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HECTOGRAPHIC COPYING APPARATUS.

(Application filed Sept. 14, 1898.)

(No Model.)



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HECTOGRAPHIC COPYING APPARATUS.

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To all whom it may concern:

Be it known that I, ERNST ARM, a subject of the Emperor of Germany, residing in Wilmersdorf, near Berlin, in the Province of Brandenburg and Empire of Germany, have invented certain new and useful Improvements in Hectographic Copying Apparatus, of which the following is a specification.

My invention relates to apparatus for producing large numbers of hectographic copies automatically by mechanical means. As compared with copies obtained according to the methods heretofore known copies produced by this means are distinguished by absolute uniformity, and a much larger number of copies can be produced in a given time by means of this new apparatus, while the hectographic plate does not wear out so rapidly as when the copies are made by hand.

The invention consists of a hectographic copying apparatus comprising a suitably-supported rotary printing-roller, means for supporting a sheet to be printed adjacent thereto, means for pressing the sheet against the roller for feeding, and means for pressing the fed sheet against the roller for printing, and, further, in a hectographic copying apparatus comprising a suitably-supported rotary printing-roller, means for supporting a pile of sheets adjacent thereto, means for pressing the top sheet of said pile against the roller for feeding the same, means for retaining the sheets below said top sheet in position during the feeding of the same, and means for pressing the fed sheet against the roller for printing; and the invention consists, further, in means for detaching the printed sheet from the roller and in means for guiding the printed sheet out of the casing in which the operative parts of the device may be inclosed.

In the accompanying drawings, which illustrate one form of apparatus for carrying out my invention, Figure 1 is an end elevation, partly in section, one end of the casing being removed; and Fig. 2 is a top view, the top of the casing being removed.

Similar letters of reference indicate corresponding parts.

Within the casing *w* is mounted on the shaft *y* a printing-roller *a*, which can be rotated in the direction of the arrow by means of a crank *z* outside of the casing. This roller

is covered on a portion of its surface with a hectographic substance *a'* and is also provided with a longitudinal groove *t*, the purpose of which will be hereinafter explained. In contact with the roller *a* is a roller *b*, which is also in contact with a roller *c*.

The two rollers *b* and *c* are mounted at their ends in hinged frames *j*, which are pivoted at *d* and are actuated by springs *g*, so as to press the roller *b* normally against the roller *a* with sufficient force to produce the printing of any sheet which may pass between the rollers *a* and *b*. Springs *i* serve to keep the roller *c* in contact with the roller *b*. Below the point of contact of the two rollers *b* and *c* is provided a discharge-chute *v*.

At the front side of the casing and extending into the same is arranged a feed-table *q*, adapted to pivot about a spindle *r*, while at its lower end *u* it is slightly curved to correspond in shape with the periphery of the roller *a*. This table has connected to it the upper ends of two springs *m*, the lower ends being attached to a long bar that connects the two angle-pieces *n n*, that are provided one on each side of the feed-table. These angle-pieces are pivoted to a rod *f* and are provided at their upper ends with a nose *o*, against which a tripping-finger *p*, fixed to the roller *a*, strikes as the roller is rotated. A roller *e* is pivoted at its ends in the angle-pieces *n n*. At the end of the feed-table is provided a stop *l*, of sheet metal, and above the point of contact of the two rollers *b* and *c* is arranged a deflecting-plate *k*, which serves to guide the printed sheet, so that the same enters between the two rollers.

The operation of the apparatus is as follows: The impression of the desired written or other matter to be printed is imparted to the hectographic plate on the roller *a* in the usual manner. Any desired number of sheets within the capacity of the hectographic plate to print are then placed on the feed-table, and by pressing the same down the sheets are slid beneath the roller *e* until they strike the stop *l*. Pressure is then removed from the feed-table, and the springs *m* raise the same and press the sheets firmly between the roller *e* and the feed-table. The roller *e* prevents the sheets from being raised into contact with the printing-roller, however, and serves to retain the sheets in

position on the feed-table. Rotary motion is then imparted to the roller by the crank, and as the roller rotates the tripping-finger *p* acts on the nose *o* and swings the angle-piece *n* momentarily sufficiently to bring the top sheet of the pile against the sticky hectographic roller, to which the sheet then adheres and is carried along, the roller *e* serving to retain the remaining sheets of the pile on the feed-table. This action takes place when the groove *t* is adjacent to the feed-table and to the stop, so that the forward end of the sheet being opposite to the groove is not in contact with the hectographic plate, but is free. The stop *l* also serves as a deflecting-plate or guiding-plate to guide this free end now so that it passes between the rollers *a* and *b*. The roller *b* is of a size adapted to enter the groove *t*, and thereby serves to curve to a slight degree the fed sheet, so that the same is readily caught by the deflecting-plate *k* and guided between the two rollers *b* and *c* into the discharge-chute *v*. As the roller *b* passes out of the groove and over the plate *a'* it presses the sheet against the same, and the sheet is thereby printed by contact therewith in the usual manner. The feeding of the sheets is thus accomplished automatically, the top sheet of the pile being fed by the tripping of the feed-table at each rotation of the printing-roller and the remaining sheets retained by the pressure of the roller *e* in combination with the stop *l*.

By my improved apparatus the printing of sheets by the hectographic process is rendered simple and rapid and the work turned out is uniform and always in the desired position on the sheet. Aside from this the plate does not wear out as quickly as the ordinary flat hectographic plate used for printing by hand, because of the even and uniform pressure of the roller as compared with the varying pressure in the hand process. The plate will thus last longer and produce from a given impression a greater number of copies.

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

1. A hectographic copying apparatus, consisting of a suitably-supported rotary printing-roller, means for supporting a sheet to be printed adjacent thereto, means for pressing the sheet against the roller for feeding, and means for pressing the fed sheet against the roller for printing, substantially as set forth.

2. A hectographic copying apparatus, consisting of a suitably-supported rotary print-

ing-roller, means for supporting a sheet to be printed adjacent thereto, means for pressing the sheet against the roller for feeding, means for pressing the fed sheet against the roller for printing, and means for detaching the printed sheet from the printing-roller, substantially as set forth.

3. A hectographic copying apparatus, consisting of a suitably-supported rotary printing-roller, means for supporting a pile of sheets adjacent thereto, means for pressing the top sheet of said pile against the roller for feeding, means for retaining in position the sheets below said top sheet during the feeding of the same, and means for pressing the fed sheet against the roller for printing, substantially as set forth.

4. A hectographic copying apparatus, consisting of a suitably-supported rotary printing-roller provided with a longitudinal groove, a movable feed-table adjacent to said roller, a stop for the sheets placed on said table, means for actuating said feed-table when the groove of the roller is adjacent to said stop, and means for pressing the sheet to be printed against said printing-roller, substantially as set forth.

5. A hectographic copying apparatus, consisting of a suitably-supported rotary printing-roller provided with a longitudinal groove, a feed-table adjacent to said printing-roller, a pressure-roller adapted to enter said groove, a deflecting-plate for deflecting the printed sheet away from said printing-roller, and a second roller in contact with said pressure-roller for guiding the printed sheet, substantially as set forth.

6. A hectographic copying apparatus, consisting of a casing, a rotary printing-roller supported in the same and having a longitudinal groove, a movable feed-table extending into said casing to a point beneath the roller, a stop at the end of the feed-table, a pressure-roller adapted to enter the groove of the printing-roller, a deflecting-plate for deflecting the printed sheet from said printing-roller, a chute for guiding the sheets out of said casing, and a second roller in contact with said pressure-roller for guiding the printed sheets into said chute, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

ERNST ARM.

Witnesses:

KARL FRANZKE,
CARL ALBRECHT.