

Sept. 6, 1938.

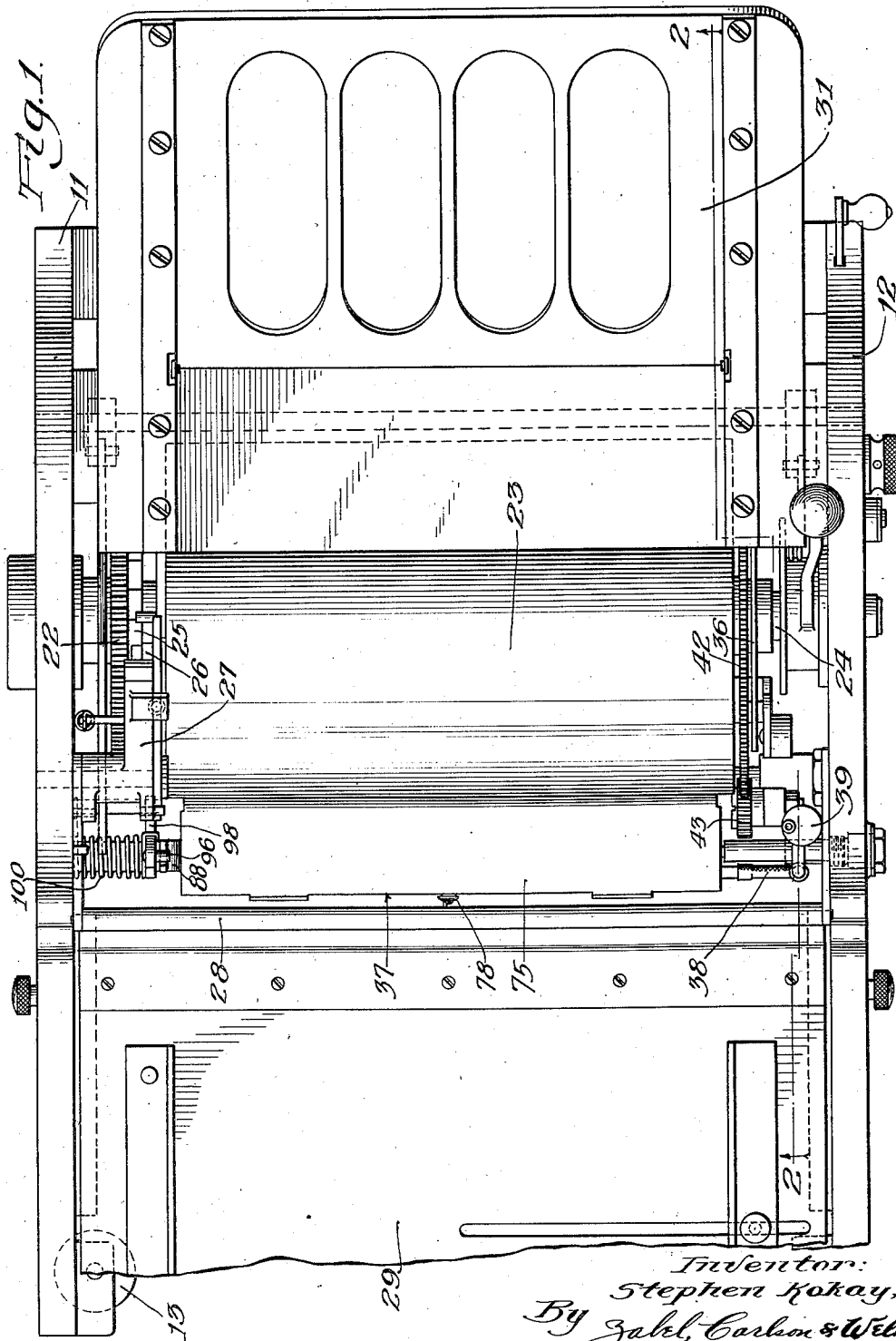
S. KOKAY

2,129,179

MOISTENER FOR DUPLICATING MACHINES

Filed Jan. 10, 1936

4 Sheets-Sheet 1



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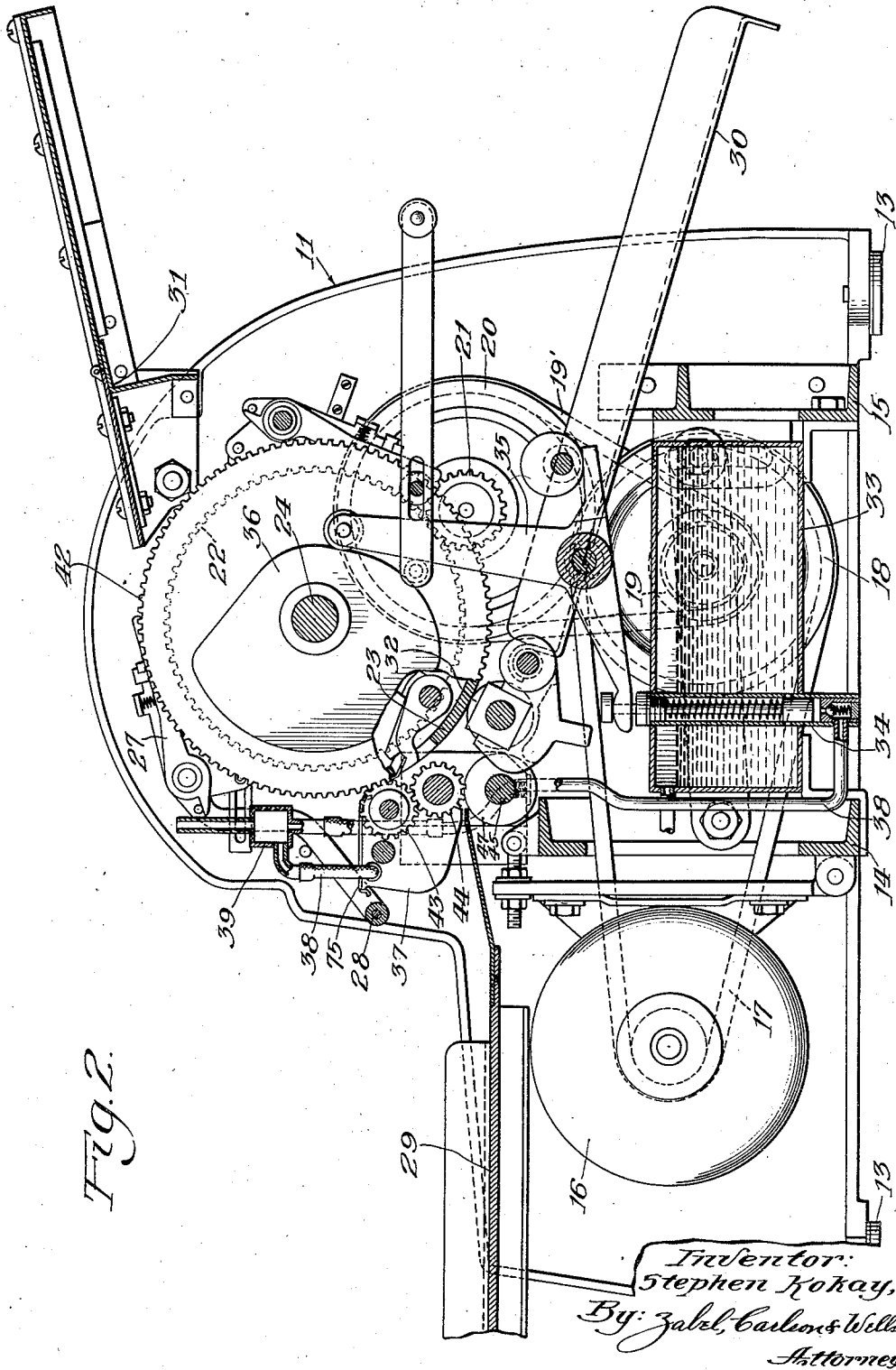
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4 Sheets-Sheet 2



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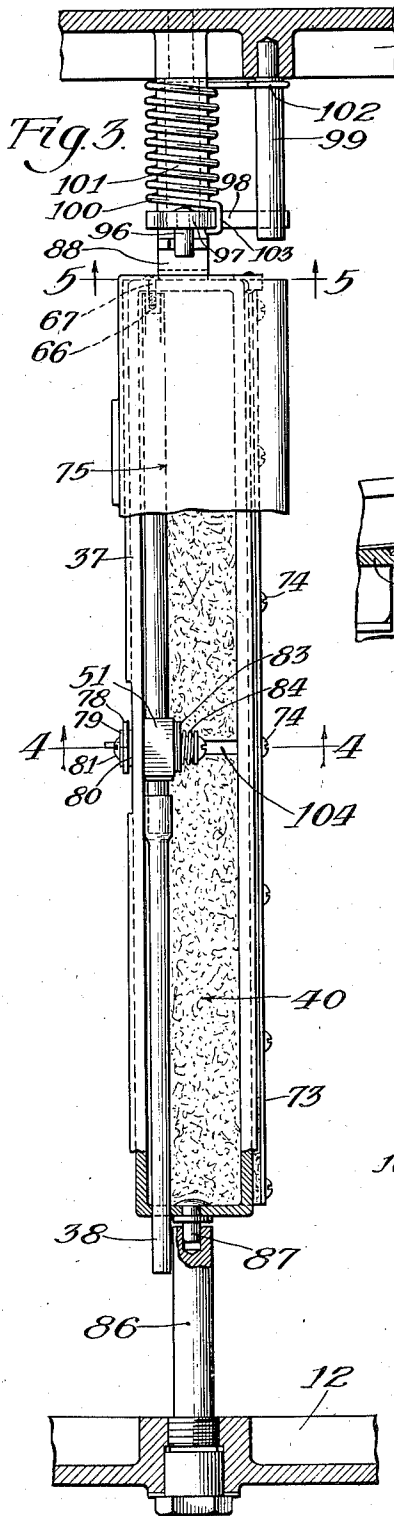
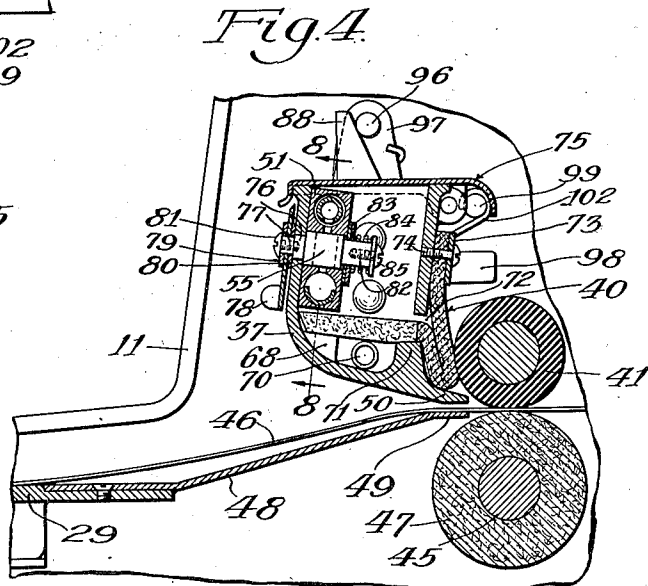
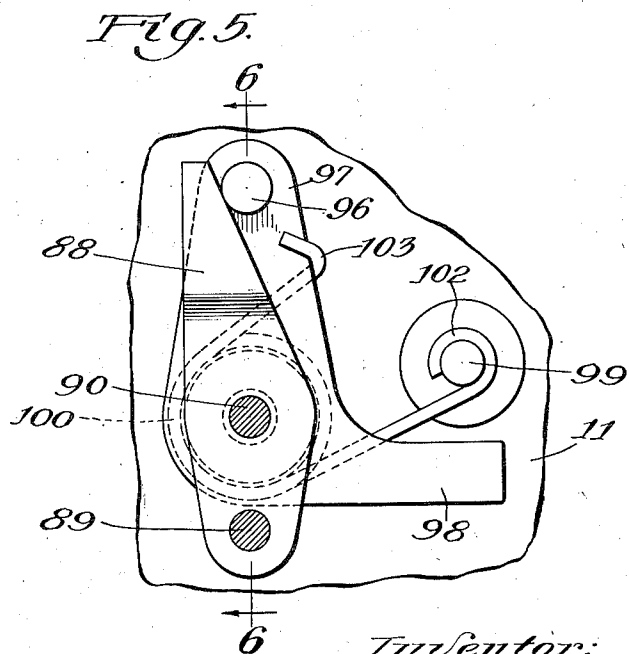
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4 Sheets-Sheet 3



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MOISTENER FOR DUPLICATING MACHINES

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4 Sheets-Sheet 4

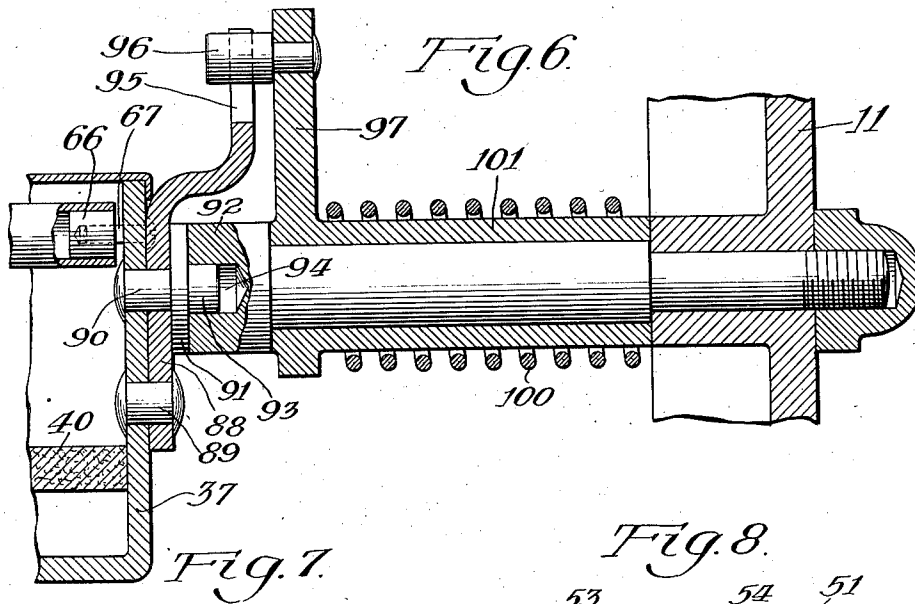
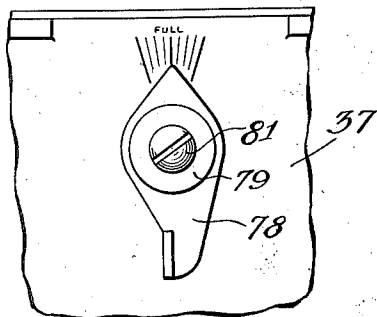
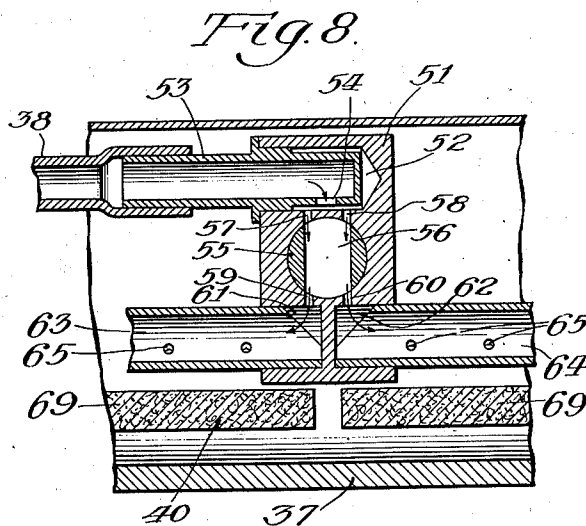
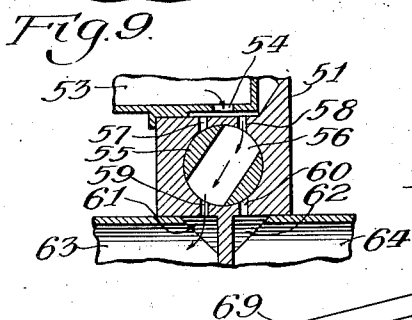
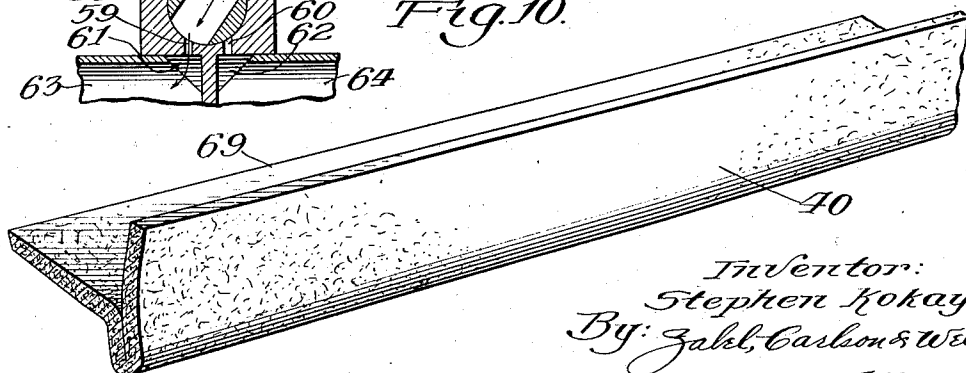


Fig. 10.



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UNITED STATES PATENT OFFICE

2,129,179

MOISTENER FOR DUPLICATING MACHINES

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Application January 10, 1936, Serial No. 58,522

9 Claims. (Cl. 101—132)

This invention relates to duplicating machines of the general type shown in the application of John W. Hernlund, Serial Number 44,911 filed October 14, 1935, for a Duplicating machine.

Machines of this type employ master sheets which are mounted upon a drum and copy sheets are moistened with a suitable solvent for the ink or carbon on the master sheet immediately before it is brought into contact with the side of the master sheet upon which the ink or carbon is placed. The master sheets have the data to be duplicated formed thereon in reverse so that when a portion of the carbon or ink is dissolved off and transferred to the moistened surface of the copy sheet it will appear in correct readable form. In practice, some readily volatile solvent such as alcohol is employed.

One form of the invention is embodied in a machine of the type described in the aforesaid application which machine comprises a rotary drum having means for clamping master sheets thereto. The copy sheets may be advanced to the drum in any suitable manner such, for example, as by means of a pair of feed rollers. A platen roller is employed to press the copy sheets against the master sheet for transferring the data on the master sheet to a copy sheet. One of the feed rollers may desirably constitute a moistening roller so that one surface of the copy sheet is moistened as it is fed to the drum. The improved machine embodying the present invention comprises a moistening receptacle adapted to receive moistening fluid from a suitable source of supply. This receptacle contains means for distributing the moistening fluid throughout the receptacle and contains a body of absorbent material which projects from the container to engage the moistening roller. The improved machine preferably includes means for isolating a portion of the absorbent material from the moistening liquid so that a portion only of the moistening roller will be moistened when, for example, the copy sheets being applied are narrower than the full length of the moistening roller or when, for any reason, it is desirable to take off only a portion of the data upon the master sheet.

The improved machine also comprises a novel mounting means for the moistening receptacle, whereby correct application of pressure between the absorbent material and the moistening roller may be obtained.

Other features and advantages of the invention will become apparent as the following descrip-

tion progresses, reference being had to the accompanying drawings, wherein—

Fig. 1 is a plan view of a duplicating machine which embodies the invention.

Fig. 2 is a sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a sectional view of a portion of the mechanism taken horizontally over the moistening receptacle, certain parts being broken away for the sake of clearness.

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

Fig. 5 is a sectional view on the line 5—5 of Fig. 3.

Fig. 6 is a sectional view on the line 6—6 of Fig. 5.

Fig. 7 is a fragmentary front elevation of a portion of the moistening receptacle.

Fig. 8 is a sectional view on the line 8—8 of Fig. 4.

Fig. 9 is a sectional view of a portion of the mechanism shown in Fig. 8 showing a changed position, and

Fig. 10 is a view in perspective of the absorbent device used in the receptacle, illustrating a modified form in which the absorbent strip is not divided transversely.

Referring now to the drawings in which a preferred embodiment of the invention is shown, the reference characters 11 and 12 designate a pair of side frames adapted to rest upon any suitable support, the side frames being provided with suitable rubber feet as indicated at 13. The side frames 11 and 12 are secured together by any suitable means, such as brackets 14 and 15. The machine further embodies a drive motor 16 and suitable mechanism including a belt 17, a pulley 18, a pulley 19, a belt 19', a pulley 20, a pinion 21 fixed to the pulley 20 and a gear 22 for supplying driving power for the machine. A drum 23 is supported upon a shaft 24 which is rotatably journaled in the side frames 11 and 12. Suitable mechanism comprising a ratchet wheel 25 and a pawl 26 are adapted to connect the drum 23 to the gear 22 for purposes of imparting rotation to the drum. This connection is controlled by a suitable trip lever mechanism indicated generally at 27 and a cross bar 28 as more fully described in the aforesaid application.

The machine further comprises a copy sheet table 29 upon which copy sheets are laid to be fed to the drum. A receiving tray 30 is provided and a master sheet tray 31 is also provided for supplying master sheets to the drum 23. A

platen roller 32 is adapted to press copy sheets against a master sheet upon the drum.

A liquid supply container 33 is suitably supported by the brackets 14 and 15 and carries a pump 34 adapted to be actuated by a bell crank lever 35 from a cam 36 fixed to the drum 23. Liquid is supplied from the container 33 to a moistening receptacle 37 through a conduit 38 having a vent chamber 39 therein. The volatile liquid used in machines of this character is supplied from the receptacle 37 through an absorbent wick 40 to a combined feeding and moistening roller 41 which is driven from the drum 23 by means of a main gear 42 on the drum, an idler gear 43 and a drive gear 44 fixed to the roller 41. The roller 45 co-operates with the roller 41 to feed copy sheets such as 46 to the drum 23. The roller 45 has a felt covering 47 to absorb excess moisture from the feed roller 41.

The copy sheet table 29 has a guide plate 48 thereon, which guide plate extends upwardly toward the junction of the rollers 41 and 45 and has a flat portion 49 which terminates as close as is practical to the junction of the rollers. The moistening receptacle 37 has a lip at 50 which is spaced slightly above the portion 49 so as to provide a restricted guideway for directing sheets to the rollers 41 and 47.

The present invention concerns itself primarily with the moistening receptacle 37, the absorbent member 40 and the means for supplying liquid from the conduit 38 to the absorbent member 40. It will be noted from an inspection of Figs. 3 and 4, in particular, that the conduit 38 enters the receptacle 37 at one end thereof and extends substantially to the center of the receptacle to a valve housing 51. The valve housing 51 is provided with a recess 52 around the inner end of a nipple 53 that connects the conduit 38 to the housing 51. An opening 54 provides for passage of liquid from within the nipple to the recess 52. A valve 55 is mounted to rotate in the wall of the receptacle 37 by a reduced portion 76. A further reduced portion 77 of the valve is adapted to receive a valve operating handle and indicator 78 which is held upon the portion 77 between two washers 79 and 80 by a screw 81. At its inner end, the valve 55 has a reduced portion 82 on which the washers 83 fit. The washers 83 are yieldingly pressed against the housing 51 by a spring 84 which is held in place by a screw 85.

The housing 51 is provided with a cylindrical bore to receive the valve 55 which has a port 56 therein, which port may be alined with two openings 57 and 58 leading from the recess 52 into the bore provided in the housing for the valve 55. The housing is also provided with outlet openings 59 and 60 from the port 56, which openings are directed into a pair of recesses 61 and 62 provided in the housing 51. These recesses have mounted therein a pair of distributing pipes 63 and 64 adapted to distribute the moistening liquid lengthwise of the receptacle 37. As shown most clearly in Fig. 8, the pipes 63 and 64 are provided with suitable apertures 65 adapted to direct the liquid against the back wall of the receptacle 37. The outer ends of the pipes 63 and 64 are plugged and may be secured to the ends of the receptacle 37 in any suitable manner such, for example, as by means of a plug 66 and a screw 67 (Fig. 6). Beneath the pipes 63 and 64 the receptacle is provided with one or more shelf portions 68 which are adapted to support a rear edge 69 of the absorbent element 40. A drain

outlet 70 is also provided for removing excess liquid from beneath the absorbent element 40. The element 40 lies substantially flat in the receptacle 37 sloping downwardly slightly toward the roller 41 and it rests upon a shoulder 71 provided on the receptacle directly beneath an opening 72 through which the absorbent element 40 projects to engage the roller 41. This element 40 is turned downward to engage the top surface of the lip 50 and is doubled upon itself to provide a thick body of absorbent material which can be pressed against the roller 41. The free edge of the element 40 is extended upwardly and fastened to the outside of the wall of the receptacle 37 by means of a bar 73 and suitable screws 74. The pressure of the bar 73 upon the absorbent element controls to a certain extent the flow of moisture to the roller 41. This pressure may be varied by adjusting the screws 74. A cover 75 is provided for the receptacle.

The receptacle 37 is preferably so mounted in the side frames 11 and 12 as to be yieldingly urged toward the roller 41 at all times. The details of this mounting are shown best in Figs. 3 and 6. At one end the receptacle 37 is secured to the side frame 12 by a stud 86 in which a projection 87, fixed in the end of the receptacle, is journaled. At the other end of the receptacle 37, a plate 88 is mounted by means of a rivet 89 and a combined rivet and bearing member 90. The member 90 has a flange 91 thereon adapted to abut the end of a stud 92 fixed in the side frame member 11 and has further a projection 93 journaled in a recess 94 in the member 92. The plate 88 is curved away from the end of the receptacle 37 at the top and projects upwardly above the receptacle as indicated at 95 to engage a pin 96 upon a bell crank lever 97. The bell crank lever 97 is pivoted upon the member 92 and has an arm 98 projecting horizontally. A pin 99 is fixed in the side frame 11 and projects outwardly over the arm 98 as shown most clearly in Fig. 3 to provide a stop limiting the movement of the arm 98 in a counterclockwise direction.

A coiled spring 100 is mounted on an extended hub portion 101 of the bell crank lever 97. This spring has one end 102 fixed to the pin 99 while the other end 103 is hooked over the bell crank lever 97. Thus, the spring continuously urges the bell crank lever in a direction to press against the upper portion 95 of the plate 88 so as to tend to turn the receptacle 37 about its pivot members 87 and 93 and press the member 40 against the roller 41.

As illustrated best by Figs. 8 and 9, the valve 55 may be adjusted to supply liquid to either one or both of the pipes 63 and 64 and it may be turned in such a position as to supply more liquid to one of the pipes than to the other as will be readily understood. In addition, the member 40 is divided in its horizontal portion by a slot 104 (Figure 3) so that the moistening liquid can not spread from one section to the other when the valve 55 has cut off the supply to one section. Thus, it is possible to eliminate the supply of liquid to one of the pipes 63 or 64 when the narrow copy sheets are being moistened. This results in considerable economy in the use of liquid and further prevents overcharging of the felt covering 47 on the roller 45.

While certain embodiments of the invention have been shown and described, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from

the spirit and scope of the invention as disclosed in the appended claims in which it is the intention to claim all novelty inherent in the invention as broadly as possible in view of the prior art.

5 Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:

1. In a duplicating machine, a drum, means to mount a master sheet thereon, means to press
10 copy sheets against said master sheet, and a moistening device for moistening the copy sheets as they are advanced to said drum, said moistening device comprising a moistening roller adjacent to and substantially parallel with said drum, a
15 moistening fluid receptacle, an absorbent element protruding from said receptacle and engaging said roller, and liquid supply means for said absorbent element comprising means for the selectively wetting separate sections of said absorbent element, said absorbent element having means to
20 restrict the spread of liquid lengthwise therein.

2. In a duplicating machine of the character described, moistening means comprising a moistening receptacle, absorbent means in said receptacle and projecting from said receptacle for
25 delivering moistening liquid to an applicator for moistening sheets, an applicator, and means to selectively restrict supply of moistening liquid to different portions of said applicator, said last named means comprising a plurality of liquid
30 spreading devices in said receptacle, each adapted to supply liquid to a particular section of said absorbent means, and said absorbent means having the sections thereof substantially isolated
35 from each other within said receptacle.

3. In a duplicating machine of the character described, a moistening receptacle having a shelf portion at one side thereof and having an opening
40 at the other side, an absorbent element supported on said shelf portion said element extending across the receptacle and projecting into said opening, and means to deliver moistening liquid onto said element within the receptacle, said receptacle having a space beneath said element and
45 between the shelf and the opening to receive excess liquid from said element.

4. In a duplicating machine of the character described, a moistening receptacle having a shelf portion and having an opening at one side, an absorbent element supported on said shelf portion
50 and projecting into said opening, and means to deliver moistening liquid onto said element within the receptacle, said receptacle having a space beneath said element to receive excess liquid from said element, said receptacle having an exterior lip beneath said opening, and said element having
55 a doubled portion overlying said lip.

5. In a duplicating machine of the character described, a moistening receptacle having a shelf portion at one side thereof and having an opening
60 at the other side, an absorbent element supported on said shelf portion said element extending across the receptacle and projecting into said opening, and means to deliver moistening liquid onto said element within the receptacle, said receptacle having a space beneath said element and
65 between the shelf and the opening to receive excess liquid from said element, the portion of said

absorbent element within the receptacle being divided transversely of the receptacle.

6. In a duplicating machine of the character described, a moistening receptacle having a shelf portion and having an opening at one side, an absorbent element supported on said shelf portion
5 and projecting into said opening, and means to deliver moistening liquid onto said element within the receptacle, said receptacle having a space beneath said element to receive excess liquid from said element, said receptacle having an exterior lip beneath said opening, and said element having
10 a doubled portion overlying said lip, and clamping means for clamping the free edge of said element to the exterior of the receptacle above said opening.
15

7. A duplicating machine comprising a frame, a drum rotatably journaled therein, means to mount a master sheet on said drum, a copy sheet table adjacent to said drum, combined feeding
20 and moistening rollers adapted to advance copy sheets fed thereto to said drum and to moisten one surface of the advancing copy sheet, and a moistening device for supplying moistening fluid to one of said rollers, said moistening device comprising a receptacle pivotally supported by said
25 frame along side the roller to be moistened, absorbent means projecting through the wall of said receptacle to engage said roller, means within said receptacle for supplying liquid to said absorbent means, and spring means urging said receptacle toward said roller, said absorbent means
30 having a doubled portion outside the receptacle to engage said roller, and the free end portion of said absorbent means being clamped against said receptacle.
35

8. In a duplicating machine of the character described, moistening means comprising a moistening receptacle, sections of absorbent means in said receptacle and projecting therefrom, an applicator contacted by said sections for receiving
40 moistening fluid therefrom, and means in said receptacle for selectively supplying moistening liquid to said sections, said sections being spaced from each other and said applicator being adapted to contact copy sheets to moisten them.
45

9. In a duplicating machine of the character described, a frame, a drum rotatably journaled therein, means to mount a master sheet on said drum, a copy sheet table adjacent said drum,
50 combined feeding and moistening rollers adapted to advance copy sheets fed thereto to said drum and to moisten one surface of each advanced copy sheet, and a moistening device for supplying moistening fluid to one of said rollers, said moistening device comprising a receptacle pivotally supported by said frame adjacent the roller
55 to be moistened, sections of absorbent means in said receptacle and projecting therefrom, said sections contacting said roller to be supplied with moistening fluid, yielding means for urging said receptacle in a direction to urge said sections against the last-mentioned roller, and means in said receptacle for selectively supplying moistening fluid to said sections, said sections being
60 spaced from each other.
65

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