

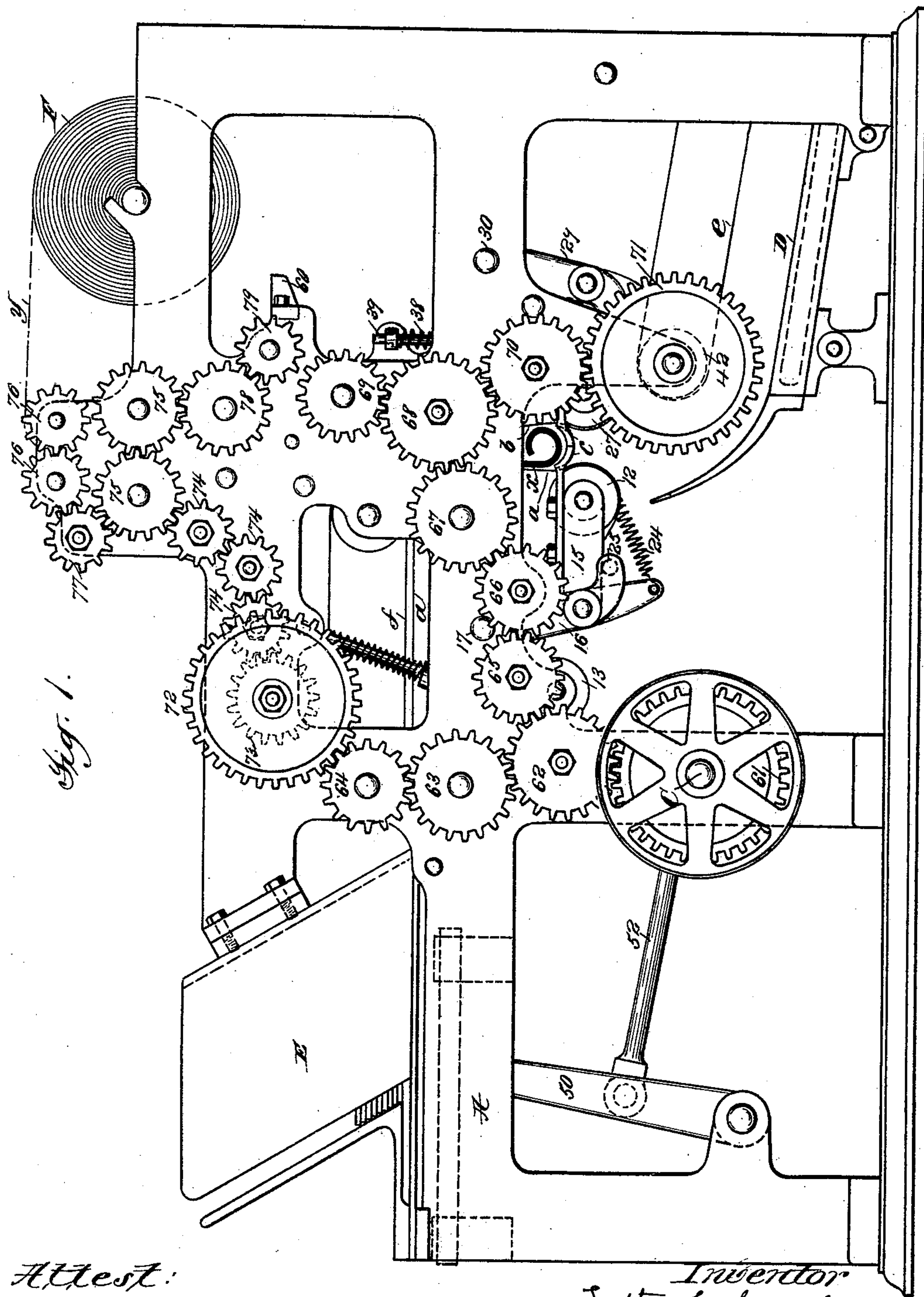
(No Model.)

5 Sheets—Sheet 1.

L. C. CROWELL.
NEWSPAPER WRAPPING MACHINE.

No. 500,536.

Patented June 27, 1893.



Attest:

Geo H. Doty
William H. Kennedy.

Inventor
Luther C. Crowell
by
Philip Munn & Phelps
Attys

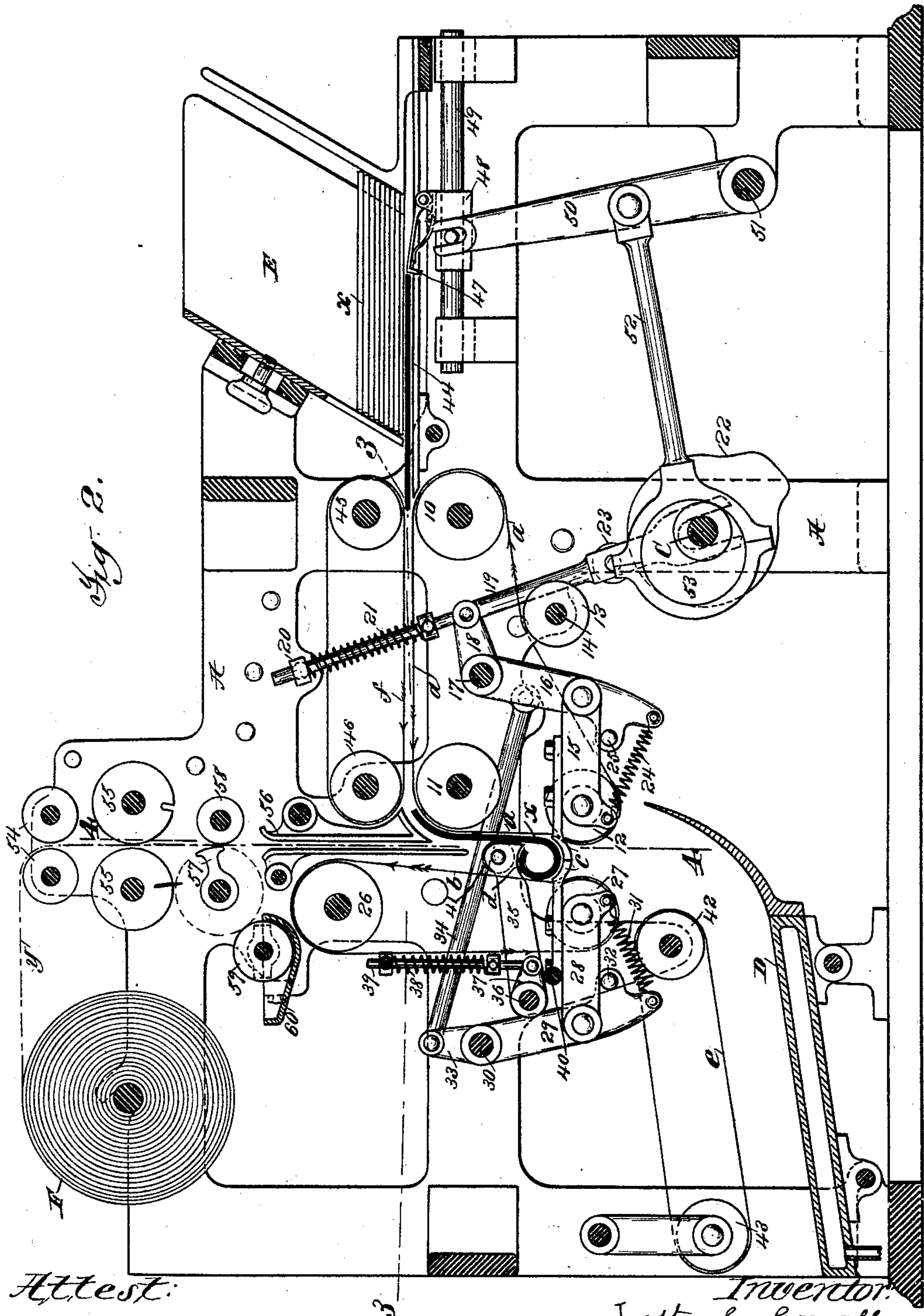
(No Model.)

5 Sheets—Sheet 2.

L. C. CROWELL.
NEWSPAPER WRAPPING MACHINE.

No. 500,536.

Patented June 27, 1893.



Attest:

Geo. H. Bots
William H. Kennedy.

Inventor:

Lucien C. Crowell
Philip Munn & Phelps
Attys

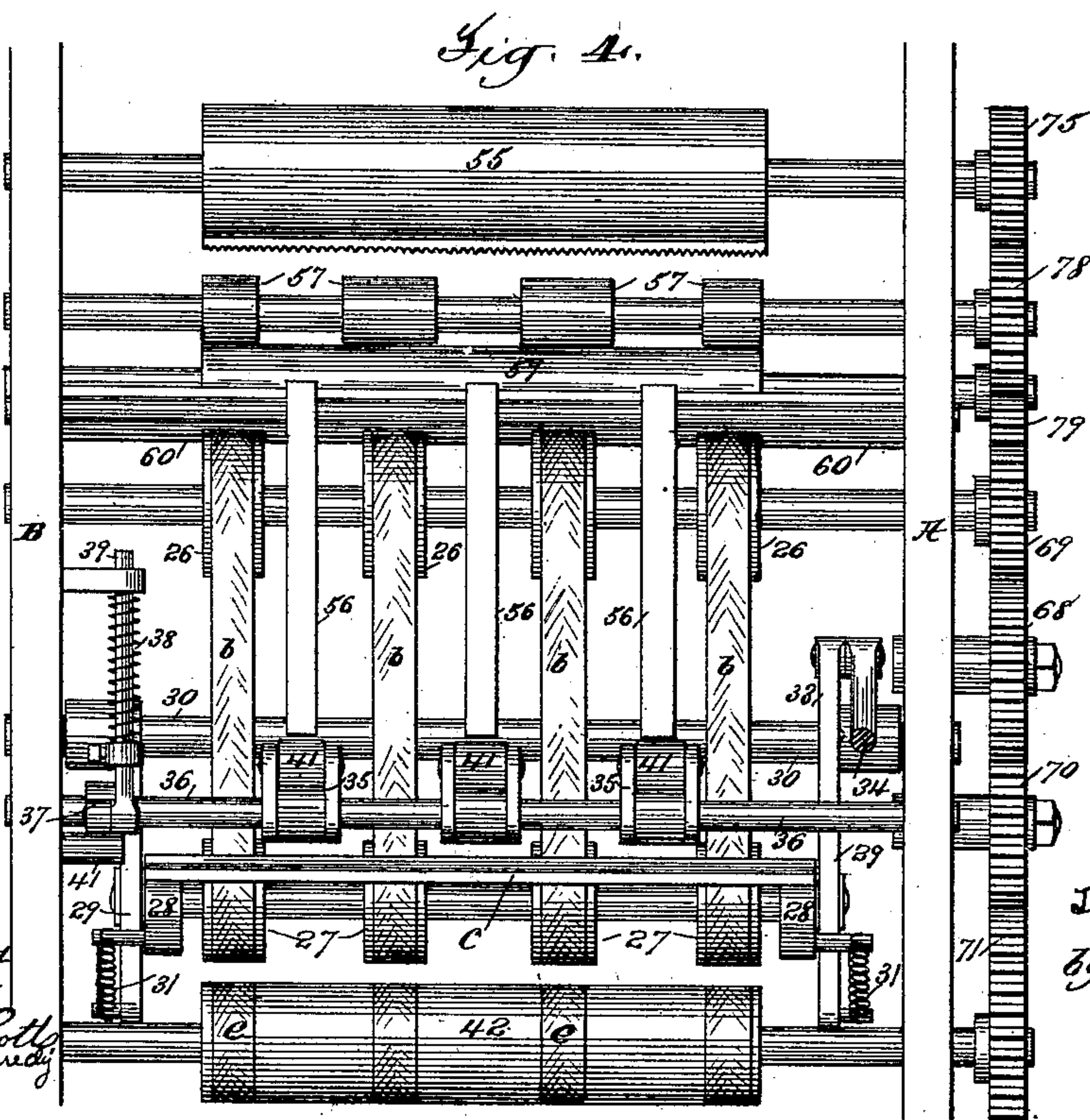
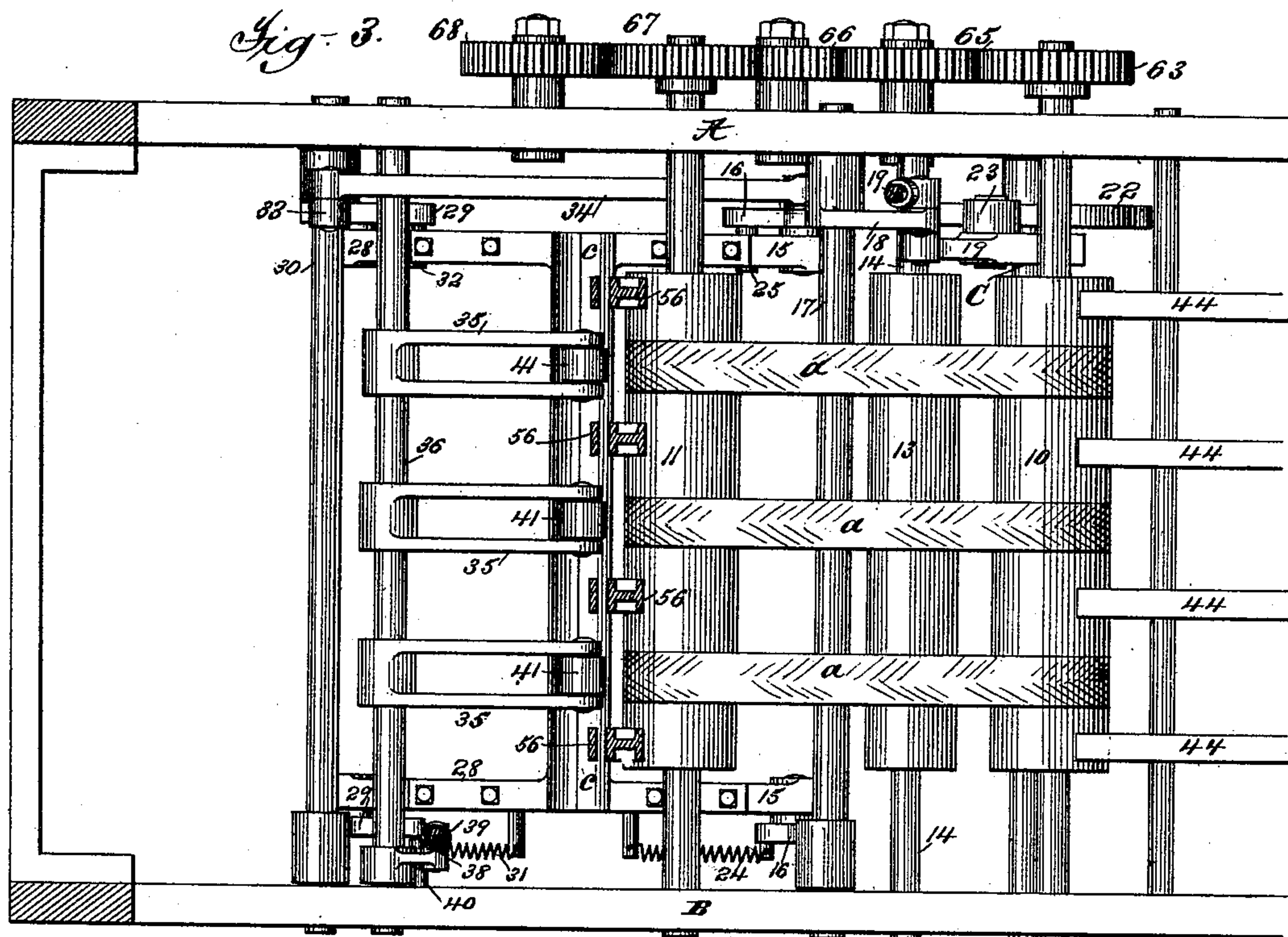
(No Model.)

5 Sheets—Sheet 3.

L. C. CROWELL.
NEWSPAPER WRAPPING MACHINE.

No. 500,536.

Patented June 27, 1893.



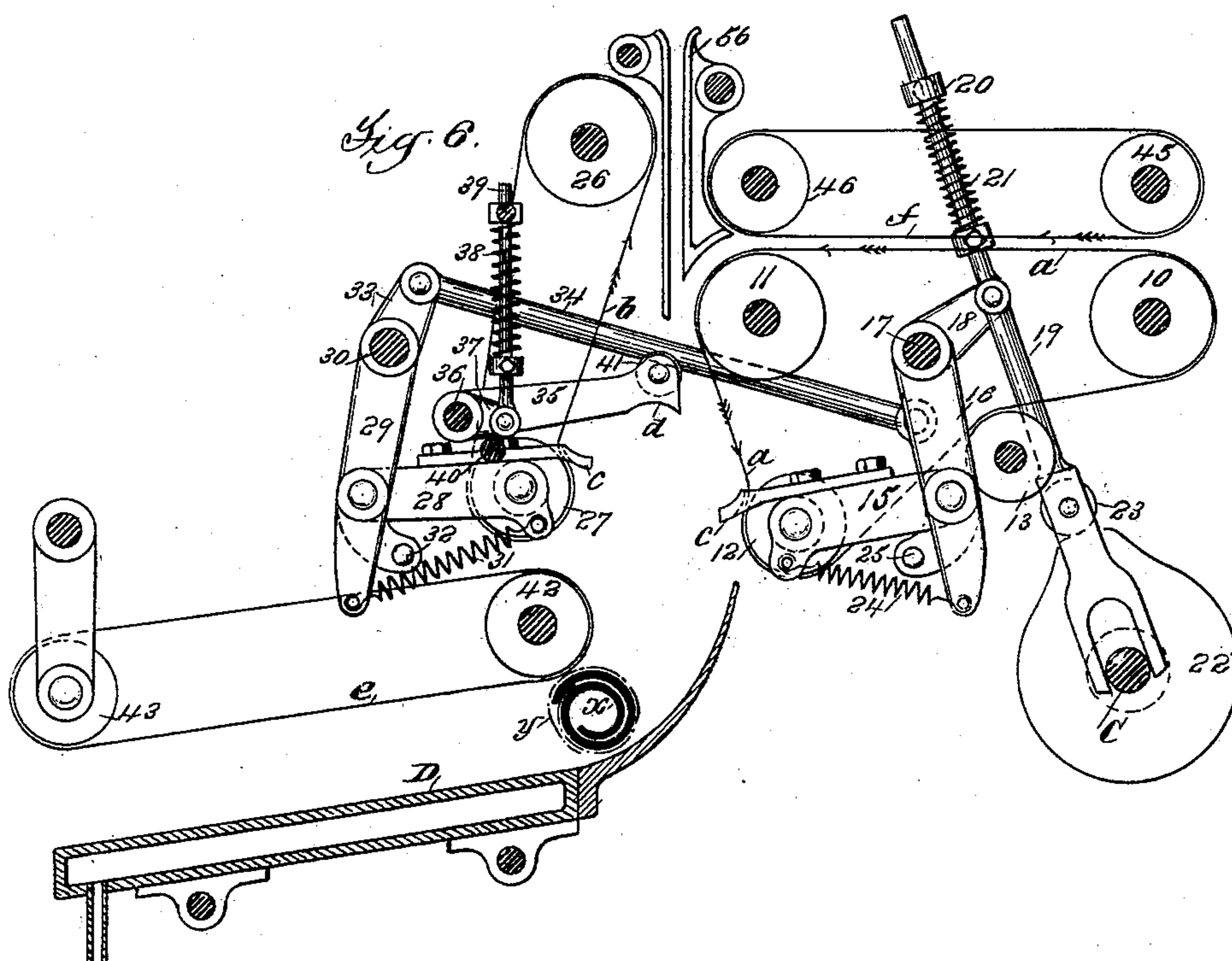
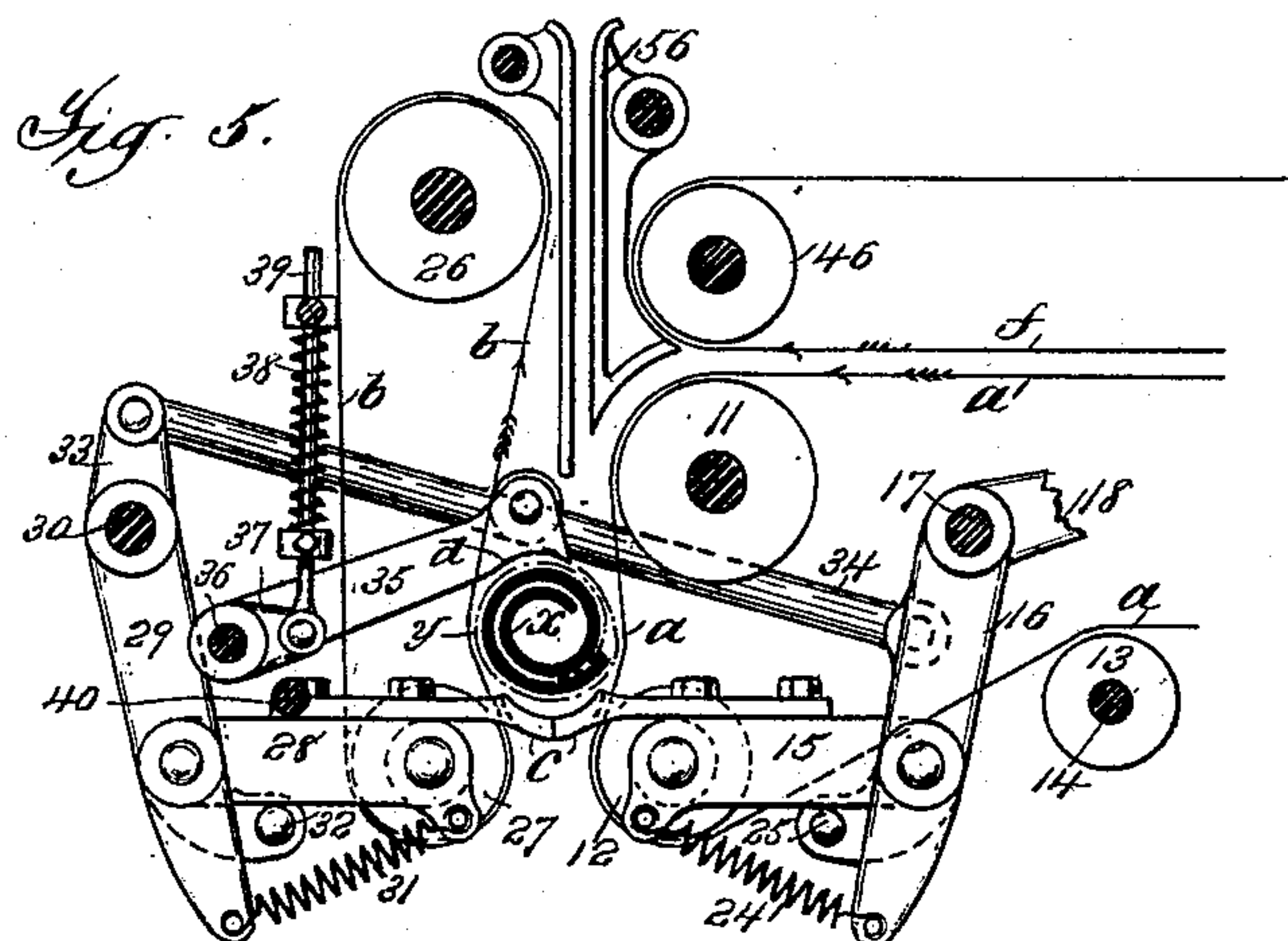
Attest
Geo. H. Potts
Wm. H. Kennedy

Inventor
L. C. Crowell
By Philip M. Munson
Attys

5 Sheets—Sheet 4.

No. 500,536.

Patented June 27, 1893.



Attest:

William H. Kennedy.

Geo. H. Botto.

Inventor:

Justin C. Crowell

By

Philipps Museum & Phelps

Allys

(No Model.)

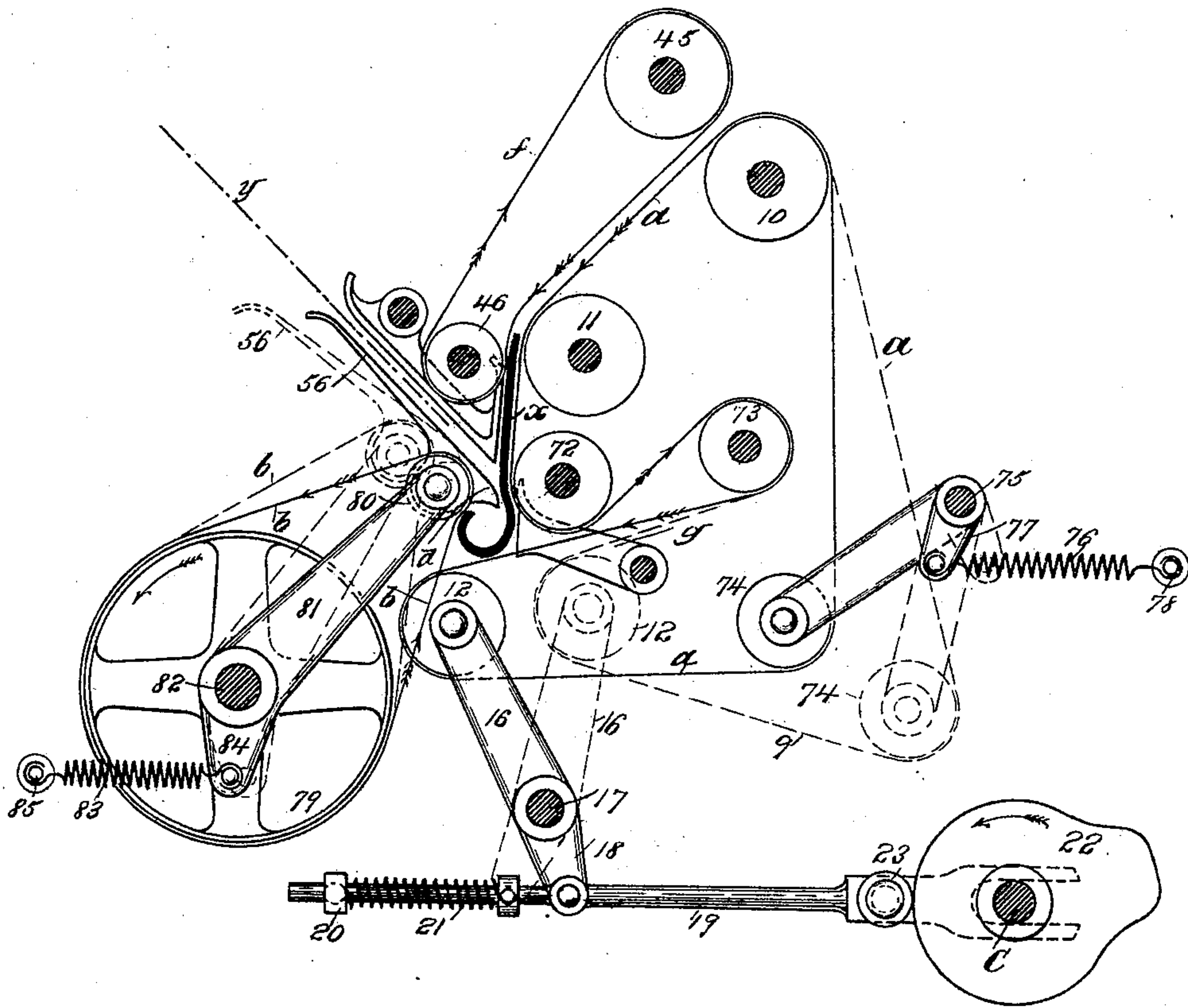
5 Sheets—Sheet 5.

L. C. CROWELL.
NEWSPAPER WRAPPING MACHINE.

No. 500,536.

Patented June 27, 1893.

Fig. 7.



Attest:
William T. Kennedy
Geo. A. Botts

Inventor:
Lester C. Crowell
by
Philip M. Munson & Phelps
Attys

UNITED STATES PATENT OFFICE.

LUTHER C. CROWELL, OF BROOKLYN, NEW YORK.

NEWSPAPER-WRAPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 500,536, dated June 27, 1893.

Application filed September 24, 1892. Serial No. 446,782. (No model.)

To all whom it may concern.

Be it known that I, LUTHER C. CROWELL, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Newspaper-Wrapping Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of the present invention is to provide an improved wrapping machine of that class used in wrapping newspapers and other publications for mailing and generally known as newspaper wrapping machines, and especially to provide a simple and efficient wrapping machine of high capacity.

In another application, Serial No. 432,363, filed May 9, 1892, I have described and claimed broadly a machine for wrapping newspapers and other publications in which the paper or other publication is rolled into circular form by feeding rollers, tapes, or other suitable feeding devices, engaging the outer surface of the paper, a wrapper wound about the paper and its pasted end secured, and the wrapped product delivered endwise or sidewise from between the feeding devices.

The invention in the present case relates to machines operating on this principle, in which feeding belts are used for advancing the paper during the rolling operation, and the invention consists broadly in the combination with feeding belts arranged to form a wrapping space between them and co-acting to roll a paper and wrapper together within the wrapping space, of means for delivering the paper from the belts, and in various constructions and combinations of parts all as fully described and claimed hereinafter. It is evident that the feeding belts and parts co-acting therewith to roll the paper and wrapper and secure the latter may be varied, and that the wrapped paper may be delivered in different ways. In constructions employing the feeding belts, however, it is preferable that the paper be delivered sidewise from between the belts, that is, in a direction parallel with their movement, as the belts have a tendency to hug the wrapped paper, and its delivery endwise, that is, in a direction transverse to the movement of the belts, would require a complicated construction of parts co-

operating therewith or a wide separation of the belts for delivery. I prefer, therefore, to deliver the paper sidewise, and I preferably use but two series of belts inclosing the wrapping space on opposite sides in combination with guides which direct the paper in a circular path as it is advanced by the belts, so as to secure its proper rolling, and I preferably deliver the paper in the line of feed of one set of the belts by separating the belts and co-operating guides so as to open the wrapping space on that side, the wrapped product thus being fed out and delivered by one set of the belts, the parts being preferably so arranged that the wrapping space is opened on the lower side, so that gravity tends to force the paper from the wrapping space, and this, together with the feed of one set of the belts, insures the quick delivery of the wrapped paper.

I preferably provide means by which the wrapped paper is pressed outward from the wrapping space as the latter is opened, and for this purpose I prefer to use a spring pressed guide which extends over the top of the wrapping space between the two series of belts, this guide being so mounted and arranged and the spring pressure so adjusted, that the guides are forced upward against the tension of the spring as the paper is wrapped, the spring thus being put under tension which is utilized in delivering the paper by pressing the guides downward as the wrapping space is opened. The belts may be of any suitable width and number, but I prefer to use belts of moderate width and to place them quite close together, so that a considerable surface of the paper is engaged thereby.

The wrapped papers may be delivered directly from the wrapping devices, but I prefer to transfer them from the wrapping devices to heating devices arranged to hold the paper and pasted wrapper in position until the paste has set, thus increasing the speed at which the papers may be wrapped and delivered. Any suitable means may be used for this purpose but I prefer to transfer the wrapped papers to a table made hollow and heated in any suitable manner, by steam or otherwise, and advance them by rolling them over the table, preferably by means of a series of feeding belts, thus holding the wrapped

paper in circular form with the wrapper pressed down during the operation of drying the pasted wrapper. The papers and wrappers, or either of them, may be fed to this wrapping mechanism by hand, but suitable feeding devices for automatically advancing both the papers and wrappers to the wrapping mechanism in proper time will preferably be combined therewith so as to form an automatic high capacity machine.

The papers may be supplied to the machine folded or partially folded, or may be folded by mechanism embodied in or forming a part of the machine. The wrappers also may be previously cut to the desired size and fed to the wrapping mechanism as sheets, or fed from the web and severed in the machine. The wrapping mechanism may be combined with suitable devices to form an independent wrapping or folding and wrapping machine, or the wrapping mechanism may be combined with any of the ordinary forms of folding and delivery mechanisms now in use in printing machines, so that the papers may be printed, folded, wrapped, and delivered by a single machine, my improved wrapping mechanism being of sufficient capacity to be applicable to high speed web printing machines.

In the accompanying drawings forming a part of this specification, I have shown for the purpose of illustration a complete independent wrapping machine of the preferred form, which will be found a simple and efficient embodiment of the present invention, and a modified form of the wrapping mechanism, and a detailed description of the same will now be given and the features forming the invention specifically pointed out in the claims.

In the drawings—Figure 1 is a side elevation of the gear side of the machine. Fig. 2 is a sectional elevation taken inside the frame looking in the opposite direction. Fig. 3 is a horizontal section taken on line 3 of Fig. 2. Fig. 4 is a vertical section on the line 4 of Fig. 2 looking to the left. Figs. 5 and 6 are sectional elevations of the wrapping mechanism similar to Fig. 2, showing the parts in different positions, and Fig. 7 is a view similar to Fig. 2 showing a modification.

Referring now particularly to Figs. 1 to 6, the frame of the machine may be of any suitable form to support the operating parts. As shown it consists of the two side frames A, B in which the wrapping mechanism is mounted at the front or delivery end of the machine, the paper feeding mechanism at the rear end of the machine and the wrapping, feeding and pasting mechanisms in the upper part of the machine, so as to feed the wrapper downward between the paper feeding and wrapping mechanisms.

The feeding belts by which the paper and wrapper are rolled consist of two series of belts *a*, *b*, running vertically on opposite sides of the wrapping space. The belts *a* form also one set of the feeding belts by which the pa-

per is advanced to the wrapping mechanism, and these belts are led from roll 10 around roll 11 and downward to the wrapping mechanism, and returned to roll 10 under a belt roll or series of belt pulleys 12 and over a series of pulleys 13, the latter being mounted on a shaft 14 secured in a fixed position in the frame of the machine, or in any other suitable manner as usual in such constructions. The shaft of belt pulleys 12 is carried by arms 15 pivotally mounted on and carried by crank arms 16 on a rock shaft 17 mounted in the frames A, B. The rock shaft 17 is provided at one end just inside the frame with a crank arm 18 connected to a pitman 19 which slides in brackets 20 on the frame and is spring pressed in a direction to carry the belt pulleys 12 inward toward the wrapping space by a spring 21, and actuated in the opposite direction against the tension of the spring to carry the belt pulleys away from the wrapping space for the delivery of the wrapped paper by means of the cam 22 carried by the main driving shaft C of the machine which engages a bowl 23 on the pitman. The arms 15 by which the belt pulleys 12 are carried are connected to the lower ends of the arms 16 by springs 24 so that the arms carrying the belt pulleys are held by spring pressure against stops 25 carried by the arms 16 during the wrapping operation, and the arms 15 swing against the tension of springs 24 as the belts are retracted from the wrapping space and the belts are bent over pulleys 13, so that the belts are kept constantly under tension. The arms 15 carry also a plate forming one-half of guide *c* lying below the wrapping space and upon which the paper rests during the wrapping operation and by which it is guided from the first series of belts *a* to the opposite series *b*. This guide *c* is constructed also to form a guide for the belts *a*, the belts running on the outer edge of the plate, as shown in Figs. 2, 5 and 6, so that they are held in position on pulley 12 and drawn back positively with the arms 15 and pulleys 12. The belts *b* are led vertically around belt rolls or pulleys 26, 27, series of pulleys being shown, the shaft of the lower pulleys being mounted on arms 28 carried by crank arms 29 on rock shaft 30 and connected to the lower ends of the crank arms by springs 31 which hold the arms against stops 32, the arms 28 carrying one-half of the guide *c*, these parts corresponding exactly in construction and function with those previously described in connection with the belt pulleys 12, and the two parts of the guide *c* being held together, as shown in Figs. 2, 5, and 6, during the wrapping operation. The rock shaft 30 carries at one end just inside the frame a crank arm 33 connected by a pitman 34 to one of the crank arms 16 on rock shaft 17 previously described, so that as the rock shaft 17 is rocked by cam 22 and returned by spring 21 to carry the belt pulleys 12 from or toward the wrapping space, the rock shaft 30 is also rocked in the opposite

direction so as to carry the belt pulleys 27 in the opposite direction and thus separate the belts and two parts of the guide *c* and open the wrapping space for the delivery of the paper.

Above the wrapping space between the belts I use a series of guides *d* carried by arms 35 on a rock shaft 36 provided with a crank arm 37 spring pressed by a spring 38 on a rod 39 sliding in brackets in the frame and connected to the crank arm, this spring operating to press the guides *c* normally downward against the paper during the wrapping operation, the downward movement being limited by stop 40, and the guides being pressed upward by the paper during wrapping so as to put the spring 38 under tension. These guides thus bridge over the space between the belts and guide the leading end of the paper, keep the paper under spring pressure during the rolling operation, and aid in delivering the paper by being thrown downward by the tension of spring 38, when the wrapping space is opened for delivery by the separation of the belts and guide *c*, as previously described. The arms 35 also preferably carry a series of rolls 41 which co-act with the belts *a* to advance the paper to the wrapping space, the proper feeding of the paper after it passes belt roll 11 being thus secured. These rollers 41 also co-act with the belts *a* to advance the leading end of the wrapper which is fed downward between the rear end of the paper and the rolls 41, as the rear end of the paper is about to be drawn in.

The wrapped paper may be finally delivered directly from the wrapping mechanism but I prefer to use drying devices, and for this purpose mount below the belts a table *D* heated in any suitable manner, preferably by making it hollow, and introducing steam or hot water, as shown, the paper being delivered upon this table from the belts *a*, *b*, and advanced over it by belts *e* carried by belt rolls or pulleys 42, 43, the wrapper thus being held pressed upon the paper for some time after delivery from the wrapping mechanism and heat being applied simultaneously to dry the paste, thus permitting the wrapping mechanism to be run at higher rates of speed with certainty in securing the wrapper. With this wrapping mechanism any suitable paper and wrapper feeding devices may be combined to form a high speed automatic wrapping machine, and the wrappers may be previously pasted or a pasting mechanism added to paste the wrappers in the machine. It will be understood, also, that this wrapping mechanism is well adapted to be combined with the final folding devices of a folding machine or combined printing press and folding mechanism of any of the common forms, so that their products are received therefrom by the wrapping mechanism, suitable wrapping, feeding and pasting devices being added. For the purpose of illustrating a complete machine, however, I have shown paper and wrapper feeding and

wrapper pasting devices of a common form combined with my wrapping mechanism to form a complete, independent, wrapping machine, the papers previously folded or otherwise compacted to a form suited to the feeding devices shown being fed from a box or holder, and the wrappers fed from the web. In this construction the holder *E* for the papers or pamphlets is mounted on the rear end of the machine, and the bottom paper fed from the holder over guides 44 to feeding belts *a*, and an upper series of feeding belts *f* carried by belt rolls 45, 46, and by these belts advanced to the wrapping mechanism, as above described. The paper is fed from the holder by a series of pivoted fingers 47 carried by slide 48 moving on rods 49 mounted in the frame of the machine, the fingers being pressed upward by springs so as to engage the bottom paper when withdrawn. The slide 48 is reciprocated upon the rods 49 so as to advance the papers in proper time by means of slotted levers 50 carried by rock shaft 51 mounted in the side frames *A*, *B* and operated from the main shaft *C* by means of eccentric rod 52 connected to one of the levers 50 and an eccentric 53 on shaft *C*.

The wrappers are cut from the web, pasted, and fed to the wrapping mechanism by the following means:—The wrapper web *y* is fed from the web roll *F* at the top of the machine by a pair of feeding rolls 54 to a pair of cutting and feeding rolls 55 by which the wrappers are severed from the web and advanced downward from the wrapping mechanism between guides 56, a line of paste being applied to the rear end of each wrapper by paster 57 co-acting with a roll 58, the paster receiving paste from a fountain roll 59 mounted in fountain 60 in the usual manner. The wrapper *y*, thus severed and pasted, is fed downward between the guides 56 so as to be engaged between the rollers 41 and the paper *x* as the rear end of the paper is about to be drawn in by the wrapping mechanism to complete the rolling of the paper, and the rollers 41 co-act with the belts *a* to secure the advance of the wrapper with the paper until it is securely held between the layers of the partially wrapped paper so as to assure its proper association therewith.

The operative parts of the machine with the exception of the means for advancing the papers *x* from the holder *E* to the belts *a*, *f* are driven from the main shaft *C* as follows:—The shaft *C* carries a large gear 61 which drives belt roll 10 through an intermediate gear 62, and gear 63 on the shaft of the roll, which gear 63 meshes with a gear 64 on the shaft of belt roll 45, so that the belts *a*, *f* are driven at the same rate of speed. The front belt roll 11 is also driven positively from the shaft *C* through intermediate 62, a pair of intermediate gears 65, 66, and a gear 67 on the shaft of the belt roll. From gear 67 the belt roll 26 is driven through an intermediate 68 and a gear 69 on the shaft of the roll, and the delivery belts *e*

are driven from intermediate 68 through an intermediate 70 and a gear 71 on the shaft of belt roll 42. All these belts are driven at the same rate of speed, and the wrapper feeding and pasting mechanism is driven at the required rate of speed to co-act therewith and deliver a wrapper with each paper at the proper time, by the following means:—The gear 64 on the shaft of belt roll 46 drives the cutting cylinders 55 through large and small intermediates 72, 73 on the same shaft, a series of intermediates 74, and gears 75 on the shafts of the rolls. The feeding rolls 54 are geared together by means of gears 76 and are driven from one of the feeding and cutting rolls 55 through an intermediate 77. From the other feeding and cutting roll 55 the paster and paste fountain roll are driven by means of gears 78, 79.

The operation of the machine will be understood from a brief description in connection with Figs. 2, 5 and 6:—The parts are so timed that the paper *x* is advanced to the wrapping mechanism and partially rolled, and as the rear end of the paper is about to be drawn in a wrapper *y* is led in between the rear end of the paper and the rolls 41, and advanced so as to be held between the layers of the partially wrapped paper, the length of the wrapper being such that its rear pasted end overlaps upon the layer of wrapper previously upon the paper for pasting, after the paper and wrapper are fully rolled. The cam 22 is so timed that the belt pulleys 12, 27, belts *a*, *b* and the two parts of the guide *c* are held in the position shown in Fig. 2, until the wrapping operation is completed, so as to inclose the wrapping space, and then separate these parts against the tension of spring 21 so as to allow the paper to drop or be forced out between them by the guide *d* under the pressure of spring 38. As shown, the machine is adapted to roll the paper twice, and wind and secure the wrapper thereon to each delivery. It will be understood, however, that the timing of the parts may readily be varied so as to roll the paper and wrapper a greater number of times, either for the purpose of rolling it more closely or to roll the wrapped paper one or more times after the wrapper is pasted down, for securing the latter more firmly. As shown in Fig. 2, the paper *x* has been received by the wrapping mechanism and its leading end advanced in its curved path so as to be guided downward by the guides *d* inside and against the body of the paper, the second rotation of the paper being about to commence. The wrapper has been cut and is just being pasted, and its leading end is nearly in position to be caught between the rolls 41 and the paper. As shown in Fig. 5, the paper is fully wrapped and wrapper secured and the parts in position for the delivery of the paper, the guides *d* having been pressed back and the spring 38 put under tension by the rolling of the paper. The bowl 23 has meanwhile been moving upon the lower concentric portion of

the cam 22, but now the upper portion of the cam engages the bowl and moves the rod 19 against the tension of spring 21 so as to rock the shafts 17, 30 and withdraw the lower parts of the belts *a*, *b* and two parts of the guide *c* in opposite directions, so as to open the wrapping space at the bottom and allow the paper to be forced downward by gravity and the pressure of the guides 45 under the tension of spring 38. As the wrapped paper leaves the wrapping mechanism it is received upon the heated table *D* and advanced thereon for delivery by the belts *e*. The operation of delivery is shown in Fig. 6. The paper having been delivered the bowl 23 again passes onto the lower concentric portion of the cam 22 and the belts *a*, *b* and two parts of the guide *c* are returned to normal wrapping position by the spring 21 for the reception of another paper, and thus the operation is continued.

It is evident that many modifications may be made in the arrangement of the belts and other devices. For instance, in Fig. 7 I have shown a modification in which the feeding belts are so led as to nearly inclose the wrapping space and the wrapping space is opened for the delivery of the paper by separating the feeding belts, no separation or withdrawal of guides being required. In this construction the belts *a* are led from rolls 10, 11, downward about a fixed roll 72 then outward about a fixed roll 73 returning inward on the under side of the wrapping space to the movable belt pulleys 12 of the construction previously described, which in this case are so positioned that the belts *a* extend entirely under the wrapping space, these pulleys 12 being mounted directly upon arms 16 supported on shaft 17 and actuated in the same manner and by the same means as arms 16 of the construction previously described. The belts *a* are returned to the belt roll 10 over belt tightening pulleys 74 mounted upon a rock shaft 75, and spring pressed so as to hold the belts constantly under tension in all positions by the spring 76 connected to a crank arm 77 on shaft 75 and to a stud 78 in the frame. A fixed guide or series of guides *g* are mounted so as to inclose the wrapping space between the belt pulleys 72 and the part of the belts *a* extending below the wrapping space. In this construction the upper guides *d*, the upper belt pulleys of belts *b* and one of the guides 56 are mounted together upon a single spring pressed arm so that the guides and belts are pressed backward by the paper in rolling the latter and the spring thus put under tension, as in the case of the guides *d* and spring 38 in the construction previously described, to force the wrapped paper downward when the wrapping space is opened for delivery. The belts *b* are led around a large driven roll or series of pulleys 79 and then around the belt pulleys 80 carried with the guides *d* and guide 56 by arms 81 mounted loosely on the shaft 82 of belt roll or pulleys

79, and spring pressed so as to press the guides *d* downward upon the rolled paper by spring 83 connected to crank arm 84 on the opposite side of the shaft 82, spring 83 being connected to stud 85 in the frame. The operation of this construction is substantially the same as that of the construction previously described and will readily be understood from Fig. 7 without a detailed description. The arms 16, belt pulleys 12 and belts *a* are thrown from the position shown in full lines in said figure to that shown in dotted lines by the cam 22 for opening the wrapping space to deliver the wrapped paper, the spring 76 drawing the tightening pulleys 74 outward so as to keep the belts *a* taut. The arm 81, guides *d*, belt pulleys 80, and guide 56 are forced by the rolling of the paper from the position shown in full lines in Fig. 7 to the position shown in dotted lines, and when the wrapping space is opened as just described, return to their normal wrapping position under pressure of spring 83, thus forcing the paper downward and delivering it between the belt pulleys 12 and the belts *b*.

It will be understood that various other modifications may be made by those skilled in the art without departing from the invention and I am not to be limited to the specific construction or arrangement of the devices shown.

It should be remarked that the machines illustrated in the present case are adapted more especially for wrapping papers or other matter consisting of a limited number of sheets or plies, and no especial provision has been made for relieving the feeding pressure upon the rear end of the paper to permit the unequal movement of the inner and outer surfaces of the paper, which it is obvious must occur in wrapping thick papers or other matter consisting of a considerable number of sheets or plies. It will be found, however, that the yielding grip of the tapes used in these constructions permits sufficient slip on each other to enable the machine to be used quite generally, the positive grip of the rolls 41, 46, being released as the paper assumes a cylindrical form. The attainment of this result of permitting slip in the construction shown in Figs. 1 to 6, is aided, also, by the slight lifting of the rolls 41 and guides *d* against the tension of spring 38, as the leading end of a paper of considerable thickness and consequent rigidity presses against the guides *d* near the completion of the first rotation, and as the paper assumes a cylindrical form. Other devices for the purpose of relieving the feeding pressure may readily be combined with this machine, if desired. This feature of allowing for unequal movement of the inner and outer surfaces of a thick paper is fully described and claimed in my application, Serial No. 432,363, filed May 9, 1892.

What I claim is—

1. The combination with feeding belts arranged to form a wrapping space between

them and co-acting to roll a paper and wrapper together within said wrapping space and secure the wrapper, of means for delivering the wrapped paper from the wrapping space, substantially as described.

2. The combination with feeding belts arranged to form a wrapping space between them and co-acting to roll a paper and wrapper together within said wrapping space and secure the wrapper, of means for separating the belts for the delivery of the wrapped paper, substantially as described.

3. The combination with feeding belts arranged to form a wrapping space between them and co-acting to roll a paper and wrapper together within said wrapping space and secure the wrapper, of means for separating the belts for the delivery of the wrapped paper, and an ejector for delivering the wrapped paper from between the separated belts, substantially as described.

4. The combination with feeding belts arranged to form a wrapping space between them and co-acting to roll a paper and wrapper together within said wrapping space and secure the wrapper, of means for delivering the wrapped paper sidewise from the wrapping space, substantially as described.

5. The combination with feeding belts arranged to form a wrapping space between them and co-acting to roll a paper and wrapper together within said wrapping space and secure the wrapper, of means for opening the wrapping space on one side and delivering the wrapped paper sidewise, substantially as described.

6. The combination with feeding belts arranged to form a wrapping space between them and co-acting to roll a paper and wrapper together within said wrapping space and secure the wrapper, of means for opening the wrapping space on one side and an ejector moving transversely to the paper, substantially as described.

7. The combination with feeding belts arranged to form a wrapping space between them and co-acting to roll a paper and wrapper together within said wrapping space and secure the wrapper, of a spring pressed guide on one side of the wrappingspace forming an ejector, and means for opening the wrapping space on the side opposite the guide, substantially as described.

8. The combination with feeding belts arranged to form a wrapping space between them and co-acting to roll a paper and wrapper together within said wrapping space and secure the wrapper, of a guide closing the wrapping space on one side, and means for withdrawing the guide to open the wrapping space for the delivery of the wrapped paper, substantially as described.

9. The combination with feeding belts arranged to form a wrapping space between them and co-acting to roll a paper and wrapper together within said wrapping space and secure the wrapper, of a two part guide clos-

ing the wrapping space on one side, and means for separating the two parts of said guide to open the wrapping space for the delivery of the wrapped paper, substantially as described.

10. The combination with feeding belts arranged to form a wrapping space between them and co-acting to roll a paper and wrapper together within said wrapping space and secure the wrapper, of a guide closing the wrapping space on one side, and means for separating the belts and withdrawing said guide for the delivery of the wrapped paper, substantially as described.
11. The combination with feeding belts arranged to form a wrapping space between them and co-acting to roll a paper and wrapper together within said wrapping space and secure the wrapper, of a guide closing the wrapping space on one side, an ejector on the opposite side of the wrapping space, and means for separating the belts and withdrawing said guide to open the wrapping space for the delivery of the wrapped paper, substantially as described.
12. The combination with feeding belts arranged substantially parallel to form a wrapping space between them and co-acting to roll a paper and wrapper together within said wrapping space and secure the wrapper, of guides extending between the belts on opposite sides of the wrapping space, and means for withdrawing one of said guides to open the wrapping space for the delivery of the wrapped paper, substantially as described.
13. The combination with feeding belts arranged vertically to form a wrapping space between them and co-acting to roll a paper and wrapper together within said wrapping space and secure the wrapper, of a guide closing the wrapping space on the lower side, and means for withdrawing said guide to open the wrapping space for the delivery of the wrapped paper, substantially as described.
14. The combination with feeding belts arranged vertically to form a wrapping space between them and co-acting to roll a paper and wrapper together within said wrapping space and secure the wrapper, a guide closing the wrapping space on the lower side, and means for separating the belts and withdrawing said guide for the delivery of the wrapped paper, substantially as described.
15. The combination with feeding belts arranged vertically and substantially parallel and forming a wrapping space between them and co-acting to roll a paper and wrapper together within said wrapping space and secure the wrapper, of a guide closing the wrapping space on the lower side, a spring pressed guide extending between the belts on the upper side and forming an ejector, and means for separating the belts and withdrawing the guide on the under side of the wrapping space for the delivery of the wrapped paper, substantially as described.

16. The combination with paper and wrap-

per feeding devices and pasting devices for the wrapper, of feeding belts to which the paper and wrapper are fed arranged to form a wrapping space between them and co-acting to roll the paper and wrapper together within said wrapping space and secure the wrapper, and means for delivering the wrapped paper from the wrapping space, substantially as described.

17. The combination with paper and wrapper feeding devices and pasting devices for the wrapper, of feeding belts to which the paper and wrapper are fed arranged to form a wrapping space between them and co-acting to roll the paper and wrapper together within said wrapping space and secure the wrapper, and means for separating the belts for the delivery of the wrapped paper, substantially as described.

18. The combination with paper and wrapper feeding devices and pasting devices for the wrapper, of feeding belts to which the paper and wrapper are fed arranged to form a wrapping space between them and co-acting to roll the paper and wrapper together within said wrapping space and secure the wrapper, and means for delivering the wrapped paper sidewise from the wrapping space, substantially as described.

19. The combination with paper and wrapper feeding devices and pasting devices for the wrapper, of feeding belts to which the paper and wrapper are fed arranged to form a wrapping space between them and co-acting to roll the paper and wrapper together within said wrapping space and secure the wrapper, means for separating the belts for the delivery of the wrapped paper, and an ejector moving transversely to the paper, substantially as described.

20. The combination with paper and wrapper feeding devices and pasting devices for the wrapper, of feeding belts to which the paper and wrapper are fed arranged to form a wrapping space between them and co-acting to roll the paper and wrapper together within said wrapping space and secure the wrapper, means for delivering the wrapped paper from the wrapping space, and heating devices to which the wrapped paper is delivered from the wrapping mechanism, substantially as described.

21. The combination with belts *a, b*, of belt roll or pulleys 12 mounted in movable supports, and means for withdrawing said roll to separate the belts, substantially as described.

22. The combination with belts *a, b*, belt rolls or pulleys 12, 27 mounted in movable supports, guide *c* formed in two parts carried by said supports, and means for moving said supports in opposite directions to separate the belts and withdraw the guide, substantially as described.

23. The combination with belts *a, b*, of belt roll or pulleys 12 carrying said belts *a* and mounted in movable supports, spring pressed

guide *d* forming an ejector, and means for withdrawing said support to separate the belts and open the wrapping space on the side opposite the ejector, substantially as described.

24. The combination with belts *a, b*, of belt rolls or pulleys 12, 27, carrying said belts and mounted in movable supports, guide *c* carried by said supports, spring pressed guide *d* forming an ejector, and means for withdraw-

ing said supports in opposite directions to separate the belts and withdraw the guide *c*, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

LUTHER C. CROWELL.

Witnesses:

NATHANIEL ATWOOD,
G. R. STEDMAN.