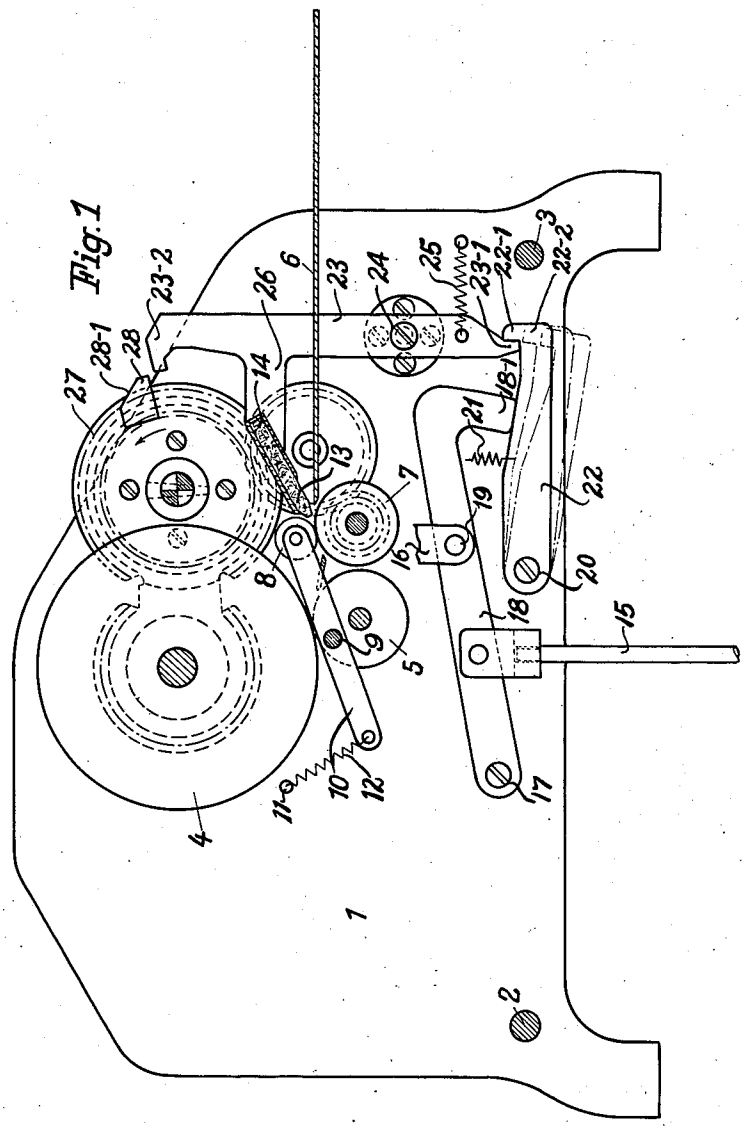
July 27, 1937. W. RITZERFELD 2,088,346

DUPLICATING APPARATUS

Filed Feb. 12, 1936 2 Sheets-Sheet 1

Fig. 1



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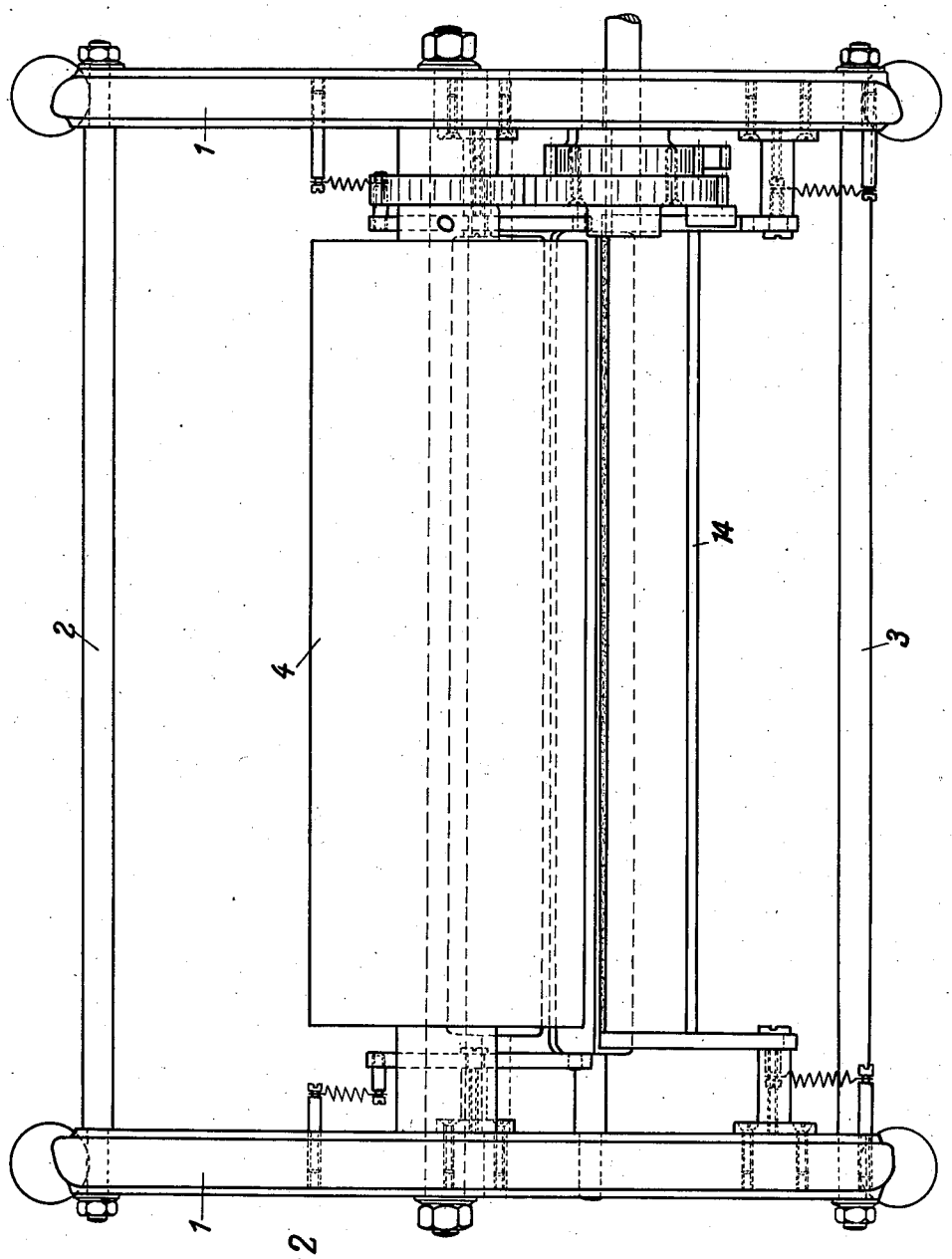


Fig. 2

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Patented July 27, 1937

2,088,346

UNITED STATES PATENT OFFICE

2,088,346

DUPLICATING APPARATUS

Wilhelm Ritzerfeld, Berlin, Germany

Application February 12, 1936, Serial No. 63,482
In Germany February 22, 1935

5 Claims. (Cl. 101—132)

My invention relates to an apparatus for duplicating script, drawings and the like matter from an original sheet or printing form bearing said matter in reversed or mirror script and being capable of transferring said matter by impression on to clear sheets or cards previously coated with a thin film of a rapidly volatilizing liquid.

The object of the invention is to provide a duplicating or reprinting apparatus in which an original sheet or printing form bearing copyable mirror script is mounted on a drum and is printed onto a clear sheet in such a manner that practically the entire surface of said clear sheet may be used for reprinting purposes.

Conventional duplicating machines of the copyable mirror script type had the disadvantage, that first feed rollers were actuated to bring the clear sheet to be printed onto to the printing line between the printing drum carrying the copyable original sheet and a counter pressure roller and after this a moistening device such as a moistening pad or the like was brought into contact with the clear sheet in order to coat it with a thin film of a readily volatilizing solvent. Therefore the head space or margin of the clear sheet was not moistened and was incapable of receiving a copy from the copyable mirror script original. Thus, heretofore it was impossible to reprint or to copy letters or drawings which covered the entire surface of the sheet bearing the copyable original onto clear sheets, or cards of the same size as said original sheet.

According to the principles of my invention I provide a duplicating apparatus by means of which the unmoistened marginal space of the clear sheets is entirely avoided or is reduced to a minimum. This is accomplished by feeding the clear sheet to be printed onto over a tray or feeding table in between the bight of two feed rollers which are not yet rotated. Hereafter, the moistening pad of a moistening device protruding into the bight of said feed rollers is lowered in such a manner, that it presses the clear sheet against the lower feed roller and is supported thereby. After this has taken place the two feed rollers and the printing drum together with its co-operating counter pressure roller are rotated by any suitable main-drive. According to the invention the upper feed roller which may be pressed to the lower one by means of a spring has a diameter considerably smaller than that of the lower feed roller, thus providing a good support for the moistening pad. The lower feed roller is provided with an elastic and rough circumferential surface capable of drawing the clear sheet of paper along.

The invention will now be more fully described in conjunction with the accompanying drawings, in which:

Fig. 1 is a side view of the apparatus after one of the side frames has been removed,

Fig. 2 is a front view of the apparatus.

Similar reference characters denote corresponding parts in both figures.

Referring now to the drawings, side frames 1 are connected by rods 2 and 3. Around the circumference of a printing drum 4 an original sheet or printing form bearing copyable mirror script or drawings is secured. Printing drum 4 is co-operating with a counter pressure roller 5. The clear sheet to be printed onto is positioned on a feeding table 6 which extends into the proximity of a pair of co-operating feed rollers 7 and 8. The lower feed roller 7 is of relatively large diameter while the upper feed roller 8 is of very small diameter and is pressed against the lower one by means of a lever 10 pivoted in a stud 9, and a spring 12 attached to a screw 11.

The arrangement of the two feed rollers 7 and 8 makes it possible to arrange pad 13 of moistening device 14 immediately before the contact line of these rollers. This line of contact of the feed rollers is also utilized as an abutment for the sheets to be printed onto. Reference character 15 denotes a connecting rod associated with a foot lever or pedal (not shown) actuating a lever 18 pivoted in a screw or stud 17. At 19, a connecting rod 16 is jointedly connected to lever 18 and serves for actuating a single revolution clutch associated with the main drive of the machine. Lever 18 is also provided with a nose 18—1 leaning against the side of a lever 22 pivoted in a screw 20 and held by a spring 21. Lever 22 is provided with an integral nose 22—1 at the free end thereof which co-operates with a corresponding extension 23—1 of a bell crank lever 23 pivoted in a screw 24 and under the action of a spring 25. Bell crank lever 23 is provided with two extensions above its pivoting point 24. One of these extensions 26, carries the moistening device 14, while the other is provided with a nose 23—2 which may be brought into the path of an angle face 28—1 of a cam 28. Cam 28 is mounted on a gear wheel 27 revolving in an anti-clockwise direction and forming part of a gear train which connects printing drum and the main drive with the feed rollers 7 and 8.

From the preceding description operation of my improved duplicating apparatus will be readily understood by those skilled in the art. A clear sheet is placed on feed table 6 so that its front edge is underneath moistening pad 13 of the moistening device. Hereafter, the foot-controlled lever 18 is actuated and its nose 18—1 will depress spring-held lever 22. As soon as spring-held lever 22 arrives into its first lower position 22—2, indicated by dotted lines in Fig. 1, nose 22—1 will release bell crank lever 23 and

moistening strip 13 will be lowered on the leading edge of the clear sheet and will press the same against the rough surface of the larger feed roller 7. Further depression of foot-controlled lever 18 will actuate the main drive (not shown) and will rotate feed rollers 7 and 8 whereby the clear sheet to be printed onto will be fed inbetween the bight of printing roller 4 and counter pressure roller 5. After the printing of the clear sheet is completed, gear wheel 27 will have made a complete revolution and angle face 28—1 will engage extension 23—2 of bell crank lever 23 and will return the same into its initial position of rest in which it is retained by nose 22—1.

It will be understood, that no restriction is made to the specific form of embodiment of the invention shown in the drawings which has been selected merely by way of example and that various modifications are quite possible within the meaning of the above description and the annexed claims without departing from the spirit of the invention.

What I claim as new and desire to secure by Letters Patent is:

1. In a duplicating apparatus printing onto clear sheets previously moistened with a readily volatilizing solvent, the combination comprising a printing roller bearing copyable mirror script original, a counter pressure roller cooperating with said printing roller, a pair of co-operating feed rollers located in front of the bight of said printing and counter pressure rollers, the lower of said feed rollers being of a substantially larger diameter than the upper and having a rough circumferential surface, a moistening pad protruding into the immediate proximity of the line of contact of said feed rollers, and a pivoted lever supporting said moistening pad, said lever normally being in an inoperative position and adapted to be actuated to lower said moistening pad and to press a clear sheet against the lower feed roller immediately before said printing roller is rotated.

2. In a duplicating apparatus printing onto clear sheets previously moistened with a readily volatilizing solvent, the combination comprising a printing roller bearing copyable mirror script original, a counter pressure roller co-operating with said printing roller, a pair of co-operating feed rollers located in front of the bight of said printing and counter pressure rollers, the lower of said feed rollers being of a substantially larger diameter than the upper and having a rough circumferential surface, driving means for said printing and feed rollers, a moistening pad protruding into the immediate proximity of the line of contact of said feed rollers, a pivoted lever supporting said moistening pad, locking means normally holding said lever and said pad in an inoperative position, and actuating means for disengaging said locking means and lowering said pad on the leading edge of a clear sheet immediately before actuation of said driving means.

3. In a duplicating apparatus printing onto clear sheets previously moistened with a readily volatilizing solvent, the combination comprising a printing roller bearing copyable mirror-script original, a counter pressure roller co-operating with said printing roller, a pair of co-operating feed rollers located in front of the bight of said printing and counter pressure rollers, the lower of said feed rollers being of a substantially larger diameter than the upper and having a rough circumferential surface, driving means for said printing and feed rollers, a moistening pad protruding into the immediate proximity of the line of contact of said feed roller, a pivoted lever supporting said moistening pad, resilient means associated with said lever for pressing said moistening pad against the leading edge of a clear sheet, locking means for normally holding said lever and said pad in an inoperative position against the pressure of said resilient means, and actuating means in common for said driving means and said lever for disengaging said locking means and for lowering said pad on the leading edge of a clear sheet immediately before actuation of said driving means.

4. In a duplicating apparatus printing onto clear sheets previously moistened with a readily volatilizing solvent, the combination comprising a printing roller bearing copyable mirror script original, a counter pressure roller co-operating with said printing roller, a pair of co-operating feed rollers located in front of the bight of said printing and counter pressure rollers, the lower of said feed rollers being of a substantially larger diameter than the upper and having a rough circumferential surface, driving means for said printing and feed rollers, a moistening pad protruding into the immediate proximity of the line of contact of said feed roller, a pivoted lever supporting said moistening pad, resilient means associated with said lever for pressing said moistening pad against the leading edge of a clear sheet, locking means for normally holding said lever and said pad in an inoperative position against the pressure of said resilient means, actuating means in common for said driving means and said lever for disengaging said locking means and for lowering said pad on the leading edge of a clear sheet immediately before actuation of said driving means, and means for returning said lever and said moistening pad into their normal and inoperative position after the printing of said clear sheet is completed.

5. In a duplicating apparatus printing onto clear sheets previously moistened with a readily volatilizing solvent, the combination comprising a printing roller bearing copyable mirror-script original, a counter pressure roller co-operating with said printing roller, a pair of co-operating feed rollers located in front of the bight of said printing and counter pressure rollers the lower of said feed rollers being of a substantially larger diameter than the upper and having a rough circumferential surface, driving means for said printing and feed rollers, a moistening pad protruding into the immediate proximity of the line of contact of said feed rollers, a pivoted lever supporting said moistening pad at an intermediate portion thereof, resilient means associated with said lever for pressing said moistening pad against the leading edge of a clear sheet, locking means engaging one of the ends of said lever for normally holding said pad in an inoperative position against the pressure of said resilient means, actuating means in common for said driving means and said lever for disengaging said locking means and for lowering said pad on the leading edge of a clear sheet immediately before actuation of said driving means, and cam-like means adapted to engage the other end of said lever and to return said moistening pad into its normal and inoperative position after the printing of said clear sheet is completed.

WILHELM RITZERFELD.