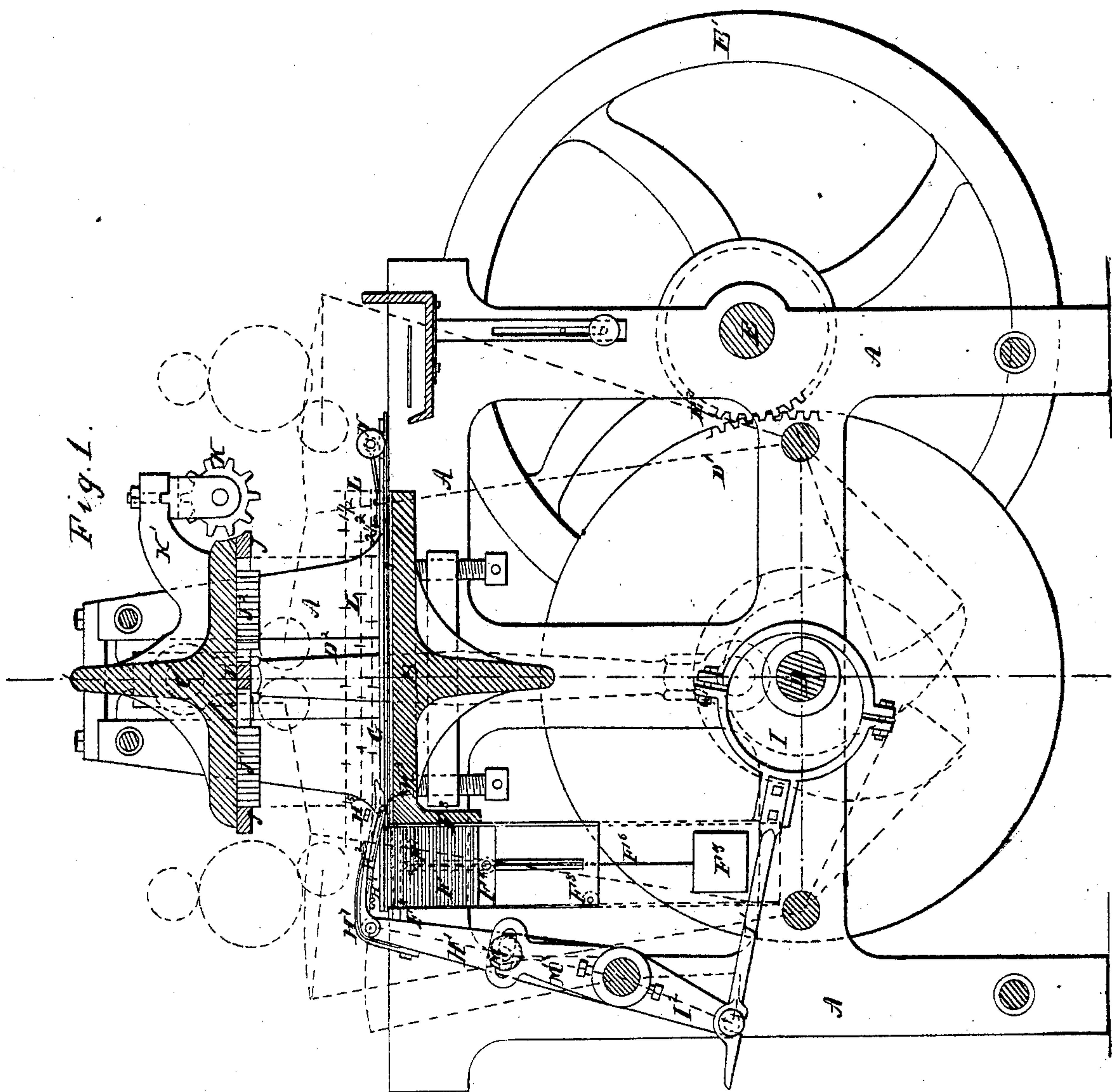


Sheet 1 of 3 Sheets.

S. Greene & W. H. Forbush.
Railroad Ticket Printing Press.
N^o 67748. Patented Aug 13. 1867.



Witnesses.

W. Dodge
P. T. Dodge

Inventors

Stephen Greene
Walter H. Forbush

Sheet 2.3 Sheets.

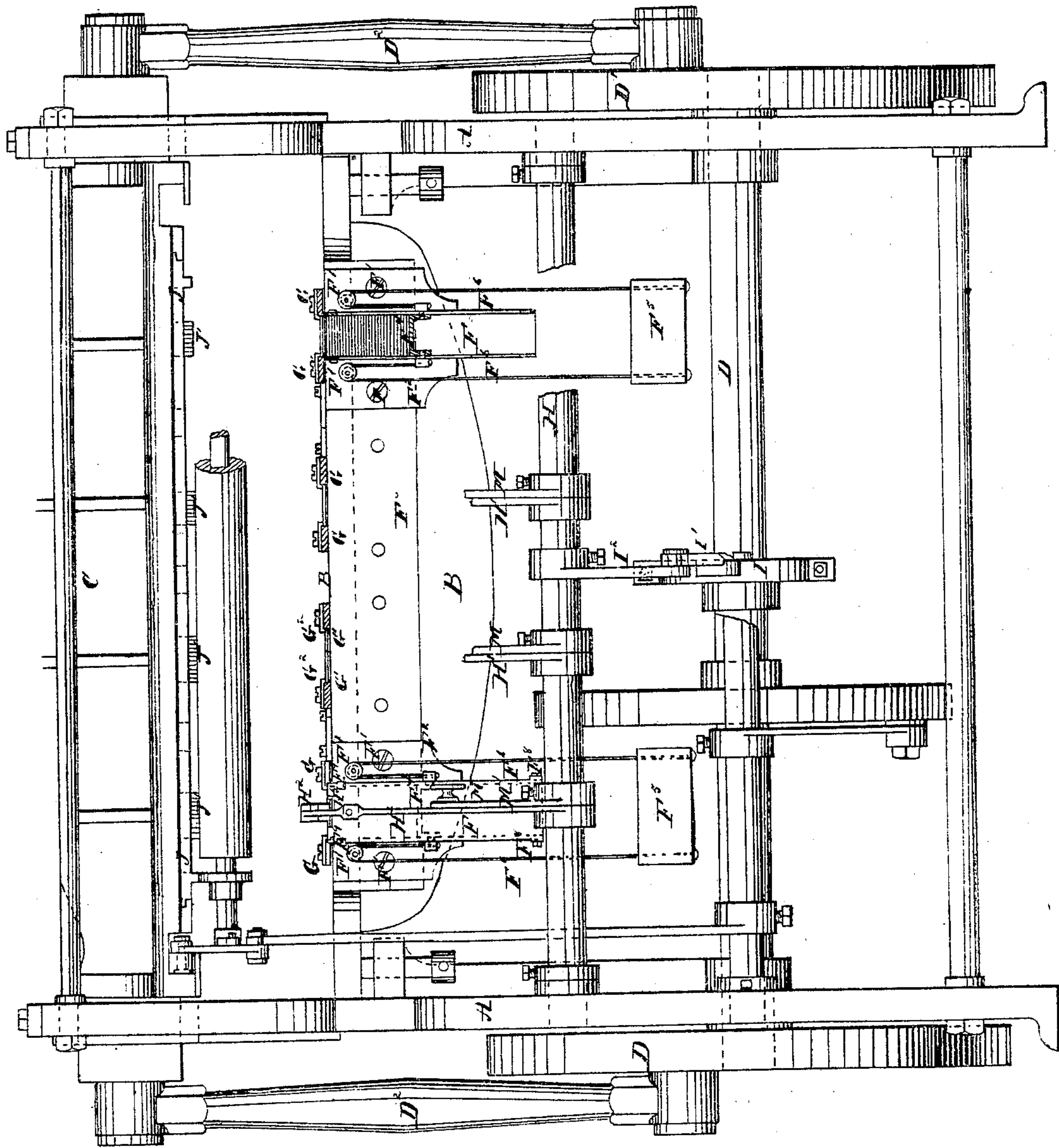
S. Greene & W. H. Forbush.

Railroad Ticket Printing Press

N^o 67748

Patented Aug. 13. 1867.

Fig. 2.



Witnesses.
H. Dodge
P. T. Doelg

Inventors
Stephen Greene
Wm. H. Forbush

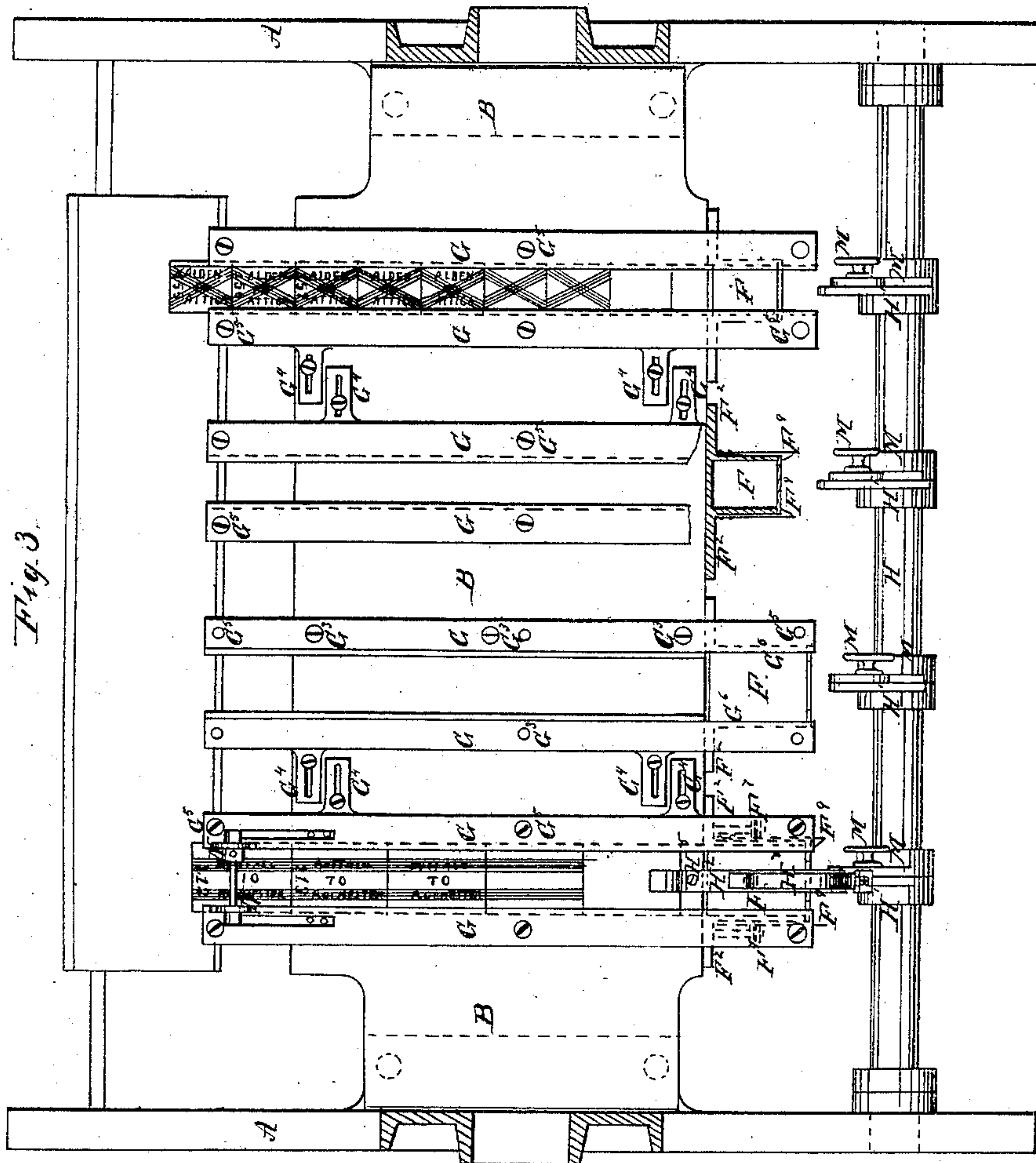
Sheet 3 of 3 Sheets.

S. Greene & W. H. Forbush.

Railroad Ticket Printing Press.

No 67748.

Patented Aug 13. 1867.



Witnesses

W. C. Dodge
P. J. Dodge

Inventors

Stephen Greene
Walter H. Forbush

United States Patent Office.

STEPHEN GREENE, OF PHILADELPHIA, PENNSYLVANIA, AND WALTER H. FORBUSH, OF BUFFALO, NEW YORK, ASSIGNORS TO HENRY G. LEISENRING, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 67,748, dated August 13, 1867.

RAILROAD-TICKET PRINTING-PRESS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, STEPHEN GREENE, of the city of Philadelphia, and State of Pennsylvania, and WALTER H. FORBUSH, of the city of Buffalo, and State of New York, (assignors to Henry G. Leisenring, of the city of Philadelphia, aforesaid,) have invented certain Improvements in Railroad-Ticket or Card-Printing and Numbering Presses; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure I is a sectional elevation of our said machine.

Figure II is a front elevation, and

Figure III is a plan of bed-plate and feeding mechanism.

Our improvements relate to that class of card-printing and numbering presses in which the cards are taken automatically from a pile contained in a tube or box, and pushed forward between grooved guides to receive the impression of a "form" or "forms" of type and their numbering-wheels.

Said improvements consist, first, in locating the card-tube below the grooved guides and providing it with a rising bottom, (operated by springs or weights,) so that as the top card of the pile is pushed forward the next card takes its place by the rising of the pile, by which location and arrangement a much more ready and complete access to the inking-rollers and type-forms is secured than heretofore, and a less number of cards required between the card-box and type-forms and their numbering-wheels after the press is put in motion, thereby securing greater rapidity, correctness, and economy in printing; second, in hinging the front end of the card-tube to the sides thereof, in a manner to permit its being thrown back to open the tube for the reception of the cards; third, extending the pusher-arm beyond its pushing-shoulder, and hinging it, with a downward spring-pressure, to a vibrating lever, the extension, by resting on the moving card, causing the pushing-shoulder to move parallel to the grooved guides, and the pressure-spring yielding to suit the changes in the angle of the arm to its lever during the vibration thereof; fourth, making the lever carrying the pusher-arm adjustable on its shaft, so that the shaft, having a definite movement, the point reached by the pusher in its forward movement may be varied according to the length of the card which it is feeding, as will hereinafter more fully appear.

Like letters refer to like parts in each of the figures.

A represent the side frames of the machine, B the bed-plate, and C the cross-head carrying "forms" of type and numbering-wheels. D represents the crank-shaft, D¹ the crank-wheels at its ends, and D² the connecting-rods extending upwards from the cranks and taking hold of the ends of the cross-head, by which the required reciprocating motion is given to the cross-head. E represents the driving-shaft carrying fly-wheel E¹, the necessary fast and loose pulleys for the driving-belt, and a pinion, E², gearing with teeth cut on one of the crank-wheels, and thereby giving motion to the crank-shaft.

The inking mechanism being essentially the same as that fully described in the application of Walter H. Forbush, of Buffalo, New York, (assignor to the within-named Henry G. Leisenring,) and not claimed in the present application, is represented in the drawings only by dotted red lines, and requires no special description.

F represents a card-tube or box attached to the front side of the bed-plate, its top being flush with the surface of the bed-plate. The press may be made wide enough to receive any desired number of these card-boxes arranged side by side. As represented by the drawings it is calculated to receive four. They are attached by screws F¹ passing through their side flanges F² and tapping into the downward flange F³ extending along the front of the bed-plate, so that they may be readily connected or removed. A set of boxes is provided for each of the different sizes of cards which it may be desired to print. By locating the card-boxes below the guides, they are brought nearer to the "forms" of type and numbering-wheels than would be possible if located above the guides, (as heretofore done,) as they must in such case be set further back, so as to clear the fountain ink-rollers, which position requires a larger number of cards between the one fed and the one discharged, which greater number increases the difficulty of pushing the train of cards to a corresponding degree. Further, the boxes located above the guides prevent the ready removal of the chase containing the forms, by making it necessary to remove the boxes first, the withdrawal of the chase from the other side of the

platen being prevented by the numbering-wheels. Each card-box has a rising bottom, F^4 , operated by a weight, F^5 , connecting with the bottom by cords F^6 passing over sheaves F^7 , by which the downward movement of the weight is made to give an upward movement to the bottom. Springs may be used in lieu of the weight for this purpose. The front end of the card-box is hinged to the sides thereof, as shown at F^8 , so that it may be thrown back and the box opened for the reception of the cards. When shut it is held by spring-catches F^9 .

G represents grooved guides arranged in pairs, each pair extending from its ticket-box across the bed-plate and secured thereto, the cards being pushed along between these guides to receive the impressions of the forms. Each guide is composed of two sections, an upper and lower, the lower section having a longitudinal rebate cut at one edge, forming the under side of the groove, as shown at G^1 , Fig. II, and the upper section having a longitudinal rib at one edge, fitting the rebate of the lower section, and forming the upper side of the groove, as shown at G^2 , Fig. II. One guide of each pair is secured to the bed-plate by screws G^3 passing through the lower section thereof and tapping into the bed-plate. The opposite guide has lateral slotted arms G^4 projecting from its lower section, through which its holding-screws pass, so that it may be moved to or from the first to suit different widths of cards. The upper sections are held to the lower by screws G^5 , by which the width of the grooves may be adjusted for different thicknesses of cards. The guides extend over the card-boxes, but have the lower flange of their grooves cut away, and are set so that the sides of the box are flush with the bottom of the grooves, as shown at G^6 , Fig. III, which causes the upper flange of the groove to resist the rising of the cards in the tube, and brings the upper card of the pile exactly in line with the grooves in which it is to be pushed forward.

H represents a rock-shaft extending across the press in front of the card-boxes, and carrying levers H^1 , to the vibrating ends of which are hinged the pusher-arms H^2 . The rock-shaft receives its motion from an eccentric, I, on the crank-shaft, connecting, by its rod I^1 with the lever I^2 on said shaft. Each pusher-arm has a shoulder, H^3 , formed by the end of a spring, H^4 , fastened to the under side thereof. The pusher-arm extends beyond this shoulder, and the projection of the shoulder below this extension may be regulated by a set-screw, H^5 , according to the thickness of the card which is being worked. The vibration of the pusher-arm is made a trifle greater than the length of the longest card the press is designed to print. At each forward movement of the pusher-arm its shoulder strikes against the front edge of the uppermost card of the pile and pushes it forward into the grooved guides, the rising of the pile, as before described, immediately filling its place with another card, which, in its turn, is pushed forward by the next movement of the pusher-arm, and so on, continuously, as long as there are cards in the box. The second card pushes the first, and the third the second, and so on through the length of the guides. Hence, as each new card is fed, all of the cards in the guides are advanced their length. A notch, H^6 , is cut in the front plate of the card-box to allow the pushing-shoulder to strike the edge of the upper card, the parts left on each side of the notch preventing the top card from being withdrawn from the box by the friction of the pusher-arm thereon in its backward movement. The pusher-arm is held down by a pressure-spring, H^7 , which compels its shoulder to engage the edge of the card, and at the same time allows the arm to yield as its angle to the vibrating lever changes.

The forms of type $J^1 J^2$ are locked in a double chase, J, which is secured to the under side of the cross-head in a common manner. The lateral position of the forms in the chase is such that as they move down to give the impression they will strike between the grooved guides, while longitudinally their position in the chase will be determined as follows: K represents the numbering-wheels attached to the cross-head by arms K^1 , one to each line of cards. The numbering of the cards being the last operation to which they are subjected, a card being in position to receive the impression of the numbering-wheels, the form J^2 must be placed at such distance from the wheels as will cause it to give its impression upon one of the cards behind, which distance will vary according as the length of the card involves the leaving of one, two, or more cards between the form and the numbering-wheels. The position of the form J^1 is governed in the same way; also the forward position of the pusher-shoulder. The scale L in Fig. I (drawn in red lines) clearly shows the number of cards of any given length which lie between the pusher-shoulder and the numbering-wheels, and by which the relative positions of the forms may be readily determined. The forward position of the pushing-shoulder is regulated at pleasure to suit the length of card being fed, by changing its position on the rock-shaft, it being secured in any desired position by the set-screws M binding it to the rigid arm M^1 on the rock-shaft. The forms $J^1 J^2$ being inked in different colors, the cards may be printed correspondingly, as clearly shown in Fig. III. Each lever H^1 being adjustable as described, one length of card may be worked in one set of guides, and at the same time a different length of card in another set of the guides, and so on, thereby securing the printing of different sizes of cards at the same impression. A spring pressure-roller, N, may be applied to the grooved guides, the upper sections thereof being cut away, so that the roller may bear upon the margins of the cards and prevent the momentum they may acquire in being moved forward by the pusher from carrying them too far. This is deemed a better plan than pinching the cards in the grooved guides.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The spring pusher-arm H^2 (with its extension beyond the pushing-shoulder) hinged to the vibrating lever H^1 , and operating in the manner and for the purpose set forth.
2. Making the lever H^1 adjustable on its shaft, so that the point reached by the pusher-arm in its forward movement may be changed as required, for the purpose set forth.
3. The spring-pressure double roller N combined with the guides, for the purpose described.

STEPHEN GREENE,
WALTER H. FORBUSH.

Witnesses:

P. T. DODGE,
W. C. DODGE.