No. 714,423. Patented Nov. 25, 1902.

G. R. WILLIAMS.

AUTOMATIC STOP MECHANISM FOR PAPER FEEDING OR OTHER MACHINES.

(Application filed Apr. 22, 1901.)

(No Model.) 4 Sheets—Sheet 1.

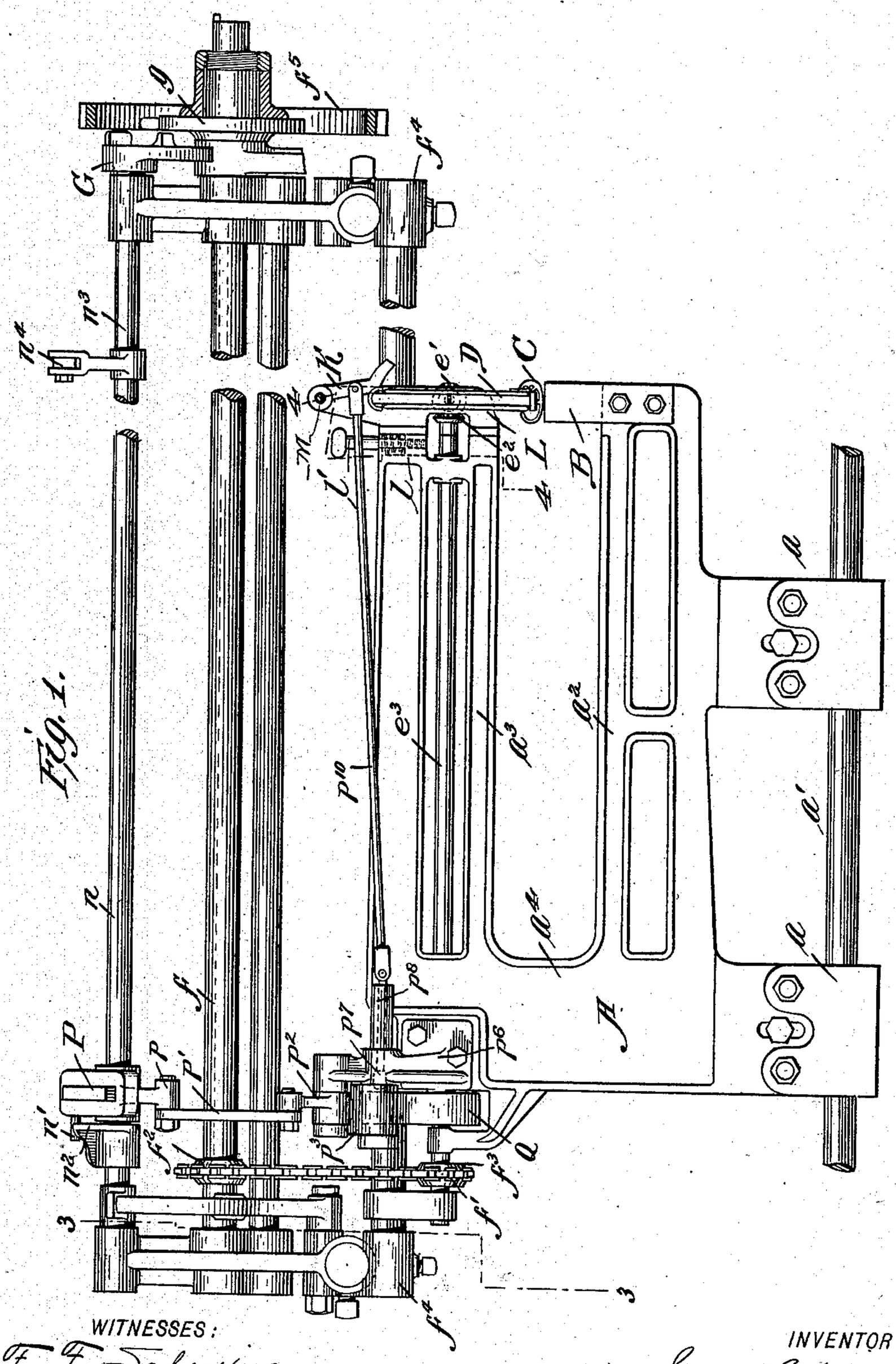

Fig. 1.

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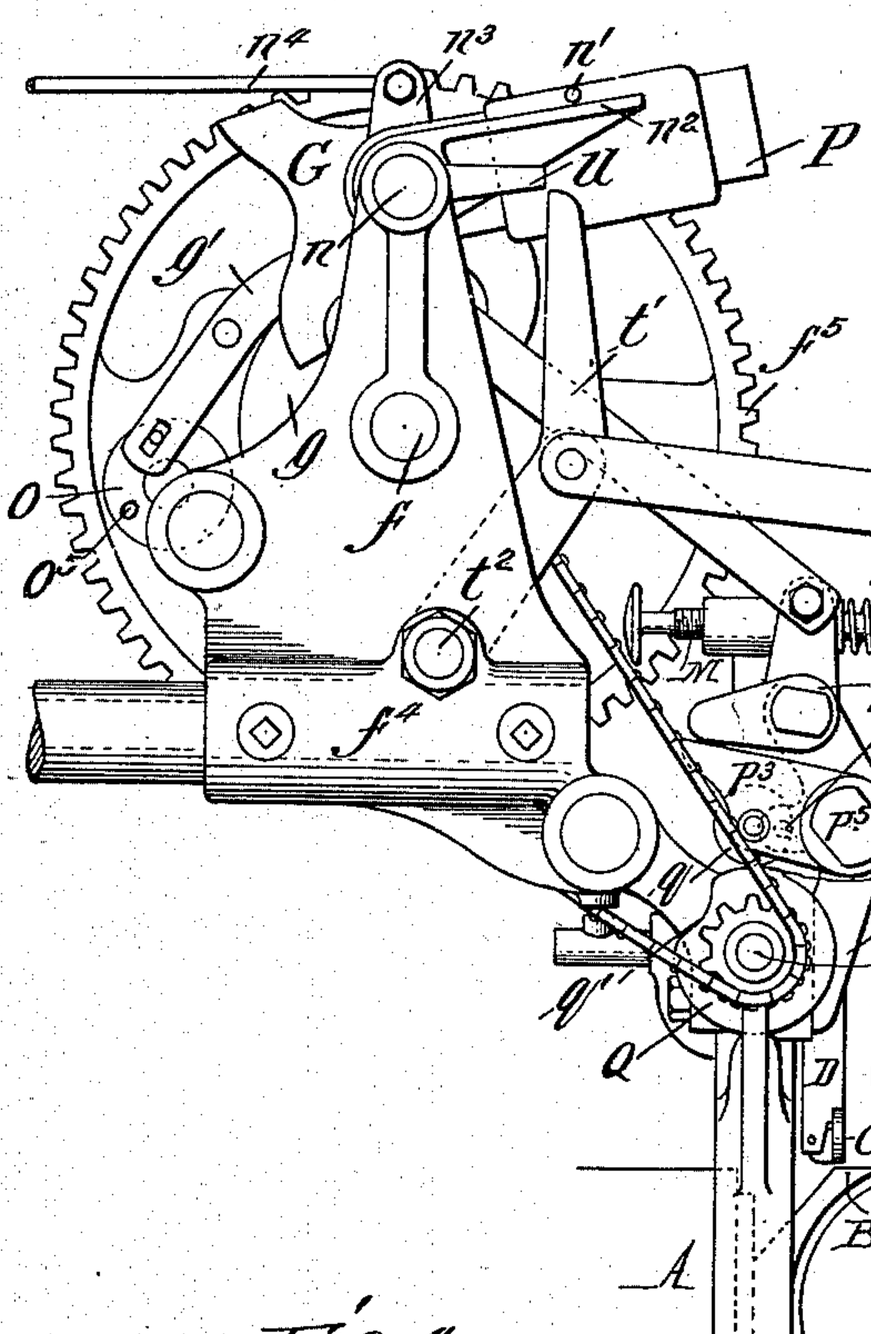


Fig. 2.

Fig. 4.

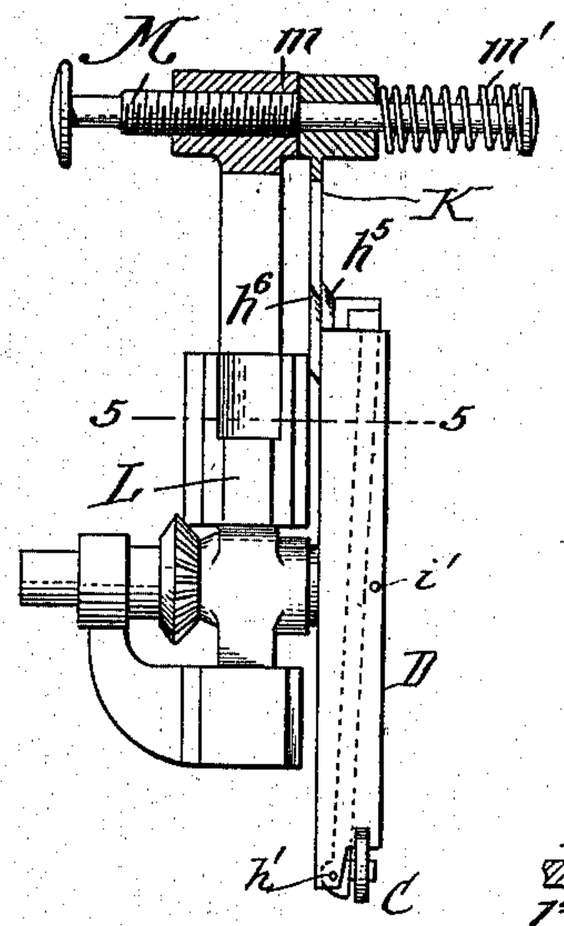


Fig. 5.

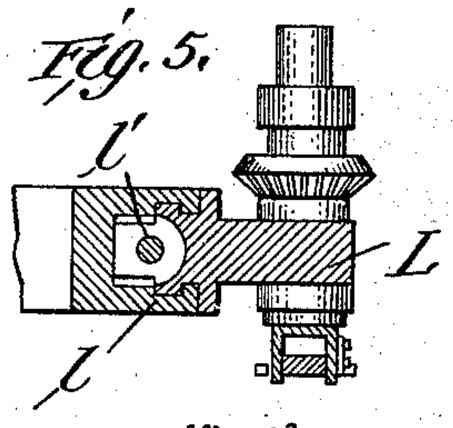


Fig. 9.

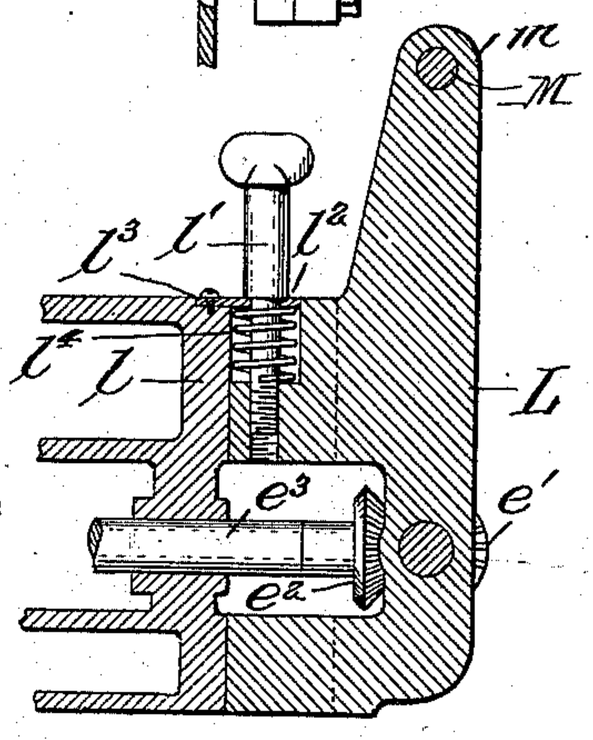


Fig. 10.

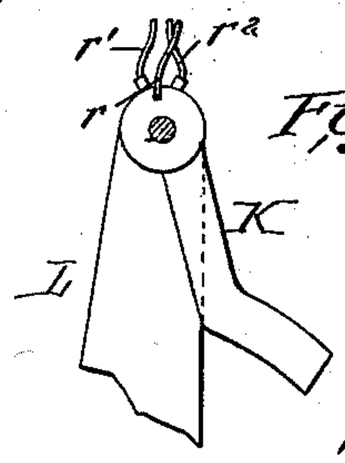
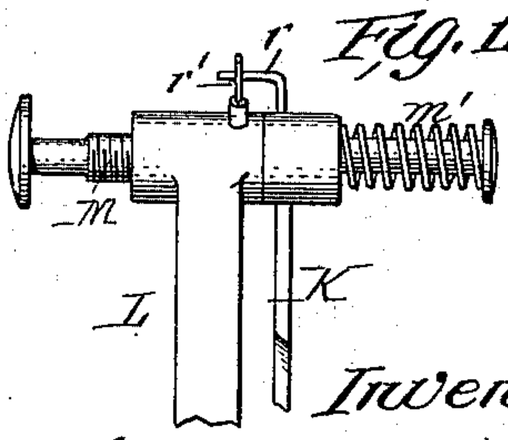


Fig. 11.



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(No Model.) 4 Sheets—Sheet 3.

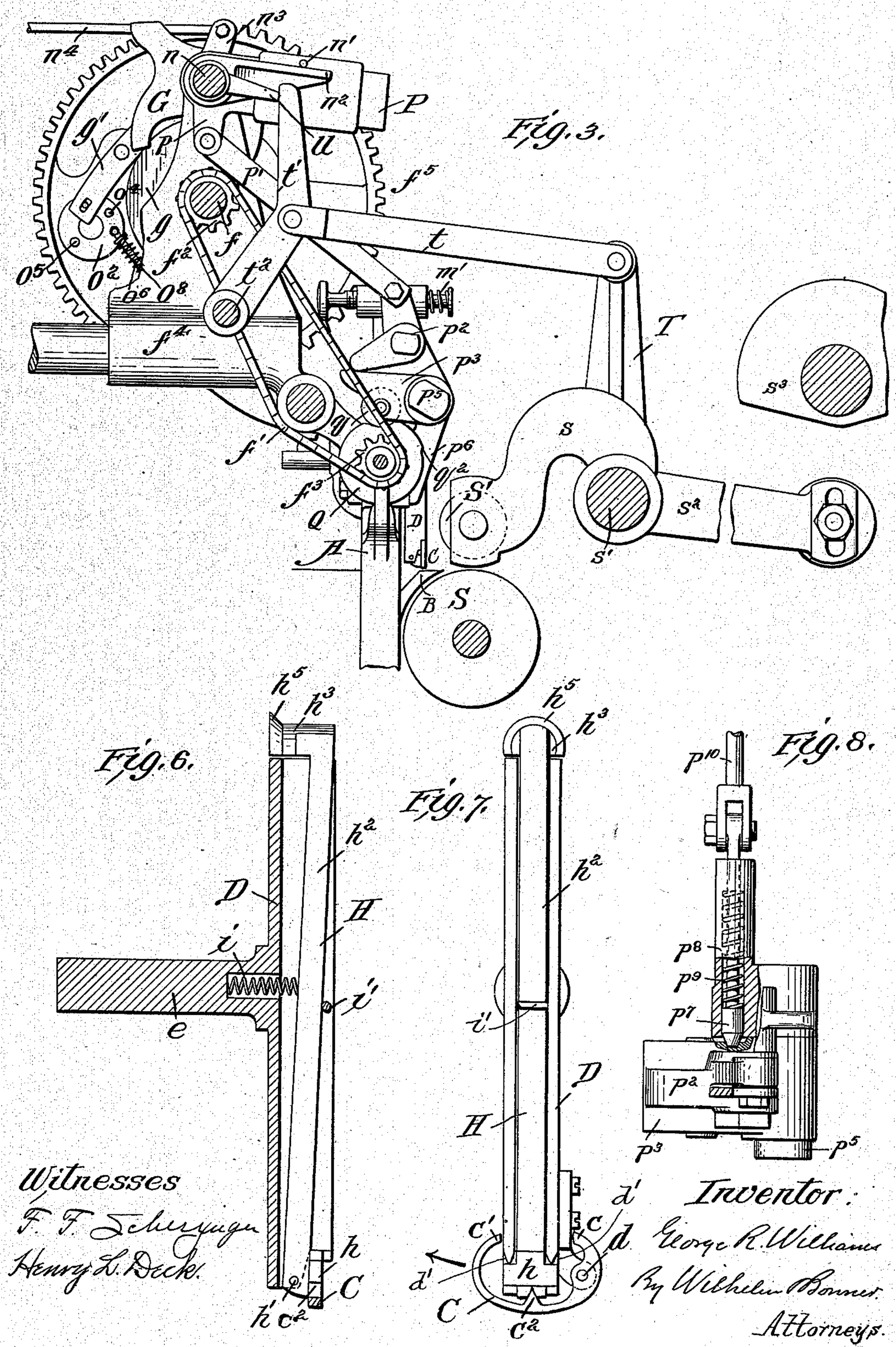

Fig. 3.

Fig. 6.

Fig. 7.

Fig. 8.

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(Application filed Apr. 22, 1901.

(No Model.)

4 Sheets—Sheet 4.

Fig. 12.

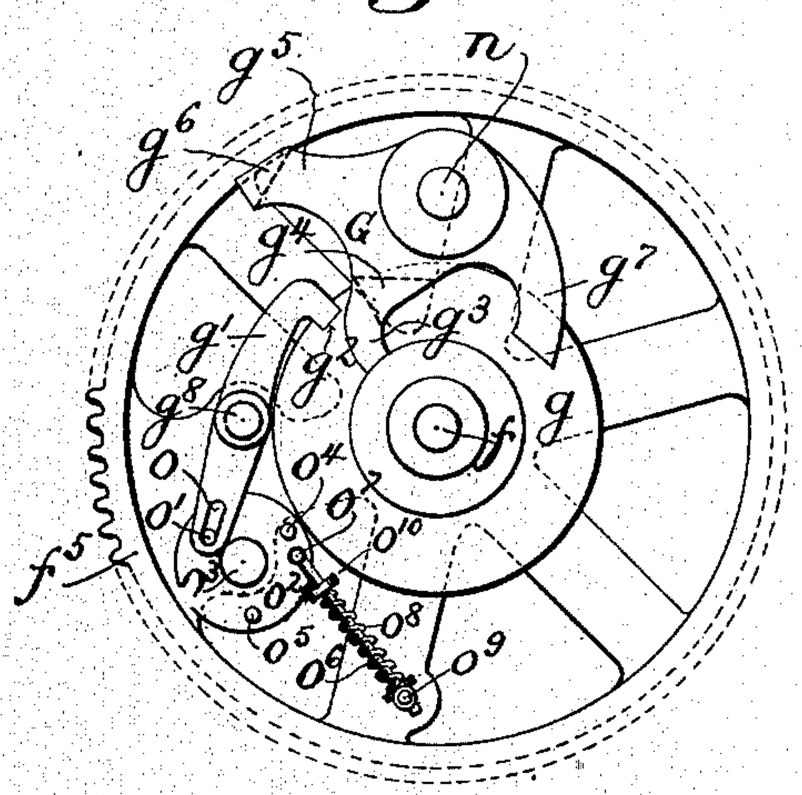


Fig. 13.

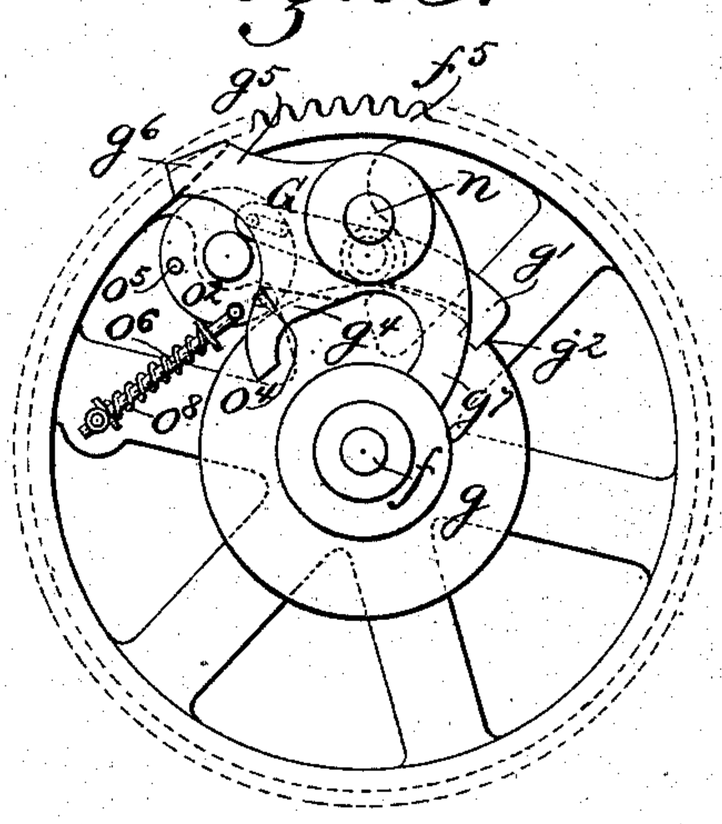


Fig. 14.

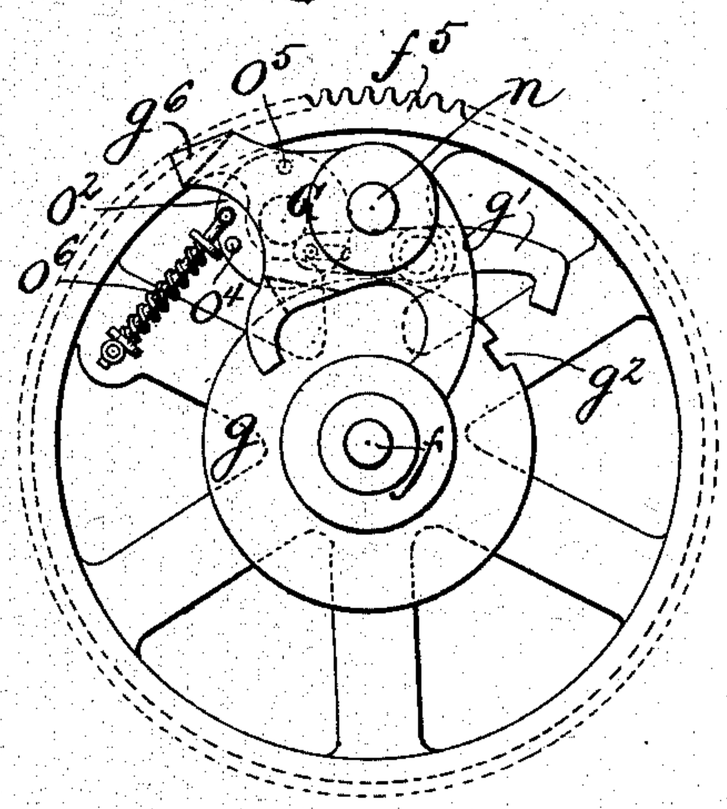
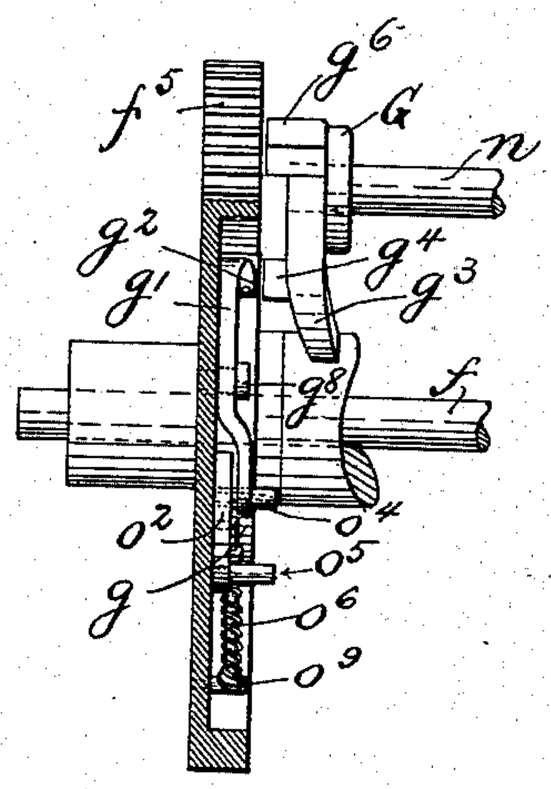


Fig. 15.



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UNITED STATES PATENT OFFICE.

GEORGE R. WILLIAMS, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE ECONOMIC MACHINE COMPANY, OF NEW YORK, N. Y.

AUTOMATIC STOP MECHANISM FOR PAPER-FEEDING OR OTHER MACHINES.

SPECIFICATION forming part of Letters Patent No. 714,423, dated November 25, 1902.

Application filed April 22, 1901. Serial No. 56,936. (No model.)

To all whom it may concern:

Be it known that I, GEORGE R. WILLIAMS, a citizen of the United States, and a resident of New York, in the borough of Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Automatic Stop Mechanisms for Paper-Feeding or other Machines, of which the following is a specification.

This invention relates to that class of automatic stop mechanisms which are employed in machines for feeding sheets of paper and in other machines for stopping the machine when an abnormal thickness of paper or other material is fed forward. In paper-feeding and other machines which operate upon sheets of paper such stop mechanisms are employed for stopping the machine automatically when two or more superposed sheets of paper are accidentally fed forward. Such stop mechanisms usually embody two gage or detector members—a lower one over which the paper moves and an upper one which is arranged at such a height above the lower member that it is not disturbed by a normal thickness of material, but is moved by an abnormal thickness and then causes the uncoupling of the driving mechanism, thereby stopping the machine. In this class of stop mechanisms the upper movable detector member receives its motion from the moving paper or other material, and such a mechanism is therefore not available when the sheet or other material comes to rest after it has been started and before it is fed forward, as in the case, for instance, when feeding sheets of paper to a folding-machine.

My invention has for its main object to produce an efficient and sensitive detector mechanism which is not dependent upon the moving material for its operation, but which is actuated positively and independently of the paper or other material, so that the detector is operative when the material is at rest and can be arranged to operate transversely or otherwise with reference to the direction of movement of the material, as may be most convenient. It is often the case that the available space between the paper-feeder and the folding or other machine to which the sheets are fed is so narrow that it does not admit of a detector mechanism which operates in the direction in which the paper moves. Furthermore, mechanisms of this last-named character require that the abnormal thickness of paper or other material should move through a certain distance in order to operate the movable detector member. This is often objectionable, for instance, in folding-machines where two sheets should be stopped instantly and before they can enter the folding-machine.

In the accompanying drawings, consisting of four sheets, Figure 1 is a fragmentary front elevation of a paper-feeding machine, showing mainly the stop mechanism, while the remainder of the width of the machine is broken off. Fig. 2 is a side view of Fig. 1, both Figs. 1 and 2 showing the parts in their normal position in which the driving mechanism is coupled. Fig. 3 is a sectional view on line 3 3, Fig. 1, showing the parts in the uncoupled position, indicating also the front part of a folding-machine to which the feeding-machine is coupled. Fig. 4 is a side view of the movable detector member and connecting parts, on an enlarged scale, partly in a section taken in line 4 4, Fig. 1, looking to the right. Fig. 5 is a horizontal section in line 5 5, Fig. 4. Fig. 6 is a longitudinal sectional view of the rotary detector-head and connecting parts on a still larger scale. Fig. 7 is a front elevation of the same. Fig. 8 is a top plan view, parts being broken away, of the parts containing the locking-bolt. Fig. 9 is an enlarged sectional elevation of the adjustable support for the movable detector member. Fig. 10 is a front elevation of the pendent arm modified by being provided with an electric contact for operating the stop mechanism. Fig. 11 is a side view of the same. Fig. 12 is a side elevation of the clutch mechanism, showing the parts in the normal driving position. Fig. 13 is a similar view showing the parts in the position in which they are about to uncouple the driving-pawl. Fig. 14 is a similar view showing the pawl uncoupled. Fig. 15 is a rear end elevation of the clutch mechanism with the gear-wheel partly in section.

Like letters of reference refer to like parts in the several figures.

The drawings illustrate my invention applied between a paper-feeding machine and a folding-machine for detecting two or more superposed sheets which are accidentally fed together from the pile and for stopping the machines before the sheets reach the folding-machine. The invention is, however, not confined to this particular use, which is simply illustrative of one application of the invention. The paper-feeding machine indicated in the drawings is of the kind in which the sheets are fed off successively from the top of a pile; but the invention may obviously be applied to other styles of machines.

The detector mechanism is mounted upon an upright frame A, which is secured transversely to the front portion of the frame of the feeding-machine and extends from one side of the machine inwardly. This frame is conveniently secured at its lower end by legs a to a horizontal bar a', which forms part of the frame of the feeding-machine. The frame A consists of a lower horizontal part a^2, which is arranged below the path of the paper, and an upper horizontal part a^3, which is arranged above this path. These two horizontal parts of the frame are connected at the side of the machine to an upright portion a^4.

The lower stationary detector member B is arranged at the inner end of the lower part a^2 of the frame A and is arranged at such a height and position that the sheet which is fed off will pass upon this member and come to rest upon the same.

The upper movable detector member C is so arranged as to move over the lower fixed member transversely to the direction of movement of the sheets. This movable member consists of a finger which has a curved lower face to slide easily over the paper and which is pivoted at its rear end to a rotary head or carrier D by a pivot d. This rotary carrier is mounted diametrically at the front end of a shaft e, which is arranged longitudinally in the machine, so that the rotation of the shaft and carrier in the direction of the arrow, Fig. 7, causes the movable detector member to sweep transversely over the underlying sheet. The shaft e is rotated by bevel-gears e' e^2 from the inner end of a transverse horizontal shaft e^3, which is journaled in the upper part a^3 of the frame. The shaft e^3 is driven from a horizontal shaft f of the feeding-machine by a chain f' and sprocket-wheels f^2 f^3 or other suitable mechanism in such manner that the carrier makes one revolution for every sheet which is fed out and causes the movable detector member to sweep over the stationary member after a sheet has been fed upon the same. The shaft f is journaled in the side frames f^4 of the feeding-machine in the usual way and is driven from a constantly-rotating gear-wheel f^5 by a releasable clutch of any suitable kind. The clutch shown for this purpose consists of a notched disk g, keyed to the shaft f and having a hub upon which the constantly-rotated gear f^5 is mounted. The gear carries a pivoted pawl g', which is thrown into and out of engagement with the notch g^2 in said disk by a crab G, to be described, so that by disengaging the pawl from the disk the rotation of the shaft f and the motion of the feeding mechanism actuated thereby are stopped.

The movable detector member C is pivoted to the rear side of the rotary carrier and is curved up on the front and rear sides of the carrier, forming a rear stop c, which limits the downward movement of the front end of this member, and a front stop c', which limits the upward movement thereof. The upward movement which is imparted to the movable member by an abnormal thickness of paper is very slight. This upward movement is transmitted to the short arm h of an elbow-lever H, which is arranged diametrically in the face of the carrier. This elbow-lever is connected to the carrier by a pivot h' near the movable finger C, so that the short arm h of the elbow-lever projects over the finger. The latter is preferably provided on its upper side with a knife-edge c^2, Figs. 6 and 7, by which it engages the short arm h, which latter is preferably formed by a hardened block secured to the long arm of the lever. The long arm h^2 of the lever H is arranged in a groove in the front side of the carrier and extends across the axial line of the shaft e to the diametrically opposite end of the carrier, where the lever H is provided with a rearwardly-projecting head h^3.

The lever H is held in its forward position by a spring i, of any suitable construction. This spring, as shown, is arranged in a socket formed in the front end of the shaft and bears against the rear side of the lever, holding the latter against a stop-pin i', secured across the groove of the carrier in front of the lever.

In the normal position of the lever its head h^3 is retracted and moves in rotating with the carrier past the front side of a depending arm K, by which the uncoupling mechanism is actuated. This arm K is arranged in rear of the rotary carrier, and the parts are so adjusted that in the normal position of the movable detector member C and lever H the head of the latter brushes past the front face of the pendent arm without disturbing the latter. The lower portion of this pendent arm is preferably arc-shaped or segmental, concentric with the axis of the detector-carrier.

When the movable member C encounters an abnormal thickness of paper, it is raised thereby and raises the short arm of the lever H. This slight upward movement is greatly multiplied by the long arm of the lever H and projects the head of the latter rearwardly from the carrier beyond the front side of the depending arm K. The head now strikes against the side of the arm and swings the latter rearwardly on its pivot. This move-

ment of the arm is utilized for uncoupling the driving mechanism, thereby stopping the machine.

The lower ends d' of the side walls of the rotary carrier D are preferably shaped as knife-edges, as shown in Fig. 7, to reduce the contact-surface between the short arm h of the lever and the carrier to a minimum. The lodgment of paper fiber and other solid matter between the short arm of the lever and the carrier is thereby prevented. When the short arm is fully raised, it rests against these knife-edges, whereby the pivot of the lever is relieved of pressure.

In order to insure the engagement of the head of the lever H with the pendent arm by a slight projection of the head, the latter is provided at its rear side with a flaring face h^5 and the arm at the front side with a similarly-flaring face h^6. A slight engagement of these flaring faces causes the lever to interlock with the arm and draws the head rearwardly into a firm engagement with the arm.

In order to adjust the detector-finger C to the thickness of the paper or other material operated upon, which may be greater or less at different times, the shaft of the rotary carrier is journaled in a vertically-movable support L, Figs. 1, 4, 5, and 9, mounted in a vertical guide l at the inner end of the upper part of the frame. This support is adjusted by a vertical screw l', engaging with its lower threaded end in said support and provided with a bearing-shoulder l^2, which rests upon a plate l^3, secured in the upper face of the upper frame portion. A spring l^4, arranged below the plate l^3, tends to force the support L down and permits the latter to rise if the detector-finger encounters an obstruction which would strain the parts if the support were rigidly secured. The range of vertical adjustment is so slight that it does not effect the intermeshing of the bevel-wheels.

The pendent shifting arm K is adjustable toward and from the rotary carrier in order to adjust the arm closely to the normal path of the elbow-lever. For this purpose the arm is mounted, as shown in Fig. 4, upon the neck of a horizontal adjusting-screw M, which is arranged with its threaded portion in a lug m at the upper end of the vertically-movable support L. The arm is hung loosely upon this neck of the screw and is snugly held against a shoulder at the rear end of the neck by a spring m'.

The parts by which the movement of the pendent arm is transmitted to the uncoupling mechanism are constructed as follows: The driving-pawl g', which engages in the notch g^2 of the disk g, and thereby couples the main shaft f to the driving-wheel f^5, is thrown into and out of engagement by the crab G, Figs. 1, 2, 12 to 15, which is of well-known construction. The crab is arranged on the inner side of the wheel f^5 and secured to a rock-shaft n, arranged above the shaft f. The crab has an inner arm g^3, provided with a stop or shoulder g^4, an outer arm g^5, provided with a stop or shoulder g^6, and a tailpiece g^7, which strikes against the hub of the wheel, and thereby limits the outward movement of the arms. The driving-pawl g' is connected with the wheel f^5 by a pivot g^8 and connected at its rear end by a slot O and pin O' with a shifting disk O^2. The latter is mounted on a pivot O^3 on the inner side of the wheel f^5 and provided with inner and outer shifting pins O^4 O^5, adapted to strike the stop-shoulders of the crab. O^6 is a shifting rod which is connected with the shifting disk between these pins by a pin O^7, and O^8 is a spring applied to said rod between a post O^9 on the wheel and a shoulder O^{10} on the rod. In the normal driving position of the parts (shown in Fig. 12) the pawl g' is engaged in the notch g^2, and the shifting pins O^4 O^5 pass between the stop-shoulders g^4 g^6 of the crab as the wheel f^5 rotates. When the crab is tripped for uncoupling the pawl, the arms of the crab are swung outwardly, as shown in Fig. 13, bringing the inner stop-shoulder g^4 into the path of the inner shifting pin O^4. The latter upon striking this shoulder during the rotation of the wheel f^5 is arrested, thereby turning the shifting disk in the direction of the arrow and compressing the spring until the shifting rod O^6 has passed the dead-center, when the expansion of the spring completes the movement of the shifting disk to the position shown in Fig. 14, thereby withdrawing the coupling-pawl g' from the notch g^2 of the disk g and stopping the machine. For starting the machine the crab is returned to its normal position. (Shown in Fig. 12.) This brings the outer stop-shoulder g^6 of the crab into the path of the outer shifting pin O^5 of the disk. This pin upon striking the stop during the rotation of the disk and pawl with the wheel reverses the shifting disk and throws the pawl into engagement with the notched driving-disk g.

P is a forwardly-projecting weighted elbow-lever, which is mounted loosely on the rock-shaft n. This lever is provided with a laterally-projecting pin n', arranged above a forwardly-projecting arm n^2 on the shaft, so that the downward movement of the lever when released will turn this shaft in such a direction that the crab is shifted to the uncoupling position. (Shown in Fig. 13.) When this takes place, the shifting disk is shifted by the crab and the driving-pawl is uncoupled, as described. For holding the crab in the normal position (shown in Fig. 12) the lower arm p of the weighted elbow-lever is connected by a rod p' with the upper arm of the elbow-lever p^2, resting with its lower arm upon a block p^3. The latter is connected at its front end by a pivot p^5 to a bracket p^6 on the upper part a^3 of the detector-frame. This block is held in its elevated position by a horizontal locking-pin p^7, Figs. 1, 2, and 8. This pin is arranged in a casing p^8, secured to the upper part a^3 of the detector-frame, and

is projected by a spring p^9, so that it engages with its outer end in a corresponding opening in the inner side of the pivoted block p^3. The locking-pin is connected with the pendent arm K by a rod p^{10}. So long as the pendent arm is in its normal position the weighted lever is sustained by the locking-pin, the block p^3, and connecting parts. When the pendent arm is moved by an abnormal thickness of paper, it pulls the pin out of the pivoted block and allows the latter to swing down when otherwise unsupported. This allows the weighted lever P to swing down and causes the pin n' on the same to strike the arm n^2, secured to the shaft n, depressing said arm and rocking the shaft, so as to place the crab into the uncoupling position, thereby uncoupling the pawl and stopping the machine as soon as the inner pin of the shifting disk in the rotation of the latter with the wheel strikes the crab and causes the uncoupling-pawl to be withdrawn from the notched driving-disk.

The pivoted supporting block or arm p^3 is arranged above a cam Q, which is secured to the outer portion of the shaft e^3. This arm or block is provided with a roller q, which is adapted to run upon the face of the cam. The latter is provided with a notch q', into which the roller drops when the block is released by the withdrawl of the locking-pin. The face of the cam is provided in front of the notch with a slightly-raised portion q^2, Fig. 2. This lifts the roller slightly as the notch approaches the roller and relieves the locking-pin from the weight of the block, the weighted lever, and connecting parts. The pin is so relieved while the detector-finger sweeps over the stationary member, and this permits the easy withdrawal of the pin by the pendent arm if the latter should be actuated by the detector encountering an abnormal thickness of material.

The driving-shaft performs part of a revolution before the clutch is uncoupled, and this is utilized for resetting the detector mechanism before the machine stops. For this purpose the notch q' in the cam Q is made so short circumferentially that immediately after the weight has been dropped and the rock-shaft n set for uncoupling the roller q of the block p^3 is raised out of the notch of the cam upon the face thereof, thereby raising the block p^3 until it is again engaged by the locking-pin. This upward movement of the block p^3 and connecting parts raises the weighted arm P to its elevated position. The detector mechanism is now set and ready to respond again to an abnormal thickness of material.

The machine having been stopped and the extra sheet or other material having been removed, the clutch is again thrown into engagement by the operator. For this purpose any suitable hand mechanism is provided. For instance, the rock-shaft n may be provided with an arm n^3 and shipper-rod n^4 for shifting the crab G so as to throw the clutch-pawl g' into engagement.

The mechanism by which the movement of the pendent arm K uncouples the driving mechanism can be modified in various ways. For instance, as indicated in Figs. 10 and 11, the arm can be provided with a push-pin r and the lug to which it is pivoted with two contacts r' r^2, so arranged that the push-pin of the arm makes contact with the yielding contact r^2 of the lug and presses the latter against the contact r', thereby closing an electric circuit when the arm is moved out of the normal position by the lever H. The electric contrivances by which the current is made effective can be constructed as described and shown in Letters Patent No. 567,262, dated September 8, 1896, to B. W. Child, or in any other suitable manner.

The sheets of paper which are fed out by the feeding-machine pass usually upon the leading-in or take roller S of the folding or other machine to which the sheets are fed, and each sheet is propelled forward when the drop-roller S′ descends and presses the sheet against the lower roller. In the drawings the drop-roller is shown as being supported in arms s, which project farwardly from a rock-shaft s', provided with a rearwardly-projecting arm s^2, which is engaged by a rotary cam s^3 in a well-known manner, so that the cam alternately raises the roller and allows the same to drop. Often the descent of the drop roller or rollers, of which there may be several, is expedited by a spring.

T is a rock-arm which projects upwardly from the rock-shaft and which is connected by a rod t with a rock-arm t', connected at its lower end to the feeder-frame by a pivot t^2. This arm t' is rocked back and forth by the connection with the rock-arm T and oscillates in unison with the upward oscillatory movement of the drop-roller.

U is a finger which projects forwardly from the uncoupling rock-shaft n of the feeding-machine. This finger is so arranged on this shaft that the free end of the finger stands just above the upper end of the rock-arm t' when the shaft n stands in the coupling position, as indicated in Fig. 2. In this position of the parts the rock-arm t' oscillates freely underneath the finger U and the descent of the drop-roller is not interfered with. When the shaft n is turned into the uncoupling position by the downward movement of the weighted lever, the free end of the finger U is swung down into the path of the upper end of the rock-arm t'. The latter strikes against the finger, and the drop-roller is thereby held in its elevated position, so that a sheet which may have reached the lower or tape roller is not fed forward. Upon returning the shaft n to the coupling position the finger U is raised out of the way of the rock-arm t', and the operation proceeds as usual.

In my improved detector mechanism the

detector-finger is moved periodically with a positive movement over the opposing detector member into and out of the calipering position and does not depend for its operation upon the movement of the sheets. The detector can therefore operate upon sheets which are at rest, and the movement of the finger over the stationary member can take place at right angles to the direction in which the sheets move, which provides a very compact arrangement of the mechanism between the feeding-machine and the folding or other machine to which the sheets are fed. As the moving detector member or finger sweeps over the stationary member with a rotary movement the finger is in the calipering or detecting position but a moment and frees itself from the paper or other material immediately upon passing out of that position, whereby the contact with the sheets is rendered exceedingly brief and mutilation of the sheets is avoided. The detector-finger is out of the way while the sheet is being fed forward and does not in any way interfere with the sheets and is not liable to be operated by a fold or crumpled portion of a sheet.

When long sheets are fed, it may be desirable to speed the rotation of the rotary carrier so that it makes two or more revolutions for every sheet in order to detect half-sheets or portions of sheets which are carried on top of a sheet, as is sometimes the case with inferior paper.

I claim as my invention—

1. The combination of two detector members, one of which is capable of being moved out of its normal position by an abnormal thickness of material between the members, means for periodically moving one of said members over the surface of said material and into the calipering position practically in the direction of such surface, and a stop mechanism which is actuated by said movable member, substantially as set forth.

2. The combination of two detector members, one of which is capable of being moved out of its normal position by an abnormal thickness of material between the members, a movable carrier to which said movable member is attached and which moves said movable member periodically over the other member and into the calipering position practically in the direction of the surface of the material, a multiplying-lever which is mounted on said carrier and engaged by said movable member, and a stop mechanism which is actuated by said movable member through said multiplying-lever, substantially as set forth.

3. The combination of two detector members, one of which is capable of being moved out of its normal position by an abnormal thickness of material between the members, a rotary carrier for said movable member, means whereby said carrier is rotated to bring the member attached thereto periodically in and out of the calipering position, and a stop mechanism which is controlled by said movable member, substantially as set forth.

4. The combination of a detector member, a movable detector-finger which is shifted out of its normal position by an abnormal thickness of material, a rotary carrier to which said finger is pivoted, a multiplying-lever arranged on said carrier and engaging said finger, a shifting arm which is engaged by said lever when the finger is moved out of its normal position, and a stop mechanism which is actuated by said shifting arm, substantially as set forth.

5. The combination of a detector member, a rotary carrier, a detector-finger pivoted to said carrier at one end thereof, a multiplying-lever pivoted to the carrier near said finger and extending across the center of the carrier to the opposite end thereof, a movable shifting arm which is actuated by the free end of the multiplying-lever, and a stop mechanism which is actuated by said shifting arm, substantially as set forth.

6. The combination of a detector member, a rotary carrier, a detector-finger pivoted to said carrier, a multiplying-lever pivoted to said carrier and engaging said finger with its short arm and having its long arm provided with a flaring face, a movable shifting arm provided with a corresponding flaring face, and a stop mechanism which is actuated by said shifting arm, substantially as set forth.

7. The combination of two detector members, one of which is capable of being moved out of its normal position by an abnormal thickness of material, a rotary carrier to which said movable member is attached, a support in which said carrier is journaled and which is adjustable toward and from the opposing member, a multiplying-lever mounted on said carrier and engaging said movable member, a shifting arm which is engaged by said lever when said movable member is moved out of its normal position, and a stop mechanism which is actuated by said shifting arm, substantially as set forth.

8. The combination of two detector members, one of which is capable of being moved out of its normal position by an abnormal thickness of material, a rotary carrier to which said movable member is attached, a multiplying-lever mounted on said carrier, a shifting arm which is engaged by said lever when said movable member is moved out of its normal position, means whereby said shifting arm can be adjusted toward and from said multiplying-lever, and a stop mechanism which is actuated by said shifting arm, substantially as set forth.

9. The combination of a stationary detector member, a movable detector-finger, a grooved rotary carrier to which said finger is pivoted, a multiplying-lever arranged in the groove of said carrier, a spring and stop whereby said lever is yieldingly held in position, a shift-

ing arm adapted to be actuated by said lever, and a stop mechanism which is actuated by said shifting arm, substantially as set forth.

10. The combination of two detector members, one of which is capable of being moved out of its normal position by an abnormal thickness of material, a rotary carrier to which said movable member is attached, means whereby said carrier is rotated to bring said movable member periodically over the opposing member, a multiplying-lever mounted on said carrier and engaging said movable member, a shifting arm which is actuated by said multiplying-lever, an uncoupling device for the driving mechanism, and a bolt which holds the uncoupling device in its coupled position and which is connected with said shifting arm and is withdrawn thereby when the movable detector member is moved out of its normal position, substantially as set forth.

11. The combination of two detector members, one of which is capable of being moved out of its normal position by an abnormal thickness of material, a rotary carrier to which said movable member is attached, a shifting arm which is actuated from said movable member, an uncoupling device for the driving mechanism, a weighted actuating device for said uncoupling device, a movable support for said weighted actuating device, a locking-bolt whereby said support is sustained in its elevated position and which is withdrawn by said shifting arm when said movable member is moved out of its normal position, and a rotary cam which allows said support to drop when released by said bolt and which afterward returns the support to its elevated position, substantially as set forth.

12. The combination of two detector members, one of which is capable of being moved out of its normal position by an abnormal thickness of material, a rotary carrier to which said movable member is attached, a shifting arm which is actuated from said movable member, an uncoupling device for the driving mechanism, a weighted actuating device for said uncoupling device, a movable support for said weighted actuating device, a locking-bolt whereby said support is sustained in its elevated position and which is withdrawn by said shifting arm when said movable member is moved out of its normal position, and a rotary cam provided with a lifting-face which lifts said support sufficiently to relieve the locking-bolt from the weight in preparing said bolt for withdrawal, substantially as set forth.

13. The combination of two detector members, one of which is capable of being moved out of its normal position by an abnormal thickness of material, a rotary carrier to which said movable member is attached, a shifting arm which is actuated from said movable member, a rock-shaft connected with the uncoupling device of the driving mechanism, a weighted lever for moving said shaft to the uncoupling position, an elbow-lever connected with said weighted lever, a pivoted support for said elbow-lever, and a locking-bolt which sustains said support in its elevated position and which is connected with said shifting arm and withdrawn thereby for allowing said weighted lever to move said shaft to the uncoupling position, substantially as set forth.

14. The combination of a rock-shaft which is connected with the uncoupling device of the driving mechanism, a detector mechanism by which said shaft is automatically turned to the uncoupling position, a drop-roller, an oscillating arm which is connected with the rocking support of said roller and moves in unison therewith, and a stop-finger which is secured to said rock-shaft and which clears said oscillating arm in the coupling position of the shaft, allowing the drop-roller to descend, and which projects into the path of said oscillating arm in the uncoupling position of said shaft and prevents the descent of the drop-roller, substantially as set forth.

Witness my hand this 18th day of April, 1901.

GEORGE R. WILLIAMS.

Witnesses:
GEO. C. KIMBALL,
H. SCANTLEBURY.