



No. 713,271.

Patented Nov. 11, 1902.

L. A. AGNEW.

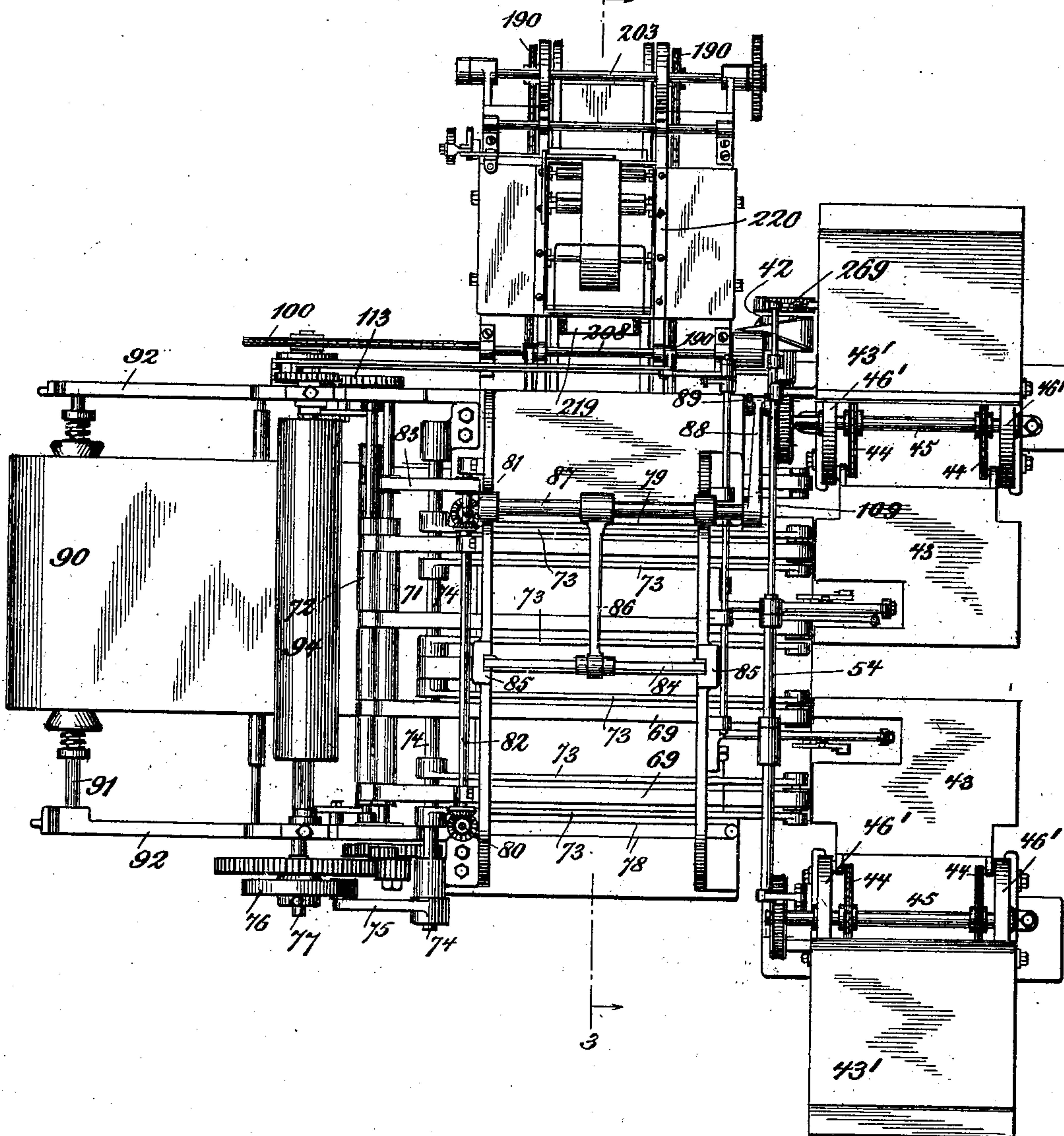
NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

(Application filed Mar. 22, 1899. Renewed May 22, 1902.)

(No Model.)

18 Sheets—Sheet 2.

Fig. 2, 3



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*Wm. C. Washburn*

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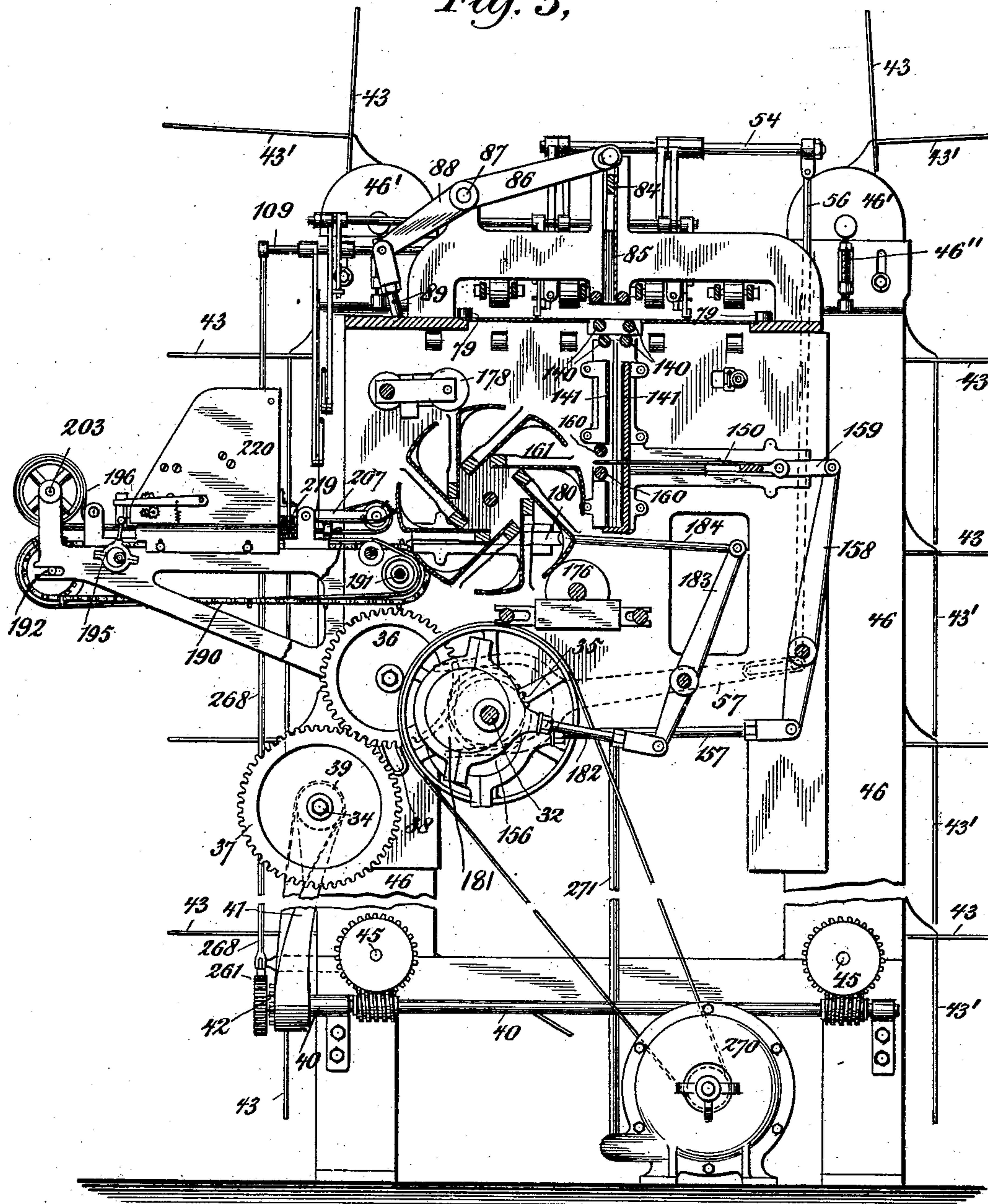
NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

(Application filed Mar. 22, 1899. Renewed May 22, 1902.)

(No Model.)

18 Sheets—Sheet 3.

Fig. 3.



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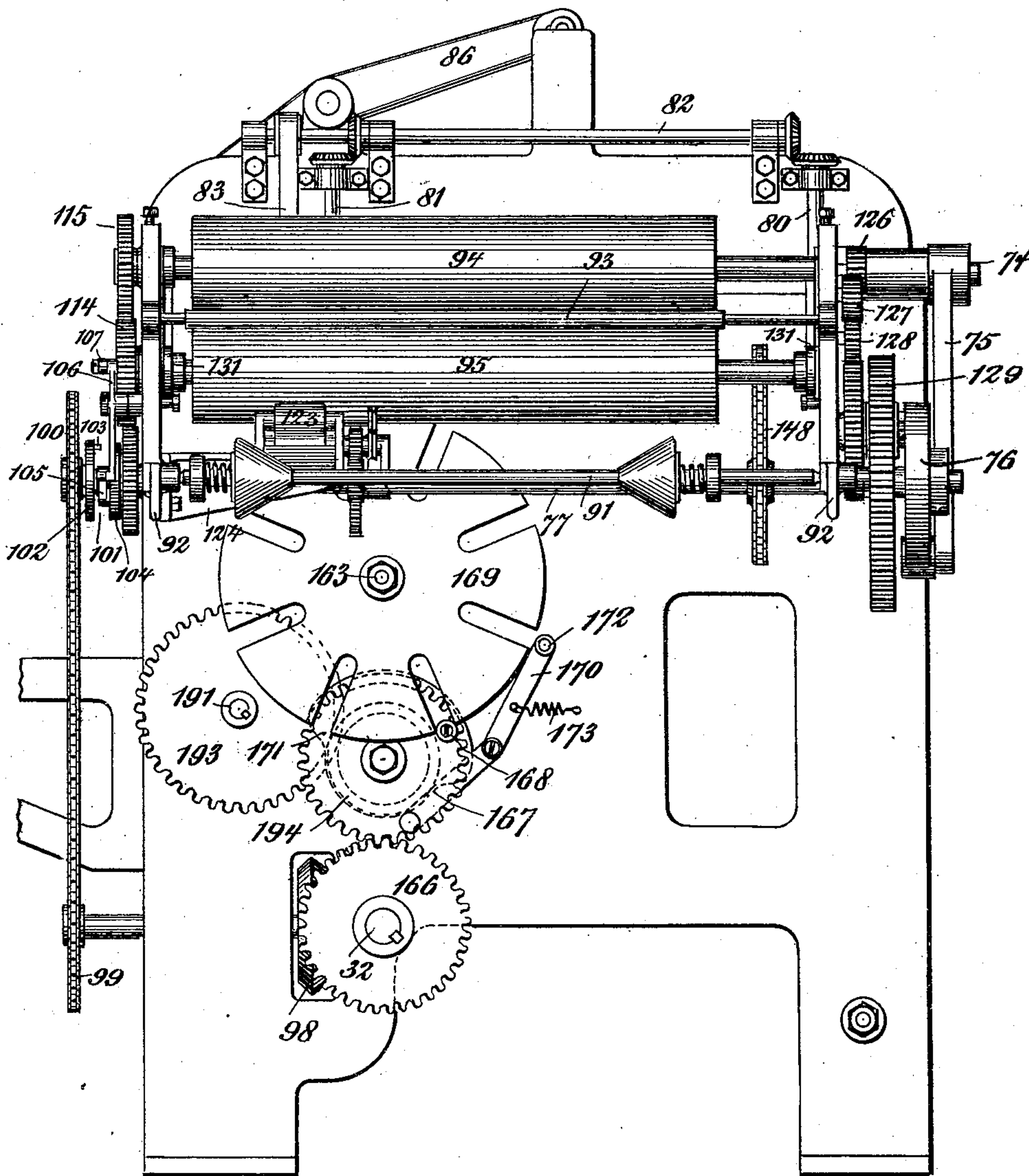
NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

(Application filed Mar. 22, 1899. Renewed May 22, 1902.)

(No Model.)

18 Sheets—Sheet 4.

Fig. 4,



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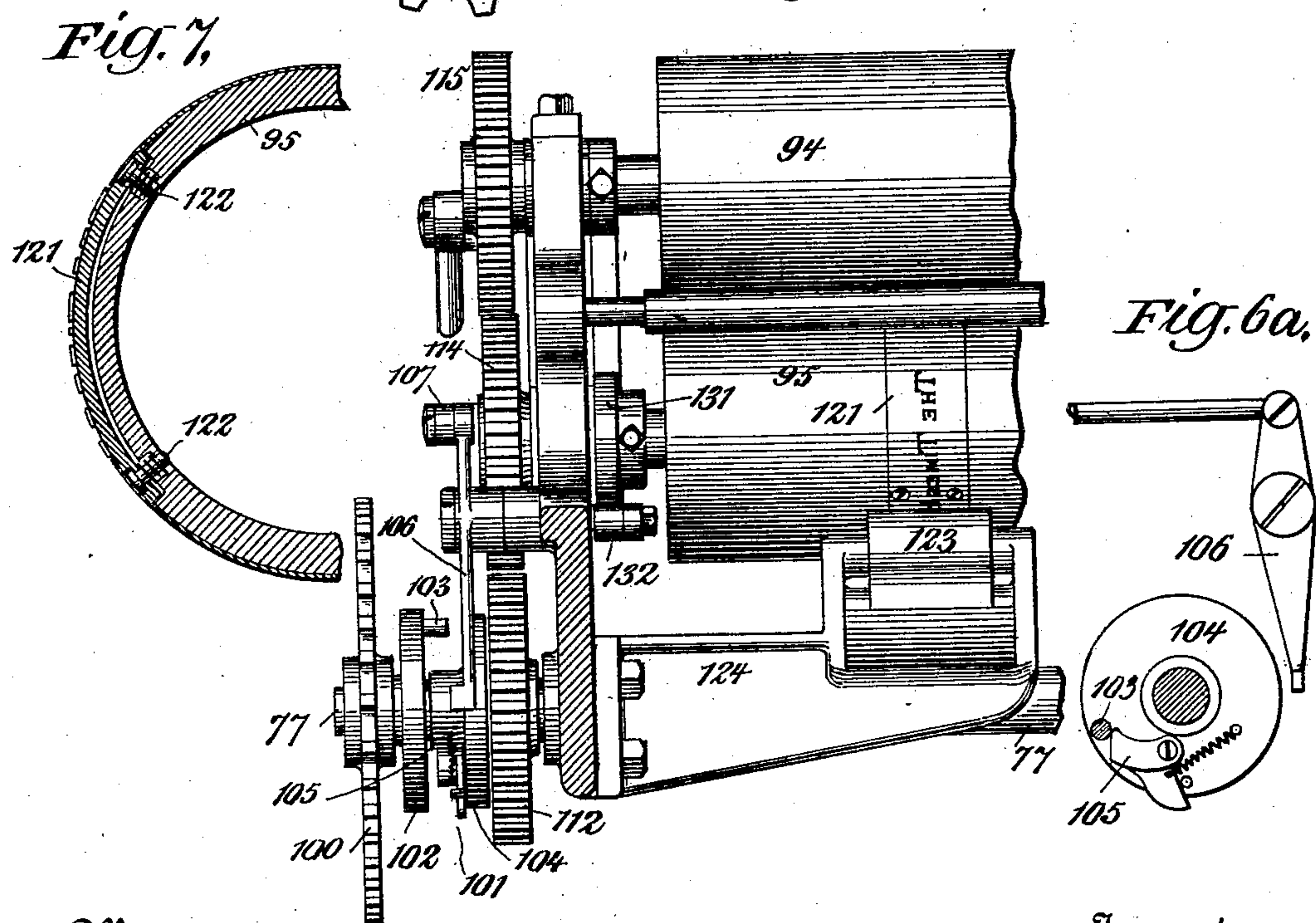
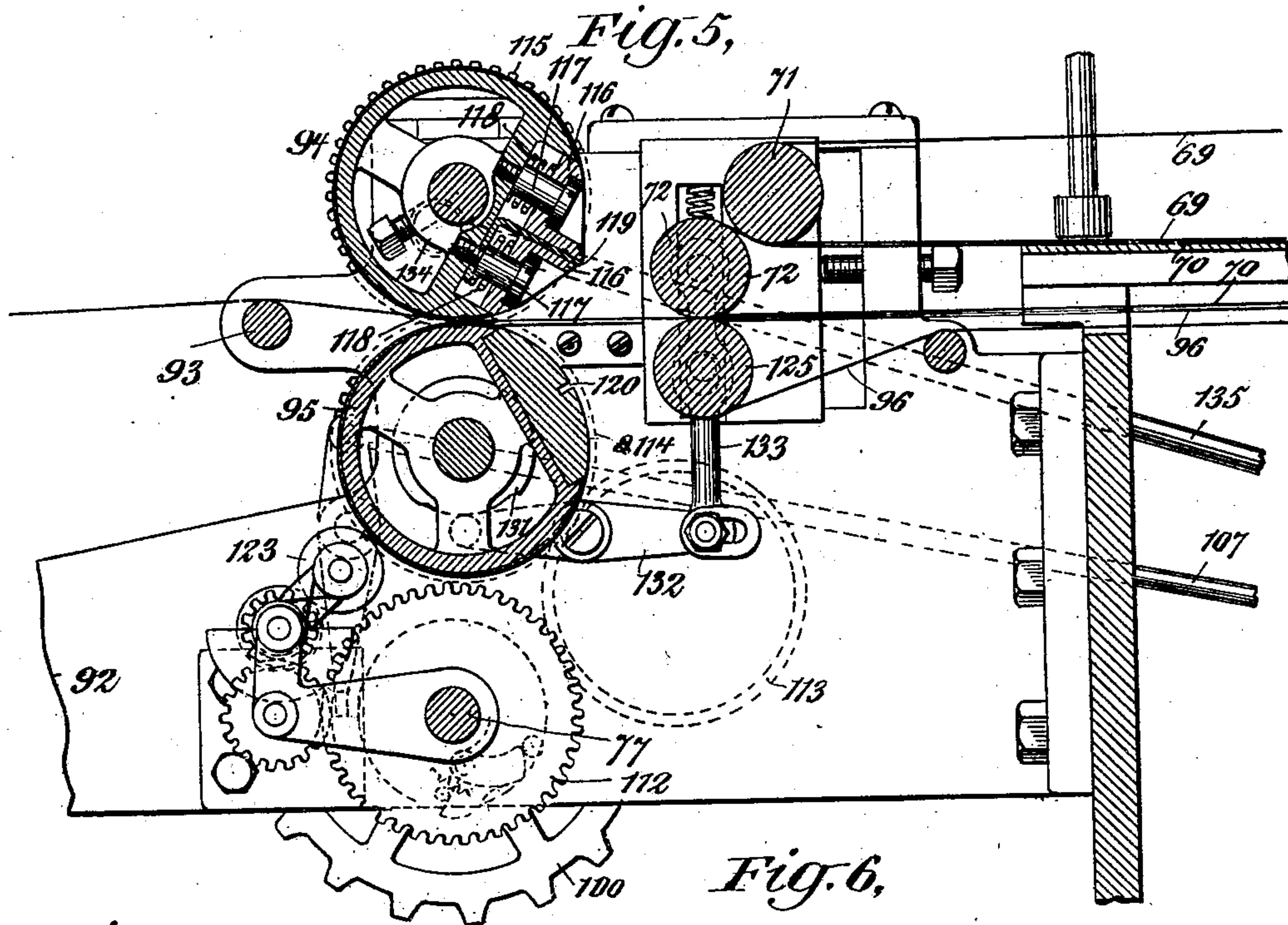
L. A. AGNEW.

NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

(Application filed Mar. 22, 1899. Renewed May 22, 1902.)

(No Model.)

18 Sheets—Sheet 5.



Witnesses  
Rita Bradt  
Wm. C. Ashie

Inventor  
L. A. Agnew  
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No. 713,271.

Patented Nov. 11, 1902.

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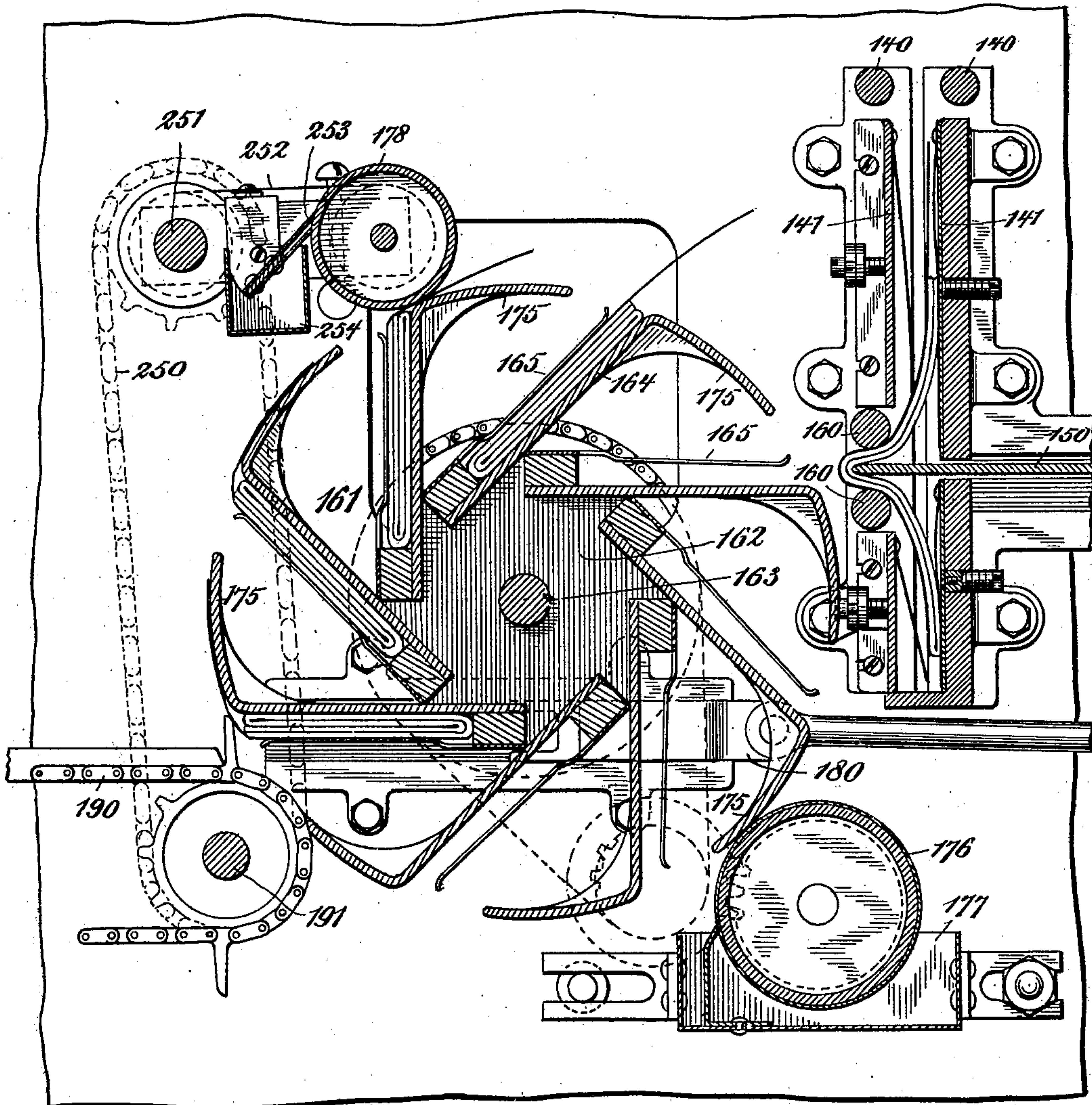
NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

(Application filed Mar. 22, 1899. Renewed May 22, 1902.)

(No Model.)

18 Sheets—Sheet 6.

*Fig. 8,*



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No. 713,271.

Patented Nov. 11, 1902.

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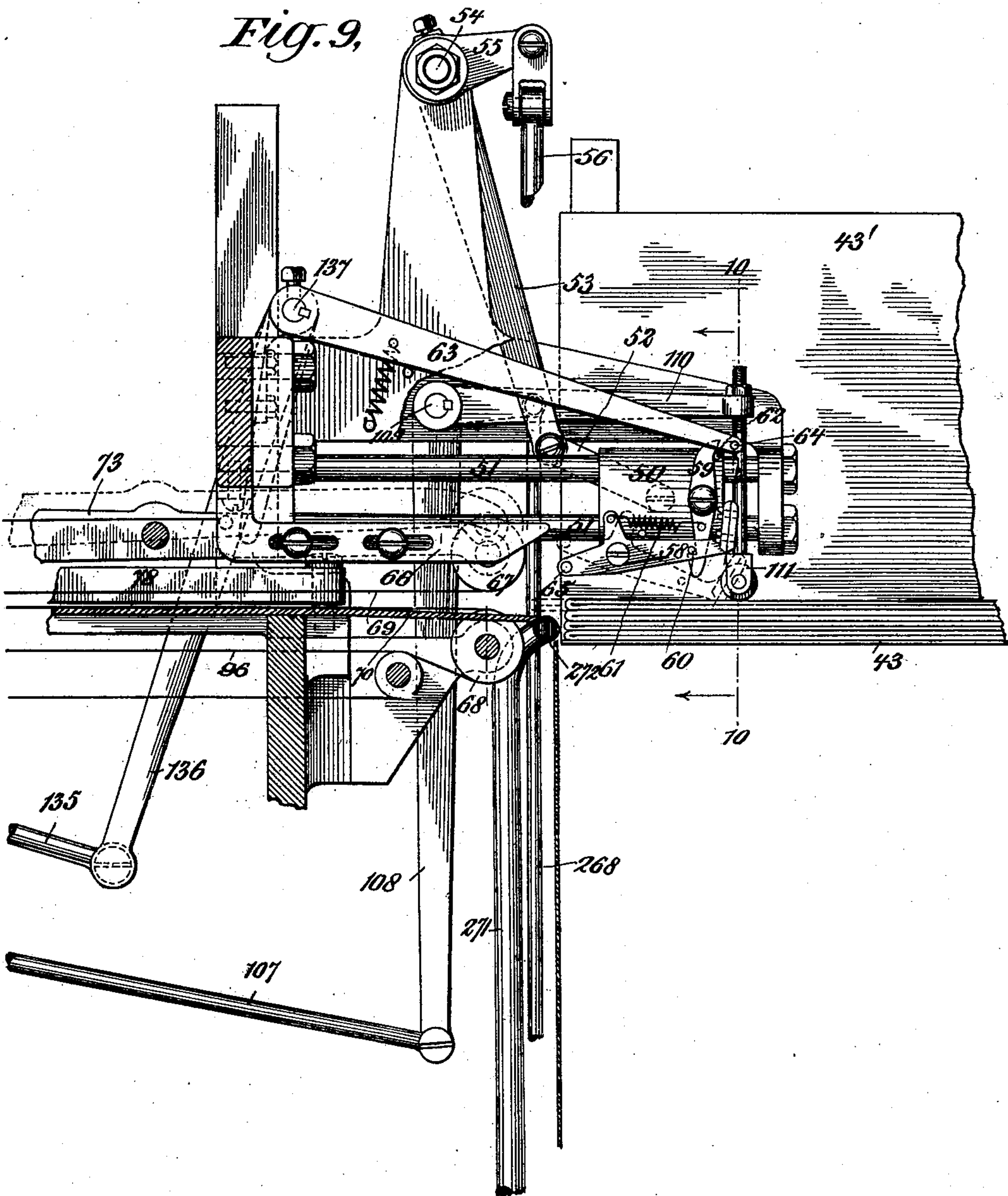
NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

(Application filed Mar. 22, 1899. Renewed May 22, 1902.)

(No Model.)

18 Sheets—Sheet 7.

Fig. 9.



Witnesses  
Rita Bradt  
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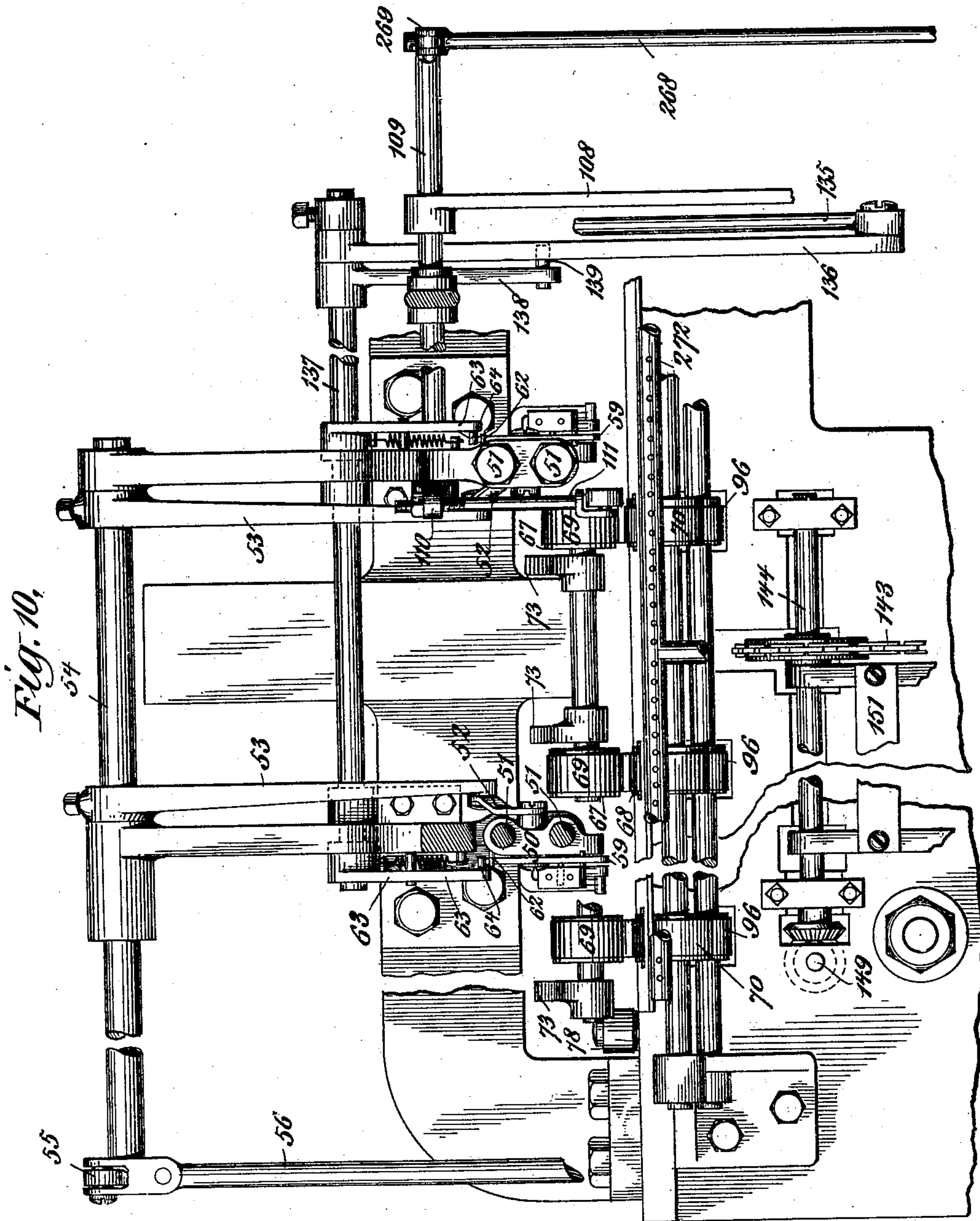
L. A. AGNEW.

NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

(Application filed Mar. 22, 1899. Renewed May 22, 1902.)

(No Model.)

18 Sheets—Sheet 8.



WITNESSES:

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No. 713,271.

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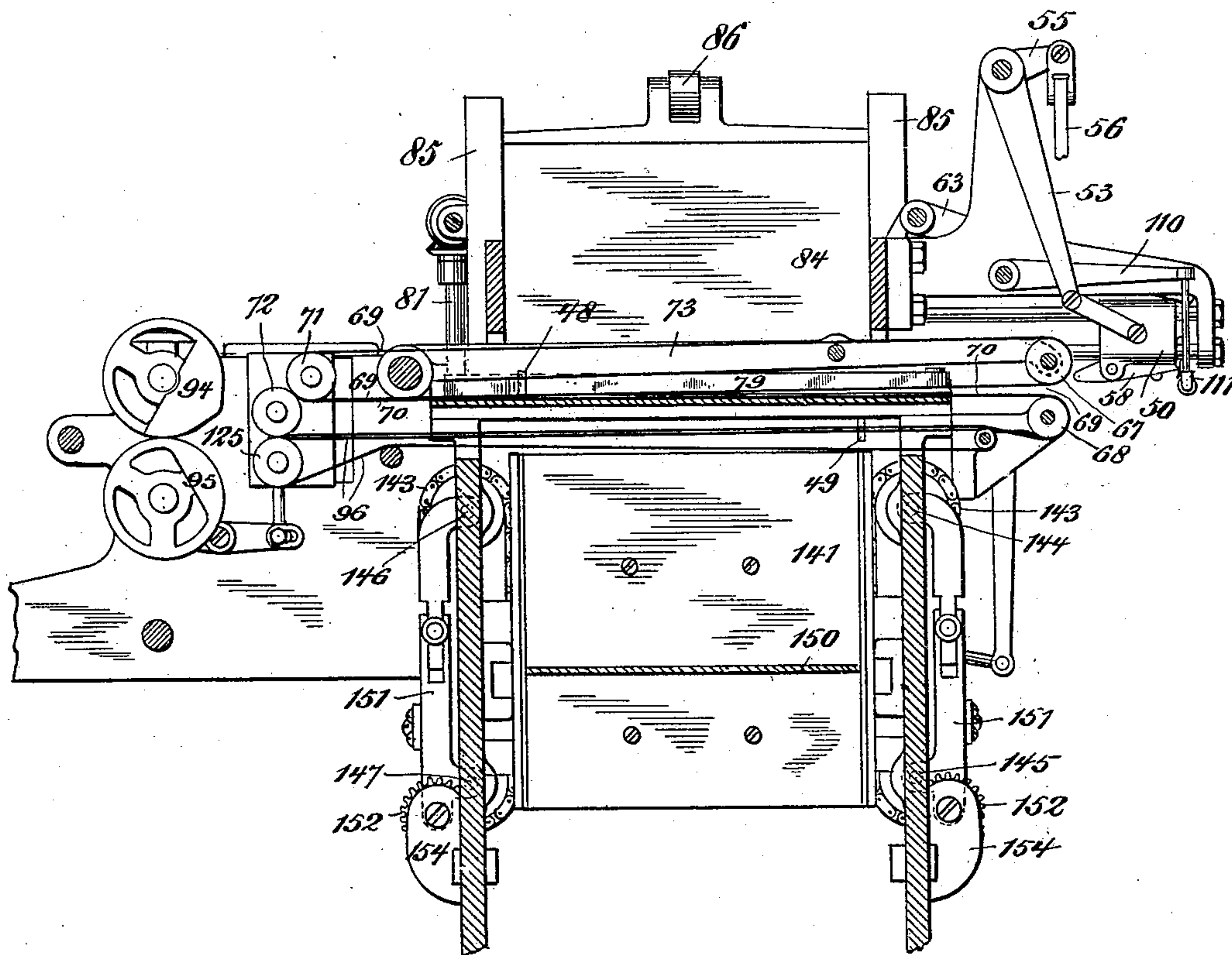
NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

(Application filed Mar. 22, 1899. Renewed May 22, 1902.)

(No Model.)

18 Sheets—Sheet 9.

Fig. 11,



WITNESSES:

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No. 713,271.

Patented Nov. 11, 1902.

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NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

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(No Model.)

18 Sheets—Sheet 10.

Fig. 12,

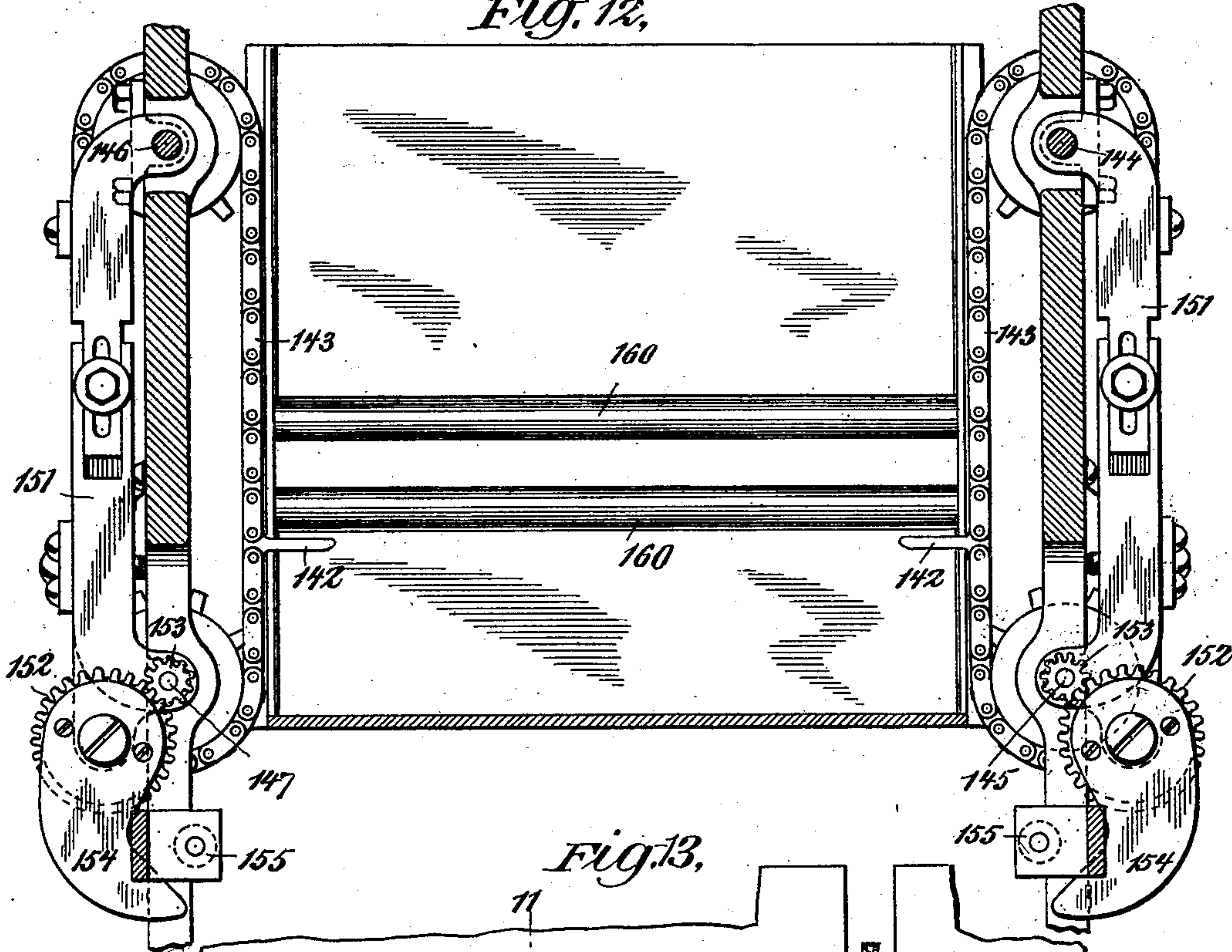
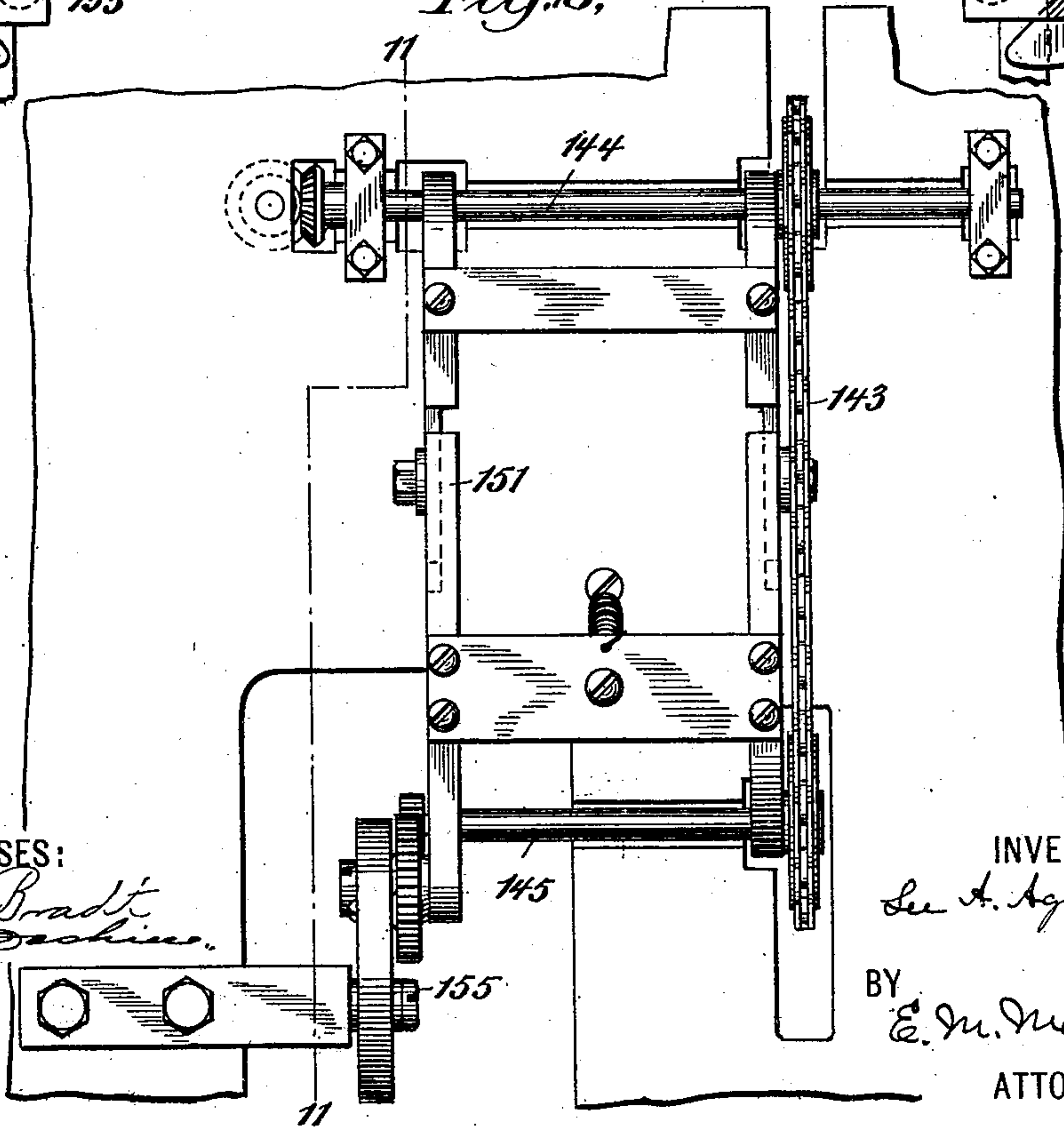


Fig. 13,



WITNESSES:

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No. 713,271.

Patented Nov. 11, 1902.

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NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

(Application filed Mar. 22, 1899. Renewed May 22, 1902.)

(No Model.)

18 Sheets—Sheet II.

Fig. 14,

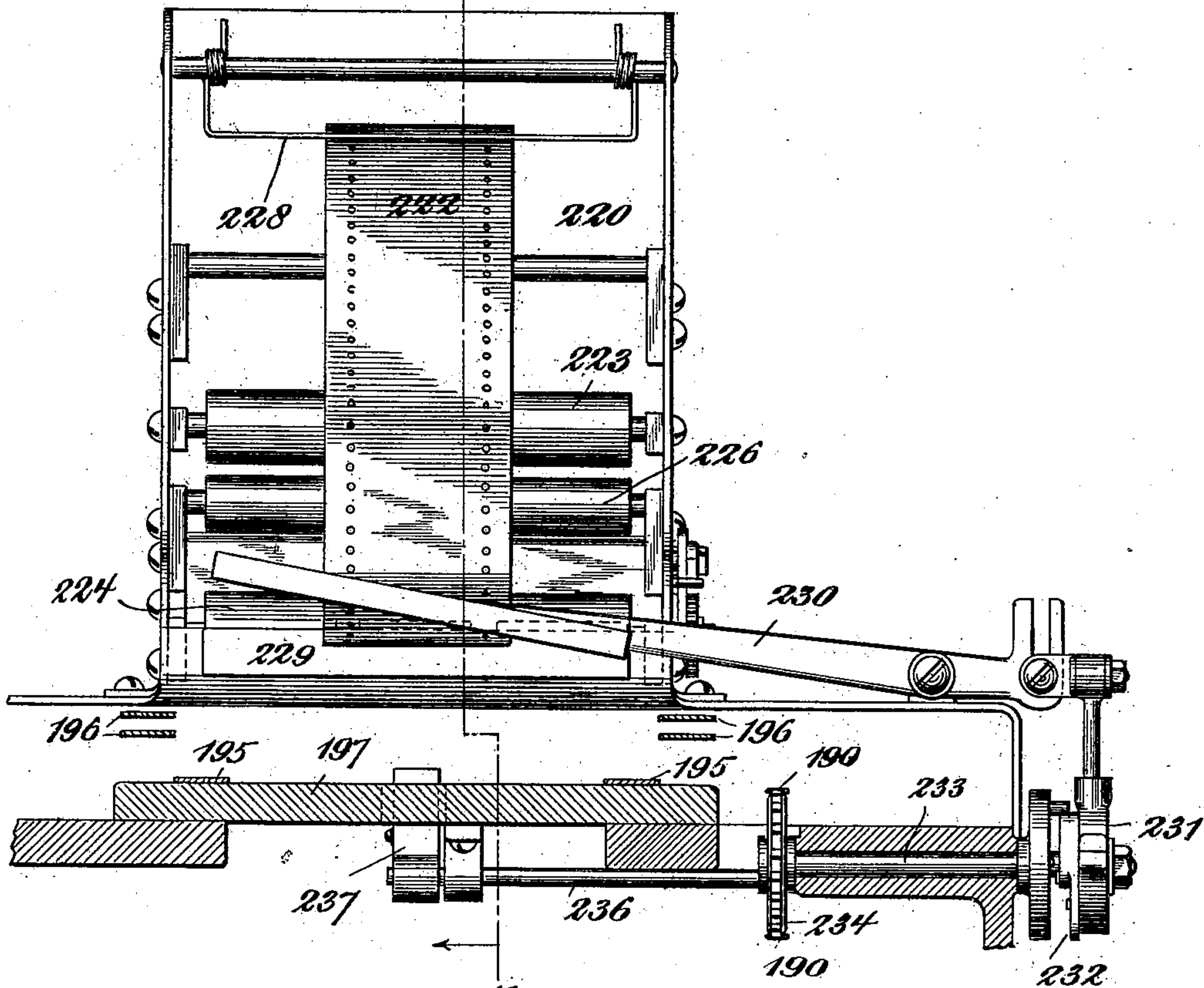
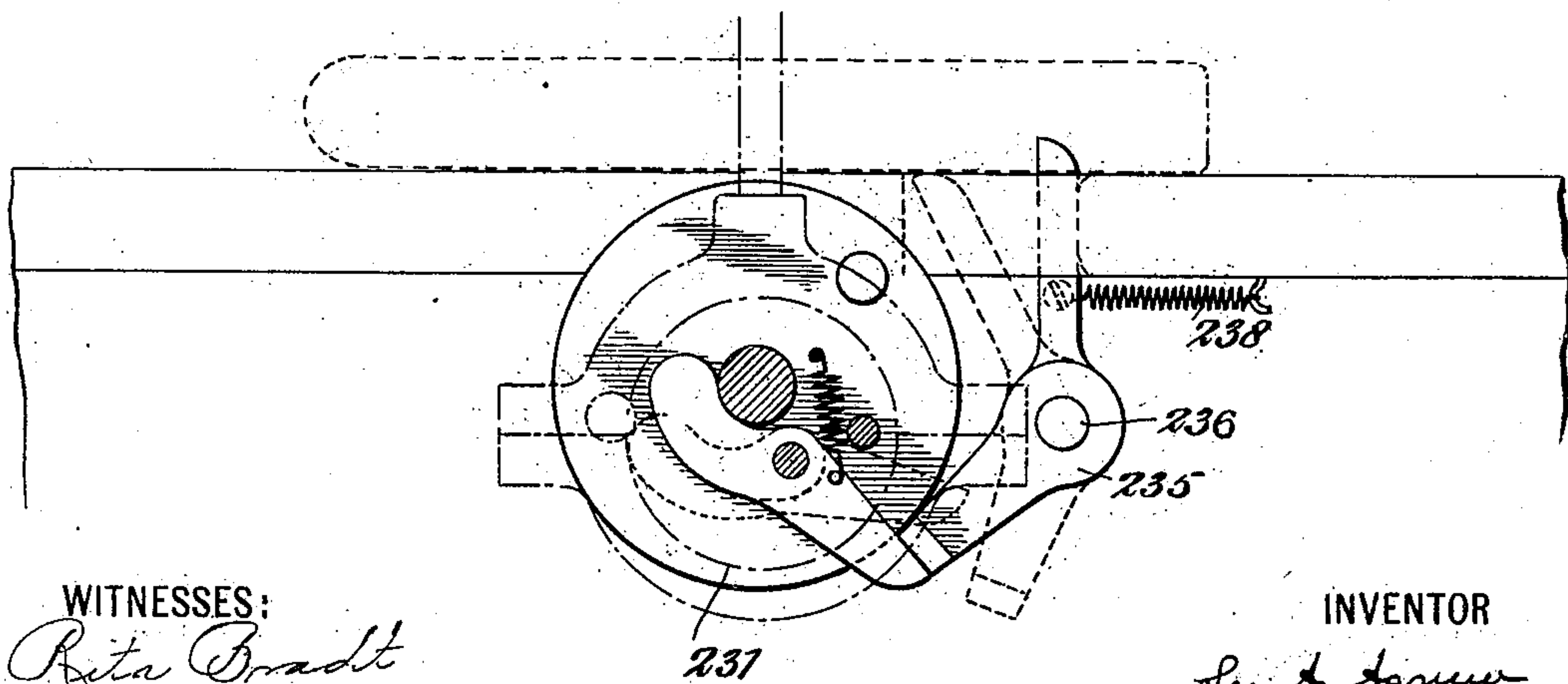


Fig. 15,



WITNESSES:

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No. 713,271.

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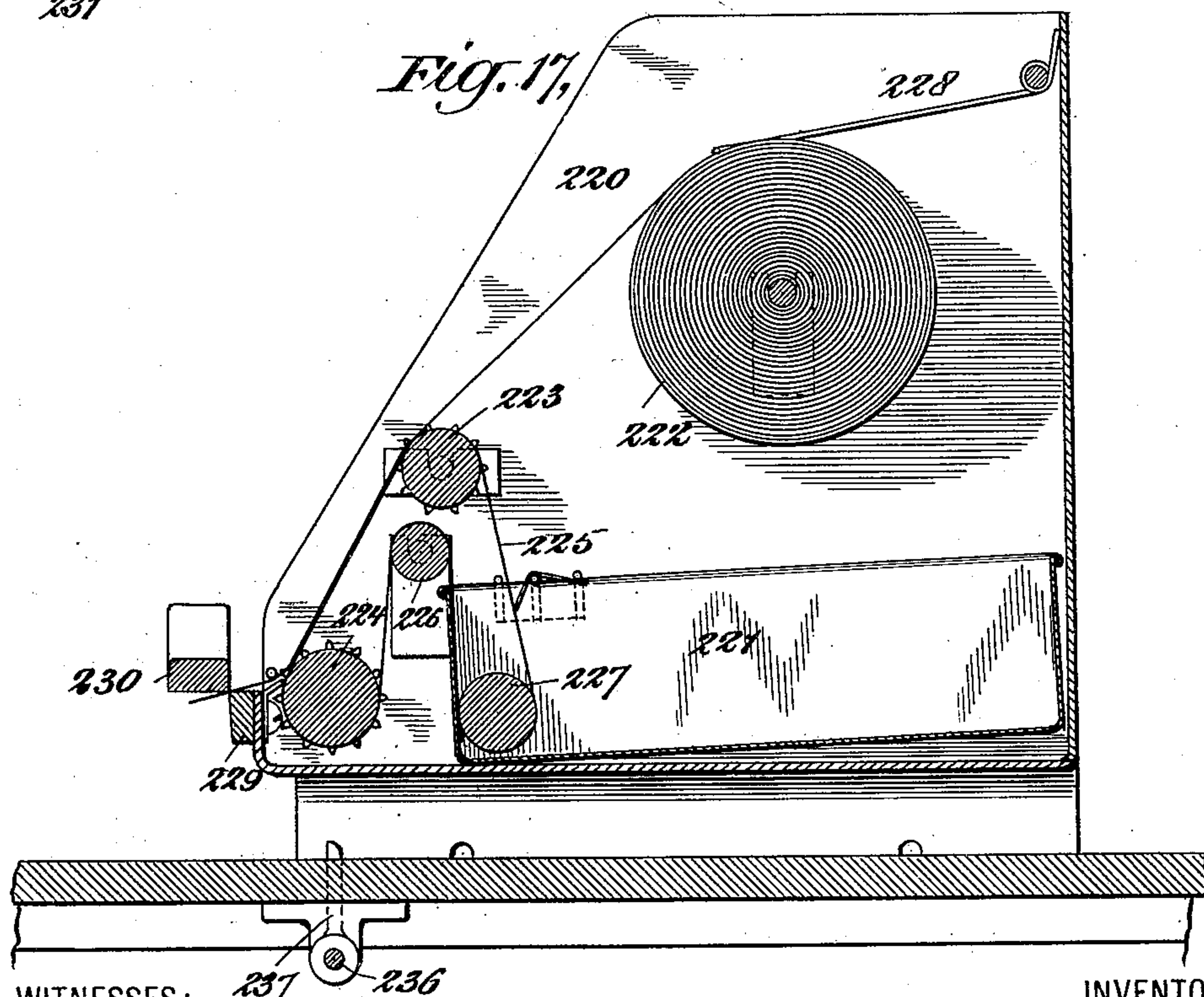
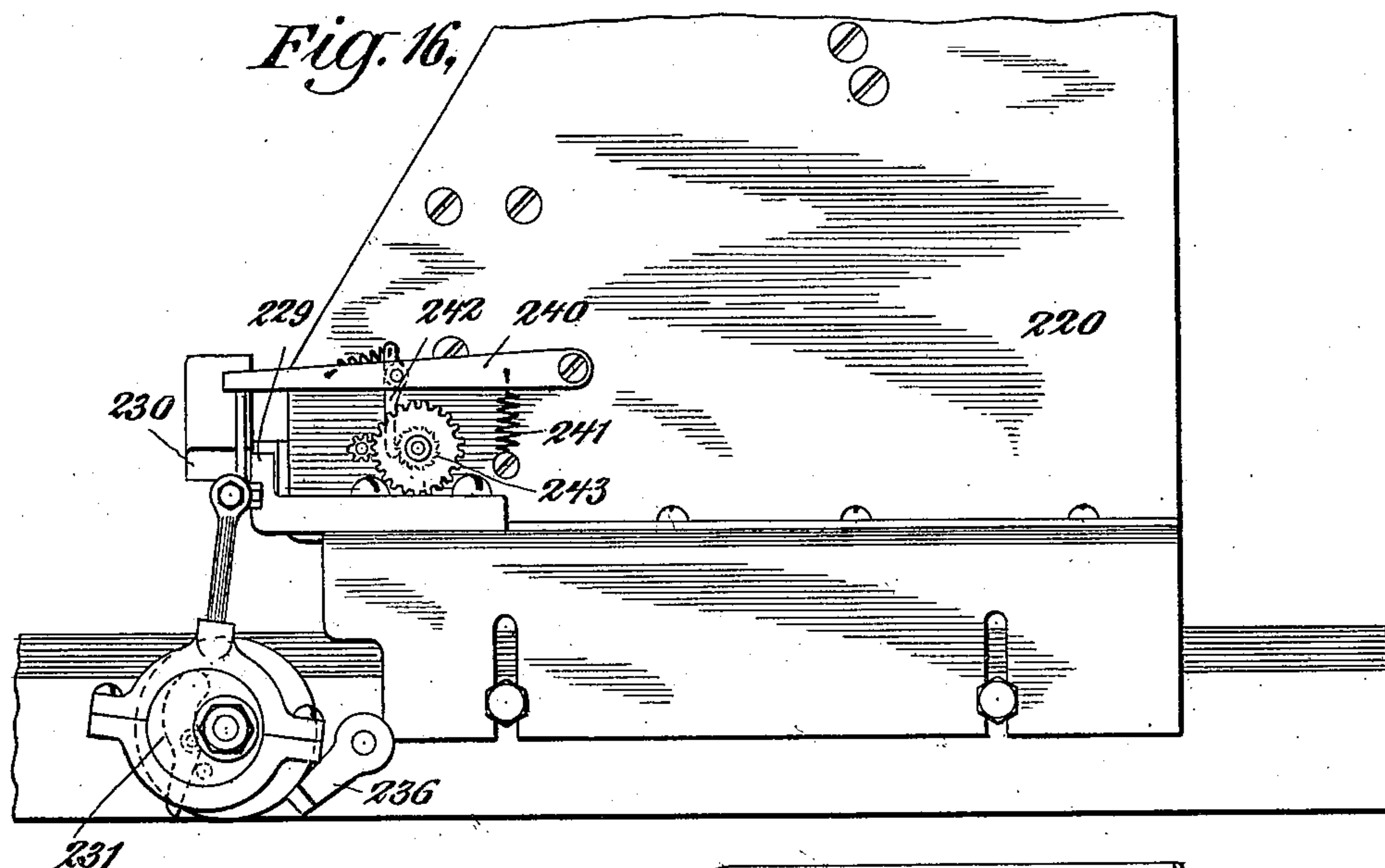
L. A. AGNEW.

NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

(Application filed Mar. 22, 1899. Renewed May 22, 1902.)

(No Model.)

18 Sheets—Sheet 12.



WITNESSES:

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No. 713,271.

Patented Nov. 11, 1902.

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NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

(Application filed Mar. 22, 1899. Renewed May 22, 1902.)

(No Model.)

18 Sheets—Sheet 13.

Fig. 18,

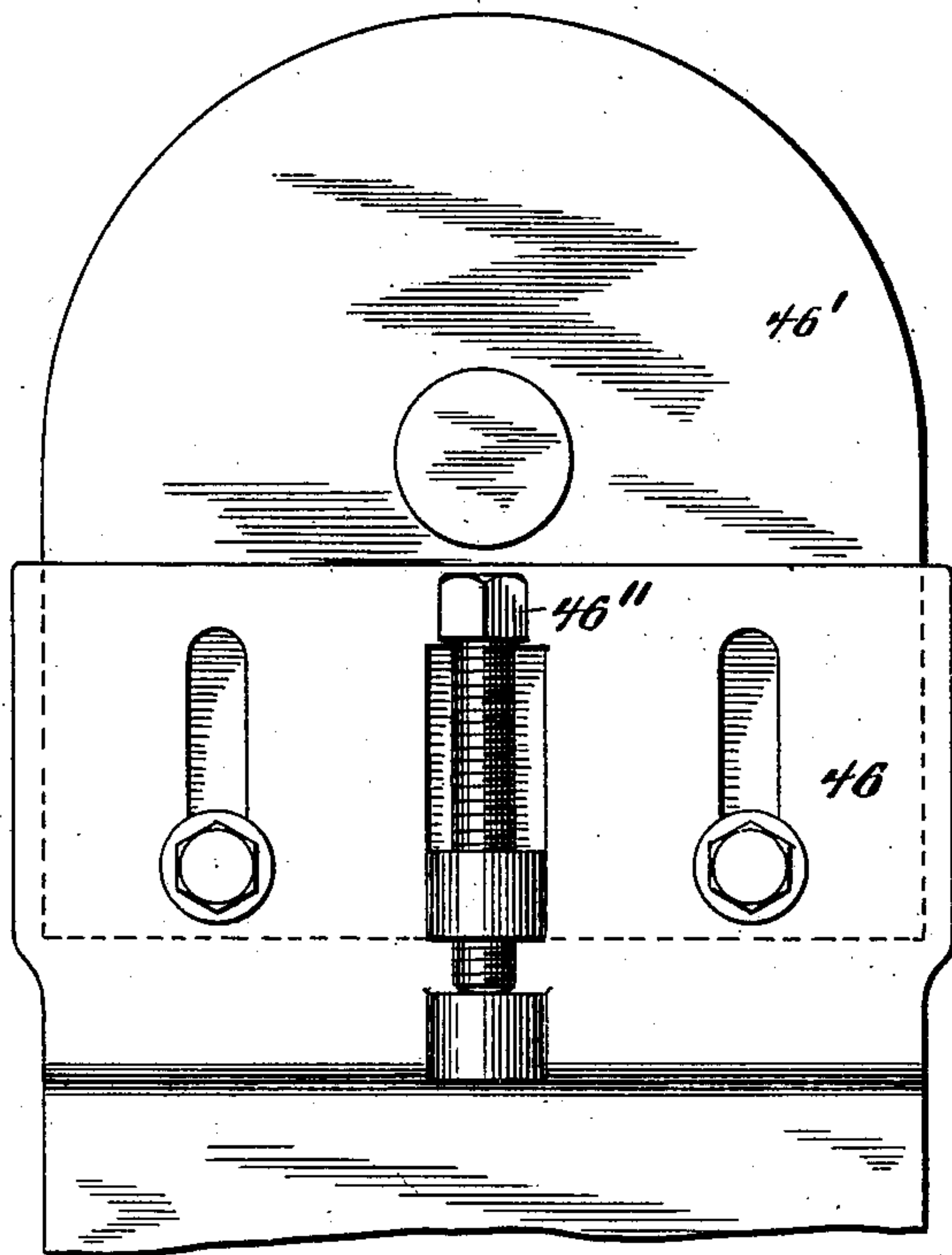


Fig. 19,

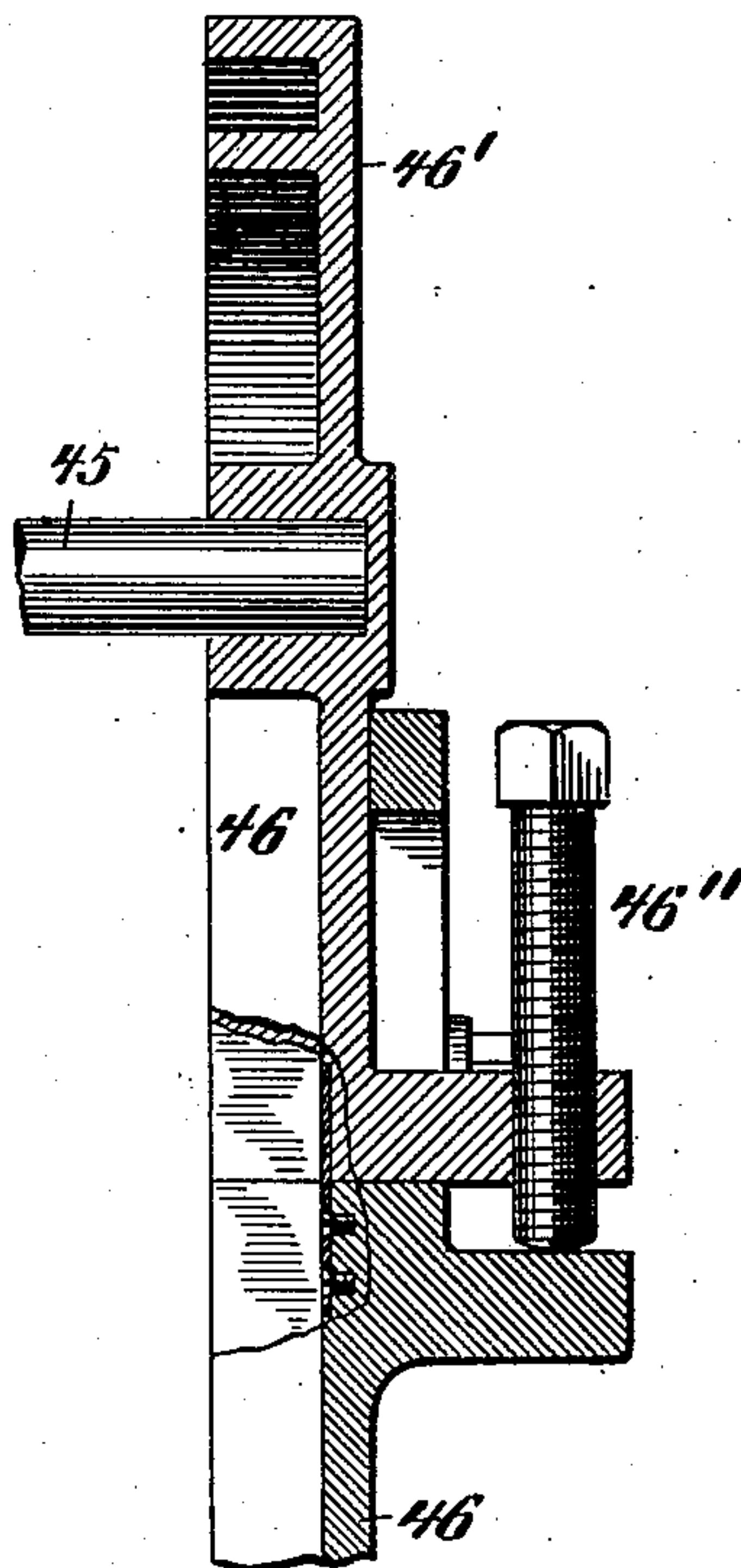


Fig. 21,

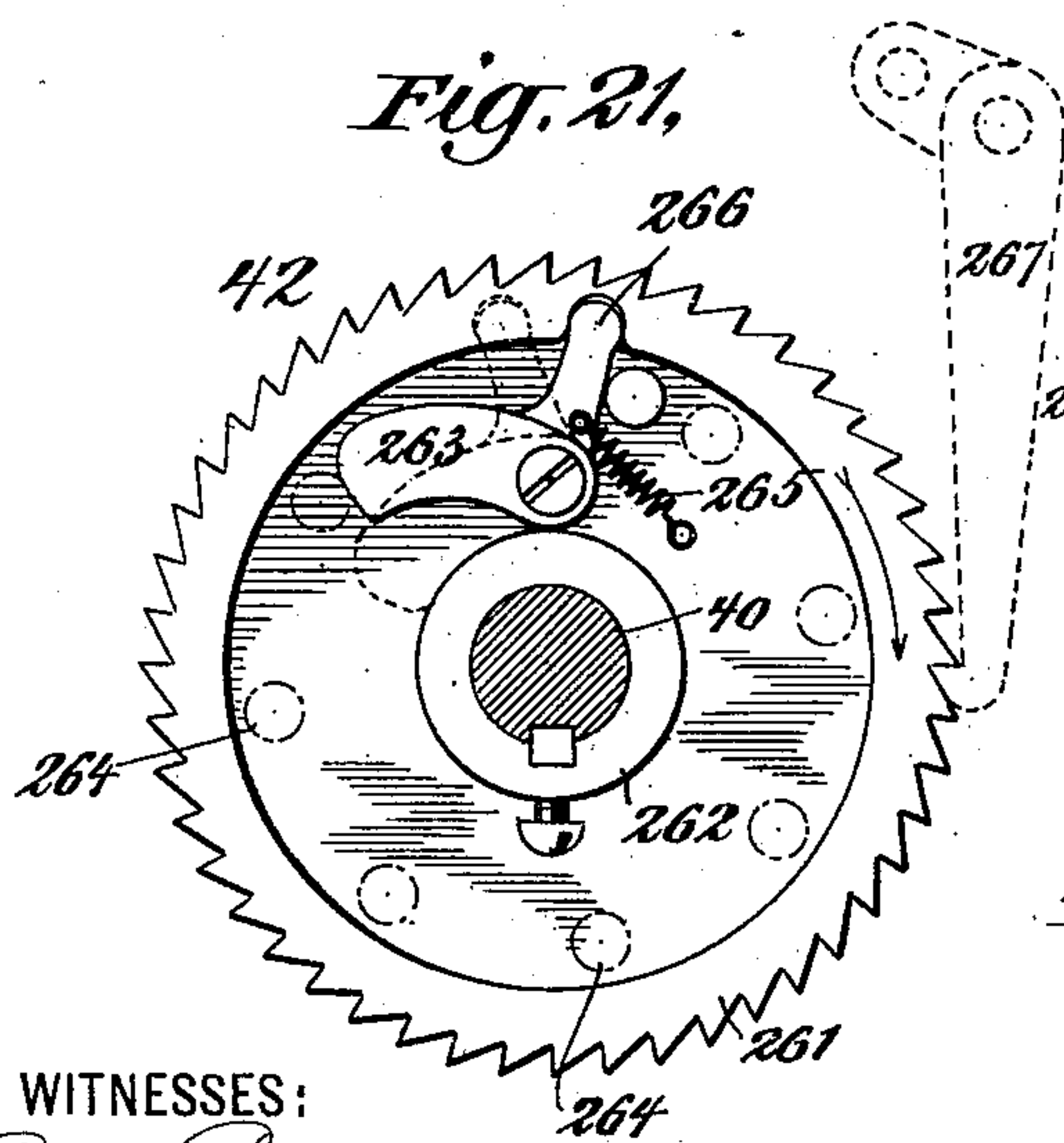
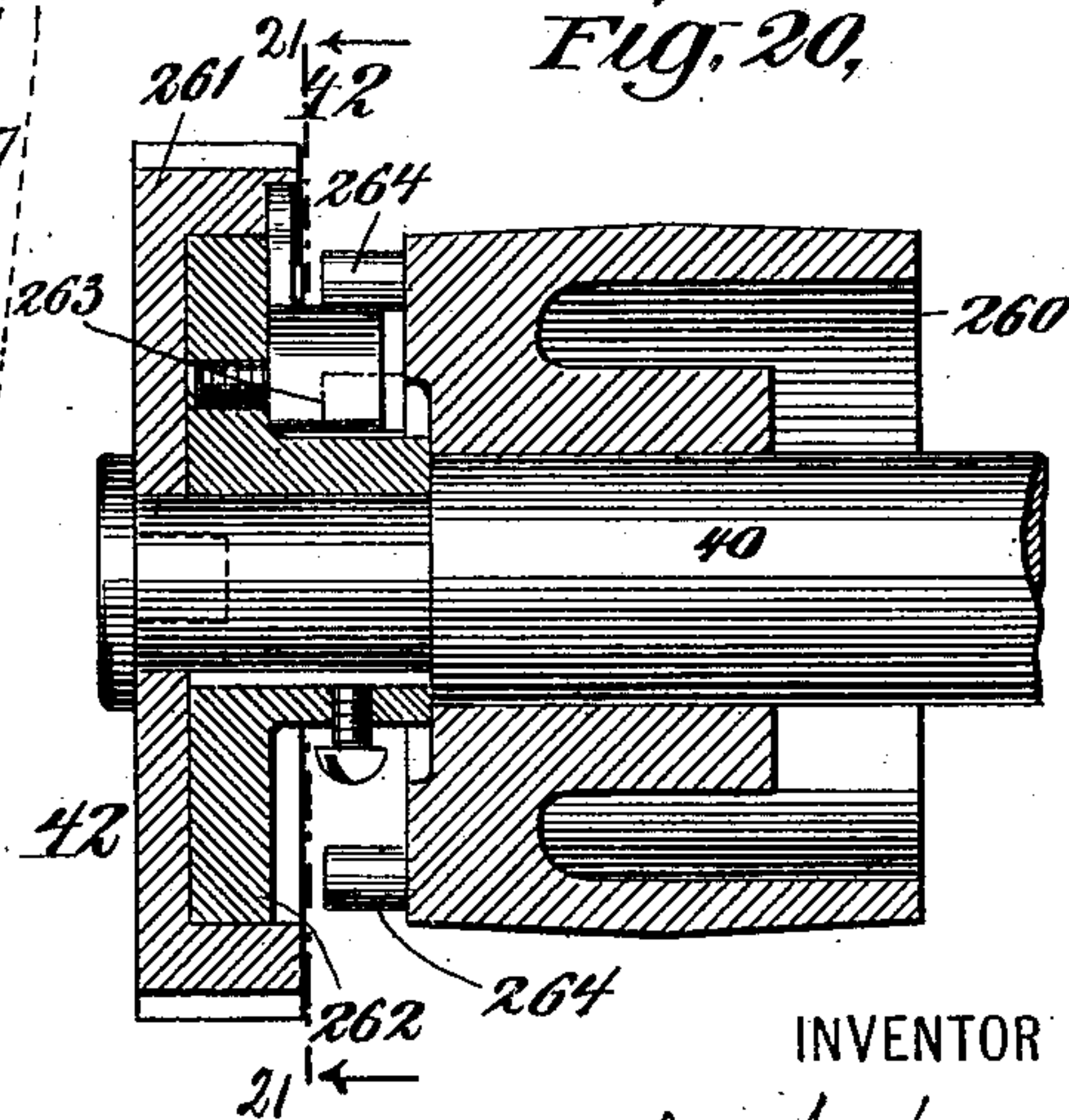


Fig. 20,



WITNESSES:

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No. 713,271.

Patented Nov. 11, 1902.

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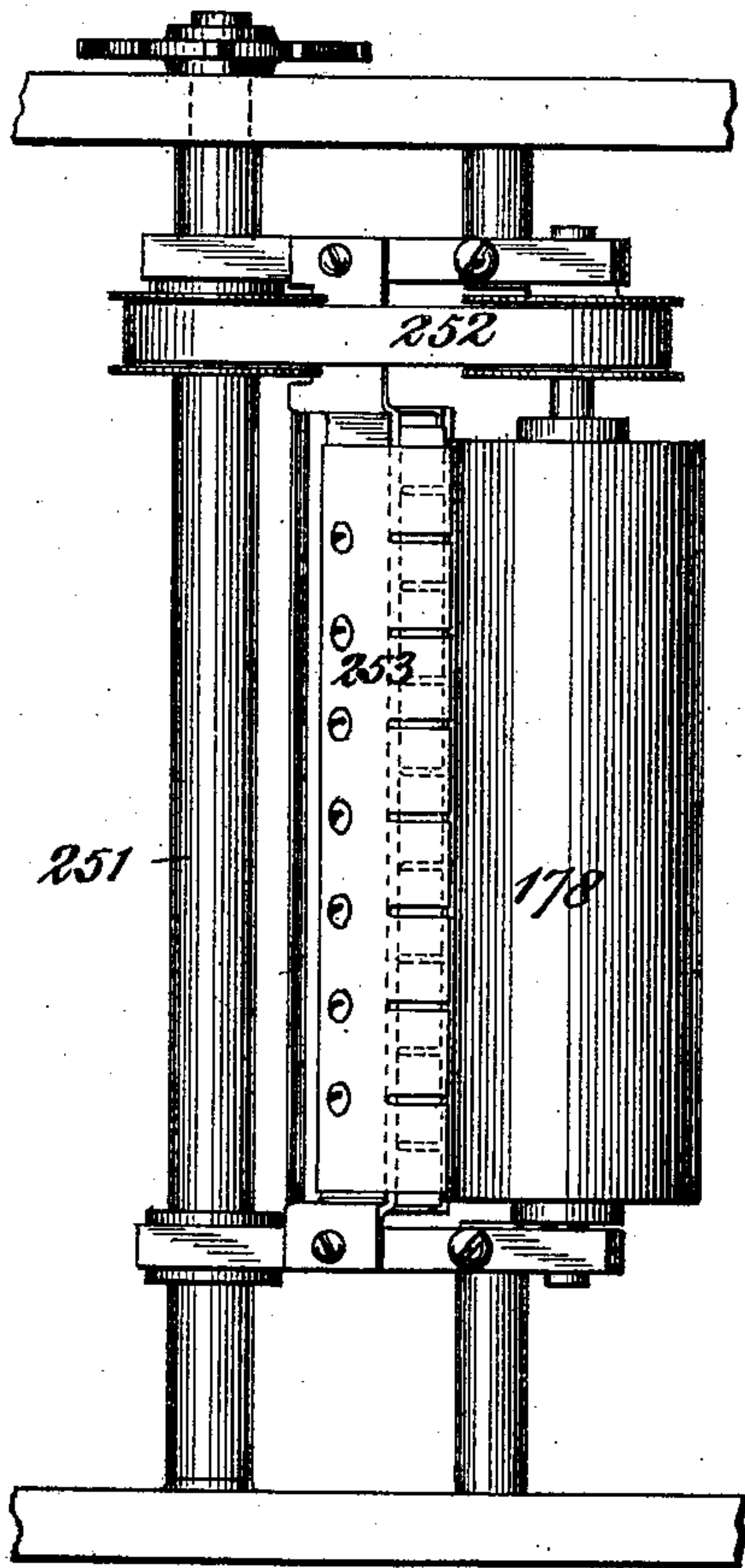
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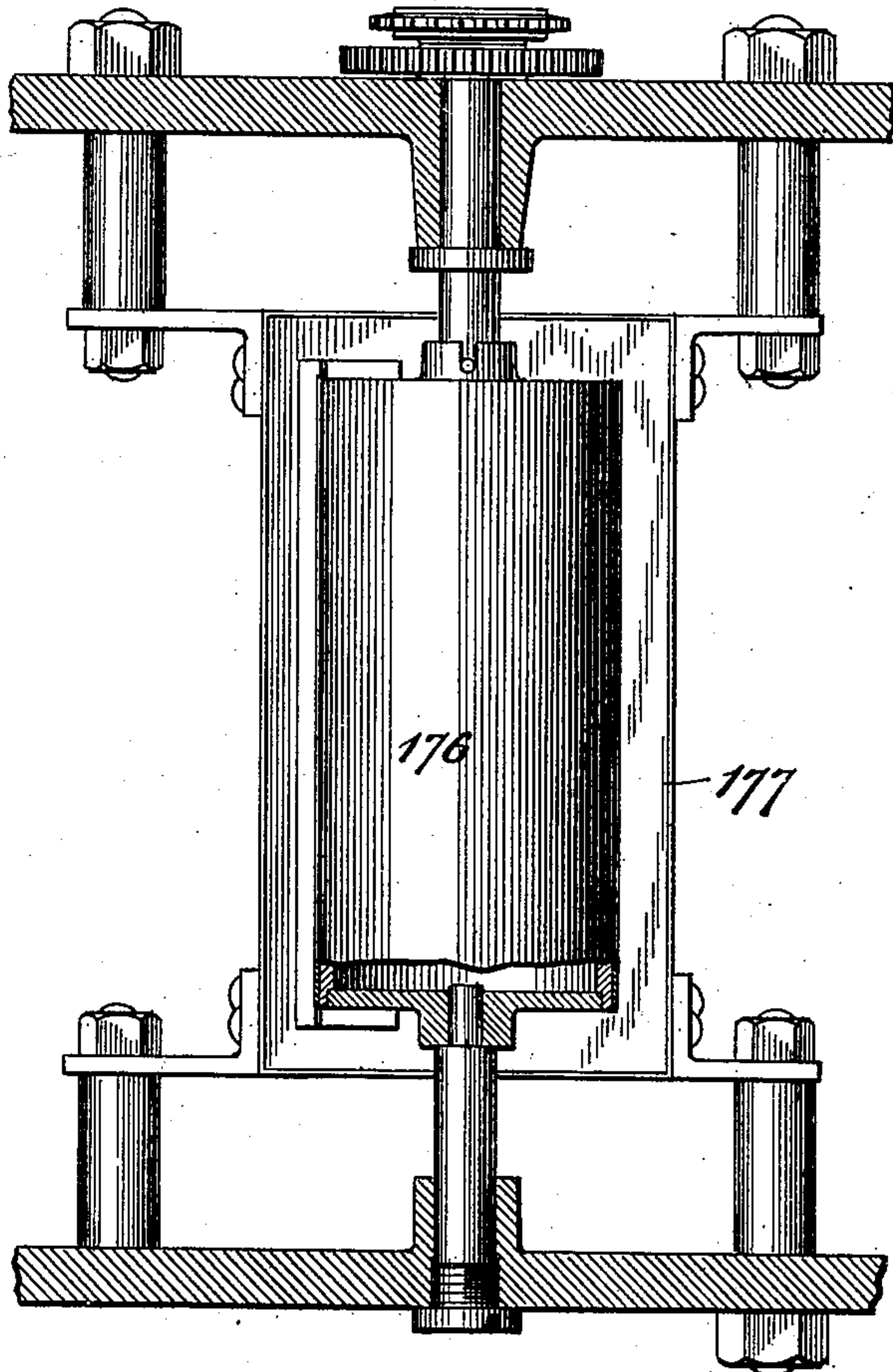
(No Model.)

18 Sheets—Sheet 14.

*Fig. 22,*



*Fig. 23,*



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No. 713,271.

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L. A. AGNEW.

NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

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18 Sheets—Sheet 15.

(No Model.)

Fig. 24,

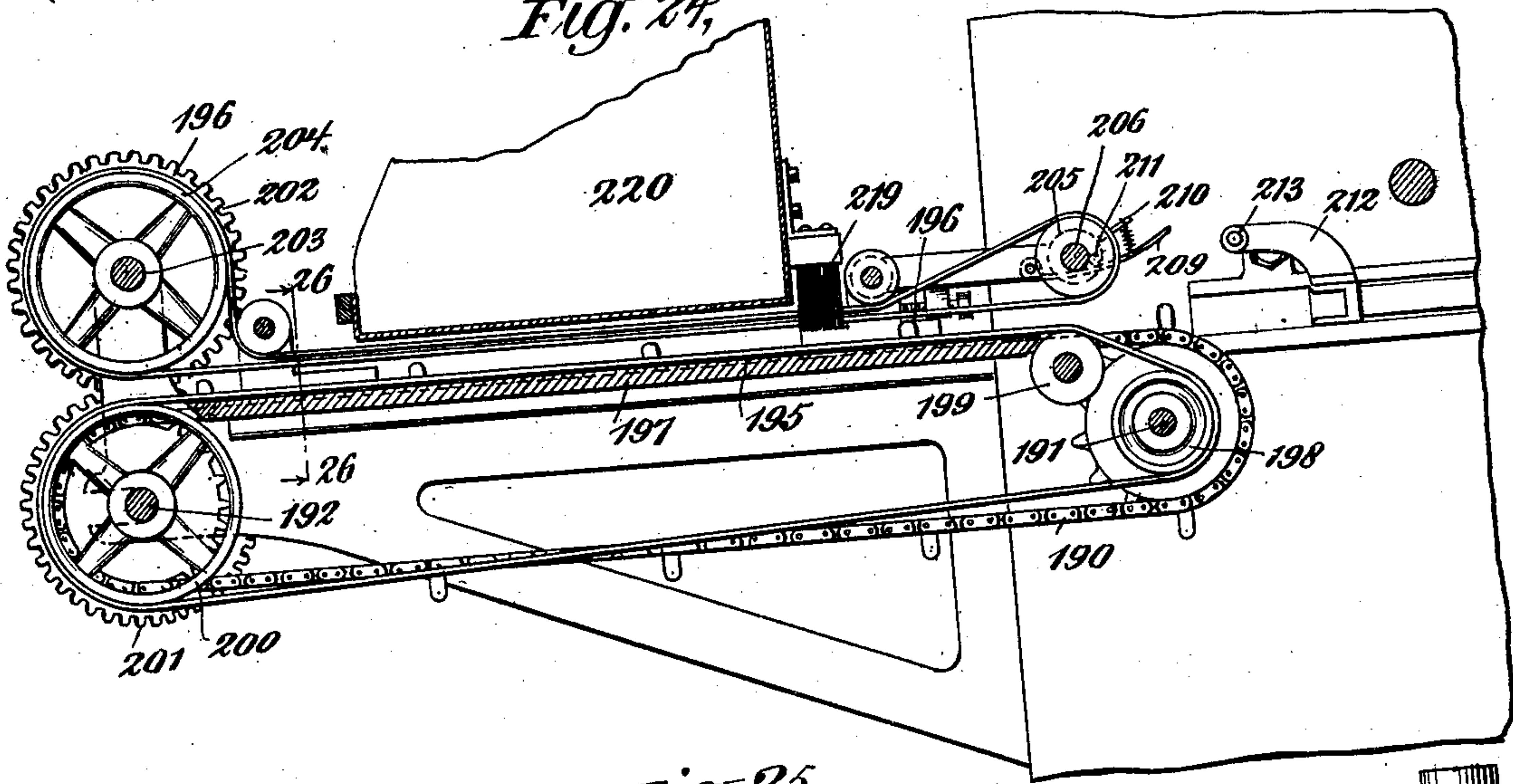


Fig. 25,

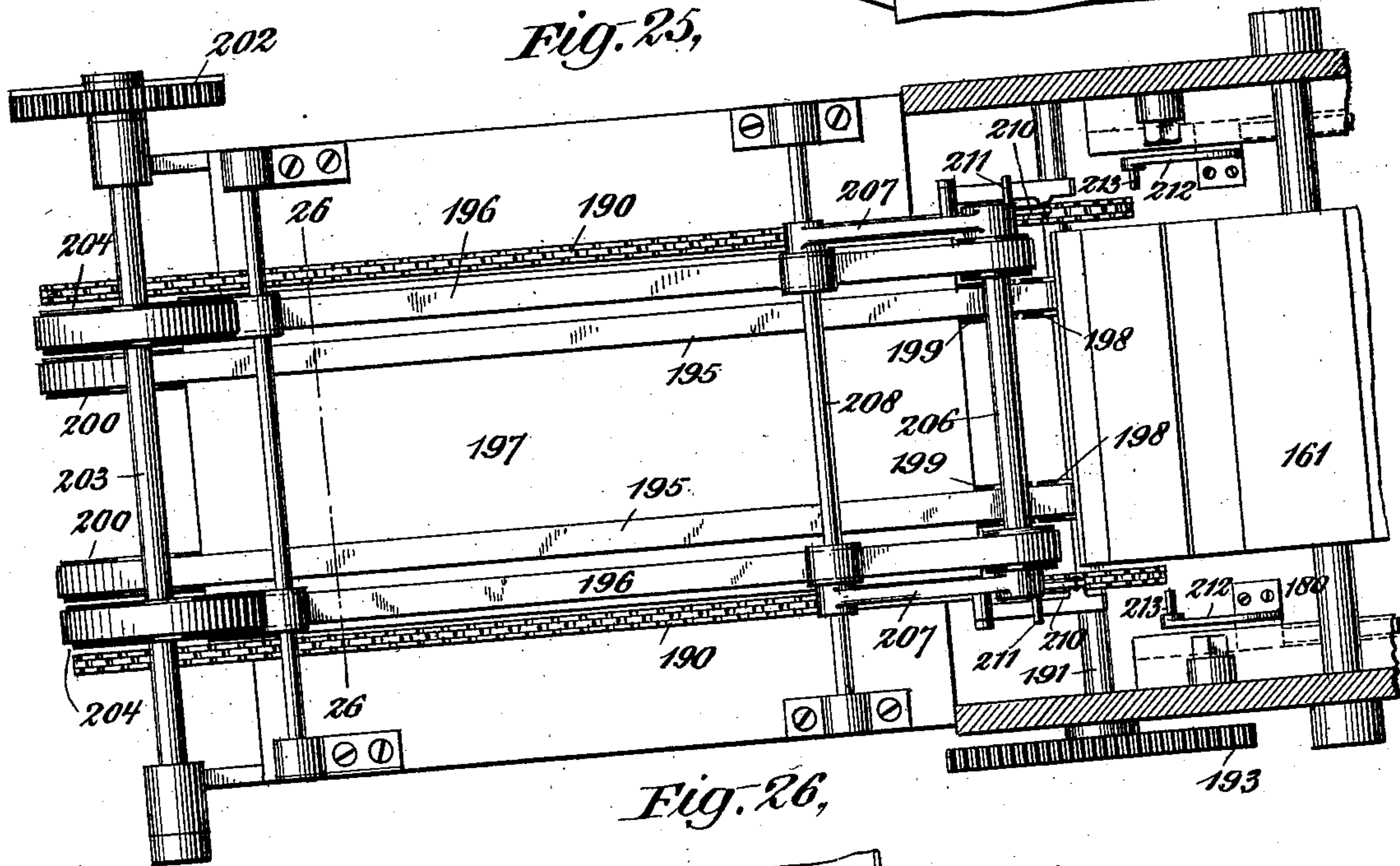
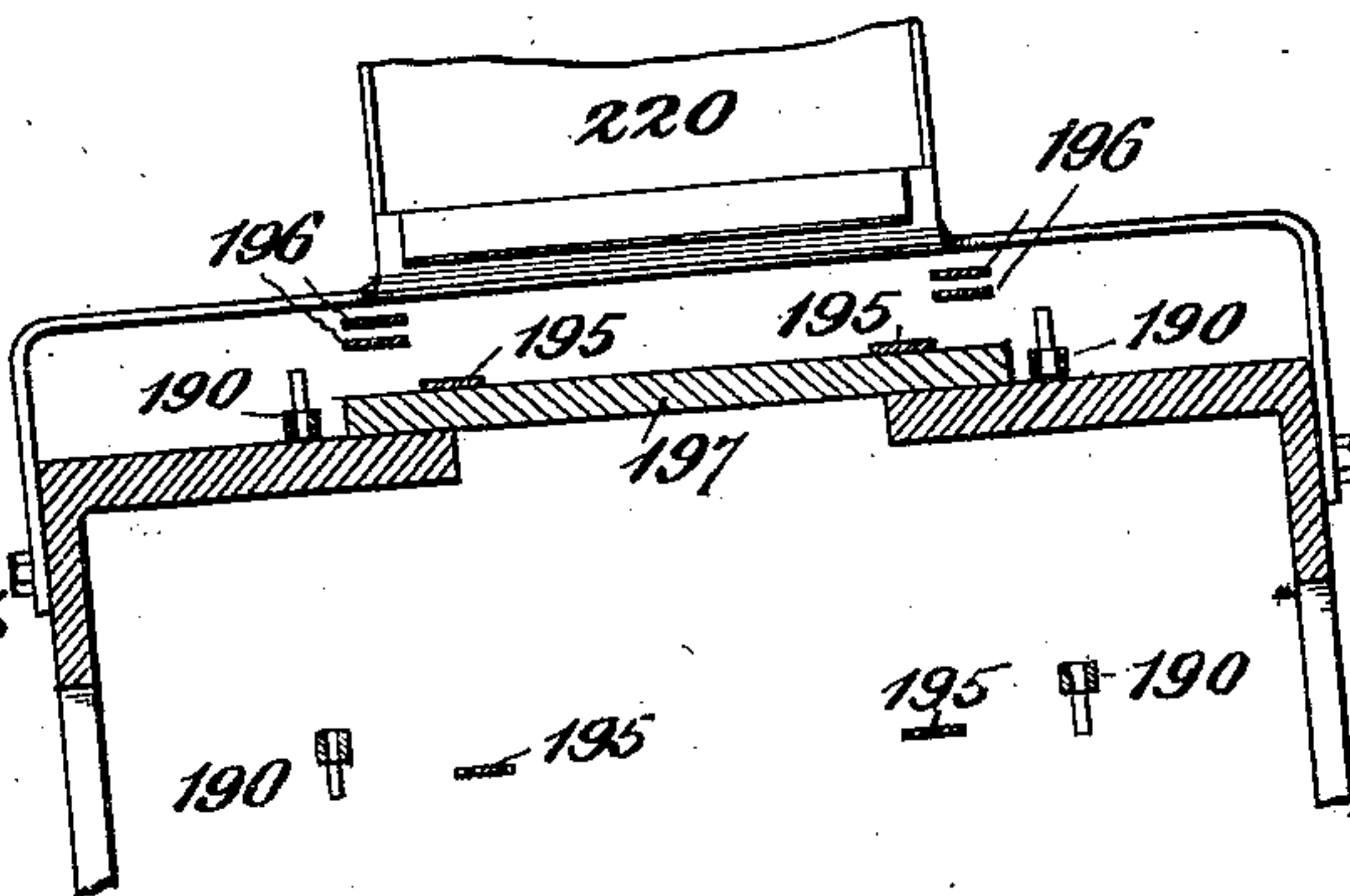


Fig. 26,



WITNESSES:

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No. 713,271.

Patented Nov. 11, 1902.

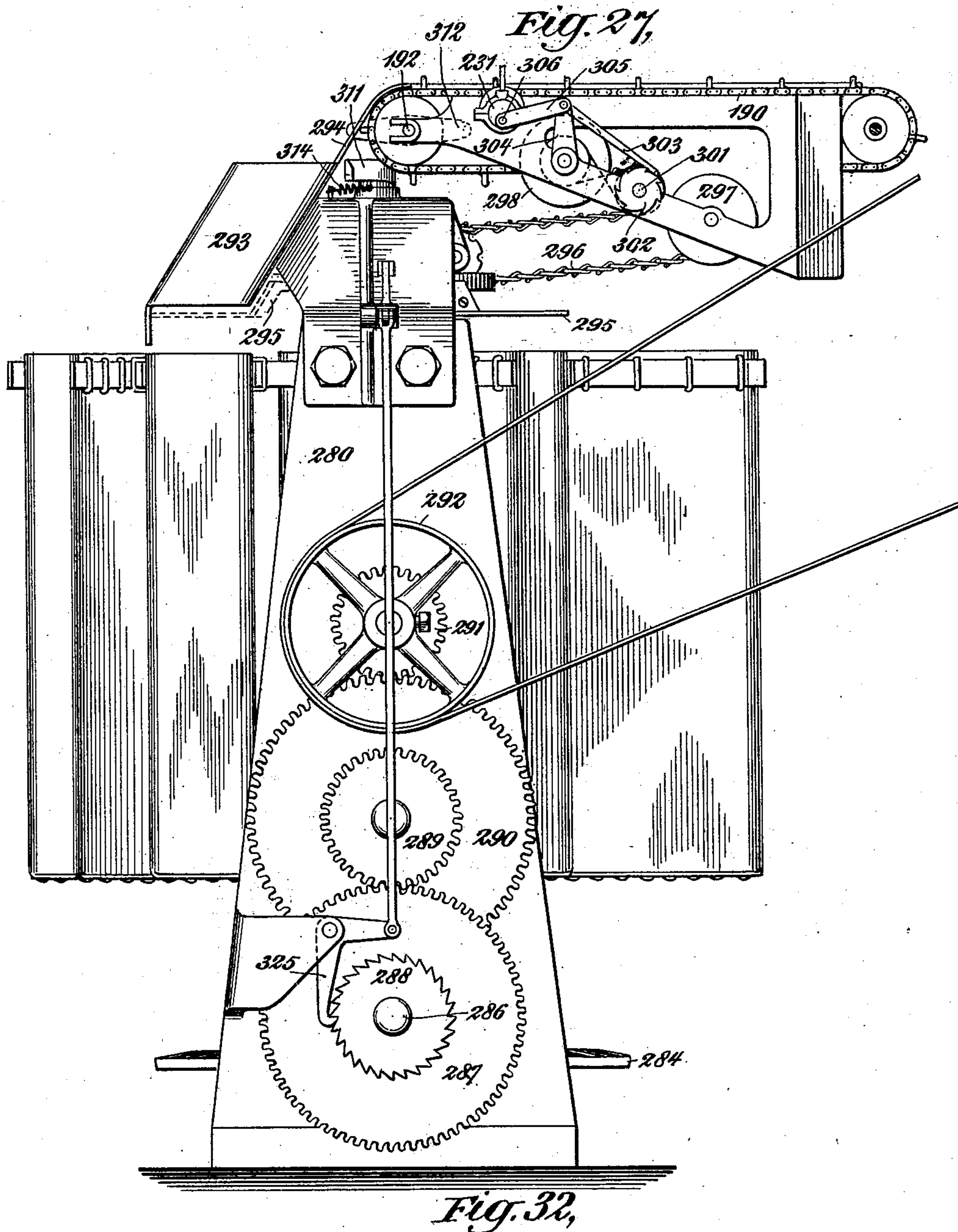
L. A. AGNEW.

NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

(Application filed Mar. 22, 1899. Renewed May 22, 1902.)

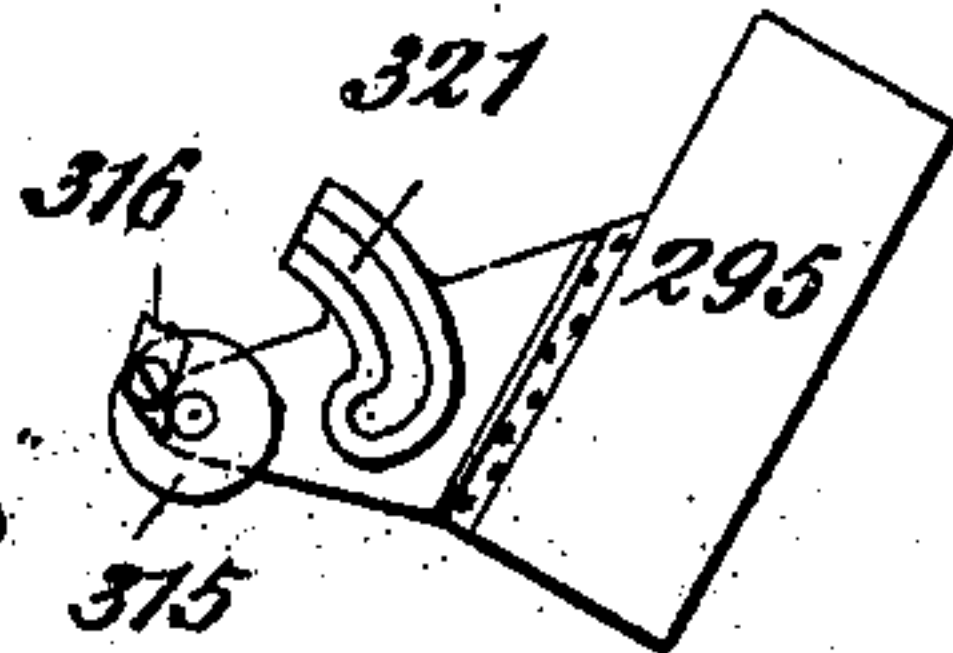
(No Model.)

18 Sheets—Sheet 16.



WITNESSES:

*Rita Bradt*  
*Wm. G. Smith*



INVENTOR

*Lee A. Agnew*

BY

*E. M. Marshall*

ATTORNEYS



No. 713,271.

Patented Nov. 11, 1902.

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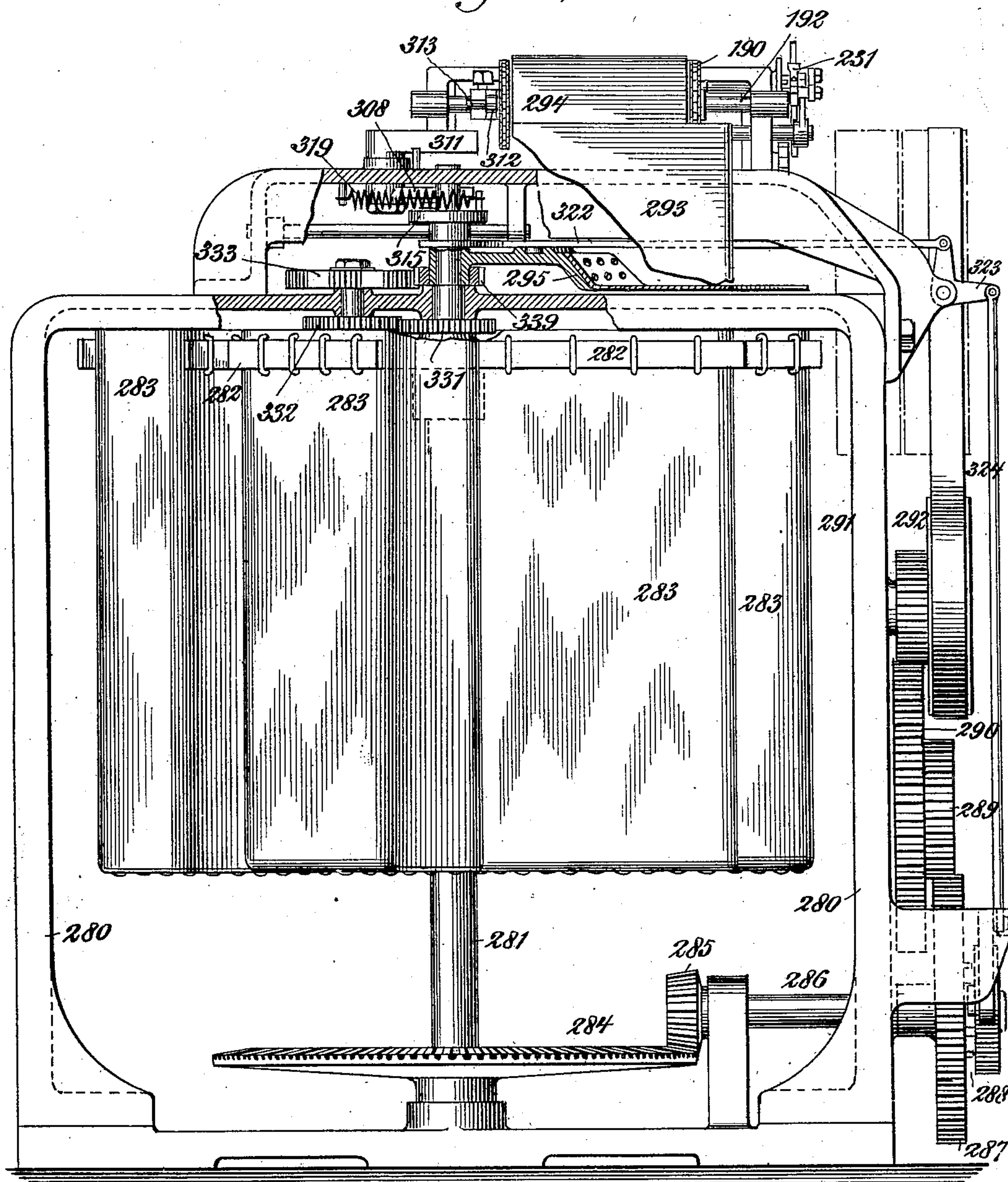
NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

(Application filed Mar. 22, 1899. Renewed May 22, 1902.)

(No Model.)

18 Sheets—Sheet 17.

Fig. 28.



WITNESSES:

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*L. A. Agnew*

BY

*E. M. Marshall*

ATTORNEYS

No. 713,271.

Patented Nov. 11, 1902.

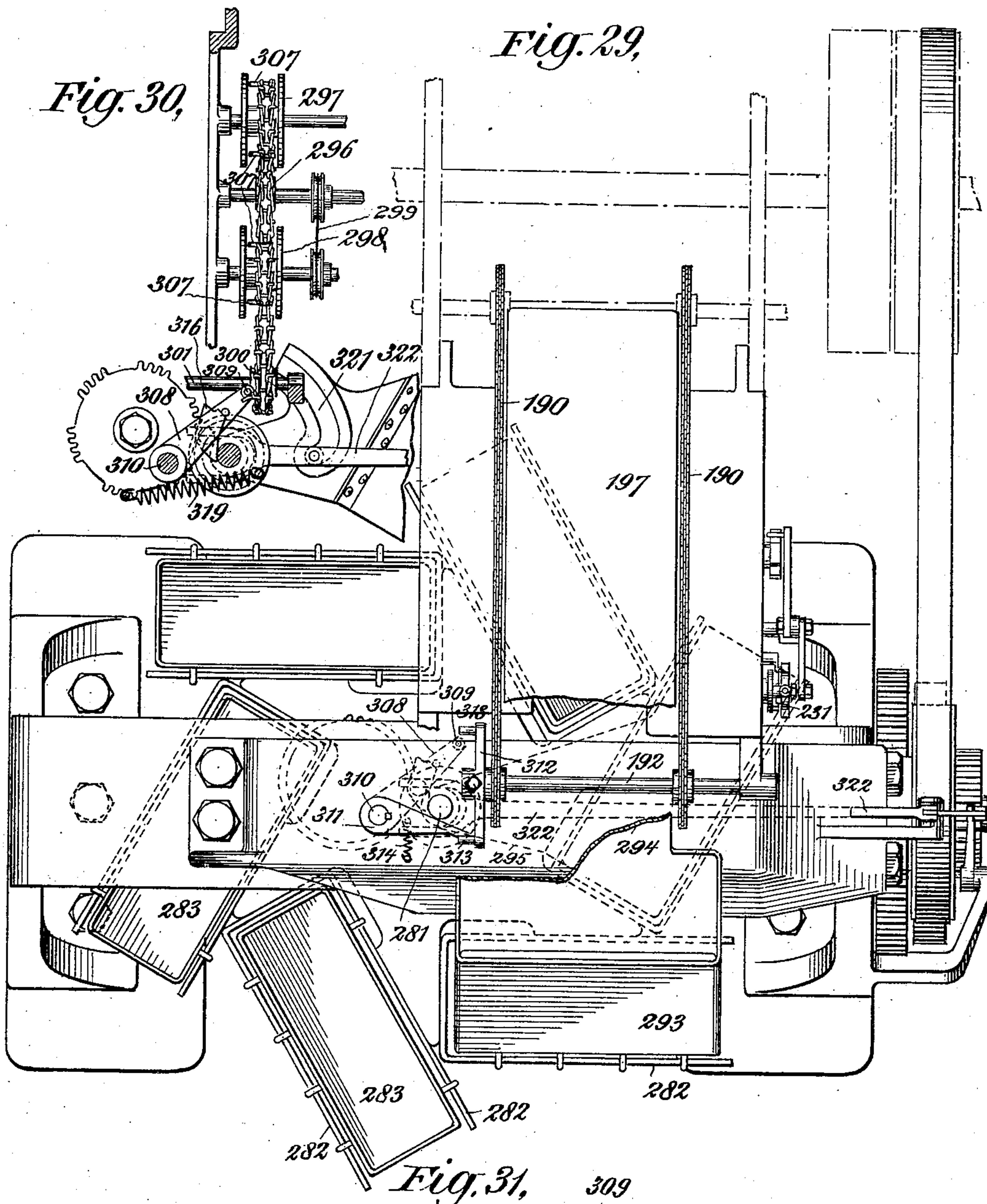
L. A. AGNEW.

NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

(Application filed Mar. 22, 1899. Renewed May 22, 1902.)

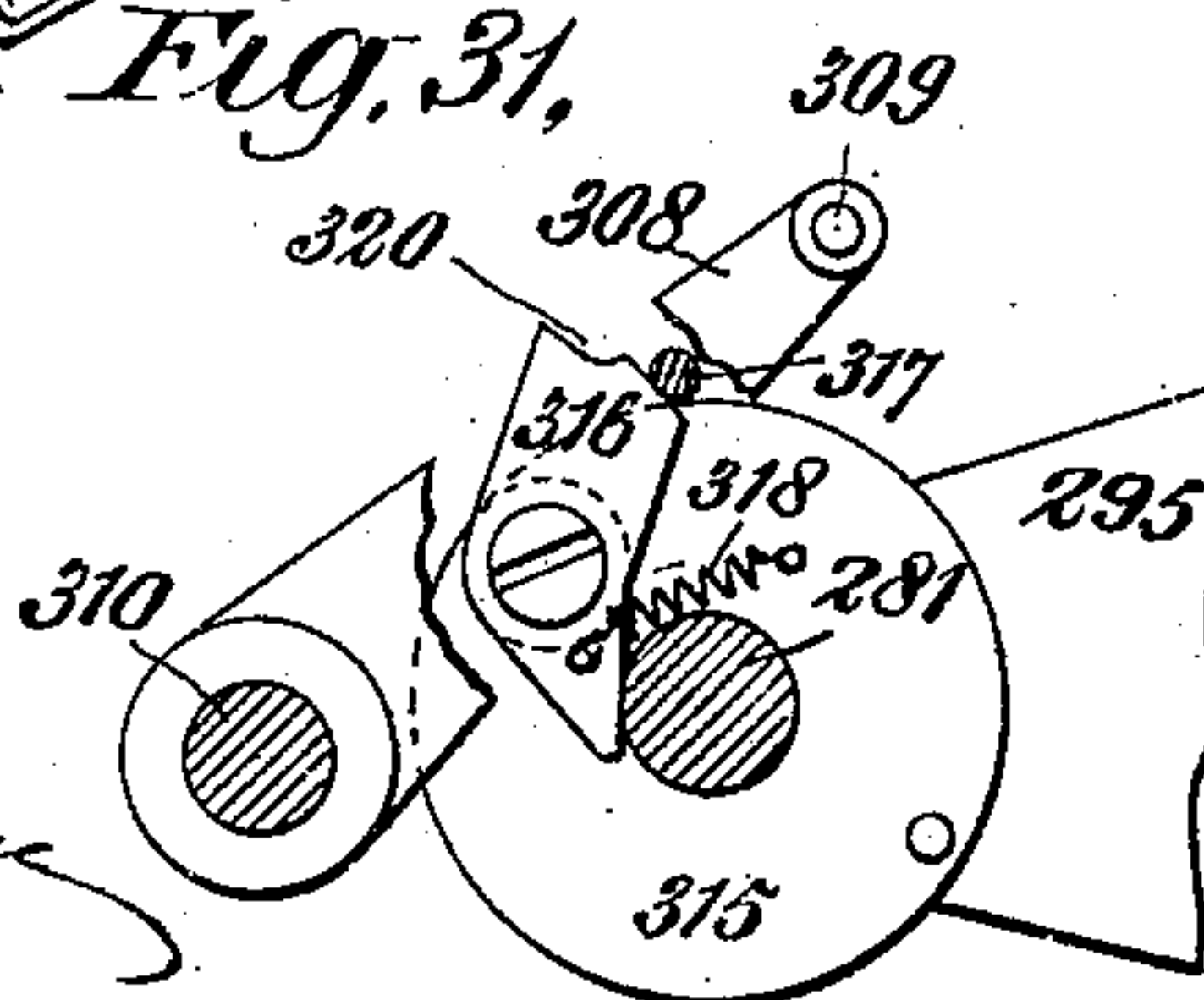
(No Model.)

18 Sheets—Sheet 18.



WITNESSES:

Rita Ernst  
Wm. O. Ashie



INVENTOR

Lee A. Agnew

BY

E. M. Marble & Son

ATTORNEYS



# UNITED STATES PATENT OFFICE.

LEE A. AGNEW, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS,  
TO AGNEW AUTO-MAILING MACHINE COMPANY, OF BOSTON, MASSA-  
CHUSETTS, A CORPORATION OF MAINE.

NEWSPAPER FOLDING, WRAPPING, ADDRESSING, AND ASSORTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 713,271, dated November 11, 1902.

Application filed March 22, 1899. Renewed May 22, 1902. Serial No. 108,540. (No model.)

*To all whom it may concern:*

Be it known that I, LEE A. AGNEW, a citizen  
of the United States, residing at New York, in  
the county of New York and State of New  
York, have invented a new and useful Ma-  
chine for Folding, Wrapping, Addressing,  
and Assorting Newspapers and the Like; and  
I do hereby declare the following to be a full,  
clear, and exact description of the invention,  
such as will enable others skilled in the art to  
which it appertains to make and use the same.

My invention relates to automatic machines  
for folding, wrapping, addressing, and assort-  
ing newspapers, magazines, and the like, and  
embodies improvements upon and combina-  
tions of mechanisms illustrated and described  
in my Patents No. 591,810, dated October 19,  
1897, for a machine for folding and wrapping  
newspapers, and No. 586,327, dated July 13,  
1897, for a machine for wrapping, folding,  
and addressing newspapers, and in my appli-  
cation for Letters Patent for a machine for  
addressing and assorting newspapers, maga-  
zines, and the like, filed August 18, 1893, Se-  
rial No. 688,910.

My invention consists in the many novel  
features of combination, construction, and  
arrangement of the parts.

The objects of my invention are, first, to  
perform by machinery automatically all of  
the operations involved in folding, wrapping,  
addressing, and assorting, according to locali-  
ties or otherwise, newspapers, magazines,  
and the like; second, to avoid the carrying  
off of two or more papers simultaneously  
when it is intended that but one paper shall  
be taken off at a time; third, to improve the  
folding mechanism and render the same more  
rapid in its operation; fourth, to improve the  
wrapping mechanism; fifth, to improve the  
addressing mechanism; sixth, to prevent the  
feeding forward of wrappers into the folding  
mechanism if for any reason the feeding of  
the newspapers or other objects to be folded  
and wrapped be interrupted; seventh, to im-  
prove the assorting mechanism, and, eighth,  
to make the whole machine as simple and  
compact as possible. These objects are at-  
tained in the inventions herein described and  
illustrated in the drawings which accompany

and form a part of this specification, in which  
the same reference-numerals indicate the  
same or corresponding parts, and in which—

Figures 1 to 26, inclusive, show a machine  
and details of parts thereof with the assort-  
ing mechanism omitted. Figs. 27 to 32 show  
the assorting mechanism. Fig. 1 is a side ele-  
vation of the machine. Fig. 2 is a top view  
thereof, most of the mechanism of the lower  
part of the machine being omitted for the sake  
of clearness. Fig. 3 is a transverse vertical  
section on the line 3 3 of Fig. 2. Fig. 4 is a  
detail elevation looking from the left of Fig.  
1 and on a somewhat-larger scale than Fig. 1  
of the mechanism for feeding in the wrappers  
and for revolving intermittently the rotary  
carrier which receives the folded papers from  
the folding mechanism, the remaining mech-  
anism of the machine being omitted. Fig. 5  
is a detail transverse section of the wrapper-  
feeding rollers and the parts in proximity  
thereto. Fig. 6 is a detail elevation of por-  
tions of these wrapper-feeding rollers with  
the gearing for driving the same, showing  
particularly a device which may be employed  
for imprinting a title or other matter upon  
the wrappers. Fig. 6<sup>a</sup> is a detail view of the  
hit-and-miss clutch through which the wrap-  
per feeding and cutting rollers are driven.  
Fig. 7 is a detail section of that one of the  
feeding-rollers which carries the printing-  
plate. Fig. 8 is a detail transverse section of  
the rotary carrier which receives the folded  
papers and the partially-folded wrappers  
from the folding mechanism and of the prin-  
cipal portions of the secondary folding de-  
vice, together with the device employed for  
pasting the wrappers. Fig. 9 is a detail ele-  
vation of the feeding apparatus employed  
for removing the papers successively from  
the elevator. Fig. 10 is a detail sectional  
elevation of this feeding mechanism on the  
line 10 10 of Fig. 9 looking in the direction  
of the arrows, the elevator and the papers  
thereon being omitted. Fig. 11 is a central  
cross-section of the machine on a plane par-  
allel to the plane of Fig. 1, showing the pa-  
per and wrapper feeding mechanism em-  
ployed for carrying the papers and wrappers  
from the primary folding-knife to the sec-

55

60

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95

100



ondary folding-knife. Fig. 12 is a detail elevation of the mechanism employed for carrying the papers downward from the primary folder to the secondary folder. Fig. 13 is a detail side elevation of the same. Fig. 14 is a detail elevation of the addresser. Fig. 15 is a detail elevation of the hit-and-miss clutch, through which the addresser is driven. Fig. 16 is a side elevation of the addresser. Fig. 17 is a sectional elevation of the addresser on the line 16 16 of Fig. 14. Fig. 18 is a side elevation, and Fig. 19 a transverse section, of one of the elevator-chain housings, showing the means employed for taking up slack in the chain. Fig. 20 is a detail longitudinal section, and Fig. 21 a transverse section on the line 21 21 of Fig. 20, looking in the direction of the arrows, of the hit-and-miss clutch employed for driving the receiving-elevator. Fig. 22 is a detail top view of the presser-roller of the pasting mechanism and of the knife employed for cleaning the same. Fig. 23 is a top view of the paste-pot and paste-roller. Fig. 24 is a vertical longitudinal section of the conveyer mechanism which carries the folded papers away from the folding and wrapping mechanism. Fig. 25 is a top view of said conveying mechanism with the addresser removed. Fig. 26 is a cross-section of the said conveyer mechanism on the line 26 26 of Figs. 24 and 25. Fig. 27 is a side view of the assorting mechanism, showing also the relation of said mechanism to the main portion of the machine. Fig. 28 is a front view of said assorting mechanism. Fig. 29 is a top view of said assorting mechanism. Fig. 30 is a detail top view of the control-chain of the assorting mechanism and associated parts. Fig. 31 is a further detail view, on a larger scale, of a portion of the assorting mechanism; and Fig. 32 is a detail view of the shutter which closes the receiving-pocket of the assorting mechanism.

The general method of operation of the machine illustrated in the accompanying drawings and to be described herein is as follows: The papers, magazines, or other articles to be folded, wrapped, addressed, and assorted according to localities, if assorting mechanism be attached to the machine, are placed in quantities upon the shelves of a receiving conveyer or elevator and are carried upward thereby. At the head of the elevator there is a feeding mechanism consisting of vibrating feed-fingers, which engage at each vibration the uppermost paper on the elevator and carry it to one side until it is caught by rapidly-moving tapes, which carry the paper into a folding mechanism. While this is being done, a wrapper feeding and cutting mechanism draws a wrapper from a roll, cuts it, and feeds it into the folding mechanism directly beneath the paper fed therein from the elevator. A folding-knife then descends upon the paper and folds it and the wrapper in the cen-

ter, carrying both downward a short distance until the paper is engaged by fingers projecting from sprocket-chains, which fingers project into the fold of the paper and carry said paper with the wrapper downward into a position opposite a second folding-knife. The fingers are then disengaged from the paper and the second folding-knife moves forward, folding the paper and wrapper a second time and forcing them into one of a series of pockets in a revolving but intermittently-moving carrier. This carrier then revolves, and by so doing causes a projecting flap of the wrapper to receive adhesive paste. The carrier carries the folded paper into a position to be acted upon by an ejector, which ejects it from its pocket in the carrier. It is then received by a delivering-conveyer, which carries it under a brush, by which the pasted flap of the wrapper is pressed down upon the main portion of the wrapper and under an addresser, by which an address-label is affixed to the wrapper. If the machine be provided with assorting mechanism, this delivering-conveyer delivers the folded paper to the assorting mechanism, by which mechanism it is placed in a bag with other papers similarly addressed. If the machine be not provided with assorting mechanism, the delivering-conveyer removes the paper a convenient distance from the addresser and then deposits it.

Mechanism hereinafter described is employed for regulating the speed of the supply-elevator and for preventing the operation of the wrapper-feeding mechanism, the addressing mechanism, and the assorting mechanism if for any reason a paper is not fed forward at any time.

Referring now to the drawings, and at first more particularly to Figs. 1, 2, 3, 9, and 10, 30 and 31 are tight and loose driving-pulleys upon a main driving-shaft 32, which also carries a fly-wheel 33. A stub-shaft 34 is driven from shaft 32 by gears 35, 36, and 37, of which gear 36 is mounted upon a carrier movable in a slot 38, Fig. 3. It is thus possible to employ gears 36 and 37 of different sizes, so as to vary the speed of driving of the shaft 34. Shaft 34 carries a belt-wheel 39, which belt-wheel drives a corresponding belt-wheel on a horizontal shaft 40 by means of a belt 41. The belt-wheel on shaft 40 may be connected to its shaft by means of a hit-and-miss clutch 42. (Shown in detail in Figs. 20 and 21.) This clutch will be fully described hereinafter. For the present it may be assumed that shaft 40 is driven by the belt 41. The shaft 40 is the driving-shaft of the receiving conveyer or elevator. This receiving-elevator consists of two series of platforms 43, each carried by two sprocket-chains 44, Fig. 2, which run over sprocket-wheels mounted upon shafts 45 45. The lower shafts 45 are mounted in bearings in uprights 46. The upper shafts are mounted in movable extensions 46' of these uprights, (shown in Figs. 18 and 19,)



which are employed for taking up slack of the chain and may be adjusted by means of screws 46''.

The two lower shafts 45 are geared to the driving-shaft 40 by worm-gears, the worms of which are of opposite pitch, as shown in Fig. 3, the inner sides of the chains of the two series of platforms running upward. The platforms 43 of the two series are so placed on the sprocket-chains that each platform when moving upward is on the same level as a platform of the other chain and forms therewith a shelf, upon which newspapers, magazines, and other articles may be placed in quantities. The platforms 43 each have side pieces or guides 43', extending upward when the platforms are moved upward for the purpose of regulating the position of the papers or magazines on the platforms, so that they shall be in proper position to be acted upon by the feeding mechanism by which such papers are carried to the folding mechanism. This feeding mechanism is shown most clearly in Figs. 1, 9, and 10. It contains two carriages 50, one of which is shown in Fig. 10, the support of its guide-rods being sectioned for that purpose. Each carriage is reciprocated back and forth during the operation of the machine upon guide-rods 51 by a link 52 and an arm 53, connected to a rock-shaft 54. This rock-shaft is itself vibrated by means of an arm 55 and a link 56, connecting said arm with a pivoted lever 57, Figs. 1 and 3, which is forked at its inner end and is vibrated up and down by an eccentric on the main driving-shaft 32. Each carriage 50 carries a feeding-finger 58, having points or needles adapted to enter the uppermost paper on the elevator and so to grip the same. In my Patent No. 586,327 I have shown a similar mechanism for removing papers successively from an elevator, but in that mechanism the needles of the feeding-fingers are upon the forward end of such fingers, so that they push the papers onward. I find it preferable to place the needles upon the rear end of the feed-fingers instead and to place them so that they are nearly vertical. They thus act as claws to draw the paper from the elevator. To each carriage 50 is pivoted a latch 59, provided at its lower end with a notch adapted to receive a pin 60 upon the feed-finger 58, and thus prevent said feed-finger from falling. A spring 61 connects a bell-crank arm on the feed-finger and the latch 59, and therefore tends both to cause the feed-finger to fall and to pull the latch 59 toward the pin 60, so as to prevent the feed-finger from falling if said latch and pin 60 be in engagement. Each carriage 50 also has a stop-pin 62 to limit the movement of the latch when not in engagement with the pin 60. Pivoted tripping-arms 63 carry pins 64, adapted to engage the latches 59 when the carriages 50 have almost reached the rearward limit of their travel, thus causing said latches to disengage the pins 60 and to release the feed-fingers. At its front end

each feed-finger is provided with a pin 65, adapted to engage an adjustable tripper 66 when the carriage has been moved forward a short distance, causing that end of the feed-finger which carries the needles to rise. The operation of this feed-finger feeding mechanism is as follows: Supposing the carriages 50 to be reciprocating at the instant when observation begins and to be moving toward the rear—that is, toward the right of Fig. 9, the parts being in the position shown in said figure—each latch 59 encounters a pin 64 of a tripping-arm 63 and is disengaged from the pin 60, allowing its feed-finger 58 to fall. The purpose of mounting the tripping-pins 64 upon movable arms will be explained hereinafter. When the feed-fingers fall, their needles engage the uppermost paper upon the elevator, and upon the next forward movement of the carriages 50 the feed-fingers draw said paper forward. They carry the paper forward far enough to cause it to enter the space between rollers 67 and 68, carrying rapidly-moving bands or tapes 69 and 70, and when the paper has reached a position between rollers 67 and 68 the pins 65 upon the feed-fingers engage the inclined edges of the trippers 66 and are depressed thereby, raising the needles from the paper. As the feed-fingers rise their pins 60 push back the latches 59 and then engage the notches therein, so that the feed-fingers are held up until the latches encounter the tripping-pins 64 and are caused thereby to release the feed-fingers. The tapes 69 and 70 are employed to carry the papers from the reciprocating feed-fingers to the position in which they are to encounter the first of the folding-knives. The pulleys over which these belts pass upon the elevator side of the machine are, as already stated, pulleys 67 and 68. As a rule four of each of these tapes are employed, as shown particularly in Fig. 2; but a greater or less number may be employed. At the driving end of the machine the tapes pass over rollers 71 and 72, by which they are driven. The means employed for driving these rollers will be mentioned hereinafter. The rollers 67 of the upper tapes 69 are carried by long arms 73, mounted upon a rock-shaft 74 near the rollers 71. An arm 75, also secured to the rock-shaft 74, carries a friction-roller engaging with a cam 76 upon a shaft 77, driven in a manner to be described hereinafter. As said shaft 77 revolves the arms 73 are alternately raised and lowered. The cam 76 is so formed that the arms are raised before a paper is introduced between the tapes by the feed-fingers 58, so that when the paper is introduced the tapes are separated widely. An instant thereafter the cam permits the arms 73 to fall, so that the paper between the tapes is grasped thereby and carried forward under the primary folding-knife 84. When the paper has reached the proper position under the folding-knife, it is checked by stops 48, Fig. 11, between the tapes. Besides the tapes 68 and 69 side tapes 78 and



79 are employed. Tape 78 is shown in Fig. 9. These tapes are driven by shafts 80 and 81, which are driven by beveled gears from a shaft 82, itself driven by a belt 83 from the driving-shaft of the roller 71. The primary folding-knife 84 slides up and down within suitable guides 85. It is reciprocated by an arm 86, carried by a rock-shaft 87, itself vibrated by an arm 88, to which is connected an eccentric-rod 89, the eccentric of which is mounted upon the shaft 32. Since the arms 73 are pivoted upon the side of the folding-knife 84 opposite the rollers 67, and therefore beyond the point to which the papers are to be fed by the tapes, they are so long that in their up-and-down movement the tension of the tapes 69 is not materially changed.

While the paper from the elevator is being fed under the folding-knife by the feeding devices already described, a wrapper is drawn from a roll, cut, and fed into the folding mechanism directly beneath the said paper and the folding-knife.

90 is the roll of wrapping-paper. It is mounted upon a mandrel 91, which mandrel is revolvably mounted in brackets 92, projecting from the frame of the machine. From the roll 90 the web of wrapping-paper passes over a guide-roller 93 and between feeding-rollers 94 and 95, and thence between the lower runs of the tapes 70 and the upper runs of a third series of tapes 96, Figs. 5, 9, and 10. The feeding-rollers 94 and 95 are driven from the main driving-shaft 32 by a beveled gear-wheel 97, Fig. 1, meshing with a corresponding gear-wheel 98, Figs. 1 and 4, a sprocket-wheel 99, Fig. 4, upon the same shaft as bevel-gear 98, and a sprocket-chain driving a corresponding sprocket-wheel 100 on shaft 77. The sprocket-wheel 100 is loose upon said shaft 77, but may drive the same through a hit-and-miss clutch 101, Fig. 6. This clutch is shown in detail in Fig. 6<sup>a</sup>. It consists of a disk 102, connected to the sprocket-wheel 100 and carrying a projecting pin 103, a corresponding disk 104, carrying a pivoted lever 105, adapted to make contact with pin 103 in one of its positions, and a pivoted operating-lever 106, adapted to trip lever 105 and throw it out of engagement with pin 103 and lock the shaft against rotation. Lever 106 is attached to an operating-rod 107, Fig. 5, extending to an arm 108, Figs. 9 and 10, upon a rock-shaft 109, which rock-shaft also carries an arm 110, from which depends a tripping-rod 111, resting upon the uppermost paper on the elevator. The construction is such that if no papers be upon the elevator or if the papers be fed upward too slowly the hit-and-miss clutch 101 will be opened and the lever 106, by preventing further movement of lever 105, will stop the revolution of the shaft 77.

Upon the shaft 77 is a gear-wheel 112, intermeshing with an intermediate gear-wheel 113. (Shown in dotted lines in Fig. 5.) The intermediate gear 113 intermeshes with a gear-wheel 114 on the shaft of the feeding-

roll 95 and the gear-wheel 114 meshes with a gear-wheel 115 on the shaft of the feeding-roll 94. When shaft 77 is rotated, therefore, the feeding-rolls 94 and 95 also rotate. Rollers 94 and 95, besides being feeding-rollers, are cutting-rollers. Roller 94 is provided with two movable sections 116, extending outward somewhat beyond the true circular periphery of the roller and sliding upon screw-studs 117, Fig. 5, which studs are there shown as recessed in these movable sections 116. Said sections 116 are normally pressed outward by springs 118. Between said sections is a cutting-blade 119. In the face of the roller 95 is a groove 120, corresponding to this cutting-blade 119. Normally the sliding sections 116 of the roller 94 shield this cutting-blade 119; but when said sections come into contact with the face of the roller 95 they are pushed inward, thus exposing the cutting-blade 119, which sinks into the recess 120 in the roller 95, cutting the wrapper-web and detaching the section which has been fed forward in advance of rollers 94 and 95. Roller 95 may also carry an electrotpe-plate 121, to be employed for printing upon the wrappers any suitable words or characters—as, for instance, the name of a newspaper. This electrotpe-plate is shown most clearly in Fig. 7. It is secured to the roller 95 by guiding-studs 122, and springs surrounding the studs tend to press it outward. The studs are so adjusted as to permit the springs to press said electrotpe-plate outward just far enough to engage an inking-roller 123, such inking-roller being set off slightly from the face of the roller 95, so as not to ink any portion of the surface of such roller except the electrotpe-plate. The inking device is supported by a bracket 124 and is driven by gear-wheels from the shaft 77.

The rollers 71, 72, and 125, Fig. 5, by which the tapes 69, 70, and 96 are driven, are themselves driven by pinions 126, 127, and 128, meshing with each other and with a gear-wheel 129, Fig. 1. The gear-wheel 129 is connected by a pinion with gear-wheel 130 on the shaft 77. Roller 72 is mounted to vibrate up and down slightly, but not enough to throw its pinion out of mesh with the pinions of rollers 71 and 125, and is vibrated by two cams 131, Figs. 4 and 5, upon the shaft of feed-roller 95, and by followers 132, connected to rods 133, attached to the bearings of said roller 72. The object of this is to permit the tapes to be driven at a linear velocity much greater than the peripheral speed of the feeding-rolls 94 and 95. When the front end of the web passes between rollers 72 and 125, being fed forward by rolls 94 and 95, rollers 72 and 125 are separated slightly, so that their tapes are out of contact with the paper or else slip idly past it; but at the instant when the knife 119 cuts off a wrapper the cams 131 cause the roller 72 to descend, so that the wrapper is gripped by the rollers 72 and 125 and by the tapes carried thereby and



is carried forward rapidly into the folding mechanism. If the wrapper be not cut evenly by the knife 119, the action of the rollers and tapes will tear it off. The wrapper is stopped 5 under the folding-blades by stops 49. (Shown in Fig. 11.)

From the gear-wheel 115 of feed-roller 94 projects a crank-pin 134, to which a rod 135 is connected. This rod extends to a lever 136, 10 Figs. 9 and 10, mounted loosely upon the same rock-shaft 137 which carries the tripping-arms 63 of the feed-finger feeding mechanism. A lever 138 is secured to the rock-shaft 137 and carries a pin 139, with which the lever 136 engages during the latter half of its 15 stroke when moving toward the elevator, thus lifting the tripping-pins 64 of the arms 63 out of the paths of the latches 59 of the feed-finger mechanism.

The tripper 111, acting through the connecting mechanism on the hit-and-miss clutch 101, through which the wrapper-feeding mechanism is driven, stops the feeding of wrappers whenever there are no papers on the elevator 25 in position to be fed forward into the folding mechanism by the feed-fingers. The trippers 63 in turn act to prevent the feeding of papers from the elevator when the wrapper-feeding mechanism is not running, for the 30 parts are so arranged that the roller 94 always stops when the clutch 101 is opened in such position that the pins 64 of the trippers 63 are out of the paths of the latches 59 of the feed-finger mechanism.

When the primary folding-knife 84 descends, it strikes the paper to be folded at or near its middle and carries it, with the wrapper beneath it, between guide-rollers 140 into a space inclosed by guides 141, Figs. 3 and 8. 40 As soon as the paper has entered the space between these guides 141 the folding-knife rises; but the paper is carried downward by fingers 142, carried by sprocket-chains 143, Figs. 11 and 12, running over sprocket-wheels 45 mounted upon shafts 144, 145, 146, and 147. Shaft 146 is driven by sprocket-chain 148 (shown in dotted lines in Fig. 1 and shown also in Figs. 2 and 4) from the driving-shaft 77 of the wrapper-feeding mechanism. Shaft 50 144 is driven from shaft 146 by means of a shaft 149 and suitable bevel-gears.

The fingers 142, which feed downward the paper, fit into its fold formed by the folding-knife 84. In order that these fingers may 55 leave the paper when it has been fed downward to the proper point opposite the secondary folding-knife 150, the lower shafts 145 and 147, carrying the sprocket-chains 143, are mounted on swinging frames 151. (Shown 60 in Figs. 11, 12, and 13.) These frames are adjustable as to length, so that slack in the sprocket-chains 143 may be taken up. They carry gears 152, meshing with pinions 153 on the shafts 145 and 147, and to the gears are 65 attached cams 154, which at a certain point in their revolution corresponding to the point at which the paper has been fed downward

as far as is desired encounter studs 155 and press the frames outward, thus drawing the fingers 142 out of the fold in the paper. 70

A secondary folding-knife 150 is mounted in suitable slides and is reciprocated back and forth by an eccentric 156 on the driving-shaft 32 and an eccentric-rod 157, lever 158, and connecting-links 159. When this folding-knife moves forward, it encounters the 75 folded paper, at or near the middle thereof, and pushes it through an opening in one of the guides 141 and between guide-rollers 160, as indicated in Fig. 8, thus folding it a second time, depositing it in one of a series of pockets in an intermittently-revolving carrier 161, which pockets successively come to rest opposite the folding-knife 150. 80

The carrier 161 consists of a hub 162, mounted upon a shaft 163 and carrying a series of 85 pockets formed by plates 164 and flat springs 165. The shaft 163 is revolved intermittently by means of a gear 166, Figs. 1 and 4, on the driving-shaft 32, intermeshing with another 90 gear 167, which carries a pin 168, adapted to work in slots of a disk 169 on the shaft 163 and to rotate said disk from one slot to another during each revolution of the gear 167, the disk 169 being stationary except when the 95 pin 168 is working in one of its slots. To hold the shaft 163 stationary while the papers are being pushed in a pocket in the carrier 161, a pivoted lever 170, operated by a cam 171 (shown in dotted lines in Fig. 4) and driven 100 by the gear 167, is provided with a pin 172, which enters one of the slots in the disk 169 as soon as the pin 168 of the gear 167 leaves one of the slots in said disk, thus locking said disk and holding it stationary. A spring 173 105 withdraws the pin 172 as soon as the cam 171 permits.

Each of the plates 164, which form sides of the pockets in the carrier 161, is provided with a circumferential rearward extension or distributor 175 for receiving paste from a paste-roller 176, Figs. 8 and 23. This paste-roller 110 works in a paste-trough 177 and is driven from the shaft 163 by sprocket and spur gearing, as indicated in Fig. 8. When a paper, 115 with its wrapper folded about it, lies within one of the pockets in the carrier 161, a portion of the wrapper projects outwardly, as indicated in Fig. 8. As the carrier revolves the projecting flap of the wrapper passes 120 under a presser-roll 178, which presses the projecting flap of the wrapper down upon the distributor 175 of the corresponding pocket. Since this distributor is covered with paste, the flap of the wrapper pressed down upon it 125 receives paste therefrom. As the carrier 161 revolves still farther each pocket containing a paper comes opposite an ejector 180, which engages the ends of the paper projecting beyond the sides of the carrier 161. This 130 ejector is reciprocated back and forth by an eccentric 181 on the driving-shaft 32, an eccentric-rod 182, rocker-arm 183, and connecting-rod 184.



The papers ejected from the pockets of the carrier 161 by the ejector 180 fall upon a horizontal conveyer formed by two conveyer-chains 190, Figs. 2, 3, 8, 24, 25, and 26. These sprocket-chains run over sprocket-wheels mounted upon shafts 191 and 192. Shaft 191, which is the driving-shaft of the delivering-conveyer, is driven from gear 167, Fig. 4, already mentioned, and so from the main driving-shaft 32, by a gear-wheel 193, meshing with a gear 194 (shown in dotted lines in Fig. 4) upon the same shaft as gear 167. Each sprocket-chain 190 has at intervals projecting teeth which carry the papers along. Inasmuch as a paper when first folded is sometimes more or less filled with air, so that the sheets do not lie as compactly as desired, I provide, besides the sprocket-chains 190, feeding-belts 195 and 196, belts 195 being below and belts 196 being above the path of the paper. The upper runs of the belts 195 travel over the face of the table 197. Belts 195 are driven by pulleys 198 on the shaft 191, being carried over the edge of the table 197 by guide-pulleys 199, and pass around pulleys 200 on the shaft 192. This shaft is connected by gear-wheels 201 and 202 to a shaft 203, upon which belt-pulleys 204 of the belts 196 are mounted. The other belt-pulleys 205 of the belts 196 are mounted upon a shaft 206, supported by swinging levers 207, themselves supported by a shaft 208. To each lever 207 is pivoted an upwardly-curved shoe 209, supported by a spiral spring depending from a pin 210, projecting from the arm 207. Other pins 211 limit the upward movement of the shoes. The ejector 180 carries two projecting pieces 212, provided with pins 213, adapted to engage these shoes 209 as the ejector moves forward and lift the levers 207, thus increasing momentarily the distance between the belts 195 and 196 and facilitating the entrance of the folded papers between said belts. As soon as the ejector moves backward the levers 207 drop.

Directly over the table 197 and adapted to act upon the folded papers as they pass over said table is an addresser 220. (Shown particularly in Figs. 14, 15, 16, and 17.) This addresser consists of a casing inclosing rollers carrying an address-strip and means for applying paste to successive portions of the address-strip provided with a suitable cutting device.

221 within the addresser is a reservoir for paste or other adhesive substance.

222 is a reel of paper having address-labels printed upon it. The paper is perforated.

223 and 224 are two rollers for guiding and feeding the address-strip and a paste-band 225.

226 and 227 are guide-rollers for the paste-band, the latter hanging loosely in a bight of the paste-band within the paste-reservoir 221.

The address-strip in passing over the rollers 223 and 224 is brought into contact with its paste-band, and so has paste applied to

its under side. A spring 228 retards the feeding of the address-strip and keeps it taut at all times.

In front of the casing are cutters or shears, one, 229, being stationary, and the other, 230, being movable and pivotally mounted. Cutter 230 is vibrated by an eccentric 231, Fig. 15, driven by a hit-and-miss clutch 232 from a shaft 233, suitably mounted and carrying a sprocket-wheel 234, which is driven by one of the chains 190.

The operating-lever 235 of the hit-and-miss clutch 232 is mounted upon a shaft 236, which extends to a point between the conveyer-chains 190 and is there provided with a finger 237, which normally projects up through an opening in the table 197 in the path of the papers fed across said table by the sprocket-chains. The hit-and-miss clutch 232 is normally open; but when a paper carried along by the conveyer-chains 190 encounters the finger 237 and presses the same forward and downward against the tension of the spring 238 the clutch 232 is closed and the eccentric 231 is caused to revolve, thus causing the cutter 230 to descend and cut off an address-label from the address-strip. This address-label has been covered on its under side with paste by contact with the paste-belt 225. The cutter 230, by means of its flat lower portion, (shown in Figs. 16 and 17,) presses said label upon the wrapper of the paper, and so affixes it.

The feeding-roller 223 of the addresser is rotated by the ratchet mechanism shown particularly in Fig. 16 and consisting of a pivoted arm 240, the end of which is above the cutter 230 and in such position that when said cutter rises it lifts the arm 240. A spring 241 tends to draw said arm downward. The arm carries a pawl 242, adapted to engage with a ratchet-wheel 243 on a shaft geared to the shaft of the roller 223.

The address-label is affixed to the wrapper without arresting the motion of the chains 190, which carry the folded and wrapped papers onward and deposit them beyond the shaft 192.

The addresser carries a brush 219, which brushes the pasted flap of each wrapper down upon the main portion thereof as the folded and wrapped papers pass under the addresser.

The presser-roll 178, which presses the projecting flaps of the wrappers upon the paste-covered distributors 175 of the carrier 161, is caused to revolve in the same direction as the carrier 161 (the adjacent surfaces of the carrier and roll therefore moving in opposite directions) by a sprocket-chain 250, Fig. 8, driven from the shaft 191 of the chain conveyer which carries the papers away from the carrier 161 and driving a shaft 251, from which shaft the roll 178 is driven by means of a belt 252. The roller 178 therefore serves to prevent accumulation of paste upon the distributors 175 beyond the edges of the wrappers by wiping it off. A scraper 253 re-



moves the paste from the roller 178, keeping its surface clear, the scrapings falling into a receptacle 254, Fig. 8.

Recurring to the receiving-elevator, by which the papers to be folded and wrapped are conveyed in quantities to the vibrating feed-fingers 58, it has already been mentioned that the driving-shaft 40 of this elevator is driven by the belt 41 through a hit-and-miss clutch 42. This clutch is shown in detail in Figs. 20 and 21. It consists of a band-wheel 260, loose upon the shaft 40 and over which the belt 41 passes, a ratchet-wheel 261, likewise loose upon said shaft 40, a carrying-disk 262, mounted within a recess in ratchet-wheel 261 upon the side facing the band-wheel 260 and keyed to shaft 40, a pawl 263, pivoted to the carrying-disk 261, one or more pins 264, carried by the band-wheel 260 and adapted to engage the pawl 263 when the latter is in the position shown in full lines in Fig. 20, and a spring 265, tending normally to hold the pawl 263 out in a position to be engaged by one of the pins 264. The pawl 263 is provided with a bell-crank extension 266, fitting within a recess in the rim of the ratchet-wheel 261. A pivoted ratchet 267 (shown in dotted lines in Fig. 21) is adapted to engage the teeth of ratchet-wheel 261. This ratchet is thrown into and out of engagement with the teeth of the ratchet-wheel by a rod 268, Figs. 3, 9, and 10, depending from a crank-arm 269, (shown in Fig. 2 and in dotted lines in Fig. 9,) secured to the rock-shaft 109, to which the arm 110 of the tripper 111 is secured. When the elevator feeds the papers upward more rapidly than they can be removed by the vibrating feed-fingers 58, the tripper 111 is raised by contact with the upper paper on the elevator, thus raising the rod 268 and moving the ratchet 267 toward the ratchet-wheel 261 until said ratchet engages one of the teeth of the ratchet-wheel. The revolution of the ratchet-wheel is thus checked instantly, while the carrier-disk 226 continues to revolve for an instant. The ratchet-wheel is therefore moved backward relatively to the carrier-disk 262, and since the bell-crank extension 266 of the pawl 263 is thereby carried backward said pawl 263 is moved out of the path of the pins 264 against the tension of the spring 265 into the position shown in dotted lines in Fig. 21. The pawl 263 encounters the hub of the disk 264 and is thereby prevented from moving farther. This instantly checks the revolution of the shaft 40. As soon as the feed-fingers 58 have removed a sufficient number of papers from the elevator to permit the tripper 111 to fall until the ratchet 267 is out of engagement with the teeth of the ratchet-wheel 261 the spring 265 draws the ratchet-wheel 261 forward with reference to the disk 262, moving the pawl 263 into the path of the pins 264. An instant thereafter one of said pins encounters said pawl, and so causes the shaft 40 to commence to revolve again.

In my Patent No. 586,327 and in my application for a patent, Serial No. 688,910, both above mentioned, I have shown elevators the driving-shafts of which are driven through hit-and-miss clutches controlled by automatic trippers; but the clutch herein described is much quicker acting in its operation than the clutches described in said patent and application by reason of having a plurality of pins 264 and a large number of teeth upon the actuating member of the clutch adapted to be engaged by the tripping-ratchet 267. This clutch is capable of regulating the rate of feed of the papers with such nicety that the papers to be removed by the feed-fingers 58 are maintained at practically the same level.

In order to prevent the papers on the elevator from adhering together in such manner that two papers may be removed simultaneously by the feed-fingers 58, I provide a blower 270, Figs. 1 and 3, the blast from which is conveyed upward by the pipe 271 to a horizontal pipe 272 directly beneath the plane of motion of the feed-fingers 58 and perforated on the side nearest the elevator. The blast of air is thus directed between the papers on the elevator, separating each from the other by a film of air, and so destroying adhesion which otherwise might exist between the papers. The feed-fingers are thus enabled to remove the papers one by one from the elevator. The fan 270 may be driven by a belt 273 from the main driving-shaft 32 of the machine or may be driven in any other suitable manner.

The operation of the mechanism as thus far described is as follows: Papers placed in bulk upon the shelves 43 of the delivery conveyer or elevator are carried upward thereby, the wrapping and addressing mechanisms being stationary, until the uppermost paper on the elevator encounters the tripper 111 and raises the same, thus closing the hit-and-miss clutch 101, by which the wrapper-feeding rolls 94 and 95 are driven. As soon as the wrapper-feed roll 94 begins to revolve the tripping-arms 63, controlling the latches 59 of the vibrating feed-fingers 58, vibrate up and down, and on the first backward movement of the carriages 50 these latches 59 are encountered by the pins 64 of the arms 63 and are moved out of engagement with the pins 60 of the feed-fingers 58, thus permitting the feed-fingers to drop and engage the uppermost paper on the elevator. On the next forward movement of the carriages 50 the feed-fingers draw the uppermost paper forward. In the meantime the cam 76 on the shaft 77 has raised the arms 73, carrying the upper feed-tapes 69, so that when the paper fed forward by the feed-fingers 58 enters between the tape-rollers 67 and 68 it has free entrance between said rollers. The pins 65 of the feed-fingers 58 encounter the inclined faces of the trippers 66 and are depressed thereby, thus raising the feed-fingers until they are caught and held in an elevated position by the latches 59. The carriages 50 then



move backward, and at about the same time the cam 76 causes the arm 73 to descend, thus causing the tapes 69 and 70 to carry the paper rapidly onward to a position under the primary folding-knife 84. The side tapes 78 and 79 keep the paper straight and prevent it from swerving to one side or the other. When the paper has reached the proper position under the primary folding-knife 84, its further movement is arrested by the stop 48. (Shown in Fig. 11.) In the meantime the feed-rollers 94 and 95 have drawn forward a portion of the wrapper-flap and have cut the same. This portion of the wrapper - flap when detached is grasped by the tapes 70 and 96 and fed forward into a position directly beneath the folding-knife 84 and beneath the paper to be folded. The wrapper is held in the proper position by the stop 49. (Shown in Fig. 11.) The folding-knife 84 then descends, folding both paper and wrapper and forcing the same between guide-rollers 140 into the space between the guide-plates 141. The feed-fingers 142, carried by sprocket-chains 143, engage the folded paper in the fold thereof and carry the same downward into a position opposite the secondary folding-knife 150. When the paper has reached this position, the cams 154 encounter the studs 155 and move the frames 151 apart, thus freeing the feed-fingers 142 from the folds of the paper. The secondary folding-knife 150 then moves forward, folding the paper and wrapper a second time and forcing the same between guide-rollers 160 into one of the pockets in the intermittently-revolving carrier 161. A flap of the wrapper projects from this pocket when the paper is in place therein, as shown in Fig. 8. As soon as the folding-knife 150 has been withdrawn the carrier 161 commences to revolve, moving another pocket opposite the secondary folding-knife, which pocket also receives a folded paper and wrapper, said paper and wrapper having been fed forward and folded in the same manner as described above. All of the pockets of the carrier 161 successively receive folded and wrapped papers in the same manner. As the carrier 161 moves forward the projecting flaps of the wrappers are successively pressed upon the corresponding paste-distributors 175, which have received paste from the paste-roller 176, so that said wrapper-flaps receive paste upon their under sides. The roller 178 in revolving removes any excess of paste beyond the edge of the wrapper, which paste is scraped from the roller by the scraper 253. As the carrier 161 moves onward each paper is brought opposite the ejector 180 and is moved forward thereby out of the pocket in the carrier 161 and upon the sprocket-chains 190. The paper so deposited is engaged by the projecting feed-fingers of these chains and is carried forward between the tapes 195 and 196, (shown particularly in Figs. 24 to 26,) by which the folds of the paper are pressed firmly together, over the table 197 under the

brush 219, which presses the pasted flap of the wrapper down upon the main portion of the wrapper and under the addresser 220. As each paper in its passage under the addresser encounters the fingers 237 and depresses said finger, as shown in Fig. 15, the hit-and-miss clutch 232, by which the addresser is driven, is closed and the eccentric 231 revolves, causing the cutter 230 to descend, and thus to cut off an address-label from the address-strip 222 and apply the same to the wrapper of the folded paper. The chains 190 continue to feed the folded, wrapped, and addressed paper forward and discharge the same at the left-hand end of the conveyer.

The assorting mechanism, which may form a part of the machine, is shown in Figs. 27 to 32, inclusive. Its location is directly beneath the delivery end of the conveyer which carries the folded and wrapped papers from the intermittently-revolving carrier 161 under the addresser 220, and so onward. 190, in Figs. 27, 28, and 29 are the sprocket-chains of this conveyer.

280 is the main frame of the assorting mechanism. It is provided with bearings for a vertical shaft 281, which carries racks 282, upon which may be placed mail-bags 283 or other suitable receptacles. Shaft 281 is also provided with a bevel gear-wheel 284, meshing with a bevel-pinion 285 on a shaft 286. A gear-wheel 287 is mounted loosely upon shaft 286, but may be placed in driving connection with said shaft through a hit-and-miss clutch 288, similar to the clutch 42, which drives the receiving-elevator. (Shown in Figs. 20 and 21.) Gear 287 is driven by a chain of gears 289, 290, and 291 from a band-wheel 292, which may be driven from any suitable or convenient source of power. Gear 287 normally revolves idly upon the shaft 286; but when the ratchet-lever 325 is moved into engagement with the teeth of the hit-and-miss clutch 288, as shown in Fig. 27, the clutch is closed and shafts 286 and 281 are caused to revolve.

293 is a pocket which receives the folded, wrapped, and addressed papers as they are discharged by the conveyer-chains 190.

294 is an apron which guides the papers into the pocket 293.

295 is a shutter revolvably mounted on the shaft 281, which closes pocket 293 at intervals while the shaft 281 is revolving and moving an empty bag 283 into position beneath pocket 293, as described hereinafter.

296 is a control-chain having one link for each paper folded and addressed. It is a common form of wire chain, the links of which are so constructed that a link may be inserted in any part of the chain or removed therefrom, as may be desired, without difficulty. 297 is the supply-spool upon which this chain is wound at the commencement of operations, and 298 is a winding-up spool driven by a slip-belt 299 from any suitable source of power.



The chain is drawn from the spool 297 by a sprocket-wheel 300, Fig. 30, mounted upon a shaft 301 and rotated at intervals by a ratchet-wheel 302, secured to said shaft, and a ratchet 5 303. The ratchet 303 is supported by a pivoted arm 304 and is moved back and forth by a link 305, connected to a pin 306, projecting from the eccentric 231, which is the eccentric which operates the addresser 220. (Shown in 10 Figs. 2, 3, 14, 16, and 17.) This eccentric 231, as already stated, does not revolve continuously, but only when a paper passes under the addresser. It makes one revolution only for each paper so passing. Each revolution 15 of the eccentric causes the ratchet 303 to move the control-chain 296 on one link.

Certain of the links of the control-chain are provided with side extensions 307. Each such link corresponds to the first name of a new 20 group of names on the address-strip. An arm 308 (shown particularly in Figs. 30 and 31 and shown also in dotted lines in Figs. 29) carries a pin 309, adapted to be engaged by these projections 307. This arm 308 is keyed 25 to a vertical shaft 310, which also has keyed to it another arm 311. (Shown in Figs. 27, 28, and 29.) Upon shaft 192, which carries the sprocket-wheels of the conveyer-chains 190, is an arm 312, provided with two projecting pins 313. Arm 311 is normally out of the 30 path of these pins 313; but when pin 309 is engaged by one of the projections 307 of the control-chain, arm 311 is moved into the path of the pins 313, and when one of said pins 35 encounters said arm 311 the latter is moved onward still farther.

The hub of the shutter 295 is provided with a horizontal disk or table 315, Figs. 28, 30, 31, and 32, which carries a pivoted latch 316. 40 This latch coacts with a pin 317, carried by arm 308. The portion of the edge of the latch with which said pin 317 is normally in contact has the outline of the arc of a circle struck from the center of shaft 310. A spring 318, 45 Fig. 31, tends to hold the latch 316 against the shaft 281. A spring 319 tends to draw the shutter 295 into the position shown in dotted lines in Fig. 27 under the pocket 293, so as to close this pocket; but such movement 50 is prevented normally by the pin 317 engaging the latch 316.

When one of the projections 307 of the control-chain engages pin 309 of arm 308, said arm is moved to the left of Figs. 29, 30, and 55 31 until the pin 317 is opposite a notch 320 in the face of latch 316. The spring 319 is thus permitted to draw the shutter 295 slightly to the left until the pin 317 lies within the notch 320. The arm 308 is thus prevented from 60 moving back to its first position, to which position a spring 314, Fig. 29, tends to return it.

When the pin 317 lies within the notch 320, the arm 311 is in the path of the pins 312, which revolve with shaft 212. One of these 65 pins then encounters the arm 311 and moves it and the arm 308 still farther to the left until the pin 317 has passed beyond the latch 316.

The spring 319 is thus permitted to draw the shutter 295 under the pocket 293, completely closing said pocket. 70

The operation by which the shutter 295 is drawn under the pocket 293 takes place in an instant of time—less than the time intervening between the feeding of two consecutive papers by the chains 190 into the pocket 293. 75

Shutter 295 is provided with a cam-groove 321, which when the shutter moves shifts a sliding rod 322 to one side. Rod 322 is connected by a bell-crank 323 to a link 324, connected to the ratchet 325 of the hit-and-miss 80 clutch 288. When rod 322 is moved to the right, as it is when the shutter 295 moves under the pocket 293, ratchet 325 is moved away from the ratchet-wheel of the clutch 288, thus closing said clutch and causing the shaft 281 85 to revolve, thus moving a new bag 283 under the pocket 293.

To the hub of the shutter 295 is keyed a pinion 330. Shaft 281 carries a gear 331, meshing with a gear 332, secured to the spindle of a mutilated gear 333, the teeth of which 90 are adapted to mesh with pinion 330. When a new bag 283 has been moved nearly into position under the pocket 293, the teeth of gear 333 engage the teeth of pinion 330 and move 95 the shutter 295 back from under the pocket 293, thus permitting papers which have accumulated in said pocket to fall into the bag 283 beneath. The capacity of the pocket 293 is sufficiently great so that it may hold all 100 the papers that are fed into it while a new bag is being moved forward into position under the pocket.

Having thus completely described my invention, what I claim, and desire to secure by 105 Letters Patent, is—

1. The combination of two conveyers, provided with projecting feed-fingers adapted to engage a folded paper in the fold thereof, and feed the paper forward. 110

2. The combination, with conveyers provided with projecting feed-fingers adapted to engage a folded paper in the fold thereof, and so to carry it onward, of means for delivering a folded paper to the conveyers. 115

3. The combination, with two conveyers, provided with projecting feed-fingers adapted to engage a folded paper in the fold thereof, and feed the paper forward, of means for disengaging said feed-fingers from the paper. 120

4. The combination, with conveyers provided with projecting feed-fingers adapted to engage a folded paper in the fold thereof, and so to carry it onward, of means for delivering a folded paper to the conveyers, and means for 125 disengaging the feed-fingers from the paper.

5. The combination, with conveyers provided with projecting feed-fingers adapted to engage a folded paper in the fold thereof, and so to carry it onward, of means for delivering 130 a folded paper to the conveyers, and means for moving said conveyers apart, at a releasing-point, thus disengaging the feed-fingers from the paper.



6. The combination, with conveyers provided with projecting feed-fingers adapted to engage a folded paper in the fold thereof, and so to carry it onward, of means for delivering a folded paper to the conveyers, said conveyers passing around guide-pulleys, at a releasing-point, which are mounted in laterally-movable bearings, and means for separating said pulleys, when the feed-fingers have reached the releasing-point, thereby releasing said fingers from the paper.

7. The combination, with conveyers provided with projecting feed-fingers adapted to engage a folded paper in the fold thereof, and so to carry it onward, of means for delivering a folded paper to the conveyers, said conveyers passing around guide-pulleys, at a releasing-point, which pulleys are mounted in laterally-movable bearings, and cams which separate said pulleys, when the feed-fingers have reached the releasing-point, thereby releasing said fingers from the paper.

8. In a paper-folding mechanism, the combination, with a folding device, of feed-fingers adapted to engage a paper folded by said folding device in the fold formed thereby, and to carry the paper away from said folding device, and means for carrying and moving said feed-fingers.

9. In a paper-folding mechanism, the combination, with a reciprocating folding-knife, of feed-fingers adapted to engage a paper folded by said folding device in the fold formed thereby, and to carry the paper away from such folding-knife, and means for carrying and moving said feed-fingers.

10. In a paper-folding mechanism, the combination, with a folding device, of feed-fingers adapted to engage a paper folded by said folding device in the fold formed thereby, and to carry the paper away from said folding device, means for carrying and moving said feed-fingers, and means for disengaging said feed-fingers from the paper.

11. In a paper-folding mechanism, the combination, with reciprocating primary and secondary folding-knives, of feed-fingers, projecting from endless conveyers, adapted to engage a paper in the fold formed by the first folding-knife, and to convey the paper to a position opposite the second folding-knife, and means for disengaging the feed-fingers when the paper has been moved into such position.

12. In paper-folding mechanism, the combination, with reciprocating primary and secondary folding-knives, of feed-fingers, projecting from endless conveyers, adapted to engage a paper in the fold formed by the first folding-knife, and to convey the paper to a position opposite the second folding-knife, and means for moving the conveyers apart when the paper has reached such position, thereby disengaging the feed-fingers.

13. The combination, with a web feeding and cutting device comprising rolls adapted to draw a web from a source of supply and

to divide the same into sections, of coacting feed-tapes adapted to act upon opposite sides of the advanced section of the web as it passes from said cutting device, and to feed such section forward at a greater speed than that at which it is delivered from the cutting device, a cam on the shaft of one of said rolls, and mechanism operated thereby for holding said tapes apart until the cutting device has acted upon the advanced section of the web, and then bringing said tapes together.

14. In a wrapping mechanism, the combination, with a series of movable pockets provided with paste-distributing surfaces, and means for applying paste thereto, of means for placing in such pockets objects having wrappers about them, each wrapper having an outwardly-projecting flap, means for pressing such projecting flap upon one of the paste-distributing surfaces, and means for ejecting the objects from the pockets and for pressing down the pasted flaps of the wrappers.

15. In a wrapping mechanism, the combination, with a movable carrier, provided with a series of pockets each having a paste-distributing table upon its rear side, means for driving the carrier, and means for applying paste to such tables, of means for placing in such pockets objects having wrappers about them, each wrapper having a flap which projects outwardly from the pocket, means for pressing such flaps down upon the paste-table as the carrier moves, and means for ejecting the objects from the pockets and for pressing down the pasted flaps of the wrappers on the main portions of said wrappers.

16. In a wrapping mechanism, the combination, with mechanism for feeding articles to be wrapped, and wrapper-feeding mechanism, of a stop-motion device controlling the wrapper-feeding mechanism, and arranged to stop the operation thereof when no articles to be wrapped are within the range of action of the corresponding feeding mechanism, and another stop-motion device, controlling the mechanism for feeding objects to be wrapped, and operated by the wrapper-feeding mechanism, and arranged to stop the operation of the mechanism for feeding objects to be wrapped when the wrapper-feeding mechanism is not operating.

17. In a paper folding and wrapping mechanism, the combination, with a reciprocating member having a feed-finger adapted to grasp a paper and carry the same forward during the forward movement of the reciprocating member, means for holding said feed-finger out of action during its return movement, and a movably-mounted tripper adapted to release said feed-finger, of wrapper-feeding rolls, and means operated thereby for vibrating said tripper.

18. In a paper folding and wrapping mechanism, the combination, with an elevator, a reciprocating member having a vibrating feed-finger adapted to remove papers from said elevator during the forward movement



of said reciprocating member, means for holding said feed-finger out of action during its return movement, and a movably-mounted tripper adapted to release said feed-finger, of wrapper-feeding rolls, means operated thereby for vibrating said tripper, a clutch controlling the operation of said rolls, and a tripper which opens said clutch when no papers are within the range of action of the vibrating feed-finger.

19. The combination, with paper-folding mechanism, of a conveyer adapted to receive the folded papers therefrom and to convey the same to an addressing device, a clutch, normally open, through which said addressing device is driven, and an operating member, located in the path of papers carried by the conveyer, and arranged to be displaced by such papers in passing, adapted when so displaced to close the clutch and cause the operation of the addressing device.

20. The combination, with paper-folding mechanism, of a conveyer adapted to receive the folded papers therefrom and convey the same to an addressing device, and moving belts arranged to press the folds of the papers together while on the conveyer, and mounted at the receiving end of the conveyer upon pulleys carried by automatically-adjustable hangers, whereby the tapes are adjusted to different thicknesses of papers.

21. In a machine for assorting newspapers, magazines, and the like, the combination, with feeding mechanism, a pocket adapted to receive articles therefrom, a series of receptacles, movably mounted, arranged to receive articles from said pocket successively, and mechanism which prevents the escape of articles from said pocket, at intervals, and simultaneously moves a new receptacle into position to receive articles from said pocket.

22. In a machine for assorting newspapers, magazines, and the like, the combination, with feeding mechanism, a pocket adapted to receive articles therefrom, a series of receptacles, movably mounted, arranged to receive articles from said pocket successively, and mechanism which prevents the escape of articles from said pocket, at intervals, and simultaneously moves a new receptacle into position to receive articles from said pocket, said mechanism having a controlling device which regulates the number of articles deposited in each such receptacle.

23. In a machine for assorting newspapers, magazines, and the like, the combination, with feeding mechanism, a pocket adapted to receive articles therefrom, a series of receptacles, movably mounted, arranged to receive articles from said pocket successively, and mechanism which prevents the escape of articles from said pocket, at intervals, and simultaneously moves a new receptacle into position to receive articles from said pocket, said mechanism having an adjustable controlling device which regulates the number of articles deposited in each such receptacle.

24. In a machine for assorting newspapers, magazines, and the like, the combination, with feeding mechanism, a pocket adapted to receive articles therefrom, a series of receptacles, movably mounted, arranged to receive articles from said pocket successively, and mechanism which prevents the escape of articles from said pocket, at intervals, and simultaneously moves a new receptacle into position to receive articles from said pocket, said mechanism having a control-chain certain of the links of which are provided with actuating devices, by the location of which the number of articles deposited in each such receptacle is regulated.

25. In a machine for assorting newspapers, magazines, and the like, the combination, with a pocket adapted to receive articles to be assorted, and a series of receptacles, movably mounted, arranged to receive articles from said pocket successively, of mechanism which at intervals prevents the escape of articles from said pocket and moves a new receptacle into position to receive articles therefrom, and a controlling device arranged to cause said mechanism to operate when a predetermined number of articles has entered each receptacle.

26. In a machine for assorting newspapers, magazines, and the like, the combination, with a pocket, open at the bottom, adapted to receive articles to be assorted, and a series of receptacles, movably mounted, arranged to be moved under said pocket, successively, of means for closing said pocket, means for moving said receptacles successively beneath the pocket, a controlling device arranged to close said pocket and to cause a new receptacle to be moved under the same, when a predetermined number of articles has entered each receptacle, and means for opening said pocket when a new receptacle has reached the position beneath said pocket.

27. In a machine for assorting newspapers, magazines, and the like, the combination, with a pocket, open at the bottom, adapted to receive articles to be assorted, and a series of receptacles, movably mounted, arranged to be moved under said pocket, successively, of a shutter for closing said pocket, means for operating the same, means for moving said receptacles successively beneath said pocket, and a controlling device, arranged to cause a new receptacle to be moved under the pocket, and to cause said shutter mechanism to close said pocket while a new receptacle is being moved thereunder, when a predetermined number of articles has entered each receptacle.

28. In a mechanism for assorting newspapers, magazines and the like, the combination, with a pocket, open at the bottom, adapted to receive articles to be assorted, and a series of receptacles, movably mounted, arranged to be moved under said pocket, successively, of means for closing said pocket at intervals, mechanism, controlled by a clutch,



for moving the receptacles successively under said pocket, a controlling device arranged to close said clutch and cause a new receptacle to be moved under the pocket, when a predetermined number of articles has entered each receptacle, and to cause said pocket to be closed while a new receptacle is being moved into position, and means for opening the clutch when each receptacle has reached the position beneath said pocket.

29. In a mechanism for assorting newspapers, magazines, and the like, the combination, with a pocket, open at the bottom, adapted to receive articles to be assorted, and a series of receptacles, movably mounted, arranged to be moved under said pocket, successively, of a shutter for closing said pocket, mechanism, controlled by a clutch, for moving the receptacles successively under the pocket, a controlling device arranged to cause said shutter mechanism to close said pocket when a predetermined number of articles has entered each receptacle, means, operated by the shutter mechanism, for closing said clutch when the shutter is closed, and means for opening said clutch and the pocket when a new receptacle has been moved into position beneath the pocket, substantially as described.

30. In a machine for folding, wrapping, addressing, and assorting newspapers, and the like, the combination, with folding and wrapping mechanism, an addressing device, and a conveyer arranged to convey the papers from the folding and wrapping mechanism to the addressing device, of assorting mechanism which receives the addressed articles, arranged to divide the same into lots and having a controlling member, separate from the addresser, by which the operation of the assorting mechanism is regulated.

31. The combination, with an addressing device, adapted to address newspapers and the like, of an assorting mechanism which receives addressed articles from said addressing device, said assorting mechanism having a pocket adapted to receive the articles, a series of receptacles adapted to be moved under said pocket successively, means for closing said pocket at intervals, a controlling device, operated each time the addressing device operates, and means operated thereby for moving a new receptacle into position beneath the pocket after a predetermined number of articles have entered each receptacle, and for closing said pocket while each new receptacle is being moved into position.

32. The combination, with paper-folding mechanism, an addressing device, a conveyer adapted to receive the folded papers and convey them to said addressing device, an assorting mechanism adapted to receive the addressed papers and to assort them into lots, and an operating member, located in the path of papers on the conveyer, and arranged to be displaced by such papers in passing, adapted to cause the operation of both the address-

ing device and the assorting mechanism when so displaced.

33. In an assorting mechanism, the combination, with a revoluble shaft carrying racks for a series of removable receptacles, means for rotating said shaft, a pocket located over said receptacles, and adapted to deposit articles therein, means for closing said pocket at intervals, a controlling device arranged to close said pocket and to cause said shaft to move a new receptacle into position beneath the pocket, when a predetermined number of articles has entered each receptacle, and means for opening said pocket.

34. In an assorting mechanism, the combination, with feeding mechanism, a controlling device and means operated thereby for dividing the articles fed forward into lots, and an operating member, located in the path of articles on the conveyer, and arranged to be displaced by such articles in passing, adapted to operate the controlling device each time it is so displaced.

35. In a machine for assorting newspapers, magazines, and the like, the combination, with feeding mechanism, of an assorting mechanism for separating the articles fed forward, into lots of predetermined and variable numbers, said assorting mechanism including a controlling-chain divided into sections by links provided with actuating devices, the intermediate links not being so provided, the links in each section corresponding to the number of articles to be placed in the corresponding lot, and means controlled by said actuating devices for dividing the articles into the lots.

36. In a machine for assorting newspapers, magazines, and the like, the combination, with a pocket adapted to receive articles to be assorted, and a series of receptacles, movably mounted, arranged to receive articles from said pocket successively, of mechanism which at intervals prevents the escape of articles from said pocket and moves a new receptacle into position to receive articles therefrom, a controlling-chain divided into sections by links provided with actuating devices, the intermediate links not being so provided, the links in each section corresponding to the number of articles to be placed in the corresponding lot, means for feeding said chain forward link by link as articles are deposited in said pocket, and means operated by said actuating devices for setting in operation the mechanism for closing the pocket and for moving a new receptacle into position.

37. In a machine for assorting newspapers, magazines, and the like, the combination, with a pocket, open at the bottom, arranged to receive articles to be assorted, a spring-operated shutter arranged to close said pocket at intervals, and a tripping device normally holding the shutter against the tension of the spring, of a controlling device, operated each time an article enters said pocket, provided with actuating devices by which, when predeter-



mined numbers of articles have entered said pocket, said shutter is released, and power mechanism for automatically moving said shutter backward against the tension of said spring.

38. In a machine for assorting newspapers, magazines, and the like, the combination, with a pocket, open at the bottom, arranged to receive articles to be assorted, a spring-operated shutter arranged to close said pocket at intervals, and a tripping device normally holding the shutter against the tension of the spring, of a series of receptacles, movably mounted, arranged to receive articles from said pocket, when open, successively, means for moving a new receptacle into position beneath said pocket at intervals, a controlling device, operated each time an article enters said pocket, provided with actuating devices by which, when predetermined numbers of articles have entered said pocket, said shutter is released, and the mechanism which moves the receptacles is operated, and means, operated by the mechanism for moving said receptacles, for automatically moving the shutter backward as a new receptacle is moved into position beneath the pocket.

39. In a machine for assorting newspapers, magazines, and the like, the combination, with a pocket, open at the bottom, arranged to receive articles to be assorted, a shutter and operating mechanism arranged to close said pocket at intervals, and a controlling device, operated each time an article enters said pocket, which causes said shutter-operating mechanism to operate when predetermined numbers of articles have entered said pocket, of a series of receptacles, movably mounted,

and arranged to be moved successively into position beneath said pocket, means for so moving said receptacles, including a clutch by which the motion of the receptacles is controlled, a cam on the shutter, a follower therefor connected to the operating device of the clutch and arranged to close said clutch when the shutter closes the pocket, and to open said clutch when the shutter is moved away from said pocket, and means for automatically moving the shutter away from the pocket as a new receptacle is moved into position beneath said pocket.

40. The combination, with a conveyer adapted to receive newspapers, magazines, and the like, and to carry the same to a feeding mechanism, adapted to remove such articles from said conveyer, of a clutch, through which said conveyer is driven, having driving and driven members, a movable pawl on one of said members adapted to engage a projection on the other member, a movable ratchet-wheel to which said pawl is connected, said ratchet-wheel being adapted, when moved backward with reference to its support, to move the pawl out of engagement with said projection, a ratchet adapted to engage and hold said wheel, and means for moving said wheel forward when released by said ratchet; of a tripper, controlling said ratchet, and operated by contact with the articles on the conveyer.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

LEE A. AGNEW.

Witnesses:

RITA BRADT,  
H. M. MARBLE.