K. F. KIRKMAN.

PRINTING PRESS.

APPLICATION FILED NOV. 23, 1910.

1,025,194. Patented May 7, 1912.

Fig. 1.

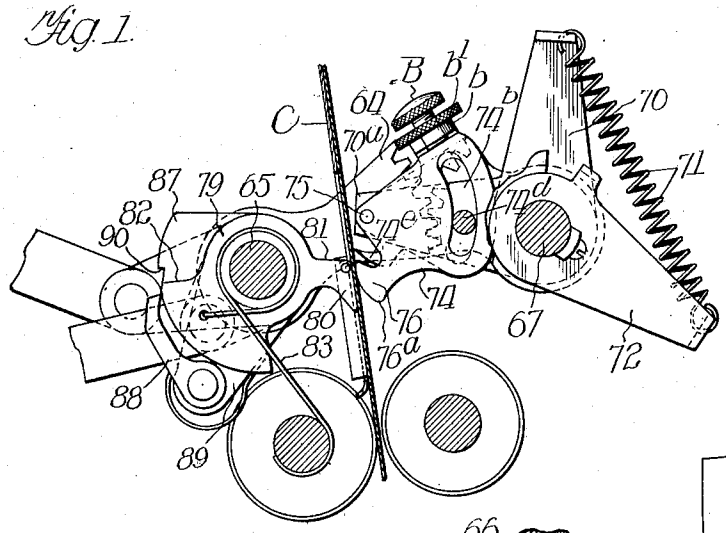


Fig. 2.

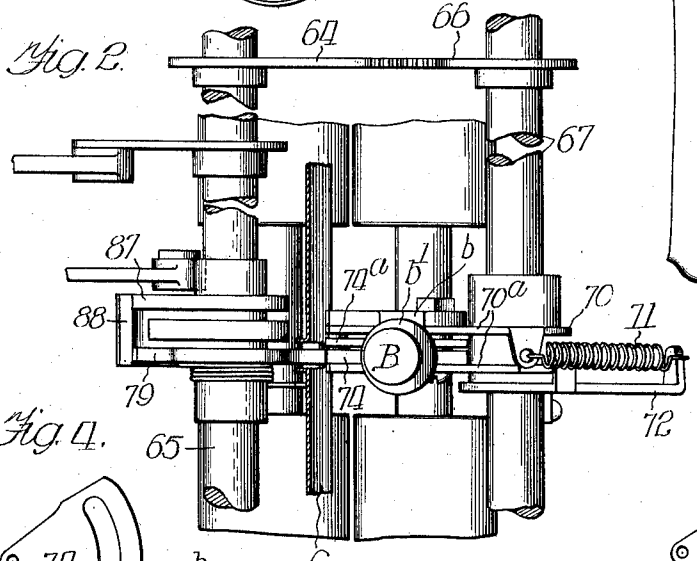


Fig. 3.

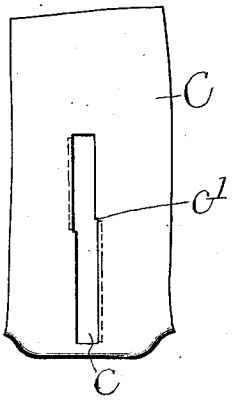


Fig. 4.

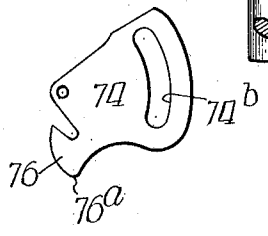
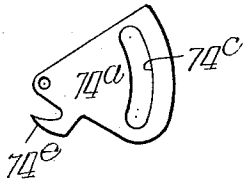


Fig. 5.



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UNITED STATES PATENT OFFICE.

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PRINTING-PRESS.

1,025,194. Specification of Letters Patent. Patented May 7, 1912.

Application filed November 23, 1910. Serial No. 593,788.

To all whom it may concern:

Be it known that I, KARL F. KIRKMAN, a citizen of the United States, residing at Erie, Erie county, Pennsylvania, have invented certain new and useful Improvements in Printing-Presses, of which the following is a specification.

My invention relates to stop mechanism for the feeding means of a printing press, and the same represents an improvement upon the stop mechanism described and claimed in my previous application filed January 19, 1909, Serial No. 473,171. In the machine of my said application the stop mechanism was adapted to stop the machine in case the paper was not being fed or was being fed in misplaced or clogged condition, but no provision was made for causing the stop mechanism to act in case of the feeding of two or more sheets of paper at the same time.

The object of my present invention is to provide means adjustable according to the thickness of a single sheet of paper, with the result that in case more than one sheet of paper is fed the stop mechanism will be caused to operate to stop the machine. The construction and arrangement is such that the adjustment may be made to take care of different thicknesses of paper, such adjustment being of a micrometer character.

In the drawings, Figure 1 is a side elevation of the controlling devices of the stop mechanism; Fig. 2 a plan view thereof; Fig. 3 a front elevation of a part of the feedway, and Figs. 4 and 5 detail views of the two controlling pawls, shown separately.

Inasmuch as the stop mechanism of my present machine is substantially the same as that illustrated in my previous application aforesaid, with the exception of certain additions and some slight changes in the form of the parts, it becomes unnecessary to illustrate and describe the entire train of the stop mechanism, and consequently the present application merely illustrates and describes the controlling devices of the stop mechanism proper, together with the additions constituting the improvements of my present invention. Furthermore, owing to the similiarity of the parts of my present machine as compared with that of the machine of my aforesaid application, I will for convenience use the same figures of reference on the corresponding parts.

The segmental gear 64 is secured to the transverse rock shaft 65 and meshes with the corresponding segmental gear 66 which is secured to a rock shaft 67. Upon the rock shaft 67 is loosely mounted a bell crank 70 which has a yielding driving connection (in one direction only) with the shaft 67 through the medium of the spring 71 and the arm 72 which is secured to said shaft. The forward end of the bell crank 70, which is the end presented to the line or plane of feed of the paper is provided with two parallel arms 70^a between which in parallel planes are pivotally mounted somewhat similar stop pawls 74 and 74^a. These pawls are of the irregular shapes shown in Figs. 4 and 5 and are pivoted intermediate their length on the cross-pin 75, the same being so pivoted that the weight of their right hand ends (Fig. 1) will overbalance the other ends or sides and tend to throw the same toward and across the line or plane of feed of paper. The pawls are moreover limited as to downward swinging movement of their right hand ends by contact of the upper end of their curved slots 74^b and 74^c respectively with the pin or bolt 74^d.

At one of the lower corners of the pawl 74 is formed a hook 76 which has a rounded heel portion 76^a which provides the gage point or surface as hereinafter made apparent. The bell-crank 70 and the two stop pawls are of such length and so arranged that the pawls are presented to the paper being fed through the machine in such a manner as to cause them to contact therewith and be oscillated thereby independently of said bell crank in the manner hereinafter described.

The stop pawl 74 coöperates with a disk 79 which is loosely mounted upon the rock shaft 65 and having the peculiar shape shown in Fig. 1, including upon one side near the feed-way the hook portion 80 and the substantially right-angled notch 81 and on the opposite side the notched or cut-away portion 82. This disk is kept in normal position relative to its shaft with a yielding pressure, as by means of the coiled spring 83. A second disk 87 is loosely mounted upon the rock shaft 65 and is

adapted to coöperate with the spring-pressed pawl 88 pivoted upon the pawl carrier 89. The construction and arrangement of the parts is such that the pawl 88 engages the notch 90 in the disk 87 when permitted to do so by the disk 79 and to this end said pawl 88 is of sufficient width to coöperate with both disks 79 and 87 as shown in Fig. 2. The normal tendency of this pawl is to engage said notch 90, but it is prevented from doing so by being rendered inoperative (whenever the paper is being fed and also being fed in proper manner) by means of the other disk 79 which acts as an interference to the action of said pawl 88.

As thus far described, the mechanism is the same as in my previous application, but as stated no means were provided for guarding against the feeding of two sheets of paper at the same time. To this end I provide a delicate adjustment for the movement of the stop pawl 74, such adjustment consisting in the provision of the adjusting screw B screwing through a bracket *b* formed as a lug inturned from the upper edge of one of the arms 70^a. The inner end of this adjusting screw is positioned in the path of movement of the upper edge of the stop pawl, with the result that by turning the adjusting screw in one direction or the other the upward movement of the stop pawl with respect to its carrier arms 70^a is limited and adjusted. For locking the adjusting screw in position a lock nut *b'* is provided.

In practice the screw B is so adjusted or calipered with reference to the front edge of disk 79 that when the pawl 74 in its upward swinging movement contacts the paper and is thereby oscillated until its top edge strikes said screw, the heel or gage point 76 is permitted to pass by a single sheet of paper in the line or plane of feed, with the result that in the operation of the machine such heel or point will pass upwardly in the upward swinging movement of the pawl. In this event the hook 76 will be moved to such an upward position that upon the reverse or downward movement of such stop pawl and after the paper has passed by, said hook will engage the recess or shoulder portion 81 of the controlling pawl 79 and the latter pawl will be oscillated with respect to its rock shaft 65 and will move in unison with the spring-pressed pawl 88 to thereby keep the latter held outwardly from engagement with the notch 90 of the disk 87. However, assuming that two sheets of paper are being fed down the feedway together, the heel or gage point of the hook 76 will contact with the paper and the stop pawl and carrier arms will be stopped, the continued movement of shaft 67 being taken care of by the spring connection 71. As a result the stop pawl will not rise to that upward position which is necessary for its subsequent engagement, as above described, with the controlling pawl 79, but will stop in the position illustrated in Fig. 1. Consequently the normal action of such controlling pawl will not now be interfered with by the stop pawl and the pawl 88 will thereupon be enabled to engage the notch 90 and thereby cause actuation of the stop mechanism proper.

By reason of the described adjusting means a very fine or micrometer gage adjustment is obtainable, which is desirable or necessary to prevent feeding of more than one sheet at a time, and to take care of paper of different thicknesses. For thin paper the screw B is screwed inwardly and for thick paper it is screwed outwardly, as will be obvious from the foregoing description.

The other pawl 74^a is not intended to cooperate with the adjusting screw B but is employed as a means for limiting and stopping the upward swing of the pawls and their carrier after the paper has passed by. For this purpose the pawl has a hook-shaped portion 74^e projecting toward the feedway and adapted to contact with the paper in its passage. In the described operation, when two or more sheets of paper are feeding simultaneously, this pawl will operate in a manner substantially like the other pawl, until the top edges of the sheets have cleared the pawl 74^a, whereupon the latter will instantly fall across the feedway and, as soon as the other pawl is cleared, both pawls and their carrier will swing upwardly until the hook or pawl 74^a is caught on the shoulder *c'* of a slot *c* in a plate C on the side of the feedway, with the result that the upward swing of the parts is thus stopped. As shown in Fig. 1, the hook 74^b of pawl 74^a is slightly higher than the hook 76 of the pawl 74. This is for the purpose of having hook 74^b cleared first by the paper and thereby given time to swing across the feedway to assure engagement with the plate C.

I claim:

1. In printing press stop mechanism, the combination of stop mechanism proper, a member controlling said mechanism and arranged to swing against the face of the paper and to pass thereby when a single sheet of paper is being fed and to be stopped in its swinging movement when a plurality of sheets of paper are being fed at one time, and adjustable means for regulating the degree of swinging movement of said member to adapt it for different thicknesses of paper.

2. In printing press stop mechanism the combination of stop mechanism proper, normally tending to automatically stop the press, and means adapted to control said mechanism, said means comprising a member arranged to be moved against and along the paper and across its path after a sheet

has passed, to thereupon engage such mechanism and render it inoperative, and adjustable means for governing the action of said member according to the thickness of the paper being fed.

3. In printing press stop mechanism, the combination of mechanism for automatically stopping the press, means for controlling such mechanism comprising a swinging pawl arranged to be swung into the path of travel of the paper and to be oscillated by contact with the face of the paper, said pawl being arranged to swing past the paper when a single sheet of paper is being fed and to be stopped in its swinging movement when a plurality of sheets of paper are being fed at one time, and means for adjusting the degree of oscillation of the pawl to adapt it for different thicknesses of paper.

4. In printing press stop mechanism, the combination with mechanism for automatically stopping the press, means adapted to control said mechanism, comprising an oscillating carrier, a pawl pivoted therein and adapted to be oscillated into the path of travel of the paper, and means for adjusting the limit of pivotal movement of the pawl with respect to its carrier.

5. In printing press stop mechanism, the combination with mechanism for automatically stopping the press, means adapted to control said mechanism, comprising an oscillating carrier, a pawl pivoted therein and adapted to be oscillated into the path of travel of the paper, and an adjusting screw mounted on the carrier in the path of movement of the pawl to limit the latter.

6. In printing press stop mechanism, the combination with mechanism for automatically stopping the press, means adapted to control said mechanism, comprising an oscillating carrier, a pawl pivoted therein and adapted to be oscillated into the path of travel of the paper, means for adjusting the limit of pivotal movement of the pawl with respect to its carrier, and a yielding driving connection for oscillating the carrier.

7. In printing press stop mechanism, the combination of stop mechanism proper, a movable member for controlling said mechanism, adjustable means for governing the movement of said member according to the thickness of paper being fed, and means for limiting the movement of said member after the paper has passed by.

8. In printing press stop mechanism, the combination with mechanism for automatically stopping the press, means adapted to control said mechanism, comprising a swinging pawl adapted to be oscillated into the path of travel of the paper, and means for limiting the oscillation of the pawl.

9. In printing press stop mechanism, the combination with mechanism for automatically stopping the press, means adapted to control said mechanism comprising a swinging pawl adapted to be oscillated into the path of travel of the paper, a second swinging pawl, and a fixed member adapted to be engaged by the latter to limit the oscillation of the first named pawl.

10. In printing press stop mechanism, the combination with mechanism for automatically stopping the press, means adapted to control said mechanism, comprising an oscillating carrier, a pawl pivoted therein and adapted to be oscillated into the path of travel of the paper, a second pawl also pivoted in the carrier, and a fixed member engaged by the second pawl to limit the oscillation of the first pawl and its carrier.

11. In printing press stop mechanism, the combination with mechanism for automatically stopping the press, means adapted to control said mechanism, comprising an oscillating carrier; a pawl pivoted therein and adapted to be oscillated into the path of travel of the paper, a second pawl pivoted on the same axis as the first pawl and adjacent thereto in a parallel plane, and a fixed member engaged by the second pawl to limit the oscillation of the first pawl and its carrier.

12. In printing press stop mechanism, the combination with mechanism for automatically stopping the press, means adapted to control said mechanism, comprising an oscillating carrier, a pawl pivoted therein and adapted to be oscillated into the path of travel of the paper, a second pawl pivoted on the same axis as the first pawl and adjacent thereto in a parallel plane, and a fixed member engaged by the second pawl to limit the oscillation of the first pawl and its carrier, said second pawl having a hook portion arranged to operate in advance of the first pawl after the paper has passed by.

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