

(No Model.)

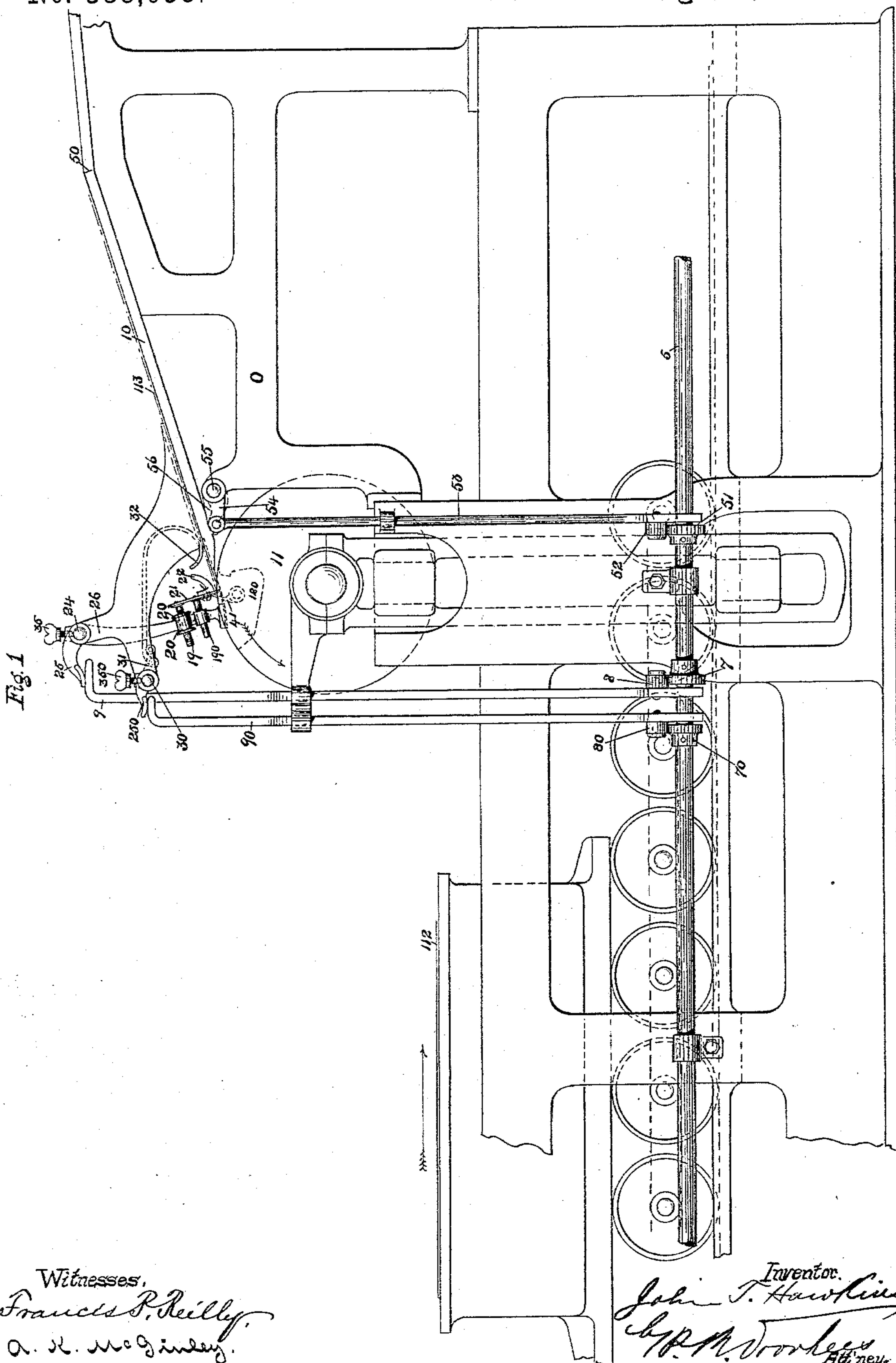
2 Sheets—Sheet 1.

J. T. HAWKINS.

FEED GUIDE FOR PRINTING MACHINES.

No. 388,038.

Patented Aug. 21, 1888.



Witnesses,
Francis P. Reilly,
A. H. McGinley.

Inventor,
John T. Hawkins
Chas. M. Voorhees
Att'ney.

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Fig 2

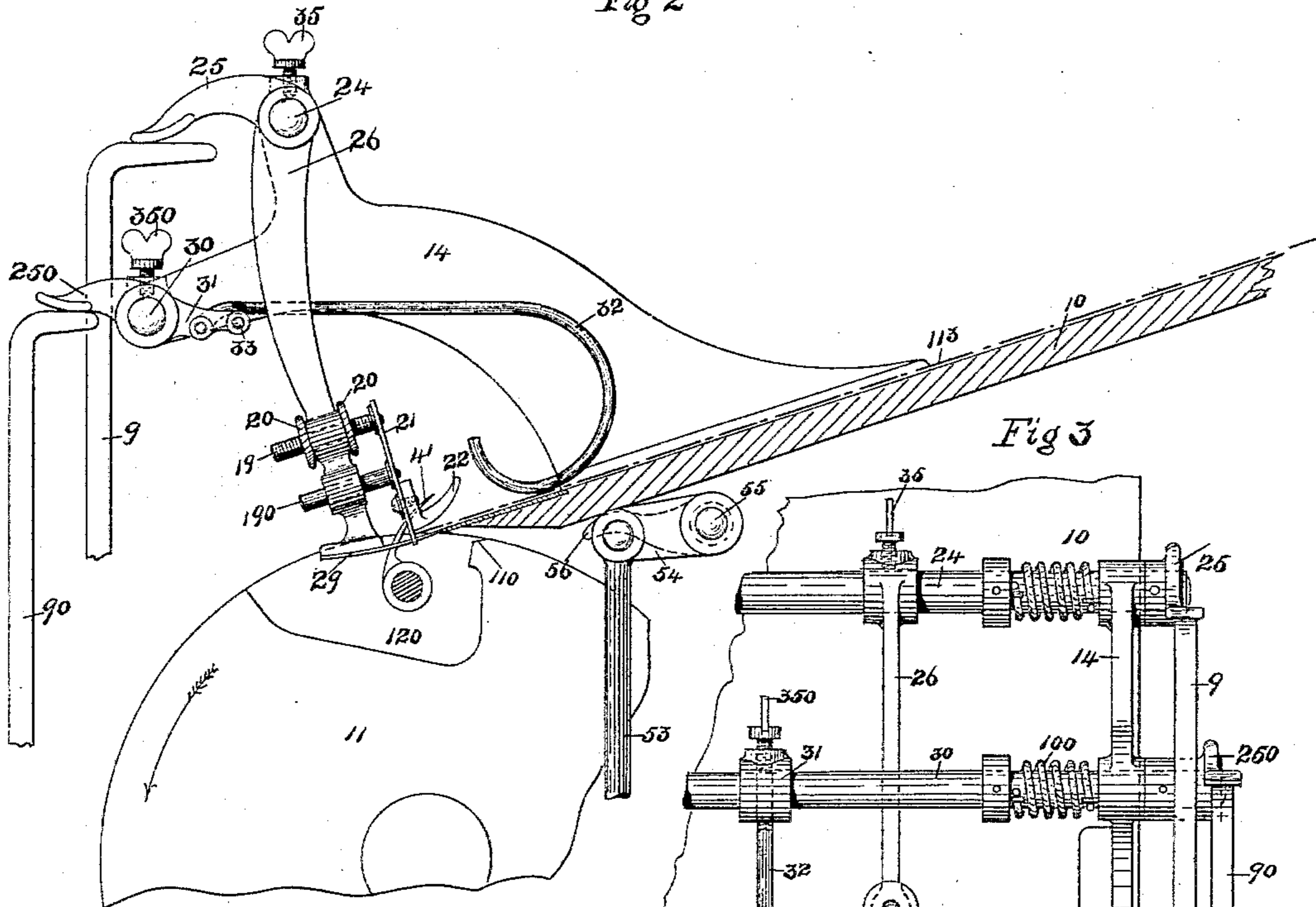


Fig 3

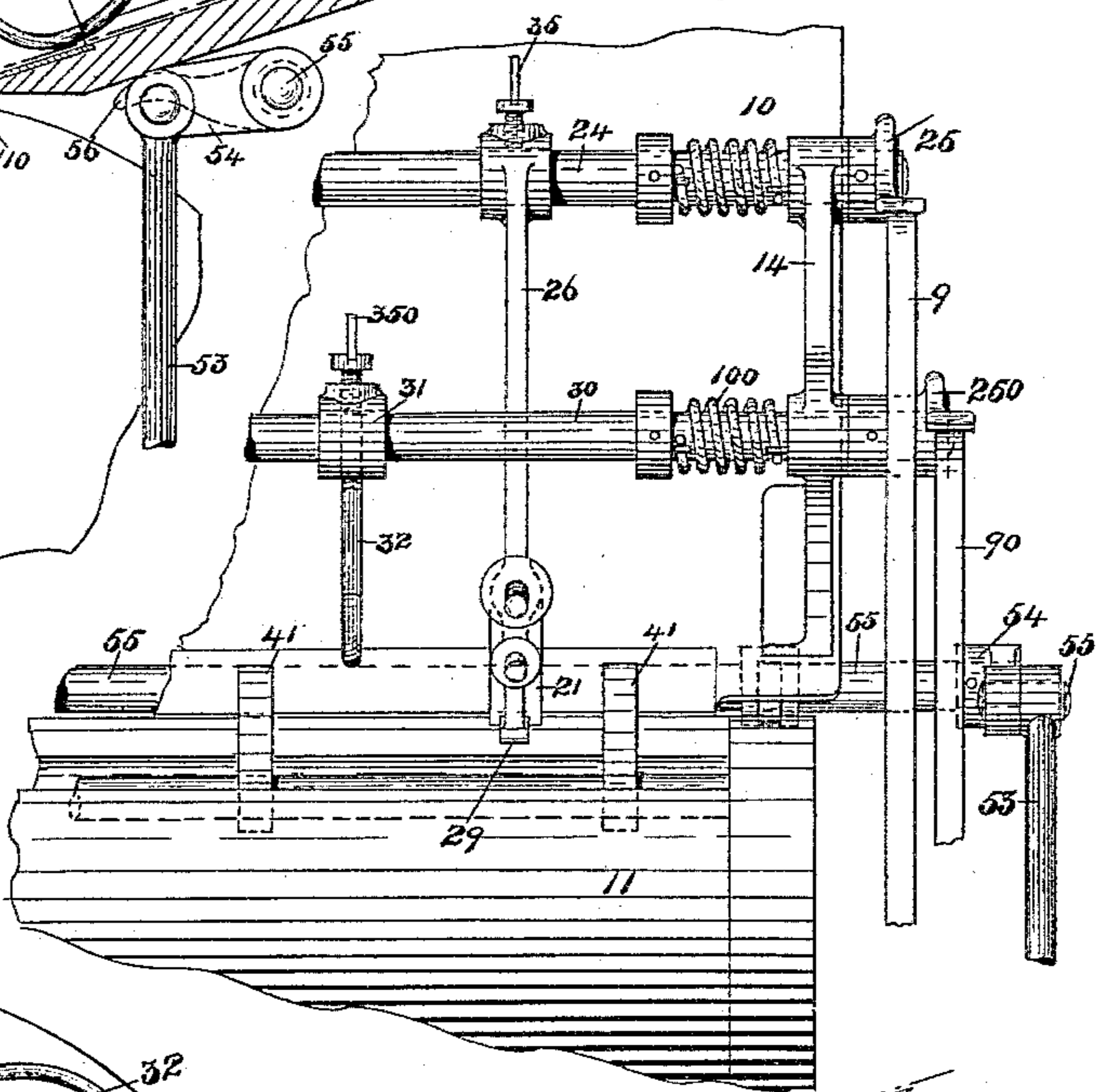
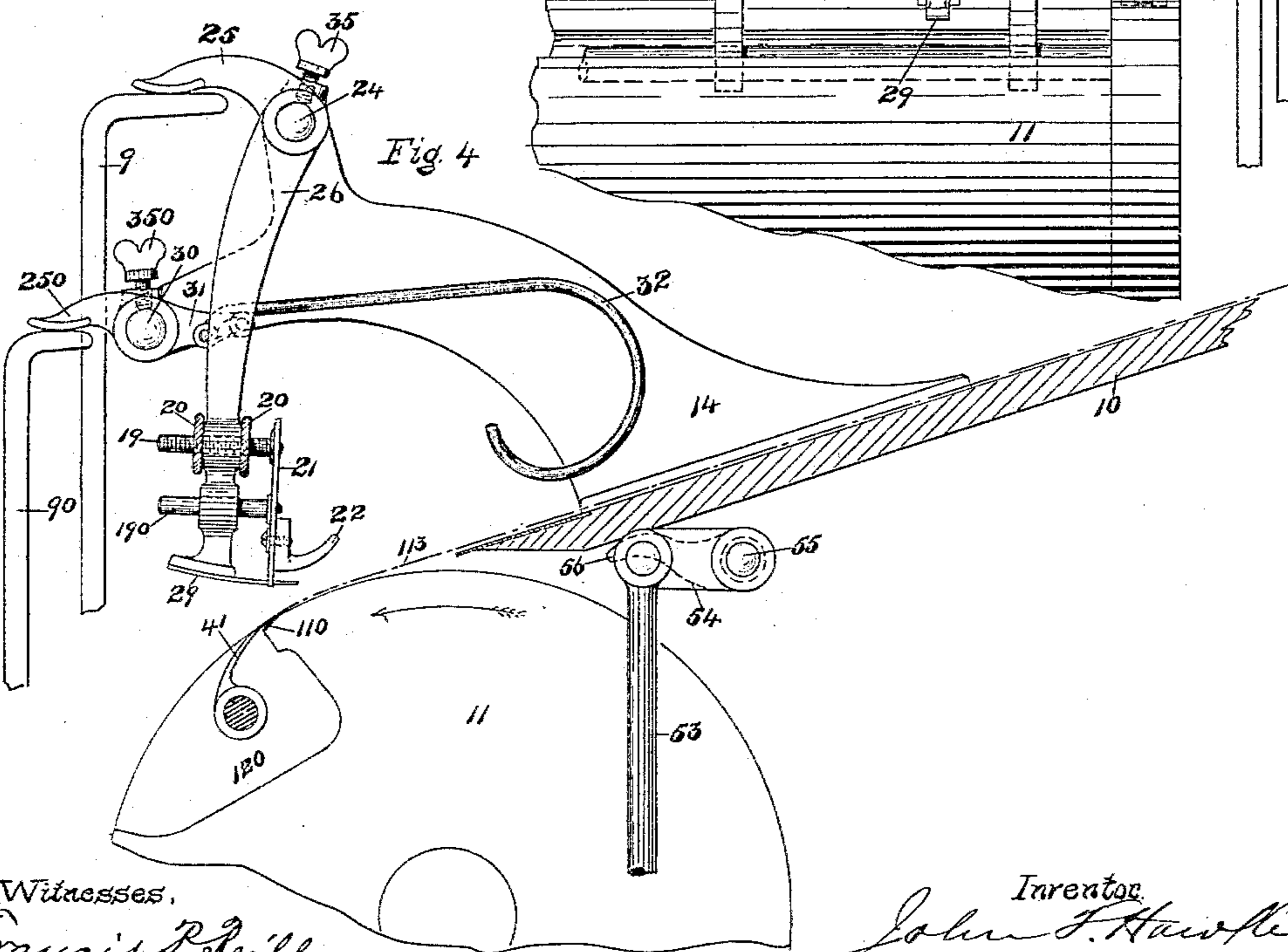


Fig 4



Witnesses,
Francis P. Reilly
a. h. mcgindley

Inventor,
John T. Hawkins.
by R. M. Vornhues Att'y.

UNITED STATES PATENT OFFICE.

JOHN T. HAWKINS, OF TAUNTON, MASSACHUSETTS.

FEED-GUIDE FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 388,038, dated August 21, 1888.

Application filed May 25, 1887. Serial No. 239,305. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. HAWKINS, of Taunton, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Feed-Guides for Printing-Machines, which invention is fully set forth and illustrated in the following specification and accompanying drawings.

The object of this invention is to obviate the corrugation of sheets of paper in the course of being printed, by causing them to be clamped straight and to remain undisturbed while upon the impression-cylinder. This object will be better understood by a short explanatory description. In cylinder-presses of that variety known as the "stop-cylinder" press, in which the impression-cylinder remains at rest during the non-printing stroke of the form and the feeding of the sheet, the under supports for the sheet during said feeding may be, and are in most cases, placed upon the cylinder and move with it. This is impracticable in those varieties of presses in which the impression-cylinder rotates continuously or has an oscillating motion, as said under guides or sheet supports must be at rest during the feeding of the sheets. The presence of such under guides, therefore, at the time of closing the grippers on the sheet is objectionable, as tending to corrugate the gripper-edge of the sheet, and thus interfere with the lateral register of the sheet; hence the object of this invention is to provide, in a guide apparatus for continuously rotating or oscillating cylinder presses, under guides which shall be automatically removed from beneath the sheet just before the actual closing of the grippers upon the sheet, and thus leaving the gripper-edge of the sheet clamped as flat across the cylinder as in the stop-cylinder press, in which the said under guides are carried in the cylinder and move with the sheet when it moves; hence, also, the further object of this invention is to remove the under guides from under the sheet in the direction the sheet is to move, thus obviating the tendency to move the sheet back from the front guides, which would result from withdrawing them in the other direction, as has heretofore been done, and which construction is, therefore, not herein claimed.

The invention is a modification of that pat-

ented to me June 8, 1886, in Patent No. 343,454, and is also a modification of an invention for which I have obtained other Letters Patent, No. 365,127, June 21, 1887.

The invention will first be described, and then particularly set forth in the claims.

In the accompanying drawings, Figure 1 is a side elevation of so much of a lithographic cylinder printing-press as is necessary to the illustration of this invention. Fig. 2 is an enlarged side elevation of a portion of Fig. 1. Fig. 3 is a partial front elevation of Fig. 2; and Fig. 4 a partial side elevation, similar to Fig. 2, with the parts in different positions.

In over-fed cylinder printing-machines, in which the impression-cylinder is in motion when the grippers close upon the sheet, it is necessary to have some form of support for the edge of the sheet, which will extend as far beyond or toward the guides as the sheet itself, to prevent the sheet from being fed under the guides, and to prevent it from coming in contact with the moving cylinder beneath it and perhaps disturbing the accuracy of feeding. These supports are variously known as "sheet-supports," "under-guides," &c., and are generally in the form of thin strips or tongues of metal. They must extend beyond the front edge of the feed-board, in order that the grippers may close upon the paper between them without coming in contact with the board. These strips or tongues in this specification will be given their most common name, "under guides."

Where the under guides project from the front edge of the feed-board they must lie between the sheet and the cylinder at the moment the grippers close upon the sheet. As said guides must be of some thickness and also not touch the surface of the cylinder, particularly in those varieties of machine in which the impression-cylinder makes more than one revolution to an impression, and in which the sheet is delivered from the top and front of the cylinder, and consequently must pass between the under guides and cylinder in delivery, said guides must make more or less of a corrugation in the gripper-edge of the sheet, and, as there must be at least two of these, there will always be at least two corrugations in the paper, and these corrugations, if per-

mitted to be formed, interfere with and render uncertain the lateral register of the sheet.

In the figures of the accompanying drawings the several parts are indicated by numbers, as follows: The number 10 indicates the feed-board, 11 the impression-cylinder, and 14 a pair of brackets attached to the feed-board 10, in which are journaled two rock-shafts, 24 and 30. The lifter-rod 9 is automatically operated by a shaft, 5, cam 7, and roller 8, as fully described in Patent No. 343,454, and a similar lifter-rod, 90, is similarly operated by shaft 5, cam 70, and roller 80 to rise and lower at the proper times. Adjustably secured to shafts 24 and 30 are levers 25 and 250, engaging, respectively, the bent upper ends of rods 9 and 90, and by means of which the rock-shafts 24 and 30 are oscillated. Adjustably secured to shaft 24 by set-screws 35 are two or more arms, 26, and adjustably mounted in the arms 26 are guide-fingers 21, to which are secured adjustable over guides 22. The guide-fingers 21 are adjusted in the arms 26 by the screws 19 and nuts 20 and guided by the pins 190. Secured to the lower ends of arms 26 are under guides 29, so formed and placed that when in position for receiving the sheet, as shown in Figs. 1 and 2, they are in line with and form a continuation of the upper surface of the feed-board 10. Secured to shaft 30 by set-screws 350 are one or more sockets, 31, in which are pivoted curved drop-fingers 32, supported when lifted by stop-pins 33. The shaft 30 is oscillated at the proper time by the action of cam 70, roller 80, rod 90, and lever 250, and return-motion, to lift the fingers 32, is had by means of the spring 100, Fig. 3. The grippers 41 of the impression-cylinder 11 are operated at the proper time by any of the well-known means. A bevel, 110, is formed on the gripper-edge of the impression-cylinder, upon which the points of the grippers 41 close to clamp the sheet, as seen in Fig. 4, and the time of closing of the grippers 41 is so adjusted that the surface of the bevel 110 is just in line with the upper surface of the feed-board 10 at the actual time of closing of the grippers 41 upon the sheet. In lithographic presses it is indispensable that the grippers 41 be allowed to pass over the surface of the stone 112 when printing. The outer surface of these grippers must therefore be kept below the circumferential line of the impression-cylinder, and the bevel 110 is for the purpose of allowing the points of the grippers 41 being wholly below this circle when closed upon the sheet, as shown in Fig. 4. If, therefore, the sheet 113 is to lie in a straight undisturbed manner on the feed-board, as shown in Figs. 1 and 2, entirely down to the guide-fingers 21, its forward edge must project below the surface-line of the cylinder 11 at the time the grippers 41 close upon it. The under guides, 29, being under the sheet, must also at this time be below the circumferential line of the cylinder, as seen in Figs. 1 and 2. In order to permit of this being effected and the under guides being kept above the circumferential

line of the cylinder at all other times, the feed-board 10 is hinged at 50, Fig. 1, and is raised and lowered at its front edge at the proper times by means of the cam 51, roller 52, and rod 53, the rod 53 being pivoted to the free end of a lever, 54, which is secured to a rock-shaft, 55, journaled in the frames O of the machine. Secured to the rock-shaft 55 are one or more lifter-levers, 56, which impinge upon the under side of the feed-board 10.

The operation of the parts is as follows: With the parts in the position shown in Figs. 1 and 2 and the cylinder 11 moving in the direction of the arrow, the sheet 113 has been previously fed to the gage-fingers 21 and the drop-fingers 32 lowered upon the sheet. During the feeding of the sheet to the gage-fingers 21 and the dropping of the fingers 32 upon the sheet the cylinder, being an oscillating one, had been moving in a direction contrary to that indicated by the arrow and the feed-board 10 with all of its attachments lowered into the position shown in Figs. 1 and 2, the under guides, 29, and lower parts of the arms 26 passing into the gap 120 of the cylinder 11, and therefore below the circumferential line of said cylinder, and the positions of the parts shown in Figs. 1 and 2 being such that the cylinder 11 is just starting to move in the direction of the arrow. Slightly preceding the closing of grippers 41 upon the sheet, the arms 26, with the front, over, and under guides, 21, 22, and 29, are moved in the position shown in Fig. 4, thus taking the under guides, 29, clear of the circumferential line of the cylinder 11. At this time the feed-board 10 begins to rise, so that by the time the tail of the sheet has passed from the feed-board 10 the under guides, 29, may again be dropped into contact with the front edge of the feed-board 10 without coming below the circumferential line of the cylinder 11, and in this position of the parts a new sheet is fed to the guides 22 and the drop-fingers 32 operated to drop upon the sheet just before the grippers 41 are closed upon it, and are lifted again immediately after the grippers have closed, so that at all other times they are up and out of the way of feeding the sheet to the guides. In typographic presses the grippers 41 may project above the circumferential line of the cylinder, and therefore the general construction here shown may be used without bringing the under guides at any time below the circumference line of the impression-cylinder, and in such cases it may not be necessary to raise and lower the feed-board if the machine has a continuously-revolving cylinder, one of the reasons for raising and lowering the feed-board in the case of the oscillating lithographic press shown being to prevent the cylinder upon its return oscillation from striking the sheet, as it may overhang the edge of the feed-board, and thus drive it back from the guides.

I do not confine myself to the methods described for effecting the raising and lowering of the feed-board nor the oscillating of the

rock-shafts 24 and 30, as these operations may be performed in a variety of ways as best suited to the general construction of the machine.

Having thus fully described my said improvements as of my invention, I claim—

1. In the feed-gage apparatus of a cylinder printing-press or other machine in which the cylinder receiving the sheet has a continuously rotating or oscillating motion, one or more oscillating arms, as 26, mounted upon a rock-shaft, as 24, journaled in suitable brackets or supports, as 14, not connected with the impression-cylinder, and carrying under guides, as 29, and adjustable front guides, as 21, all combined and adapted to be simultaneously withdrawn in the direction in which the sheet is to move at the proper time for its passage, whereby the edge of the sheet is properly gaged, located, and supported from contact with the moving impression-cylinder until clamped thereon by the cylinder-grippers in a smooth and uncorrugated condition, substantially as set forth.

2. In the feed-gage apparatus of a cylinder printing-press or other machine in which the cylinder receiving the sheet has a continuously rotating or oscillating motion, one or more oscillating arms, as 26, carrying under guides, as 29, adjustable front guides, as 21, and over guides, as 22, all mounted on a shaft, as 24, journaled in brackets attached to a feed-board, and combined and adapted to be operated, as described, substantially as and for the purposes set forth.

3. In the feed-gage apparatus of a cylinder printing-press or other machine requiring sheets of paper fed to it, in combination with a lifting feed-board, as 10, one or more oscillating arms, as 26, carrying under guides, as 29, and adjustable front guides, as 21, all combined and adapted to be operated as described, substantially as and for the purposes set forth.

4. In the feed-gage apparatus of a cylinder printing-press or other machine requiring sheets of paper fed to it, in combination with a lifting feed-board, as 10, one or more oscillating arms, as 26, carrying under guides, as 29, adjustable front guides, as 21, and over guides, as 22, all combined and adapted to be operated as described, substantially as and for the purposes set forth.

5. In the feed-gage apparatus of a cylinder printing-press or other machine requiring sheets of paper fed to it, in combination with an impression-cylinder having a bevel upon its gripper-edge, as 110, upon which the grippers may close without any portion of them extending beyond the circumferential line of said cylinder, and a lifting feed-board, as 10, one or more oscillating arms, as 26, carrying under guides, as 29, and adjustable front-guides, as 21, all combined and adapted to be operated as described, substantially as and for the purposes set forth.

6. In the feed-gage apparatus of a cylinder printing-press or other machine requiring sheets of paper fed to it, in combination with an impression-cylinder having a bevel upon its gripper-edge, as 110, upon which its grippers may close without any portion of them extending beyond the circumferential line of said cylinder, and a lifting feed-board, as 10, one or more oscillating arms, as 26, carrying under guides, as 29, adjustable front guides, as 21, and over guides, as 22, all combined and adapted to be operated as described, substantially as and for the purposes set forth.

7. In the feed-gage apparatus of a cylinder printing-press or other machine requiring sheets of paper fed to it, one or more oscillating arms, as 26, carrying under guides, as 29, and adjustable front guides, as 21, all carried on a feed-board and adapted to be simultaneously withdrawn in the direction the sheet is to move at the proper time for the passage of the sheet, in combination with one or more drop-fingers, as 32, whereby the edge of the sheet is properly gaged, located, and supported from contact with the impression-cylinder and held by said drop-fingers during the last closing of the cylinder-grippers, until required to be clamped upon the impression-cylinder, thereby preserving the sheet in a smooth and uncorrugated condition, substantially as set forth.

JOHN T. HAWKINS.

Witnesses:

ELISHA T. JACKSON,
ALBERT J. PARK.