

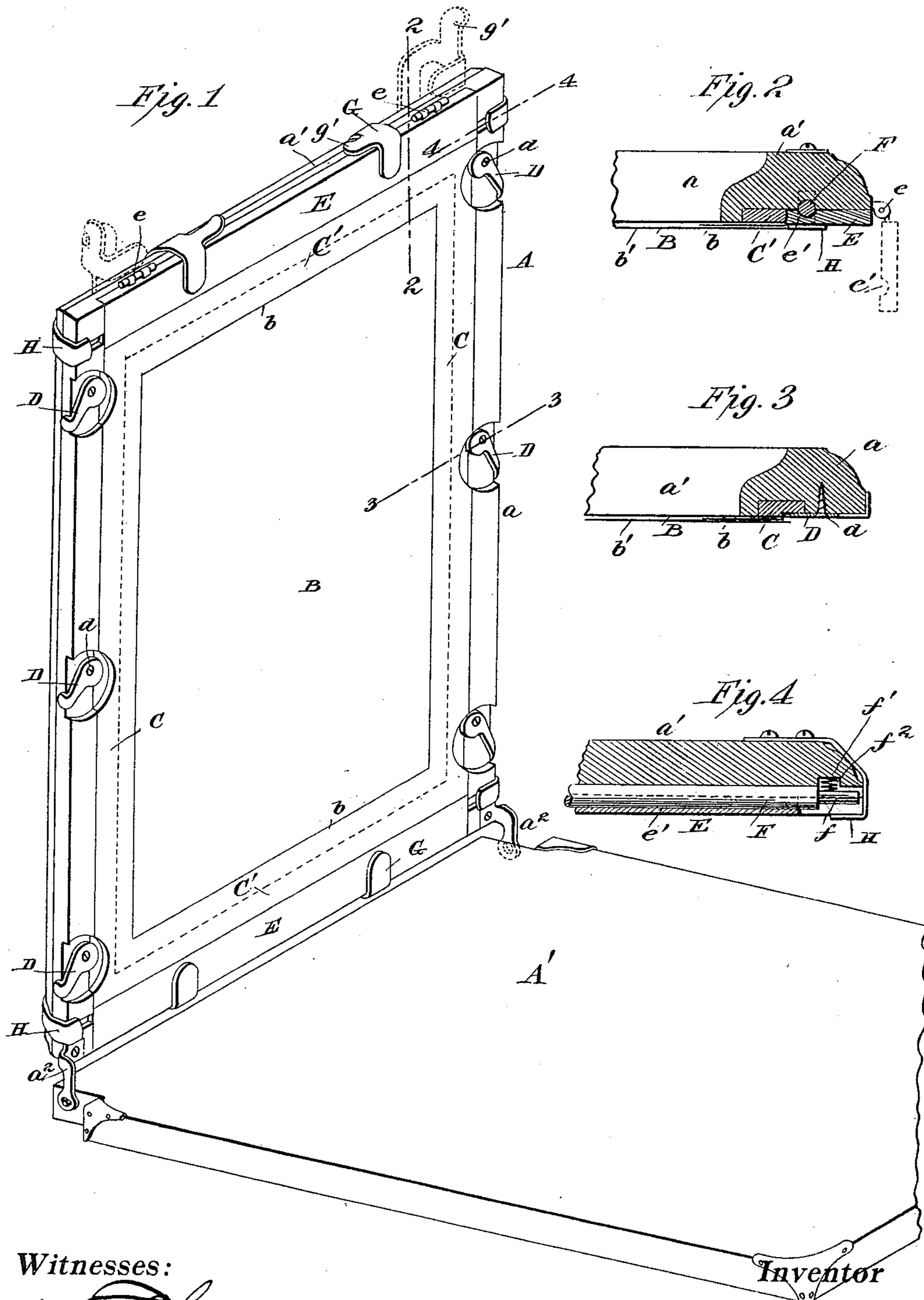
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A. B. DICK.
DUPLICATING APPARATUS.

(Application filed Aug. 5, 1899.)

(No Model.)



Witnesses:

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UNITED STATES PATENT OFFICE.

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DUPLICATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 666,410, dated January 22, 1901.

Application filed August 5, 1899. Serial No. 726,219. (No model.)

To all whom it may concern:

Be it known that I, ALBERT B. DICK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Duplicating Apparatus, of which the following is a specification.

The present invention relates more particularly to duplicating apparatus, such as the mimeograph, in which is employed a stencil-sheet of waxed paper, the ink being forced through the perforations therein in such manner as to be deposited on the sheet below.

The objects of the invention are to simplify the construction of duplicating apparatus and increase its efficiency, chiefly with respect to the means for mounting the diaphragm or top sheet, through which the ink is passed to the stencil, and maintaining such top sheet in position, and with respect to the means for securing the stencil in position below such top sheet.

To these ends the invention consists in the construction and arrangement of the several parts, as illustrated in the drawings, in which—

Figure 1 is a perspective view illustrating the under side of the hinged member of a duplicating apparatus; and Figs. 2, 3, and 4 are detail sectional views taken on the lines 2 2, 3 3, and 4 4, respectively, of Fig. 1.

Referring to the figures, in which similar letters of reference denote corresponding parts, A designates the hinged leaf, consisting of a frame having side pieces *a a* and end pieces *a' a'*. At one end this frame is provided with lugs *a²*, forming part of the hinge, by means of which said frame is secured upon the bed member A' of the apparatus. The latter being of the construction now widely known and in use is not here illustrated.

As will be readily understood, in duplicating apparatus of the type under discussion the bed upon which the paper to be printed on is placed is in operation stationary, while the hinged member carrying the stencil and the diaphragm is raised upon its hinge in order to remove the printed sheet and to substitute therefor a sheet to be printed upon.

B designates the diaphragm, formed, preferably, of woven fabric of such structure as to permit the ink to be readily passed there-

through to the stencil below. This diaphragm is preferably provided with a margin *b*, formed by varnishing or waxing, in order that the area through which the ink may pass shall be limited to the size of the writing upon the stencil-sheet. Said diaphragm is mounted in a detachable frame consisting of side pieces C and end pieces C'. To this frame it is secured by any suitable means, and the whole frame, carrying the diaphragm, is secured to the hinged leaf A in such manner as to permit its ready removal when desired. In the present instance I have shown the means for securing the diaphragm-frame in position as consisting of clamping-cams D, pivoted at *d* upon the side members *a* of the frame A. In Figs. 1 and 3 these are shown in such position as to firmly secure the diaphragm-frame to the frame A. In order to release the former, it is only necessary to swing the cams D to the left by means of the outwardly-extending and downwardly-projecting ends thereof.

The utility of the detachable diaphragm-frame will be appreciated when it is understood that it is of importance to have the diaphragm supported in such manner that it will not wrinkle. In order to so arrange said diaphragm, it is desirable to remove the supporting means entirely from the machine in order that it may be laid flat and the diaphragm applied and secured with care, so as to obtain the best results.

Turning now to another feature of the present invention, heretofore alluded to, this concerns the means for securing the stencil-sheet in position. In apparatus formerly employed it was common to secure the stencil-sheet not only at the top and bottom, but also at the sides. In later apparatus provision was made for securing the stencil-sheet only at the top and bottom; but for various reasons—such, for instance, as variations in the thickness of the stencil-sheet—this arrangement has proved defective. In the construction illustrated in the drawings the efficiency of the means for securing the stencil-sheet is unaffected by variations in the thickness of said sheet, said means operating to hold the sheet firmly at top and bottom under all conditions and being capable of ready and easy operation.

The means for securing the stencil-sheet *b'*

(see Figs. 2 and 3) to the hinged leaf or frame A and under the top sheet B consists of mechanism which is duplicated at each end of said frame. That at but one end need therefore
 5 be described in detail. Such mechanism consists, first, of the clamping-bar E, hinged at *e* to the end member *a'* of the frame A. As here shown, this clamping-bar extends nearly from end to end of the end member *a'* and practically forms part of the frame A. The under
 10 side of the clamping-bar E is provided with a longitudinal groove *e'*, which coacts with a spring-actuated rod F, the ends of which may, if desired, be decreased in diameter, as shown at *f*.

f' designates coiled springs, here shown as located in recesses *f''* in the end members *a'* of the frame A. These springs *f'* exert their pressure against said rod F, tending to force
 20 it into intimate relation with the groove *e'* in the clamping-bar E.

The clamping-bar E is secured in closed position by means of the locks G, hinged upon the upper surface of the frame A. Those portions of the locks G which perform the locking operation are substantially U-shaped, as
 25 shown most clearly in dotted lines in Fig. 1, so that when in operative position said clamps shall practically embrace the end of the frame A, holding the clamping-bar E firmly in the position in which it appears in full lines in the drawings. The locks G are also preferably provided with finger-pieces *g'* for ease of operation.

In securing the stencil-sheet in position it is only necessary to release the locks G and raise the hinged clamping-bar E, whereupon the end of such sheet may be laid over the spring-actuated rod F and the locking-bar brought
 40 down upon it and secured in position by means of the lock G. By reason of the movement of the rod F, permitted by the coiled springs *f'*, very considerable variation in the thickness of the stencil-sheet is permitted. After one
 45 end of the stencil-sheet has been locked as described said sheet may be drawn taut and its other end secured to the other clamping device in the same manner, whereupon the stencil-sheet will be arranged, without buckling or wrinkling, smoothly below the diaphragm B, the whole operation being exceedingly simple and requiring but a moment.

If desired, the end members *a'* of the frame A may be provided with a groove immediately beneath the rod F in order to give said bar greater scope of vertical movement. In the present instance I have shown clips H, secured at or near the ends of the side members *a* of the frame A and extending around
 50 such side members to the under side thereof, where their ends are located over the ends of the rod F, so as to preclude disarrangement of said rod due to the pressure of the coiled springs *f'*. It is obvious, of course, that

these clips may be readily dispensed with, 65 small plates or pins secured to the under side of the members *a'* of the frame being substituted to meet the same requirement.

What I claim is—

1. In duplicating apparatus, the combination with the bed, stencil-carrying members, and a stencil carried thereby, of a complete independent detachable frame, and a diaphragm supported thereby independent of said stencil, substantially as set forth. 70 75

2. In a duplicating apparatus, the combination with the bed, stencil-carrying members, and a stencil carried thereby, of a complete independent detachable frame, a diaphragm supported by said frame independent of said stencil, and means for locking said frame in position, substantially as set forth. 80

3. In a duplicating apparatus, the combination with the bed, stencil-carrying members, and a stencil carried thereby, of a complete independent detachable frame, a diaphragm supported thereby independent of said stencil, and locking devices carried by said stencil-carrying members and adapted to lock said diaphragm-frame in position, substantially as set forth. 85 90

4. In a duplicating apparatus, the combination with the bed and stencil-carrying members, of a complete independent detachable frame, a diaphragm supported thereby, and a stencil arranged in proximity to said diaphragm but independent thereof and secured to said stencil-carrying members by its ends only, substantially as set forth. 95

5. In a duplicating apparatus, the combination with the hinged leaf, of a clamping-bar pivoted to each of the end members of said leaf, means for locking each clamping-bar upon the hinged leaf and parallel with the plane thereof, and a spring-actuated rod mounted within each of the end members of the hinged leaf and cooperating with the corresponding clamping-bar, substantially as and for the purposes set forth. 100 105

6. In a duplicating apparatus, the combination with the hinged leaf, of a clamping-bar pivoted to each of the end members of said leaf, means for locking each clamping-bar upon the hinged leaf and parallel with the plane thereof, a spring-actuated rod mounted within each of the end members of the hinged leaf and cooperating with the corresponding clamping-bar, and clips carried by the hinged leaf for limiting the upward movement of said spring-actuated rod when the clamping-bars are unlocked, substantially as and for the purposes set forth. 110 115 120

This specification signed and witnessed this 31st day of July, 1899.

ALBERT B. DICK.

Witnesses:

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