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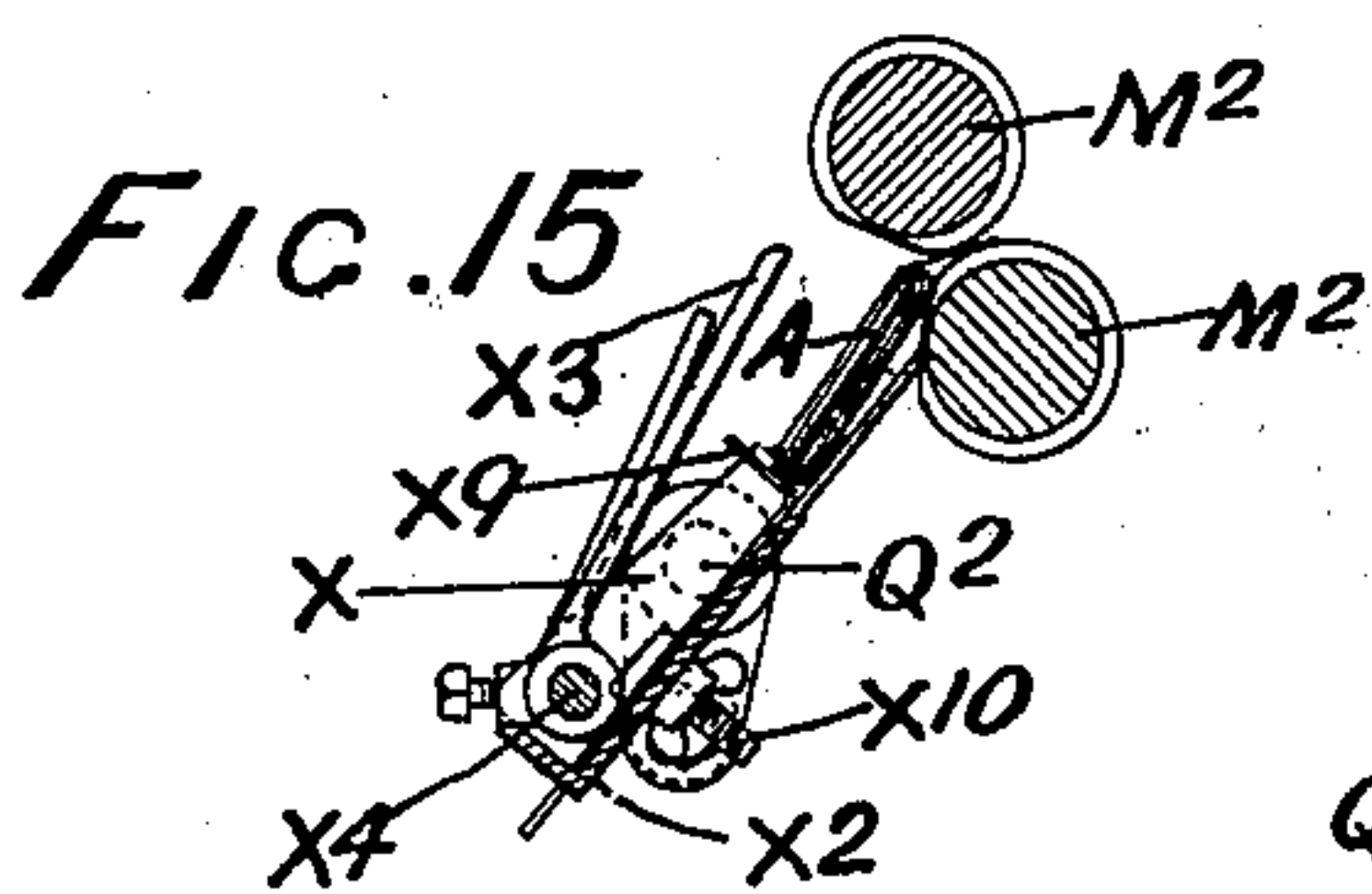
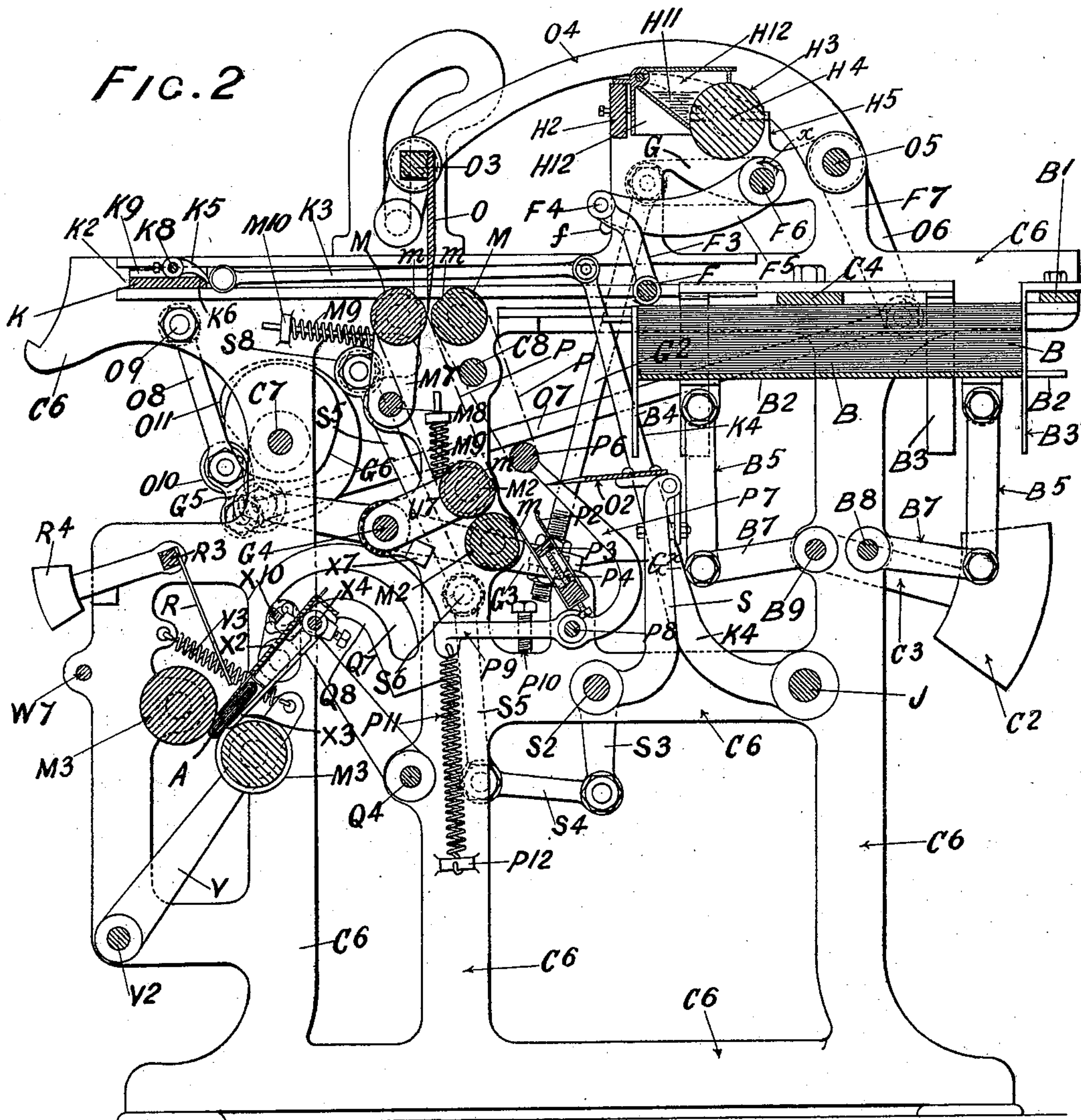
Patented Apr. 5, 1898.



Inventors:-
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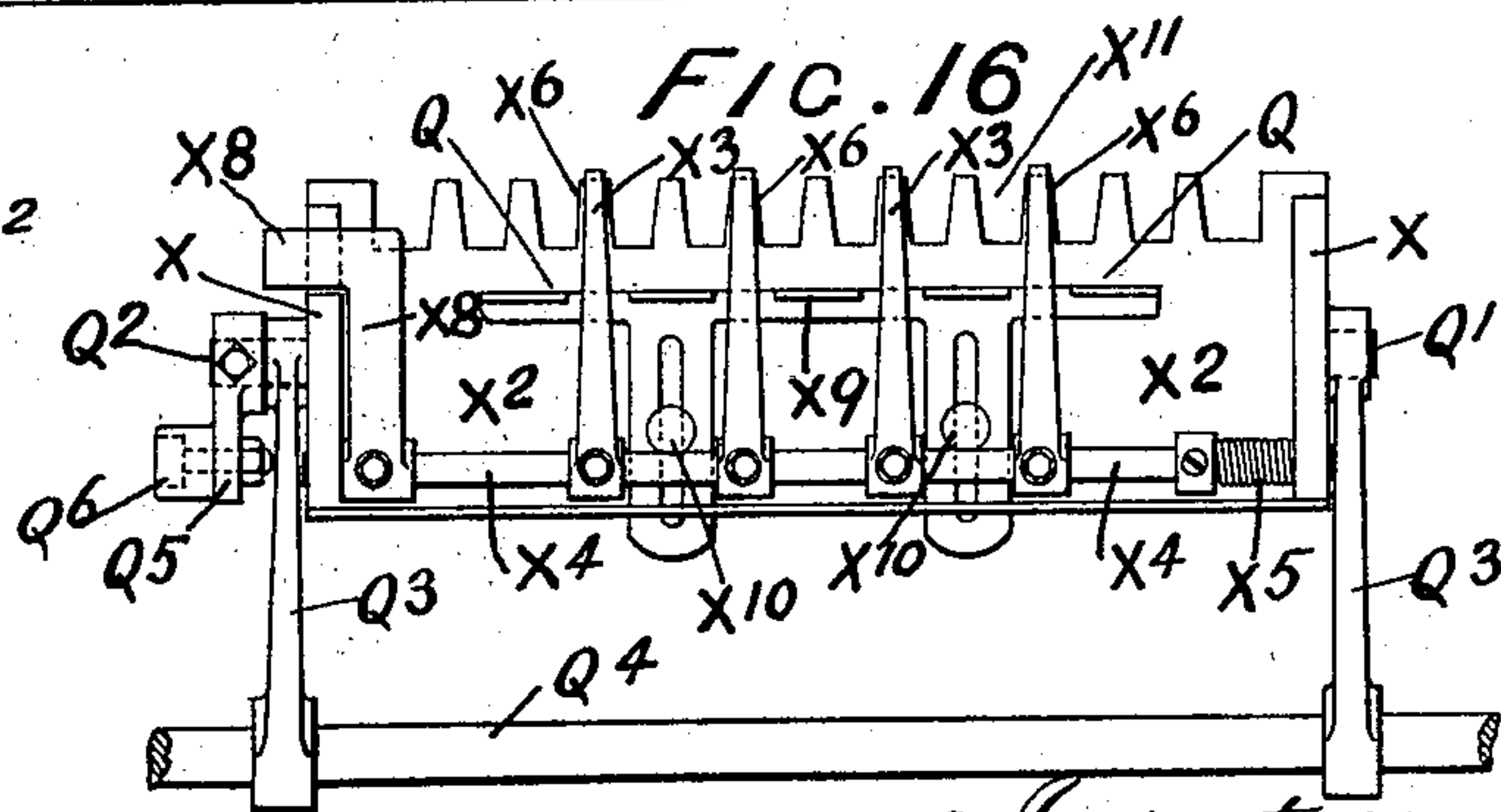
Patented Apr. 5, 1898.



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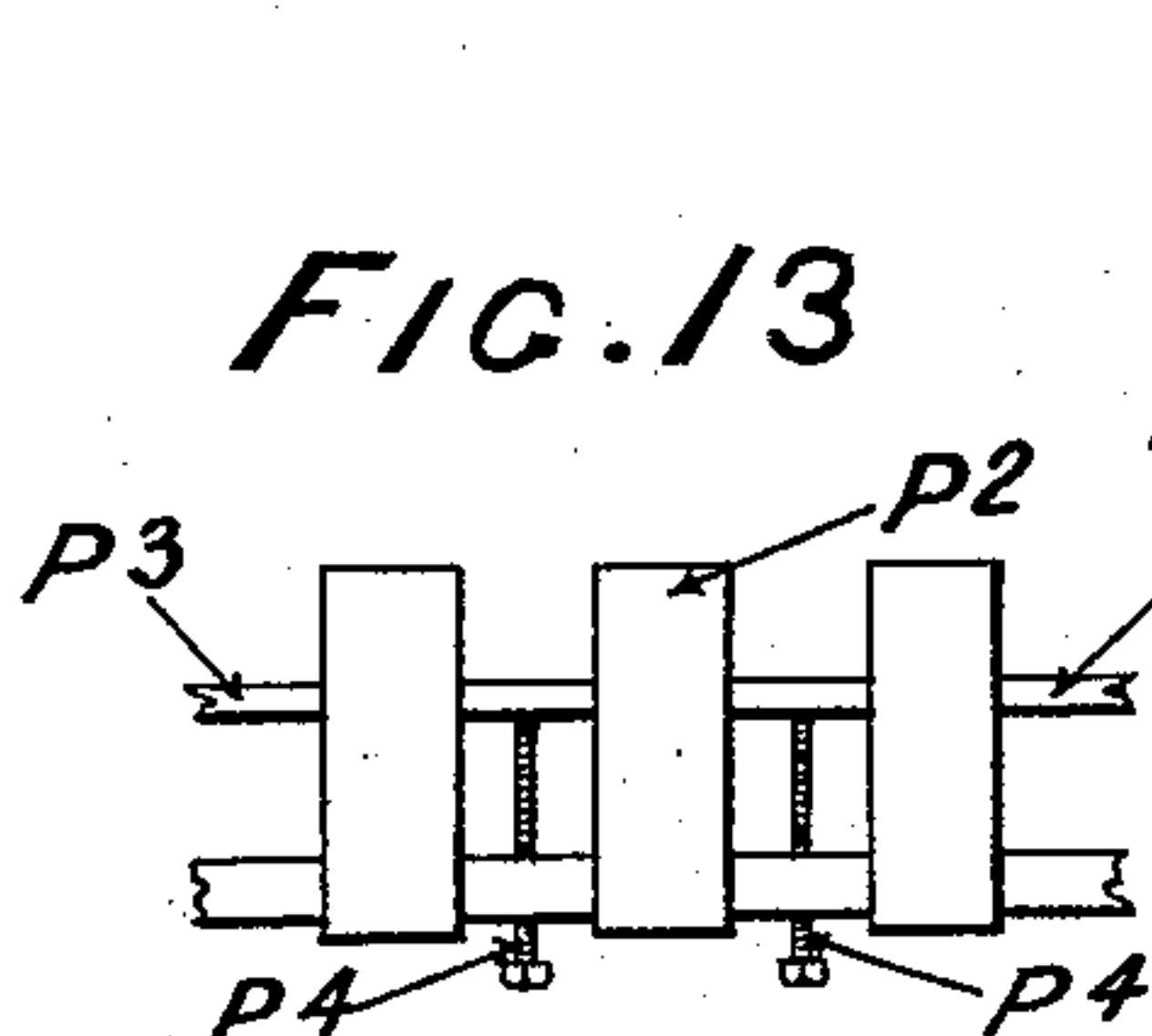
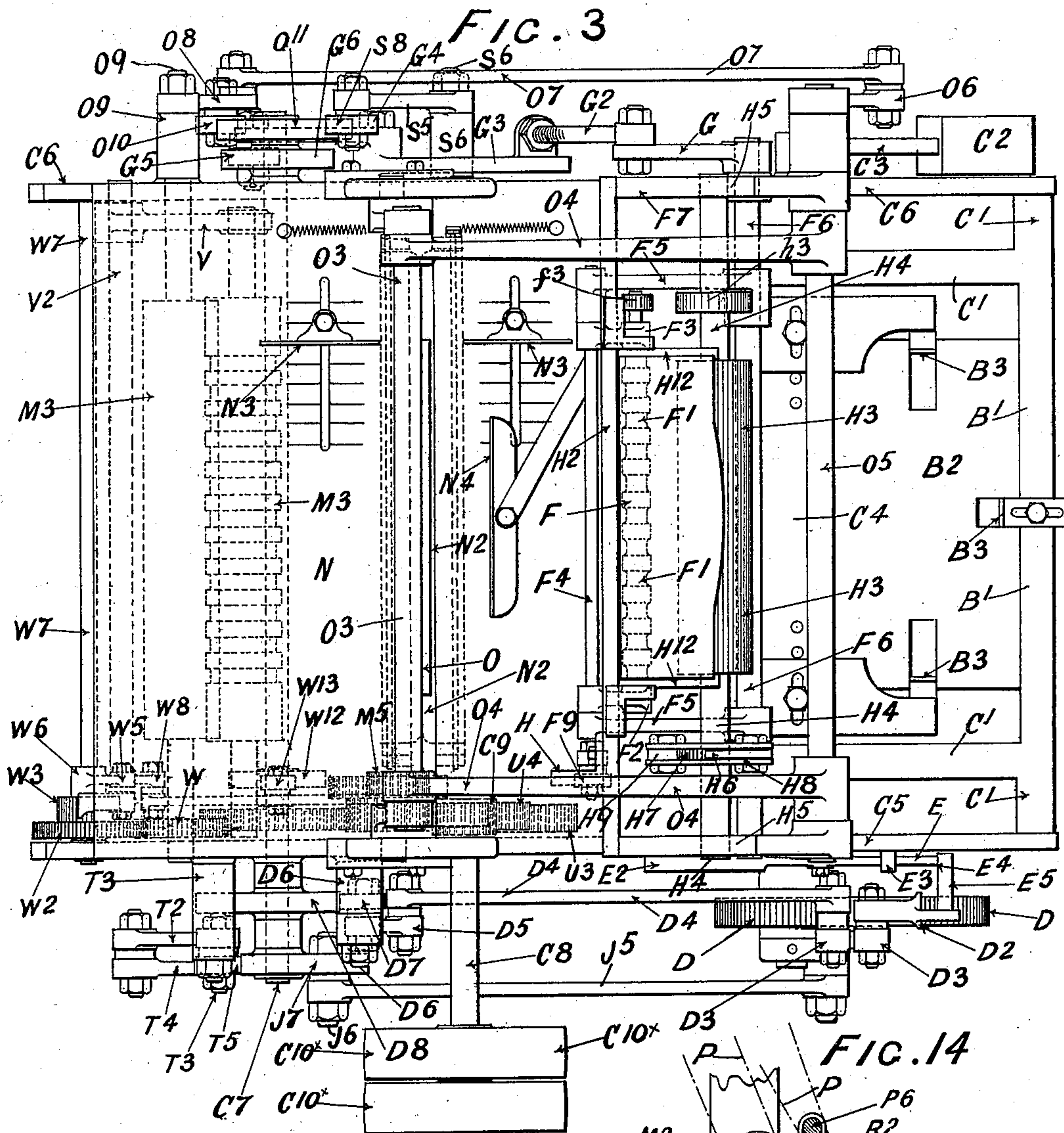
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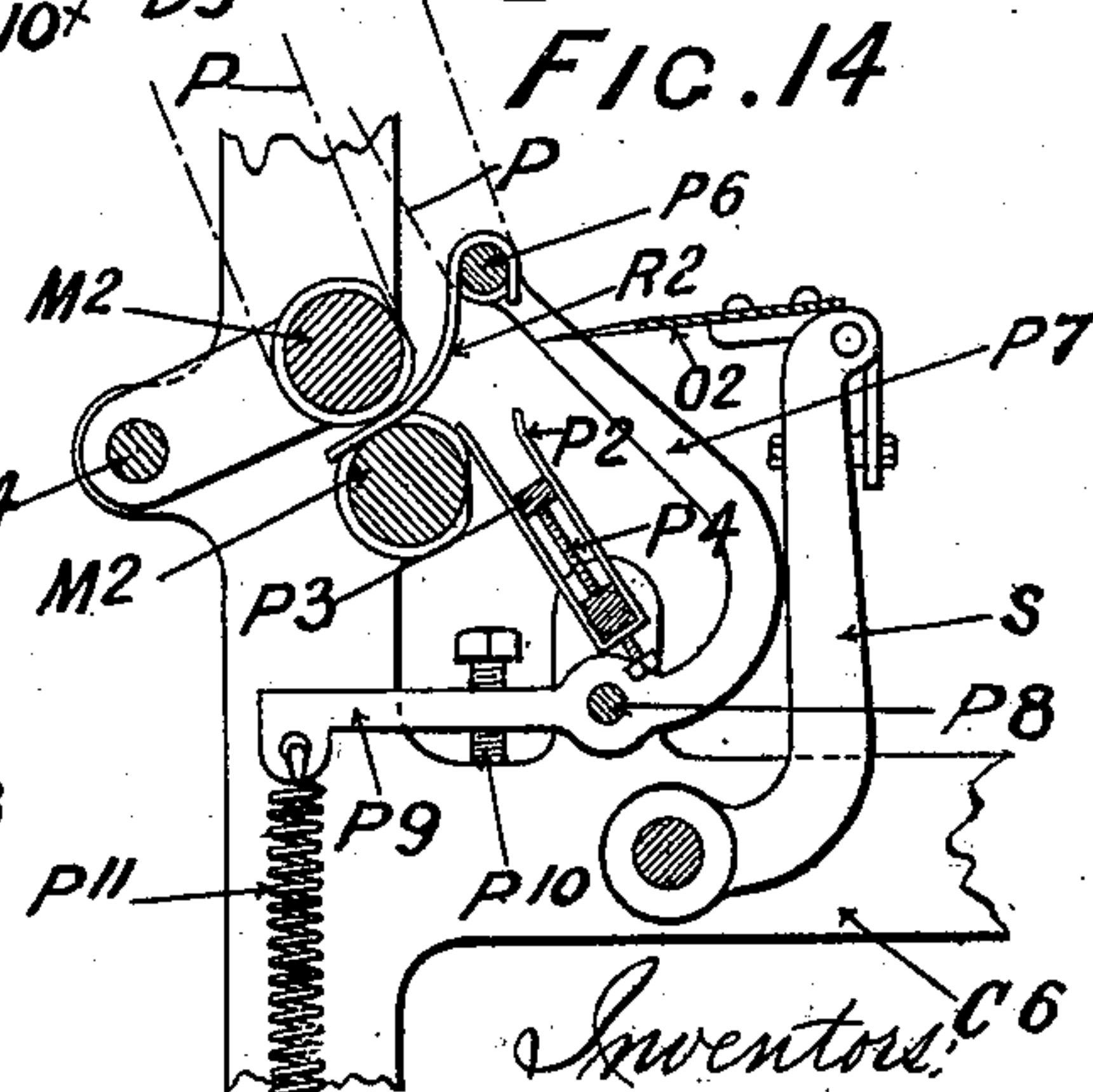
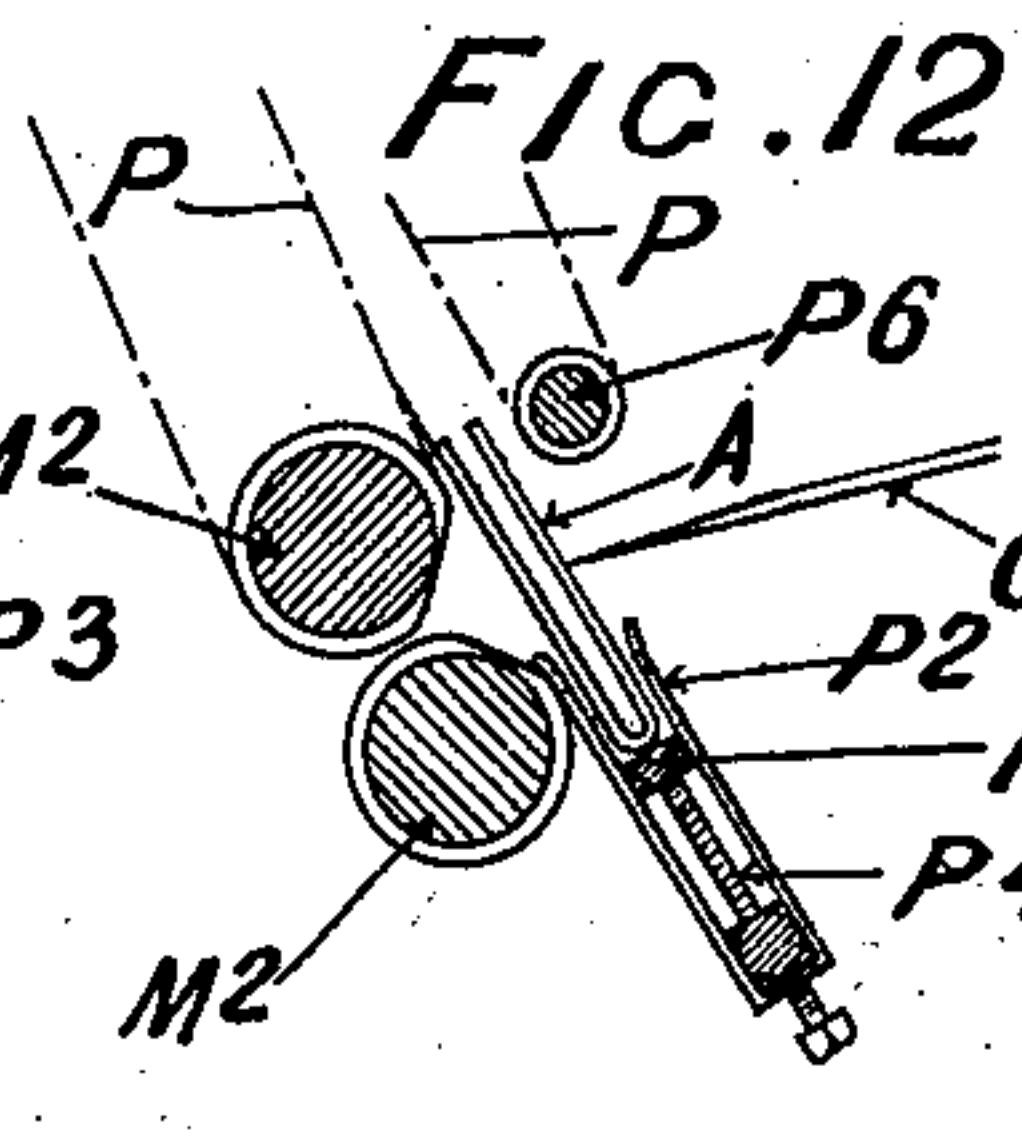
F. WAITE & J. SAVILLE.
MACHINE FOR FOLDING AND WRAPPING NEWSPAPERS.

No. 601,741.

Patented Apr. 5, 1898.



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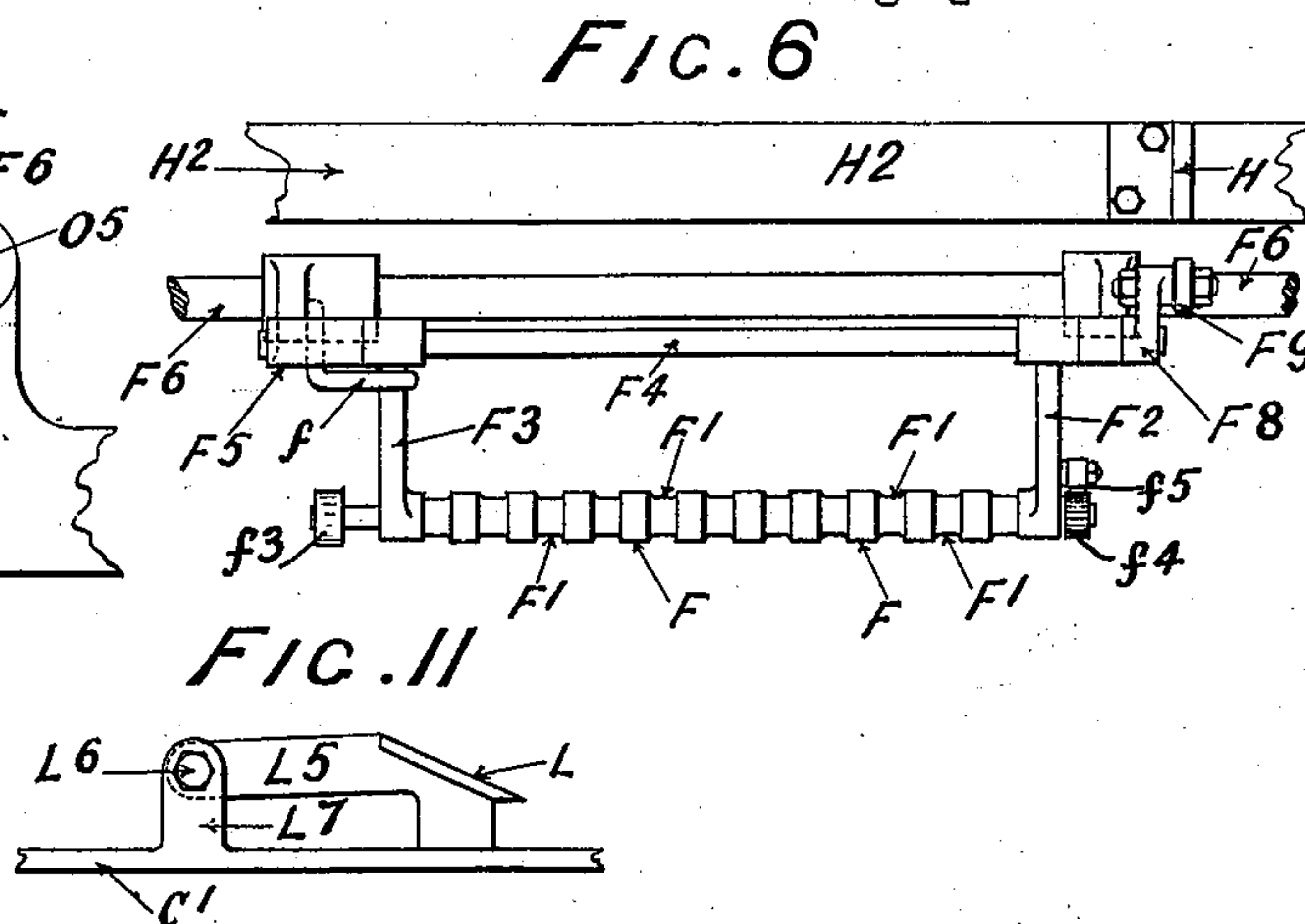
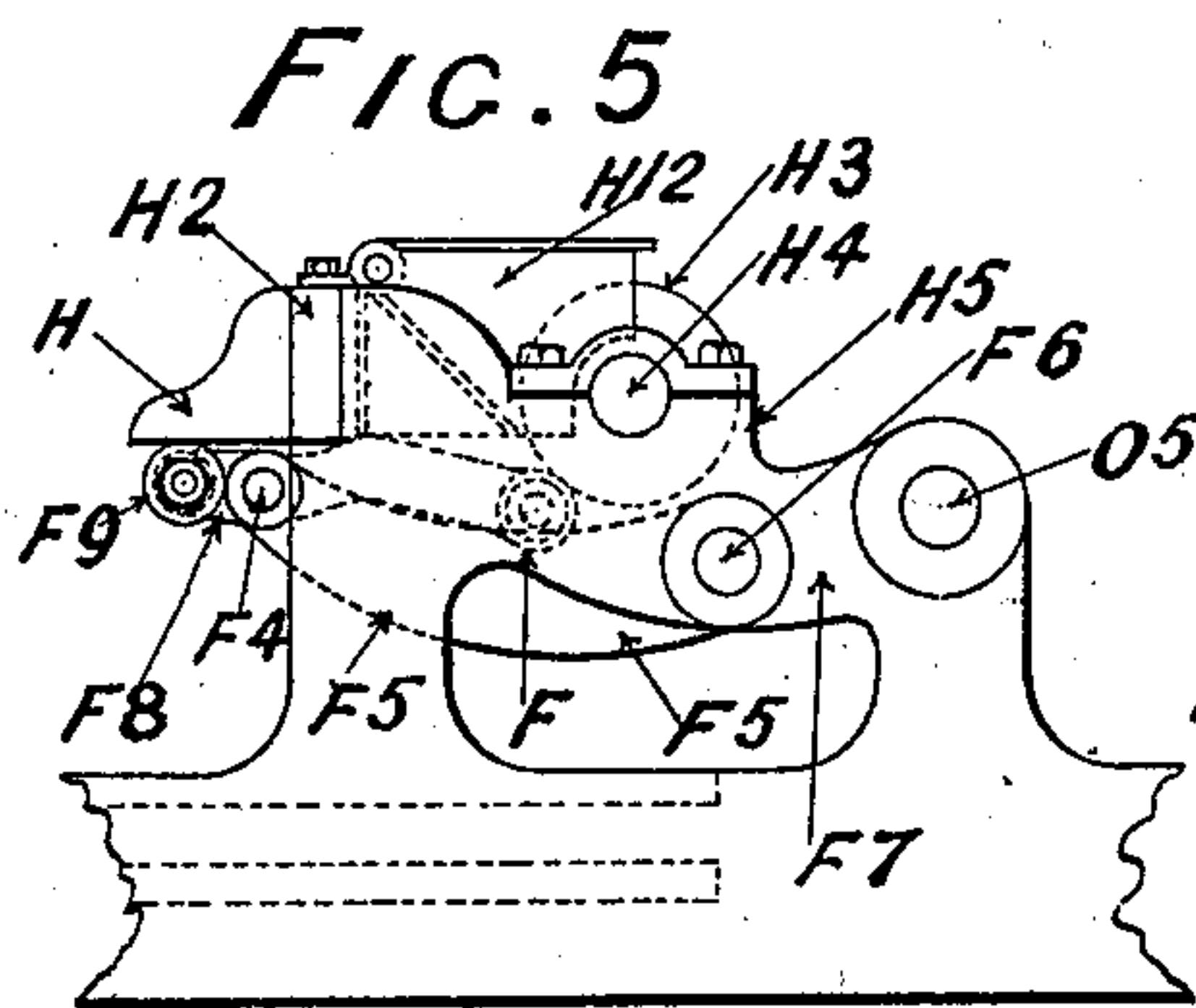


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4 Sheets—Sheet 4.

No. 601,741.

Patented Apr. 5, 1898.



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UNITED STATES PATENT OFFICE.

FRED WAITE, OF OTLEY, AND JASON SAVILLE, OF BRADFORD, ENGLAND.

MACHINE FOR FOLDING AND WRAPPING NEWSPAPERS.

SPECIFICATION forming part of Letters Patent No. 601,741, dated April 5, 1898.

Application filed September 23, 1895. Serial No. 563,417. (No model.) Patented in England October 31, 1891, No. 18,810, and September 7, 1893, No. 16,815.

To all whom it may concern.

Be it known that we, FRED WAITE, residing at Otley, and JASON SAVILLE, residing at Bradford, England, subjects of the Queen of England, have invented certain Improvements in Combined Folding and Wrapping Machinery for Preparing Newspapers, Journals, Prospectuses, Circulars, and the Like for Postal and Similar Purposes, (for which Letters Patent have been obtained in England, No. 18,810, dated October 31, 1891, and No. 16,815, dated September 7, 1893,) of which the following is a specification.

This invention relates to improvements in combined folding and wrapping machinery or apparatus for preparing newspapers, journals, periodicals, pamphlets, prospectuses, circulars, or the like for postal and similar purposes.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of our improved machine. Fig. 2 represents a sectional elevation of Fig. 1. Fig. 3 represents a plan view of the same. Figs. 4 to 16 represent views of details hereinafter referred to.

The wrappers (represented by the lines B, Fig. 2) are contained in a wrapper-box formed by the bottom B² and the adjustable back and side guides B³, as well as the fixed front guide B⁴.

Fig. 4 represents a sectional plan of a portion of the machine, illustrating the wrapper-box and certain other parts. The bottom B² of the wrapper-box is mounted upon the four links B⁵, connected to the ends of the arms B⁶ B⁶ and B⁷ B⁷, respectively, projecting from the rocking shafts B⁸ and B⁹, to which they are rigidly fixed. These two rocking shafts are geared together by the pinions C C, and the weight C², fixed on the arm C³, projecting from the shaft B⁹, is sufficiently heavy to raise the bottom B² and the pile of wrappers thereon and normally keep them pressed against the under side of the cross-bar C⁴, fixed across between the brackets C' C', fixed to the side frames C⁵ and C⁶ of the machine. The adjustable side guides B³ are connected to the bar C⁴, and the front guide B⁴ and the back guide B³ are respectively connected to the cross-bars B' B', bolted to the brackets C'.

To relieve the pressure upon the wrappers each time the top wrapper is required to be withdrawn, the segmental ratchet D is provided upon the outer end of the shaft B⁸, and a pawl D², engaging this ratchet, is operated so as to move D in the direction of the arrow, Fig. 1. The pawl D² is pivoted upon the arm D³, loosely mounted on the end of the shaft B⁸, and this arm is operated each time the wrappers are required to be lowered by the connecting-rod D⁴, connected at one end to the arm D³ and at the other to the hanger D⁵, loosely suspended from the stud D⁶, fixed in the side frame C⁵. The rod D⁴ carries an antifriction-roller D⁷, which engages the periphery of the cam D⁸, fixed on the cam-shaft C⁷. This cam-shaft is mounted in suitable bearings formed in the side frames and is driven from the driving-shaft C⁸ by the toothed wheels C⁹ C⁹. The driving-shaft C⁸ is provided with fast and loose pulleys C¹⁰ C¹⁰, which are omitted in Fig. 1.

As the pile of wrappers is reduced in bulk it is necessary for the bottom B² of the wrapper-box to be lifted higher to bring the uppermost wrapper into contact with the cross-bar C⁴. To effect this, the pawl D² must be disengaged from the rack D each time the wrappers are lifted, and for this purpose we employ a lever E, pivoted intermediate its ends, and one end carrying a weight E², while its other inclined end E⁴ engages beneath a stud E⁵, projecting from pawl D². The normal tendency of the weight is to continuously throw the pawl upwardly out of engagement with the rack, and to prevent such disengagement except at the proper moments a stop E³ is provided, against which the lever bears. At the moment that the pile of wrappers is to be slightly lowered to permit the uppermost wrapper to be withdrawn the cam on the shaft C⁷ operates upon roller D⁷ to swing the arms D⁴ and D³ to the right, whereby the rack D will be moved to the right, (in the direction of the arrow,) whereby the arms B⁶ B⁵ will be operated to slightly lower the bottom of the wrapper-receptacle to permit the uppermost wrapper to be removed. This having been done, the cam on shaft C⁷ will be in a position to free the roller D⁷, and the parts, under the influence of the weight C²,

will be moved reversely—that is to say, the arms B^6 B^5 will be again raised and the rack D moved to the left, carrying back the pawl D^2 until the stud E^5 comes against the inclined end of lever E, and, owing to the inclination thereof, just as the wrappers reach the limit of their upward movement—i. e., when arrested by the cross-bar C^4 —the reverse movement of the rack is arrested, and the pawl, being thus relieved of pressure, is raised by the weighted end of lever E out of engagement with the rack. When the arm D^3 and rack are again moved to the right for the purpose of again lowering the wrappers, the stud E^5 rides down the inclined end of lever E and comes again in engagement with the rack to operate it as before. We would state, however, that when the pile of wrappers has been appreciably reduced in height the pawl, instead of engaging the same tooth of the rack, will come in engagement with the succeeding tooth of rack D, owing to the increased length of the reverse throw of said rack, which enables the pawl upon its next engagement to engage the succeeding tooth.

Each time the pile of wrappers is raised the gumming-roller F, charged with adhesive material, is brought down onto the front end of the top wrapper, and the latter, adhering to it, is supported thereby, when the remainder of the wrappers are lowered from beneath it. The gumming-roller is preferably not made parallel from end to end, but is reduced or cut away at intervals F' . The gum is therefore not applied continuously along the whole front end of the wrapper, but only at certain portions, leaving ungummed spaces between them.

The gumming-roller F is mounted between the lever F^2 and the arm F^3 , projecting from the shaft F^4 , loosely pivoted in the arms F^5 F^5 , rigidly fixed to the rocking shaft F^6 , mounted in bearings F^7 F^7 , formed in the side frames.

To charge the roller F with adhesive material and bring it down onto the top wrapper, the rocking shaft is operated at suitable intervals by means of the arm G, fixed to one end. This arm is connected by the rod G^2 to one end of the lever G^3 , loosely mounted on the end of the shaft G^4 , and its other end carries an antifriction-roller G^5 , engaging the cam G^6 on the cam-shaft. This cam is so formed and the parts of the mechanism are so relatively arranged that each time the roller requires charging with gum previous to a wrapper being withdrawn the arms F^5 F^5 are raised, thereby lifting the roller F and the arms in which it is mounted until the projection F^8 on the arm F^2 , carrying the antifriction-roller F^9 , engages the tappet H, fixed on the cross-bar H^2 , secured to the side frames C^5 and C^6 . Then the further upward movement of the parts causes the roller F^9 to roll along the under face of the tappet, and by thus depressing that end of the lever F^2 partly turns the shaft F^4 and raises the roller F into

contact with the periphery of the cylinder H^3 , which is heavily charged with gum, and the face of the gumming-roller is kept for a sufficient time in contact with the cylinder to transfer the requisite quantity of gum thereto. To insure the roller F revolving, an india-rubber roller f^3 , of slightly-larger diameter, is fixed on the other end of its arbor to engage the periphery of the disk h^3 , fixed on the other end of the arbor of the cylinder H^3 , and to prevent the roller F revolving in the reverse direction the ratchet-wheel f^4 and pawl f^5 are provided at the other end. Fig. 5 represents a side view of a portion of the machine, showing those parts in this position. The cylinder H^3 is fixed on the shaft H^4 , mounted in suitable bearings H^5 H^5 in the side frame, and is intermittently operated while the roller F is in contact with it by the pawl H^6 , engaging the ratchet-wheel H^7 , fixed on the shaft H^4 . The pawl H^6 is pivoted upon one end of the lever H^8 , loosely mounted on said shaft, and the other end of said lever is connected by the rod H^9 to the arm H^{10} , projecting from the rocking shaft J, operated in the manner hereinafter described. The gum H^{11} for charging the cylinder H^3 is contained in a gum-box H^{12} , fixed to the cross-bar H^2 . A portion of the side and bottom of this gum-box is cut away, and the cylinder fits into the opening thus formed, so that its periphery revolves directly in contact with the gum and is thus charged therewith.

The manner of operating the roller F to cause it to gum the edge of a wrapper and raise such edge into proper position to be seized by the gripping mechanism of the carriage K, presently described, the various positions of the roller F and gummed edge of the wrapper being shown in Figs. 7 to 10, may be briefly described as follows: After the roller F has been operated to have gum applied thereto by the cam G^6 , operating upon the lever G^3 , which causes the rod G^2 and arms G F^5 to be raised to bring roller F^9 against tappet H, all as previously described, the cam G^6 assumes such position as to permit the end G^x , Fig. 2, of lever G^3 to descend, thus drawing down the rod G^2 and arm G, turning rock-shaft F^6 in the direction of arrow x , Fig. 2, which thus swings arm F^5 downwardly, together with the roller F, until the arms F^2 F^3 are almost vertical; but the latter arms are prevented from passing quite into a vertical position even after roller F^9 is disengaged from tappet H by the small projection f on arm F^3 engaging the under side of arm F^5 next to it, as seen in Figs. 1 and 6. While the arms F^2 F^3 are held in said inclined position, the roller F is brought down onto the front edge of the top wrapper, as seen in Fig. 7, and owing to the shape of the cam G^6 the parts continue to move as just described, which causes the roller F to roll a short distance along the top wrapper, and the front edge adhering to the roller said edge is turned up, as seen in Fig. 8. At this moment the

remainder of the wrappers are lowered, leaving the front edge of the top wrapper suspended from the roller, as seen in Fig. 9, and the parts will remain in this position (owing to the shape of the cam G^6) sufficiently long to enable the carriage K, presently described, with its gripping mechanism, to be operated to approach and seize the suspended edge of the top wrapper, as seen in Fig. 10, after which the cam G^6 will operate to cause the parts to be operated to again raise the gumming-roller into contact with the cylinder H^3 to receive gum for the succeeding wrapper.

The carriage K, Figs. 1, 2, 4, and 10, is mounted in guide-grooves K^2 , formed in the side frames C^5 and C^6 , and is periodically reciprocated in these grooves by the rods $K^3 K^3$, connecting it to the arms $K^4 K^4$, projecting from the rocking shaft J. The shaft J is operated by the arm J^2 , rigidly fixed on the end of said shaft, connected by the bolt J^3 to the arm J^4 , also mounted on said shaft, and the arm J^4 is connected by the rod J^5 to the stud J^6 , projecting from the face of the cam J^7 on the cam-shaft. The stud J^8 , connecting the rod J^5 to the arm J^4 , is fixed in a slot and may be adjusted therein to regulate the distance the carriage is reciprocated, and the position of the carriage at the termination of the stroke may be adjusted by means of the connection between the arms J^3 and J^4 .

The carriage K is provided with a number of grippers or fingers K^5 , the extremities of which are normally pressed with more or less pressure on the inclined edge K^6 of the carriage by means of the coiled spring K^7 on the light shaft or rod K^8 , upon which the grippers are fixed. The rod K^8 is mounted in bearing-pieces $K^9 K^9$, fixed on the top of the carriage, and one end of the coiled spring K^7 (which is under torsion) is connected to one of these bearing-pieces, and the other end is connected to the collar K^{10} , fixed on rod K^8 .

While the end of the top wrapper is suspended from the roller F in the position shown in Fig. 9 the carriage K is moved to the position shown in Fig. 10, and as it passes the incline L the antifriction-roller L^2 on the arm L^3 , rigidly secured to the rod K^8 , rides over this incline. By this means the arm L^3 is sufficiently raised to open the fingers K^5 away from the edge K^6 of the carriage and allow them to pass over the edge of the wrapper supported by the roller F. The roller L^2 then passes off the other side of the incline, and the fingers K^5 immediately drop and grip the end of the wrapper against the edge K^6 of the carriage. The motion of the carriage is then reversed, and the wrapper is carried along with it until the antifriction-roller L^2 engages the incline L^4 , projecting from the side frame C^5 , and, thereby opening the fingers K^5 , releases the wrapper and leaves it in the required position over the first pair of folding-rollers M M. A separate view, looking from the opposite side of the machine to Fig. 1, of the incline L and the part upon which it is

mounted is shown in Fig. 11. This incline is formed on the end of the arm L^5 , pivoted by the stud L^6 to the lug L^7 , projecting on the top of the bracket C' at that side of the machine. The under side of the incline L is made parallel to the top side. Consequently on the return stroke of the carriage the roller L^2 raises the incline and passes along without opening the grippers. The incline L^4 is inclined toward both sides. Therefore the roller L^2 rides over it when it approaches it from either side.

The paper to be folded and wrapped is placed upon the table N over the slot N^2 through the table. The adjustment-fences $N^3 N^3$ and N^4 are provided to facilitate placing the paper truly in position for the first fold to be made. When the paper is in position on the table and the wrapper beneath, the first folding-blade O descends and more or less folds the paper and wrapper and passes them between the first folding-rollers M to complete the fold. The folded paper A and wrapper a are then passed down between the guide-tapes P P into the stationary box P^2 , the bottom P^3 of which may be adjusted by the screws P^4 , so as to support the paper and wrapper in the proper position opposite the second pair of folding-rollers $M^2 M^2$ to receive the second fold. Fig. 12 represents a sectional detail showing the paper and wrapper in this position, and Fig. 13 is a separate view of a portion of the box P^2 , looking at right angles to Fig. 12. The second folding-blade O^2 is then operated, and the paper and wrapper are then folded between the rollers M^2 and are delivered into the tipping box Q, with the flap a^2 of the wrapper projecting, the tipping box Q having been brought to the position shown in the detail view, Fig. 15. The tipping box Q is mounted by journals Q^1 and Q^2 and loosely mounted in arms $Q^3 Q^3$, rigidly projecting from the rocking shaft Q^4 , mounted in bearings formed in the side frames $C^5 C^6$. The journal Q^2 has a crank Q^5 fixed on its outer end, the crank-pin Q^6 of which lies in the fixed cam-race Q^7 , formed in the fixing Q^8 , secured to the side frame C^6 . The cam-race is of such a form and is placed in such a position in relation to the shaft Q^4 that when the latter is operated and the arms Q^3 moved from the position shown in Fig. 15 to the position shown in Figs. 1 and 2 the box is inverted and the paper and wrapper are presented to the sealing-rollers $M^3 M^3$. As the box is inverted the gummed flap a^2 of the wrapper is rubbed against the spring-wiper R and is more or less folded over before it is pressed between the sealing-rollers, which press down the flap and deliver the paper completely wrapped into a basket or hopper beneath or any other suitable receiver. The wiper R is fixed on the rocking shaft R^3 , provided with a weighted arm R^4 .

In case it is only necessary to impart one fold to the wrapper and paper before sealing

it the two switch-pieces R^2 , Figs. 4 and 14, are inserted. They are hooked over two of the reduced portions P^5 of the guide-roller P^6 , and their lower ends pass between the rollers M^2 and lie in the reduced portions M^4 of these rollers. By this means the paper and wrapper are guided directly between the second pair of rollers and do not pass into the box P^2 . When the switches are in use, the second folding-blade O^2 is thrown out of action. The roller P^6 is mounted in bearings formed in the curved arms $P^7 P^7$. These arms are mounted on the cross-shaft P^8 , and one of them has an extension P^9 , with a screw-stop P^{10} to engage the side frame and limit the motion of the arms in that direction, while a spiral spring P^{11} , extended between P^9 and a projection P^{12} on the side frame, allows them to move under pressure in the reverse direction.

The first folding-blade O is fixed on the shaft O^3 , carried on the arms O^4 , fixed on the rocking shaft O^5 , mounted in bearings formed at the top of the side frames. The shaft O^5 is operated by the arm O^6 , projecting from the end and connected by the rod O^7 to the hanger O^8 , suspended by the stud O^9 to the side frame C^6 . The hanger O^8 carries an antifriction-roller O^{10} , which is engaged by a cam O^{11} on the cam-shaft.

The second folding-blade is mounted upon arm S , operated by the arm S^3 on one end, coupled by the rod S^4 to the lower end of the lever S^5 , pivoted on the stud S^6 , projecting from the side frame C^6 . The lever S^5 is vibrated by the cam O^{11} , engaging the antifriction-roller S^8 on the upper end of the lever.

The rocking shaft Q^4 , operating the tipping box, is operated by the arm T , fixed upon its end and connected to the triangular hanger T^2 , suspended from the stud T^3 , fixed in the frame C^5 , by the connecting-rod T^4 . The hanger T^2 is vibrated by the cam J^7 , engaging the antifriction-roller T^5 , mounted on the said hanger.

The first folding-rollers M are geared together by means of toothed wheels M^5 and M^6 , which intermesh, and with which wheel M^5 gears a toothed wheel C^{10} on the shaft M^8 . To press the rollers M together, a spiral spring M^9 is provided at each side, which springs are more or less compressed between the arms M^7 and lugs M^{10} on the side frames. The second pair of folding-rollers are arranged and driven in a similar way. They are connected together by the wheels U and U^2 , and the wheel U is driven by the stud-wheels U^3 and U^4 , connecting it to the spur-wheel C^9 . The wheel U^2 engages the wheel U^5 , loosely mounted upon the cross-shaft G^4 , carrying the arms $U^7 U^7$, in which one of the rollers M^2 is mounted. Springs M^9 are provided to press the rollers M^2 together.

The folding-rollers have preferably flat portions or faces m formed along them to facilitate folding the paper and wrapper between them, and the flat portions or faces of each pair of rollers are arranged to just be meet-

ing when the paper is folded between the rollers.

The folding-rollers are made with a series of grooves or reduced portions m^4 in addition to the grooves M^4 , provided to receive the switches R^2 . These grooves m^4 correspond in position to the full parts of the roller F . Consequently the gummed part of the wrapper passes through these grooves when the wrapper passes between the rollers. Therefore the gum is not disturbed and the rollers are not smeared.

The sealing-rollers M^3 are not necessarily geared together and are preferably intermittently driven with the object of retaining the paper, with the flap of the wrapper pressed down, between them for an appreciable time. The outer roller is provided with a toothed wheel W on its arbor which engages the stud-wheel W^2 . The stud-wheel W^2 is attached to the ratchet-wheel W^3 , the pawl W^4 of which is carried on one arm W^5 of the lever W^6 , loosely mounted on the shaft W^7 , carrying the wheel W^2 and ratchet W^3 . The outer arm W^8 of the lever is connected by the rod W^9 to the free end of the lever W^{10} , loosely mounted upon the shaft M^8 . The lever W^{10} is operated by the cam W^{13} engaging the antifriction-roller W^{14} , carried by the said lever.

The roller M^3 is mounted in bearings formed in the side frames, and the inner sealing-roller is carried by the arms V , projecting from the shaft V^2 . A spiral spring V^3 is provided at each side, having one end attached to the framework and the other to the ends of the arms V to keep the rollers M^3 pressed together.

The journals Q' and Q^2 of the tipping box are formed on end pieces X , fixed on the back plate X^2 of the box. The gripper-fingers X^3 are fixed on the light shaft X^4 , mounted in bearings formed in the end pieces X . A spiral spring X^5 , coiled around one end of X^4 , is arranged to press the fingers X^3 against the front edge X^6 of the plate X^2 with sufficient pressure to hold the paper as it is carried from the rollers M^2 to the rollers M^3 , but not sufficiently tight to prevent the paper being withdrawn by the latter rollers when it is presented to them. An arm X^8 is fixed on the other end of the shaft X^4 , which arm engages the projection X^7 on the side frame G^6 and opens the fingers sufficiently to admit the paper when the box is moved to the position shown in Fig. 15. The bottom X^9 of the box is made adjustable and is secured to the plate X^2 by the bolts X^{10} .

The front edge X^6 of the plate X^2 has notches X^{11} formed in it corresponding to the grooves m^4 to prevent the plate being smeared with gum. The edge of the second folding-knife O^2 is formed in a similar way for the same object.

We claim—

1. In a combined folding and wrapping machine, the combination with a wrapper-box

having a vertically-movable bottom and a stop against which the wrappers contained in the box are pressed when the said bottom is raised, of a roller having cut-away portions or recesses along its length, said roller being adapted to be brought into contact with the uppermost wrapper to apply gum thereto at intervals as described and means for lowering the bottom of the box after the gum has been applied to the said uppermost wrapper.

2. In a combined folding and wrapping machine, the combination with a gum-receptacle having a discharge-opening for the gum, and a roller projecting into said opening to receive gum, of a receptacle adapted to contain wrappers, a second roller adapted to be brought into contact with the uppermost wrapper, a driving-shaft, a cam-shaft, a cam on the latter, said shafts being geared together, a third shaft, connections intermediate the latter and the cam for effecting the rocking of the said third shaft, and a connection between the latter shaft and the said second roller whereby the latter is first brought into contact with the first roller to receive gum and then brought into contact with the uppermost wrapper to apply gum thereto.

3. In a combined folding and wrapping machine, the combination with a gum-receptacle having a discharge-opening for the gum, a distributing-roller projecting into said opening to receive gum, and a shaft upon which the distributing-roller is mounted, of a receptacle adapted to contain wrappers, a second roller adapted to be brought into contact with the uppermost wrapper, a driving-shaft, a cam-shaft, a cam on the latter, said shafts being geared together, a third shaft, connections intermediate the latter shaft and the cam for effecting the rocking of the said third shaft, a connection between the latter shaft and the said second roller whereby the latter is first brought into contact with the first roller to receive gum and then brought into contact with the uppermost wrapper to transfer the gum to the same, and connections intermediate the shaft of the gum-distributing roller and the cam whereby the said roller is intermittently moved when the said second roller is in contact with it.

4. In a combined folding and wrapping machine, the combination with a gum-receptacle having a discharge-opening for the gum, a distributing-roller projecting into said opening to receive gum, and a shaft upon which the distributing-roller is mounted, of a receptacle adapted to contain wrappers, a second roller adapted to be brought into contact with the uppermost wrapper, a driving-shaft, a cam-shaft, a cam on the latter, said shafts being geared together, a third shaft, connections intermediate the latter shaft and the cam for effecting the rocking of the said third shaft, a connection between the latter shaft and the said second roller whereby the latter is first brought into contact with the first roller to receive gum and then brought into

contact with the uppermost wrapper to transfer the gum to the same, a toothed wheel on the shaft of the gum-distributing roller, a rock-lever loosely mounted on said shaft, a pawl carried by one end of said lever and engaging the toothed wheel, a rock-shaft, pivotally-connected levers connecting the latter with the rock-lever, and further pivotally-connected levers connecting the said rock-shaft with the cam on the cam-shaft.

5. In a combined folding and wrapping machine, the combination with a wrapper-box, and a roller adapted to be brought into contact with the uppermost wrapper and apply gum thereto, of a reciprocating carriage, a shaft thereon, a series of spring-actuated fingers, carried by the said shaft, said fingers being adapted to cooperate with a transverse gripping edge on the carriage to clamp a wrapper as described and the said shaft being adapted to be tilted so as to raise the fingers to permit the edge of the wrapper suspended from the gumming-roller to pass between the fingers and the said edge of the carriage, and means for varying the extent of reciprocation of the carriage consisting essentially of a driving-shaft, a cam-shaft, a cam on the latter, said shafts being geared together, a rock-shaft, arms on the latter, and adjustably connected together, a rod connected at one end with the cam, and having an adjustable connection at the other end with one of the said arms, arms on the rock-shaft and rods connecting the latter arms with the carriage.

6. In a combined folding and wrapping machine, the combination with the table of the machine adapted to support the papers to be folded and wrapped and having a slot, of a pair of rollers arranged beneath the table and having their nipping edges approximately in line with the slot, a folding-blade arranged vertically and adapted to reciprocate through the slot, a second pair of folding-rollers, tapes or bands adapted to conduct the wrapper and contents to the said second pair of rollers, and a second folding-blade arranged to fold and force the wrapper and contents between the second pair of rollers, a pair of sealing-rollers, a box, and means for tilting the box after having received the wrapper and paper and simultaneously moving it from the second pair of folding-rollers toward the sealing-rollers whereby the said wrapper and paper are presented to the sealing-rollers.

7. The combination with a pair of folding-rollers and a pair of sealing-rollers, of a box adapted to receive the folded paper and wrapper from the folding-rollers and to be inverted to present the said paper and wrapper to the sealing-rollers, said box having an adjustable bottom or rest for the paper and wrapper, a back plate, and spring-pressed fingers adapted to grip the edge of the wrapper between them and the edge of said back plate.

8. The combination with a roller adapted to apply gum to the edge of a wrapper, said roller having reduced portions or grooves and

adapted to apply gum at intervals along the edge of the wrapper, of folding-rollers provided with reduced portions or grooves corresponding to the like portions of the gumming-roller, a pair of sealing-rollers, a box adapted to receive the folded paper and its wrapper from the folding-rollers and to be inverted to present them to the sealing-rollers, said box having a back plate provided with notches corresponding to the grooves in the folding-rollers, and spring-pressed fingers adapted to grip the edge of the wrapper between them and the back plate.

9. The combination with a pair of folding-rollers and a pair of sealing-rollers, of a box adapted to receive the folded paper and wrapper from the folding-rollers and to be inverted to present them to the sealing-rollers, said box having a back plate, spring-pressed fingers adapted to grip the edge of a wrapper between them and the back plate, a rock-shaft carrying the said fingers, an arm on said rock-shaft, a projection on the machine against which said arm is adapted to strike to effect the opening of the fingers when the box is moved toward the folding-rollers, for the purpose of receiving the wrapper and contents.

10. In a combined folding and wrapping machine, the combination with a wrapper-box having a vertically-movable bottom, of rock-shafts, a segmental rack mounted on one of said shafts, pinions on the shafts gearing the same together, arms on said shafts, links pivotally connected to the arms and to the bottom of the box, and a weighted arm also mounted on one of the rock-shafts operating to normally force the said bottom upwardly, a rotatable cam-shaft, a cam thereon, an arm carrying a pawl adapted to engage the rack, said arm being loosely mounted on one of the rock-shafts, connections between the latter arm and the cam, and a pivoted lever having one end weighted and its opposite end operating upon the pawl to disengage it from the rack in the manner described.

11. In a combined folding and wrapping machine, the combination with a wrapper-box and its vertically-movable bottom, of means for raising and lowering said bottom consisting of shafts B^8 , B^9 , pinions thereon engaging each other, arms B^6 , B^7 rigidly mounted on the shafts, links B^5 pivotally connected to the outer ends of the arms, and to the bottom, an arm on the shaft B^9 and carrying a weight, a segmental ratchet on the shaft B^8 an oscillatory arm D^3 loosely mounted on the latter shaft, a pawl loosely mounted on the arm D^3 and adapted to engage the ratchet D , a pivoted lever, one end carrying a weight and its other end being inclined and adapted to engage the pawl, and a stop to limit the throw of the latter lever.

12. In a combined folding and wrapping machine, the combination with a wrapper-box having a vertically-movable bottom upon which the wrappers are placed, of a bar ar-

ranged above the bottom against which bar the wrappers are pressed, and means for normally pressing the wrappers against the bar consisting of links pivotally connected at one end to the bottom of the box, rock-shafts, arms secured at one end upon said shafts and being pivotally connected at the other end to the other end of the links, pinions upon the rock-shafts gearing together, and a weighted arm carried by one of the rock-shafts, as described.

13. In a combined folding and wrapping machine, the combination with a wrapper-box, of means for gumming one edge of the wrappers comprising a paste or gum receptacle, a cylinder projecting into the latter and adapted to receive gum on its periphery, swinging arms, a roller carried by the said arms and adapted to apply gum to the edge of the wrappers and means for periodically operating the swinging arms to cause the roller to be brought into contact with the cylinder and receive gum therefrom, consisting of a cam-shaft, a cam thereon, a pivoted lever G^3 carrying at one end a roller bearing upon the cam, a rod G^2 connected to the other end of the lever G^3 , an arm G connected to the rod G^2 , a rock-shaft to which the arm G is secured arms F^5 rigidly secured to the rock-shaft, a shaft loosely mounted in the arms F^5 , and upon which shaft the swinging arms carrying the gumming-roller are mounted, a projection on one of the swinging arms, a roller on said projection, and an abutment against which the latter roller is adapted to strike.

14. In a combined folding and wrapping machine, the combination with a wrapper-box, of means for gumming one edge of the wrappers, comprising a gum-receptacle, a cylinder projecting into the latter and adapted to receive gum on its periphery, swinging arms, a roller carried by said arms adapted to apply gum to the edge of the wrappers, means for periodically operating the swinging arms to cause the roller to be brought into contact with the cylinder and receive gum therefrom, means for partially rotating the cylinder while the roller is in contact therewith, and means whereby the rotation of said roller is insured while in contact with the cylinder, consisting of a yielding roller mounted upon the shaft of the gumming-roller, and a disk mounted on the shaft of the cylinder and with which disk the yielding roller is adapted to come in contact, as described.

15. In a combined folding and wrapping machine, the combination with a wrapper-box, of means for gumming one edge of the wrappers comprising a gum-receptacle, a cylinder projecting into the latter and receiving gum on its periphery, a gumming-roller adapted to apply gum directly to the edge of the wrappers, a set of swinging arms in which said roller is mounted, a second set of swinging arms to which the first set is pivotally connected, an abutment or tappet arranged to effect a swinging movement of the first set

of arms independently of the second set at a certain point in the upward movement of the arms to thereby bring the gumming-roller into contact with the cylinder, and means for periodically raising the sets of arms, for the purpose specified.

16. In a combined folding and wrapping machine, the combination with a wrapper-box, of means for gumming one edge of the wrappers, comprising a gum-receptacle, a cylinder projecting into the latter and receiving gum on its periphery, a gumming-roller adapted to apply gum directly to the edge of the wrappers, a set of swinging arms in which said roller is mounted, a second set of swinging arms to which the first set is pivotally connected, an abutment or tappet, an anti-friction-roller carried by one of the first set of arms and adapted to strike said tappet at a point in the upward movement of the said first set of arms and means for periodically raising the sets of arms for the purpose specified.

17. The combination with a pair of folding-rollers, of a box adapted to receive the paper and its wrapper after having been folded by said rollers, a second pair of folding-rollers in proximity to said box and a blade adapted to force the folded paper and wrapper between the said second pair of rollers to receive a second fold, a second box arranged to receive the paper and wrapper after being folded by the second pair of rollers, said second box adapted to be inverted after receiving the paper and wrapper, a rock-shaft, arms mounted thereon and within which arms said second box is loosely journaled, a crank on one of the journals of the said box, and provided with a pin, a cam-race within which said pin is arranged, whereby to effect the tilting or inversion of the said box when the rock-shaft is turned and a pair of sealing-rollers adapted

to receive between them the contents of the second box when the latter is tilted, as specified.

18. The combination with a pair of folding-rollers, and a pair of sealing-rollers, of a box arranged intermediate said pairs of rollers, said box having an adjustable bottom, and being adapted to be inverted after receiving the folded paper and wrapper from the folding-rollers, and deliver the same to the sealing-rollers, and means for effecting the tilting or inversion of the box consisting of a rock-shaft, arms mounted thereon and within which arms said box is journaled, a crank on one of the journals of the box, and provided with a pin, and a cam-race within which said pin is arranged, as specified.

19. The combination with a pair of folding-rollers, and a pair of sealing-rollers, of a box arranged intermediate said pairs of rollers, and adapted to be inverted to deliver the folded paper and wrapper to the sealing-rollers, means for effecting the inversion of the box consisting of a rock-shaft, arms mounted thereon and within which arms said box is journaled, a crank on one of the journals of the box and provided with a pin, and a cam-race within which said pin is arranged and a series of gripper-fingers carried by the box adapted to grip the folded paper and wrapper after leaving the folding-rollers and during the inversion of the box, and until engaged by the sealing-rollers, as specified.

In testimony whereof we have hereunto set our hands in the presence of the two subscribing witnesses.

FRED WAITE.
JASON SAVILLE.

Witnesses:

DAVID NOWELL,
SAMUEL A. DRACUP.