

(No Model.)

2 Sheets—Sheet 1.

J. FLANDERS.

AUTOMATIC PILING DEVICE FOR PRINTING PRESSES.

No. 273,052.

Patented Feb. 27, 1883.

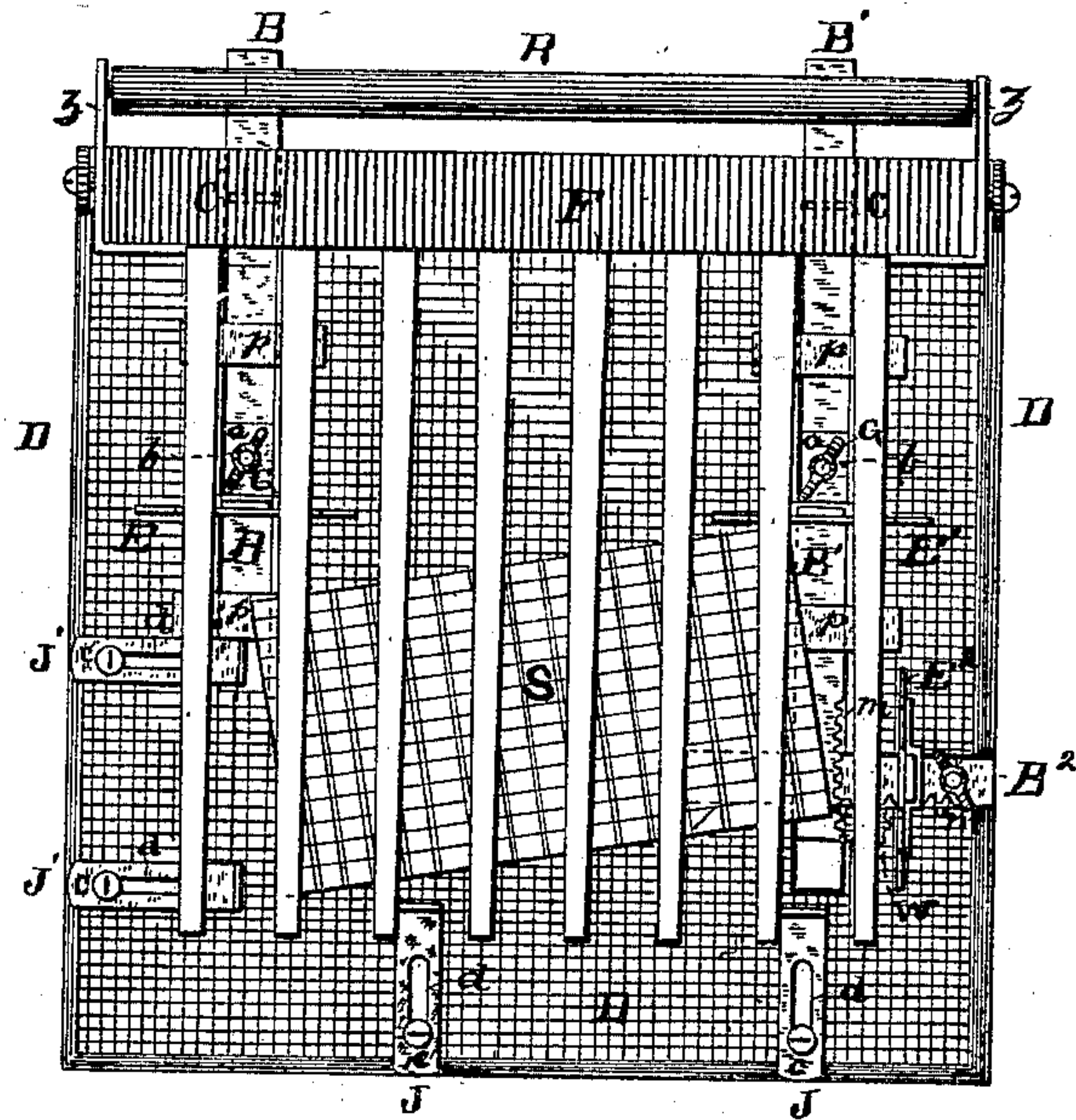


FIG. 1.

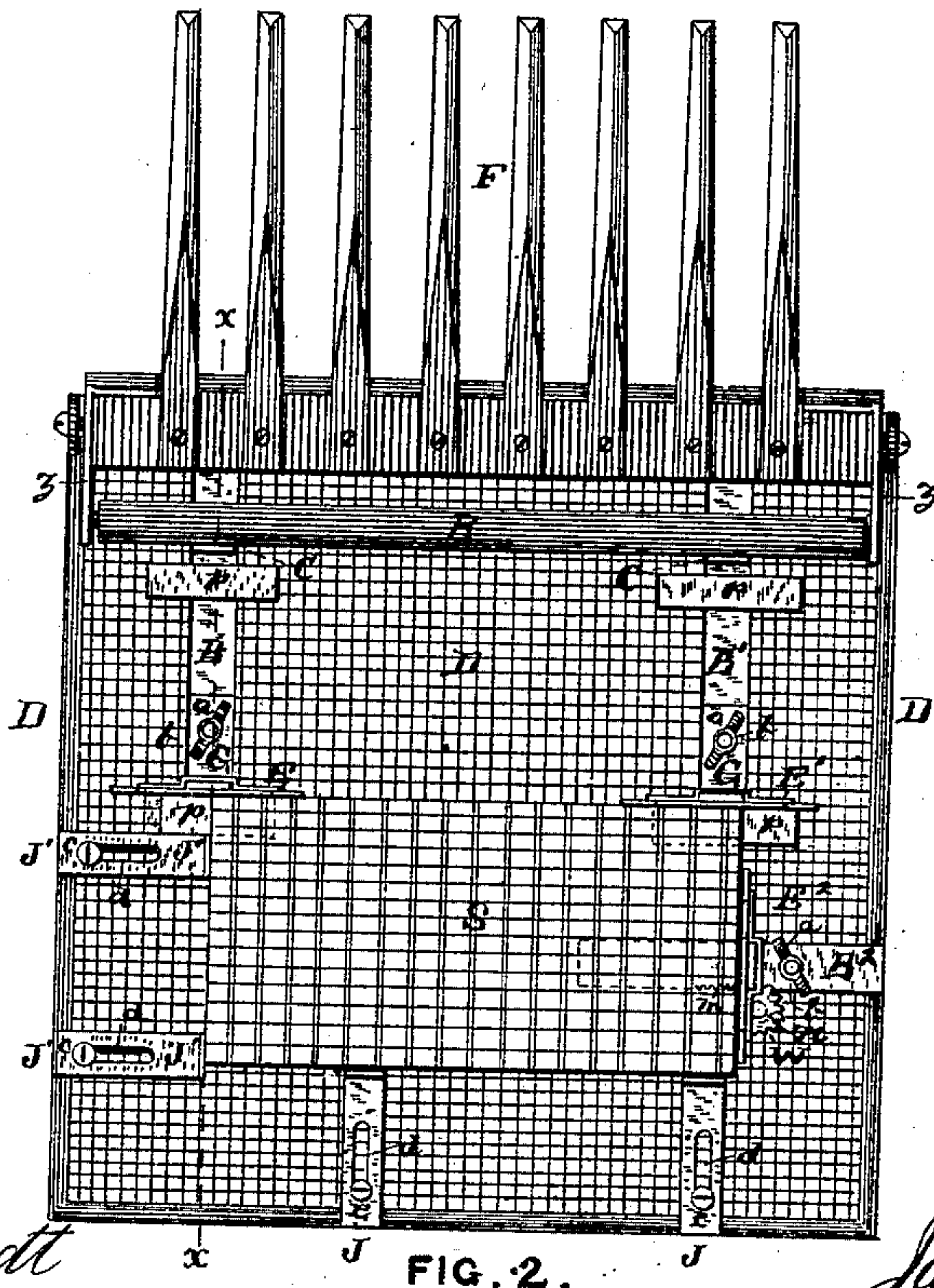


FIG. 2.

WITNESSES:

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Wm. H. Carson.

INVENTOR

James Flanders
by Atty Joshua P. P. P.

(No Model.)

2 Sheets—Sheet 2.

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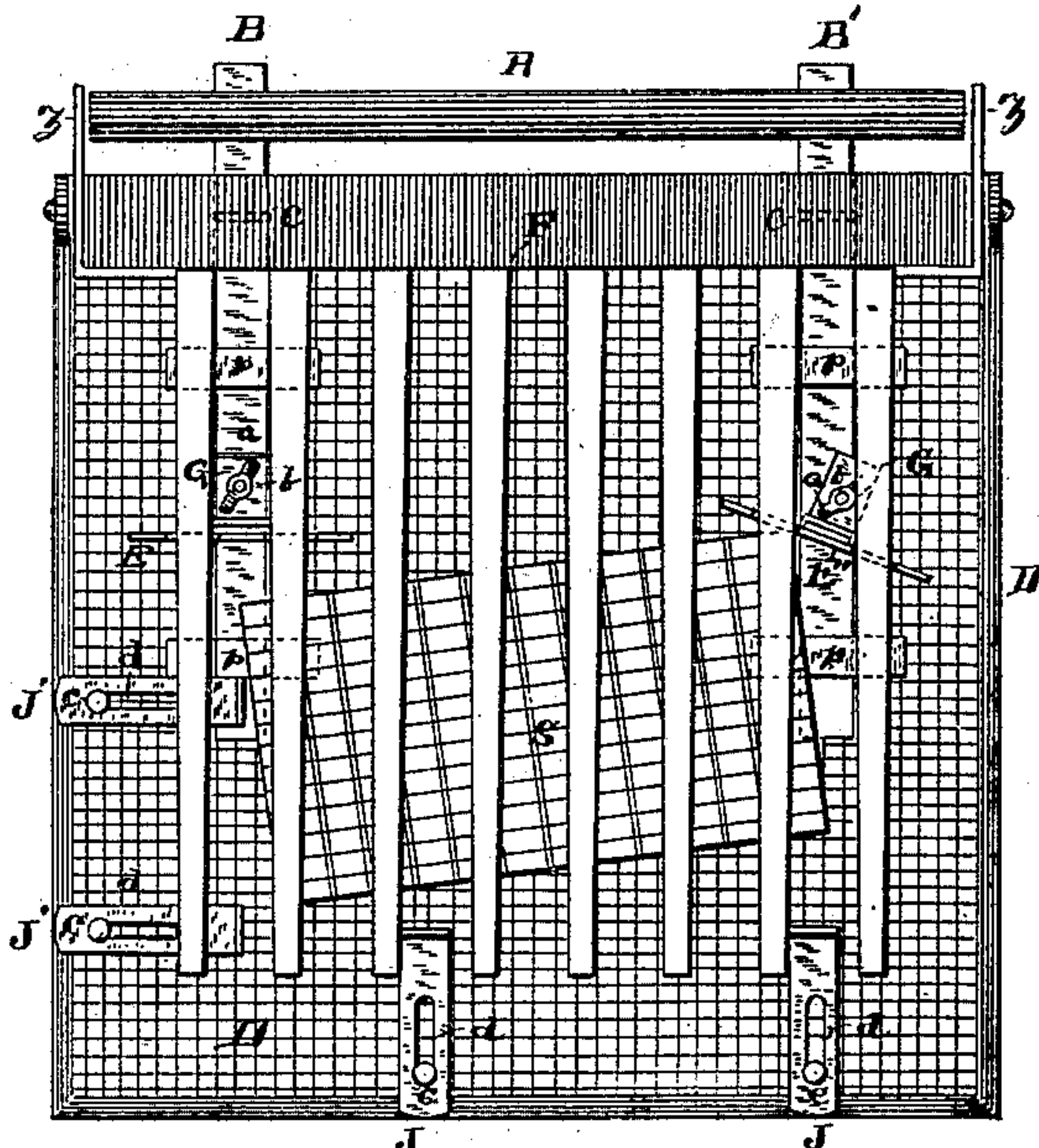


FIG. 3.

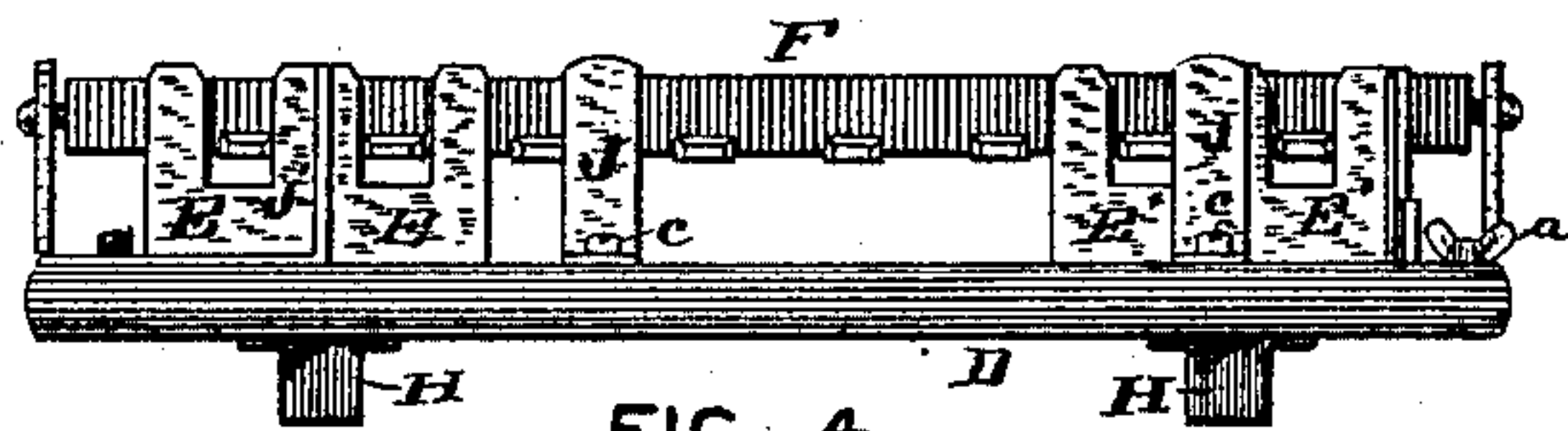


FIG. 4.

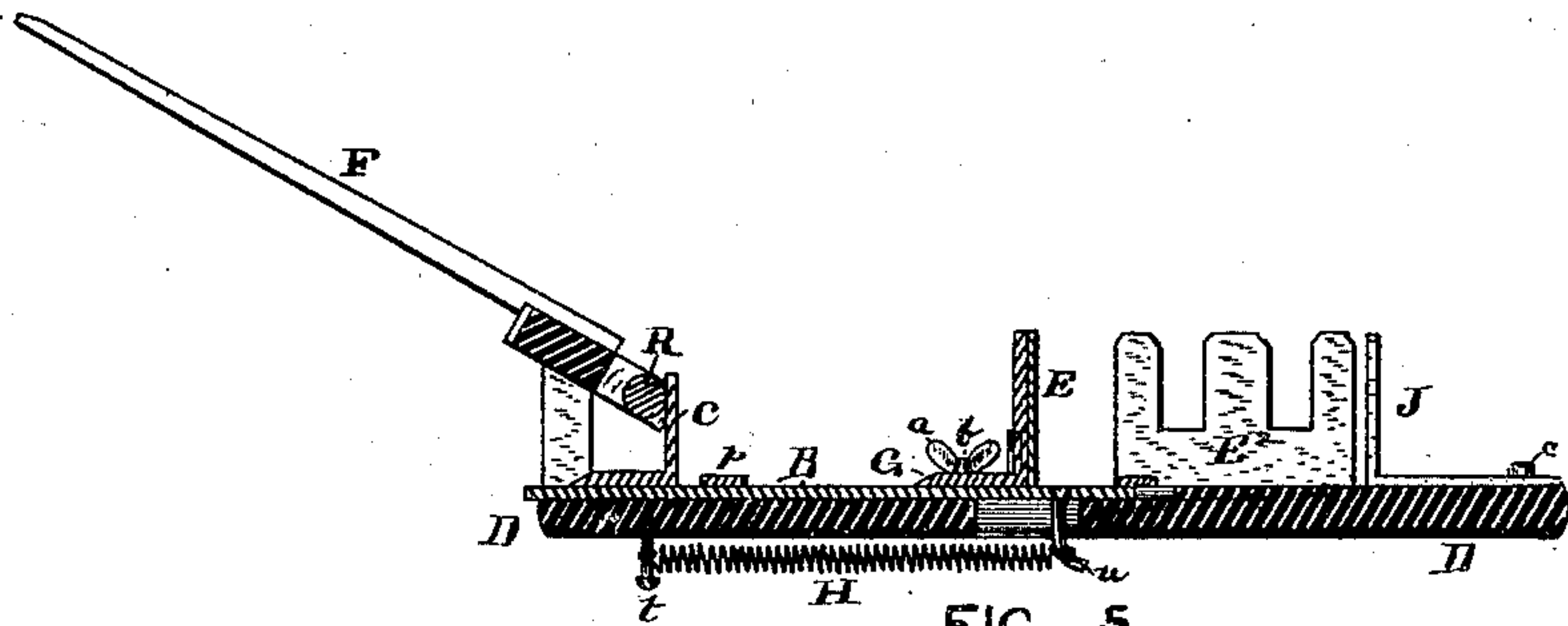


FIG. 5.

WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES FLANDERS, OF AUGUSTA, MAINE.

AUTOMATIC PILING DEVICE FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 273,052, dated February 27, 1883.

Application filed June 5, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES FLANDERS, a citizen of the United States, residing at the city of Augusta, in the county of Kennebec and State of Maine, have invented a new and useful Improved Automatic Piling Device for Printing-Presses, of which the following is a specification, reference being had to the accompanying drawings, of which—

Figure 1 is a plan of the invention, showing the position of the piling mechanism, with the fly of the printing-machine in a horizontal position, as casting a sheet of paper upon the delivery-board in an oblique position. Fig. 2 is a plan thereof, showing the position of the devices when the fly has ascended, ready to take the next sheet from the press, the sheet being brought into the proper position, or "squared," by the action of the piling mechanism. Fig. 3 is plan similar to Fig. 1, illustrating a modification in the arrangement of a part of the squaring device useful under some circumstances, as hereinafter set forth. Fig. 4 is a front end elevation of the apparatus when the parts are in the same relative position as that of Fig. 1. Fig. 5 is a section upon the line *x*, Fig. 2.

Like letters of reference, where they occur in the several figures, indicate corresponding parts.

The nature of this invention is a combination of devices the moving parts of which are actuated by the vibrations of the fly of a power printing-press, whereby the sheets of paper are caused to be evenly piled or squared upon the delivery-board of the machine.

It consists in one or more bars or levers arranged to slide in grooves in the delivery-board of a printing-machine by the action of the fly, which bars are provided with upright adjustable plates, in combination with fixed stops secured to the delivery-board, one or more of which stops are in a plane parallel with and one or more in a plane at right angles to the direction of movement of the said sliding bars, in a manner that each and every sheet of paper, when pressed forward by the upright plates upon said bars, will strike against said stops.

It consists, also, in the combination, with the said sliding bar or bars and the upright plates

adjustable thereon, of a similar bar or bars, with like plates at right angles with the first-mentioned bar or bars, which is or are caused, by the same impulse of the fly actuating the latter bars, to slide at right angles thereto, and thereby press against and square the ends of the sheets at the same time that the sides thereof are being brought into the required position, as hereinafter to be described.

I have deemed it unnecessary to show other parts of a printing-machine than the fly and delivery-board as seen in the drawings, as their connection and function are well understood by those familiar with printing-machines as usually made.

Referring now to the accompanying drawings, D is the delivery-board. F is the usual vibrating fly, which in the position shown by Figs. 2 and 5 receives the printed sheets of paper as they pass from the printing-rolls, and, rotating to the position of Figs. 1, 3, and 4, delivers the same upon the board D. Without a suitable piling or squaring device the sheets will be unevenly piled—that is, their edges will not register—as one is superimposed upon the others by the fly. In the present instance the latter is provided with a counter-balance-roller, R, pivoted to arms *z*, which extend below the bearings upon which the fly turns.

B B' are bars or levers lying in grooves in the top of the delivery-board, and held therein by means of the plates *p*. When the fly vibrates backward and upward—that is to say, from the position seen in Figs. 1, 3, and 4 to that seen in Figs. 2 and 5—to receive the sheet from the printing-cylinder, the counter-balance impinges against studs C upon the bars B B', and thereby propels the latter forward a certain distance. When the fly descends to deliver the sheet S the bars B B' are made to recoil back a suitable distance by the stress of a helical spring, H, Fig. 5, beneath the delivery-board, one end of which spring is secured to a pin, *t*, and its other extremity to a stud, *u*, which is fixed to the under side of the bar and extends through a slot in the board D, as shown in Fig. 5.

E E' are vertical plates, attached to angle-plates G, which are adjustable lengthwise of the bars B B', and fixed to the latter at the de-

sired points by means of a thumb-nut, *a*, in connection with a threaded bolt, *b*, which works in a longitudinal slot in said bars. These vertical plates are also adjustable with said angle-plates by means of the said nut and bolt, so that either may be inclined so as to stand at an angle to the other, as in Fig. 3.

J J are stop-plates secured to the delivery-board, toward the front end of the same, by means of the screws *c*, which pass through the slots *d*, whereby the plates may be readily adjusted to the desired position. *J' J'* are similar stops at the side, in a plane at right angles to that of the end stops, *J*. The function of these side and end stops is to limit and gage the position of the sides and ends of the sheets of paper when the latter are shifted by the action of the plates *E E'* on the sliding bars, as hereinafter described. In order to secure the proper movement of the sheets—for instance, toward the left and at the same time forward—one of the plates, *E'*, is canted to the left, as shown in Fig. 3, and there secured. Now, when the sheet *S* is laid by the fly upon the delivery-board in front of the plates *E E'*, the inclined side of the latter, Fig. 3, striking the corner of the sheet as the bars *B B'* are advanced by the fly, as before described, forces the sheet forward toward the stops *J* and at the same time sideways toward *J'*; and the side of the paper coming into contact with the plate *E*, which remains at right angles to the plane of movement of the bars, prevents it (the sheet) from being canted too far around by the action of the inclined plate *E'*. It will be observed that the plates *E E'* are slotted vertically, and also the stops *J* are placed so as not to obstruct the movement of the fly as it approaches the delivery-board.

The foregoing-described arrangement of my invention is useful more especially when the sheets of paper are of comparatively small dimensions. Under other circumstances, with larger sheets, it is preferable to make use of a sliding bar, *B²*, as shown in Figs. 1 and 2, in conjunction with the bars *B B'*, which bar *B²* is caused to move at right angles to the others in order to square the ends and sides of the sheets simultaneously. This cross-bar is provided with an adjustable plate, *E²*, similar to *E* and *E'*. Bar *B²* crosses beneath bar *B'*, as seen in Figs. 1 and 2. In order to obtain the requisite movement of the same—that is, so that its plate *E²* shall press one end of the sheets while plates *E E'* are pressing the side thereof—I provide the rack-and-pinion device shown. This consists of the cogs or teeth *m* in the outer edges of bars *B' B²*, toward the ends of the same, which engage with the cogs

of a small wheel, *W*, rotating on the pin *n*, which is fixed to the delivery-board. When the bar *B'* is advanced by the fly and retracted by the spring *H*, wheel *W* is caused to rotate, which of course imparts a movement to the bar *B'* forward or back corresponding to that of *B'*.

In Fig. 1 the sheet *S* is shown as delivered obliquely, and in Fig. 2 as squared by the operation of the devices described. In this instance, when the cross-bar is used in conjunction with the others, it is unnecessary to incline any of the plates on the bars, and in such case the stops *J* and *J'* may usually be dispensed with without much, if any, disadvantage, as the positive push of the squaring-plates *E E' E²* at the side and end of the sheet will cause the latter to take the same position as those preceding it.

It is obvious that the fly may be provided with suitable projections, located so as to impinge against the studs *C*, in lieu of the counter-balance *R*; also, that a positive backward throw or movement of the bars *B B'* may be secured without the aid of spring *H* by adding studs to the bars adjacent to *C* and on the opposite side of said counter-balance or projections.

It is believed that from the foregoing description the essential construction and practical adaptation and operation of my invention will be fully understood by those skilled in the art to which it appertains.

I claim as new and desire to secure by Letters Patent—

1. In a paper-sheet-piling device for printing-machines, the combination of the fly, the bars *B B'*, having push-plates *E E'*, longitudinally and pivotally adjustable on said bars, and the studs *C*, the counter-balance *R*, and stops *J J'*, all constructed and operating substantially as and for the purposes set forth.

2. In a paper-piling device, the fly and its counter-balance, the delivery-board, the bars *B B'*, with plates *E E'*, actuated by the fly and spring *H*, and the cross-bar *B²*, with plate *E²*, all constructed, combined, and operating substantially as and for the purposes shown and described.

3. The combination of the bars *B'* and *B²*, provided with the plates *E'* and *E²*, respectively, both of said bars having the cogs *m*, with the common pinion *W*, arranged in relation to said bars substantially as and for the purpose specified.

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Witnesses:

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