

(No Model.)

T. H. BOWES.

DEVICE FOR STRAIGHTENING SHEETS DELIVERED FROM THE FLY OF A
PRINTING PRESS.

No. 276,221.

Patented Apr. 24, 1883.

Fig. 1.

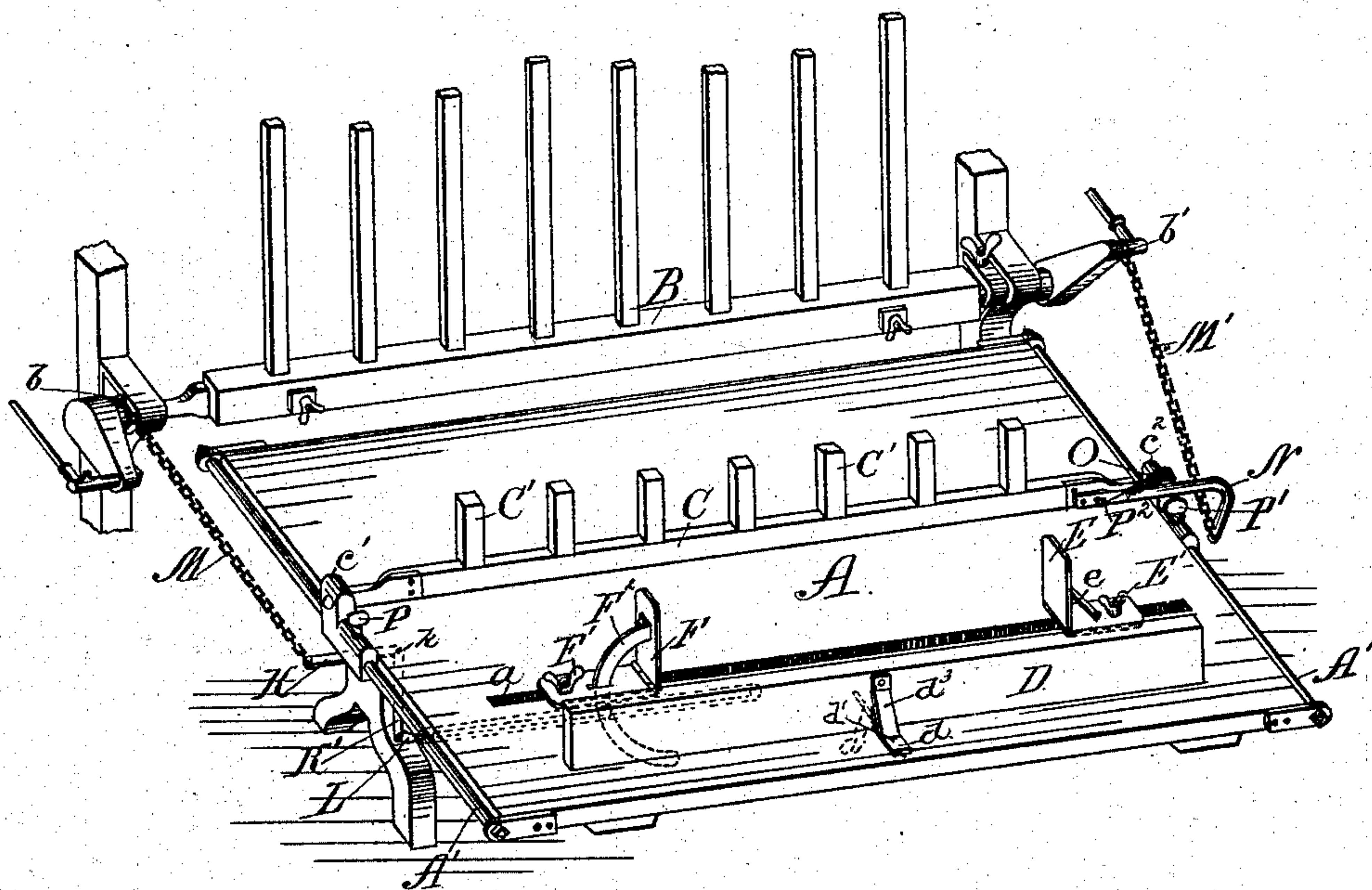


Fig. 2.

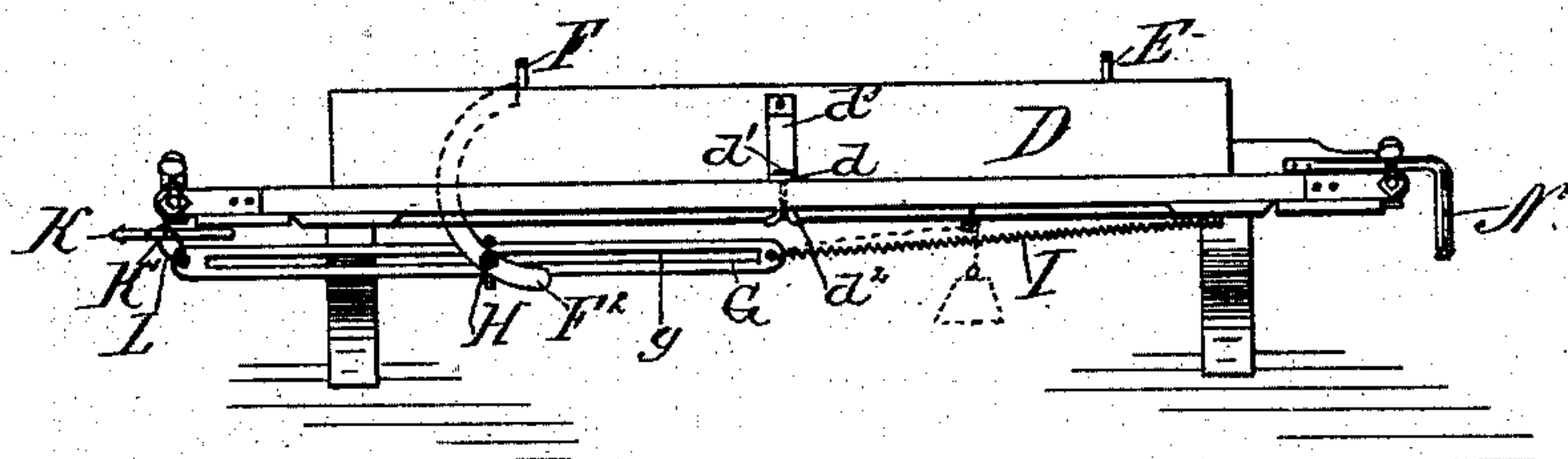


Fig. 3.



Fig. 4.

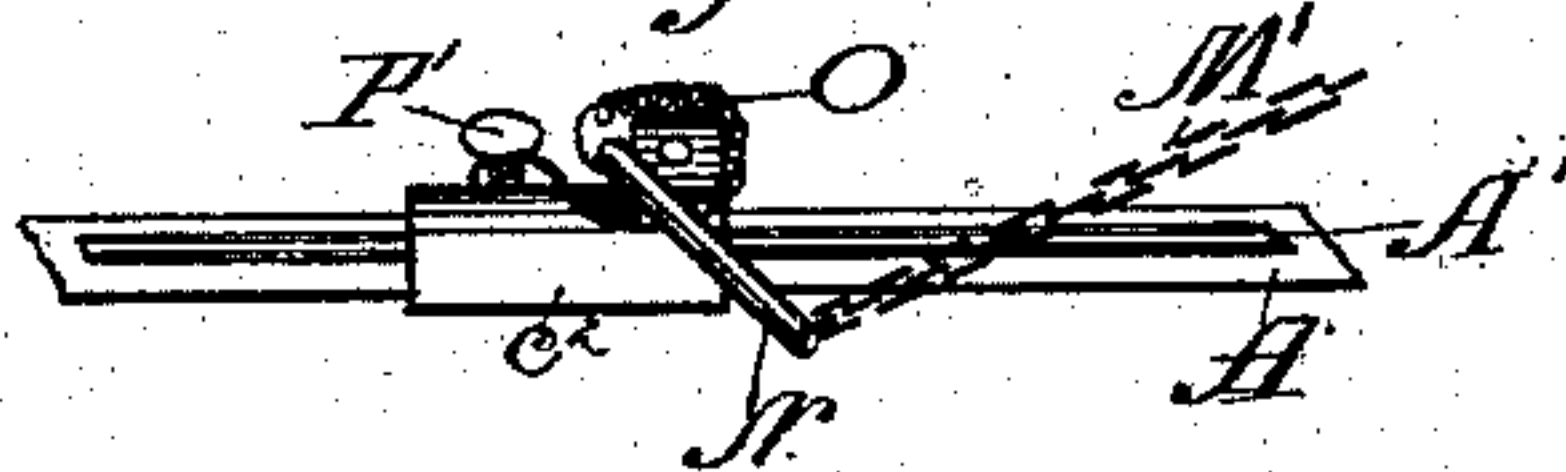
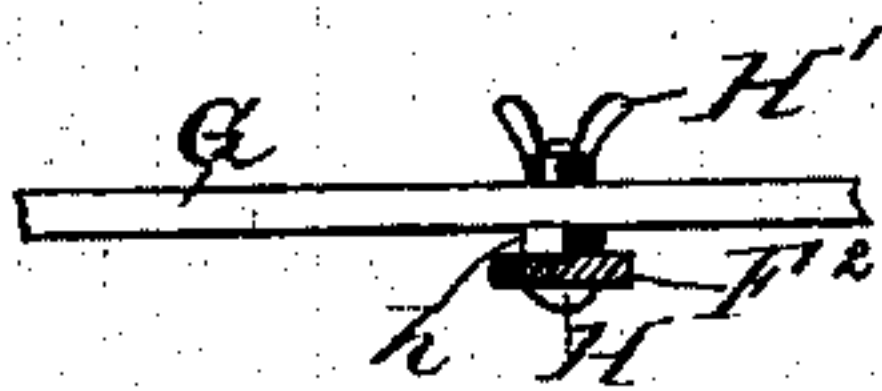


Fig. 5.



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UNITED STATES PATENT OFFICE.

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DEVICE FOR STRAIGHTENING SHEETS DELIVERED FROM THE FLY OF A PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 276,221, dated April 24, 1883.

Application filed August 2, 1882. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. BOWES, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Devices for Straightening Sheets Delivered from the Fly of a Printing-Press; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to printing-presses; and it consists in an attachment thereto for straightening the sheets of printed paper as they are delivered from the fly onto the fly-board, as will be more particularly set forth hereinafter.

In the drawings, Figure 1 is a perspective view of the fly and fly-board of a printing-press with my device attached thereto. Fig. 2 is a front elevation of said attachment, and Figs. 3, 4, and 5 are details.

A is the fly-board, resting upon suitable legs or supports. B is a vibrating fly, attached to the frame of a printing-press in any usual manner. Extending along each end of the said fly-board, and secured thereto, at a slight distance therefrom, are the guide-rods A' A' , upon which slide the adjustable bearings c' c^2 of the rear straightener, C. The front portion of the board A has a longitudinal slot, a , cut therein, for a purpose to be described hereinafter, and a central transverse slot, a' , (shown by dotted lines,) between the slot a and the extreme front of the fly-board.

D is an upright board, parallel with the slot a and straightener C, and is hinged to the strip d , which is perforated to admit bolt d' , which passes down through the slot a' , by means of which the said board D may be adjusted nearer to or farther from the slot a , and secured in any location desired by means of thumb-nut d^2 on the bottom of said bolt. Above the hinge is an angle strip or brace, d^3 , the upper short arm of which is pivoted to the upper central front portion of the board D, while the lower arm projects downward at an angle of, say, forty-five degrees, and fits within the groove in the screw-head of the bolt d' , thereby keeping the board D rigid in its upright position.

E is a stationary standard, adjustable forward and back within the slot a , and composed of two plates hinged together, so as to form a right angle when in use, but provided with a pivoted angle strip or brace, e , (simi-

lar in construction and operation to the brace d^3 , already described,) and which standard is secured at any desired point on the line of the slot a by a thumb-screw, E' .

F is another standard, also composed of two plates hinged together, and located at the opposite end of the slot a from the standard E, and there secured by thumb-screw F' ; but, unlike that standard, this standard F is not stationary. Its upper plate has a movement when in use on the arc of a circle, and the rear straightener, C, (which consists of a long strip rounded off at c on its rear edge, and having fingers C' C' projecting up from said strip,) has a similar motion. In order to produce this movement in the upper plate of standard F, there is secured thereto the curved arm F^2 , which passes through a slot in the lower plate of said standard, and thence downward through the slot a in the fly-board A, where it is secured to the slotted link G, as shown in detail in Fig. 5, by means of the bolt H, having central washer, h , and nut H' . This bolt passes through a hole in the curved arm F^2 , then through the washer h , and out through the slot g in link G, and is screw-threaded at its end, and all these parts are then secured together by means of the thumb-nut H' , which is only screwed down tight enough to prevent their accidental separation, while permitting a slight play of the bolt H within the slot g . The inner end of the link G is connected with the right-hand end of the under side of the fly-board by a spring, I; or, in place of this spring, a weighted cord may be used, one end of which may be attached to the end of the link and the other pass over a staple or hanger secured to the under side of the fly-board, as shown in dotted lines in Fig. 2.

K K' represent an obtuse-angled horizontal lever, pivoted at k to the under side of the left-hand side of the fly-board. The free end of the forward arm, K' , of this lever is connected by a loop, L, to the outer end of the link G, while the free end of the rear arm, K, is connected by a chain or flexible cord, M, with the left-hand journal, b , of the fly B.

N is a bent arm, one end of which is made fast to the right-hand portion of the rear straightener, C, near bearing c^2 , and the straight part of the arm N projects in line with said part C, and extends over the bearing c^2 , and is then bent downward, and to the free end of this arm another chain or flexible cord, M' , is

attached, the other end of which is secured to the right-hand crank-arm of the fly at b' . On top of the bearing c^2 its set-screw serves as a pin, P' , and another pin, P^2 , projects laterally from the arm N at its point of attachment toward the front of the fly-board, and a spring, O, extends from the pin P' under the arm N, and then around oversaid arm and bearing c^2 to the other pin, P^2 , as shown in Fig. 1, and the detail view, Fig. 4.

The operation of my device is as follows: The parts being all connected, as shown in Fig. 1, and the printing-press started, the fly B will receive a printed sheet and move forward and downward over the fly-board, and as it does so the partial revolution of its journals will slacken the chains or cords M and M', and at the same time the sheet will be deposited on the fly-board between the four boundaries C, D, E, and F, which have previously been adjusted according to the size of said sheet. As soon as the chains M M' begin to slacken the springs I and O begin to operate, and respectively draw back the standard F and the rear straightener, C. Then, as the fly returns to receive another sheet, this motion draws the chains taut, and, overcoming the force of the springs I and O, pulls the parts F and C again to a vertical, the said parts moving in the arc of a circle from a fixed point, thus automatically moving the sheet just laid on the fly-board to its proper position against the stationary parts D and E, which operation is continued as long as the fly vibrates, laying one sheet on top of another, and then straightening it to place on the pile of sheets on the fly-board till all is done. By reason of the hinged construction of the parts D and E and the pivoted braces d^3 and e these first-named parts can be folded down on the fly-board, and the pile of printed sheets thus readily removed without disturbing the adjustment at any time—a feature of value, inasmuch as it may be desirable to remove some of the sheets before the whole job is done, and by my device this can be done in the way described, and then the hinged parts D and E be again raised to a vertical and quickly secured in such position by means of their pivoted braces d^3 and e , so as to finish the job without disarrangement of the adjustment.

Another advantage of my device lies in the fact that the parts C and D extend practically the whole length of the fly-board, and as the part C can be moved forward or back to any point desired by means of its bearings c' c^2 sliding on the guide-rod A' A', and secured at such point by the set-screws P P', it will be seen that the said device will operate equally well to straighten the smallest-sized sheet as well as large ones. I have shown only one slot, a , in the fly-board, and hence only one pair of side standards, E and F; but it is obvious that, if desired, one or more additional slots a could be provided and each equipped with a stationary standard, E, and movable standard F F², (by making rod-connections

under the fly-board with the link G and the curved levers F²;) but these are mere matters of duplication, requiring only ordinary mechanical skill in their construction, and hence not affecting the essence of my invention.

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

1. In a device for straightening sheets of paper as delivered from the fly of a printing-press, the adjustable standard F, consisting of two plates hinged together and provided with curved arm F², secured to the upper plate and passing through a slot in the lower plate, in combination with actuating mechanism, substantially as described, whereby the upper plate of the said standard is adapted to move in the arc of a circle, while the lower portion remains at a fixed point, substantially as described, and for the purpose set forth.

2. In combination with the fly of a printing-press, the fly-board A, having slot a , chain or cord M, lever K K', slotted link G, and hinged standard F, provided with curved arm F², and spring or weighted cord I, all connected together, substantially as described, and for the purpose set forth.

3. In combination with the fly and fly-board of a printing-press, the straightener C, with rounded lower rear edge, c , and adjustable bearings c' c^2 , guide-rods A' A', bent arm P, spring O, and chain or cord M', all connected together, substantially as described, and for the purpose set forth.

4. In combination with the fly-board A, having slot a' , the upright board D, having perforated strip d , hinged thereto, and angle-brace d^3 , pivoted thereto, and the screw-bolt d' , with groove in top, and thumb-nut d^2 , substantially as described, and for the purpose set forth.

5. In combination with the fly-board A, having slot a , the adjustable standard E, formed of two plates hinged together, and provided with angle-brace e , pivoted to the upper plate and adapted to slide and lock within a groove in the lower plate, and the thumb-screw E', substantially as described, and for the purpose set forth.

6. In combination with the fly and slotted fly-board of a printing-press, the rear straightener, C, mounted in adjustable bearings adapted to move on guide-rods A' A', the upright board D, with hinged attachment d d' d^2 d^3 , the adjustable hinged stationary standard E, and the adjustable movable standard F, curved arm F², slotted link G, lever K K', chains or cords M M', and springs I and O, all connected together, substantially as described, and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand, on this 24th day of June, 1882, in the presence of two witnesses.

THOMAS H. BOWES.

Witnesses:

HAROLD G. UNDERWOOD,
S. S. STOUT.