F. GOTTSCHALK.

DUPLICATING MACHINE.

APPLICATION FILED FEB. 25, 1916.

1,224,634. Patented May 1, 1917.

Fig. 1.

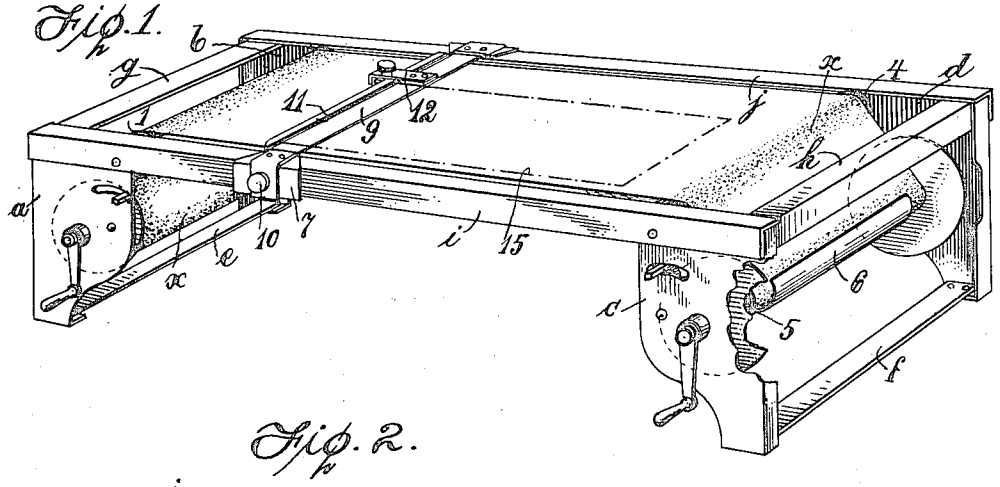


Fig. 2.

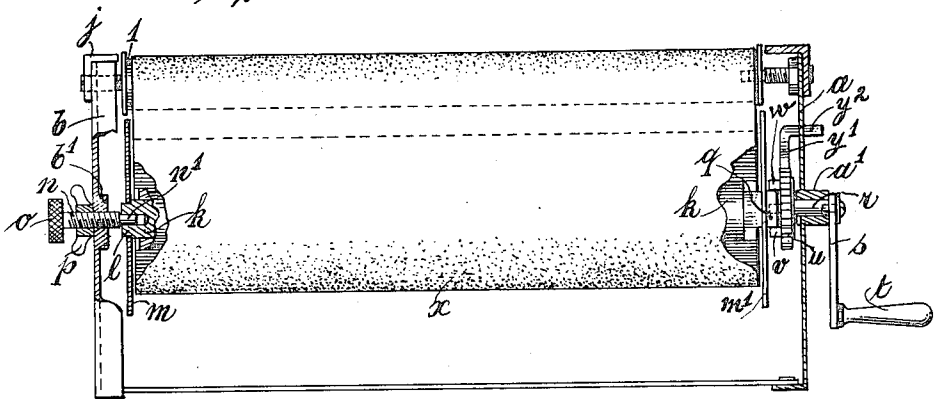


Fig. 4.

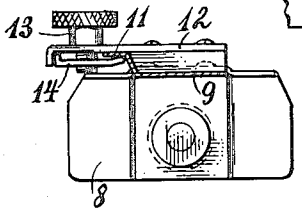
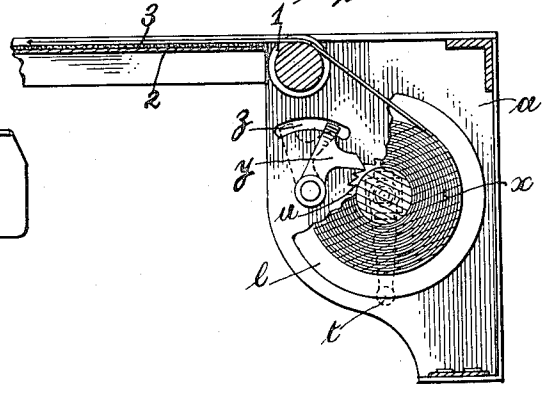


Fig. 3.



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UNITED STATES PATENT OFFICE.

FREDERICK GOTTSCHALK, OF NEW YORK, N. Y., ASSIGNOR TO GRAPHIC DUPLICATOR CO., INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

DUPLICATING-MACHINE.

1,224,634. Specification of Letters Patent. Patented May 1, 1917.

Application filed February 25, 1916. Serial No. 80,369.

To all whom it may concern:

Be it known that I, FREDERICK GOTTSCHALK, a citizen of the United States of America, and a resident of New York, county and State of New York, have invented certain new and useful Improvements in Duplicating-Machines, of which the following is a specification.

This invention has reference to improvements in duplicating machines adapted to make duplicates of a writing, drawing or the like. It is the special purpose of the present invention to produce a duplicating machine in which the essential operative parts are easily exchangeable and adjustable without the aid of any tools.

Heretofore duplicating machines or duplicators usually were provided with a film roll requiring tools for the removal or exchange of the same. Likewise the paper guide generally was fixed to the frame and therefore not removable nor could it be placed in any desired location. The pawl arresting the teeth of the ratchet in such machines is not easily accessible and operable. The side edges of the gelatin film were not sufficiently protected and sometimes the film was damaged. The free end of the film required certain constructions and rather tedious operations for securing it to the wind-up roll and some machines are not well adapted for producing duplicates on ruled or lined paper so that the print appears exactly on the lines.

It is the purpose of the present invention to produce a duplicating machine or duplicator in which the described defects have been avoided. The operative parts are easily exchanged and adjusted by simple manual operations, the paper guide is adapted to slide on the frame and the free end of the gelatin film is secured in very easy manner. By simplicity in construction the cost of production and liability to derangement have been greatly reduced and care has been taken to produce a neat and desirable article all as will be fully described hereinafter with reference to the accompanying drawing in which:

Figure 1 represents in perspective view a duplicating machine embodying in desirable form the present improvements.

Fig. 2 illustrates the machine in rear view partly broken away with some parts in section.

Fig. 3 shows the rear winding mechanism in sectional elevation.

Fig. 4 is a sectional elevation of the paper guide.

Similar characters of reference denote like parts in all the figures.

In the drawing in Fig. 1, an oblong frame is shown composed of four standards or feet having wide side portions and narrow bottom ends. These standards or feet *a*, *b*, *c*, *d*, are connected at the bottom by cross braces *e*, *f*, and at the top by two braces *g*, *h*, and two rails *i*, *j*. The standards or feet are provided with bearings in which the spindle for the roll and the spindle for winding up the roll during the operation of the machine are mounted.

The spindle which carries the gelatin film is exchangeable as best shown in Fig. 2. This spindle *k*, preferably made of wood, extends into a metallic end portion *l* on which a relatively large metal disk *m* is mounted. The metallic extension *l* of the spindle *k* has centrally an opening. On the inner portion of the standard or foot *b* a bearing b^1 is formed integral therewith. The bearing b^1 is interiorly threaded and a threaded rod *n* passes through the bearing. The threaded rod has a reduced inner portion n^1 which fits the opening in the metallic extension of the spindle. At the outer end the threaded rod *n* has a knurled head *o* by means of which it may be easily operated. For the purpose of locking the threaded rod *n* in the desired position a thumb screw *p* is provided.

The opposite end of the spindle *k* has at its end a metal disk m^1 of same size as the metal disk *m*. Upon this disk a square metallic extension *q* is secured having a central opening. On the outer portion of the standard *a* a bearing a^1 is formed through which a pin or rod *r* passes in the opening of the square disk. A crank *s* with handle *t* is attached to the outer end of the pin or rod. Upon this rod and within the standard *a* a ratchet wheel *u* is mounted which is provided with two prongs, lugs or flanges *v*, *w*. Between these lugs the square extension of the disk m^1 is lodged.

If the roll formed of the spindle with the gelatin film *x* thereon is to be inserted the square extension *q* is placed between the flanges *v*, *w*. At the same time the inner end of the pin enters the opening in the

square extension. The opposite end of the roll is now placed in position and the knurled head o turned until the reduced end n^1 of the threaded rod n is located within the opening of the extension on the spindle k. In order to secure the roll permanently the winged lock screw p is operated until it rests against the standard b. Thus the roll with the film thereon may be turned. The disks m, m^1 are circular in shape and of such size as to laterally protect the entire roll of the gelatin film.

In order to arrest the ratchet wheel u a pawl y is provided. The pawl is mounted in the standard a and has an upper extension y^1 which is bent at a right angle forming a horizontal top portion y^2. This horizontal end passes through a slot z in the standard a and permits of the operation of the pawl from the outside. When the film x is moved by turning the crank handle it passes first over a guiding roller 1 and then upon a platform 2 covered with felt cloth 3. Beyond the felt cloth and platform the film passes over a guiding roller 4 and from there down upon a wind-up spindle 5 mounted between the standards or feet c, d, in the same manner in which the spindle k is mounted between the standards a, b. The pawl and ratchet mechanism is of the same construction except to note that the pawl is mounted toward the interior of the machine so as to be operative in proper style.

For the purpose of securing the free end of the gelatin film to the spindle 5 in a quick and simple manner I apply a cut tube 6 of semi-circular cross section. The free end of the film is placed on the spindle and the clamp 6 of semi-circular cross section simply pressed thereon whereby this free end is secured in a moment. It is of course understood that such clamp may be used on both ends of the film.

The paper guide employed in this machine is a separate element and may be shifted on the rails i, j of the frame work. The paper guide comprises two side flanges 7, 8 with horizontal top extensions. To the bottom surface of these extensions a guide strip 9 is riveted which extends across the rails i, j. When the guide has been shifted upon the rails into the desired position it is secured by means of a screw 10. The rear end of the strip 9 has a raised edge 11 against which the edge of the paper rests whereon a duplicate is to be made. This renders it possible to produce duplicates on lined or ruled paper with the print in exact position of the lines. When the paper guide has been shifted into the proper position the duplicates on lined paper are perfect no matter how many are made.

In order to be able to use sheets of paper of various widths the paper guide is provided with a gage 12 which is adapted to slide on the paper guide proper. The gage extends beyond the raised rear edge of the guide and is provided there with a thumb screw 13 passing through the gage and a leaf spring 14 underneath which reaches under the raised edge 11 of the guide. In this manner the gage may be secured in any desired position and sheets of paper 15 of a limited size, as indicated in Fig. 1, may be used for preparing duplicates.

I claim as my invention:

1. In a duplicating machine, a frame, two removable spindles, a threaded rod for each spindle with a knurled head and winged lock screw engaging one end of the said spindle, a disk on said end, a rod engaging the other end of the spindle, a ratchet wheel on the rod with two lugs thereon, a disk with square extension fitting between the lugs, a pawl with lateral extension, and a crank handle on the said rod.

2. In a duplicating machine, a frame with platform, two removable spindles, a threaded rod for each spindle with a knurled head and winged lock screw engaging one end of the said spindle, a disk on said end, a rod engaging the other end of the spindle, a ratchet wheel on the rod with two lugs thereon, a disk with square extension fitting between the lugs, a pawl with lateral extension, and a crank handle on the said rod, a gelatin film on the spindles running over the platform, and a clamp of semi-circular cross section for securing the end of the film.

3. In a duplicating machine, a frame with standards, a spindle for the gelatin film with a film protecting disk, and means on one side adapted to permit the insertion and removal of the spindle by hand, a like second disk at the other end of the spindle, a square extension with central opening on the second disk, a rod reaching into said opening and having a crank handle at its outer end, a ratchet wheel on the rod within the frame having two lugs adapted to receive the square extension of the spindle, and a pawl with projection extending beyond the frame.

Signed at New York, N. Y., this 24th day of February, 1916.

FREDERICK GOTTSCHALK.

Witnesses:

L. E. SCHMIDT,

SOPHIE GRIB.