

I. S. HAYNES.
DUPLICATING APPARATUS.

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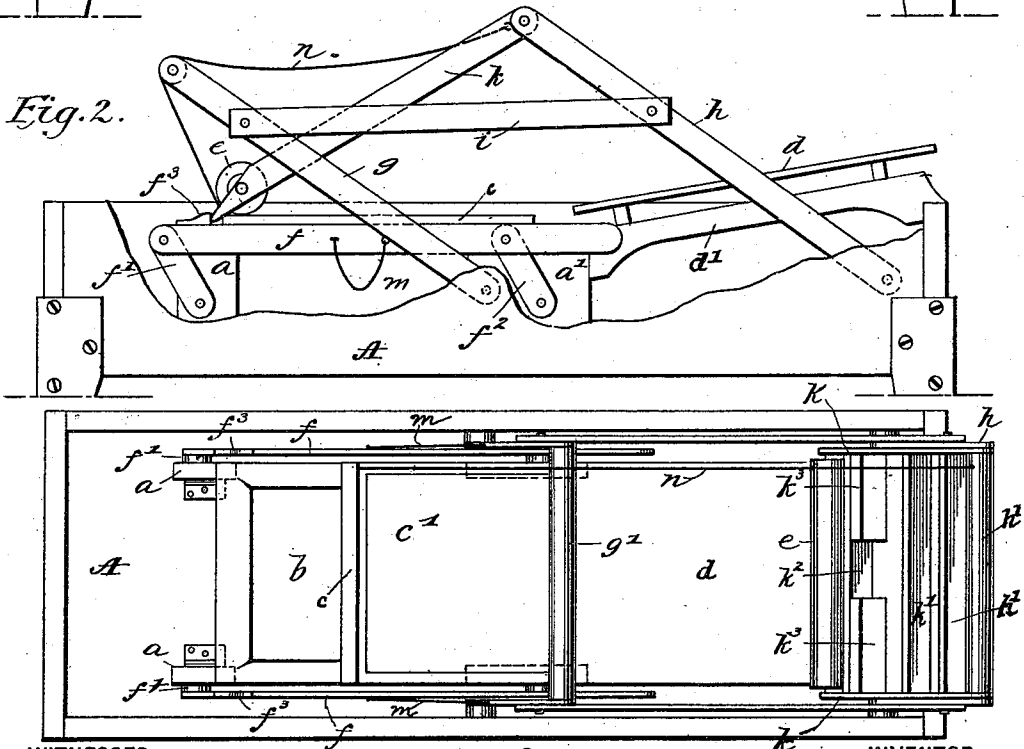


Fig.3.

Frank S. Ober
Frederick C. Lawver.

Irving S. Haynes.
BY
C. V. Edwards.
ATTORNEY

UNITED STATES PATENT OFFICE.

IRVING S. HAYNES, OF NEW YORK, N. Y.

DUPLICATING APPARATUS.

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To all whom it may concern:

Be it known that I, IRVING S. HAYNES, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Duplicating Apparatus, of which the following is a specification.

My invention has reference to duplicating apparatus, and its object is to construct an apparatus for use in printing from stencil plates or sheets, whereby the inconvenience of inking the stencil and removing the printed sheet, and also the liability to blur or smear the paper while being printed, will be reduced to a minimum or entirely done away with.

A further object of the invention is to so construct the apparatus that when not in use it may be stowed away in the stand upon which it is mounted, and the latter then be used as a desk or table.

The invention will be described with reference to the accompanying drawings, in which—

Figure 1 is a sectional view of my improved apparatus. Fig. 2 is a side elevation, with parts broken away, showing the position of the parts when the roller is at the forward end of the stencil sheet, and Fig. 3 is a plan view of the apparatus in the position shown in Fig. 1.

Referring to the drawings by letter, A represents a stand or receptacle suitable for the support of the apparatus. Any stand or table may be used, but I prefer to use a box, as shown, for reasons which will hereinafter more fully appear. The legs a, a', a'', a''' are suitably notched or otherwise adapted to receive and support the platen b , to which is hinged the vibrating stencil frame c carrying the stencil sheet c' . At the rear of the frame and inclined slightly upward therefrom is an inking plate d , or other equivalent device for supplying ink to the roller e , which is adapted to move back and forth in the manner to be hereinafter described. At each side of the platen is pivoted a supporting rod f adapted to be raised and lowered by means of swinging links f', f'' , at each end, so that when the links are substantially vertical, the top of the rod will be high enough to prevent the roller

from touching the stencil sheet when moving as will be described hereinafter. The opposite ends of the links f', f'' , are pivoted to the legs a, a' , rendering the rod capable of a rocking motion, it dropping down below the stencil frame when the upper ends of the links f', f'' are swung forward. The rod f is provided with a lug or raised portion f^3 . At each side of the platen is pivoted an arm h , and an arm h' , each capable of swinging or rocking motion and connected to the other by a connecting arm i . The arms on each side of the apparatus are respectively connected to the corresponding ones on the other side by cross braces g', h' , so that the whole will form a frame capable of swinging forward and backward. A flexible strap m has one of its ends fastened to rod f and the other fastened to the swinging frame and is so adjusted that when the frame is in its vertical position the strap will be taut and rod f drawn to its highest position. A flexible strap n is fastened at one end to the stencil frame c and at the other end to the swinging frame, and adjusted to lower and raise the stencil as the swinging frame is rocked forward and backward. To the upper end of arms h , or any other part of the swinging frame, is pivoted a roller carrier consisting of two side rods k, k' , connected by braces k^1, k^2 . The roller e is fixed thereto by any convenient means and its pressure upon the ink plate and stencil is regulated by means of weights k^3 upon the roller carrier. The ends of the arms k project a short distance beyond the roller and below the sides of the ink plate, as indicated in the drawings.

The operation of the apparatus is as follows: When the swinging frame is in its vertical position, as shown in Fig. 1, the roller e will be upon the rear of the inking plate d ; the strap n will be drawn back and stencil frame c raised; and straps m drawn taut so that rods f are raised to their highest position. The paper to be printed upon is then laid upon platen b and the swinging frame g, h, i swung forward, causing the roller to advance toward the stencil and the stencil frame to drop in position upon the platen by reason of the slackening of strap n . When the roller reaches the forward end of the plate, the projecting ends of the carrier, k, k' , will

come in contact with rods *f* and slide forward thereupon, thus keeping the ink roller raised above and out of contact with the stencil sheet. Upon reaching the end of the stencil the ends *k*, *k*, strike against lugs *f*³ and push them forward, the straps *m* having in the meantime become slack. This pushes the rods *f* down to their lowest position and drops the roller on to the stencil frame, in the position shown in Fig. 2 of the drawings. The rocking or swinging frame *g*, *h*, *i*, is then swung backward, drawing after it the roller *e*, which, being weighted by the weights *k*³ bears heavily upon the stencil sheet and forces ink through the same and upon the paper to be printed. When the roller has been drawn back upon the ink plate, the stencil frame will be lifted, and the rods *f* raised to their highest level, by the tightening of straps *n* and *m*. The apparatus is then ready for the removal of the printed sheet and the insertion of another sheet to be printed in the same manner.

In the construction of my apparatus it is immaterial whether or not the various parts be of the relative proportions indicated in the drawings. They may be varied or altered; and it is pointed out that the arms *g*, and arms *i* which connect arms *g* to arms *h*, may be dispensed with without greatly detracting from the utility of the apparatus. In that case the straps *m* would be connected to arms *h* instead of arms *g* as shown. Furthermore, it is to be understood that although I have described the machine as having one arm of each pair of the arms of the frame pivoted on each side of the machine, the frame may be made up of arms, singly or in pairs, pivoted to either side of the apparatus; and, although I have described the apparatus as having a supporting rod *f* on each side, it is obvious that only one rod would accomplish the same result as two or more. The length of the links *f*¹, *f*², and consequent height of rods *f*, as compared with the height of the platen *b* *c*, may also be regulated at pleasure by making the projecting ends of the roller carrier, *k*, *k*, longer or shorter as desired. The type of platen and stencil frame used is unimportant. The apparatus may be adapted to receive and print from any of the common types of mimeograph, neostyle, cyclostyle, &c.

In the drawings I have illustrated the apparatus installed in an inclosing box *A* and prefer to so install it, in order that the apparatus, when not in use, may be folded up inside of the box and the box then used as a desk or table by providing a suitable cover therefor. With this end in view the platen *b* and stencil frame *c*, and inking plate *d* with its support *d*¹, are adapted to be removed from their supporting legs *a*, *a*¹ and the side of the box *A*, and the legs *a*, *a*¹ are hinged to the box in such manner that they may be folded one above the other on the bottom of the box, or otherwise arranged to withdraw their support from the platen *b*. The swing-

ing frame *g*, *h*, *i*, may then be swung forward, without allowing the roller to advance, until the arms are below the top of the sides of the box. The cover is then put in place.

Having thus described my invention, I claim—

1. In a duplicating apparatus, the combination of a platen, a stencil adapted to rest thereon, a source of ink supply, a swinging frame, means to cause the same to raise and lower said stencil by its vibrations, a roller adapted to receive ink from said source of ink supply and operated by said swinging frame to move upon said stencil, and means to prevent the roller from touching the stencil when moving in one direction, substantially as described.

2. In a duplicating apparatus, the combination of a platen, a stencil adapted to rest thereon, a source of ink supply, a swinging frame, means to cause the same to raise and lower said stencil by its vibrations, a roller adapted to receive ink from said source of ink supply and operated by said swinging frame to move upon said stencil, supporting rods upon which said roller is adapted to travel, and means to cause said supporting rods to withdraw their support from said rollers, substantially as described.

3. In a duplicating apparatus, the combination of a platen, a stencil adapted to rest thereon, a source of ink supply, a swinging frame, means to cause the same to raise and lower said stencil by its vibrations, a roller adapted to receive ink from said source of ink supply and operated by said swinging frame to move upon said stencil, pivotally swung supporting rods upon which said roller is adapted to travel, and means to cause said supporting rods to be swung downward by the movement of the roller, substantially as described.

4. The combination of a platen, a stencil adapted to rest thereon, a source of ink supply, a swinging frame means to cause the same to raise and lower said stencil by its vibrations, a roller carrier pivoted to said swinging frame, said roller carrier carrying a roller adapted to receive ink from said source of ink supply and to move upon said stencil, and means to prevent the roller from touching the stencil when moving in one direction, substantially as described.

5. The combination of a platen, a stencil adapted to rest thereon, a source of ink supply, a swinging frame means to cause the same to raise and lower said stencil by its vibrations, a roller carrier pivoted to said swinging frame, said roller carrier carrying a roller adapted to receive ink from said source of ink supply and to move upon said stencil, supporting rods upon which said roller carrier may travel, means to lower said supporting rods at the end of movement of said roller carrier in one direction, and a flexible strap connecting said supporting rods to said swing-

ing frame and adjusted to raise said supporting rods when said swinging frame is moved backward, substantially as described.

6. The combination of a platen, a stencil
5 hinged thereto, an inking plate, a swinging frame having its vibrating end pivoted to a roller carrier having projecting ends and carrying a roller adapted to move upon said stencil and said inking plate, pivotally swung
10 supporting rods, upon which said projecting ends of the roller carrier are adapted to travel, said rods being provided with lugs against which said projecting ends will strike, and flexible straps connecting said stencil and
15 said supporting rods with said swinging frame, substantially as and for the purpose set forth.

7. The combination of a box, hinged supports therein, a platen having a stencil hinged thereto, an inking plate having an open chamber thereunder, said platen and said plate
20 being removably fixed to said supports, a swinging frame having hinged thereto a roller carrier provided with an ink roller adapted to move upon said stencil and said inking
25 plate, projections on said roller carrier, pivotally swung supporting rods provided with a lug or offset portion, said supporting rods

acting to support the projections on said roller carrier and adapted to be pushed down by the striking of said projections against said
30 lugs, and flexible straps connecting said supporting rods and said stencil with said swinging frame, substantially as and for the purpose described.

8. The combination of a receptacle; sup- 35
ports therein; a platen and stencil resting upon said supports; and supporting rods, a swinging frame and roller carrier swung adjacent to the sides of the platen, substantially
40 as described.

9. The combination of a receptacle, hinged supports therein, a platen and stencil and an ink supply resting upon said supports, supporting rods swung from said supports, and a
45 swinging frame and roller carrier swung from said receptacle, substantially as described.

Signed at New York, in the county of New York and State of New York, this 25th day of June, A. D. 1894.

IRVING S. HAYNES.

Witnesses:

HENRY G. LEIST,
C. V. EDWARDS.