July 17, 1934. G. S. ROWELL 1,966,464

PRINTING MEANS

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Fig. 1.

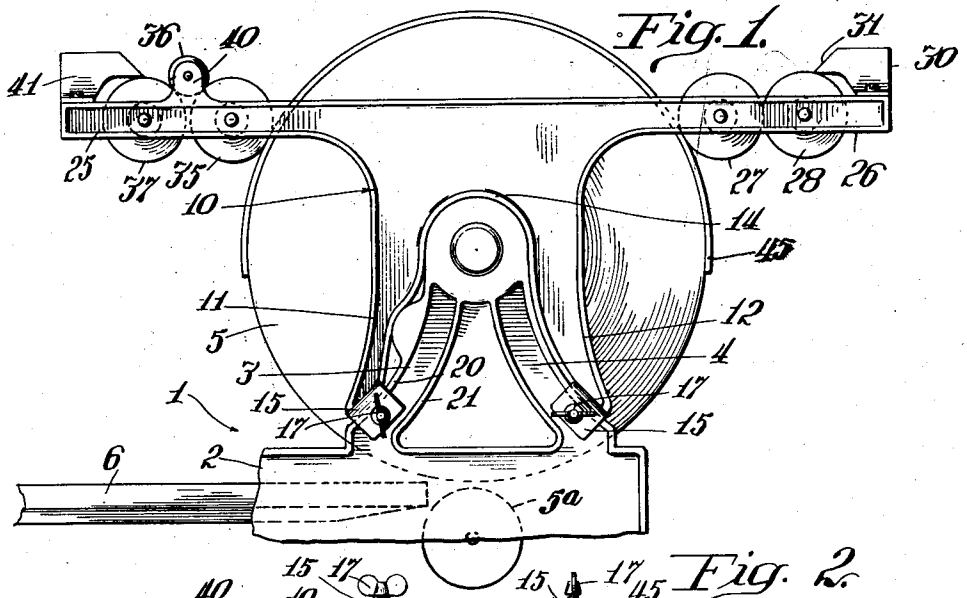


Fig. 2.

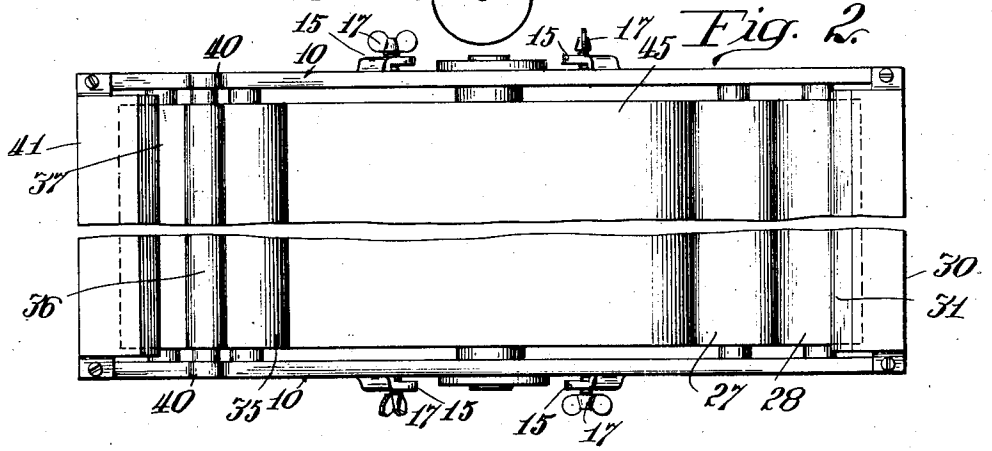
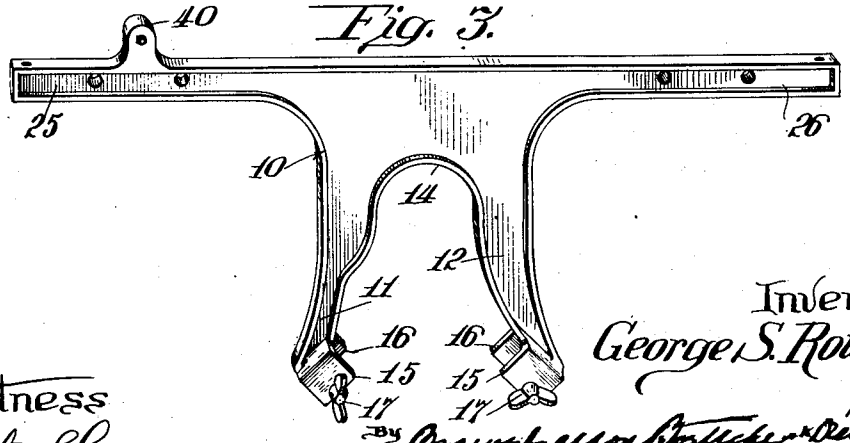


Fig. 3.



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PRINTING MEANS

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7 Claims. (Cl. 101—141)

This invention relates to duplicating machines, that is to machines for making copies of a written or printed page, picture or the like. It is one of the objects of the present invention to provide a machine of the class described which is comparatively inexpensive so that the same may be used in small establishments not devoted to printing, for making their own circulars, letterheads and the like. The machine of my invention is relatively simple in its construction and mode of operation so that the same may be operated by a person unskilled in the art of printing, such as the average office boy or stenographer.

It is an object of the present invention to provide a duplicating machine which may be used for mimeograph work or the like and which may also be used for producing lithographic or other like effects.

The machine may be constructed as an integral apparatus or, if desired, the principles of my invention may be embodied in an attachment to be applied to an ordinary duplicating machine for enabling that machine to be used to produce lithographic or like effects, the machine being at the same time available for non-lithographic purposes.

The attainment of the above and further objects of the present invention will be apparent from the following specification taken in conjunction with the accompanying drawing forming a part thereof.

In the drawing:

Figure 1 is a side view showing a portion of a standard form of duplicating machine with my improved lithographing attachment secured thereto;

Figure 2 is a top view of Figure 1; and

Figure 3 is a perspective view of the attachment bracket.

The drawing shows, for illustrative purposes only, the principles of my invention applied to a member which is to be attached to a standard type of duplicating machine to adapt it for use as a lithographing machine.

It is, of course, to be understood that the invention is not limited to an attachment for known machines since the principles of my invention may be embodied in a complete and integral machine which may be used for non-lithographic duplicating work or for lithographic work, as desired.

A fragmentary portion of a standard duplicating machine is shown at 1. This comprises a frame 2 having a pair of converging standards 3 and 4 which support a rotatable drum 5, which normally carries a non-lithographic printing form which coacts with the rotatable platen 5a for printing. The drum is rotated by suitable mechanism, (not shown) in the usual manner. A table 6 supports the paper which is ordinarily fed to the duplicating machine. The paper may be automatically or manually fed, in which case the paper is advanced against a stop which is automatically withdrawn as the drum 5 rotates into a predetermined position. When the machine is used for non-lithographic work a printing member, which has been prepared in the usual manner, is secured to the periphery of the drum 5 and the sheets of paper are fed to the drum, one at a time, as the drum is rotated.

To adapt the machine for lithographic work I mount upon the standards 3—4 a pair of frame members 10 of a construction such as is shown more particularly in Figure 3. The frame members are mounted on the opposite sides of the drum 5 and are joined together by cross members.

The frame member 10 in my preferred form has a pair of diverging arms 11—12 which are adapted to embrace the converging standards 3—4 of the duplicating machine. The portion 14 of the frame member 10 is adapted to seat upon the top convergent part of the standards 3 and 4. A pair of forked locking or holding members 15 and 16 may be formed at the bottom of each arm 11 and 12. The forked members 15 and 16 are adapted to embrace the bottom of the standards 3 and 4, to which they are locked by wing nuts 17.

For moistening means I show a pair of rollers 27 and 28 rotatably supported between the two frame members 10. The rollers are in engagement with one another so that upon turning of the roller 27 the roller 28 is turned.

A trough or other receptacle 30 for containing liquid may be supported by the frame members, and is shown with an opening at 31 for maintaining the rollers 28 and 27 moist.

For supplying ink I provide three rollers 35, 36 and 37, also supported upon frame members 10. The rollers 35 and 37 are out of engagement with one another and are both in engagement with the roller 36 which constitutes an idling roller. An ink trough or receptacle 41 may be mounted on the frame adjacent the roller 37, and adapted to feed ink thereto.

The subject matter to be reproduced or duplicated is first formed upon a thin plate, such as is commonly used in lithographic work. The

plate comprises a thin sheet of metal, preferably aluminum. The sheet may be rather thin so that it is sufficiently flexible to permit its insertion into a typewriter so that it may be typed upon.

The subject matter may consist of pictures, photographs, free hand sketches, and hand written matter as well as typewritten matter. The surface of the plate is prepared, as in lithographic work, so that it will receive moisture when the same is applied thereto but will repel certain kinds of ink. The subject matter to be reproduced is produced upon the plate by means of a greasy substance which repels moisture but will receive the kind of ink used in lithographic work. This is standard practice in lithography and as such is well known in the art.

The plate indicated at 45 is then secured to the drum 5 in much the same manner that an ordinary printing member would be secured to the drum. Water or other moistening liquid may be placed in the trough 30 and lithographing ink in the trough 41. The rollers 27 and 35 may be suitably held in contact with the plate 45. The drum is rotated in a counter clockwise direction, and the plate thus receives ink and moisture from the mechanism described.

The drum is further rotated into contact with a sheet of paper from the table 6 in the same manner as is customary in standard duplicating machines. The plate 45 applies the ink to the paper thereby producing a lithographic reproduction of the image or subject matter upon the plate. If desired, cloth or other materials may be used instead of paper for receiving the impression from the plate 45.

While I have herein shown a plate 45 which is preferably made of aluminum, the surface of which has been grained to remove the smooth gloss, the invention is not limited to such a plate. For instance, I may make the plate of zinc. Likewise, the plate may be made of substances which absorb moisture from the atmosphere, or of substances which even when dry repel the inks such as may be placed in the receptacle 41. When this is the case, the moistening rollers 27 and 28 are unnecessary and may be omitted.

The machine is operated in the same manner in which a mimeographing machine is operated,—hence the ordinary office boy is fully competent to operate the same. The impressions produced are the same as are produced by type printing, thereby producing a neater sheet than can be produced by mimeograph work. In addition it is possible to use my improved machine for reproducing designs or pictures, a use to which an ordinary duplicating machine cannot be put. If it is desired to use the machine for non-lithographic purposes the entire attachment frame may be removed, or the lithographing attachment may be rendered ineffective by merely removing the inking roller 35 and the moistening roller 27.

While I have herein shown a form of my invention which constitutes an attachment to known machines, it is to be understood that the same is merely illustrative of the invention and that the present invention is not limited to the precise construction herein shown, nor is it limited to an attachment. The principles of my invention may be embodied in a unitary machine rather than as an attachment to already existing machines. What I consider as new and desire to secure by Letters Patent is:

1. A lithographing attachment for a duplicating machine having a rotatable drum and means for supporting said drum, comprising a pair of frame members, each comprising a substantially T-shaped bracket having a head portion adapted to extend beyond opposite sides of the drum and a leg portion adapted to be disposed beyond the end of the drum, adjustable means carried by each leg portion for removably securing said frame members to said drum supporting means, moistening rollers carried by said head portions to one side of said drum, a trough for supplying moisture to said moistening rollers, inking rollers carried by said head at another side of said drum, and a trough for supplying lithographing ink to said inking rollers, whereby a lithographing plate attached to the periphery of the drum will be successively moistened and inked upon rotation of the drum.

2. In a device of the character described, a pair of T shaped frame members spaced from one another, an inking roller mounted on and extending between the ends of the flanges of the frames, the outer portions of the stems of the frame being bifurcated, and means at the ends of the bifurcated portions for mounting the frames.

3. In a device of the character described, a pair of T shaped frame members spaced from one another, an inking roller mounted on and extending between the ends of the flanges of the frames, a moistening roller mounted on and extending between the opposite ends of the flanges of the frames, the outer portions of the stems of the frame being bifurcated, and means at the ends of the bifurcated portions for mounting the frames.

4. A duplicating machine including a printing drum, a pair of T shaped frame members on the opposite sides of the drum with the flanges of the frame members extending beyond the periphery of the drum, means at the lower ends of the stems for removably mounting the frame members in place, an inking roller mounted on and extending between the flanges of the frame member at one end thereof, and a moistening roller mounted on and extending between the flanges of the frame members at the other end thereof, said printing drum extending between and being straddled by said rollers.

5. A duplicating machine including a printing drum, a frame member having a pair of upstanding arms supporting the drum, a pair of removable T shaped frame members on the opposite sides of the drum with the stems of the T members bifurcated and straddling said upstanding arms and secured thereon, and an inking roller mounted on and extending between the flanges of the T shaped frame and in cooperating relation to said drum.

6. In a duplicating machine of the non-lithographing type having a rotatable drum for receiving a stencil, means for adapting the machine for lithographic work, said means comprising a lithographic form adapted to be mounted on the drum interchangeably with the stencil, a pair of frame members, means for removably mounting said members on the machine at the opposite ends of the drum, inking and moistening rollers supported by the frame members, an ink receptacle and a moisture receptacle for inking and moistening the respective rollers, said receptacles being mounted on the frame members, and said frame members, rollers and receptacles being simultaneously attached to or detached from the machine.

7. In combination, a main frame, a drum mounted on the main frame for rotation about a horizontal axis, said drum being adapted to support alternatively on its periphery, a lithographic printing form or a printing form of other character, a supplemental fame detachably mounted on the main frame, and rolls for supplying lithographic printing materials, said rolls being rotatably mounted on the supplemental frame in such location that when the supplemental frame is mounted on the main frame the rolls may bear on the surface of a lithographic plate on the drum.

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