April 14, 1936. A. ROSENTHAL 2,037,091

PRINTING PRESS

Filed July 27, 1935 3 Sheets-Sheet 1

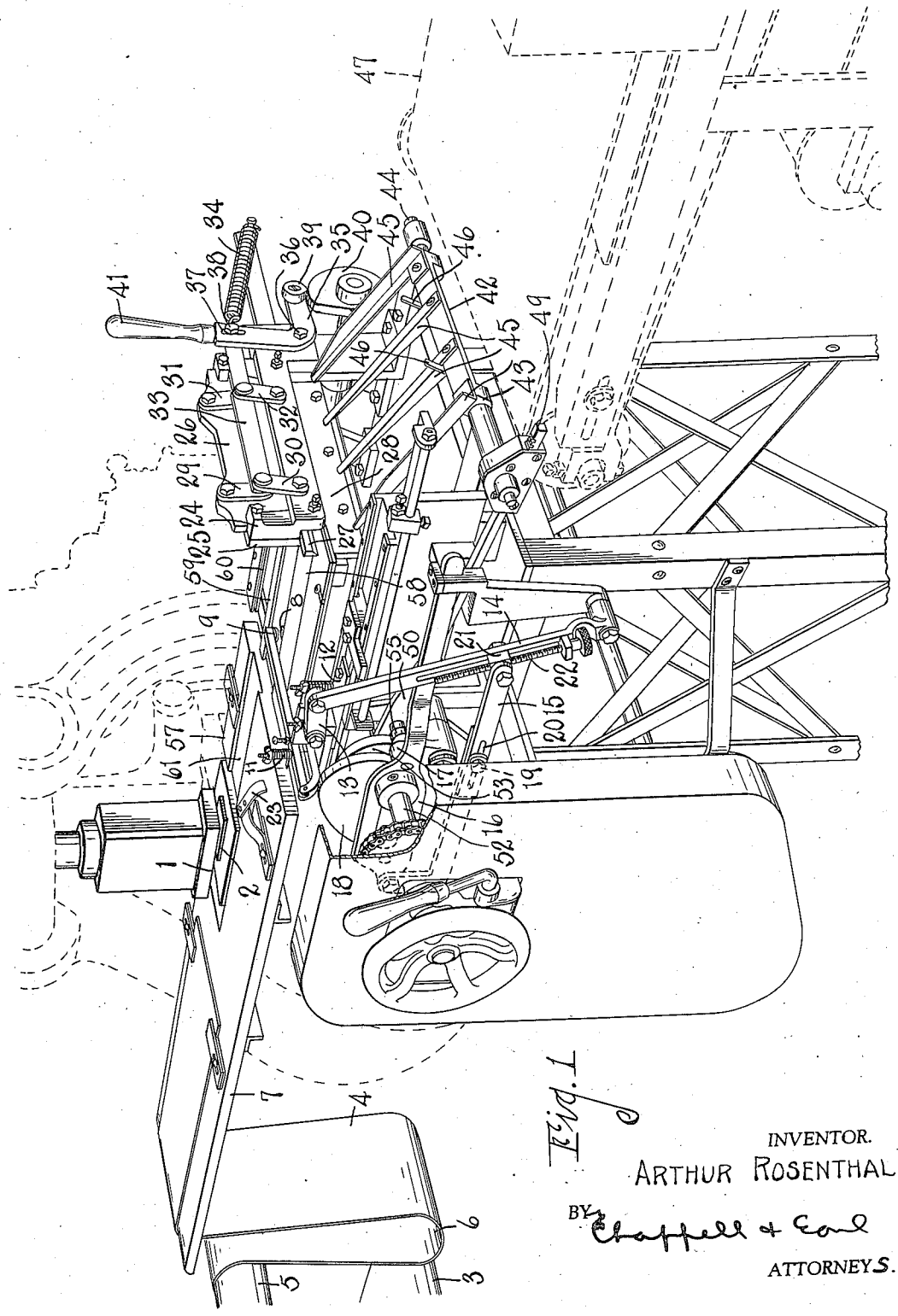

Fig. 1

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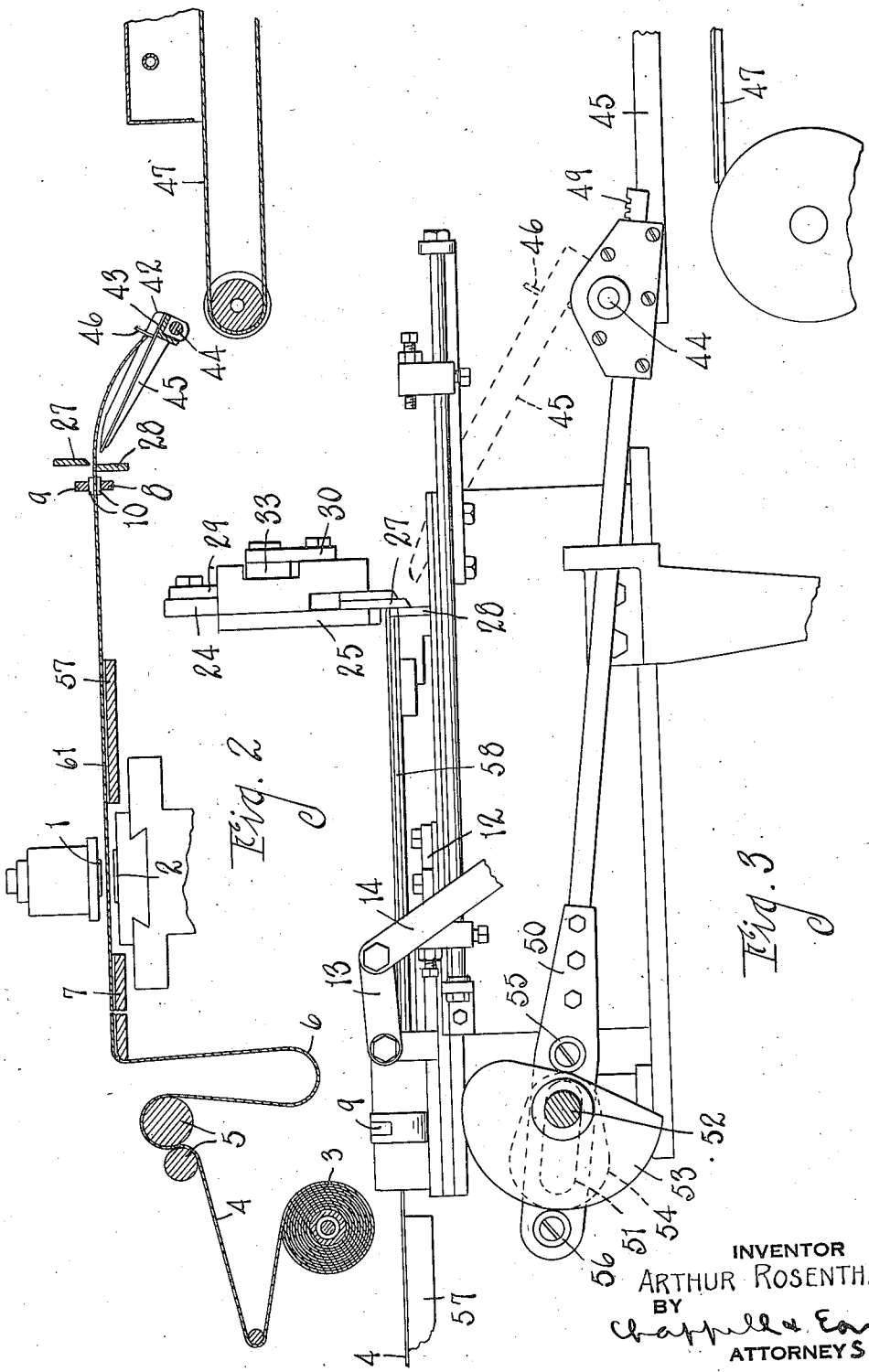

Fig. 2

Fig. 3

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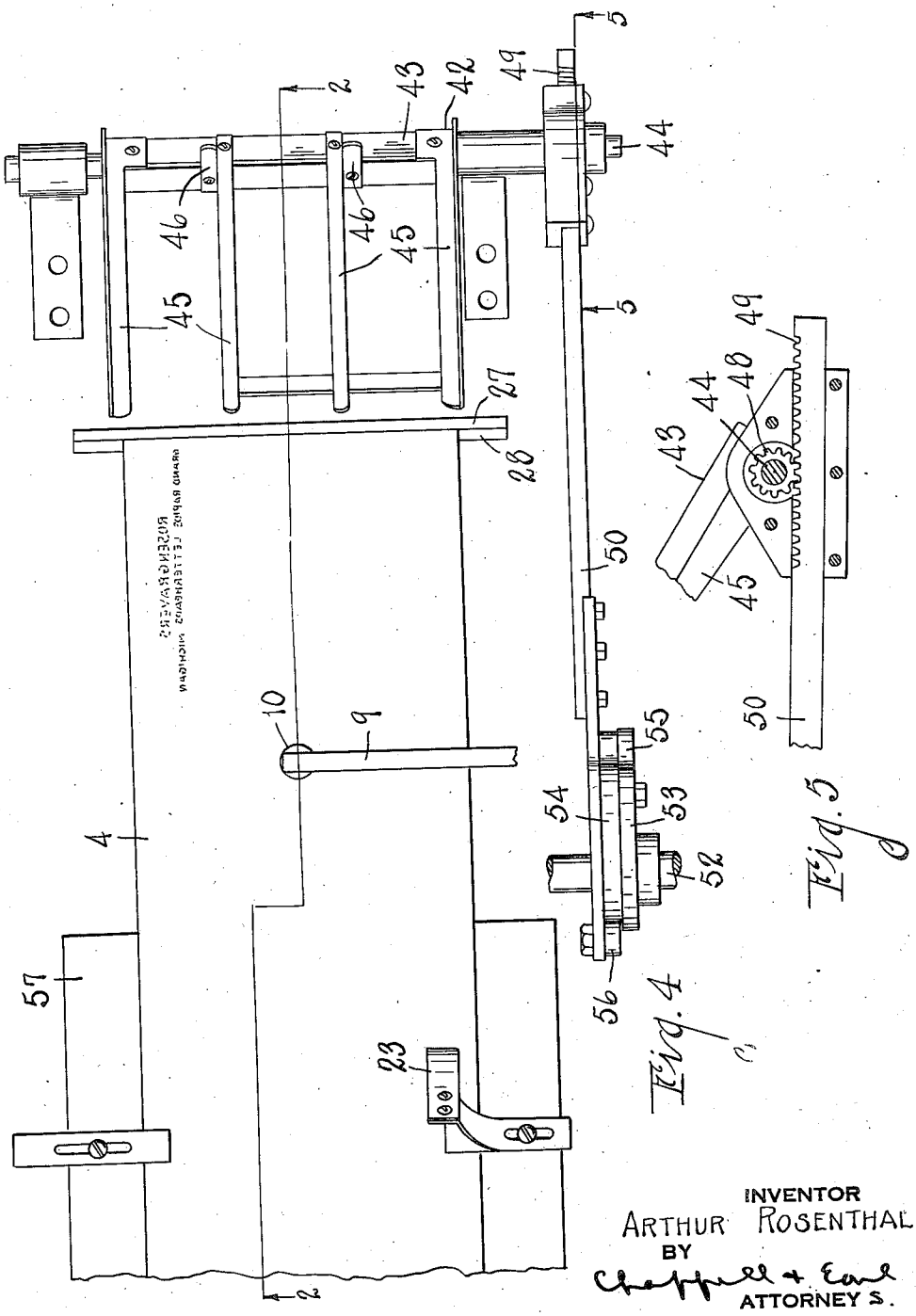

Fig. 4

Fig. 5

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Patented Apr. 14, 1936

2,037,091

UNITED STATES PATENT OFFICE

2,037,091

PRINTING PRESS

Arthur Rosenthal, Grand Rapids, Mich., assignor to Rose Patch & Label Company, Grand Rapids, Mich.

Application July 27, 1935, Serial No. 33,423

6 Claims. (Cl. 101—163)

This invention relates particularly to intaglio presses for engraving letterheads or the like and has for its objects:

First, to provide a new and improved apparatus for engraving letterheads or the like from a web of paper which is fed continuously to the press and severed in sheet lengths after engraving or printing.

Second, to produce such an apparatus particularly adapted for use on intaglio presses made in the United States in which presses the counters practically all face downwardly and the dies upwardly.

Third, to provide such an apparatus in which the web may be fed and engraved and then fed to a cutting apparatus and the driers without smearing the engraved matter on the finished printed article.

Fourth, to provide such an apparatus that will transfer the engraved matter to a drier automatically depositing the engraving upwardly to avoid smearing.

Fifth, to provide such a device that may be conveniently made as an attachment for use in connection with presses already in operation with hand feeds or the like.

Further objects and advantages pertaining to details and economies of construction and operation will appear from the description to follow. A preferred embodiment of my invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a perspective view with some portions broken away to show operating mechanisms of an intaglio press with my improved feeding apparatus thereon.

Fig. 2 is a view semi-diagrammatic and in section on line 2—2 of Fig. 4.

Fig. 3 is a side view of the feeding and turning mechanism of a machine embodying my invention.

Fig. 4 is a plan view of the feeding and turning mechanism.

Fig. 5 is a detail sectional view on line 5—5 of Fig. 4 showing means for reciprocating the turner.

Referring to Fig. 1 of the drawings, I have shown the mechanism of the press and drier in dotted lines since they form no part of my invention.

1 is the counter of an intaglio printing press and 2 is the die. 3 is a supply roll for the paper web 4 which is fed to friction feed rolls 5 and thence into a loop 6 before passing over the bed 7 of the press and between the counter and die thereof. The web 4 of the paper is fed by feed jaws 8 and 9, 8 being a lower stationary feed jaw and 9 being a movable upper jaw, both provided with disks 10 for grasping the paper web and advancing the same. A spring 11 is disposed to hold the jaws normally pressed together and they are mounted on a reciprocating slide 12 which is connected by a link 13 to a reciprocating arm 14 which is connected to a pitman 15 which is in turn connected to a cam follower 16 having a roller 17 engaging a cam 18. The throw of the feeding jaws can be regulated by adjustment of the pitman 15 through the bolt 19 in the slots 20 and by an adjustment of the point of attachment of the pitman 15 to the lever 14 through the threaded block 21 and screw 22. The jaws 8 and 9 are actuated by means of a cam slide which is not shown in detail here, it being substantially identical with the cam slide arrangement for operating the jaws of the feeding means shown in my co-pending application Serial No. 612,678, filed May 21, 1932, for means for feeding webs of paper to printing presses.

The feeding jaws 8 and 9 are timed to grasp the web of paper and advance it a predetermined length between operations of the press to make an impression on the web. The jaws move the web a predetermined distance and then release the web and move back to initial position where they again grasp the web for the next feeding operation. A spring member 23 tends to hold the web in position and since it is not under tension, but hangs in the loop 6, the web remains in position for printing without being under tension.

The cut-off means are similar to those shown in the above mentioned co-pending application and comprise the bracket 24 and plate 25 forming guide ways for the cutting member 26, which carries at its lower edge a blade 27 which cooperates with a stationary blade 28 for severing sheets from the end of the web. The cutting member 26 is provided with toggle members 29, 30, 31, and 32. The members 29 and 31 are pivoted to the member 26 and the toggle members 30 and 32 are pivoted to the bracket 24. The toggle members 29 and 30 are pivoted together and the members 31 and 32 are pivoted together and all are pivoted to the bar 33 which is normally urged to the right, as shown in Fig. 1, by the spring 34 which causes the blade to cut. A bell crank lever 35 pivoted at 36 and having a slotted end 37 engaging the bolt 38 on the bar 33 and provided at its other end with a cam follower 39 is provided to raise the cutting blade between feeding operations and the cam 40 engaging the cam follower 39 is so shaped that the blade is quickly actuated

at the end of a feeding operation. A handle 41 is provided for operating the cutting mechanism if the machine is not in operation and for controlling movement of the same.

A turner 42 is provided which comprises a rack 43 pivoted on the shaft 44. The rack has a plurality of spaced apart arms or fingers 45 extending toward the cutting means. Stops 46 are provided for engaging a severed sheet of paper which rests on the arms or fingers 45. The rack 43 is arranged to reciprocate from the position shown in Fig. 1 which will be referred to as the sheet receiving position, which corresponds to the dotted line position of Fig. 3 to the full line position of Fig. 3. A sheet of paper carried thereon is deposited on the continuous belt conveyor of the drier shown here in dotted lines at 47. A pinion 48 is provided for reciprocating the turner 42 and a rack 49 engages the pinion. The reciprocation of the rack causes the turner 42 to reciprocate. The rack is connected by a pitman or arm 50 with a slotted member 51 passing around the drive shaft 52 of the cams 53 and 54. These cams are arranged to be rotated in clockwise direction as seen in Fig. 3, the cam 53 engaging a cam follower 55 for moving the rack to the right, as viewed in Fig. 3, and the cam 54 engaging a cam follower 56 for movement of the rack to the left, as viewed in Fig. 3. The movement of the rack back and forth causes the turner 42 to reciprocate from sheet receiving to sheet discharging positions and the cams are so timed that this operation takes place between cutting and feeding operations so that the sheet received from the press is deposited on the conveying belt 47 and in a turned over position.

A bed 57 is provided extending from die 2 to the cutting mechanism. The bed is formed of a portion of the bed 7 of the printing press and by the plates 58, 59 and 60 forming part of the feeding mechanism. The bed is provided with a slot or groove 61 extending from the die to the cutting mechanism in the direction of movement of the web. The groove 61 is of a width to receive the engraving on the web without smearing it and is of a width also to be spanned by the sheet of paper passing through the feeding mechanism. The fingers 45 of the turner 42 are spaced similarly to receive the sheet of paper without touching the downwardly facing engraving thereon so that as the web of paper passes through the printing press it is fed face down with the engraving over this groove until the paper is turned with the engraving face up on the drier.

I have described and shown a preferred embodiment of my invention and wish to claim the same broadly as well as specifically, as pointed out in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In an intaglio printing press having a downwardly facing counter and an upwardly facing die for engraving letterheads and the like, the combination of means for feeding a web of paper between said die and said counter and for advancing said web a predetermined distance between impressions of the press, comprising a pair of reciprocating feeding jaws timed to grasp said paper and between impressions of said press to advance the web a predetermined distance, release the same, and return to initial position to again grasp and feed the web after an impression of the press, cutting means for severing sheets of paper from the end of said web between feeding operations, a bed extending from the die to said cutting means to receive and support the web of paper and having a groove therein extending from the die to the cutting means in the direction of movement of the web and of a width to be bridged by the web of paper and to receive the engraving on said web made by the impression of the press, whereby the engraving on the web does not touch the bed during feeding operations, and means for receiving the sheets with the engraving facing downwardly as they come from the cutting means and for turning said sheets over, comprising a reciprocating turner timed to receive a sheet, turn it, and return to receiving position between cutting and feeding operations, comprising a pivoted frame formed of extending fingers spaced to engage the sheets on both sides of the engraving thereon, a pinion on said frame for turning the same, a rack engaging said pinion, and a cam for reciprocating said rack back and forth once between each feeding and cutting operation.

2. In an intaglio printing press having a downwardly facing counter and an upwardly facing die for engraving letterheads and the like, the combination of means for feeding a web of paper between said die and said counter and for advancing said web a predetermined distance between impressions of the press, cutting means for severing sheets of paper from the end of said web between feeding operations, a bed extending from the die to said cutting means to receive and support the web of paper and having a groove therein extending from the die to the cutting means in the direction of movement of the web and of a width to be bridged by the web of paper and to receive the engraving on said web made by the impression of the press, whereby the engraving on the web does not touch the bed during feeding operations, and means for receiving the sheets with the engraving facing downwardly as they come from the cutting means and for turning said sheets over, comprising a reciprocating turner timed to receive a sheet, turn it, and return to receiving position between cutting and feeding operations, comprising a pivoted frame formed of extending fingers spaced to engage the sheets on both sides of the engraving thereon, a pinion on said frame for turning the same, a rack engaging said pinion, and a cam for reciprocating said rack back and forth once between each feeding and cutting operation.

3. In an intaglio printing press having a downwardly facing counter and an upwardly facing die for engraving letterheads and the like, the combination of means for feeding a web of paper between said die and said counter and for advancing said web a predetermined distance between impressions of the press, comprising a pair of reciprocating feeding jaws timed to grasp said paper and between impressions of said press to advance the web a predetermined distance, release the same, and return to initial position to again grasp and feed the web after an impression of the press, cutting means for severing sheets of paper from the end of said web between feeding operations, a bed extending from the die to said cutting means to receive and support the web of paper and having a groove therein extending from the die to the cutting means in the direction of movement of the web and of a width to be bridged by the web of paper and to receive the engraving

on said web made by the impression of the press, whereby the engraving on the web does not touch the bed during feeding operations, and means for receiving the sheets with the engraving facing downwardly as they come from the cutting means and for turning said sheets over, comprising a reciprocating turner timed to receive a sheet, turn it, and return to receiving position between cutting and feeding operations, said turner having an open space to receive the engraving on said sheets.

4. In an intaglio printing press having a downwardly facing counter and an upwardly facing die for engraving letterheads and the like, the combination of means for feeding a web of paper between said die and said counter and for advancing said web a predetermined distance between impressions of the press, cutting means for severing sheets of paper from the end of said web between feeding operations, a bed extending from the die to said cutting means to receive and support the web of paper and having a groove therein extending from the die to the cutting means in the direction of movement of the web and of a width to be bridged by the web of paper and to receive the engraving on said web made by the impression of the press, whereby the engraving on the web does not touch the bed during feeding operations, and means for receiving the sheets with the engraving facing downwardly as they come from the cutting means and for turning said sheets over, comprising a reciprocating turner timed to receive a sheet, turn it, and return to receiving position between cutting and feeding operations, said turner having an open space to receive the engraving on said sheets.

5. In an intaglio printing press having a downwardly facing counter and an upwardly facing die for engraving letterheads and the like, the combination of means for feeding a web of paper between said die and said counter and for advancing said web a predetermined distance between impressions of the press, comprising a pair of reciprocating feeding jaws timed to grasp said paper and between impressions of said press to advance the web a predetermined distance, release the same, and return to initial position to again grasp and feed the web after an impression of the press, cutting means for severing sheets of paper from the end of said web between feeding operations, and a bed extending from the die to said cutting means to receive and support the web of paper and having a groove therein extending from the die to the cutting means in the direction of movement of the web and of a width to be bridged by the web of paper and to receive the engraving on said web made by the impression of the press, whereby the engraving on the web does not touch the bed during feeding operations.

6. In an intaglio printing press having a downwardly facing counter and an upwardly facing die for engraving letterheads and the like, the combination of means for feeding a web of paper between said die and said counter and for advancing said web a predetermined distance between impressions of the press, cutting means for severing sheets of paper from the end of said web between feeding operations, and a bed extending from the die to said cutting means to receive and support the web of paper and having a groove therein extending from the die to the cutting means in the direction of movement of the web and of a width to be bridged by the web of paper and to receive the engraving on said web made by the impression of the press, whereby the engraving on the web does not touch the bed during feeding operations.

ARTHUR ROSENTHAL.