

C. RUSH.
WEB FEED MECHANISM FOR PRINTING PRESSES.
APPLICATION FILED OCT. 5, 1910.

1,009,791.

Patented Nov. 28, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

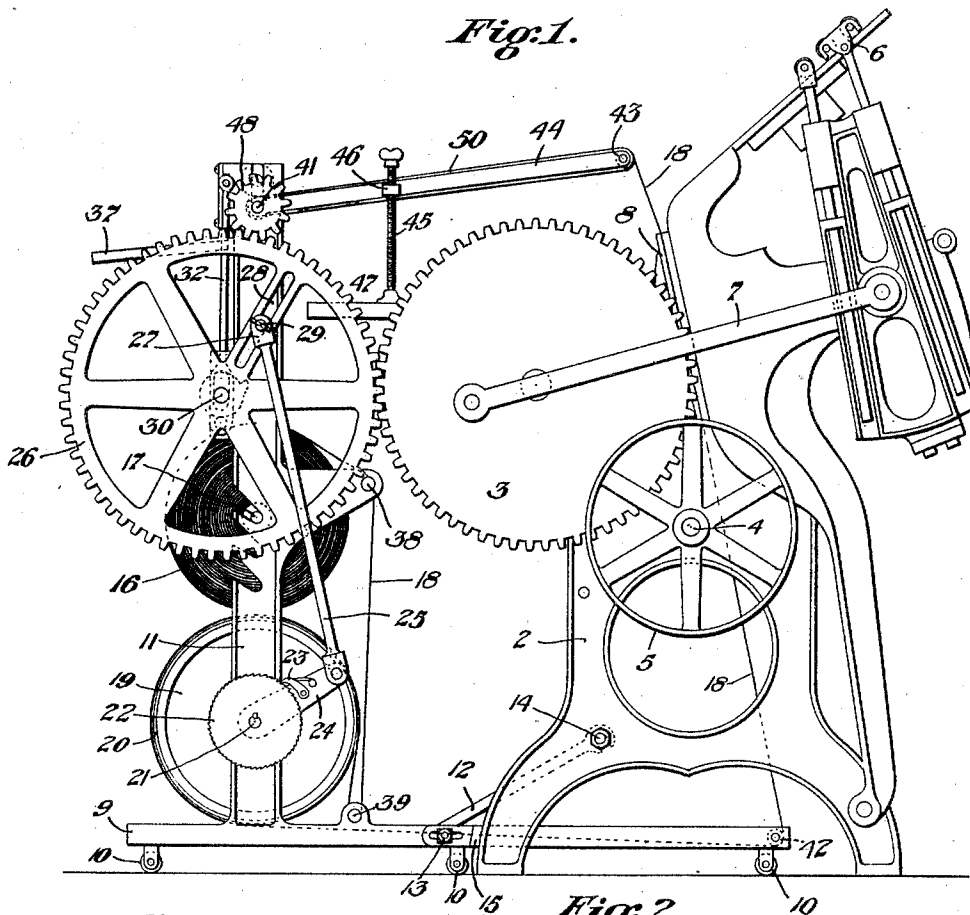
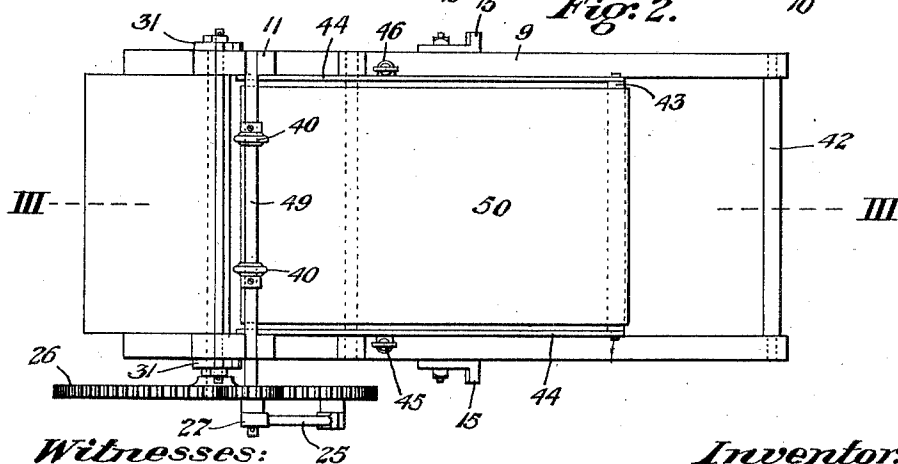


Fig. 2.



Witnesses:

Chas. S. Repley.
Henry Dend.

Inventor:

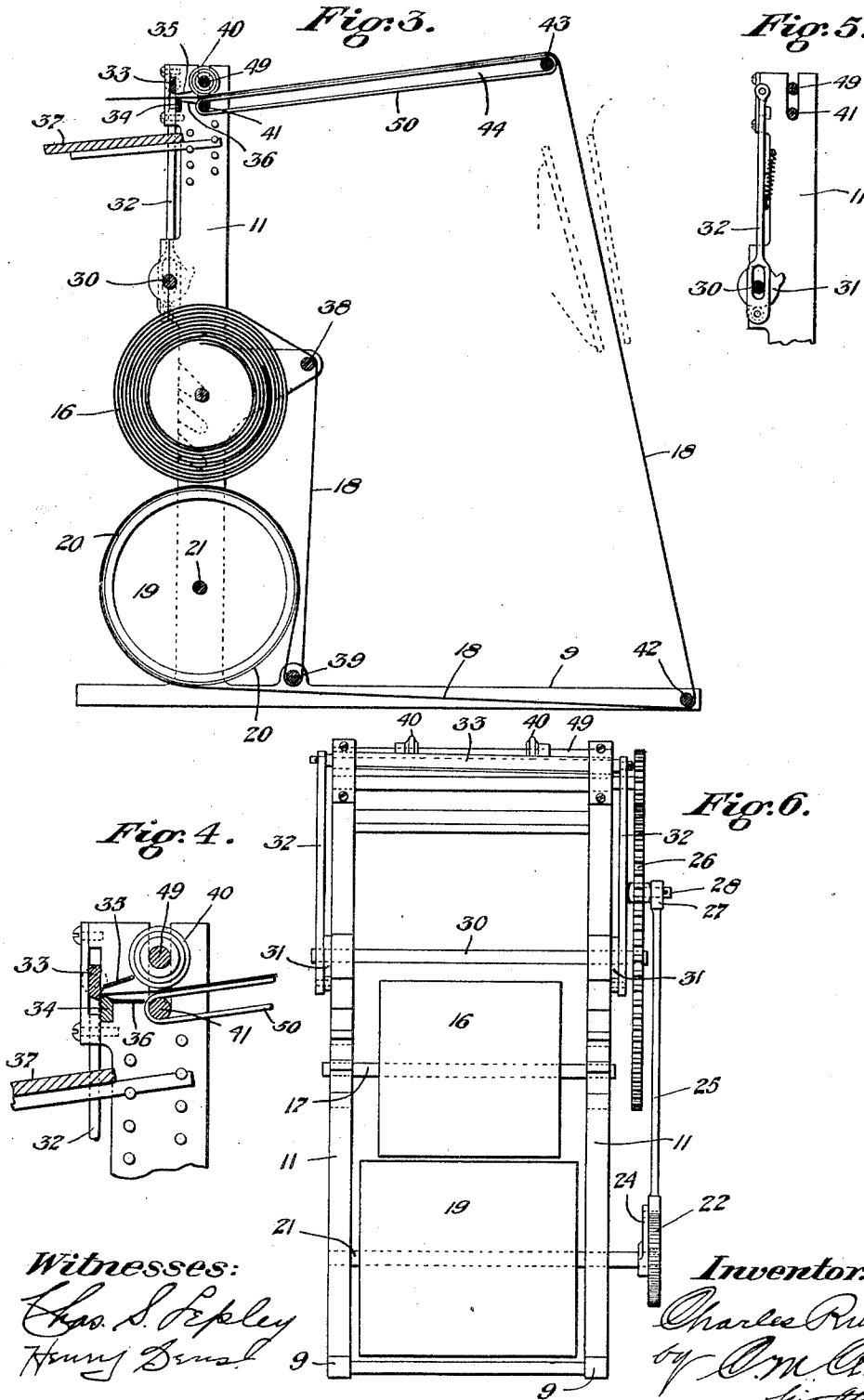
Charles Rush
by C. M. Clarke
his Attorney

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UNITED STATES PATENT OFFICE.

CHARLES RUSH, OF PITTSBURGH, PENNSYLVANIA.

WEB-FEED MECHANISM FOR PRINTING-PRESSES.

1,009,791.

Specification of Letters Patent. Patented Nov. 28, 1911.

Application filed October 5, 1910. Serial No. 585,434.

To all whom it may concern:

Be it known that I, CHARLES RUSH, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Web-Feed Mechanism for Printing-Presses, of which the following is a specification.

My invention refers to improvements in web feed mechanism for printing presses and has for its object to provide a portable attachment adapted to be temporarily connected with and driven by a printing press of any suitable construction, to effect continuous automatic feed and shearing of a continuous strip of paper.

The invention has in view to provide in such a device, a supporting frame adapted to be moved over a floor surface, adjusted to proper position with relation to the printing press and fixedly secured thereto, having a supply roll of paper, an intermittently operating feed roll, a pair of constantly running take-up rolls adapted for slippage, shear mechanism, intermittent ratchet and pawl feed mechanism for the feed roll, and gearing adapted to be driven by the gearing of the printing press to actuate said mechanism, with other features of construction as shall be more fully hereinafter described.

In the drawings:—Figure 1 is a view of a printing press in side elevation showing my improved web feed mechanism combined therewith in operative relation. Fig. 2 is a plan view of the web feed mechanism detached. Fig. 3 is a longitudinal vertical sectional view on the line III. III. of Fig. 2. Fig. 4 is an enlarged sectional detail view of the shear mechanism shown in Fig. 3, the shear being lowered. Fig. 5 is a detail view of the cam actuated mechanism for the shear blade. Fig. 6 is a view of the web feed mechanism in front elevation.

The apparatus is designed to be used in conjunction with any suitable form or type of printing press having a reciprocating platen or corresponding operation. It is intended to be operated by the power of the printing press, through geared feed mechanism and suitably timed and actuated to feed a fixed length or section of paper from the feed roll for each operation in front of the printing position, the web being drawn through the press by constantly running feed rolls, adapted to take up the slack

which is supplied immediately after the printing operation, drawing the desired length or web through the press until the paper becomes taut, the printing and shearing operations occurring during the stationary interval. Means are also provided for varying the distance between the positive feed roll and the slippage feed rolls consisting of an adjustable frame and terminal roller.

In the drawings, 2 represents the frame of the printing press, the reciprocating platen of which is actuated by the toothed wheel 3 and suitable gearing from the shaft 4 carrying the driving pulley 5. The inking mechanism 6 of well known construction is intermittently actuated by the pitmen 7, one at each side, the inking and pressing operations by the inking rolls and the platen 8, occurring intermittently, as is well understood.

9 is a supporting base or frame for the web feed mechanism, preferably mounted on rollers or casters 10 for portability and having at each side uprights 11 forming the sides of the web feed structure. At each side the base is provided with any suitable means as bars 12 whereby the frame may be rigidly connected with the frame of the press to hold it in fixed relation thereto during operation. Bars 12 may if desired, have an adjustable pivot mounting 13 in the frame 9 adapted to swing thereon and to engage a transverse bolt or bar 14 of the press frame, as clearly indicated. 15 represents stops, also preferably adjustable on base 9 adapted to bear against the frame 2 to fix the location of the parts with relation to each other. Any other suitable means whereby the web feeding frame may be adjusted and secured with relation to the printing press frame may be adopted if desired.

16 represents the roll of paper, mounted by a center cross bar 17 on suitable receiving sockets in the frame 11 at each side, and free to rotate as the web 18 is intermittently drawn therefrom.

19 represents the positively actuated intermittently operable feed roll which performs the feeding of the exact amount of strip for each printing operation. Said feed roll 19 is of large diameter, say 9 to 13 inches, of the necessary width to provide a face adapted to engage the full width of the web 18 being fed, and is preferably covered

with a frictional face 20, as a sheathing of rubber or the like, to insure an active adhesion of the web to the roller when it is tightly in contact therewith. Feed roll 19 is journaled by its shaft 21 in suitable bearings in uprights 11 and is provided with a ratchet wheel 22 intermittently actuated by one or more pawls 23 mounted on a reciprocating arm 24 journaled on shaft 21. Arm 24 is actuated by a pitman 25 which in turn is reciprocated by gear 26 in mesh with gear 3 of the printing press.

The terminal 27 of pitman 25 is adjustably mounted in gear 26 by engaging a radial slot 28 in one of the arms thereof as shown, whereby pin 29 of terminal 27 may be fixedly secured at the desired distance from the center of shaft 30, to effect the exact feed desired. To insure exactness of the feed, the teeth of ratchet wheel 22 may be made very small, and if desired, a plurality of pawls 23 may be employed, one of which extends beyond the other a distance equal to one-half tooth, as thus commonly practiced in feed mechanism of this description.

Shaft 30 for gear 26 is mounted in suitable bearings in frame 11 and is provided with cams 31 for actuating reciprocating pitman 32 and the transverse shear blade 33, during the rest period of the web 18. The shear blade mechanism is of well known construction, blade 33 operating across the face of lower stationary blade 34, while guide plates 35, 36, above and below are arranged to direct the free end of the paper web to the narrow clearance space between the blades, when upper blade 33 is raised.

37 is a receiving shelf for the cut-off printed sections of the web.

By the positive feed mechanism described, a fixed length or section of the web 18 is drawn from roll 16 at each reciprocation of feed roll 19. Transversely across the supporting framework are arranged bars 38, 39, around which the web 18 is drawn by the feed roll 19, due to its close adherence to the web, which is held taut thereon, by the constantly running feed rollers 40, 41, at the upper portion of the frame and immediately behind the shears 33, 34. By reason of the round bars 38, 39, it will be seen that a considerable friction is interposed between the paper roll 16 and the feed roll 19, and that the location of the lower roller 39 with relation to the roller 19 and the direction of travel of web 18 underneath, insures the contact between roller 19 and the web for more than three-fourths of its circumference, thereby insuring a positive gripping engagement, especially in view of the adhering rubber covering 20. At the rear of base 9 is an additional friction bar 42, around which the web passes before passing upwardly between the platen and bed as shown,

giving additional friction and retarding effect to the web.

For the purpose of alining the web 18 in approximate operative relation to the working parts of the printing press, the web 18 is also passed around an additional cross bar 43. Said bar 43 is preferably made adjustable vertically by means of supporting arms 44 at each side, pivotally mounted upon the shaft of lower feed roller 41 and vertically adjustable by means of securing mechanism 45 engaging lugs 46 at each side of the supporting arms 44 and bearing downwardly upon any stationary portion of the press or frame, as the feed board, as indicated at 47. By this means roller 43 may be adjusted within a wide range of movement to any desired position, whereby to provide a bearing over which the web will be drawn by the constantly running feed rollers and also to vary the distance between the feed roller 19 and the shears, or rather, to vary the distance between the printing position and the shears. The object of this last named adjustment is to provide for variation in the length of the strip comprising the printed sections, as desired, by insuring a sufficiently long section of paper between the printing mechanism and shears to constitute a multiple of the several printed sections traveling toward the shears, of whatever length they may be, whereby to insure positive placing of the end of each printed section between the shears.

The constantly running feed rollers 40 and 41 respectively, above briefly referred to, are for the purpose of taking up the slack which is positively fed intermittently by roller 19. The lower roller 41 is positively actuated from wheel 26, by a pinion 48 secured on the end of roller 41 as shown and running at a speed which is as fast or faster than the positive feed of the intermittently actuated roller 19.

The upper feed rollers 40, which may be of any desired form and which as shown consist merely of two rubber faced disks mounted on an idle shaft 49, bear by their weight upon the printed web 18, and these rollers 40 and 41 acting together operate to feed the slack of the web toward and through the shears. Upon the slack being taken up the lower feed rollers 41 will merely slip underneath the web, the upper rollers 40 remaining stationary. The effect however, is to constantly maintain a tight tension on the web, and to immediately take up the slack thereof as soon as it is fed forwardly at the next operation by feed roller 19.

For the purpose of supporting the printed section of web 18 between bar 43 and feed rollers 40, 41, I employ a web or belt 50, which may be of rubber or other suitable material, and which passes around said elements and serves to feed forward and sup-

port the web. Said belt may however, be dispensed with, the tension of the web serving to hold it taut under the action of the feed rollers 40 and 41.

5 The operation of the invention will be readily understood from the foregoing description. The entire web feed apparatus as shown, is complete in itself and may be detached from the printing press in a few
10 minutes and moved away so that it in no way interferes with hand feeding if desired. It will be understood that the speed of the movements, proportions and the relation of the gears must be suitably designed to co-
15 operate with the gear 3 of the particular press with which the mechanism is designed to be used, but all such questions may be left to the province of the designer or builder. Also, that the invention may be
20 changed or modified to suit it to different presses or to meet other conditions, and that changes or variations in the detail construction or otherwise may be made by the skilled mechanic without departing from the
25 scope of the invention as covered by the following claims.

Having described my invention, what I claim is:—

1. Web feed mechanism comprising a sup-
30 porting frame, a feed wheel, guiding devices adapted to hold the paper closely against and around said wheel, means for intermittently actuating said feed wheel to feed a predetermined length of material
35 consisting of ratchet and pawl mechanism, a driving wheel, and an adjustable pitman connecting the ratchet and pawl mechanism and the driving wheel, and continuously running feed mechanism beyond said feed
40 wheel, substantially as set forth.

2. Web feed mechanism comprising a sup-
porting frame, a feed wheel, guiding de-
45 vices adapted to hold the paper closely against and around said wheel, means for intermittently actuating said feed wheel to feed a predetermined length of material consisting of ratchet and pawl mechanism, a
50 driving wheel, and an adjustable pitman connecting the ratchet and pawl mechanism and the driving wheel, continuously running feed mechanism beyond said feed wheel, and friction creating bearings for the web, sub-
stantially as set forth.

3. In web feed mechanism for printing
55 presses, the combination of a portable frame adapted for attachment to the press and provided with means for supporting a roll of paper, an intermittently operable feed wheel, means for directing the travel of the
60 paper around and in tight frictional engagement with said wheel and into operative relation to the printing press, constantly running feed mechanism adapted to take up the material, and shears; and gearing for
65 actuating the intermittently operable feed

wheel, constantly running feed mechanism, and shears, geared with the printing press, substantially as set forth.

4. In web feed mechanism for printing presses, the combination of a portable frame
70 adapted for attachment to the press and provided with means for supporting a roll of paper, an intermittently operable feed wheel, means embodying a roller for directing the travel of the paper around and in
75 tight frictional engagement with said wheel and into operative relation to the printing press, constantly running feed mechanism adapted to take up the paper, shear mechanism, and a single gear wheel for actuating
80 the feed wheel, feed mechanism, and shear mechanism adapted to be geared with the printing press, substantially as set forth.

5. In web feed mechanism for printing presses, the combination of a portable frame
85 adapted for attachment to the press and provided with means for supporting a roll of paper, an intermittently operable feed wheel, means for directing the travel of the paper around and in tight frictional engage-
90 ment with said wheel and into operative relation to the printing press, constantly running feed mechanism adapted to take up the paper, shear mechanism, gearing for actuating the feed wheel, feed mechanism, and
95 shear mechanism, adapted to be geared with the printing press, an adjustable transverse bearing for the paper between the feed wheel and said constantly running feed mechanism, and means for fixedly securing
100 said frame and its parts to the press, substantially as set forth.

6. The combination of a supporting frame having means for rigid connection with a
105 printing press and frame and supporting a roll of paper mounted on the frame, an intermittently operable feed wheel, transverse bars providing bearings for the paper and for directing its travel around the feed
110 wheel, a positively driven constantly running feed roller and a bearing roller therefor, shear mechanism, and a wheel adapted to be geared with a wheel of the printing press and provided with a ratchet and pawl
115 operating mechanism for the feed wheel, and shear operating mechanism, substantially as set forth.

7. In web feed mechanism, the combination with means for supporting the paper roll, an intermittently operable friction feed
120 wheel, means for maintaining the paper around and in contact with said wheel, cross bearings, constantly running feed mechanism providing slippage, and shears; of vertically adjustable bars extending rearwardly
125 from said feed mechanism and provided with a terminal cross roller for the web, substantially as set forth.

8. In web feed mechanism, the combination with the paper roll, an intermittently
130

operable friction feed wheel, cross bearings, a constantly running feed roll, and shears; of vertically adjustable bars extending rearwardly from said feed mechanism and provided with a terminal cross roller for the web, and a feed belt passing around said roller and said constantly operating feed roll, substantially as set forth.

9. In web feed mechanism, the combination of a supporting frame having means for fixedly locating it in operative relation to a printing press and for supporting a roll of paper, a feed roller and ratchet and pawl actuating mechanism therefor, fixed bearing members for the paper web, a constantly running feed wheel, an idle wheel bearing thereon, shear mechanism, a gear wheel mounted on the frame adapted to be adjusted to driving engagement with a gear on a press and having operative connection with said ratchet and pawl actuating mechanism, the constantly running feed wheel, and shear mechanism respectively; and an

adjustable frame mounted on said supporting frame having a bearing roller for the paper web, substantially as set forth.

10. Web feed mechanism comprising a portable supporting frame adapted for attachment to the frame of a printing press, means for supporting a roll of paper therein, a feed wheel and means for directing the paper strip closely around and in frictional contact with the greater portion of the periphery of said wheel, means for intermittently actuating said feed wheel to feed a predetermined length of paper, continuously running feed mechanism beyond said feed wheel, and shear mechanism, substantially as set forth.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

CHARLES RUSH.

Witnesses:

C. M. CLARKE,
CHAS. S. LEPLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."