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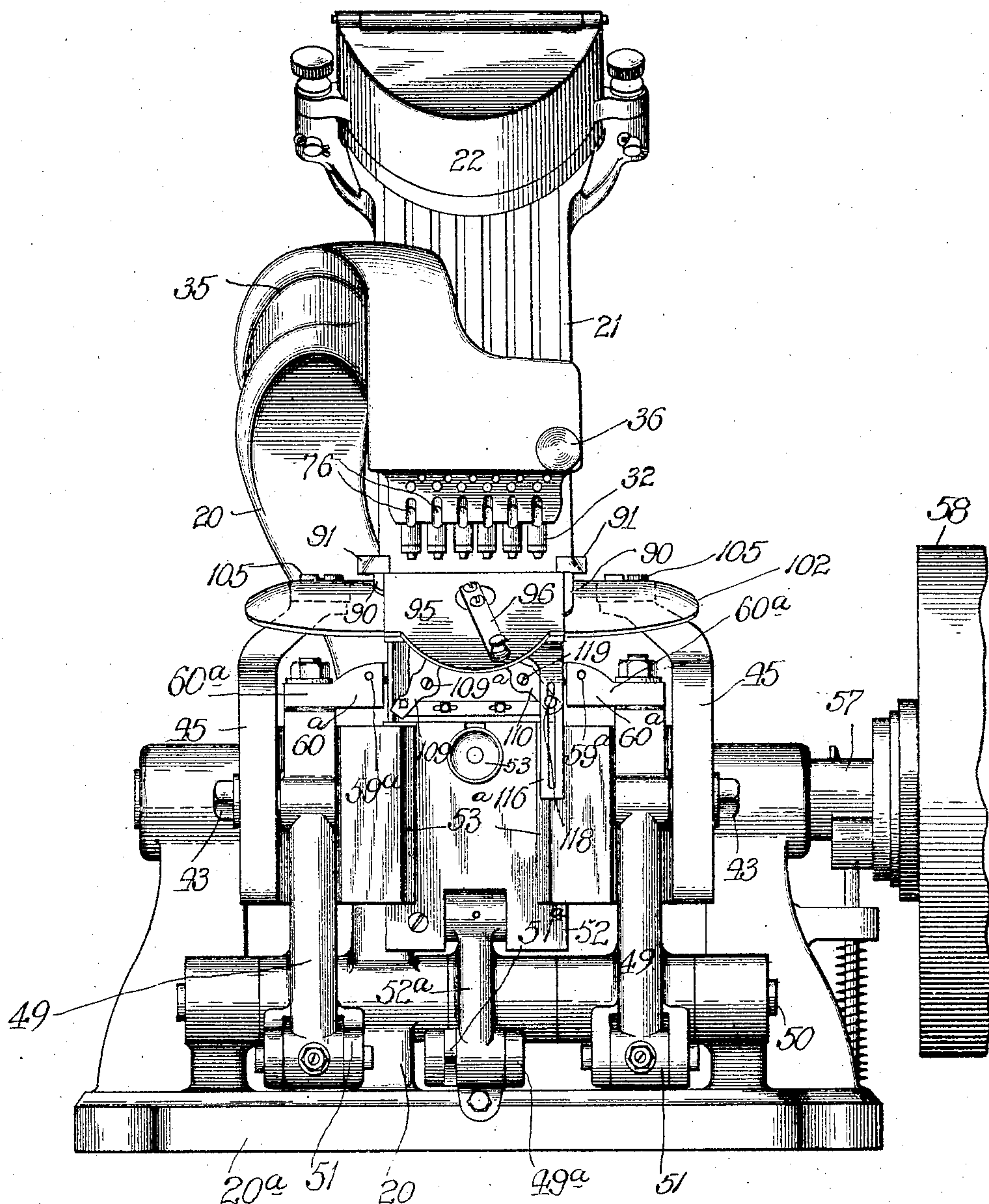
J. W. BARNA & V. HOFFMAN

EYELETING MACHINE.

APPLICATION FILED JULY 16, 1903.

5 SHEETS—SHEET 1.

Fig. 1



Witnesses
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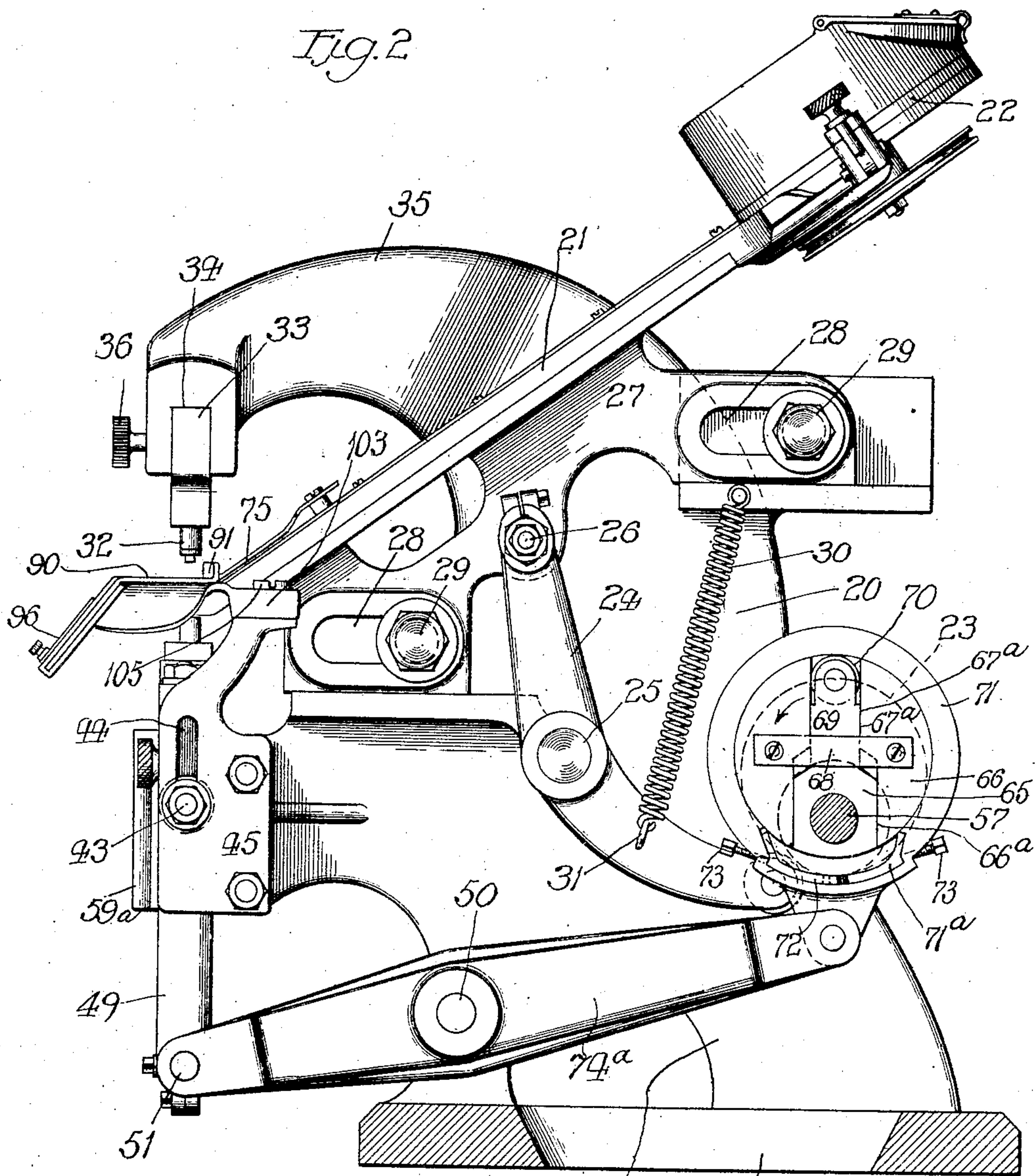
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5 SHEETS—SHEET 2.



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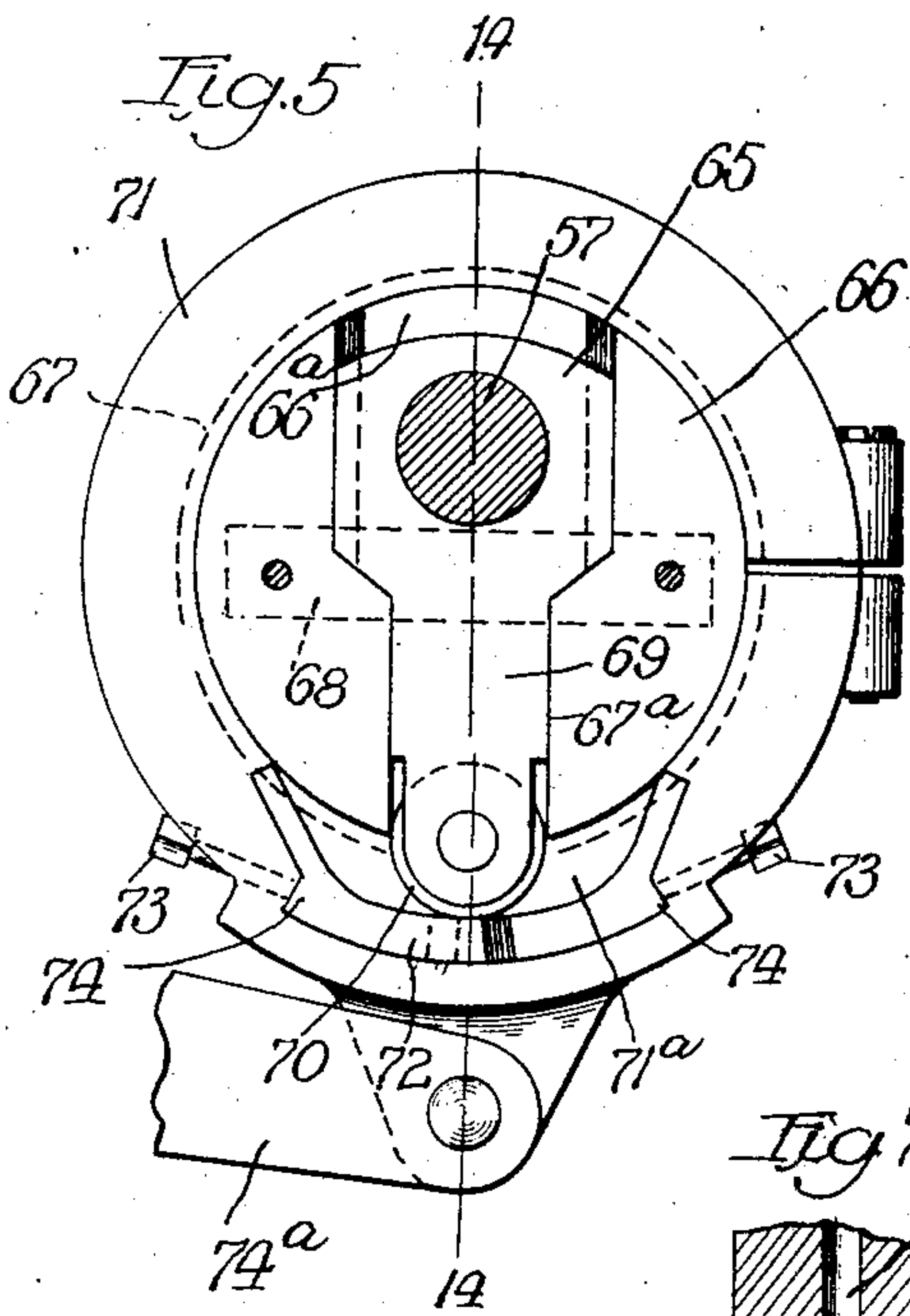
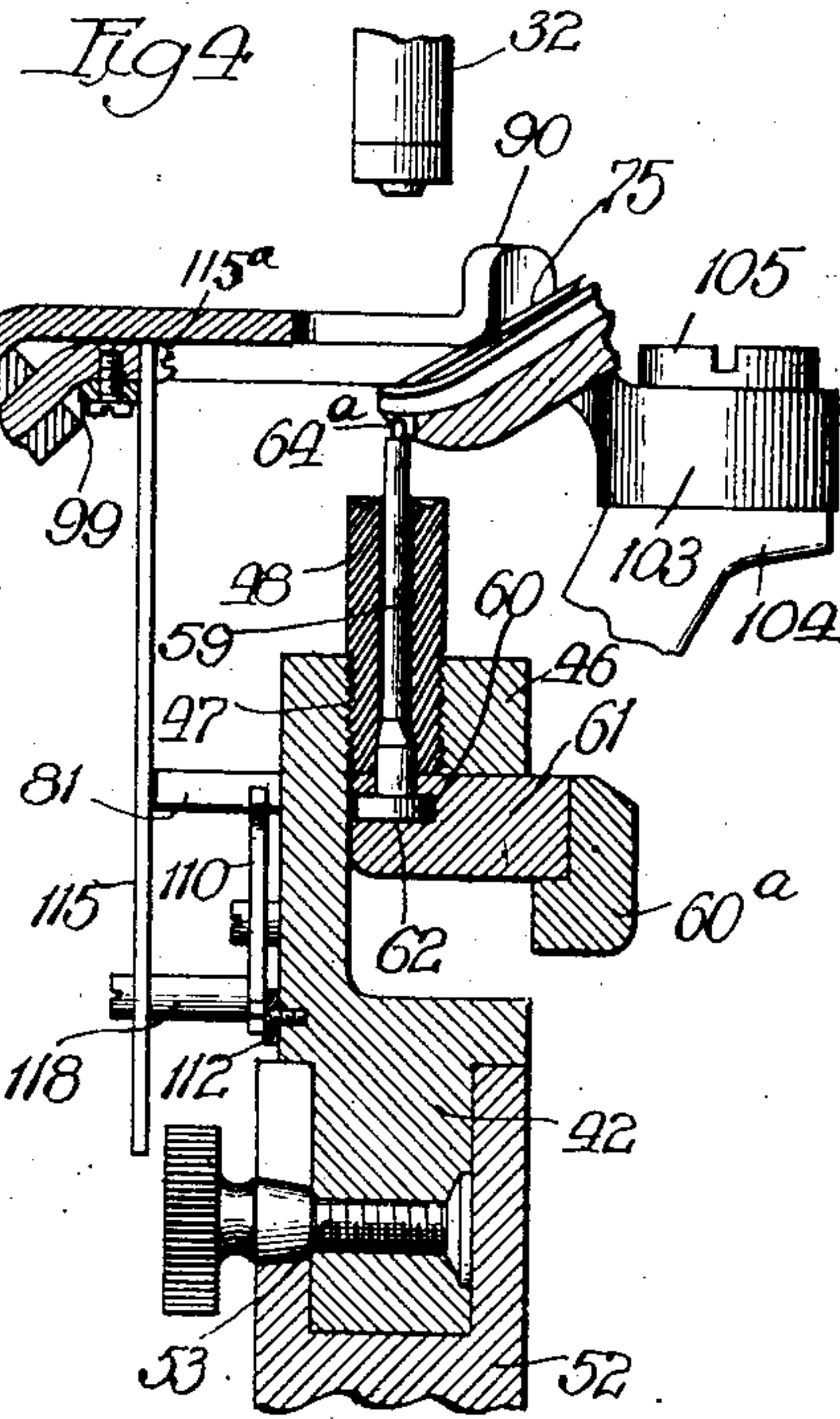
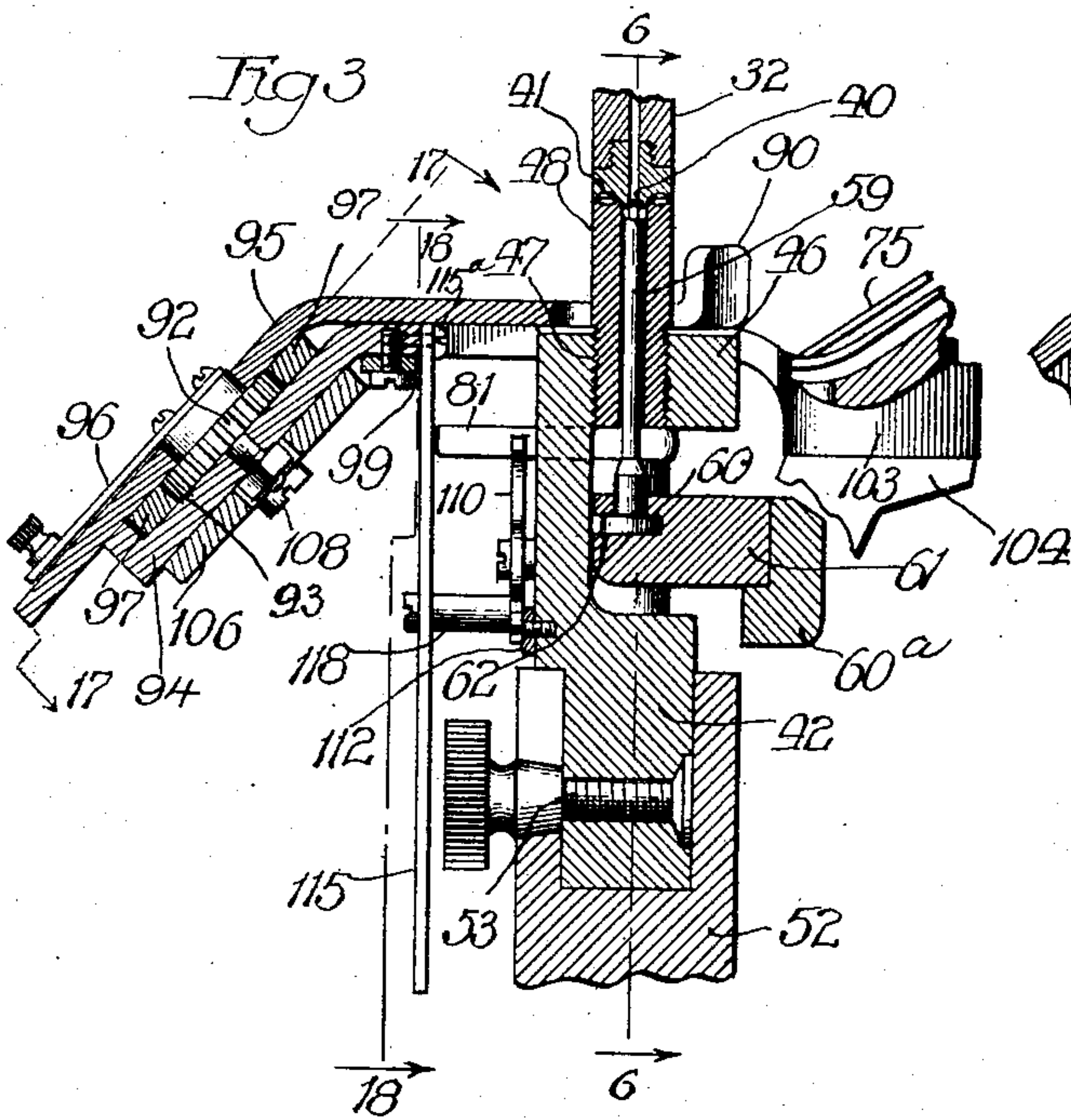
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EYELETING MACHINE.

APPLICATION FILED JULY 16, 1903.

5 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

JOSEPH W. BARNA AND VALENTINE HOFFMAN, OF CHICAGO, ILLINOIS,
ASSIGNORS TO THE PEERLESS MACHINERY COMPANY, OF BOSTON,
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EYELETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 786,340, dated April 4, 1905.

Application filed July 16, 1903. Serial No. 165,757.

To all whom it may concern:

Be it known that we, JOSEPH W. BARNA and VALENTINE HOFFMAN, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Eyeletting-Machines, of which the following is a specification.

This invention relates to improvements in that type of eyeletting-machines employed for setting eyelets in shoe-uppers, corsets, and other articles with which eyelets are used.

The primary object of the invention is to provide means in a machine of this character for throwing out of operation one or more of the eyelet sets, whereby the number of eyelets secured at each operation may be varied at will.

A further object is the provision of a simple and extremely effective setting mechanism, comprising generally a stationary and a movable die or set and a spindle-punch associated with the movable set and adapted to make a preliminary and then a final cut in the material to which the eyelets are to be attached, the first cut being made by the stationary set and spindle-punch, which also picks up and delivers the eyelets to the sets and which makes a second and final cut around the same aperture, enlarging the same, and thereby producing a clean-cut aperture of the proper size and free from frayed edges.

The invention further contemplates the inclusion of a gage mechanism for accurately determining the position of each series of eyelets and also means for shifting the position of the gage automatically to center the same with respect to the sets when one of the latter is thrown into or out of operation.

The invention consists of the combination and arrangements of parts hereinafter fully described, particularly designated in the claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of an eyeletting-machine constructed in accordance with our invention. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical section through

the dies and sets, lower-set carrier, and gage, showing the parts in the positions they assume at the final step of the setting operation. Fig. 4 is a vertical section through the sets and lower-set carrier in the preliminary position of the parts. Fig. 5 is a side elevation of one of the eccentric-cams controlling the movement of the punches. Fig. 6 is a side elevation of the eccentric for operating the carrier of the lower or movable sets. Fig. 7 is a vertical section, on an enlarged scale, through the upper set and spindle-punch. Fig. 8 is a longitudinal sectional view on the line 6 6 of Fig. 3, illustrating the mechanism for throwing out of operation certain of the sets when it is desired to vary the number of eyelets inserted. Fig. 9 is a section on the line 9 9 of Fig. 8. Fig. 10 is a section on the line 10 10 of Fig. 8 with all the sets in operative position. Fig. 11 is a section on the line 11 11 of Fig. 8. Fig. 12 is a perspective of one of the inner spindle-punches. Fig. 13 is a detail of a portion of one of the movable sets. Fig. 14 is a section on the line 14 14 of Fig. 5. Fig. 15 is a section on the line 15 15 of Fig. 14. Fig. 16 is a plan of the gage for determining the position of each series of eyelets. Fig. 17 is a section on the line 17 17 of Fig. 3, showing the mechanism for adjusting the gage. Fig. 18 is a section on the line 18 18 of Fig. 3, illustrating the means for automatically shifting the gage; and Fig. 19 is a section on the line 19 19 of Fig. 17.

In Figs. 1 and 2 we have shown the eyeletting-machine in its assembled and complete form. In these figures 20^a designates a base provided with a standard or head 20, on which is mounted the raceway 21 for feeding eyelets to the setting mechanism and which is supplied with eyelets from a reservoir or other receptacle 22 in the usual manner. The raceway is retracted by an eccentric 23 (shown in dotted lines in Fig. 2) through the medium of a lever 24, pivoted to the head 20 at 25 and also, as at 26, to a frame 27, slidably mounted on the said head and provided with slots 28, in which play bolts 29, permitting of the movement of the raceway. A spring 30, anchored

at one end to the head 20 and at the other to the lever 24 at 31, serves to advance the raceway after it has been retracted by the cam.

The parts heretofore referred to may be of ordinary construction and operate in the usual manner, and as they form no part of the present invention except in so far as they are necessary to the operation of the machine they need not be particularly described.

10 The setting mechanism comprises a series of stationary die sets and coöperating with the same a series of movable sets, each of the latter of which has associated therewith an independently and positively operated spindle-punch designed by coacting with a stationary set to make a double cut in the material to which the eyelet is to be attached, thereby insuring a clean aperture for the eyelet and also to pick up and hold an eyelet in position for the affixing operation of the sets.

20 The stationary sets 32 are fixed in a block 33 in any suitable manner, and the said block is secured in a groove 34, formed on the under face of an arm 35 of the head 20 by means of a set-screw 36. The specific construction of these upper die sets is not material; but preferably each one is constructed as shown in Fig. 7, the passage 37 thereof terminating in a flaring mouth 38, provided with a cutting edge 39 at the end of an annular extension 40, at the base of which is formed the usual annularly-recessed setting-shoulder 41, Figs. 3 and 7.

35 The lower or movable series of sets is mounted on a carrier 42, which is shown, Figs. 1, 3, and 4, as removably seated in a groove or recess of the slide 52, being held in position by a screw 53. The slide 52 reciprocates in ways formed by the vertical flanges 53^a appearing in Fig. 1. This carrier 42 is provided with a rearward extension or flange 46, having a series of threaded vertical apertures 47, corresponding in number to the number of sets employed, and screwing into the apertures are tubular sleeves 48, the upper ends of which provide the lower sets and which are designed to coact with the upper sets 32 in the usual manner, the extensions 40 of the upper sets entering the open ends of the lower series when in the act of affixing the eyelets, as shown in Fig. 3. Motion is imparted to the slide 52, and consequently the carrier 42, through the medium of a centrally-located lever 49^a, pivoted to the head 20 and jointed, as at 51^a, to the lower end of a rod 52^a, whose upper end is connected to the slide 52, the rear end of the lever 49^a being pivoted at 55 to an eccentric-strap 54, Fig. 6, operated by an eccentric 56, keyed to a drive-shaft 57, to which motion is imparted through the medium of a drive-wheel 58.

65 The spindle-punches, which cut the apertures in the material in which the eyelets are to be affixed and also pick up the said eyelets from the raceway and deliver them to the sets,

are seated in and slide in the sleeves 48. The punches 59, shown as the four inner ones of the series illustrated in Fig. 8, are provided at their lower ends with heads 60, by means of which they are retained in or coupled to a cross-plate or sliding head 61, located under and parallel with the flange 46 of the carrier 42. The plate 61 in the present instance is shown, Figs. 3 and 4, as provided along its front face with a longitudinal groove 62, the upper wall of the said groove being provided with slots 63 at its edge, Fig. 10, in which the shanks of the punches slide to seat the heads in the groove.

Looking at Fig. 4, it will be obvious that when the slide-plate 61 is reciprocated the punches will follow the movement of the same, and this construction facilitates the removal and insertion of punches when necessary. The upper ends of the spindles 59 are provided with shoulders 64, from which the pointed punch ends 64^a project, and such extensions seat themselves during the eyelet-affixing operation in the mouths of the stationary sets, as shown in Fig. 3. The punches being loose in the lower sets and the mouths of the upper sets being flaring, the punch ends are readily centered, and any friction which would be incident to the employment of rigid punches is avoided.

95 The spindle-punch slide 61 is operated independently of the lower set's carrier by means of a peculiar and novel eccentric mechanism, which by reason of the fact that it operates as an eccentric to move the punch-carrier and has a cam action to arrest such movement we term an "eccentric-cam." A pair of such devices is preferably employed, and connection with each end of the slide is provided in order to preserve an even and regular movement; but as they are similar in construction description of one will serve for both. One of these eccentric-cams is shown in Fig. 2, on a larger scale in Fig. 8, and in section in Fig. 14. It comprises a hub portion 65, set eccentrically with reference to the shaft 57, on which it is fixed, and provided with an arm 69, at the end whereof is mounted an antifriction-roller 70. Slidably mounted on the hub 65 and arm 69 is a disk 66, having a slot 66^a, in which the hub 65 is seated, and a groove 67^a, in which the arm 69 is located. A plate 68, crossing the groove 67^a and secured to the disk 66, serves to retain the hub and arm in place. The eccentric-sleeve 71, in which the disk-section 66 and the hub 65 rotate, is provided with a recess 71^a, located in the construction illustrated at the bottom thereof. Ordinarily the antifriction-roller 70 follows the circular face of the sleeve 71, as illustrated in Fig. 2, so that the device operates as an eccentric, raising the spindle-punch slide 61 through the medium of levers 74^a, which are pivoted to the eccentric-straps 71 and to the head 20 at 50, the forward end of each of said levers being jointed,

as at 51, to a rod 49, provided with a stud 43, which moves in a vertical guide-slot 44, formed in an extension 45 of the head 20 at each side of the machine. The rods 49 support at each
 5 end a chair 60^a, suitably connected thereto, as shown in Fig. 1, on which the slide 61 is seated and to which it is secured by pins or screws 59^a. As soon as the eccentric reaches such position as to carry the arm 69 opposite the
 10 end of the recess 71^a the eccentric-strap is merely rocked, lost motion being provided by the recess 71^a, and the punches 59 are held stationary. The lower sets 48, however, continue to rise by reason of the action of the
 15 eccentric 56. When the cam-shaft 57 has turned far enough to move the arm 69 out of the recess 71^a, the eccentrics 66 again act to retract the punches 59, the eccentric 56 at the same time lowering the sets 48. Adjustment
 20 of the eccentric-cams in order to insure accuracy in the timing of the movements of the punches 59 is secured by varying the size of the recess 71^a. As shown in Fig. 5, this recess has seated in it a two-part lining 72, and the adjustment is obtained through the medium
 25 of screws 73, which pass through the eccentric-strap and engage the shoulders 74 on the said lining-sections to move them toward or from each other, thereby varying the length
 30 of the recess.

The lower or feeding ends of the raceway 21 extend to such position as to support the eyelets in the path to the punches 59, and each one is provided with an eyelet-stop 75 of the
 35 usual construction. The feeding of the eyelets is accomplished in the ordinary manner from the reservoir 22 to the punches 59. During the initial movement of the machine the lower sets 48 and the punches 59, which normally
 40 or when the lower sets and punches are in their retracted position extend above the sets, are raised simultaneously through the medium of the eccentrics 56 and 66. As the pointed ends 64^a of the punches after picking
 45 up eyelets from the raceway enter the mouths of the stationary sets 32 they punch out small pieces from the stock, which is held in place between the sets, and such punchings or pieces are carried up and forced out as they accumulate
 50 through apertures 76 (shown in Fig. 1) in the dies 32. As the punches reach the limit of their movement—that is to say, when the shoulders 64 thereof abut against the edges 39 of the extensions 40 of the stationary sets, at which
 55 time the cutting edges enlarge the apertures and produce clean-cut openings of the proper size—the end of the arm 69 comes opposite the recess 71^a and further movement of the punch-slide is arrested. The lower sets, however,
 60 through the medium of the eccentric 56 continue their upward movement, and the eyelets are moved onto the annular extensions 40 and upset in the usual manner by the cooperating sets. Before the sets 48 and 32 come together
 65 the raceway is retracted and the ends

thereof withdrawn from the path of the movable sets.

An important feature in the invention relates to means for varying the number of eyelets attached or affixed at each operation of
 70 the machine. Shoes of the larger sizes, for instance, are usually provided with six eyelets at each edge of the upper, while the smaller sizes have only four or five. Heretofore the
 75 practice has been to use different machines for affixing different numbers of eyelets. To avoid this, we have provided means in a single machine for accomplishing the same result
 80 and which is attained by throwing out of operation one or more pairs of the eyelet sets, depending on the number of eyelets to be set at a single operation, without disassembling such
 85 sets from the machine. The invention may be worked out in various forms, one of which is illustrated in the accompanying drawings and clearly shown in Figs. 8 to 13, inclusive. In the present instance the two outer sets, as
 90 shown in Fig. 8, are capable of being thrown out of action. Each of these sets comprises the upper tubular set portion 78, provided at its lower end with a threaded aperture 79 to
 95 receive the upper threaded end of a sleeve 80, between which and the said set portion 78 is clamped a trip or handle-piece 81, by which the said sets may be thrown into and out of
 100 action and held and which is secured against independent rotation by a tang 79^a entering the upper end of one of the longitudinal slots 82 with which each sleeve 80 is provided. The sleeves 80 are adapted to slide in vertical
 105 apertures 82^a in the set-carrier 42, and each has affixed to its lower end a cross-piece 83, the ends of which are movable in guide-grooves 84, formed in the wall of the aperture in which the sleeve 80 slides, as shown in Fig. 8. Slid-
 110 ably mounted in each of the set portions 78 is a punch 77, whose lower end is provided with a cross-piece 85, which extends into and plays in the diametrical slots 82 of the sleeve 80. The punches 77 under normal conditions—that is to say, when operating with the punches
 115 59—are in such position that the ends of the cross-pieces 85 are seated in the groove of the cross-plate 61, so as to be held rigidly and move with the latter, and the ends of the cross-bars 83 of the sets 78 rest upon ledges 83^a at the upper ends of the apertures 82^a, as shown in Figs. 8 and 11. In this position the ends of the handles or trips are seated against the
 120 stop formed by the horizontal slots 86. (Shown in Figs. 10 and 18.) When it is desired to throw one or both of the sets 78 out of operation, the handle thereof is oscillated or turned outwardly and pressed downwardly through the
 125 vertical slot 87, thereby carrying with it the associated set and punch. With the construction illustrated it will be apparent that the machine may be made to set simultaneously six, five, or four eyelets, and it will be obvious
 130 that other of the sets may be so made as to be

capable of being thrown out of operation in the same manner as those designated 78. The sets 78 are held against accidental displacement by springs 88, anchored to the carrier 42 and extending in the path of the trips 81, as seen in Fig. 18. Interposed between the cross-bars 83 at the bottom of the sleeves 78 and the cross-bar of the punches 77 are expansion-springs 89, which are designed to elevate the said punches into their normal or active position—that is to say, into a position corresponding with that of the punches 59 when the said sets are thrown into operation, so that the ends of the cross-pieces 85 when the sleeves 80 are turned or oscillated back to their original position will engage the groove in the slide 61. It is necessary to dispose the opposing series of eyelets so that they will correspond. In shoe-uppers, for instance, each series must be spaced equidistant from the hooks in order to coincide or be in alinement with those at the opposite edge of the upper. To attain this end, we provide a gage which may be adjusted to accurately space the series of eyelets from the hooks. This gage consists of a pair of rearwardly-extending arms 90, located, as shown in Fig. 16, at the opposite ends of the series of sets. In eyeleting a shoe-upper the bottom hook at one edge is held against one of the gage-arms and the edge of the upper pressed against the stops 91 at the rear of such arms, and both arms being spaced an equal distance from the end sets of the lower series both sets of eyelets will be spaced correspondingly when the upper is reversed and eyelets affixed to the other edge of the same. In order to vary the spacing of the series of eyelets from the hooks, if desired, simultaneous and equal movement is imparted to the arms 90 through the medium of a pinion 92, mounted in a recess 93 in a plate 94 and retained by a cap 95, as shown in Fig. 19. The pinion 92 is actuated by a handle or finger piece 96, playing over the plate 95, which may be scaled to indicate the position of the gage-arms 90. The pinion 92 meshes with rack-bars 97, located at opposite sides thereof and sliding in longitudinal grooves 98 in the plate 94, Fig. 17, and the gage-arms 90 project from the ends of the rack-bars. Secured to the under face of the plate 94 is a bar 99, having slots 100, into which pins 101, fixed to the gage-arms, extend to guide and steady the arms in their movement.

Means are also provide for automatically shifting the gage to throw the latter centrally of the series of sets when the number is varied by throwing a set out of action, as heretofore described. Such means are shown in Fig. 18. The plate 94, carrying the gage-arms 90, is slidably mounted on an inclined ledge 106 of a table 102, having rearwardly-extending arms 103, secured by screws 105 to upwardly-projecting arms of the extension 45,

as seen in Fig. 2. The ledge 106 has longitudinal slots 107, projecting through which are headed pins or screws 108, adapted to move therein and guide the gage, Fig. 19. The gage might be adjusted by hand to properly position it with reference to the sets when one or both of the latter are thrown out of action; but this operation is preferably performed automatically by means of the following mechanism. Secured by screws 115^a to the plate 94 is a bar 115, having a vertical extension 116, provided with a longitudinal slot 117. The slot 117 is entered by a finger 118, projecting from the end of a lever 110, which is pivoted between its ends at 119 to the carrier 42. The lever 110 extends across the slot 87 at the adjacent end of the carrier 42 and in the path of the operating-handle movable in said slot.

When the set 78 adjacent the lever 110 is depressed, its trip-finger 81, moving down the slot 87, associated therewith, engages the end of the lever 110, extending across such slot, and through the medium of its slotted connection with the extension 116 moves the bar 115. This throws the gage to a central position with reference to the five remaining active sets, the length of the slots 107 regulating the movement of the gage. The upper or free end of the lever 110 extends across the horizontal slot 86 behind the trip-finger 81, and during the action just described such end is moved outwardly, but still remains in the path of the associated trip-finger 81. In throwing the set 78 at that end of the series back into its active position the finger 81 engages the free end of the lever 110 and moving the same returns the gage to its original position. When it is desired to operate with but four sets, the set associated with the trip 110 is lowered far enough to throw it out of action, but not far enough to actuate the lever 110 and move the gage. Then when the set at the opposite end is lowered the gage-arms are left in their central position and may be adjusted as required by the pinion 92. In order to prevent accidental movement of the gage when operating with four sets, a slide-bar 112, provided with slots 113, through which project pins or screws 114 for securing the bar to the carrier 42 and permitting it to slide, is moved into the path of the lever 110, so as to prevent movement thereof. This is accomplished by means of a lever 109, having a slot at one end into which extends a pin 111 on the bar 112, and which lever is pivoted between its ends to the carrier 42 at 109^a. One of the ends of the lever 109 extends across the slot 87, in which the handle actuating the set at the adjacent end of the series moves, and when engaged by such handle throws the bar 112 over against the lever 110. When the latter set is thrown back into operation, its trip-finger 81 engages the upper or free end of the lever

109 and turning the latter on its pivot with-
draws the bar 112, thereby releasing the le-
ver 110.

Having described our invention, what we
claim is—

1. An eyeleting-machine having a plurality
of sets, and means whereby one of such sets
may be thrown into an inoperative position to
vary the number of active sets without dis-
assembling it from the machine.

2. An eyeleting-machine having a series of
coöperating sets, and means whereby a plu-
rality of the sets may be thrown into an in-
operative position to vary the number of ac-
tive sets without disassembling the same from
the machine.

3. In an eyeleting-machine, in combination,
a plurality of stationary sets, movable sets co-
operating therewith, and means whereby one
of the said sets may be thrown into an inop-
erative position to vary the number of active
sets without disassembling it from the ma-
chine.

4. In an eyeleting-machine, in combination,
a series of stationary sets, movable sets co-
operating therewith, and means whereby one
of the said movable sets may be thrown into
an inoperative position to vary the number of
active sets without disassembling it from the
machine.

5. In an eyeleting-machine, in combination,
a series of stationary sets, a carrier, a second
series of sets mounted on the carrier and co-
operating with the first series, and means
whereby one of the second series of sets may
be thrown into an inoperative position to vary
the number of active sets without disassem-
bling it from the machine.

6. In an eyeleting-machine, in combination,
a series of stationary sets, a carrier, a coöp-
erating series of sets mounted on the carrier,
and means whereby a set of one of the said
series may be thrown into an inoperative po-
sition to vary the number of active sets with-
out disassembling it from the machine.

7. In an eyeleting-machine, in combination,
a series of stationary sets, a carrier, a coöp-
erating series of sets mounted on the carrier and
one of which is movable thereon, and means
whereby such latter set may be moved to throw
it out of operation.

8. In an eyeleting-machine, in combination,
a series of stationary sets, a carrier, a series
of coöperating sets mounted on the carrier
and one of which is slidable thereon, and
means whereby such set may be moved to
throw it out of operation.

9. In an eyeleting-machine, in combination,
a series of stationary sets, a carrier, a series
of coöperating sets mounted on the carrier and
one of which is slidable thereon, and a finger-
piece for sliding such set.

10. In an eyeleting-machine, in combina-
tion, a series of stationary sets, a carrier, a

series of coöperating sets mounted on the car-
rier and one of which is vertically slidable
thereon, and means for holding such set in its
advanced position.

11. In an eyeleting-machine, in combina-
tion, a series of stationary sets, a carrier, a
series of coöperating sets mounted on the car-
rier and one of which is vertically slidable
thereon, a stop on the carrier, and an arm
carried by the slidable set and engaging the
stop to hold the slidable set in its advanced
position.

12. In an eyeleting-machine, in combina-
tion, a series of stationary sets, a carrier, a
series of coöperating sets mounted on the car-
rier and one of which is slidable and oscillat-
able thereon, a stop on the carrier for hold-
ing the set in its advanced position, and means
for oscillating the set to engage or disengage
it from the stop.

13. In an eyeleting-machine, in combina-
tion, a series of stationary sets, a carrier, a
series of coöperating sets mounted on the car-
rier and a plurality of which coöperating sets
are slidable and oscillatable on the carrier,
stops on the carrier for holding the slidable
sets in their advanced positions, and finger-
pieces on such sets for oscillating the said sets
to disengage them from the stops.

14. In an eyeleting-machine, in combina-
tion, a series of coöperating sets, and means
whereby a plurality of said sets may be thrown
out of action independently of one another
without disassembling such plurality of sets
from the machine.

15. In an eyeleting-machine, in combina-
tion, a series of stationary sets and a series of
coöperating movable sets, and means whereby
a plurality of one of said series of sets may be
thrown out of operation without disassembling
such plurality of sets from the machine.

16. In an eyeleting-machine, in combina-
tion, a series of stationary sets and a series of
coöperating movable sets, and a trip for throw-
ing one of said sets out of operation.

17. In an eyeleting-machine, in combina-
tion, a series of stationary sets, a carrier, coöp-
erating sets mounted on the carrier and a plu-
rality of which are slidable and oscillatable
thereon, stops on the carrier, and an arm fixed
to each slidable set for sliding the same and
also for oscillating it to engage it with and
disengage it from the stop.

18. In an eyeleting-machine, in combina-
tion, a series of stationary sets, a carrier, a
series of coöperating hollow sets mounted on
the carrier and one of which is slidable on the
carrier, punches sliding in the movable sets,
a slide-plate on which the punches are mount-
ed, the punch associated with the slidable set
being movable therewith, and an arm for mov-
ing said set and associated punch.

19. In an eyeleting-machine, in combina-
tion, a stationary and a coöperating movable

series of sets, a slide on which the latter series is mounted and on which one of the same is independently movable, and punches cooperating with the movable series, the punch associated with the independently-movable set being movable with the latter.

20. In an eyeleting-machine, in combination, a series of stationary hollow sets, a movable series of cooperating hollow sets, punches sliding in the movable sets and provided with pointed punching ends entering the stationary sets and one of the movable sets being movable independently of the others together with its associated punch to throw the same out of action.

21. In an eyeleting-machine, in combination a series of stationary hollow sets, a vertically-reciprocating carrier having a vertical aperture, a series of hollow cooperating sets mounted on the carrier and one of which is slidable in the aperture, a slide-plate, punches mounted on the said plate and sliding in the movable sets, the punch associated with the independently-slidable set adapted to be disengaged from the slide-plate, and a spring for returning said punch to its position of engagement with the slide-plate.

22. In an eyeleting-machine, in combination, a series of stationary hollow sets, a vertically-reciprocating carrier having a plurality of vertical apertures, a series of hollow cooperating sets mounted on the carrier certain of which are slidable and oscillatable in the apertures and provided with vertical slots, shoulders at the upper ends of the apertures, cross-pieces fixed to the oscillatable sets and normally resting on the shoulders, grooves in the walls of the apertures in which the ends of the cross-pieces slide, punches associated with the movable sets and slidable therein, a slide-plate to which the punches are connected, the punches associated with the independently-movable sets being provided with wings extending into the slots of the said sets and normally engaging the slide-plate, and expansion-springs interposed between the ends of the punches and the cross-pieces of the sets.

23. In an eyeleting-machine, in combination, a series of stationary sets, cooperating movable sets, means for moving the latter sets, punches associated with the movable sets and coacting with the stationary sets, a carrier for the punches, and an eccentric mechanism operating the carrier and comprising a strap having a recess on its inner face, a disk mounted in the strap and provided with a slideway and a shaft-hub seated in the slideway.

24. In an eyeleting-machine, in combination, a series of stationary sets, cooperating movable sets, an eccentric for moving the latter sets, punches associated with the movable sets and coacting with the stationary sets, a carrier for the punches and an eccentric mechanism operating the carrier and comprising a strap having a recess on its inner face, a disk

mounted in the strap and provided with a slideway across its face, a shaft-hub provided with an arm having a roller at its end seated in the slideway, and adjustable blocks located in the recess.

25. In combination with an eyeleting-machine having a series of stationary sets and a series of cooperating movable sets, a gage associated with the sets, means whereby a set of one of the series may be thrown into and out of action, and means actuated by the former means for adjusting the gage.

26. In combination with an eyeleting-machine having a series of stationary sets and a series of cooperating movable sets, a set of one of such series being adapted to be thrown into and out of action, a gage associated with the sets, and a connection for adjusting the gage when the said set is thrown into and out of action.

27. In combination with an eyeleting-machine having a series of cooperating stationary and movable sets, means whereby a set of one of the said series may be thrown into and out of action, and a gage controlled by the said means and adjusted thereby when the said set is thrown into and out of action.

28. In combination with an eyeleting-machine having a series of sets, a gage located adjacent each end of such series and means for adjusting the gages simultaneously in the same direction.

29. In combination with an eyeleting-machine having a series of sets, a gage located adjacent each end of such series, rack-bars carrying the gages, a pinion meshing with the rack-bars and a slide carrying the rack-bars and pinion.

30. In combination with an eyeleting-machine having a series of sets, a gage, means for throwing out of action one of the sets, and means controlled by the former means for shifting the gage.

31. In combination with an eyeleting-machine having a series of sets, a gage, means whereby one of the end sets may be thrown out of action, and means controlled by the former means for shifting the gage.

32. In combination with an eyeleting-machine having a series of sets, a gage, means whereby the set at each end of the series may be thrown out of action, and means for maintaining the gage in proper position irrespective of the number of sets in action.

33. In combination with an eyeleting-machine having a series of sets, a slide having gage-arms equally spaced from the end sets of the series, means whereby one of the end sets may be thrown out of action, and means controlled thereby for shifting the gage-slide to its central position with reference to the remaining active sets.

34. In combination with an eyeleting-machine having a series of sets and one of the sets of which series is adapted to be thrown

out of action, a gage comprising a pair of simultaneously-adjustable arms located adjacent the ends of the series of sets, and a trip actuated when the set is thrown out of action to shift the gage to its central position with reference to the remaining active sets.

35. In combination with a series of sets of an eyeleting-machine, devices for throwing the end sets out of action, a centrally-located gage, and trips controlled by the said devices for moving the gage to its central position with respect to the remaining active sets.

36. In combination with a series of sets of an eyeleting-machine, a finger-piece for throwing one of the end sets out of action, a centrally-located gage, and a trip actuated by the finger-piece for moving the gage to its central position with respect to the remaining active sets.

37. In combination with a set-carrier of an eyeleting-machine and its series of sets, finger-pieces for throwing the end sets out of action, springs for holding the finger-pieces against movement, a centrally-located gage, and trips actuated by the finger-pieces for moving the gage to maintain the same in its central position with respect to the active sets of the series.

38. In combination with a set-carrier of an eyeleting-machine and its series of sets, finger-pieces for throwing the end sets out of action, a centrally-located gage, trips pivoted to the set-carrier and extending into the path of the finger-pieces, a longitudinally-adjustable bar mounted on the carrier, a sliding connection between one of the trips and the bar, a bracket movable with the gage and having a vertical slot, and a pin fixed to the other trip and entering the bracket-slot.

39. In combination with a series of sets of an eyeleting-machine the end sets of which are adapted to be thrown out of action, handles controlling such latter sets, a centrally-located gage, a trip associated with each of said latter sets and actuated by its handle and one of which coacts with the gage to shift the same, and a lock-bar controlled by the other trip for holding the first trip against movement.

40. An eyeleting-machine provided with a series of coöperating sets, one of which sets may be thrown into and out of operation at will to vary the number of active sets, and a provision whereby such set may be thrown out of operation independently of the other sets, and without disassembling it from the machine.

41. In combination with an eyeleting-machine provided with means whereby the number of active sets may be varied, of an adjustable gage therefor controlled by the said means.

42. In combination with an eyeleting-machine provided with means whereby the number of active sets may be varied, of a gage controlled by the said means to adjust the same.

43. In combination with an eyeleting-machine provided with means whereby the number of active sets may be varied, of a gage associated with the sets and automatically adjusted through the medium of the said means.

In testimony whereof we affix our signatures in presence of two witnesses.

JOSEPH W. BARN.

VALENTINE HOFFMAN.

Witnesses:

ARTHUR B. SEIBOLD,
E. MOLITOR.