W. J. WRIGHT.

CLAMPING OR BINDING MECHANISM.

APPLICATION FILED OCT. 3, 1908.

930,258.

Patented Aug. 3, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

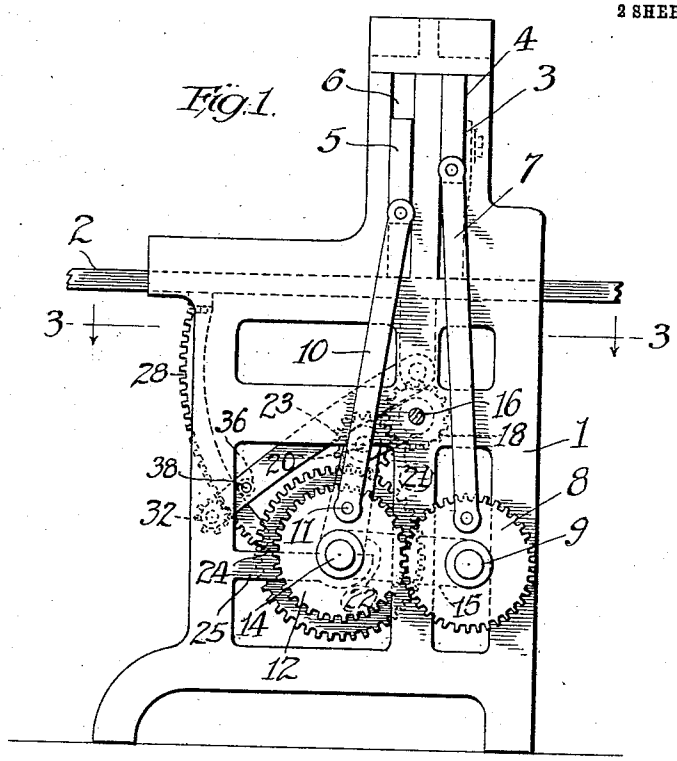
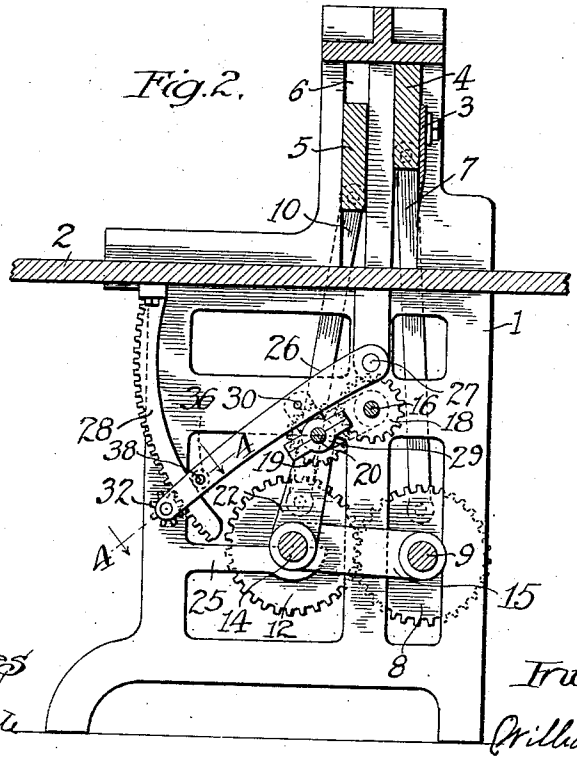


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

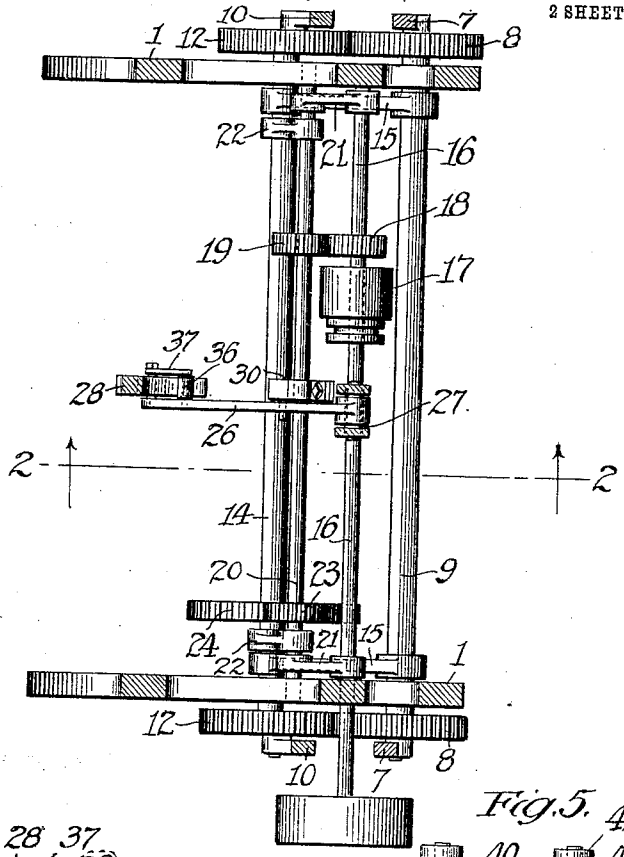


Fig. 4.

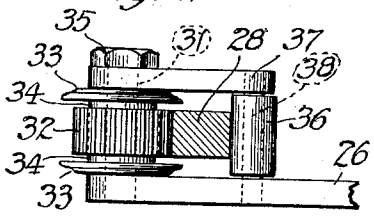


Fig. 5.

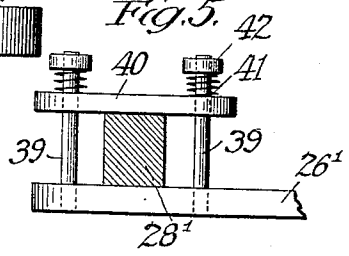


Fig. 7.

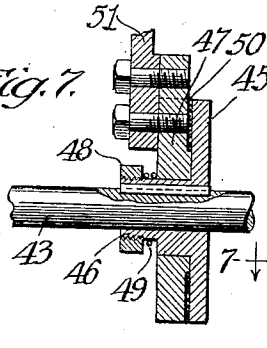
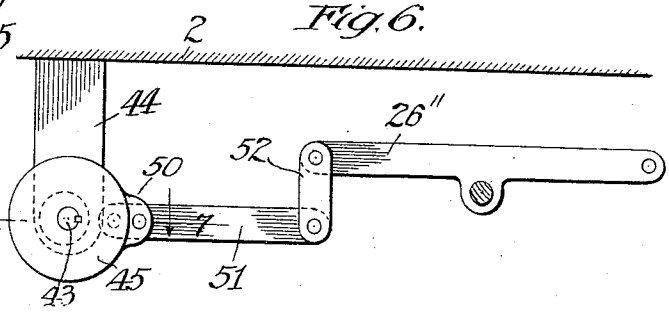


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM J. WRIGHT, OF CHICAGO, ILLINOIS.

CLAMPING OR BINDING MECHANISM.

No. 930,258. Specification of Letters Patent. Patented Aug. 3, 1909.

Application filed October 3, 1908. Serial No. 455,995.

To all whom it may concern:

Be it known that I, WILLIAM J. WRIGHT, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Clamping or Binding Mechanism, of which the following is a description.

My invention relates to means especially applicable to a paper cutting machine for holding the paper during the cutting operation.

The object of my invention is to provide a simple and efficient mechanism for controlling the pressure exerted by the clamp or binder as in a paper cutting machine for controlling the pressure upon the paper during the cutting operation and also for preventing undesirable shocks to the driving portion of the mechanism when the parts are returning to their normal positions after the cutting operation is completed.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the accompanying drawings wherein like or similar reference characters indicate like or corresponding parts, Figure 1, is an end elevation of a machine equipped with my invention. Fig. 2, is a section taken substantially on line 2—2 of Fig. 3. Fig. 3, is a section taken substantially on line 3—3 of Fig. 1. Fig. 4, is an enlarged fragmentary section taken substantially on line 4—4 of Fig. 2. Fig. 5, is a view similar to that shown in Fig. 4, but showing a modified form of my device. Fig. 6, is a partial sectional view of a modified form of my improved mechanism removed from the remainder of the structure to more clearly show the construction. Fig. 7, is a section taken substantially on line 7—7 of Fig. 6.

In the form shown in the drawings, my improvement is shown, as applied to the clamping mechanism of a paper cutting machine in which 1—1 is the frame, 2, the bed plate, 3, the cutting knife, guided at its ends by the slides 4—4.

5, is the clamping bar, arranged to move vertically in the opening 6, to hold the paper or other stock in position upon the bed plate during the cutting operation. The usual or any preferred means may be employed for operating the cutting knife. In the form shown, the bar to which the cutting knife is attached is provided at each end with a connecting rod 7, extending downward and attached to a suitable crank pin upon a gear 8. The gears 8, are each keyed or otherwise rigidly secured to a shaft 9, mounted in suitable bearings upon the frame 1, all in the usual or any preferred manner.

The clamp 5, is preferably provided at each end with a connecting rod 10, attached at its lower end to a crank pin 11 upon a gear 12. The gears 12, are each rigidly secured to a shaft 14 arranged to move laterally in the frame and for this purpose the shaft 14 is rotatably mounted in suitable bearings at the extremities of the links 15—15 upon the shaft 9 connecting the shafts 9 and 14 so that the shaft 14 may rise and fall to compensate for the thickness of the paper or other stock engaged by the clamping mechanism without permitting the gears 8 and 12, which are of suitable size to mesh with each other to transmit power from the shaft 14 to the shaft 9, to become disengaged from each other.

In the form shown, power to operate the machine is transmitted to a shaft 16, rotatably mounted upon the frame 1—1 thence by the clutch 17 to a gear 18 upon the shaft 16. The gear 18 meshes with a gear 19 upon a shaft 20. The shaft 20 is mounted in suitable bearings near the extremities of suitable links 21—21 upon the shaft 16 arranged to connect the shaft 20 to the shaft 16. The shaft 20 is also held in suitable relation to the shaft 14 by suitable links 22—22 one end of each of which engages the shaft 20 and the opposite end the shaft 14 so that the gears 23—24 rigidly mounted upon the shafts 20 and 14 respectively will always be held in suitable relation to each other to transmit motion from the shaft 20 to the shaft 14.

The particular form and proportions of the gears and of the various connections are preferably of the usual or any well known construction and as they form no part of my present invention are believed to require no further description.

As thus constructed the pressure exerted by the clamp 5, upon the stock in the machine will obviously amount to the combined weights of the various parts held in suspension during the clamping operation and my invention is for the purpose of increasing this clamping effect as may be desired. My invention also reduces the shock upon the shaft

14 and other portions of the mechanism caused by the return of the shaft 14 to the supporting brackets 25 when the clamp is released. In the form shown my improvement comprises a lever 26 pivotally mounted upon the frame 1, as at 27, with its free end arranged to frictionally engage a suitably formed segment 28, or other convenient means attached to the frame 1. A bearing 29 is fitted to the shaft 20 and pivotally or otherwise suitably attached to the lever 26 as at 30 so that the movement of the shaft 20 during the clamping operation above described will move the free end of the lever 26. The frictional engagement of the free end of the lever 26 with the segment 28 will obviously tend to yieldingly resist the lateral movements of the shafts during the clamping operation both when the shafts are raising at the commencement of the clamping operation and when they are returning to their normal positions.

Any suitable friction mechanism may be provided to resist the free movement of the arm 26. In the form shown in Fig. 4, a stud or shaft 31 is provided near the free end of the arm 26 and a pinion 32 is rotatably mounted upon the stud in position to engage a series of suitable teeth formed upon the segment. A collar 33 is provided at each side of the pinion 32 with a washer 34 of felt, leather, or other suitable frictional material positioned between the face of each collar and the end of the pinion to frictionally engage the pinion between the collars. The collars 33 are each splined or otherwise secured against rotation upon the shaft 31, but free to move longitudinally thereon and a nut 35 or other suitable means is provided to control the position of the collars upon the shaft and to force the collars together to control their frictional engagement with the pinion 32. As shown a roller 36 is rotatably mounted upon a stud 38 at the inner face of the segment 28, and a link 37 is provided to connect the free end of the stud 38 and the free end of the shaft 31.

In the form shown, in Fig. 5, the segment 28′ is merely a smooth curved bar and the lever 26′ is provided with a pair of studs 39—39 one at each side of the segment connected by a link 40. The studs 39—39 are each preferably provided with a spring 41 and nut 42 to resiliently press the link 40 toward the arm 26′ to clamp the segment 28′ between arm and link. This form, while somewhat simpler than the form previously described, has not produced as satisfactory results in practice.

In the form shown in Figs. 6 and 7, the segment 28 is omitted and the shaft 43 is rigidly mounted in suitable brackets 44 upon the bed plate 2. A disk 45 preferably provided with a central hub 46 is mounted upon the shaft 43 and keyed or otherwise rigidly secured thereto; a companion disk 47 mounted upon the hub 46 and a nut or other suitable means 48 is provided near the extremity of the hub to force the disk 47 into contact with the disk 45. As shown a spring or other suitable resilient means 49 is positioned between the nut 48 and disk 47 and if desired a washer 50, of felt, leather, or other friction material is positioned between the disks. An arm 51 is rigidly secured to the disk 47 with its free end connected to the free end of the lever 26^2 by a link 52, thus providing a very convenient and satisfactory resisting mechanism for the free end of the lever 26^2.

In operation the parts of my device are so proportioned and constructed that when no material is in position on the bed or table 2, to be engaged by the clamp 5 the clamp will merely move up and down in its guides, its lower face just coming into contact with the bed 2, at the lower limit of its movement, the shaft 14 not moving from its position in the brackets 25. When stock is placed upon the bed or table 2 in position to be operated upon, the clamp 5 engages the stock in its downward movement and is thereby arrested before it reaches the lower limit of its travel. When this occurs the continued rotation of the shaft 14 will obviously raise it from the brackets 25, its whole weight being supported and transmitted by the rods 10—10 to the clamp 5 to hold the stock in position upon the bed 2. My improved mechanism is applied as hereinbefore described to resist the upward movement of the shaft 14 thereby increasing the engaging pressure of the clamp 5 and also tending to partially support the shaft and associated parts to reduce the shock incident to the return of the shaft to its position upon the brackets 25 and thereby increase the smoothness of the operation of the mechanism. The manner in which my mechanism accomplishes this end is believed to be sufficiently set forth in the foregoing description and no further explanation of the same is required.

Having thus described my improvement it is obvious that various immaterial modifications may be made in my device without departing from the spirit of my invention, hence I do not wish to be understood as limiting myself to the exact form or construction shown.

What I claim as new and desire to secure by Letters Patent is:

1. In a device of the kind described, a reciprocating part, a laterally movable rotatable shaft, and intermediate means between said part and shaft for reciprocating said part, in combination with means for directing the lateral movements of said shaft, and means adapted to resist said lateral movements.

2. In a device of the kind described, a re-

ciprocating part, a laterally movable rotatable shaft, and intermediate means between said part and shaft for reciprocating said part, in combination with means for directing the lateral movements of said shaft, and means connected to said shaft adapted to resist said lateral movement.

3. In a device of the kind described, a reciprocating part, a laterally movable rotatable shaft, and intermediate means between said part and shaft for reciprocating said part, in combination with means for directing the lateral movements of said shaft, and means adapted to yieldingly resist said lateral movements.

4. In a device of the kind described, a reciprocating part, a laterally movable rotatable shaft, and intermediate means between said part and shaft for reciprocating said part, in combination with means for directing the lateral movements of said shaft, and friction mechanism connected to said shaft adapted to resist said lateral movements.

5. In a device of the kind described, a reciprocating part, a laterally movable rotatable shaft, and intermediate means between said part and shaft for reciprocating said part, in combination with means for directing the lateral movements of said shaft, and a lever connected to said shaft and provided with friction mechanism at its free end adapted to resist said lateral movements.

6. In a device of the kind described, a reciprocating part, a laterally movable rotatable shaft, and intermediate means between said part and shaft for reciprocating said part, in combination with means for directing the lateral movements of said shaft, and means adapted to resist said lateral movements, and mechanism for adjusting the resistance of said resisting means.

7. In a device of the kind described, a reciprocating part, a laterally movable rotatable shaft, and intermediate means between said part and shaft for reciprocating said part, in combination with means for directing the lateral movements of said shaft, friction mechanism connected to said shaft adapted to resist said lateral movements and means, for adjusting said friction mechanism to control said resistance.

8. In a device of the kind described, a reciprocating part, a laterally movable rotatable shaft and intermediate means between said part and shaft for reciprocating said part, in combination with means for directing the lateral movements of said shaft, a lever connected to said shaft, friction mechanism connected to the free end of said lever adapted to resist its movement and thereby the lateral movements of said shaft, and means for adjusting said friction mechanism to control said resistance.

9. In a device of the kind described, a reciprocating part, a laterally movable rotatable shaft, and intermediate means between said part and shaft for reciprocating said part, in combination with means for directing the lateral movements of said shaft, a lever connected to said shaft, a member rotatably connected to the free end of said lever and a stationary part coöperating with said member whereby a movement of said lever will rotate said member, and friction mechanism adapted to resist the rotation of said member.

10. In a device of the kind described, a reciprocating part, a laterally movable shaft, and intermediate means between said part and shaft for reciprocating said part, in combination with means for directing the lateral movements of said shaft, a lever connected to said shaft, a pinion rotatably mounted at the end of said lever, and a stationary segment coöperating with said pinion whereby a movement of said lever will rotate said pinion, and friction mechanism adapted to resist the rotation of said pinion.

In testimony whereof, I have hereunto signed my name in the presence of two (2) subscribing witnesses.

WILLIAM J. WRIGHT.

Witnesses:
WILLIAM J. WRIGHT, Jr.,
B. CHALMERS.