

F. W. ROLLAND, JR.
WEB CONTROLLER FOR PRESSES.
APPLICATION FILED JULY 24, 1908.

Patented June 22, 1909.
2 SHEETS—SHEET 1.

925,949.

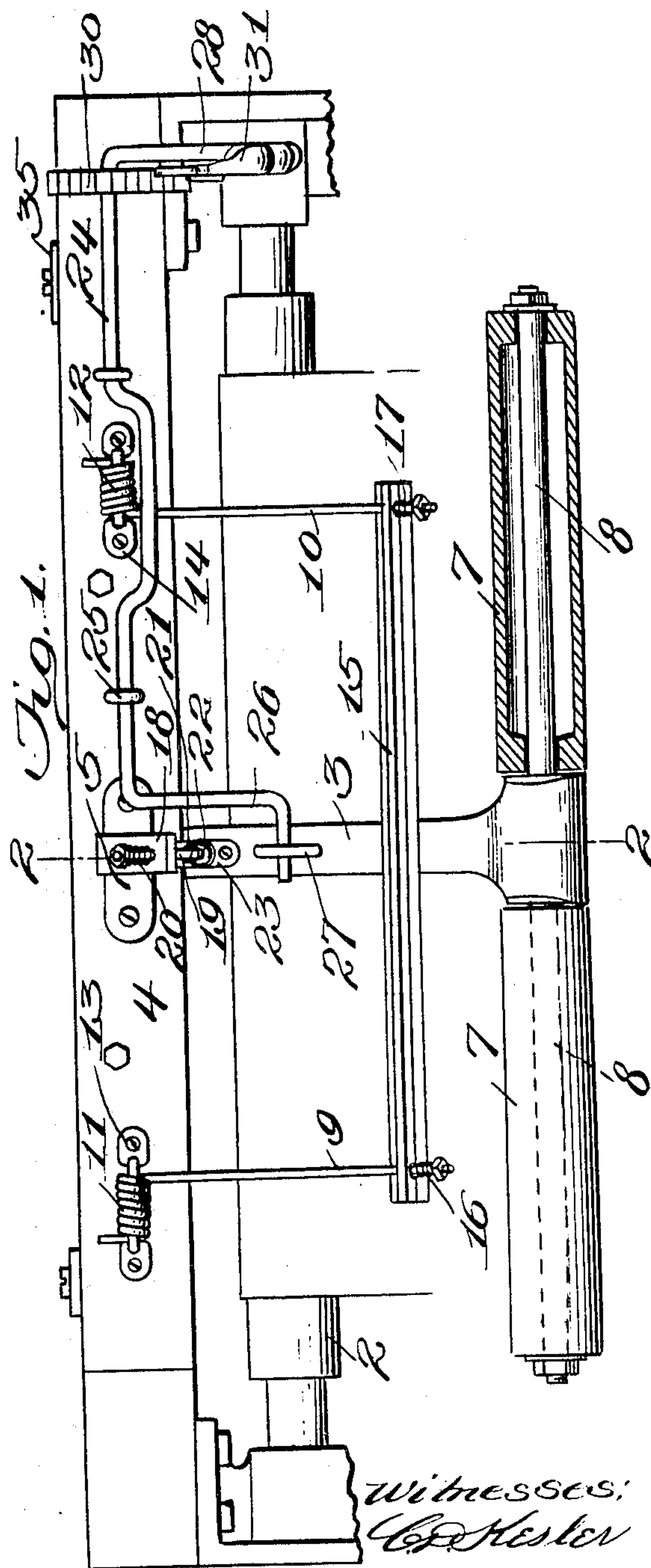
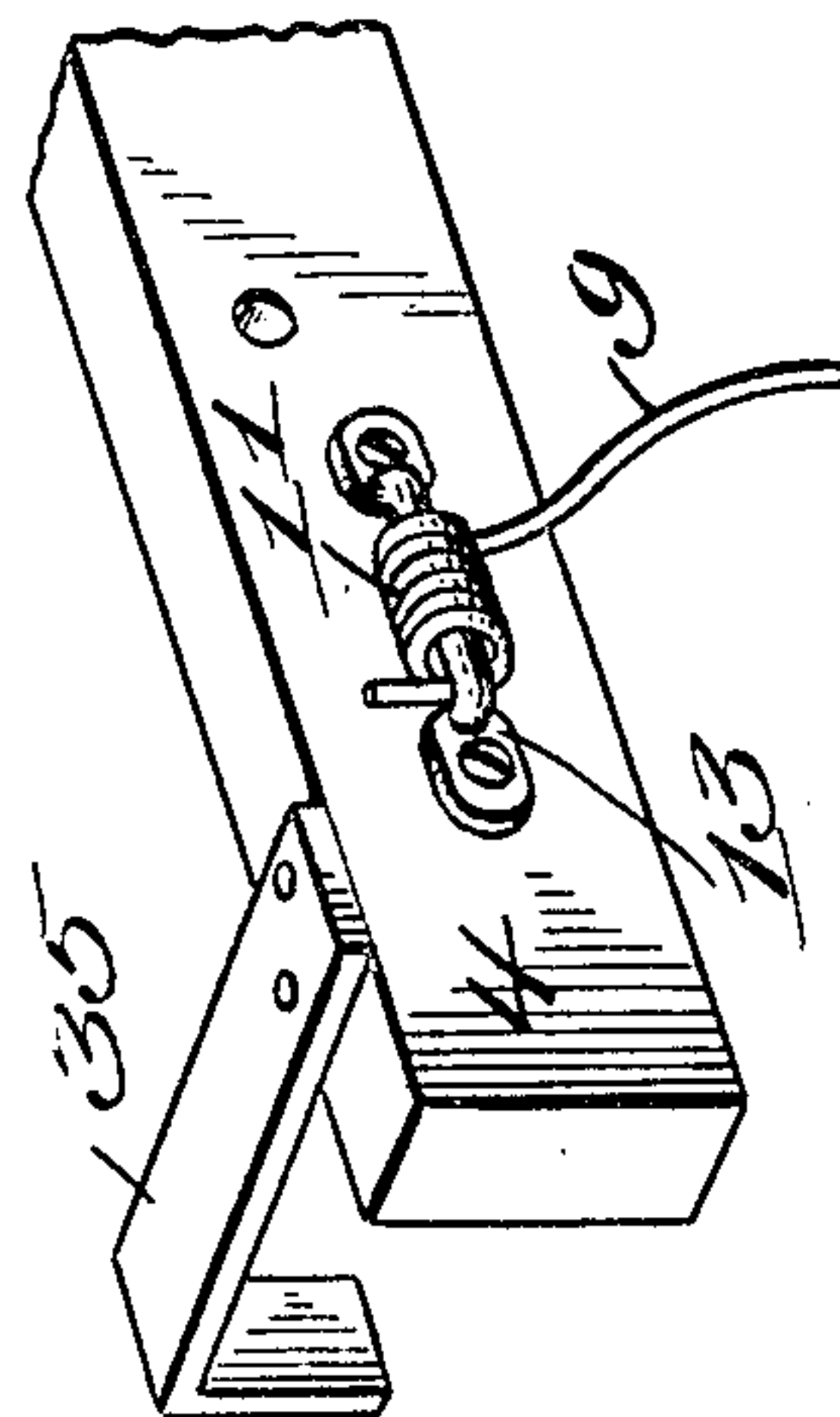


Fig. 4.



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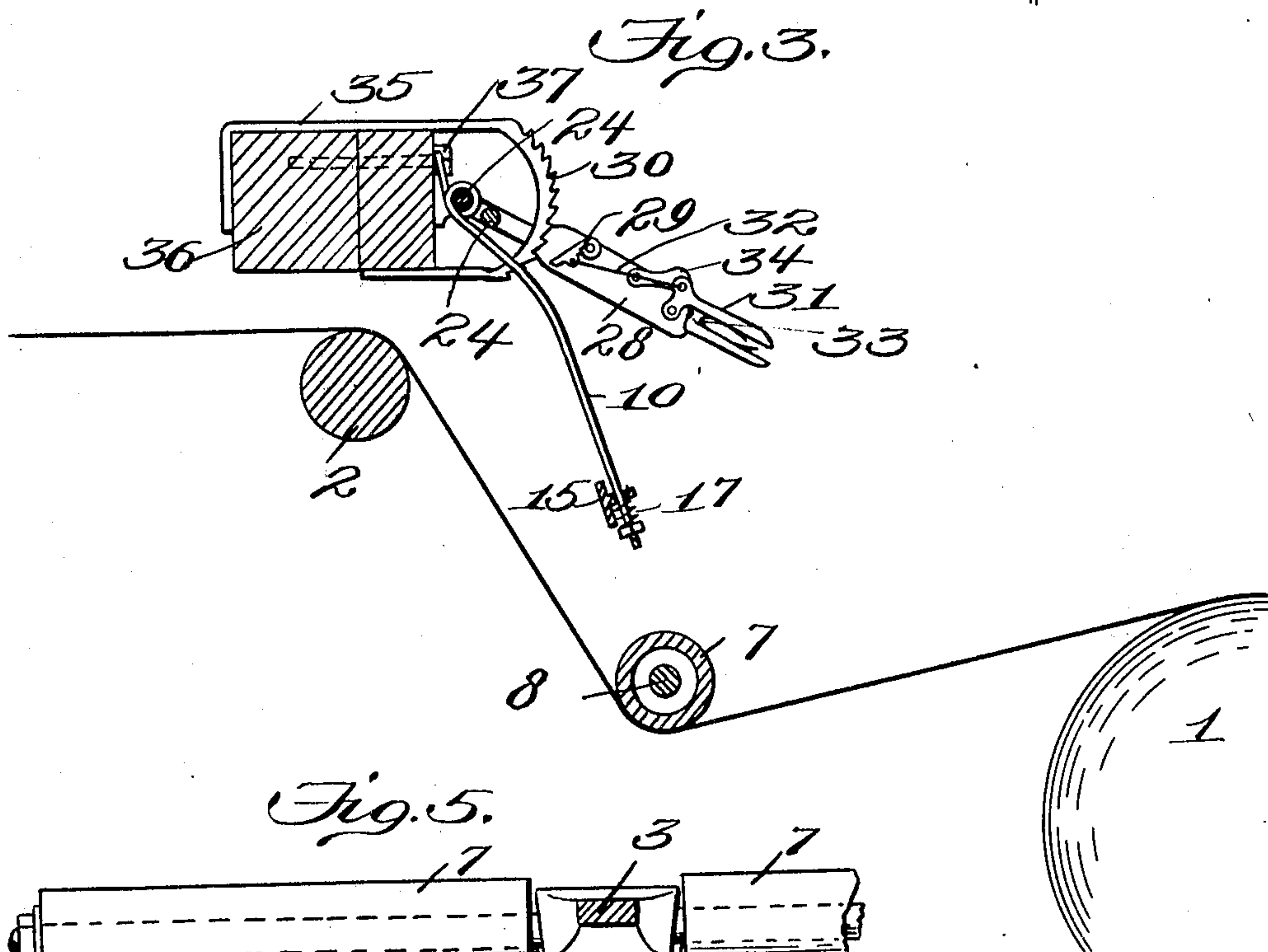
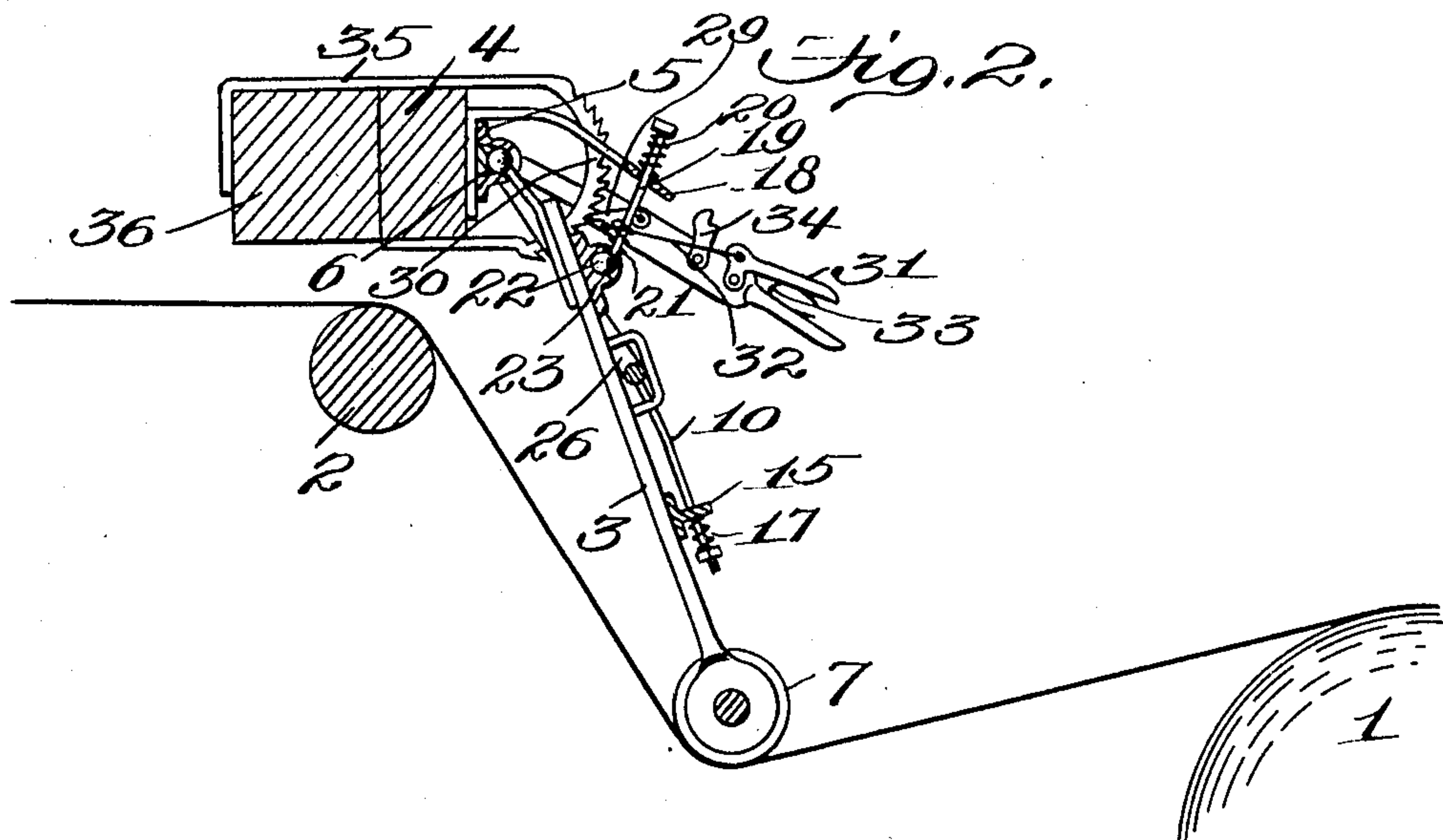
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2 SHEETS—SHEET 2.

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UNITED STATES PATENT OFFICE.

FREDERICK W. ROLLAND, JR., OF CHICAGO, ILLINOIS.

WEB-CONTROLLER FOR PRESSES.

No. 925,949.

Specification of Letters Patent.

Patented June 22, 1909.

Application filed July 24, 1908. Serial No. 445,244.

To all whom it may concern:

Be it known that I, FREDERICK W. ROLLAND, Jr., a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Web-Controllers for Presses, of which the following is a specification.

My present invention relates to improvements in devices for controlling or regulating the feed of a web of paper to or through presses and particularly for automatically taking up or controlling the slack between the paper roll and the feed rollers of the press, and it has for its object primarily to provide a novel and improved control of this character which enables presses equipped therewith to be started with the greatest facility and either without liability of snapping the web or over-feeding the web of paper immediately after the relatively heavy paper roll has started to revolve, the controller being provided with a detaining device which is automatically set by the abnormal tension of the web of paper upon the starting of the press and which device prevents action of the controller until after the press and paper roll have attained normal operating conditions.

Further objects of the invention are to provide means for supporting the controller upon the press whereby controllers of different sizes may be readily interchanged according to the dimensions of the rolls of papers to be fed, to provide means for preventing shocks due to sudden movements of the controller either upon the starting of the press or the breakage of the web, and to provide other improvements over my prior patent, No. 745,240 granted November 24, 1903.

To these and other ends, the invention consists in certain improvements, and combinations and arrangements of parts, all as will be hereinafter more fully described, the novel features being pointed out particularly in the claims at the end of the specification.

In the accompanying drawing: Figure 1 is a front elevation of a web controller constructed in accordance with my present invention; Fig. 2 represents a transverse vertical section of the controller taken upon the line 2—2 of Fig. 1, the position of the web relatively to the controller being indicated prior to the starting of the press; Fig. 3 is a view similar to Fig. 2 showing the relative position of the detaining device during the

normal operation of the press; Fig. 4 is a perspective view of one end of the controller frame showing the improved means for detachably mounting it upon its support on the press; and Fig. 5 is a detail view of the web engaging member.

Similar parts are designated by the same reference characters in the several views.

In the starting of presses wherein the paper is fed thereto in the form of a web which is unwound from a roll, the weight of the roll is considerable, and upon the starting of the press, a relatively high tension is imposed upon the web in order to overcome the inertia of the paper roll and start it revolving at the normal speed. In using a spring-pressed controller between the paper roll and the press to compensate for slack due to irregularities between the operation of the press and the roll, such controllers upon the starting of the press are thrown against the action of their springs into an abnormal position because of the relatively high tension upon the web, but as soon as the paper roll has attained a normal speed of rotation, these controllers being unrestrained will act with a considerable spring pressure upon the web tending to deflect it and thereby accelerate the rotation of the paper roll so that the latter will feed the paper to the press faster than the press uses the same, and upon the slowing down in the rotation of the paper roll, there is a tendency to break or snap the web. This objection or defect is overcome in the present invention by providing a restraining device which is automatically set upon the starting of the press and is held from acting upon the web until after the same has attained its normal operating speed.

In the accompanying drawing, I have shown one embodiment of the invention which is adapted to cooperate with the web of the paper at a point between the paper roll and the press, the reference character 1 designating the paper roll and 2 one of the feed rollers of the press.

The controller in the present instance comprises an arm 3 which is attached to the supporting frame 4 of the controller by means of a connection which will permit a rising and falling movement of the controller or a relative torsional movement thereof in order to accommodate it to that portion of the web with which it engages, a universal joint being shown in the present instance

which is composed of a bracket 5 which is fixed to the frame 4 and provided with a socket to cooperate with a ball or head 6 which is attached to the upper end of the arm 3. The arm 3 carries a transversely extending part which is adapted to be arranged transversely of the length of the web and to bear upon the same during its feeding movement. The paper engaging portion of the controller may either be in the form of a slide or strip such as that shown in my prior patent aforesaid, or it may embody a pair of rollers 7 which are journaled to revolve in a pair of spindles 8 which project laterally from the opposite sides of the arm 3. These spindles are slightly yieldable under the pressure of the controller, and in order to prevent binding between the inner ends of the rollers and the adjacent portion of the arm 3, the sides of the latter are beveled or tapered inwardly and upwardly, as shown. A web engaging member of this character minimizes the tendency of the web to tear, as the pressure at the edges of the web where the tear starts is less than the pressure toward the center of the web.

The controller is normally pressed into engagement with the web by means of a pair of spring arms 9 and 10, the upper ends of which are coiled to form a pair of torsional spring members 11 and 12 which encircle and are supported by brackets 13 and 14 fixed to the controller frame 4, and the free ends of these spring members engage a relatively fixed portion of the frame 4 so as to exert the necessary spring tension upon the controller. The ends of these spring members engage apertures in the ends of the cross-piece 15 which engages the arm 3, and these spring arms also serve to prevent relative lateral movement of the controller. In order to permit a relatively free swinging movement of the controller, the ends of the spring arms preferably have a sliding engagement with the cross-piece, and a pair of tension springs 16 and 17 are preferably interposed between this cross-piece and the free ends of these members as shown.

In order to prevent shock due to sudden movements of the controller upon breakage of the web or the tensioning of the web upon the starting of the press, a buffer is provided which comprises in the present instance a relatively fixed arm 18 which is fixed to and projects forwardly from the controller frame 4, this arm being provided with an aperture through which a rod 19 may pass, a pair of buffer springs 20 and 21 encircling this rod at opposite sides of the arm 18 so as to gradually arrest the upward or downward movement of the controller. The lower end of this rod is provided with a ball or head 22 which has a universal connection with a socketed bracket 23 which is fixed to the arm 3.

The setting of the controller into operative and inoperative positions relatively to the web is accomplished in the present instance by means of a shaft 24 which is rotatably supported in suitable brackets 25 fixed to the frame 4, one end of this shaft being provided with a crank 26 which is arranged to cooperate with an eye 27 attached to the arm 3, and the opposite end of this shaft is provided with an operating lever 28 which is preferably arranged at one side of the press or in a position that will enable it to be readily manipulated by the pressman. This operating lever is provided with a pivoted dog 29 which is arranged to cooperate with a sector 30 which is concentric with the axis of the shaft 24 and is provided with ratchet-shaped teeth for the said dog. By the construction just described, the controller is free to rise, the dog 29 slipping over the ratchet teeth upon the sector and after the controller has reached its uppermost position due to the tension of the web upon the starting of the press, the dog will cooperate with the sector to retain the controller in such elevated position. In order to release the dog and permit the controller to reengage the web, a trip 31 is pivoted upon the outer end of the operating lever and is connected to the dog 29 by means of a rod 32, a movement of the trip toward the handle portion of the lever under the grasp of the hand, causing the dog to be disengaged from the sector. The dog, however, is normally pressed toward the sector by means of a bow-shaped spring 33 which is interposed between the operating lever and the trip, and in order to hold the dog in disengaged relation with the sector, a latch 34 is provided, this latch being pivoted to the operating lever and is provided with a notch which automatically engages a portion of the trip 31 after the latter has been operated to disengage the dog from the sector, this latch being operated either by gravity or otherwise as may be desired.

In operating the press with paper rolls of different widths, it is desirable to employ paper controllers of different sizes according to the widths of the paper, and in order to enable the controllers to be readily interchanged, the controller frame 4 is provided with a suitable number of hangers 35, a pair of these hangers being shown in the present instance which are hook-shaped so as to engage above and behind a suitable support 36 which may constitute a fixed part on the press, the controller frame 4 fitting against this support and may be firmly clamped or secured in cooperative relation therewith by means of a suitable number of clamping bolts 37, it being possible to readily remove the controller from the press after these clamping bolts have been loosened or removed.

In starting a press equipped with a controller constructed in accordance with my present invention, the portion of the web within the press will start to move quickly. Before the starting of the press, the controller will bear upon the web between the paper roll and the press and will deflect the web accordingly. Upon the starting of the web, however, this slack produced in the web by the controller will be quickly taken up, consequently causing a lifting movement of the controller. The latch 34 at this time will be disengaged from the trip so that during the lifting movement of the controller, the dog 29 will ride upwardly over the ratchet teeth of the sector and when the controller has reached its uppermost position, this dog will cooperate with the appropriate tooth of the sector and will thereby retain the controller in elevated position. The upward movement of the controller is, of course, resisted by the spring arms, and the reaction produced upon the web will be sufficient to gradually start the paper roll. After the latter has attained a speed of rotation corresponding to that of the rate of feed of the web into the press, the controller may then be restored to operative position by operating the trip 31 to release the dog 29, the latch 34 serving to retain the dog in an inoperative position. After the dog has been disengaged from the sector, the controller may then descend so as to engage the web, the spring action of the controller serving to equalize any unevenness in the movement of the web or the rate of rotation of the paper roll with respect to the press, and as no slack can occur in the web, liability of breaking thereof is eliminated. By employing the restraining means just described for retaining the controller in an inoperative position immediately after the starting of the press, the tendency of the controller to accelerate the speed of rotation of the paper roll by reason of the relatively high compression of its springs during its ascending movement is avoided, and the novel manner of mounting the controller upon the press enables controllers of different dimensions to be readily interchanged.

I claim as my invention:

1. A web controller of the class described comprising a member having a normal tendency to bear upon and control the tension of the web, and means operable automatically as the controller assumes a predetermined position for restraining the said member in an inoperative position relatively to the web.

2. A web controller of the class described comprising a web tensioning member having a normal tendency to engage the same, and means for automatically restraining said member after it has been moved into a predetermined position.

3. A web controller for presses comprising a web tensioning member having a normal tendency to bear upon the web, and means normally inactive but operable automatically for restraining the said member after it has been moved into an abnormal position by an increased tension of the web.

4. A web controller of the class described comprising a member having means for holding it in engagement with the web to control the tension of the same, and means capable of permitting a movement of said member into one position and for preventing a movement thereof in a reverse direction.

5. A web controller of the class described comprising a swinging member having a normal tendency to bear upon the web to control the tension thereof, and ratchet means for permitting a movement of said member toward an inoperative position upon an increased tension of the web and for preventing a return of the member toward operative position.

6. A web controller of the class described comprising a movably mounted member having a normal tendency to bear upon the web, means for restraining said member after it has been moved into an abnormal position by an increased tension of the web, and means for holding the restraining means in an inoperative condition.

7. A web controller of the class described comprising a movably supported member having means for normally holding it in engagement with the web to control the tension thereof, a dog and cooperating ratchet, one of said parts being operatively connected to said member and serving to retain the latter in an inoperative position when moved into such position by an increased tension of the web, a trip for disengaging said dog, and a device for retaining the dog in an inoperative position.

8. A web controller of the class described comprising a movably mounted web controlling member having means for normally holding it in engagement with the web, a shaft operatively connected to said member and provided with an operating lever, a dog and sector arranged to cooperate to retain the operating lever and the member connected thereto in an inoperative position, and a latch serving to retain said dog in an inoperative condition to permit oscillatory movements of said member.

9. A web controller of the class described comprising a pivoted member having a portion to cooperate with the web to control the tension of the same, a cross-piece carried by said member, a pair of spring arms loosely engaging the said cross-piece, and springs interposed between the ends of said arms and the cross-piece.

10. A web controller of the class described comprising a member mounted for universal

movement and adapted to cooperate with a web to control the tension thereof, means normally operating to retain said member in cooperative relation with the web, and a
5. buffer for easing the movements of said member involving a member embodying a part having a universal connection with said member, a pair of cushioning devices, and a
10. ioning devices and cooperative with said part to guide the same.

11. A web controller of the class described comprising a pivoted member having means for holding it in engagement with the web
15. to control the tension thereof, a relatively fixed arm, a rod fixed to said member, and buffer devices carried by said rod at opposite sides of said arm to ease the swinging movements of the member in either direction.

20. 12. A web controller of the class described comprising a frame, a swinging member having a universal connection with said frame and adapted to bear upon the web to control the tension thereof, an arm fixed to
25. said frame, a rod having a universal connection with the swinging member, and a pair of buffer springs arranged on said rod at opposite sides of the stationary arm and arranged to cooperate with the latter to arrest
30. the movements of the swinging member in either direction.

35. 13. A web controller for presses comprising a frame having a web engaging member movably mounted thereon and having means attached to said frame for normally holding

said member in engagement with the web to control the tension thereof, a support adapted to be arranged upon a press and to receive said frame, and hangers extending rearwardly from said frame and having down-
40. turned arms for detachably connecting said frame and support.

14. A web controller for printing presses comprising a frame, a swinging member pivotally mounted on the frame and arranged
45. to engage the web to control the tension thereof, spring supported on said frame for holding said member in engagement with the web, a support adapted to be fixed to the press and to receive said frame, hook-shaped
50. hangers attached to the frame and having portions adapted to overhang said support and downturned arms to engage the rear side thereof, and means for clamping the frame and support in cooperative relation.
55.

15. A web controller comprising a movably supported arm, a pair of web engaging rollers journaled on spindles projecting laterally from the opposite sides of said arm
60. so as to permit a relative yielding of the outer ends of the rollers, and means cooperating with said arm for pressing said rollers against the web.

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

FREDERICK W. ROLLAND, JR.

Witnesses:

L. PALMER,
CLAUDE READ.