

No. 644,231.

Patented Feb. 27, 1900.

A. JOHNSON & A. J. STONE.

SHEET PRINTING MACHINE.

(Application filed June 27, 1899.)

(No Model.)

2 Sheets—Sheet 1.

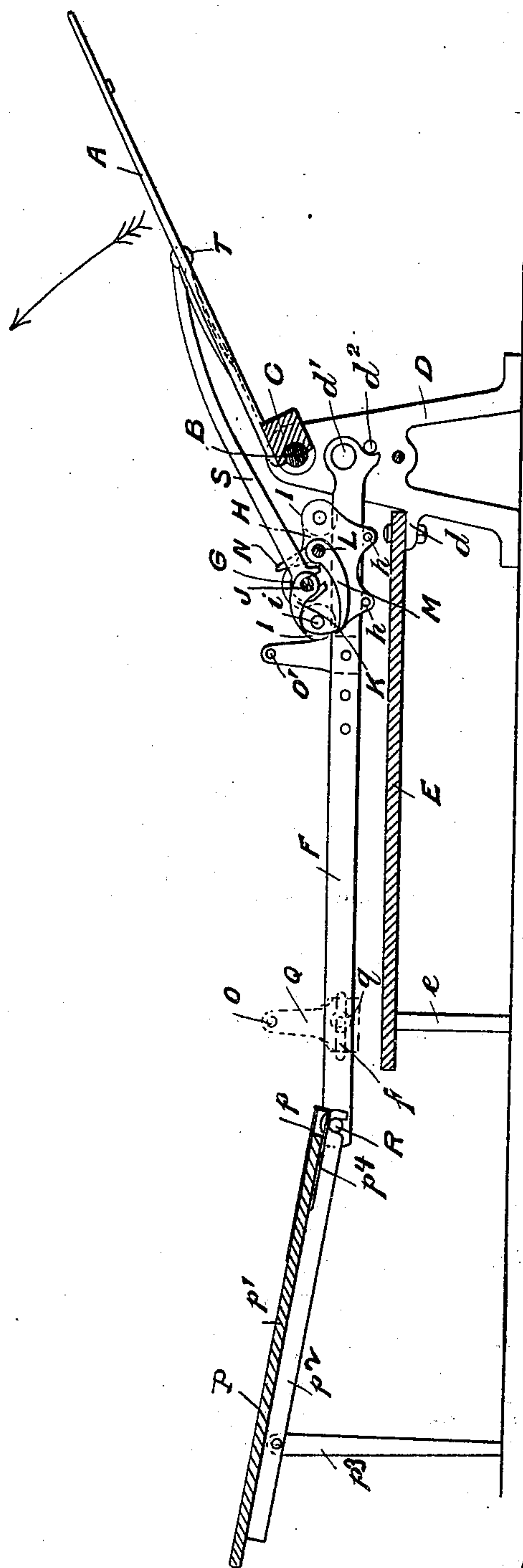


FIG. 1.

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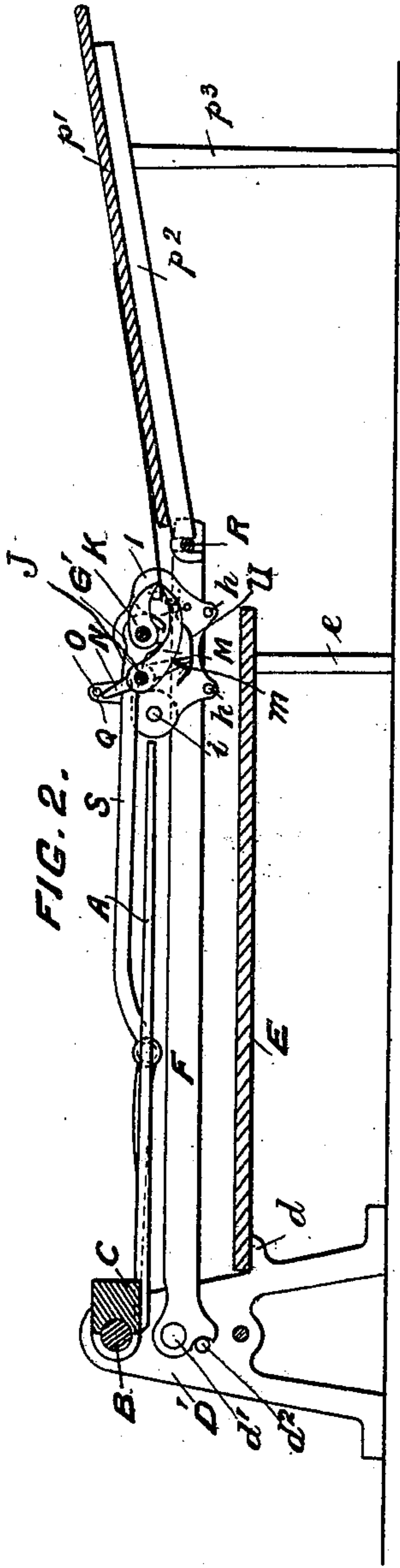


FIG. 2.

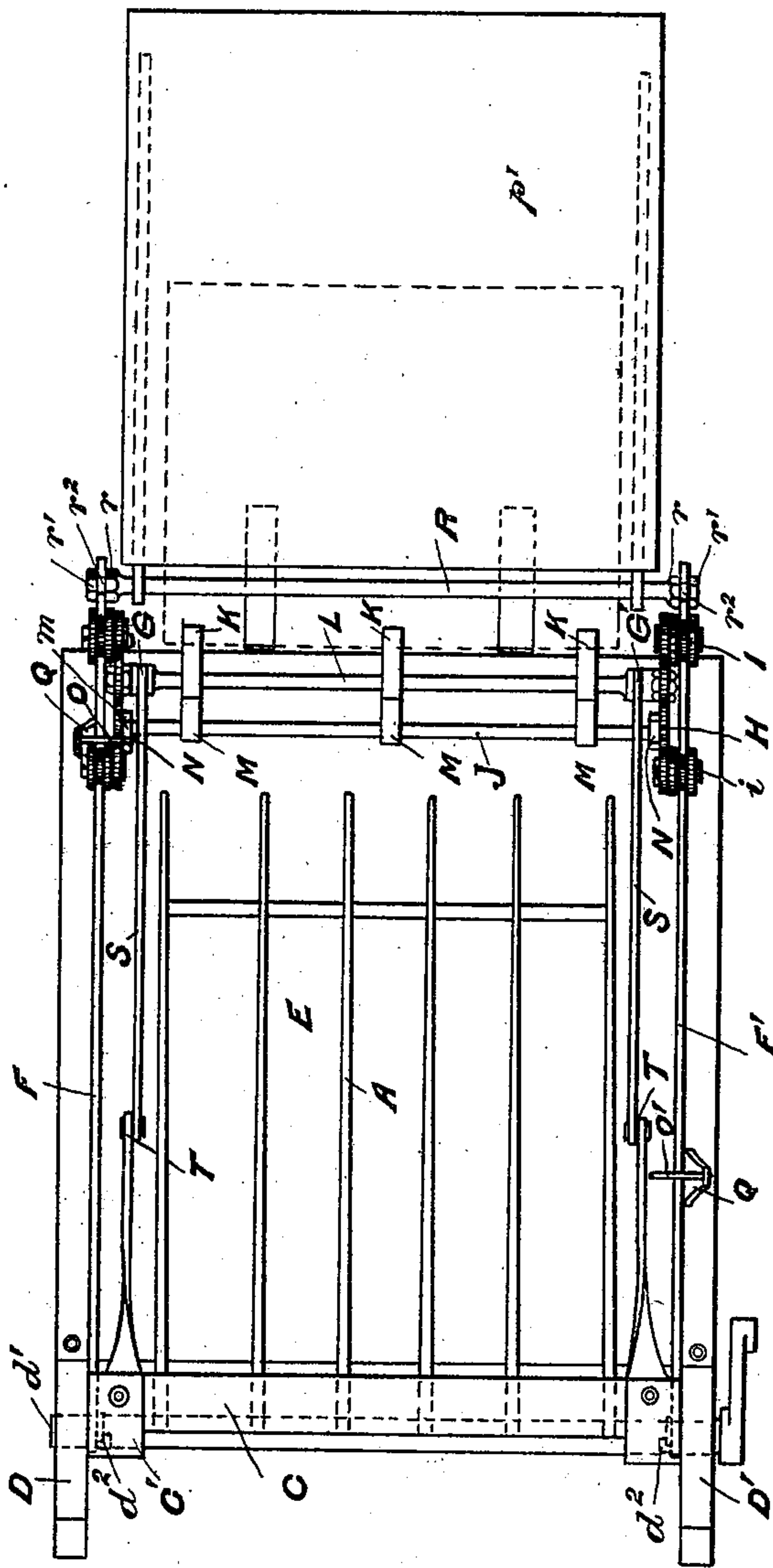


FIG. 3.

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UNITED STATES PATENT OFFICE.

ALFRED JOHNSON, OF NEW YORK, N. Y., AND ANDREW J. STONE, OF LONDON, ENGLAND.

SHEET-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 644,231, dated February 27, 1900.

Application filed June 27, 1899. Serial No. 722,070. (No model.)

To all whom it may concern:

Be it known that we, ALFRED JOHNSON, a resident of New York, (Brooklyn,) in the county of Kings, State of New York, and ANDREW JACKSON STONE, a resident of London, E. C., England, both citizens of the United States, have invented certain new and useful Improvements Relating to Sheet-Printing Machines, of which the following is a specification.

This invention relates to sheet-printing machines, and has for its object to provide means for laying between the sheets as they are piled on the piling-table slip-sheets, by means of which offset is prevented. Hitherto slip-sheets have been laid on by hand, and as the result in such cases the speed of the machine had necessarily to be decreased.

The invention is applicable to machines having an ordinary fly-delivery or a reciprocating delivery, but is more especially applicable to the type of machine described in the specification to Letters Patent No. 610,491, of September 3, 1896.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of a piling-table arranged with fly-delivery mechanism and means for the insertion of slip-sheets according to the invention. Fig. 2 is a reverse longitudinal section corresponding to Fig. 1, in which the reciprocating carriage-frame is at the opposite extremity of its stroke and in the act of seizing a slip-sheet.

Fig. 3 is a plan corresponding to Fig. 2.

In carrying the invention into effect, as illustrated in the accompanying drawings, fly-fingers A are suitably mounted upon a transverse oscillating shaft B, to which motion is communicated from the main shaft of the printing-machine by any suitable means, such as by a cam or crank and connecting-rod, the shaft being oscillated through an angle of somewhat less than one hundred and eighty degrees. As illustrated in the drawings, the fly-fingers A are preferably mounted upon the cross-shaft B by being secured to a cross-bar C, fastened to the shaft at each end in shoes or brackets C', and the shaft B is carried at each side by means of brackets D D'. The brackets D D' by means of lugs d support one

end of the piling-table E, the piling-table being supported at its opposite end by means of feet or a frame, such as e. Above the piling-table at a suitable distance apart are provided rails F F', such rails being mounted, respectively, upon the brackets D D' by pins d', so that they may be capable of being upwardly lifted above the piling-table. The rails are supported in their horizontal position by means of stops d², abutting against projections provided upon the respective rails, and the rails are connected together at their opposite extremities by means of a transverse rod R, having shoulders r, which maintain the rails at a determined distance apart, the rod being secured in position by means of nuts r' and being capable of removal by being mounted in slots r², provided in the rails to receive it. By so connecting the rails together the rod R is capable of ready removal to permit of the carriage-frame being taken away.

Upon the rails F F' are mounted carriages G G', each of which consists of a plate H, upon the outer side of which grooved rollers I are mounted, having peripheral grooves corresponding to the width of the rails F F', the rollers being secured in position upon pins or spindles i, suitably held upon the plate H. The carriages G are suitably connected together by means of a rod J, and upon this rod are provided, at intervals apart, fixed jaws K, while an oscillating shaft or spindle L is also mounted and supported by the carriages G, so as to be parallel to the fixed rod J, and gripper-arms M are fixedly mounted thereupon at intervals and in positions corresponding to the jaws K, so that when the gripper-arms are moved upward toward the end of the stroke of the carriage-frame they shall come in contact with the edge of the respective jaws K and seize the slip-sheet.

Upon the oscillating shaft or spindle L, at each end, a pawl-operating lever N is provided, by means of which the shaft or spindle L is oscillated, so as to open and close the gripper-arms M. This is effected on the reciprocation of the carriage-frame by contact of the operating-pawls N with stops O O', which may be fixedly mounted at opposite extremities of the rails, the one, O', being pref-

erably arranged upon one rail and the other, O, upon the other. The one stop O, by contact with one of the operating-pawls N at the forward extremity of the stroke of the carriage-frame, causes the gripper-arms M to close and grip the slip-sheet *p*, while the other stop O' makes contact with the other operating-pawl and causes the gripper-arms M to open at the opposite extremity of the stroke of the carriage-frame. The opening and closure of the gripper-arms may be timed so that the slip-sheets may be seized at any particular point and deposited at any particular place upon the piling-table by arranging the stops O O' to be capable of adjustment. This may be done by mounting the stops O upon a bracket Q and securing that bracket by means of a pin *q* within a longitudinal slot *f*, provided within the respective rails F or F', in which it is capable of longitudinal movement and where it is capable of being secured in any longitudinal position.

The gripper-arms M are positively maintained open or closed by means of a spring U, which is preferably mounted upon one of the carriages G and has its extremity bearing upon a projection of the adjacent operating-pawl. When the grippers are open, (see Fig. 1,) the spring presses directly in the line of the projection *m*, while when the grippers are closed the spring exercises a slight pressure, tending to turn the shaft or spindle L, and thereby maintain the grippers closed with a slight pressure. The carriages G are prevented from being uplifted and from being withdrawn, except by sliding along the rails, by the provision upon the plate H of transverse pins *h h*, which bear under the rails F F'.

A supplementary slip-sheet-feeding table P is provided. This may consist of a surface *p'*, supported upon transverse bars *p''*, these bars having secured thereto feet *p'''* for holding the table at one end, while at the opposite end the bars *p''* are formed hook-shaped, so as to engage with the transverse bar R, by means of which the two rails F F' are secured together at their outer extremities. The slip-sheets *p* may be put into proper register by means of stops *p''''*.

The reciprocating motion of the carriage-frame is effected from the oscillating shaft B by means of connecting-rods S, secured at one end to the extremities of crank-arms T, their other extremities being formed hook-shaped and riding upon a transverse rod J, by means

of which the carriages G are connected. It will thus be understood that the sheet after being printed in the press is deposited upon the fly-fingers A, and on the oscillation of the shaft B the fly-fingers A are caused to rotate in the direction indicated in the drawings by an arrow and so deposit the printed sheet upon the piling-table E. Simultaneously with this rotation of the fly-fingers the carriage-frame is caused to move outwardly, ready to bring back a slip-sheet on its return stroke. At the out extremity of the stroke the gripper-arms M are closed, as hereinbefore described, and seize the slip-sheet *p*, which is previously arranged in position to be received by them upon the table P. The slip-sheet is retained in position upon the table by means of stops, and the grippers while seizing the slip-sheet lift it clear of such stops. The reciprocating frame then takes the slip-sheet and deposits it upon the piling-table and upon the sheet last deposited upon the pile, the grippers releasing the sheet at the backward extremity of the stroke.

It will be understood that by the employment of the invention the printing-machine may be run at twice or three times the speed that would be necessary when inserting slip-sheets between the printed sheets on the pile by hand, while, moreover, the layer-on can work with greater ease.

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

1. In combination, the side rails, the carriages running thereon, the gripper mechanism carried by the carriage, means for operating said gripping mechanism, the rock-shaft journaled at one end of said track with means for operating the same, and the fly-fingers carried by said rock-shaft.

2. In combination, the brackets, the rails hinged thereto, the rock-shaft journaled in the brackets and carrying the fly-fingers, the carriages traveling on said rails and carrying grippers and operating connections between the rock-shaft and carriages, substantially as described.

In witness whereof we have hereunto set our hands in presence of two witnesses.

ALFRED JOHNSON.

A. J. STONE.

Witnesses:

G. F. WARREN,

W. EDWARD EVANS.