

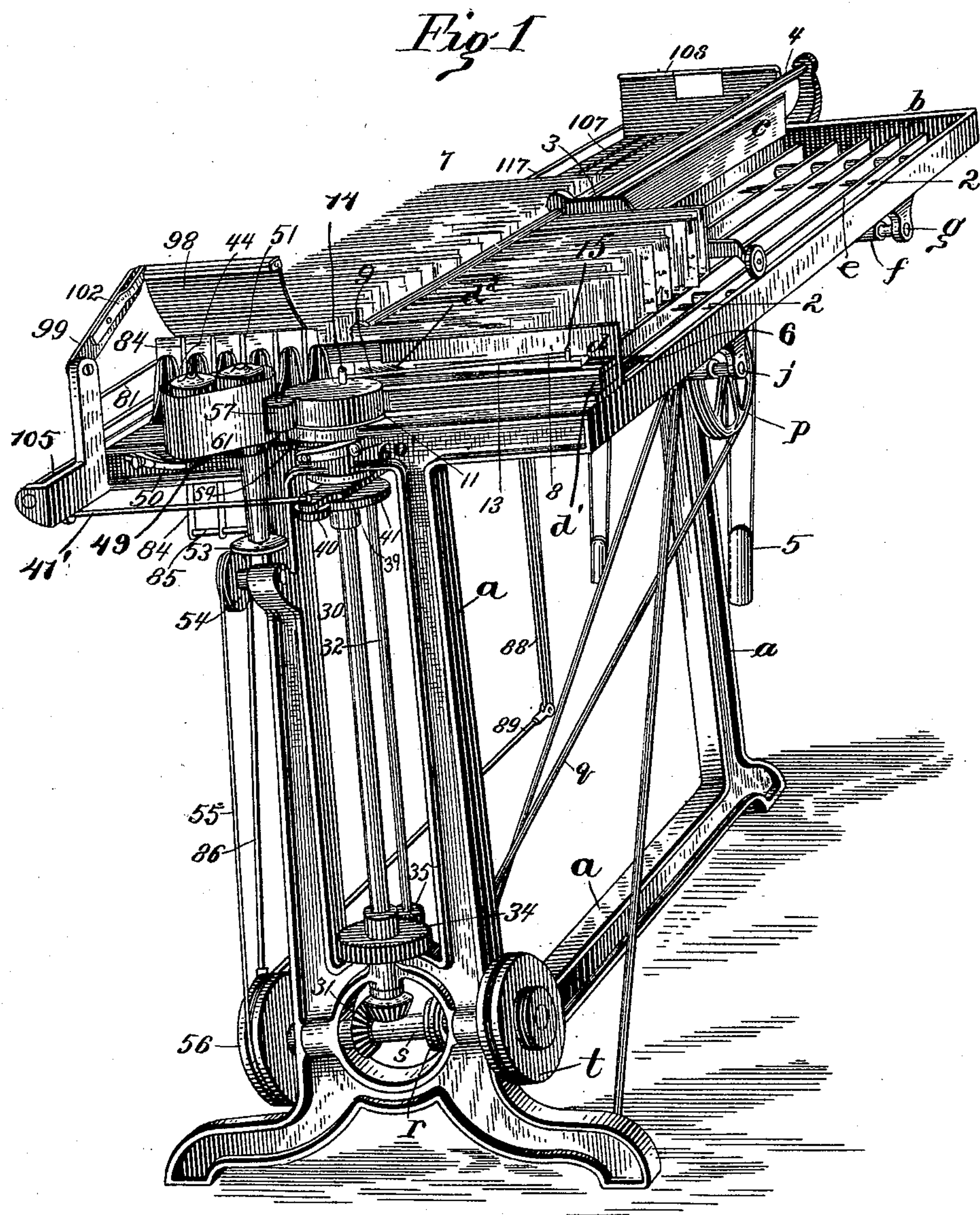
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9 Sheets—Sheet 1.

W. BARRY.
MAIL CANCELING MACHINE.

No. 585,074.

Patented June 22, 1897.



Witnesses
Chas. C. Burdine.
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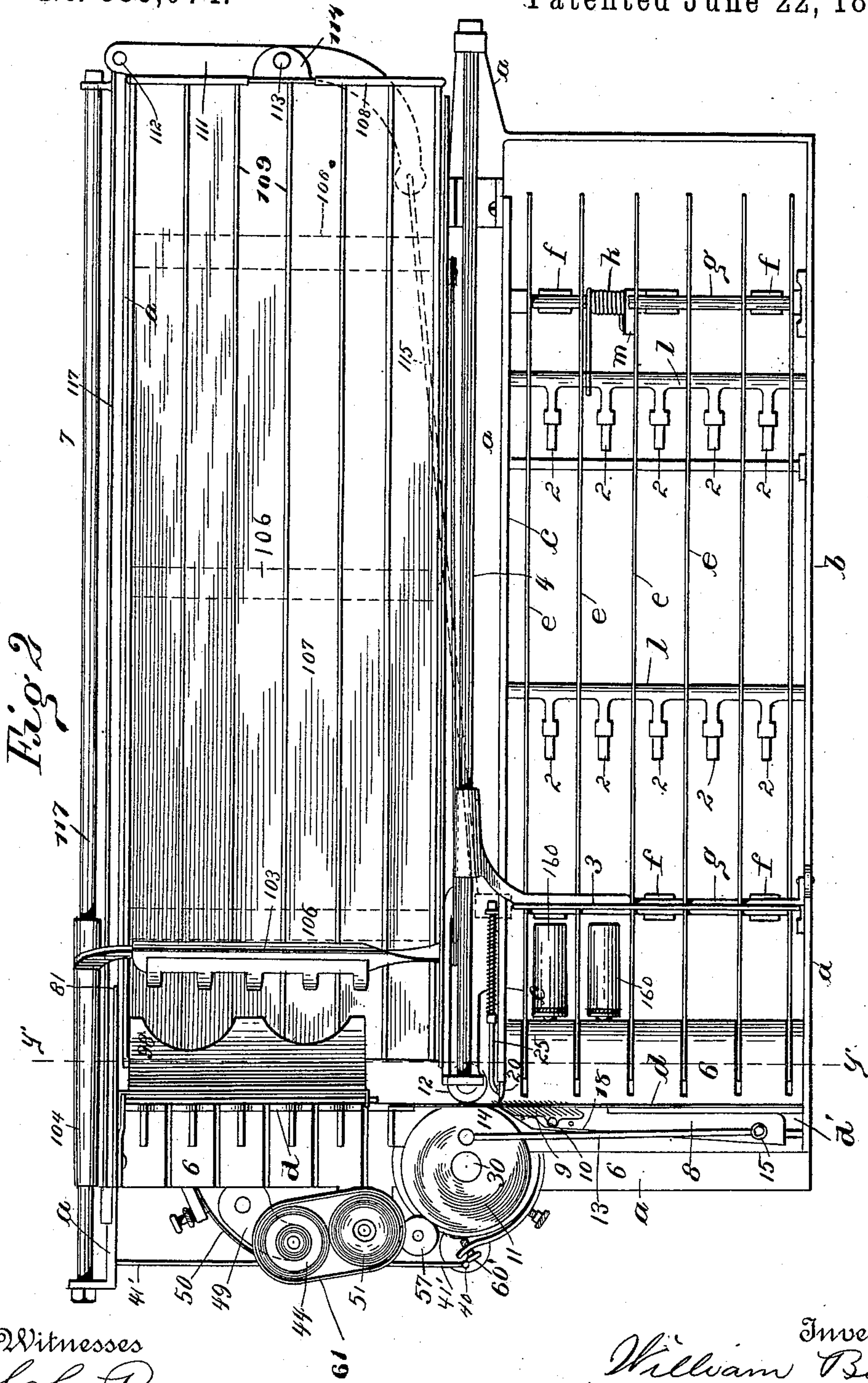
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9 Sheets—Sheet 2.

W. BARRY.
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Witnesses

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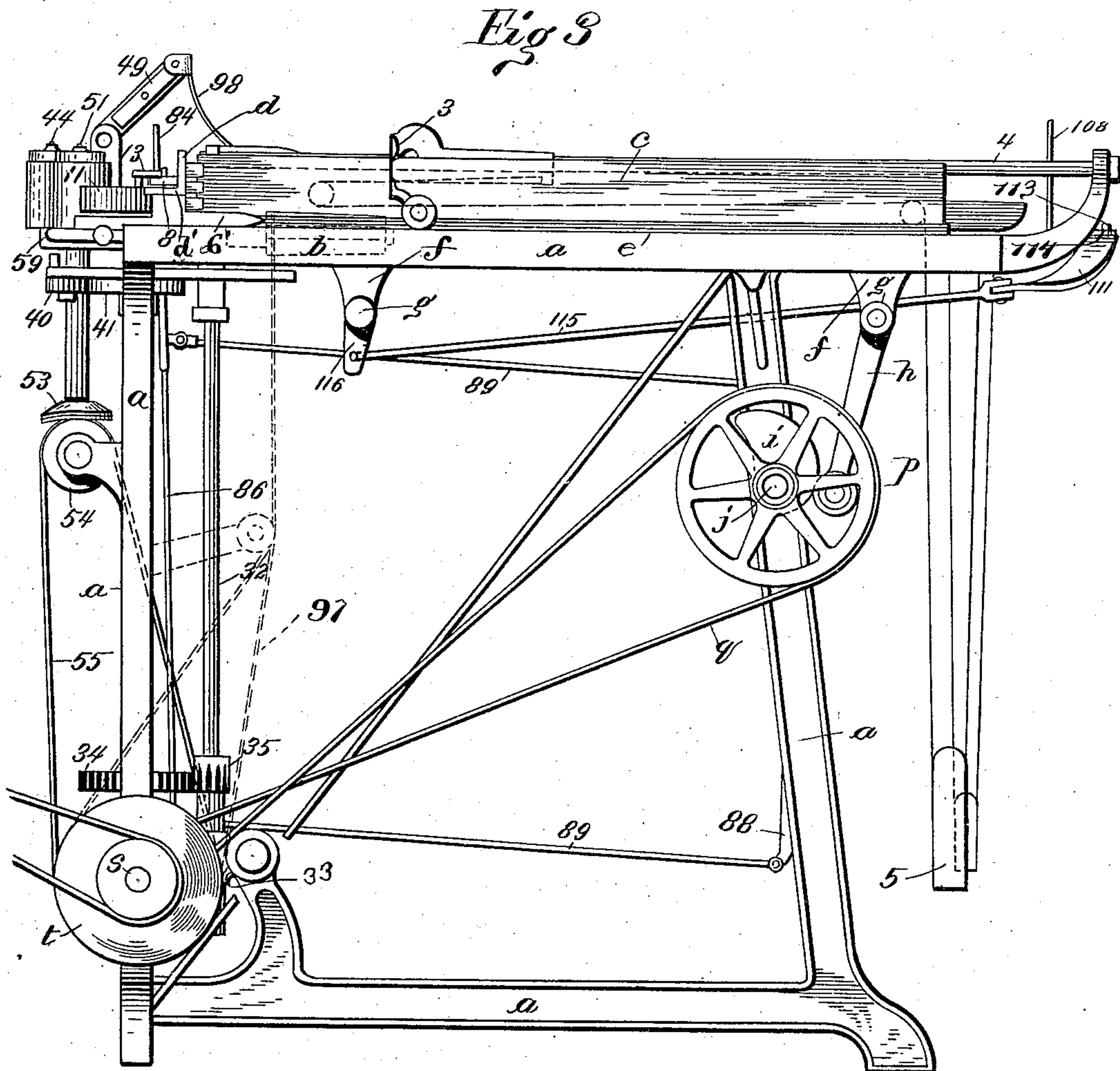
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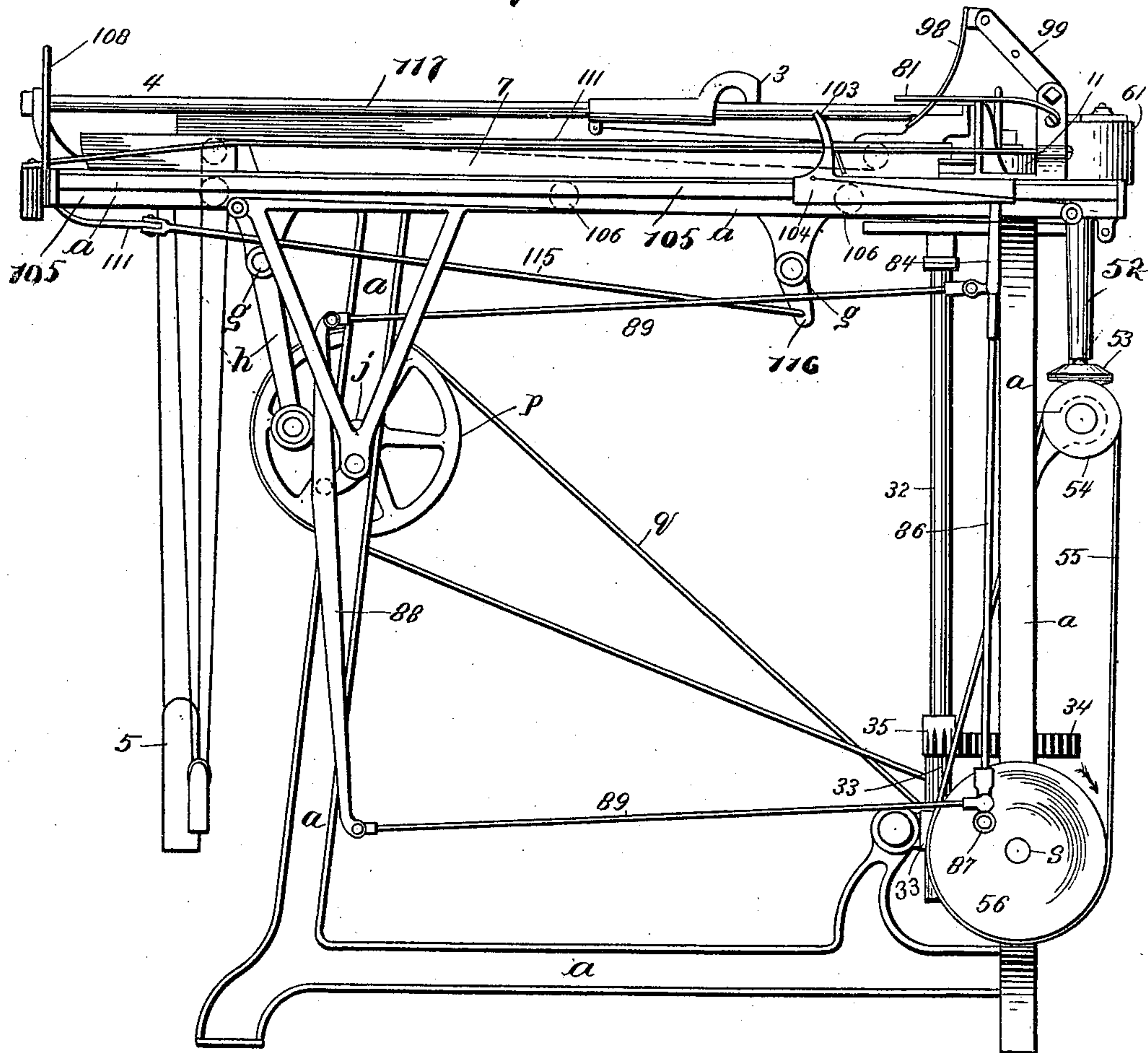
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Fig. 4



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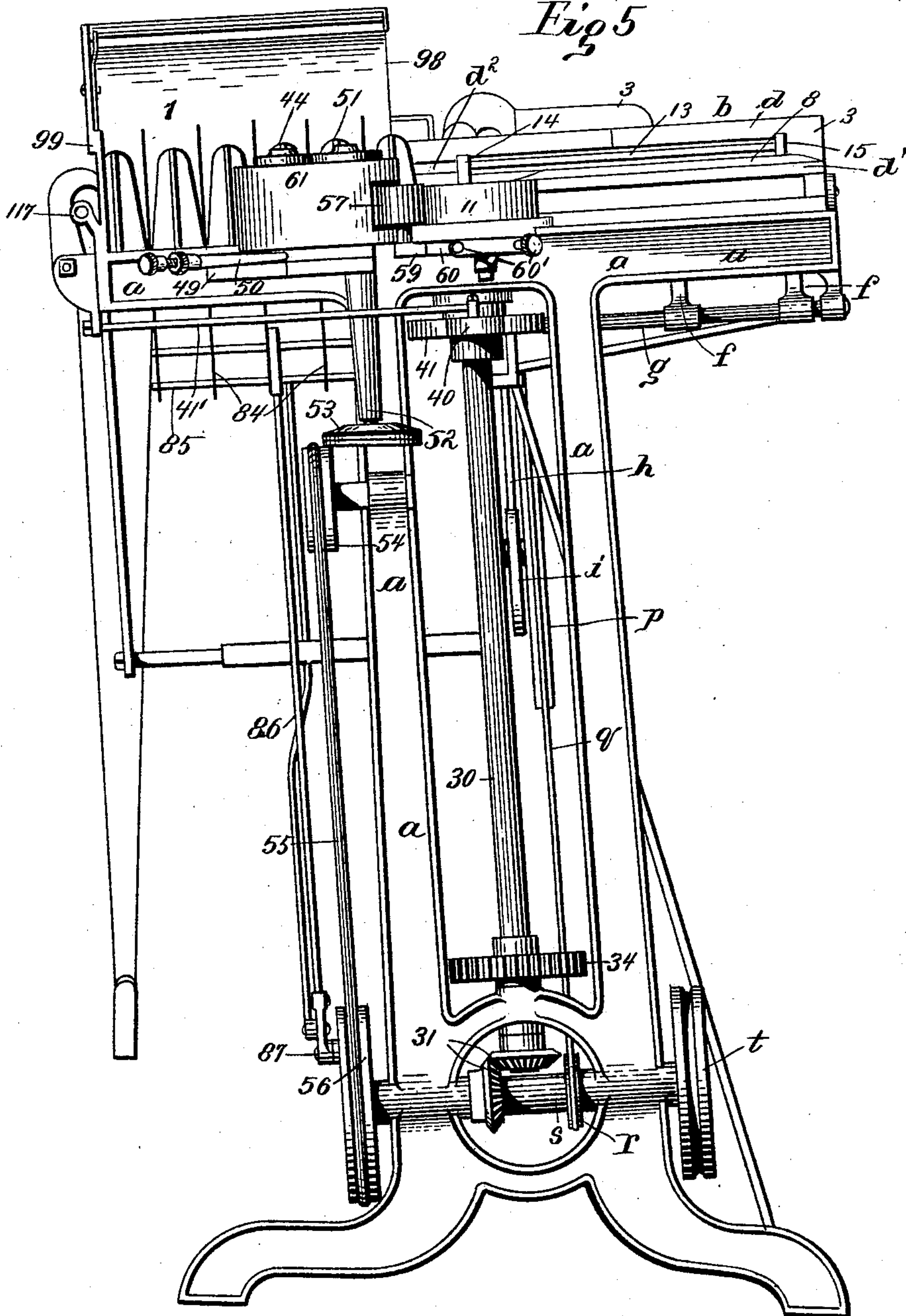
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Patented June 22, 1897.



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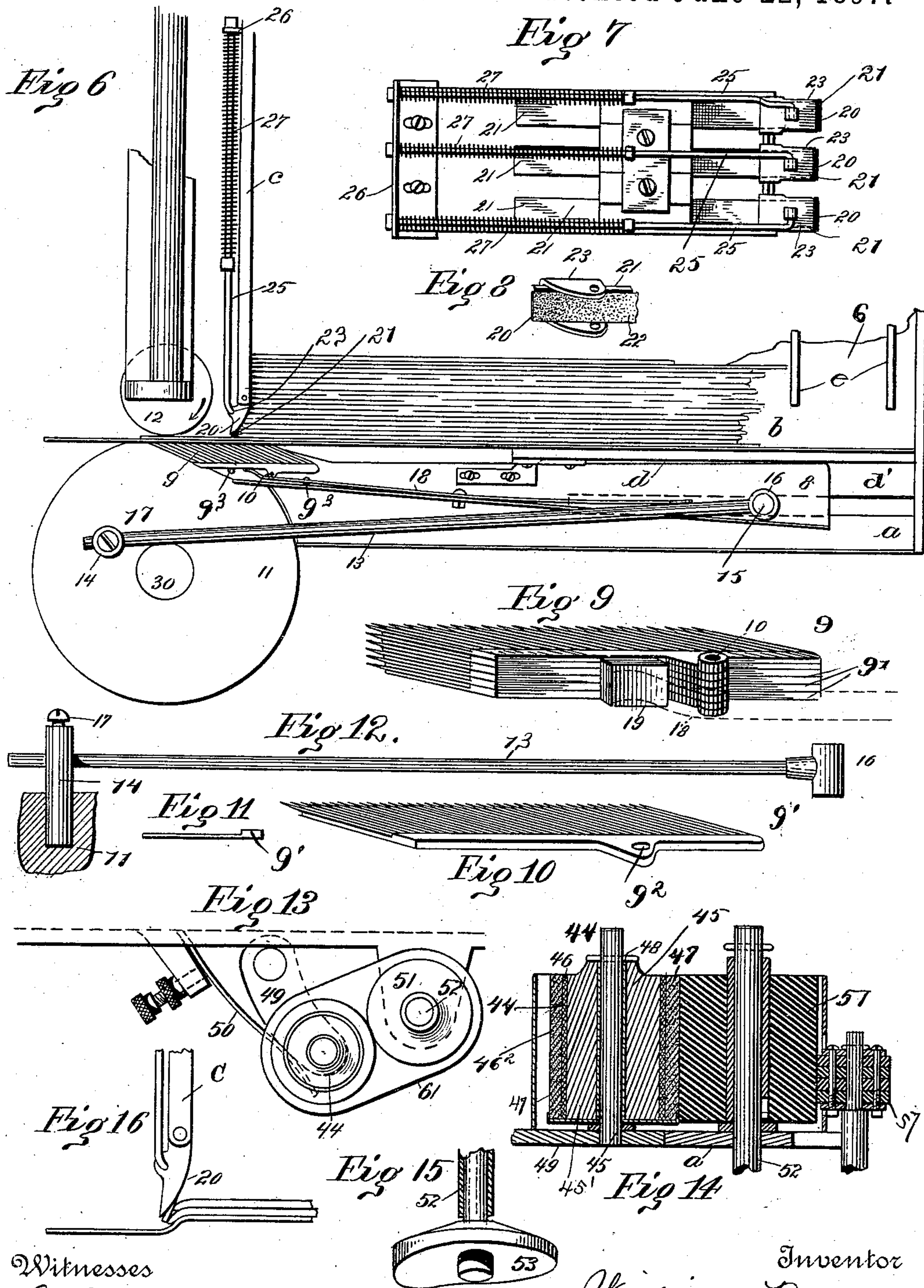
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W. BARRY.
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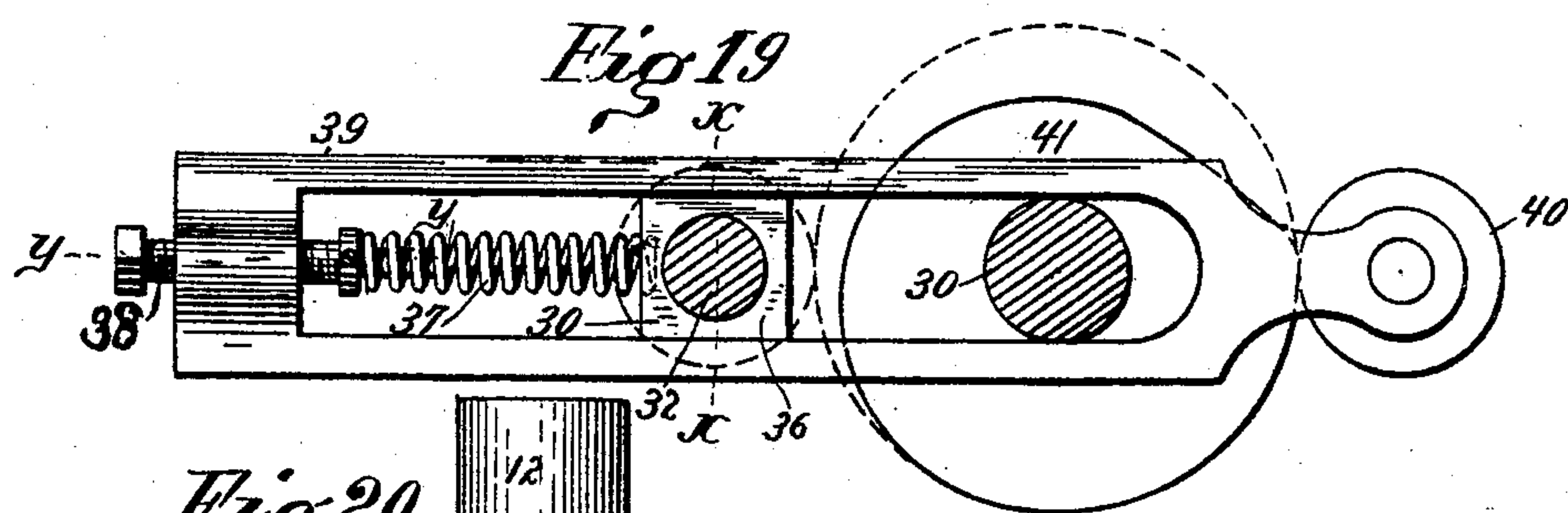
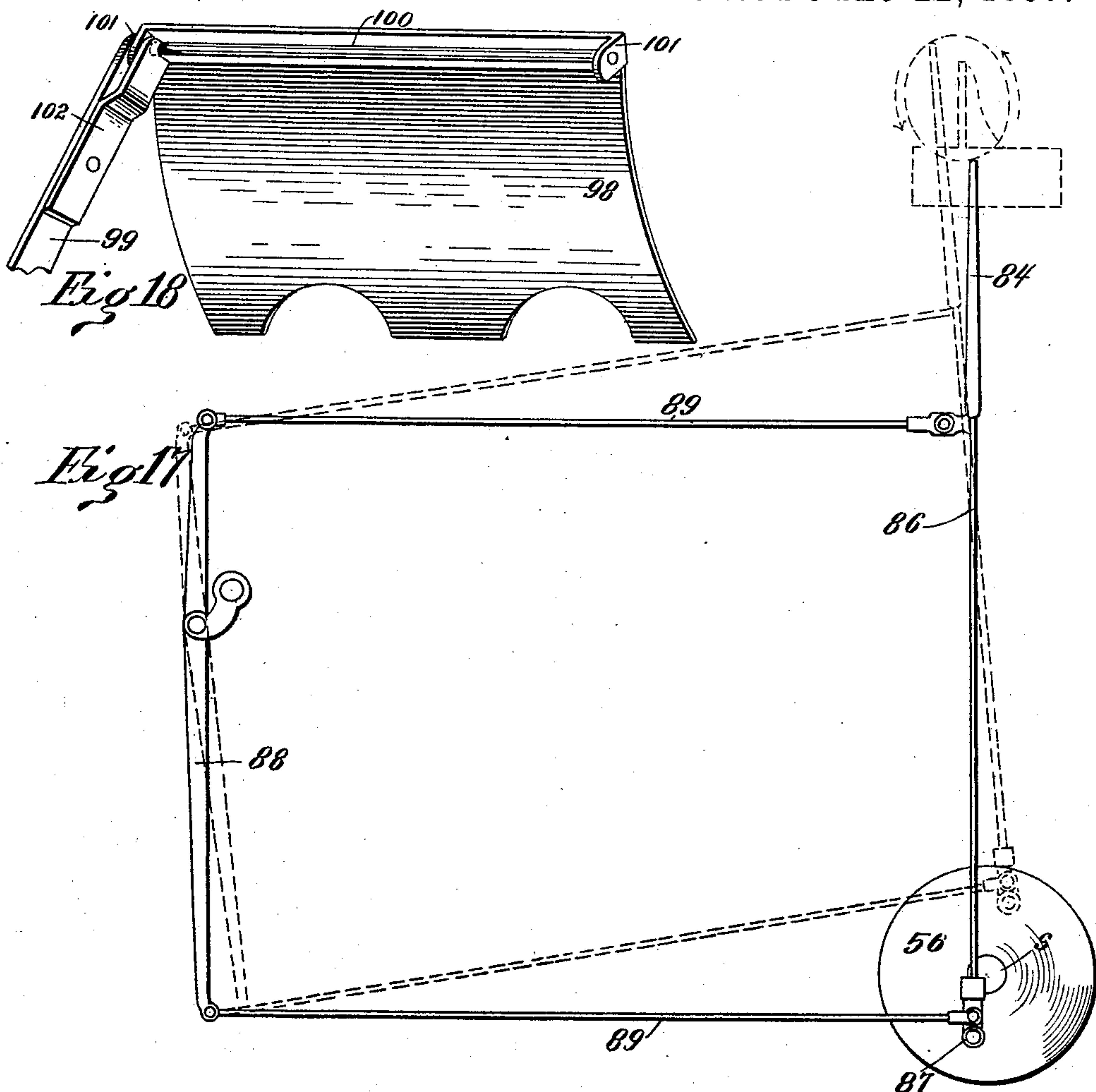


Fig 20

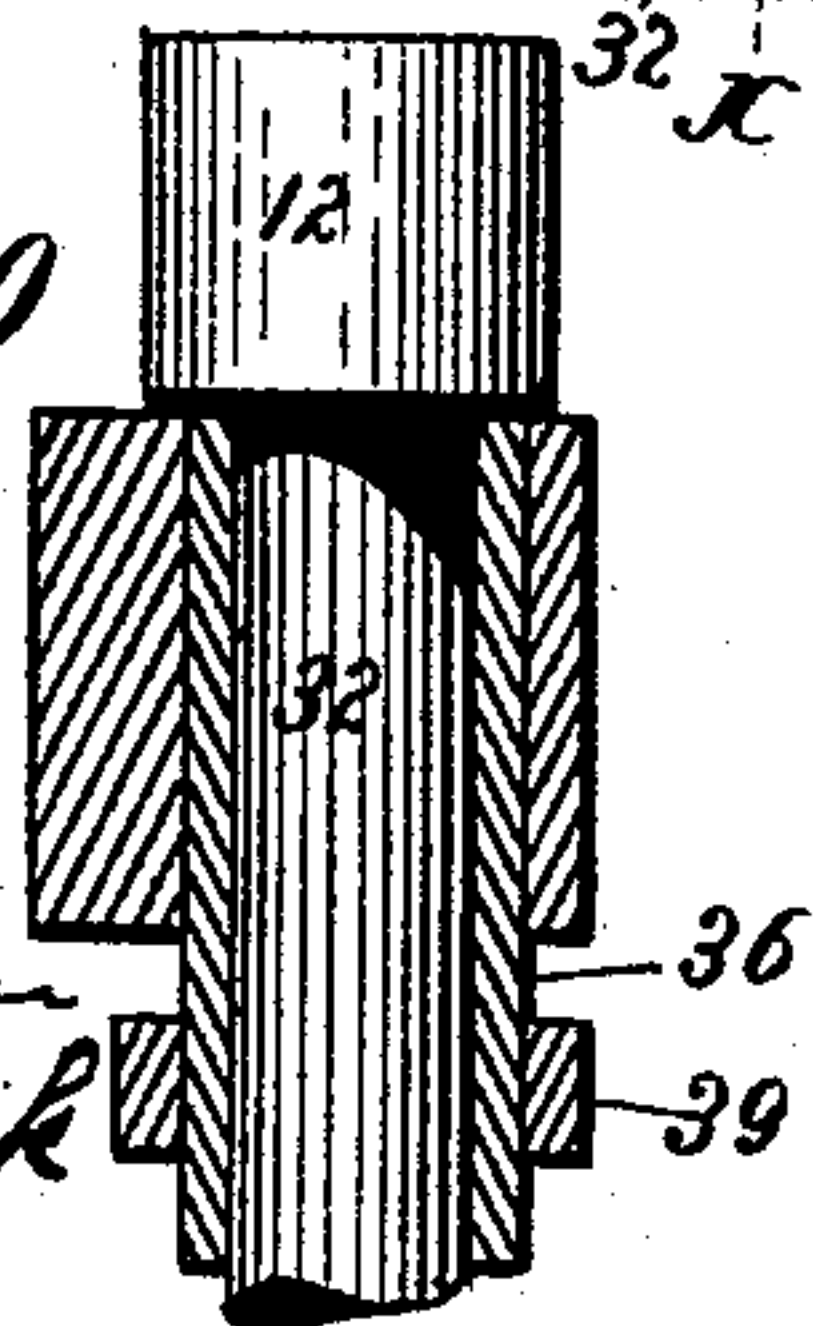
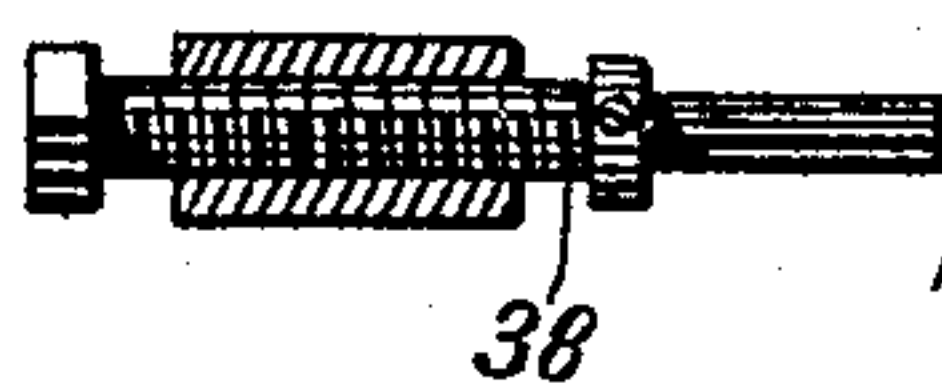


Fig 21



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(No Model.)

9 Sheets—Sheet 8.

W. BARRY.
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Fig 22.

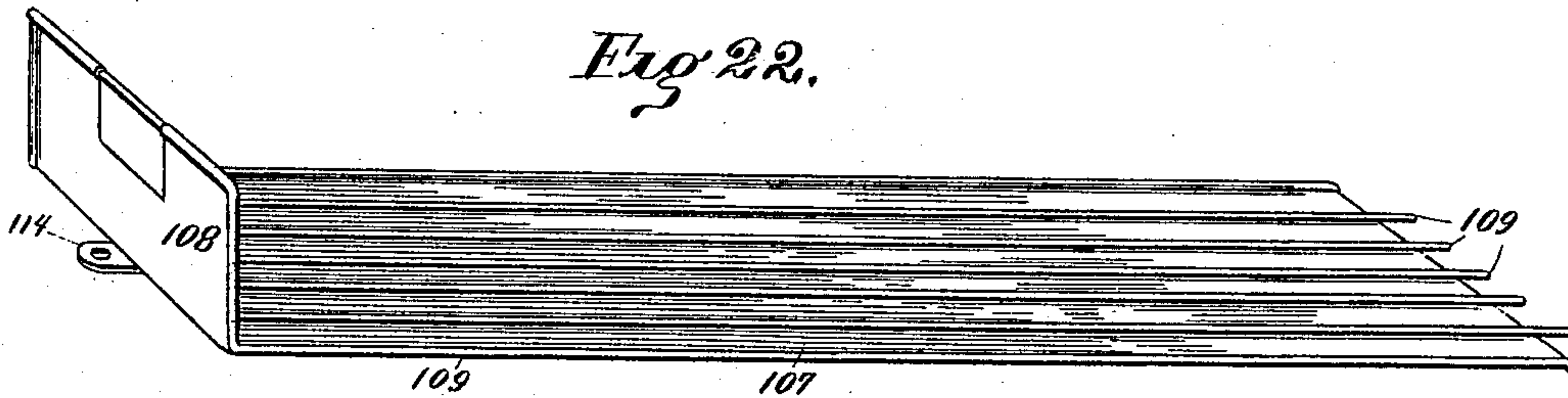


Fig 23.

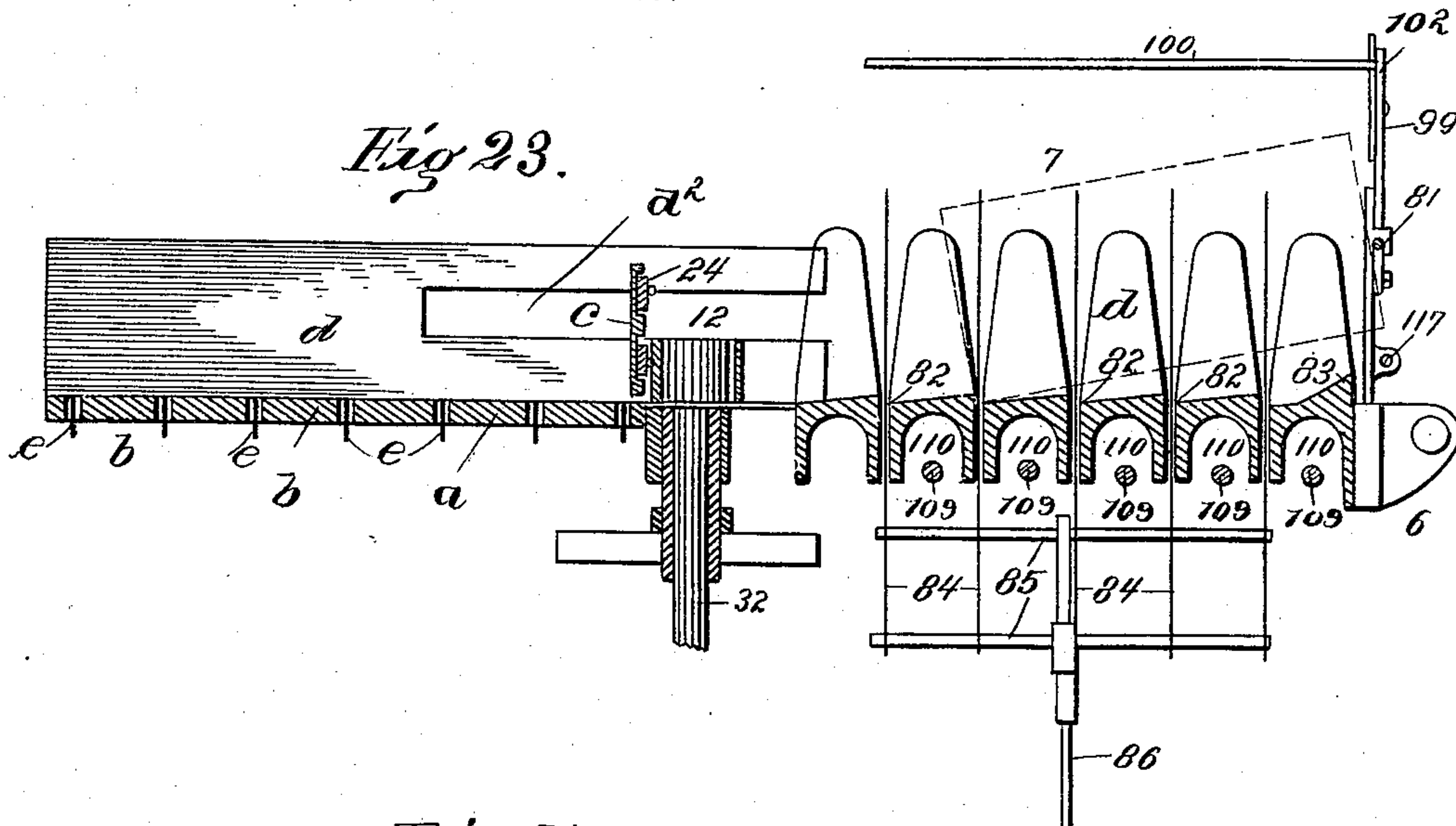
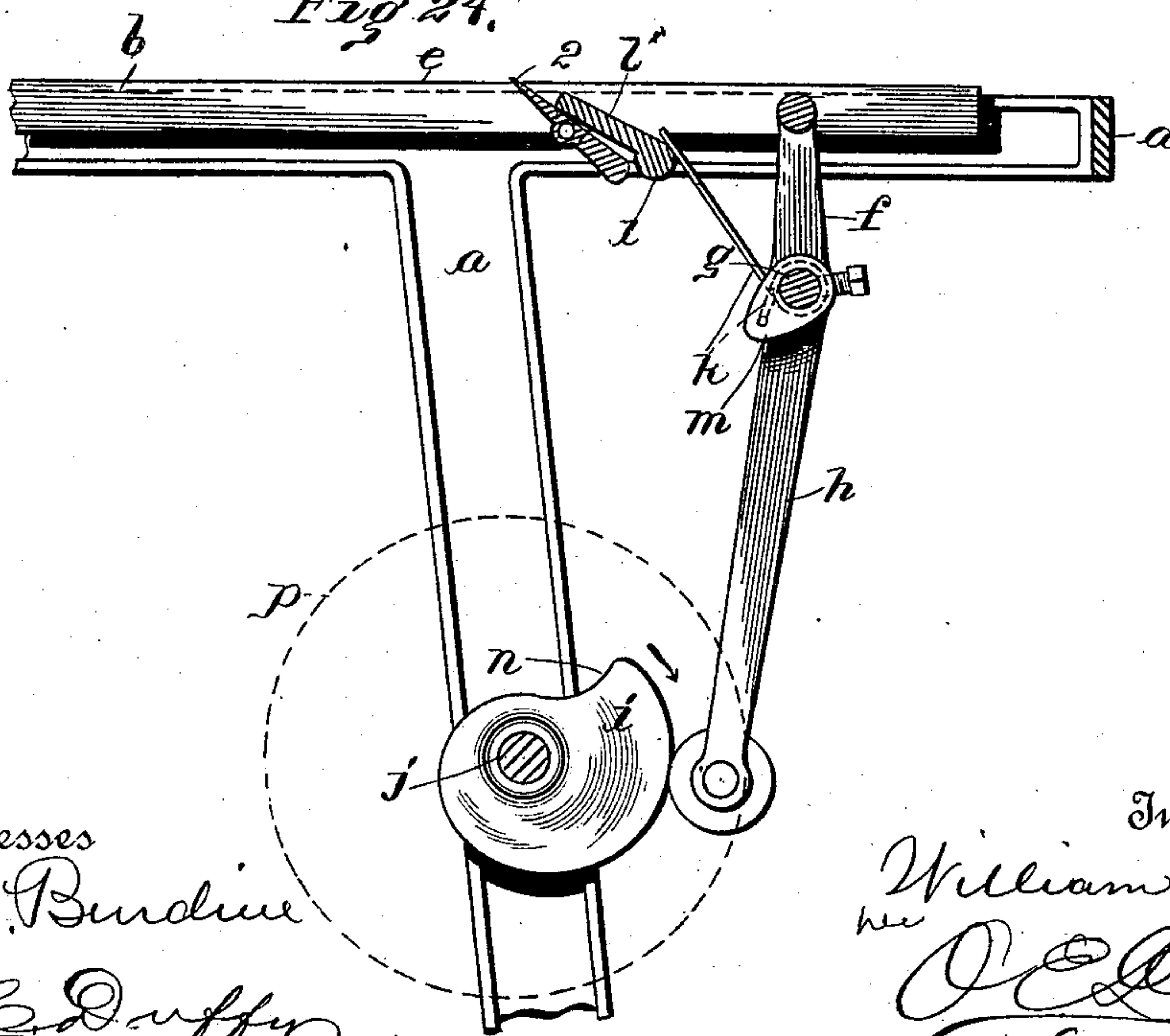


Fig 24.



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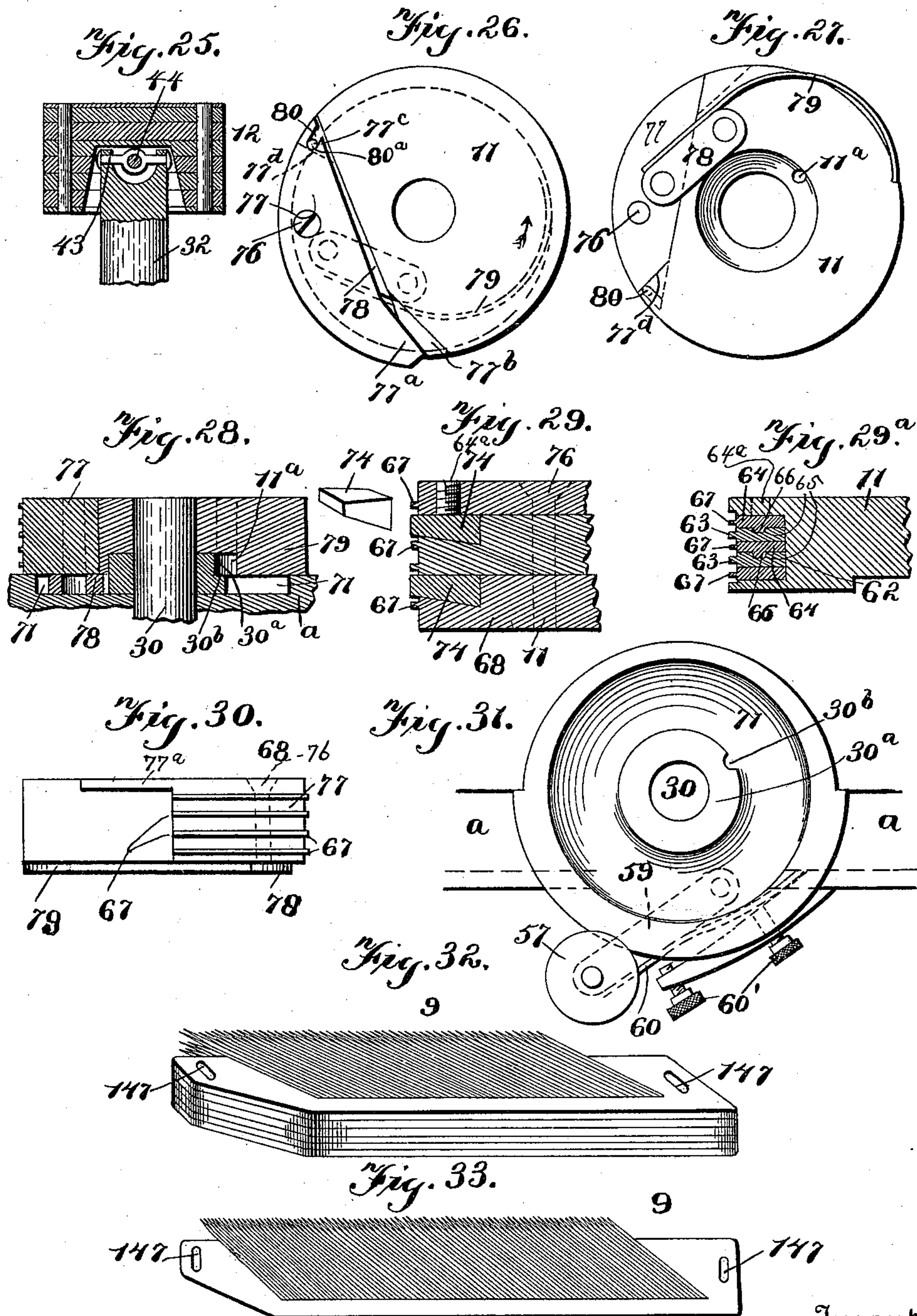
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9 Sheets—Sheet 9.

W. BARRY.
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No. 585,074.

Patented June 22, 1897.



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UNITED STATES PATENT OFFICE.

WILLIAM BARRY, OF SYRACUSE, NEW YORK.

MAIL-CANCELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 585,074, dated June 22, 1897.

Application filed August 10, 1892. Serial No. 442,715. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BARRY, of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Mail-Canceling Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form parts of this specification.

This invention relates to certain improvements in machines for canceling the stamps of and postmarking mail-matter.

The object of the invention is to provide an improved mail-stamping machine simple and durable in construction and exceedingly accurate, reliable, and rapid in action, and wherein all the pieces of mail-matter will be stamped without missing or clogging and without permitting several letters to pass through the printing mechanism at the same time.

A further object of the invention is to improve details in the forms, constructions, and arrangements of parts and thereby produce a highly efficient and accurate mail-stamping machine.

A further object of the invention is to provide a mail-stamping machine having an improved printing mechanism simple and yet very sure and effective in operation and action and wherein the printing-characters can be easily inserted and removed and the printing-wheel so constructed and operated as to prevent smearing or inking of the letters except by the type or printing-characters.

A further object of the invention is to provide a mail-stamping machine with improved means for separately feeding the letters from the receiving-bed through the printing mechanism, so that the mail-matter composed of pieces of greatly-varied thicknesses can be easily separated and fed to the printing mechanism in such a manner that every piece of mail-matter will be properly stamped.

A further object of the invention is to provide an improved method of placing the letters in the receiving-bed and of receiving them after being stamped in such a manner

that they can be easily and quickly removed and sorted.

A further object of the invention is to provide a mail-stamping machine with improved means of receiving the letters after they have been stamped and stacking them in regular order and preventing them from flying up or sidewise from the stack on being discharged from the printing mechanism.

A further object of the invention is to provide an improved inking mechanism for the printing mechanism, so that the ink will be evenly distributed on the printing-wheel without complication of parts or smearing.

The invention consists in certain novel features of construction and in combination of parts more fully described hereinafter and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a perspective of the machine as in operation. Fig. 2 is a top plan view of the machine. Fig. 3 is a side elevation of the machine, looking toward the feedway side. Fig. 4 is a side elevation of the machine, looking at the opposite side. Fig. 5 is a front end view. Fig. 6 is a detailed top plan of the inner end of the receiving-way, showing the separating and feeding mechanism in the act of feeding mail through the printing mechanism. Figs. 7 and 8 are detailed views of a form of separating-finger which prevents more than one letter at a time being fed to the printing mechanism. Figs. 9, 10, and 11 are detail views of a form of toothed feeder and parts thereof. Fig. 12 is a detail view of the pitman for driving said feeder. Fig. 13 is a detail top plan of the ink-roller and its swinging support and an intermediate distributing-roller. Fig. 14 is a central vertical sectional view through the ink-roll and intermediate roll and the distributing-roll. Fig. 15 is a detail perspective view of the cam that vibrates the intermediate distributing-roll. Fig. 16 is a detail plan view of the throat through which the letters are carried to the printing mechanism. Fig. 17 is a detail view in elevation showing the stacking-fingers and operating mechanism therefor. Fig. 18 is a detail perspective view of the swinging shield located at the inner end of the way that receives the letters after they have been printed. Fig. 19 is a detail view, in horizontal section, show-

ing the mechanism in plan that periodically
relieves the impression-roller shaft from the
spring that presses the same toward the print-
ing-roll, dotted lines showing the printing and
5 impression rolls. Fig. 20 is a cross-section
taken on line $x x$, Fig. 19. Fig. 21 is a cross-
sectional view taken on the line $y y$, Fig. 19.
Fig. 22 is a detail perspective view of the tray
which receives the letters after they have been
10 printed. Fig. 23 is a cross-sectional view
taken in the plane of line $y' y'$, Fig. 2. Fig.
24 is a detail sectional view showing a por-
tion of the bottom of a letter-way and the
means for reciprocating the same. Fig. 25 is
15 a vertical section through the impression or
platen roll, showing the shaft partially broken
away and the universal-joint mounting of the
roll. Figs. 26 and 27 are top and bottom plan
views, respectively, of a printing-roll detached
20 from its shaft. Fig. 28 is a vertical section
of the roll, including a portion of the frame
beneath the roll. Fig. 29 is a detail enlarged
section of the type carrier or block of the roll,
showing a manner of securing the type therein
25 and showing a type in perspective. Fig. 29^a
is a section of the printing-roll, showing the
modified way of holding the type. Fig. 30 is
an edge view of the printing-roll. Fig. 31 is
a plan of the cam or eccentric groove or socket
30 above which the printing-roll is arranged and
which controls radial movement of the type-
carrier of the roll, showing also the inking-
roll and the means carrying and controlling
the same. Figs. 32 and 33 show, respectively,
35 a feed-block and a section thereof provided
with transverse slots.

The machine in general has a way into
which the letters or other mail-matter to be
stamped are stacked on edge and all facing
40 in one direction. These letters are fed toward
one end of the machine and are carried lat-
erally and separately from said way through
a throat by a feeder to a printing-machine.
The letters are separated at said throat to
45 prevent passage of more than one at a time
by suitable separating mechanism extending
into said throat. The printing mechanism
discharges the stamped letters into another
way, where a stacker catches the letters and
50 stacks them in order on a floor which can
form a removable tray and which has a recip-
rocating movement to feed the letters toward
its outer end. When this tray is full, it can
be removed and emptied on a table and rein-
55 serted.

In the drawings the reference-letter a indi-
cates the frame of the machine, formed of
suitable castings or the like extended later-
ally at the upper ends to support the ways or
60 beds that receive the letters.

b indicates the feed bed or way in which
the letters to be stamped are stacked on edge
and facing in one direction. This way has
the longitudinal guide plate or edge c at the
65 inner side and the rigid vertical wall d at its
inner end. The side and end bars of this way
are rigid with the main frame of the machine.

The bottom of the way is formed to recipro-
cate and is preferably (although I do not so
limit myself) composed of parallel longitudi- 70
nal bars e , usually located a distance apart
and extending throughout the length of the
way. The lower edges of the letters rest on
these bars. The bars (see Figs. 3 and 24) are
pivoted on the upper ends of the arms f , ex- 75
tending up from and rigid with the rock-shafts
 g , extending transversely beneath the bars
and suitably journaled in the frame of the
machine. One of the rock-shafts is provided
with a rigid crank-arm h , extending down- 80
wardly therefrom and provided with an anti-
friction-roller bearing against the periphery
of the cam i on the shaft j . A suitable spring
is provided to hold the roller of the crank-arm
against the periphery of the cam, such as 85
spring k , coiled on rock-shaft g and having
one end bearing against a cross-bar l , con-
necting the sides of the way, and the other
end secured to an adjustable stop or lug m on
the shaft. By this arrangement the roller of 90
the crank-arm is constantly forced against the
cam. The periphery of the cam forms a gradu-
ally-increasing curve from the abrupt shoul-
der n in its periphery. The cam moves in the
direction of the arrow to rock the crank-arm 95
 h in such a direction as to reciprocate the bot-
tom of the feedway forwardly and thereby
carry the letters forwardly against the wall
at the front end of said way. When the roller
of said arm reaches the abrupt shoulder of 100
the cam, it drops inwardly suddenly toward
the center of the roller, thereby throwing the
reciprocating bottom quickly and suddenly
rearwardly and back. The back motion is so
rapid that the bottom does not carry back the 105
letters, but merely loosens them. The shaft
 j , carrying the cam, is provided with a pulley
 p , driven by a belt q from the pulley r on the
drive-shaft s of the machine. This drive-
shaft is preferably horizontally arranged in 110
the lower part of the frame and is provided
with a drive-pulley t , to which the power for
driving the machine is applied.

Rigid cross-bars l extend transverse of and
beneath the floor of the feedway and prefer- 115
ably have arms l' projecting up between the
bars of said floor to receive the fingers 2, (see
Figs. 2 and 24,) which are inclined toward the
inner or front end of the way. These fingers
normally project a slight distance above the 120
upper faces of the said bars, so that the let-
ters will easily slip forwardly over them, but
the fingers will prevent retrograde movement
of the letters with the quick return of the
floor. These swinging fingers are advanta- 125
geous because they are quick and sure and
will not become bent up and back by the let-
ters, and, furthermore, they let the letters
slide freely over them.

The projections l' of the cross-bars l have 130
downwardly-extending perforated lugs be-
tween which the fingers 2 are pivoted to have
a vertical swing. The swing of the fingers is
limited by the under sides of the projections

of the cross-bars, and the lower ends of the fingers are heavy enough to normally hold the upper ends of the fingers up to come in contact with the letters.

5 The reciprocatory bottom positively feeds the letters forwardly, but does not crowd or jam them together, but feeds them in such a manner that they can be easily and quickly separated and fed laterally from the way. It
10 makes no difference how much mail-matter there is in the way, the feed will be the same without crowding or jamming. A follower 3 is provided in the feedway merely to hold the letters together. This follower is provided
15 with a sleeve at its inner end, sliding on guide-rod 4, and at its outer end with a roller traveling on the outer side of the feedway. A counterweight mechanism 5 is attached to this follower to constantly tend to move the same
20 forwardly.

The cross-beam or bottom plate 6 extends completely across the front end of the machine and front ends of the feed and receiving ways and in the feedway is beveled up
25 and slotted, as shown in Fig. 2. When a few letters only remain in the way, the follower carries them across this beam or plate 6 to the feeding mechanism.

30 The receiving-way 7 lies, preferably, parallel with and in the same horizontal plane as the feedway and has a rigid wall at its inner end. The two ways communicate laterally at their front or inner ends through the printing mechanism.

35 A ledge or shelf d' is located at the front side of the wall d , at the inner end of the feedway, and on this ledge a plate 8 reciprocates transversely of the way and is suitably guided so that its inner end can have a limited swing
40 toward and from the wall d . A feeder or block 9 (see Figs. 2 and 6) is pivoted on the upper face of the inner end of this plate 8, so as to project through a horizontal longitudinal slot d^2 in the wall d into engagement with
45 the face of the letters in the feedway pressed up against said wall. This block has its inner gripping-surface composed of a plurality of closely-arranged needles or other fine sharp points inclined in the direction the letters are
50 to be fed. This feeding-block is preferably composed of a series of parallel independent movable plates 9', (see Figs. 9, 10, and 11 of the drawings,) each having a plurality of closely-arranged parallel needles or the like
55 soldered or otherwise rigidly attached thereto with their points evenly projecting a slight distance from one edge thereof. Each plate has an opening 9² at its rear edge or corner, and all the plates are placed one on the other
60 on the same pivot 10, so as to practically form one block, but so that each plate thereof can swing independently a limited distance. The block as an entirety also has a limited swinging movement on the pivot.

65 The rocking of the feeding-block is limited by the stops 9³ on the feeder-carrier 8. In this connection it should be noted that the

invention broadly comprises a feeder comprising sections having an independent play, each section having the biting-points; also, 70 the invention is not limited to mounting the sections of the block on a pivot, as shown in Fig. 9.

11 and 12 respectively indicate the horizontally-rotating printing and impression rolls 75 opposite the lateral opening or throat from the feedway. A pitman 13 connects a crank-pin 14 eccentrically in the upper face of the printing-roll and a pivot 15 on the rear end of the reciprocating feed-plate to reciprocate 80 the same. The pivot-pin 15 is rigid on said plate, and the pitman has a sleeve 16, that slips over the same. The crank-pin 14 fits loosely and removably in a vertical socket in the printing-wheel and is provided with a 85 transverse aperture at its upper end, through which the pitman adjustably extends, and a screw 17, extending through the end of the crank-pin, adjustably clamps the pitman in the pin. By this arrangement the stroke of 90 the feed-plate can be easily adjusted and varied, so that the feeder can be made to start and stop at different points to engage the letters at different distances from their ends, and the pitman can be easily and quickly 95 disconnected at any time desired. For instance, Fig. 12 shows the pitman shortened by being adjusted to project through pin 14, while in Fig. 6 the pitman is shown adjusted to its full length between pin 14 and tube 16. 100

A spring 18 is secured between its ends to the reciprocating plate 8, and its outer end bears against the pitman, and its inner end bears against the rear end of the feed-block beyond its pivotal point. (See Fig. 6.) Thus 105 when the plate begins its stroke the pitman bears in against the outer end of the spring, and hence throws the inner end of the plate inwardly through the slot a slight distance to insure the feed-block engaging the face of 110 the letter, and at the same time the inner end of the spring forces in the inner end of the feed-block. It is obvious that this function is attained because the pitman is moved in close to the wall d when the feeder is starting in on a feeding stroke and consequently 115 bears in against said spring and that as the stroke is completed the pitman moves away from said wall by reason of its eccentric connection with the printing-roll, and thus re- 120 lieves the spring.

The sliding feeder-carrier 8 is at its outer portion pivotally confined to its way d' by any suitable means, such as a pin depending in a slot in the way, (see Fig. 6,) so that the inner 125 end of the way can play toward and away from the wall d . The feeder-block is also mounted on the carrier to play thereon toward and away from the wall. The spring forces the free end of the carrier inwardly 130 and also forces the feed-block inwardly. The point or end of the biting-surface of said block hence first engages the thin end of the letter and prevents its bending or doubling in

in passing the separating-fingers or before entering between the printing and impression rolls. As the plate and block continue forwardly the block gradually rocks until its entire surface engages the letter. When the forward stroke is completed, the pitman gradually releases the spring 18, allowing the inner end of the plate and the block to move out on the return movement and thereby disengage the letter.

Forming the block of the independent plates insures the biting-face of the block engaging mail-matter having uneven surfaces, as each plate is independently and yieldingly pressed inwardly by any suitable means, such as a rubber block 19 on the end of the spring 18, that bears against the block. If desired, each section of the feed-block can have a separate spring.

The wall *d* extends across the front ends of both the ways of the machine and preferably above the printing-roll. The reciprocating feed-plate is mounted to reciprocate in a horizontal plane above the plane of the upper surface of the printing-wheel, and the parts are preferably so arranged that the feed-block is carried above the printing-wheel to or beyond the engaging point between said rolls to insure the letters being carried between and caught by the rolls.

Suitable mechanism is provided to prevent the passage of more than one letter at a time through the opening between the end of wall *c* and wall *d*, such as fingers 20, extending from end of wall *c* across said opening, so as to push and hold back the letters behind the letter moved by the feeder. In Figs. 6, 7, and 8 these fingers consist of strips 21 of rubber or other suitable flexible material having their engaging faces covered with suitable friction or rough material, as strips 22, such as emery-cloth. These strips extend through and project beyond holders 23, pivoted at their rear ends and connected to wall *c*. Each holder or finger has a rearwardly-extending pivoted rod 25, passing through an adjustable guide-plate 26, and each rod is provided with an expansive coil-spring 27, interposed between an adjustable stop on the rod and plate 26.

The constant tendency of each spring 27 is to yieldingly hold the finger across the discharge opening or passage from the feedway. The tension of the springs can be varied and adjusted to vary the size of the opening for the mail-matter. These fingers bear and press tightly against the rear faces of the letters moved by the feeder and effectually hold back the adjacent letters in the rear, the rough or friction material greatly assisting. As the rubber or friction material wears at the ends the strips can be moved forward in the metal holders or fingers. This manner of hinging the fingers and applying springs thereto permits the passage of mail-matter greatly varied in thickness, while the fingers positively prevent the thin or thick pieces of

mail passing through other than separately. The separator is so formed and arranged as to permit the feeder to reciprocate beyond the same without engaging or catching the separator-fingers. For instance, as shown in Fig. 7, this can be accomplished by having the finger in the horizontal plane of the feeder if a finger be arranged in said plane shorter than the other fingers, so as not to engage the feeder if the parts operate without a letter being interposed between the feeder and the separator. If desired, the wall *d* can be given an outward bend or bulge (see Fig. 16) opposite the separating-fingers, so that the ends of the letters will be bent out and thereby more easily separated by the fingers. Furthermore, the springs force the fingers to press the letters against the feeder, thereby assisting the feeder.

The horizontal printing-roll 11 is mounted on the upper end of a vertical shaft 30, suitably journaled and at its lower end driven from the drive-shaft *s* by bevel-gearing 31. The impression-roller 12, bearing against the printing-roll and revolving in unison therewith, is mounted on the upper end of a vertical counter-shaft 32, at its lower end mounted in a swinging bracket 33. This bracket is mounted to swing toward and from the printing-roll shaft. The counter-shaft is driven from the printing-roll shaft by gear 34 on the printing-roll shaft meshing with pinion 35 on the counter-shaft. The smaller impression-roller thus has the same rate of peripheral speed as the printing-roller. The upper journal-box 36 of the impression-roll shaft is located in an elongated slot in the main frame, so that said roll can move toward and from the printing-roll. (See Fig. 19.) An expansive spring 37 bears against said box and tends to yieldingly force the impression-roll against the printing-roll. This spring at the opposite end is secured to an adjusting-screw 38, adjustable through the end of yoke 39, passing loosely by opposite sides of the counter-shaft and printing-roll shaft to the front side of the printing-roll shaft, where the yoke is provided with an antifriction-roller 40, held bearing against the periphery of a horizontal cam 41 rigid on the printing-roll shaft. The cam is so arranged that its reduced portion will just precede or nearly coincide with, in order of rotation, the printing-characters on the printing-roll, and the parts are thus so timed that when the feeder has brought the letter to the rolls the roller 40 reaches the reduced part of the cam 41, thereby allowing the spring to draw the yoke back and relieve, or partially relieve, the counter-shaft and impression-roll from the tension of the spring. The impression-roll will therefore move away from the printing-roll very easily and quickly, permitting the entrance of the letter or package between the rolls without regard to thickness and without bending or injuring the same and reducing noise and jar. Furthermore, this arrange-

ment permits the rolls accommodating mail-matter composed of many differently-sized pieces. As soon as the letter enters the rolls the cam 41 again throws the full force of the spring on the impression-roll and the printing portion of the wheel then strikes the letter. The yoke is guided and held by the link 41', (shown in Fig. 1,) pivoted as shown. The tension of the spring 37 can be easily and quickly adjusted so as to constantly maintain the proper pressure.

The impression-roller is preferably composed of some material not so hard as to injure the type of the printing-roll and yet sufficiently hard to be durable and tough enough to form a good impression. Hence I prefer to use a roll composed of circular layers of rawhide riveted together, as shown in Fig. 25. The roll is provided with a socket in its under side to receive the upper end of its shaft. This socket is flared outwardly, and the roll is secured to the shaft by a universal joint composed of one horizontal rotary shaft 43 in a cavity in the end of the shaft and another shaft 44 extending through the roller and loosely through an opening in the first-mentioned shaft. By this arrangement the impression-roll can always be maintained parallel with the printing-roll when the counter-shaft is swung out. Suitable inking mechanism for the printing-roll is provided, preferably substantially such as shown and hereinafter described. This loose or universal mounting of the impression or platen roll also permits it to readily yield and accommodate itself to the uneven surfaces and thicknesses of mail-matter, so as to always form a flat solid backing behind the letter when the printing-characters move against the face thereof.

44 indicates the ink-reservoir or fountain-roller, composed of a central shaft 45, a body portion or core of wood or other material 45', and a surrounding wrapping of wire-gauze or the like 46, surrounded by a covering of porous material 47. The core or body is provided with bushing 48, fitting the shaft and intended to prevent ink getting in the bearing. The ink is poured on the upper end of the body and percolates through the wire-gauze and is absorbed by the felt or other absorbent covering, which becomes saturated and, with the gauze, retains a supply of ink that will last for some time. This ink-roll is carried by a swinging arm 49, pivoted to the main frame and provided with an adjustable spring 50, which tends to constantly press the ink-roll against a parallel distributing-roll 51 of soft material or composition. By this arrangement the quantity of ink taken up by the distributing-roller can be regulated by the tension of the ink-roller on the soft roller by tension of spring 50. This distributing-roll is arranged above a portion of the frame or front table of the machine and has a vertical reciprocating movement imparted thereto by its shaft 52, which passes down through

said portion of the table. This shaft rotates the roll and has a horizontal friction-wheel 53 rigid on its lower end, resting on the periphery of a vertical pulley 54, mounted on a suitable shaft journaled in the main frame and rotated by a belt 55 from a pulley 56 rigid on the drive-shaft. The friction-surface of wheel 53 is irregular or cam-shaped, and hence as the pulley 54 drives the friction-wheel said wheel and the distributing-roll are reciprocated vertically. The reciprocating movement of the distributing-roll tends to more evenly distribute the ink on the inking-roll 57 and to collect it from the ink-roll.

The inking-roller 57 is mounted on the end of the swinging arm 59, pivoted to the main frame, (see Figs. 1 and 5,) so that the inking-roll can be pressed against the distributing-roll and the printing-roll by a spring 60, bearing against said swinging rod and an arm of the main frame. This spring 60 is provided with screws 60' for adjusting its tension. The ink and distributing rolls can, if desired, be inclosed in a case 61 to prevent adjacent parts being daubed or spattered with ink. The peripheral speed of the distributing-roller is greater than that of the printing-roll.

The portion of the printing-roll carrying the printing devices throws the inking-roll out from engagement with the distributing-roll. The spring 60 and its screws limit its outward throw. The inking-roller is thus held out of engagement with the distributing-roll by the portion of the printing-wheel having the printing devices, and hence the ink is more evenly distributed on the printing-wheel by retarding the speed of the inking-roll.

The inking-roller is preferably formed of disks or layers of felt or other absorbent material pressed together by screws, as shown in Fig. 14, so as to form a solid body with a smooth surface. The inking-roller engages the portion of the printing-roll provided with printing type and characters and distributes the ink thereon so that the letters will be plainly stamped and the postage-stamps fully canceled.

The printing-roll is so formed and constructed that the only portion thereof engaged by the inking-roll is the part carrying the type or printing-characters. Hence daubing the mail-matter is avoided.

The form of the printing-roll herein disclosed has a movable type block or carrier moving with the roll and controlled by means which throw said block out from the roll to engage the inker and draw the same back to a solid backing or seat for printing.

The printing-roll shaft 30 extends through and above the front floor or table of the machine and is shown with a collar 30^a rigid thereon above the table, having edge recess 30^b. The printing-roll 11 fits removably on the upper end of said shaft and has a bottom recess to receive said collar and a pin or projection 11^a to fit down in said recess 30^b, so

as to turn the roll with the shaft and yet permit the roll being readily lifted off or placed on the shaft.

A stationary eccentric or cam 71 is suitably formed in any desired manner on the table around the shaft 30. The eccentric is here shown as a circular groove or socket formed in the front table of the machine-frame around and eccentric to the printing-roll shaft.

The inker 57 is controlled so as not to engage the printing-roll except when the type-carrier thereof is thrown out to engage the inker, and the remaining portion of the periphery of the roll is formed to engage and cooperate with the impression-roll in carrying along the letters.

The type block or carrier 77 forms practically or approximately a sector of the complete cylinder or circle of the printing-roll, so that when the type-carrier is in its printing position against the flat or cut-off edge of the main portion of the roll the outer edge or face of the type-carrier is in or approximately in the circle of the roll and forms a part or continuation of the periphery thereof. The type-carrier is here shown confined to the main portion of the printing-roll by a loose connection, such as link 78, arranged at the under end of the roll, with its ends pivoted, respectively, to the main portion of the roll and to the type-carrier in such a relation as to permit the carrier to swing out from the circle of the roll. This link is arranged in the eccentric, and any suitable spring is preferably provided, yieldingly pressing the type-carrier outwardly from the roll, so that the outer end of the link, engaging the outer edge or wall of the eccentric, controls the position of the type-carrier by pressing said end of the link in until the carrier is seated solidly against the roll or permitting the same to swing outwardly under the influence of the spring. On the drawings a bent spring 79 is shown at one end secured to the link, with its free end arranged and compressed in the eccentric groove 71, so as to press against the outer wall thereof and exert its tension on the type-carrier, as just described. It will thus be observed that when the roll is lifted from its shaft the type-carrier and spring move out with it.

The front end of the type sector or carrier 77 has a nose or edge 77^a at its upper side projecting over the main portion of the roll, preferably into a recess 77^b therein. The opposite end of the carrier 77 also has an upper edge 77^c projecting into a recess in the main portion of the roll. The rear end of the carrier in the direction of rotation has an end shoulder abutting against a corresponding shoulder of the main portion of the roll, as shown at 77^d, Figs. 26 and 27. A pin 80^a projects up from the main portion of the roll into slot 80 in the lip or overlapping edge 77^c. The slot 80 is so arranged relatively to the pivotal points of link 78 as to cause the type-carrier to move radially out from the link as

the guiding slot and pin cooperate with the pivotal link in properly moving the type-carrier, while shoulders 77^d engage and push the type-carrier around without wedging or jamming, and the overlapping ends or edges hold the type-carrier from dropping down and reduce friction and wedging and also overlap points to avoid sharp or abrupt edges to strike and throw out the inker.

The eccentric is so arranged that during every rotation of the printing-roll as the type-carrier thereof approaches the inker the eccentric permits the spring to throw the type-carrier out to the inker to ink the type thereof, and as the type-carrier approaches the impression-roll the eccentric draws the carrier to its solid seat against the main portion of the roll, so as to have a solid seat for printing.

Any suitable means can be provided for removably securing the type in the type-carrier or providing other printing-characters thereon. In Fig. 29 the type-carrier is formed of horizontal sections removably secured together by any suitable means, as a vertical screw 76, so that the type can be clamped between the sections and removed on loosening the screws and sections. The sections can have tapering depressions in their upper sides to receive the type 74, which have tapered or inclined sides to fit in said depressions. The section above fits down on and thus clamps the type rigidly in position. It will thus be observed that the type are locked by and interlocked and alternate with horizontal sections. The sections can have printing-ribs 67 to form lines or dashes between the type and also, if desired, to extend beyond the type forming the postmark to print the lines which cancel the stamps.

The small screws 64^a, Fig. 29, can be employed, if desired, as eveners for each type.

In Fig. 29^a the type-holder is shown with a cavity in which the horizontally-arranged type and intermediate sections are arranged. The type 63 have side cross grooves or depressions 65, and the intermediate sections or metal strips 64, which are arranged horizontally between the horizontal rows of type, each has a rib 66 on one side fitting in the aligned grooves 65 of the row of type beneath to hold the type properly. The opposite side of each strip is flat to form a bearing or support for the next succeeding row of type. The sections have the printing-ribs 67 at their outer edges, which can extend beyond the type to form the stamp-canceler. The screws 64^a clamp the sections and type rigidly together and in place, and yet permit ready removal or insertion thereof by loosening the screw or screws. This arrangement of printing-roll presents many advantageous features. There is no bumping and no blows on the parts when running at a high rate of speed, and consequently no noise and excessive wear.

The letter after being stamped is shot outwardly by the rolls across the inner end of

the receiving-way against a stop-arm 81 at the outer edge of said way. The letter is prevented from rebounding by the shoulders 82, formed by a series of what might be called "ratchet-teeth" or "short inclines" inclined upwardly toward the outer edge of the way, forming the series of shoulders facing outwardly, and formed in the cross-beam extending across the front end of the machine. The last incline 83 at the outer edge of the way is curved upwardly, as shown, toward the stop-arm 81, so that when the outer corner of the letter strikes said curve it will direct the outer end of the letter upwardly and throw the inner corner of the letter down in front of one of the said shoulders or stops 82, as shown by dotted lines in Fig. 23. The letters are thus stacked about in line in the receiving-way.

As each letter enters the receiving-way it is caught by a suitable stacker and pressed down in proper position to form the pile or stack. This stacker preferably consists of a series of fingers 84, which move up and forward through slots in the end wall *d* of the way and up and forward through the slots in cross-beam 6 between each incline, forming shoulder 82 behind each letter, pressing the same forward in proper position, and then the fingers move down and back beneath the way. These fingers can be secured and operated in different ways. In Figs. 17 and 23 of the drawings the vertical fingers are shown secured to cross-bars 85, secured to the upper end of an oscillating pitman 86, at its lower end journaled on a crank-pin 87, projecting from the face of pulley 56 on the drive-shaft. The pitman 86 has the oscillatory movement imparted thereto by the upright lever 88, fulcrumed between its ends near the front end of the machine and having its upper and lower ends, respectively, connected by pivotal links 89 with the upper and lower ends of pitman 86. The crank causes the pitman and fingers to rise and fall, while the lever and links cause the same to oscillate to cause the fingers to move the letters forwardly and then move back to catch the next letter, the parts being properly arranged and geared to move in the desired sequence.

A depending swinging guard or shield 98 is suspended at the front portion of the receiving-way in front of the path traveled by the stacking-fingers, so that each letter must pass beneath the guard, which lies on the series of letters fed outwardly in the way and is pressed outwardly by the same. The guard is intended to assist in stacking or piling the letters in order and prevent them flying up or over the other letters or piling one on the other. The guard is suitably supported, preferably by an arm 99, extending upwardly from the outer edge of the way and having a horizontal rod 100 extending laterally over the way. The shield is formed of any suitable light material, such as leather or thin sheet metal, &c., and is provided with per-

forated ears 101 at its upper edge, loosely located on said rod. A swinging catch 102 is pivoted to the inner side of the arm 99, so as to swing down against the outer side of the innermost ear 101 and thereby retain the shield on the rod 100. By swinging up this catch the shield can be moved laterally from the rod. It is evident that the catch 102 swings down against rod 100, beside the inner ear 101, and hence prevents said ear moving outwardly, as it must when the ears are slid longitudinally of rod 100 in removing the shield.

The receiving-way is provided with a follower 103, that is gradually pressed outwardly as the stack of letters in the way increases. This follower is provided with a sleeve 104, sliding on a guide-rod 105 at the outer edge of the way. The inner end of the follower is guided by a suitable guide edge at the inner side of the way. A suitable counterweight mechanism is provided for this follower. The follower is so arranged with its free end traveling on a support or guide and its opposite end mounted on the tube sliding and turning on a rod as to be capable of upward swing from the way and thereby permit removal of the tray containing letters. The receiving-way is also provided with a reciprocating bottom which, if desired, can be a removable tray, although I do not wish to limit myself to the employment of a movable tray. The main frame is provided with suitable rigid side and cross pieces at the receiving-way, and the antifriction-rollers 106 are usually mounted in the cross-pieces. (See Fig. 4.) On these rollers the reciprocating floor or tray 107 rests. This tray is preferably, though not necessarily, formed of sheet metal bent up at the outer end 108 to form a stop and handle. The upper face of the tray is preferably provided with series of parallel longitudinal ribs 109, on which the lower edges of the letters rest and slide with a minimum amount of friction. These ribs are preferably formed of metal rods which project beyond the inner end of the tray and fit loosely in sockets 110 in the under side of the cross-beam when the tray is in position. This floor or tray is reciprocated in a direction to feed the letters toward the outer end thereof by suitable means, such as a lever 111, fulcrumed at 112 at the outer end of the receiving-way to swing horizontally and extend transversely across the way. Suitable means are provided to pivotally and removably unite said lever and the reciprocating floor or tray of the receiving-way, such as a vertical pin 113 between the ends of the lever and a perforated ear 114 from the end of the tray arranged to drop on said pin, so that the lever when swung will reciprocate the tray. A link 115 is pivoted to the outer end of said lever 111 and at its opposite end is pivoted to the lower end of an arm 116, projecting down from and rigid with an extended end of one of the rock-shafts *g*. (See Figs. 3 and 4.)

These shafts, by reason of their upwardly-extending arms, impart the forward feed motion to the feedway-floor in one direction, while by reason of the downwardly-projecting arm the feeding motion in the opposite direction is imparted to the floor or tray of the receiving-way. A guide-rod 117 can be rigidly secured to the frame at the outer longitudinal edge of the receiving-way to guide the letters as they are stacked in said way. If desirable, other means can be employed or arranged for guiding the letters.

In practical use the letters to be stamped are stacked properly on edge on a suitable pan or tray which is placed on the feedway, the follower being swung up and to one side. The tray is then pulled out from under the letters while they are held, thus leaving the stack of letters on the floor of the feedway. These trays or pans can be filled by clerks when desired, and the machine can be easily and quickly filled with letters when desired.

The letters are separately carried laterally from the inner end of the feedway through the printing mechanism and discharged into the inner end of the receiving-way, wherein the letters are stacked in the removable pan or tray. As fast as one tray is filled it can be removed and another substituted. The letters can be easily removed and sorted and distributed in these trays. Furthermore, by the use of these trays the machine can be very easily manipulated and several machines can be attended to by one person. If desired, a tray such as is used in the receiving-way can be employed in the feedway.

In Figs. 32 and 33 the preferred construction of feed-block is illustrated. This block is formed in sections, as shown, and the ends of the sections have transverse slots 147, as shown, so that the entire biting-surface of each section of the feed-block or the surface of the entire feeder-block can move inwardly toward the letter. Where the sections of the block are pivoted at one end, the free ends only of the sections can swing inwardly to catch uneven surfaces, but where the sections can slide throughout their entire lengths by reason of the end slots letters uneven throughout their lengths can be readily engaged and fed.

It should be noted that the positive mechanism provided to vary the tension between the printing and impression rolls is so arranged and controlled that the tension between said rolls is increased after the letter has been grasped by the rolls and as the printing devices of the printing-roll arrive around at the printing-point, so that the tension of the impression-roll toward the printing-roll reaches its maximum while the printing-roll is actually performing the printing operation, whereby a good impression on the the mail-matter is secured, and yet the tension between said rolls is not so high when the letter is presented to the rolls as to render it difficult for the rolls to grasp the same.

The stacking device herein disclosed comprises a swinging pusher having any kind of a suitable shank, body, or carrier, shown in the drawings as having a movable fulcrum, by being pivotally joined to link 89, and to which shank or carrier any suitable reciprocating, rotary, or circular eccentric or crank actuating means can be applied, and a letter-engaging portion shown in the drawings as composed of strips, slats, or fingers carried by the shank.

This machine has hereinbefore been called a "stamping-machine," although the specific purpose of the machine is to cancel stamps and postmark letters. It has been found advantageous to incline the letter-ways laterally in the same direction—that is, the feedway is inclined toward the inner edge thereof and the receiving-way toward its outer edge. This inclination is preferably attained by the formation of the frame. By this inclination of the frame and ways the inner ends of the letters are kept against the inner guide of each way, and hence the letters are kept in regular order and can be easily engaged and operated by the feeder; also, the letters are discharged more readily and accurately across the inner end of the receiving-way and are stacked in a superior manner in the receiving-way. I do not wish, however, to limit myself to such constructions.

If desired, one or more rollers 160 can be horizontally arranged parallel with the feedway and near the inner end thereof and driven by any suitable mechanism, such as the belting passing over a guide-pulley from the bottom drive-shaft, as shown by dotted lines in Fig. 3, so that the upper face of the rollers will travel toward the inner edge of the feedway. The letters are thus kept against the inner edge of the feedway, so as to be readily caught by the feeder. These rolls are so located as not to interfere with the forward feeding of letters.

For the sake of clearness the machine has been very minutely and specifically described; but I wish it understood that I do not limit myself to this description or to the machine illustrated, as it is evident that various changes might be made in the forms, constructions, and arrangements of the parts described without departing from the spirit and scope of my invention. Hence I do not limit myself to the construction herein described.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a mail-marking machine, the combination of a frame, a feedway, wherein the letters are arranged on edge, provided with means to feed the body of the letters forwardly and with a longitudinal guide at its inner edge having a lateral discharge-opening therethrough, letter-feeding means, a printing mechanism, and a receiving-way into the inner side of which the letters are

discharged on edge, and provided with means for moving the body of letters therein, and with a longitudinal guide at its outer edge, said two ways arranged side by side in approximately the same plane and inclined transversely to aline the ends of the letters against said inner and outer guides, respectively, of the feed and receiving ways, substantially as described.

2. In a mail-marking machine, the combination of a horizontally-disposed receiving-way into the inner side of the front end of which the letters are discharged on edge, and having a reciprocating feed-floor, a stacker to force the letters outwardly in said way, a longitudinal guide at the edge of said way, opposite the letter-inlet, said way being inclined transversely toward said guide to aline the outer ends of the letters against the same, and means to feed the letters into the way, substantially as shown and described.

3. A mail-marking machine having a feed-way provided with a reciprocating floor to feed the letters toward the inner end thereof, and a receiving-way having a reciprocating floor arranged to feed the letters toward the outer end thereof, substantially as described.

4. A mail-marking machine having a feed-way provided with a reciprocating feed-floor, and a receiving-way provided with a reciprocating feed-floor connected with and reciprocated in an opposite direction from the receiving-way floor, substantially as described.

5. In a mail-marking machine, the combination of a frame, a reciprocating feedway-floor, a reciprocating receiving-way floor, a rock-shaft having lateral arms connected to the feedway-floor, and an oppositely-extending arm connected to the receiving-way floor to reciprocate the same, and a cam-and-spring device to rock said shaft in opposite directions and consequently reciprocate the two floors, substantially as described.

6. In a mail-marking machine, the combination of a frame, a reciprocating feed-bed, a rock-shaft beneath said bed having an upwardly-extending arm pivotally connected to said bed, a reciprocating receiving-bed, and a downwardly-extending arm from the shaft connected with the receiving-bed to reciprocate the same, substantially as described.

7. In a mail-marking machine, the combination of a frame, two parallel letter-ways arranged thereon side by side and in approximately the same horizontally-disposed plane, the front ends of the two ways ending in approximately the same vertical plane, means comprising printing mechanism to feed the letters from the front end of one way into the front end of the opposite way, the ways provided with positive feeding means positively operated one from the other and arranged to carry the letters toward the outer end of one way and toward the front end of the other way, substantially as described.

8. A mail-marking machine having a recip-

rocating feed-bed, a reciprocating receiving-bed, said beds operated oppositely one from the other, substantially as described.

9. A mail-marking machine provided with two letter-ways having feeding-floors operated one from the other and connected together, substantially as described.

10. In a mail-marking machine, the combination of a frame, two letter-ways arranged horizontally thereon and each provided with reciprocating feeding means, a direct operating connection between said feeding means of the two ways, operating means for said connection, and feeding devices for carrying the letters from one way into the other way, substantially as described.

11. In a mail-marking machine, the combination of a frame, letter-ways arranged horizontally thereon side by side, and each having a feeding-floor, an actuating connection directly connecting said two floors and arranged to actuate the floors to feed in opposite directions, respectively, operating means for said connection, and means to carry the letters from one way to the other, substantially as described.

12. A mail-marking machine having the series of outwardly-facing shoulders in the path of the letters, and a stop for the letters at the outer end of said series, substantially as described.

13. A mail-marking machine having the front end of the receiving-way provided with the series of shoulders, an upwardly-curved guide at the outer edge of said way, and a stop-arm above said guide, substantially as described.

14. In combination, printing mechanism, a receiving-way across the end of which said printing mechanism discharges the letters, the end of said way across which said letters pass formed with short upward and outward inclines terminating in shoulders, a stop at the outer edge of said way, and a stacker arranged to catch each letter as it enters the way, substantially as described.

15. In a mail-marking machine, the combination of a receiving-way into one end of which the letters are discharged, a stacker arranged at one end of the way to pack the letters therein, a stationary support, and a depending shield carried by said support and arranged immediately above the inlet end of the way and over the path of the letters in moving across the way to prevent the letters jumping up out of the pack or way when discharged thereinto or engaged by the stacker, substantially as described.

16. In a mail-marking machine, the combination of a receiving-way, having a side inlet at one end through which the letters are discharged transversely in an upright position, a support, and a depending movable shield arranged immediately above the inlet end of the way with its lower end arranged to swing rearwardly and rest on the upper

edges of the letters in the way and to prevent the letters flying up as they enter the way, substantially as described.

17. In combination, a receiving-way having a bracket extending up over the way, a swinging shield depending from said bracket over the way, and a latch to hold the shield on the bracket, substantially as described.

18. In a mail-marking machine, the combination of a receiving-way into which the letters are discharged on edge and transversely of the way, a stacker at said end of the way, and a rearwardly-inclined shield arranged above the way and immediately over and above the path traversed by the letters in entering said way to hold the letters in the way as they enter the same, substantially as described.

19. In a mail-marking machine, the combination of a letter-receiving way, a support arranged above the same, and a flexible shield in the form of a sheet depending from the support over the inlet end of the way with its lower free end arranged to rest on the upper edges of the letters moving outwardly in the way, substantially as described.

20. In a mail-marking machine, the combination of a frame, a letter-receiving way having a side inlet-opening at one end, a printing mechanism at said opening arranged to shoot the letters in an upright position transversely across the end of the way, a shield arranged above said inlet end of the way and immediately above the path traversed by the letters entering the way and arranged to engage the upper edges of the letters in the way, a letter-stacker at front end of the way, and a movable body in the way to hold the letters together and in their upright positions.

21. In a mail-marking machine, the combination of a receiving-way having a side inlet, means to discharge the letters into said way through said inlet, said way formed with an upward incline in its floor in the path of the letters entering the way, and a shield arranged above the way and immediately above said incline and path of the letters entering the way, substantially as described.

22. A mail-marking machine, having its receiving-way provided with a swinging stacker moving into and out of the way for packing the letters as received in the way, and provided with a reciprocating floor feeding the pile of letters outwardly in said way, substantially as described.

23. A mail-marking machine having a letter-way provided with a removable reciprocating floor, and operating connections to reciprocate said floor quickly in one direction and more slowly in the opposite direction.

24. A mail-marking machine having the floor of its receiving-way formed of a removable tray, and means connected with said tray for reciprocating the same quickly in one direction and more slowly in the opposite direction to feed the letters outwardly therein, substantially as described.

25. The mail-marking machine having a removable tray forming its receiving-way, and a lever, connected with rocking means, to which said tray is detachably secured substantially as described.

26. The combination, the frame and operating mechanism, of the machine, a letter-receiving tray, a swinging lever on which said tray removably rests and by which the tray is reciprocated, and operating means for the lever, substantially as described.

27. In a mail-marking machine, a letter-way having means to feed the letters longitudinally of the way and toward one end thereof, a longitudinal side guide, and positively-operating means arranged in the floor of the way to engage the letters and line them up against said guide, substantially as described.

28. In a mail-marking machine, the combination of a letter-way having a side discharge, a printing-couple at said discharge, a reciprocating feeder having a biting-surface arranged to engage the letters at or near their ends and carry them into the printing-couple and having a stroke extending beside the end of one member of the couple, a pitman pivotally and eccentrically joined to said member of the printing-couple and loosely connected with said feeder to reciprocate the same, and adjustable means connecting the pitman to the member to adjust the pitman longitudinally in respect to the member to vary the starting-point of the feeder in its stroke and vary the point at which it grasps each letter, said pitman so connected as to be readily lifted from the said member, substantially as described.

29. In a mail-marking machine, the combination of a letter-way, a rotary member adjacent thereto, a reciprocating feeder to carry the letters from the way, and a pitman directly connecting the member and feeder, said pitman having a transverse socket at one end adapted to drop down on a vertical journal from one of said parts connected by the pitman, a pin arranged to movably rest in a socket in the other part and having the pitman adjustably clamped thereto so that the length of the pitman between said parts connected by it can be varied and so that the pitman and said pin can be lifted from said parts, substantially as described.

30. In a mail-marking machine, the combination of a letter-way having a discharge-opening and a front end wall, a horizontally-reciprocating feeder arranged in front of said wall to project through the same and grasp the letters at or near their front ends, a horizontally-rotating member having a socket, a vertically-removable pin turnable in the socket and having a transverse opening at its upper end, a pitman at one end pivotally connected to said feeder and vertically removable therefrom and at its opposite end passing through said transverse opening, and means to clamp the pitman in said opening so that the length of the pitman between the feeder

and said member can be varied to vary the points of engagement between the feeder and letters longitudinally of the letters, and so that the pitman can be readily lifted from the feeder and said member, substantially as described.

31. In a mail-marking machine having the front end wall of its way provided with an outward curve or bend at the lateral discharge from said way, separating-fingers forcing the letters against said curve whereby the letters can be easily separated, and a feeding mechanism for forcing the letters from the way through said discharge, substantially as described.

32. In a mail-marking machine, the combination of a letter-way having a discharge-opening, a feeder arranged to catch the letters at their inner ends and carry them through the opening, a separating device at said discharge arranged opposite the feeder, the wall of the way and the separating device being so relatively arranged and shaped as to bend the edges of the letters toward the feeder so that the feeder engages and grips the inner flexible ends thereof, substantially as described.

33. A feeding-block composed of a series of parallel independently-movable plates, having needle-points projecting from corresponding edges to form the surface of needle-points, substantially as described.

34. A feeding-block composed of a series of parallel plates, each having a series of sharpened wires, needles, or the like, secured thereto with the points projecting from one edge thereof, substantially as described.

35. A movable feeding-block, having the biting-face composed of a plurality of fine closely-arranged points, the block composed of separate plates independently mounted so as to have slight independent play, and yieldingly pressed together in the same direction.

36. A feeding-block composed of a series of parallel plates, each having a series of parallel needles or the like secured thereto with their points projecting from one edge thereof, said plates independently pivoted and yieldingly held in position, substantially as described.

37. A feeder composed of alternate layers of plates and parallel needles, substantially as described.

38. The feeder composed of parallel plates carrying series of needles and independently mounted; a yielding or spring device yieldingly holding said plates, and a support carrying the feeder, substantially as described.

39. A reciprocating carrier having operating means, in combination with a feeder-block having a surface of fine points and one or more slots transverse of the plane of said surface of points, and confining means in said slot and from the carrier so that the block can move transversely independently of the carrier, substantially as described.

40. A feeder-block built up of a series of parallel sections laid one on the other and

each at an edge having a series of projecting fine parallel points, so that a surface of fine, closely-arranged points is formed at one side of the block, substantially as described.

41. A feeder built up of a series of independently-movable sections, arranged one against the other, each carrying a series of points at one edge so that a flexible surface of points is formed which readily adapts itself to uneven surfaces, substantially as described.

42. A reciprocating feeder comprising a sliding carrier having lateral play, means for reciprocating the same, and a feeder proper mounted on said carrier and composed of a plurality of independently-movable plates carrying biting-edges, means for limiting the play of said plates, and a spring independently pressing all the plates inwardly, substantially as described.

43. In a mail-marking machine, a feeder comprising a reciprocating carrier, a series of parallel independently-movable plates, each having a biting-surface, each plate at one end having an elongated slot, a confining-pin passed down through the same, and a stop limiting the in-and-out play of the opposite ends of said plates, substantially as described.

44. In a mail-marking machine, the separating device comprising pivoted fingers, slide-rods having their outer ends bent laterally and loosely joined to said fingers, guides for said rods, and springs pressing them longitudinally, substantially as described.

45. The separating mechanism comprising a spring-actuated finger, a rod controlling the same, and a stop to limit the inward movement of the finger and rod, substantially as described.

46. In a mail-marking machine, a series of independent separating-fingers extending across the discharge from the feedway and consisting of swinging holders yieldingly held inwardly by springs and provided with adjustable strips of friction material, substantially as described.

47. A separating-finger composed of a holder and an adjustable strip of rubber or other flexible material faced with a strip of friction material, substantially as described.

48. The separating-fingers composed of swinging holders provided with friction material, said holders extending across the discharge from the feedway, and having rods attached to their outer portions and extending rearwardly, and springs and guides for said rods, substantially as described.

49. In a mail-marking machine, the combination of a letter-way having a rigid front wall and a side discharge, said front wall extended along one side of said discharge, a pair of gripping-rolls at said discharge, a support at the discharge opposite said wall, a series of parallel separating-fingers arranged side by side, each formed of a metal block at its inner end independently pivoted to said sup-

port and extending transversely across the discharge toward said rigid wall so as to be swung back by each letter, and having the curved or rounded letter-engaging face, springs independently holding each finger against the letters, and a feeder to carry the letters from the way and past said fingers, substantially as described.

50. In a mail-marking machine, an impression-roll having a socket in its under side to receive its shaft, and provided with a universal joint securing it on the end of the shaft, substantially as described.

51. In a mail-marking machine, the combination of a printing-roll, an impression-roll, a laterally-swinging shaft carrying the impression-roll, said impression-roll having a socket to receive said shaft end, and a universal joint connecting the shaft and roll consisting of shafts or pins crossing each other, substantially as described.

52. A printing-roll in combination with an impression-roll movable toward and from the printing-roll and mounted on and connected with its shaft by a universal joint, and composed of layers of rawhide rigidly secured together, substantially as described.

53. A mail-marking machine having a printing-roll, and an impression-roll, said rolls constantly and yieldingly held toward and in operative relation to each other, in combination with positively-operated means actuated at each revolution of a roll, independently of the mail-matter, for varying the tension on said rolls, substantially as described.

54. The combination of a printing and an impression roll, spring mechanism constantly pressing said rolls toward each other, and means for reducing or easing the tension of said spring mechanism at fixed periods and independently of the mail-matter so that the rolls will quickly and easily separate to receive the pieces of mail-matter as each is presented thereto, substantially as described.

55. The combination of a printing-roll, an impression-roll constantly and yieldingly pressed into operative relation to the printing-roll, a feeder to carry the letters to said rolls, and positively-operated means controlling the tension on the impression-roll independently of the passage of mail-matter, and timed in operation with said feeder to vary the tension on said roll at every stroke so that the tension on the rolls is least when each letter is presented thereto.

56. In a mail-marking machine, the combination of a printing-roll, an impression-roll movable toward and from the printing-roll, and always in operative position, a spring constantly and yieldingly holding the impression-roll toward the printing-roll, and positively-operated means varying the tension of said spring on the impression-roll at every revolution of the printing-roll, substantially as described.

57. In a mail-marking machine, the combination of two cooperating rolls constantly held

yieldingly toward each other in operative position, a feeder to carry the letters separately into the rolls, a spring constantly acting on said rolls, and a carrier for the spring positively operated at every stroke of the feeder to vary the tension of the spring on the rolls, substantially as described.

58. In a mail-marking machine, the combination of a printing-roll having printing devices at a portion of its periphery, an impression-roll constantly in operative position and yieldingly held toward the printing-roll, and means for easing or reducing the tension on the impression-roll and positively operated from the printing-roll shaft at fixed periods so as to ease the tension on said impression-roll at every revolution of the printing-roll and just before the printing-characters thereon come opposite the impression-roll, substantially as described.

59. In a mail-marking machine, the combination of a printing-roll, an impression-roll, a movable support, a spring controlled thereby, and constantly pressing the impression-roll toward the printing-roll, and means controlling said support and operated at every revolution of the printing-roll to move the support to vary the tension of the spring on the impression-roll.

60. In combination, two cooperating rolls and their respective shafts, one roll and its shaft movable toward and from the other, a spring constantly pressing said roll toward the other, a yoke secured to the spring, and a cam on the opposite shaft to move the yoke at fixed periods to relieve the pressure of the spring on the movable shaft and roll, substantially as described.

61. In combination, a printing-roll and its shaft, a cam on said shaft, an impression-roll and its laterally-movable shaft, an expansive spring constantly bearing against said shaft to hold the impression-roll to the printing-roll, a sliding yoke to which the outer end of said spring is secured, said yoke being held and reciprocated by said cam, substantially as described.

62. The combination of the printing-roll, the impression-roll, the spring pressing the impression-roll to the printing-roll, the yoke and operating means controlling said spring, and adjustable means securing the spring to the yoke, substantially as described.

63. A printing-roll having removable clamping-sections and means to clamp the same, type between and clamped by and interlocking with the sections, said sections having printing-ribs between the rows of type and extended beyond the same to form the stamp-canceler, substantially as described.

64. A printing-roll having its type-block formed of a series of transverse removable sections, rows of removable type between and interlocking with said sections, said sections having printing-ribs at their outer edges between the type to print lines between the lines of printing, and a clamping-screw passing

through the sections and locking the same together with the type in place, substantially as described.

65. A printing-roll having a type-carrier 5 formed of a series of sections removably clamped together, some of the sections having tapering recesses in a side face, the type to fit therein having inclined sides so that when the sections are locked together flat 10 sides of adjoining sections will engage the flat faces of the type and rigidly lock them in the depressions for operation, substantially as described.

66. A printing-roll cut off on one side, a 15 type-block arranged at said cut-off side to form a sector of the roll and complete the circle thereof and movable in and out independently of the roll, and formed of a series of sections removably clamped together, and 20 printing-characters clamped removably between the sections, substantially as described.

67. In combination, a vertical shaft, a printing-roll removably resting on the upper end 25 thereof, and provided with a type-carrier forming a sector and loosely connected therewith so as to lift from the shaft with the roll, and means to move the carrier out from the roll when opposite the inker and back to its 30 opposite seat against the roll when opposite the printing-point, substantially as described.

68. In a mail-marking machine, the combination of a frame having a circular cam or 35 eccentric, a printing-roll having one end beside said cam, an inking-roll held out of engagement with the surface of the printing-roll, said printing-roll having a portion of its 40 circumference broken to form the approximately flat rigid seat, the type-carrier completing the circumference of the roll and formed at its inner edge to seat itself firmly against said seat of the roll, type removably 45 seated in the outer face of said carrier, means for securing the type therein, and a type-carrier controller arranged entirely at an end of the roll and on which said carrier directly 50 rests and which loosely confines the same to the roll and travels in engagement with said cam to throw the carrier out to the inking-roll and withdraw the same against its rigid seat for printing, substantially as described.

69. In a mail-marking machine, the combination of a frame, a continuous cam or eccentric surface, a printing-couple comprising 55 a printing-roll arranged opposite said cam, said roll having a movable sector-shaped section formed to seat itself firmly against the roll or to swing out and engage the inker, said section in width approximately equal to the 60 length of the roll and completing the circumference of the roll and formed to removably receive type, type removable therein, securing means for the type operative from an end of the roll, a plate arranged at an end of the 65 roll and on which said section is confined and traveling in engagement with said cam to control the section, and an inker, substantially as described.

70. In a mail-marking machine, the combination of a frame, an upright shaft, a printing-roll thereon having a movable type-carrier forming a sector of the roll and confined 70 to turn with the same, the frame having a cam or eccentric immediately beneath the roll, means depending from the type-carrier into engagement with said cam or eccentric to 75 move the type-carrier to its seat against the roll or out from the same to engage the inker, said carrier forming the printing-surface of the roll, the remaining portion of the periphery forming a feeding-surface, an impression- 80 roll held from engagement with the feeding portion of the printing-roll, and a yieldingly-held inker, substantially as described.

71. In a mail-marking machine, a frame, a shaft, a printing-roll thereon having a movable type-carrier, a link loosely connecting 85 the carrier to the body of the roll and arranged beneath the same, the frame having a cam or eccentric in which the link travels and by which the in-and-out movement of the 90 carrier is controlled, substantially as described.

72. In a mail-marking machine, a frame, a vertical shaft, a printing-roll removably located on the upper end of the shaft so that it 95 can be lifted therefrom, a type-carrier moving in and out from the roll and forming a sector thereof, an eccentric or cam beneath the roll, and means from the type-carrier removably sliding in said cam or eccentric and controlling the in-and-out movement of the carrier and arranged and connected so that said 100 means can be lifted from the cam or eccentric with the carrier, substantially as described.

73. A printing-roll having a movable type-carrier forming a sector thereof and pushed 105 around by the roll, and having lips or projections overlapping the roll to break joints with the same at the ends of the type-carrier, and means for moving the sector out from or back 110 against the roll, substantially as described.

74. A printing-roll formed with a cut-away portion on one side, a movable type-carrier completing the circle of the roll at said side 115 which forms a seat for the same, said carrier having a projection from its front end projecting over and having a sliding contact with the body of the roll, and a shoulder at its rear end engaged by a portion of the roll to push 120 the carrier around with the roll, and means to control the independent movement of the carrier, substantially as described.

75. In combination, a frame having a cam-surface, a rotary printing-roll having a type-carrier movable into and out of printing position, a type-carrier-controlling support on 125 which said carrier is mounted and by which it is loosely secured to the roll, said support traveling against the cam, and a spring rigid with said support and engaging the cam to 130 yieldingly press the carrier outwardly, substantially as described.

76. A printing-roll having a movable carrier, the carrier and body of the roll overlap-

ping at one end and having a guiding pin and slot, a link pivotally connecting the roll and carrier beneath the same, a frame having a cam or eccentric in which said link slides
5 and by which the carrier is controlled, and a spring secured to the link and traveling in the cam and pressing the carrier outwardly, substantially as described.

77. In combination, a frame having a cam
10 or eccentric surface, a rotary printing-roll having a movable type-carrier, said cam opposite an end of the roll, a carrier-controlling support arranged at an end of the roll and carrier and traveling against and controlled
15 by said cam, said carrier mounted and resting on said support so as to move around with the roll, and means controlling said carrier and to move one end out ahead of the other, substantially as described.

78. In combination, a support, a printing-roll, a movable type-carrier forming an approximate sector of the printing-roll, and at one end overlapping or breaking joints with the printing-roll, a cam or eccentric opposite
25 the roll, a carrier support or controller traveling therein, and a pivot mounting the carrier on said support so that the carrier swings on the pivot and moves one end out ahead of its other end, substantially as described.

79. A printing-roll having a movable section forming a sector of the roll with its sides approximately flush with the ends of the roll and provided with a type-socket, removable type therein, means to clamp the type there-
35 in extending through one side of the section to be operative from an end of the roll, a cam-surface opposite the other end of the roll and controlling the position of the section, and means loosely confining the section to the
40 roll, substantially as described.

80. A printing-roll having a movable section forming a sector of the roll and formed to removably receive type, removable type, means to secure the type in said section, a
45 plate pivoted to the roll and to the section and loosely confining the section to the roll, a cam-surface opposite an end of the roll, and a spring confined to the section and engaging said cam to assist centrifugal force
50 in moving the section outwardly, the cam forcing the section into its seat against the roll for printing, substantially as described.

81. A printing-roll having a movable type-carrier forming a sector of the roll and loosely
55 confined thereto, and provided with means to move the carrier one end out in advance of the other, substantially as described.

82. In combination, a printing-couple comprising a printing-roll having a movable section including a portion of the periphery of the roll and provided with a type-socket, removable type therein, means extending to the exterior of a side of the section for removably securing the type therein, a frame
65 having a cam opposite the roll, and means loosely confining the section to the roll and

controlled by the cam, substantially as described.

83. In combination, a frame, an inker, a printing-couple comprising a printing-roll
70 having a movable section forming the printing portion of the roll and loosely confined to the body of the roll which forms a rigid seat for the section when pressed into printing position, said roll held out of engagement
75 with the inker, a spring constantly acting on said section to assist centrifugal action in moving the section out to the inker, and a cam to draw the section into its rigid seat for printing, substantially as described. 80

84. In a mail-marking machine, the ink-roller composed of a body, a layer of wire-gauze on the same, and a covering of absorbent material so that the ink is poured on the upper end of the roll and percolates down
85 through the gauze and is taken up by the absorbent material, substantially as described.

85. In a mail-marking machine, the combination of a frame, a printing-roll, a distributing-roll having driving means imparting a
90 longitudinal vibratory movement thereto, an ink-supply roller yieldingly held against and rotated by said distributing-roller, and an ink-roller yieldingly held against and driven by friction from the printing and distributing
95 rolls, substantially as described.

86. The vertical ink-distributing roll having a downwardly-extending shaft, a friction-wheel mounted horizontally on the lower end thereof having an irregular bottom-engaging
100 surface, and a vertically-turning driving friction-wheel beneath and on which said surface rests, substantially as described.

87. In combination, a frame, a printing-roll, a distributing-roll, an inking-roll mounted on
105 a swinging arm, a spring engaging said arm and forcing the ink-roll against the distributing-roll, an inking-roll mounted on a swinging arm pivoted eccentrically of both the distributing and printing rolls and provided
110 with a spring forcing said roll against the distributing-roll, substantially as described.

88. In combination, a movably-mounted spring-controlled inking-roll, a distributing-roll normally engaging the same, and a printing-roll having the outwardly-projecting
115 printing-characters and so arranged that the inking-roll does not engage the printing-roll except at the outwardly-extending printing-characters which on engaging the inking-roll
120 throw the same out from the distributing-roll, substantially as described.

89. In combination, a frame, a vertical distributing-roll having its shaft mounted therein and extending downwardly and provided
125 with a friction-cam, driving means arranged to rotate the roll and vibrate the same vertically, a vertical ink-supply roll mounted on a swinging spring-pressed arm from the frame and yieldingly held to the distributing-roll,
130 and an inking-roll mounted on a swinging spring-pressed arm from the frame and nor-

mally held toward the distributing and printing rolls, substantially as described.

90. In a mail-marking machine, a receiving-way into one end of which the letters are fed, in combination with a series of upright pushers, a crank operating the same, a movable fulcrum moving in a fixed path provided with movable controlling means positively operated and imparting a back-and-forth movement to the pushers, substantially as described.

91. A stacker comprising a swinging pusher, crank-operating means therefor, and a swinging lever rigid within itself and connected with the pusher and connected with movable means to control the path traversed by the letter-engaging portion thereof, substantially as described.

92. A stacker comprising a pusher having a letter-engaging portion, an operating-crank connected to the portion of the pusher opposite the letter-engaging portion, and a swinging controlling-lever approximately parallel to the body portion of the pusher and connected pivotally with the pusher between the crank and letter-engaging portion of the pusher, substantially as described.

93. A receiving-way, in combination with a stacker having a letter-engaging end arranged to move into and out of the receiving-way, eccentric or crank driving means for said pusher, and a swinging lever loosely connected with said pusher between its ends by a pivotal rod, substantially as described.

94. A receiving-way, in combination with a swinging pusher having a crank-operating means, a lever fulcrumed between its ends, a pivotal connection from said lever to the pusher, and means connected with the opposite portion of said lever to rock the same and thereby impart a back-and-forth movement to the pusher, substantially as described.

95. A receiving-way, in combination with a stacker comprising a pusher composed of a letter-engaging portion and a carrier-shank therefor, an operating-crank supporting and swinging the same, and a swinging lever loosely connected to said shank between the crank and letter-engaging portion for controlling the path of movement of the letter-engaging portion, substantially as described.

96. A stacker comprising a pusher having an upright shank provided with a series of letter-engaging fingers at its upper end, a crank or eccentric at its lower end, a lever fulcrumed between its ends, and pivoted links from opposite ends of the lever to opposite portions of the pusher, substantially as described.

97. In a stacking device, the combination of a pusher having a movable fulcrum and circularly-moving driving means, and controlling means connected to said pusher at a different point from the connecting points of the driving means and fulcrum, and also con-

nected to the pusher at the fulcrum so that said controlling device is directly operated to move the pusher at its fulcrum to attain the oscillating movement of the letter-engaging portion of the pusher, substantially as described.

98. A stacker having a swinging pusher, actuating means therefor, a movable fulcrum therefor, and a lever-and-link mechanism controlling the fulcrum to move in a fixed elliptical path, substantially as described.

99. A stacker comprising a pusher, a movable member to which the same is fulcrumed, a swinging member having a stationary fulcrum and to which said first-mentioned member is pivoted, and operating means for the pusher, substantially as described.

100. A stacker comprising a swinging pusher, having crank or eccentric operating means, and a swinging member to which the pusher is fulcrumed to carry the letter-engaging portion in a fixed path, said member being also connected with the pusher at a point other than its fulcrum so as to be moved thereby to move the fulcrum, substantially as described.

101. A stacker comprising a swinging pusher provided with actuating means, and a movable fulcrum, and controlling means connected with the pusher to one side of the fulcrum and controlling the path or stroke of the fulcrum and of the letter-engaging portion of the pusher, substantially as described.

102. A stacker comprising a pusher having a shank or body and a letter-engaging portion, and provided with a movable fulcrum, and controlling means holding the fulcrum to move in a fixed or predetermined path and connected with the shank at a point to one side of and independent of the fulcrum, and pusher-operating means, substantially as described.

103. In a mail-marking machine, the combination of a horizontally-disposed receiving-way having a positively-driven reciprocating feeding-floor to carry the body of letters outwardly therein, and a follower, means to discharge each letter into the front end of the way, and a stacker arranged to move into and out of the front end of the way after each letter has entered the way and push each letter back to make room for the following letter, substantially as described.

104. A mail-marking machine having its frame provided with horizontal rollers, and a letter-tray removably resting on said rollers, and means for reciprocating said tray, substantially as described.

105. A mail-marking machine provided with a letter-way having a reciprocating floor, and a stationary cross-bar or floor at one end of the way across which letters are discharged and which overlaps the inner end of said floor, substantially as described.

106. The combination, in a mail-marking machine, of an elongated letter-way having

means to feed the letters therein, a letter-tray
to enter the way, and a follower in said way
arranged to hold the letters loosely together,
and removable so that said tray can be easily
5 inserted and removed from said way, substan-
tially as described.

In testimony that I claim the foregoing as

my own I affix my signature in presence of
two witnesses.

WILLIAM BARRY.

Witnesses:

HUBERT E. PECK,
S. BRASHEARS.