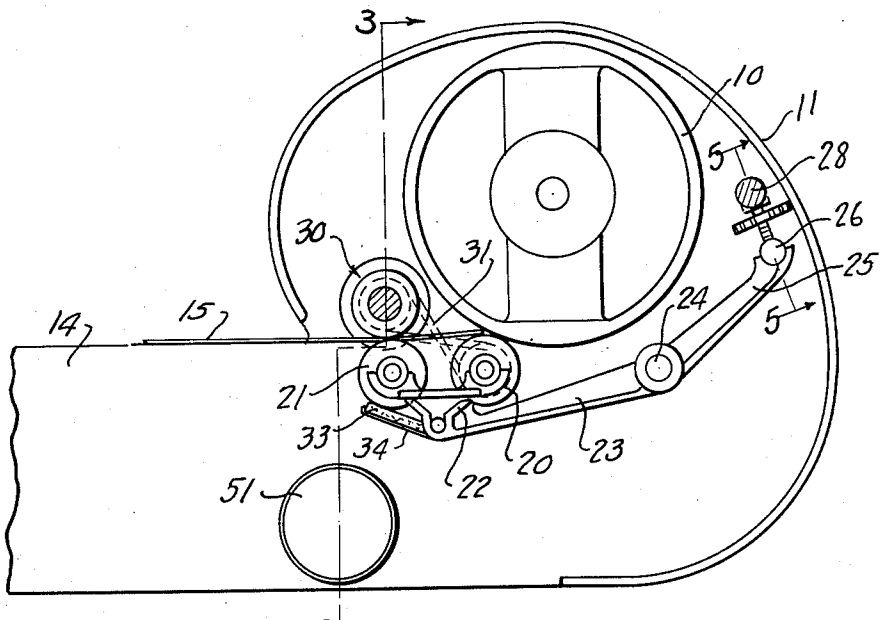
Dec. 19, 1950 A. V. DITTY 2,534,422

MOISTENING DEVICE FOR DUPLICATING MACHINES

Filed May 14, 1945 2 Sheets-Sheet 1

FIG. 1.



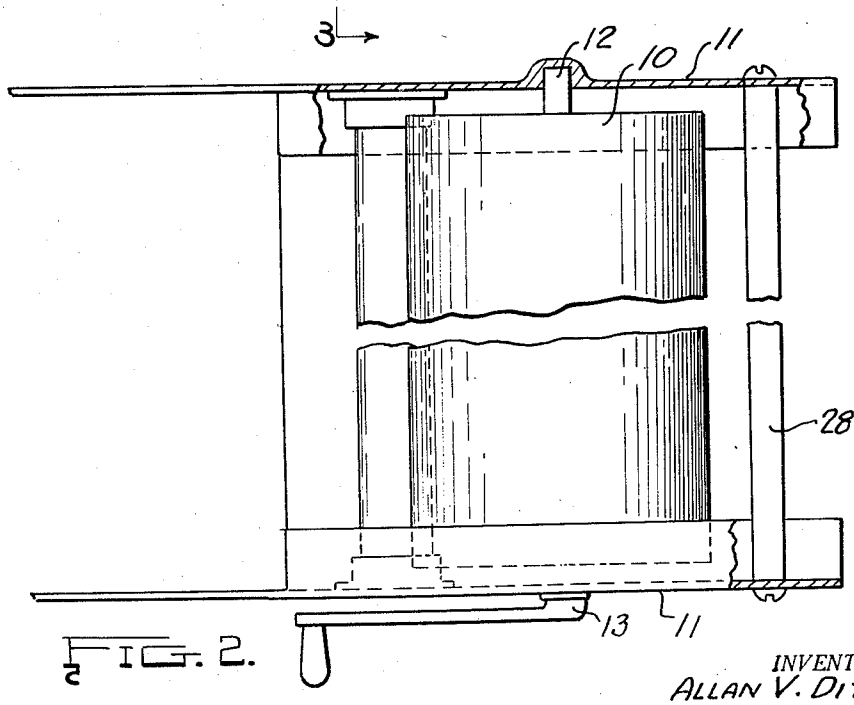


FIG. 2.

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FIG. 3.

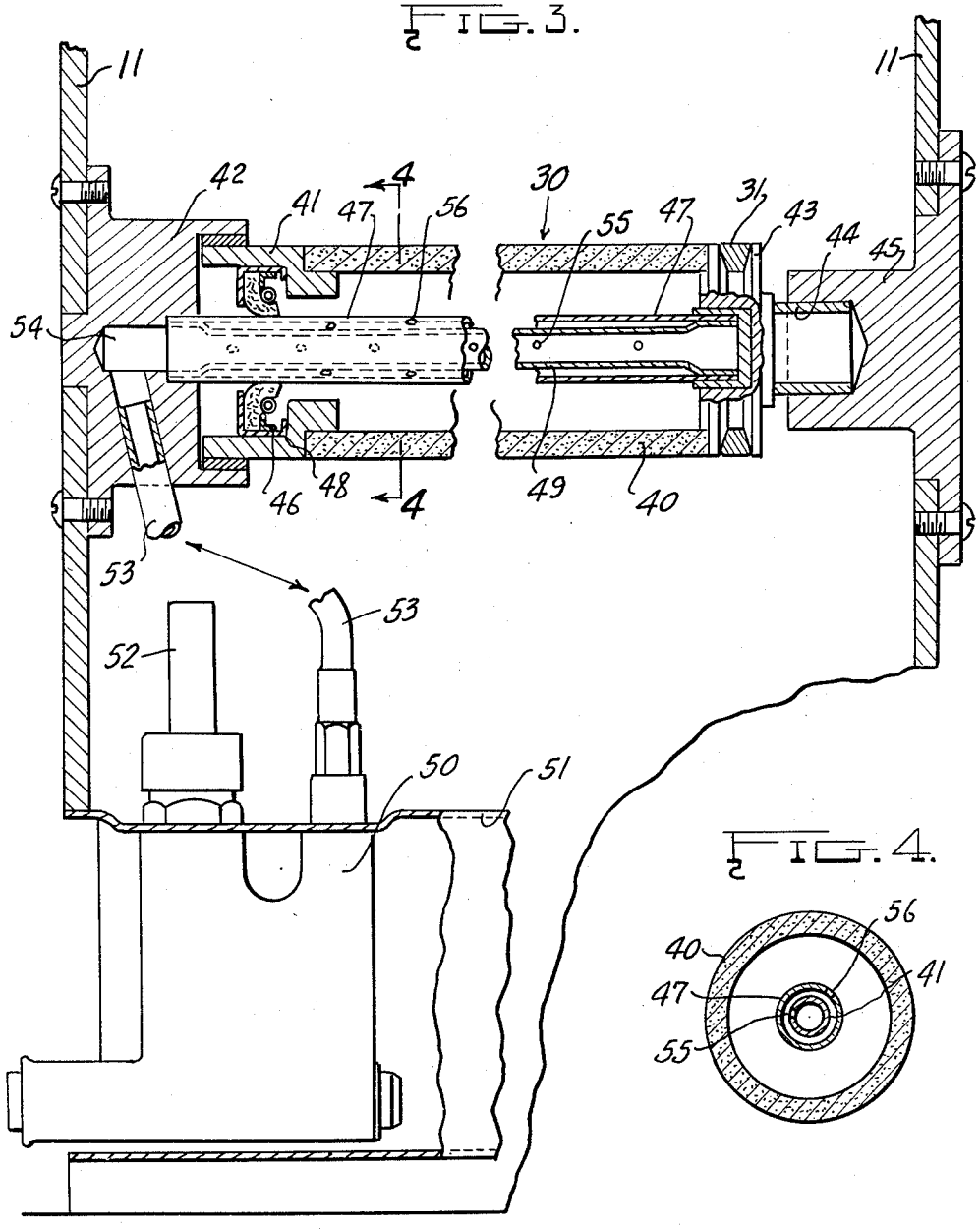
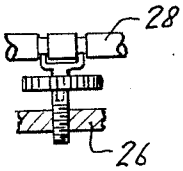


FIG. 4.

FIG. 5.



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Patented Dec. 19, 1950 2,534,422

UNITED STATES PATENT OFFICE

2,534,422

MOISTENING DEVICE FOR DUPLICATING MACHINES

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Application May 14, 1945, Serial No. 593,647

3 Claims. (Cl. 91—49)

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This invention relates to a duplicating machine of the type in which a plurality of copy sheets may be made from a master sheet.

The particular type of duplicating machine in question has a cylindrical or drum platen around which a master sheet with reversed, raised, soluble characters is wrapped and fastened. Copy sheets are then passed to the drum while it is rotating and pressed against the raised characters of the master sheet on the drum with a small amount of pressure. Prior to meeting the master these copy sheets are moistened with a volatile, dissolving liquid such as alcohol, which will remove from the master sheets a very small quantity of the raised characters thereon, which deposits on the copy sheets to form the legible copy.

It is an object of the present invention to provide an improved method of furnishing the moistening material to the copy sheets so that it will be evenly distributed without danger of large quantities being deposited at the initial contact by the sheet. In previous constructions, such as that shown in the patent to Morris No. 2,229,583, absorbent wicks have been used to apply the liquid to the copy sheet. The present invention is considered an improvement over the wick type of applicator in that it affords control and consistency in the distribution of the moistening material and is more economical over long periods of use.

Another advantage of the present construction lies in the design which permits the entire sheet to be moistened including the top margin. In previous designs it has been necessary to pass the top margin to the frictional drive connection, thus removing it from the wetting zone.

Other objects and features of the invention relating to a novel method of mounting the operating rollers and other details will be found in the following description and claims:

In the drawings:

Fig. 1 is a sectional view through a portion of the duplicator machine showing the platen drum and the rollers aligned therewith.

Fig. 2 is a plan view of the platen drum and a portion of the machine.

Fig. 3 is a sectional view on line 3—3 of Fig. 1.

Fig. 4 is a sectional view of the porous roller on line 4—4 of Fig. 3.

Fig. 5 is a sectional view on the line 5—5 of Fig. 1.

With reference to the drawings, a platen drum 10 is supported in a housing 11 by a journal 12 at one end, and a pinion passing to a crank 13 at the other. A table 14 on the housing 11 provides support for the copy paper 15 which is fed to the platen roller. A feed roller 20 and a feed roller 21 are mounted in parallel relation on a rocker bar 22 which is pivoted on a member 23.

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A pin 24 mounts the member 23 which extends at 25 to a cross piece 26. A threaded pin 27 is tapped into cross piece 26 and extends upwardly to a transverse member 28 between sides 11. As shown in Fig. 5 a yoke 29 on pin 27 bears against member 28. A finger wheel 27a serves to facilitate turning of pin 27 to exert downward pressure on extension 25. This pin 27 permits equalization of pressures between the rollers 20 and 21 and the porous roller and platen with a single adjustment.

Roller 20 bears against the drum platen 10. Roller 21 bears with an equal amount of pressure against a roller 30 which is the moistening roller. A crossed belt 31 connects pulley wheels on rollers 20 and 30, respectively. As roller 20 is rotated by the contact with driven drum 10, the roller 30 will likewise be rotated. A felt wiper 33 is contained in a longitudinal recess or retainer 34 on member 23. Any excess accumulation of liquid on rolls 30 and 21 will be collected by this wiper. When paper is fed to the rolls 21 and 30, it will pass between rolls 10 and 20 where it contacts the master sheet to receive copy and then passes through the machine.

Details of the moistening roller designated 30 are shown in Fig. 3. The contacting portion 40 of the roller is tube-like in form and has a porous structure, the pores being of such minute nature that, when moistening fluid passes through or exudes from them, the outer surface of the roller appears to sweat. Examples of a suitable material are:

(A) Diatomaceous earth;
(B) Alfrax (made by the Carborundum Company),

either of which materials is used as a filtering medium in laboratory work for isolating virus or other minute particles from a liquid. Alfrax is available in varying degrees of porosity depending on the purpose for which it is intended.

One end of the tube 40 is supported by a collar 41 rotatably mounted in a flanged piece 42 at one side of the housing 11. The other end of the roller assembly is formed by a pulley 43 having a pinion 44 bearing in a bushing 45. The pulley 43 seals one end of the tube and a closure type wiping seal 46 surrounding an inlet tube 47 seals on the other end of the porous tube. A circular coil spring 48 holds a sealing member 46 close

against the tube 47 but permits rotation about such tube.

Inlet tube 47 is supported at each end by member 42 and pulley 43, respectively and is concentric with a tube 49 of smaller diameter. A pump 50 in a tank 51 has an operating plunger 52 suitably reciprocated by rotation of the platen to force liquid through a supply tube 53 to a passage 54 in member 42 which leads to the inner tube 49. Holes 55 are provided along tube 49 at a point slightly above the axis thereof so that liquid furnished to the tube will flow along the entire tube and spill over the holes 55 into the tube 47 which is provided with holes 56 along its length through which the liquid will be evenly distributed throughout the length of the porous tube 40. This tube-within-a-tube construction insures an even distribution of liquid through the porous tube since liquid will flow from the inner tube to fill the outer tube evenly in its entire length. Flow from each of the holes 56 will be substantially equal.

As roll 40 is rotated in the operation of the machine, the liquid thus furnished to the inner walls will be distributed around the entire tube and the porosity of the tube will absorb the liquid which will pass gradually through to the outer surface where it will be distributed to the sheets 15 as they pass to the master roll.

Liquid will exude from the pores of the roller by capillary action but this action may be hastened by building up a pressure within the porous roll by means of the pump 50.

It will be understood that roll 21 could be driven by roll 20 and roll 30 driven by friction without departing from the invention. Similarly the felt wick could wipe directly against roller 30 rather than against roll 21 as now shown.

What I claim is:

1. In a duplicating machine for making a plurality of copies from a soluble master sheet fastened to a drum platen, a means for moistening the copy sheets with a dissolving liquid prior to contact with the master sheet comprising a porous tube positioned to rotate in parallel relation with said drum in the path of the copy sheets being fed thereto, means to feed moistening liquid to the inside of said tube, comprising stationary concentric tubes axially positioned within said porous tube extending the length thereof and provided with holes spaced upward from the lower surface, means sealing the ends of said porous tube around said concentric tubes to permit relative rotative movement, and means to feed liquid to the inner of said concentric tubes under pressure.

2. In a duplicating machine for making a plurality of copies from a soluble master sheet fastened to a drum platen, a means for moistening the copy sheets with a dissolving liquid prior to the contact with the master sheet comprising a porous tube positioned to rotate in parallel relation with said drum in the path of the copy sheets being fed thereto, and means to feed moistening liquid to the inside of said tube comprising a pair of concentric tubes positioned axially within said porous tube independently of said concentric tubes, a rotary seal mounted at one end of said porous tube outside said concentric tube to confine liquid at one end of the assembly, and a cap sealing the ends of the concentric tubes at the other end of the porous tube serving as a mount for the concentric tubes at the closed end, said inner concentric tube being apertured at points at the axis or above and being adapted to receive moistening liquid, and said outer concentric tube being apertured to said liquid to the inside of the porous tube as it rotates.

3. In a duplicating machine for making a plurality of copies from a soluble master sheet fastened to a drum platen, a means for moistening the copy sheets with a dissolving liquid prior to contact with the master sheet comprising a porous tube positioned to rotate in parallel relation with said drum in the path of the copy sheets being fed thereto, means to feed moistening liquid to the inside of said porous tube comprising concentric tubes within said porous tube extending the length thereof axially of the porous tube, sealing means at the ends of the concentric tubes to form an annular chamber within the porous tube and being arranged to permit relative rotatable movement between the concentric tubes and the porous tubes, and means to feed liquid to the inner of the concentric tubes, the concentric tubes being apertured to feed such liquid to the annular chamber throughout the length of the porous tube.

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