

A. J. FORD.
FEED MECHANISM FOR PRINTING PRESSES.
APPLICATION FILED MAY 25, 1908.

936,108.

Patented Oct. 5, 1909.

3 SHEETS—SHEET 1.

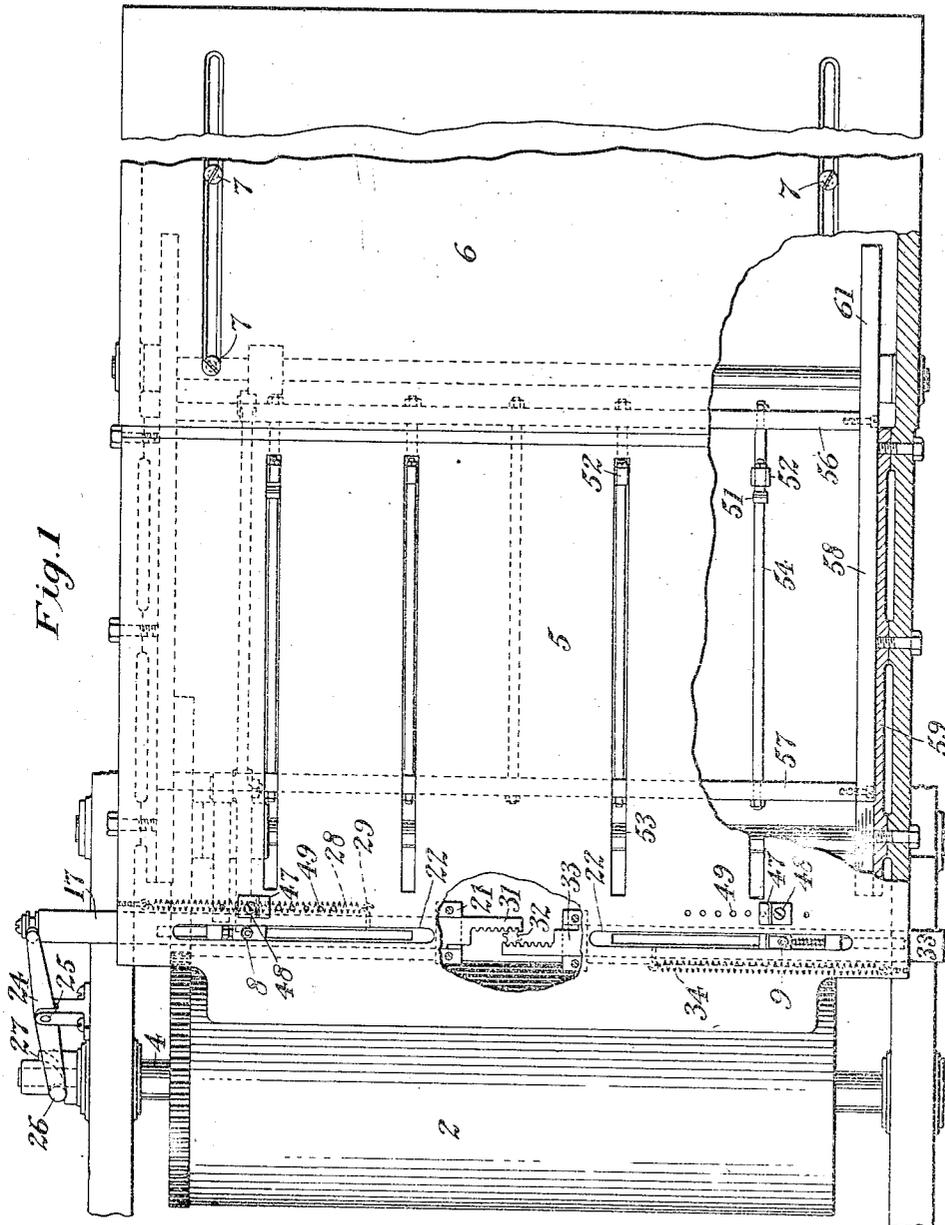


Fig. 1

Witnesses:

Edward [Signature]
Wm. Ashley Kelley

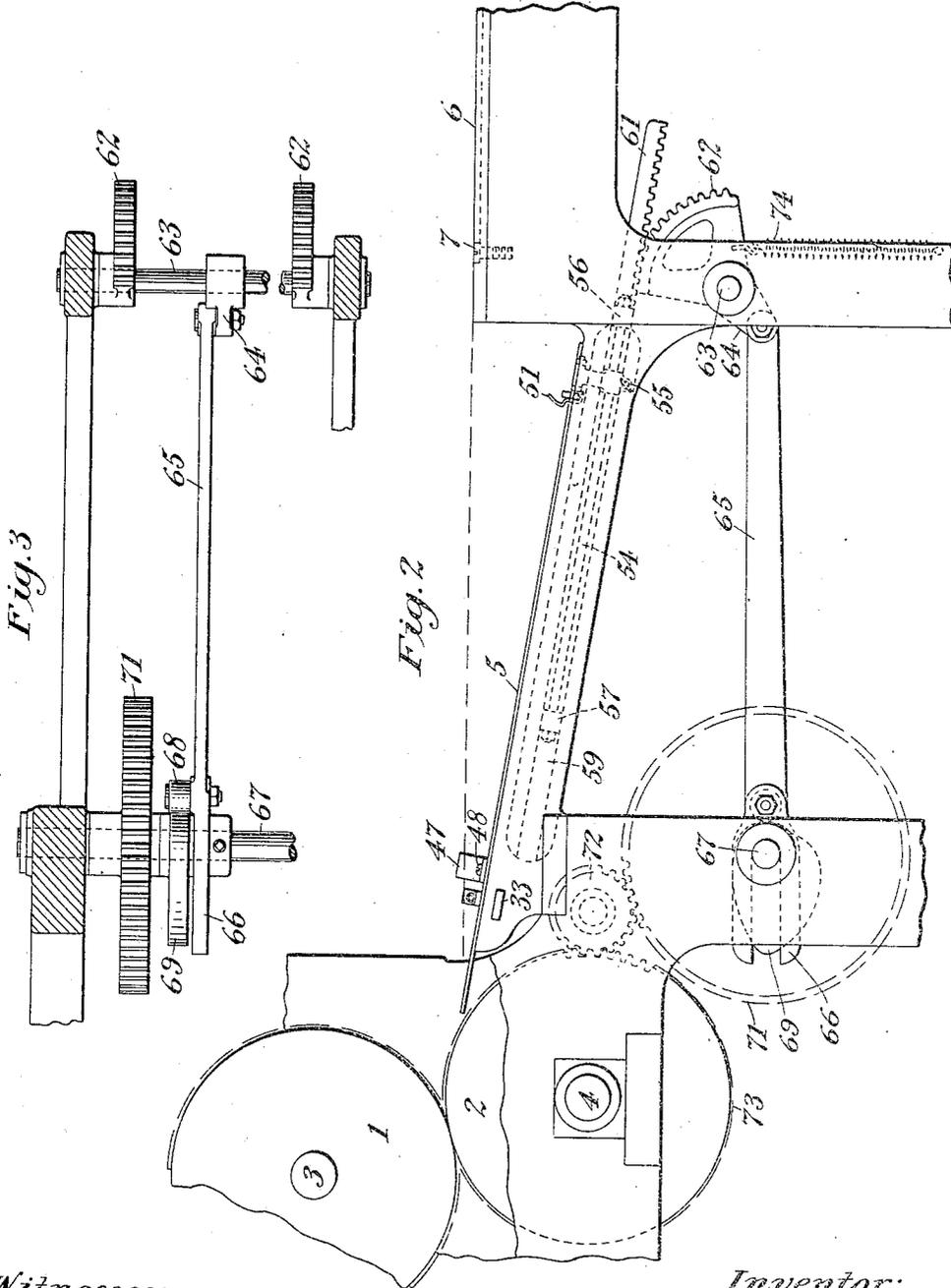
Inventor:

Albert J. Ford
by *Henry D. Williams*
Attorney.

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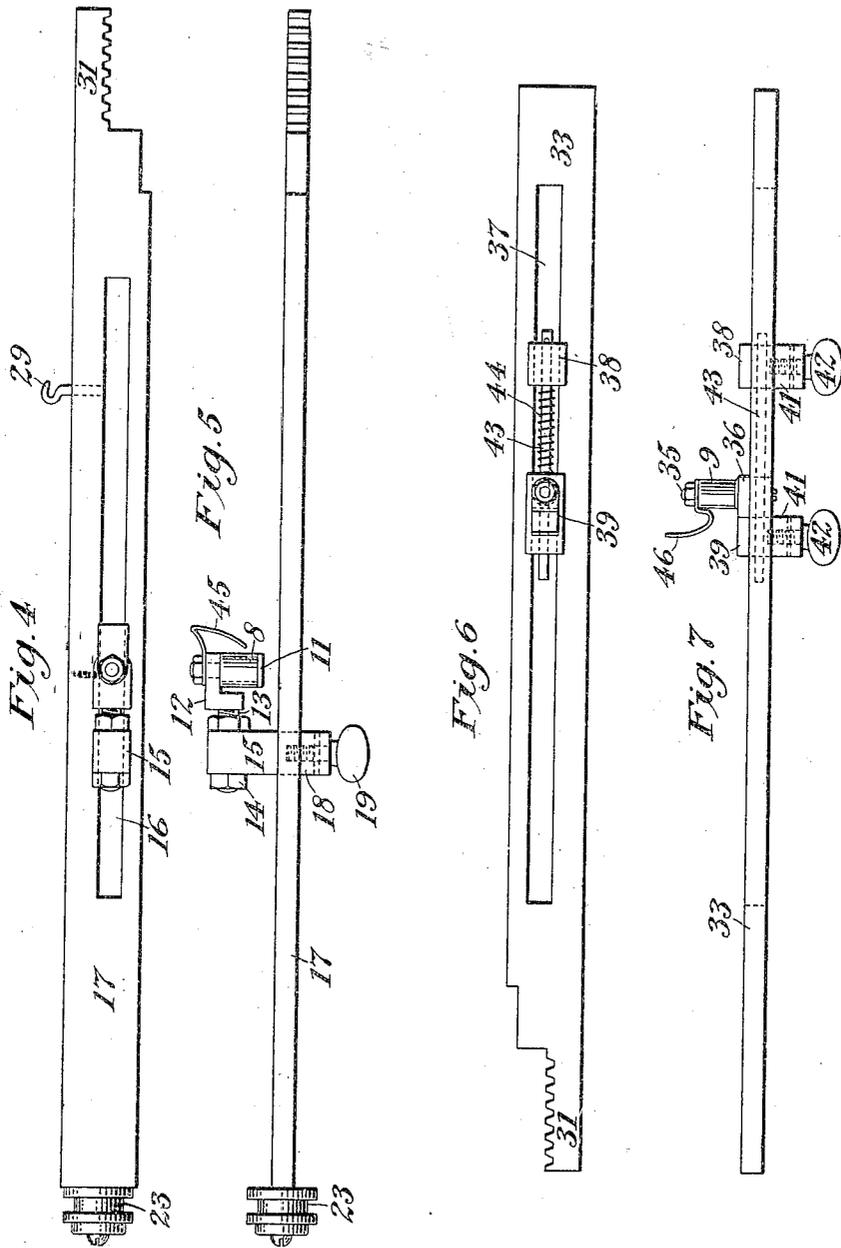
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Witnesses:

Samuel Tamm
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UNITED STATES PATENT OFFICE.

ALBERT J. FORD, OF NEW YORK, N. Y., ASSIGNOR TO FUCHS AND LANG MANUFACTURING COMPANY, A CORPORATION OF NEW YORK.

FEED MECHANISM FOR PRINTING-PRESSES.

936,108.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed May 25, 1908. Serial No. 434,740.

To all whom it may concern:

Be it known that I, ALBERT J. FORD, a citizen of the United States, residing in the borough of Manhattan, city of New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Feed Mechanism for Printing-Presses, of which the following is a specification, reference being had therein to the accompanying drawings, forming part thereof.

My invention relates to feed mechanism for printing presses, and is particularly adapted for use in feeding sheets of tin plate or other stiff material.

The object of the invention is to produce a feed mechanism of simple construction which will present a sheet to the printing couple of a press in timed relation to the movement of the printing couple and in a rapid and reliable manner, the position of the plate as it enters the press being accurately determined by the mechanism so as to correctly engage the plate with the grippers of the press and determine the position of the impression on the plate.

To the above ends the invention comprises a feed mechanism provided with means for advancing the plate into contact with the printing couple at the proper time in the operation of the press, together with means for engaging the lateral edges of the plate to adjust it laterally to predetermined position while it is being so advanced, and these means are made adjustable for plates of different sizes and are preferably combined with a feed table inclined downwardly away from the printing couple so that the plate, when placed upon the table by the operator, tends to slide away from the printing couple and into engagement with the moving feeding devices.

Other features of the invention will appear in the following description of the illustrated embodiment thereof.

I will now describe the embodiment of my invention illustrated in the accompanying drawings, and will thereafter point out my invention in claims.

Figure 1 of the drawings is a plan view of a feed mechanism embodying the present invention. Fig. 2 is a side elevation of the feed mechanism. Fig. 3 is a plan view of the mechanism for actuating the feeding fingers. Figs. 4 and 5 are a plan view and a

side elevation of one of the side gages and the slide upon which it is carried, and Figs. 6 and 7 are similar views of the other side gage and slide.

A portion of a rotary printing press is shown in Figs. 1 and 2, comprising the transfer cylinder 1 and the impression cylinder 2, which constitute the printing couple. These cylinders are mounted on shafts 3 and 4 journaled in the frame of the press. The plates are fed upon a feed table 5, which inclines upwardly toward the printing couple. The plates are laid one by one on the feed table by an operator, and are taken from a stack on a supply table 6 situated at the rear of the feed table. The top of the supply table is slotted and is adjustably secured by screws 7. When small plates are to be printed the screws 7 may be loosened and the supply table may be adjusted horizontally toward the printing couple to reduce the distance through which the plates must be carried by the operator. After the plate is laid upon the feed table and while it is being advanced into engagement with the printing couple, it is engaged laterally by two side gages 8 and 9 which determine its position laterally. The side gage 8, shown particularly in Figs. 4 and 5, is in the form of a roller 8 journaled on a stud 11 depending from a head 12. The head 12 is mounted on a threaded stem 13 fixed, by means of nuts 14, to a post 15. The post has a shouldered lower end slidingly fitting a longitudinal slot 16 in a slide 17. The post is fixed adjustably in position in the slide by means of a block 18 and a thumb screw 19. The slide 17 is mounted to move longitudinally in bearings 21 fixed below the feed table, and the post 15 and gage 8 project upward through a slot 22 in the table. Reciprocating motion is imparted to the slide to move the side gage into and out of engagement with the plate on the table. For this purpose a grooved collar 23 is mounted on the outer end of the slide. This collar is engaged by the forked end of a cam-lever 24 pivoted at 25 on the frame of the machine. The cam-lever carries a cam roll 26 engaging a face cam 27 fixed to the end of the shaft 4 of the impression cylinder. As the cylinder and the shaft rotate the cam, through the connections described, operates at the proper time to move the slide inward and cause the side gage to engage the

edge of the plate on the feed table. The return movement of the slide is caused by a spring 28, of which one end is fixed to a pin 29 on the slide 17 and the other end is fixed to the frame of the machine. To actuate the other side gage 9, the inner end of the slide 17 is provided with a rack 31 engaging a pinion 32 journaled below the feed table. This pinion engages a similar rack on a slide 33 arranged to move beneath the feed table in the same manner as slide 17. A spring 34, similar to spring 28, is connected with slide 33. This arrangement is such as to cause the two slides to move simultaneously in opposite directions.

The side gage 9 is in the form of a roller journaled on a stud 35 projecting upward from a block 36. The block is shouldered to engage slidably a slot 37 in slide 33. It is not fixed in position, but is mounted yieldingly to permit the side gage to yield when both gages are in engagement with the opposite edges of the plate in order to accommodate the mechanism to slight variations in the width of the plates. The block 36 moves between two blocks, 38 and 39, which are adjustable along the slot 37 and are fixed in position by blocks 41 and thumb screws 42 beneath the slide 33. A rod 43 is fixed at its ends in the blocks 38 and 39 and passes loosely through a hole in the slide block 36, serving to keep the latter in place on the slide. A compression spring 44 surrounding rod 43 engages slide block 36 and fixed block 38 and tends to move the slide block toward fixed block 39. This spring permits the side gage to yield during the last portion of the movement of the side gages toward each other after the plate has been moved into engagement with the unyielding side gage 8, and thus the side gage 8 determines the final lateral position of the plate and is adjusted, accordingly, so that it shall come to rest exactly at the point to which the edge of the plate is to be brought.

To insure the proper engagement of the edges of the plate with the side gages, curved guides 45 and 46 are fixed over the gages 8 and 9 respectively. These guides hold the edges of the plate down and prevent their springing upward out of engagement with the side gages. To assist the operator in laying the plate upon the feed table in proper position between the side gages, two inclined guide plates 47 are fixed to the feed table, by means of screws 48, beside the slots 22 in which the side gages move. These guides may be adjusted, according to the adjusted position of the side gages, by placing screws 48 in any two of a series of holes 49 provided in the feed table beside the slots 22.

The plate is fed up the feed table and into engagement with the printing couple by two feeding fingers 51, which may be mounted

on any two of the four heads 52 moving in longitudinal slots 53 in the feed table. The heads 52 are carried by rods 54 beneath the table, and are adjustably fixed thereon by clamp screws 55. The rods are fixed in cross members 56 and 57 of a feed frame having side members 58 sliding longitudinally in slotted guides 59 fixed to the frame of the machine.

To actuate the feed frame the side members are provided with racks 61 which engage two segmental gears 62 carried by a rock shaft 63 journaled in the frame of the machine. The rock shaft has a depending arm 64 pivotally connected with a connecting rod 65. The rod has a forked end 66 slidably mounted on a cam shaft 67 journaled in the frame of the machine. The connecting rod carries a cam roll 68 which engages a cam 69 fixed on the cam shaft 67. To rotate the cam a gear 71, mounted on the cam shaft, is engaged by a pinion 72 meshing with a gear 73 mounted on the shaft 4 of the impression cylinder. As the cylinder rotates the cam is rotated and operates, through the connections described, to move the feed frame and the feeding fingers toward the printing couple. The return movement is caused by a spring 74 connecting segmental gear 62 with the frame of the machine.

To adjust the feed mechanism for plates of a given size the table 6 is adjusted as far toward the printing couple as the size of the plate will permit. The feeding fingers are then so adjusted on the feed frame that just as they reach the end of their feeding movement the forward edge of the plate engages the printing couple in position to be seized by the grippers on the impression cylinder. The side gage 8 is then so adjusted on its slide that at the completion of its inward movement it will have moved the edge of the plate to the required position. The side gage 9 is so adjusted that at the end of the inward movement of slide 33 which actuates it, it will be in engagement with the edge of the plate and will have yielded slightly, through the action of spring 44. The guide plates 47 are then so adjusted that when the side gages are in their retracted position, the guide plates will be in position to receive the plate and guide it to a position on the feed table between the side gages.

In the operation of the mechanism the operator, taking a plate from the pile on the supply table 6, drops it between the guide plates 47 and the plate then remains where it falls or slides downward into engagement with the feeding fingers. At the proper time in the rotation of the printing couple the cams 27 and 69 operate simultaneously to move the feeding fingers forward and to move the side gages toward each other. The cam 69 is formed to complete the forward

movement of the plate just as the grippers are in position to seize its forward edge. The cam 27 is formed to cause the side gages to retreat and disengage the plate substantially at the moment when it is seized by the grippers. The feeding fingers then retreat quickly to receive another plate.

It is obvious that various modifications may be made in the embodiment of my invention hereinbefore described and illustrated in the accompanying drawings, within the nature of the invention and the scope of the following claims.

I claim:

- 15 1. Feed mechanism for printing presses comprising, in combination with a printing couple, a feed table, means acting automatically to engage the rear edge of a sheet on the table and move the sheet into engage-
20 ment with the printing couple, two side gages, means for moving them simultaneously toward each other to engage the lateral edges of the sheet and move the sheet laterally to a predetermined position, rigid
25 connections between one side gage and the actuating means, and yielding connections between the other side gage and the actuating means to permit the gage to yield to accommodate sheets of different widths.
- 30 2. Feed mechanism for printing presses comprising, in combination with the printing couple of a press, a feed table, means acting automatically to engage the rear edge of a sheet on the table and move the sheet
35 into engagement with the printing couple, two side gages, means for moving the side gages to cause them to engage the lateral edges of the sheet and move the sheet laterally to predetermined position, and adjust-
40 able connections between the side gages and their actuating mechanism, one of said connections being rigid and the other yielding to permit the gage to yield to accommodate sheets of different widths.
- 45 3. Feed mechanism for printing presses comprising, in combination with the printing couple of a printing press, a feed table,

means acting automatically to engage the rear edge of a sheet on the table and move the sheet into engagement with the printing
50 couple, two side gages, means for moving the side gages simultaneously toward each other to cause them to engage the lateral edges of a sheet on the table, and two fixed
55 guides engaging the lateral edges of the sheet to assist in placing it between the side gages.

4. Feed mechanism for printing presses comprising two side gages, and means for moving them simultaneously toward each
60 other to engage the lateral edges of a sheet and move the sheet laterally to a predetermined position, one side gage being moved yieldingly and the other positively to a pre-
65 determined position so as to determine the position of one edge of the sheet while yielding to accommodate sheets of different widths.

5. Feed mechanism for printing presses comprising, in combination with the print-
70 ing couple of a press, a feed table for receiving a sheet to be printed, the passage of said sheet from the table to the printing couple being unobstructed but the table being
75 sloped away from the printing couple so that the sheet when laid thereon tends under the influence of gravity to move away from the printing couple, feeding means ar-
80 ranged to engage the rear edge of the sheet and arrest such movement with the forward edge of the sheet out of position to be acted upon by the printing couple, and means for moving said feeding means in timed rela-
85 tion with the operation of the printing couple to advance the sheet up the feed table and into engagement with the printing couple.

In testimony whereof I have affixed my signature in presence of two witnesses.

ALBERT J. FORD.

Witnesses:

EDWARD KAUFMAN,
HENRY H. DAVIS.