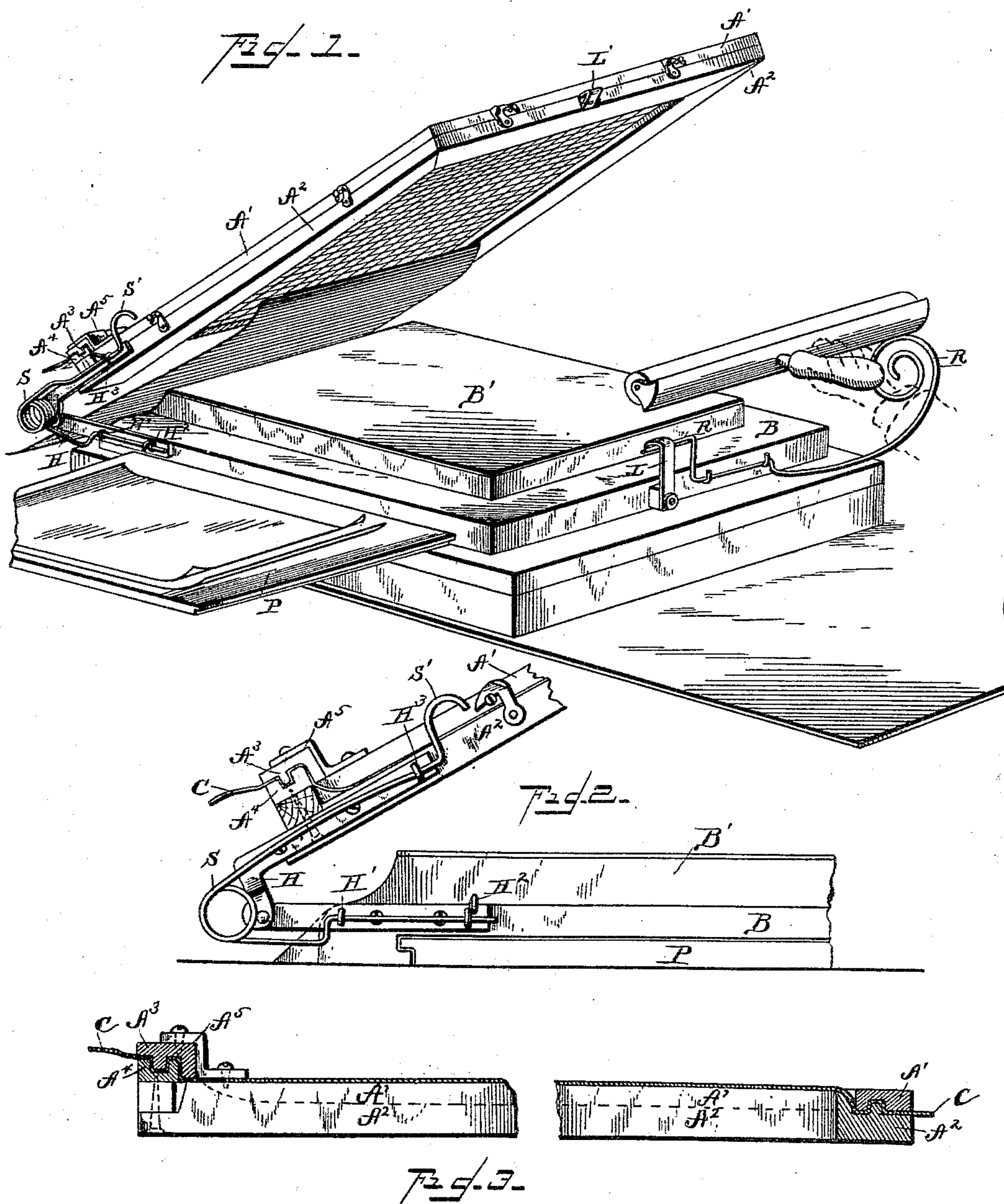


(No Model.)

G. H. DAVIS.  
AUTOMATIC DUPLICATING APPARATUS.

No. 414,378.

Patented Nov. 5, 1889.



WITNESSES:

Chas. C. Adams.  
May J. Adams

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INVENTOR.



# UNITED STATES PATENT OFFICE.

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## AUTOMATIC DUPLICATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 414,378, dated November 5, 1889.

Application filed March 7, 1889. Serial No. 302,321. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE HOWLETT DAVIS, a citizen of the United States, residing at Washington, District of Columbia, have  
5 invented certain new and useful Improvements in Automatic Duplicating Apparatus, of which the following is a full and clear description.

My invention relates to that class of duplicating apparatus which employ a printing-stencil over which an inked roller is passed, and my improvements provide means whereby immediately the roller has passed over the stencil the stencil-frame is raised and the  
15 printed sheet discharged from the apparatus automatically, together with other improvements, all of which will be hereinafter more fully described.

Having in another application of even date  
20 described and claimed the method herein involved of raising and discharging the printed sheet, which consists, briefly, in raising the stencil-frame with sufficient rapidity to create a suction of air which lifts the printed  
25 sheet, and in providing a suitable opening for the sheet to fall through, I will in this application describe more particularly the improved construction illustrated in the accompanying drawings for carrying the aforesaid  
30 method into effect.

In the accompanying drawings, Figure 1 is a perspective view of my apparatus elevated on top of the box in which it is inclosed when not in use, showing the stencil-frame opened  
35 and the manner of operating the apparatus. Fig. 2 is an enlarged side elevation showing a detailed view of the apparatus next the hinges. Fig. 3 is a transverse sectional view of the stencil-frame cut through the ends.

40 Similar letters indicate like parts throughout the several views, in which—

A' A<sup>2</sup> A<sup>3</sup> A<sup>4</sup> is a stencil-frame made in two separable parts, the sides A' A<sup>2</sup> of which are similarly formed; but the hinged sides of  
45 the upper and lower parts A<sup>3</sup> A<sup>4</sup> are raised, the upper side A<sup>3</sup> being rigidly attached to the two sides of the upper frame A' by means of the metal pieces A<sup>5</sup>, and the lower side A<sup>4</sup> rigidly attached to two sides of the  
50 lower frame A<sup>2</sup> in the manner shown. When

the stencil G is secured between the upper and lower parts of the frame, the lower edges of the hinged side and the upper edges of the three remaining sides of the frame are about flush with the stencil C stretched  
55 thereon. The advantages of a stencil-frame constructed in this way are that there is no projection whatever from the under part of the hinged side of the frame to stop or impede the printed sheets from passing out at  
60 that end, and on account of the other three sides of the frame being flush with or a little below the stencil they allow a free and easy movement of the roller over the stencil after it has left the hinged or elevated side. Were  
65 all the sides of the frame higher than the stencil, as is the case in some apparatus, it would require considerable care to prevent the sides of the roller from striking them; and, on the other hand, if the top of all four  
70 sides of the frame were flush with the stencil the under part of the hinged side, out of which the printed sheet is discharged, would offer more or less obstruction to the sheets in passing out, although this part of the frame  
75 might be rounded, as I have shown in drawings accompanying application filed April 18, 1888.

The stencil-frame A' A<sup>2</sup> A<sup>3</sup> A<sup>4</sup> is hinged to the printing-board B, the latter having an  
80 incline at its hinged side to prevent the lower end of the falling sheet from resting thereon.

The hinges H, of the form shown, are purposely pivoted as far below the stencil as practicable, so that when the stencil-frame is  
85 raised it is given a slight forward movement, which it imparts to the printed sheet which is raised therewith, thus discharging the latter through the opening with greater force and certainty.

The springs S, of the form shown, are attached simply by inserting their lower ends through the screw-eyes H' H<sup>2</sup> and by inserting their upper ends in the hooks H<sup>3</sup>, the upper extremity S' of the springs being curved,  
95 as shown, so that they may be conveniently pressed down and unhooked by the hand of the operator.

L is a spring-latch bent in the shape shown, the lower end being pivotally attached to the  
100



printing-board and the upper end, bent as shown, being so adjusted that upon the stencil-frame being lowered it catches the projection L' and prevents the frame from rising. When desired, the latch may be quickly thrown out of operative position by turning it on its pivotal screw-bearing.

R is a detachable releasing device, shaped as shown, one end R' of which engages the latch L and the other end extended upward, so that immediately the roller has passed over the stencil and has cleared the end of the stencil-frame the guard of the roller strikes the upper part of the releasing device, which causes the end R' to press the latch L off the projection L' and allow the frame to be raised by the springs.

The shelf P, adapted to hold the supply of paper to be printed in convenient position, is adapted to slide into the frame of the printing-board B when not in use.

The operation of my invention is as follows: It is preferable, before commencing to print, to slightly curl one side of the pile of paper to be printed, so that each sheet when placed on the printing-board presents a slightly-concave surface to the stencil. The curled side of the sheet is best placed farthest from the hinges. The stencil-frame is lowered with the left hand until the latch L catches the projection L' thereon. Immediately the roller has been passed over the stencil with the right hand the guard of the roller strikes the upper part of the releasing device, which throws off the latch, whereupon the springs S raise the frame quite rapidly, and an air suction or vacuum which is thus

created between the stencil and the printed sheet causes the latter to be raised part or entire way with the stencil and then falls or shoots in a slanting direction through the opening provided therefor. The forward movement of the stencil-frame and stencil produced by the pivots of the hinges being placed below the stencil aids to throw out the sheets with greater force.

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

1. In a duplicating apparatus, the combination, with the printing-board, of a stencil-frame constructed with the hinged side higher than the three remaining sides, whereby when the stencil is stretched between the upper and lower parts of the said frame the undermost part of the hinged side and the uppermost part of the three remaining sides will be flush with the stencil, substantially as and for the purposes described.

2. In a duplicating apparatus, the combination, with a printing-board and stencil-frame, of springs, substantially as shown, a latch adapted to engage the stencil-frame, and a releasing device adapted to throw off the said latch upon the former being struck by the hand or printing-roller, all substantially as described.

In testimony that I claim the above I have hereunto set my hand this 6th day of March, 1889.

GEORGE HOWLETT DAVIS.

Witnesses:

MARY J. ADAMS,  
CHAS. C. ADAMS.