L. A. SCHMIDT.

INKING MECHANISM.

APPLICATION FILED OCT. 11, 1919.

1,348,900.

Patented Aug. 10, 1920.

2 SHEETS—SHEET 1.

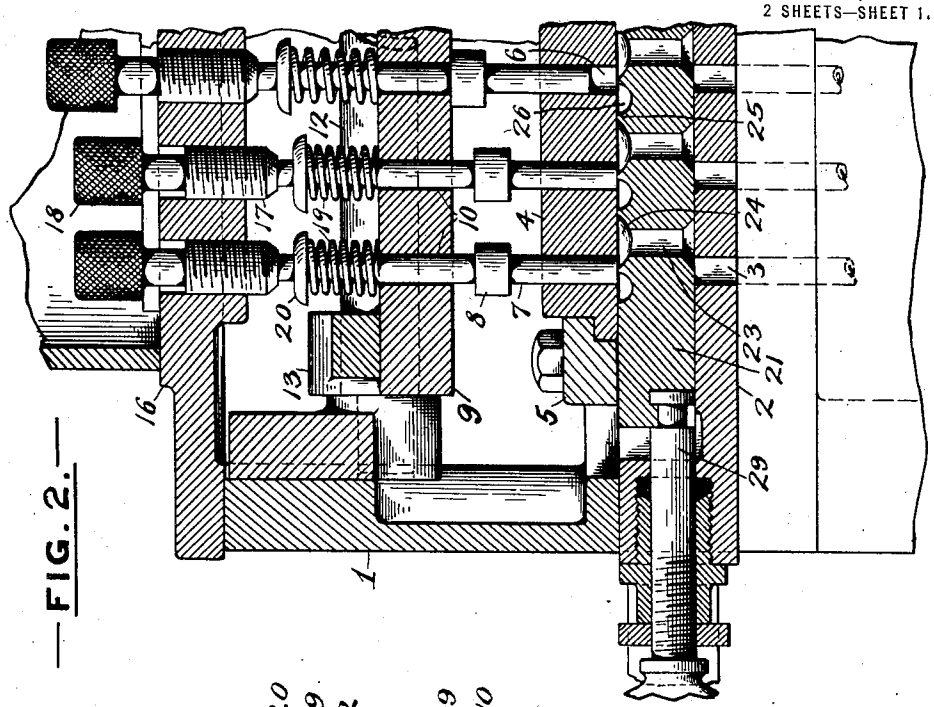


FIG. 2.

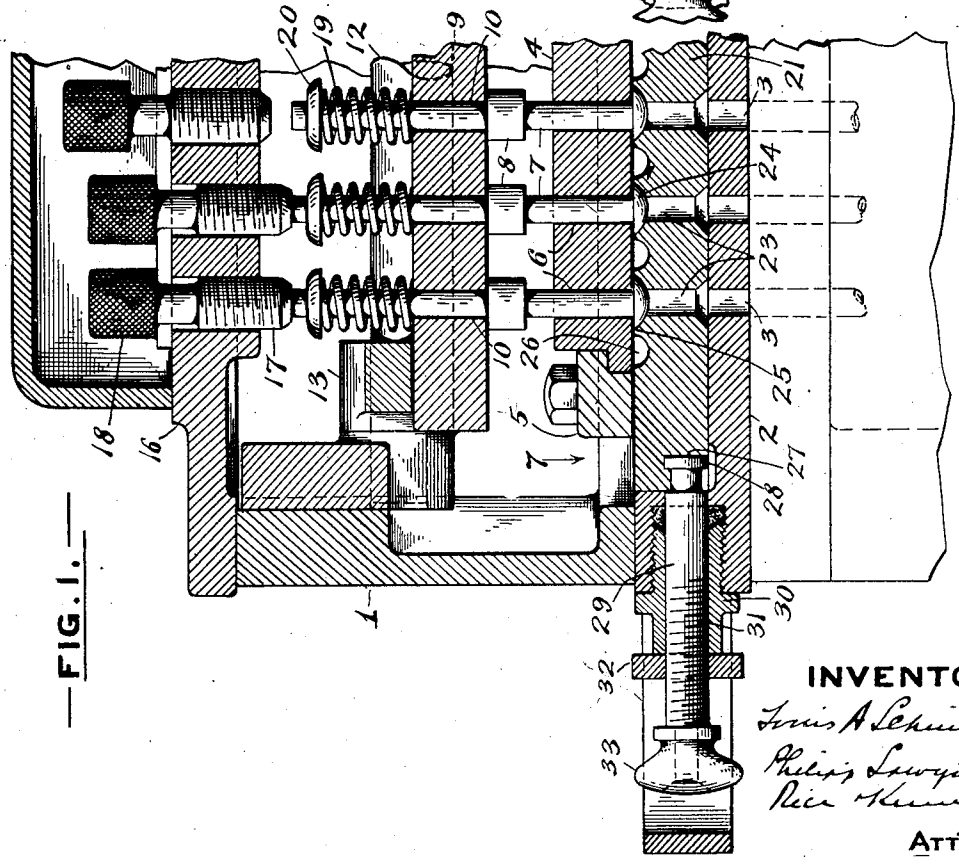


FIG. 1.

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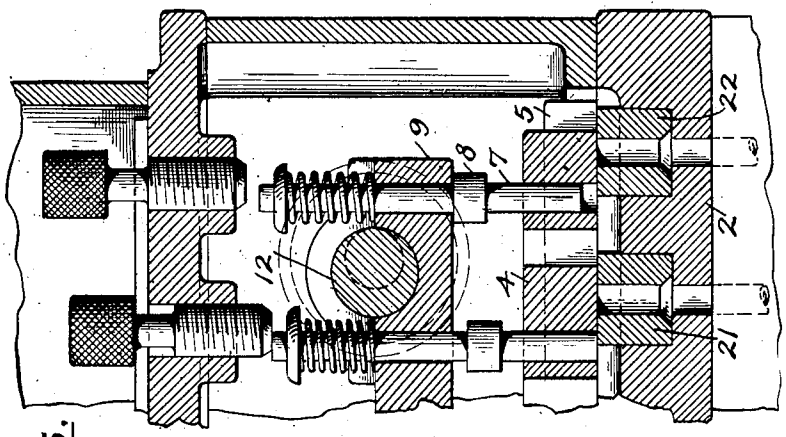


FIG. 5.

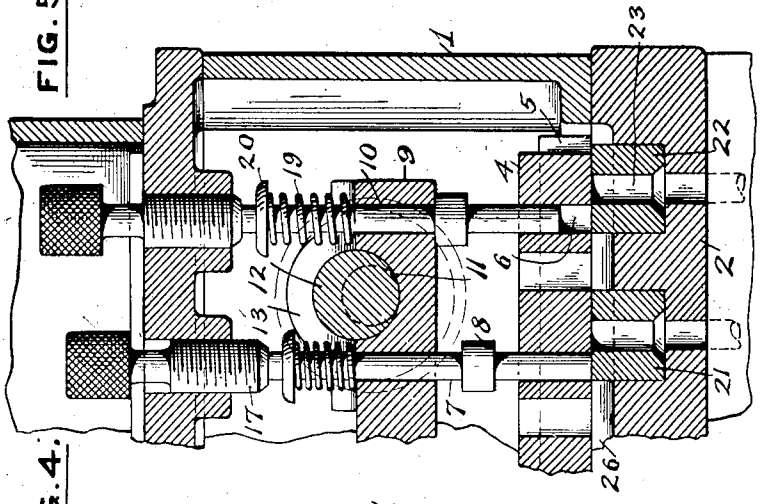


FIG. 4.

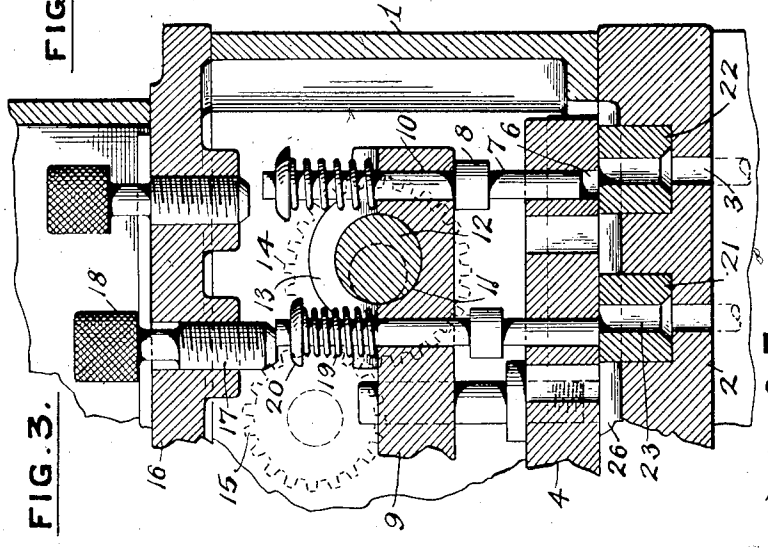


FIG. 3.

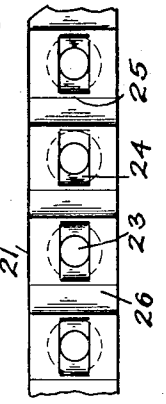


FIG. 6.

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UNITED STATES PATENT OFFICE.

LOUIS A. SCHMIDT, OF NEW YORK, N. Y., ASSIGNOR TO R. HOE AND CO., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

INKING MECHANISM.

1,348,900. Specification of Letters Patent. Patented Aug. 10, 1920.

Application filed October 11, 1919. Serial No. 330,086.

To all whom it may concern:

Be it known that I, LOUIS A. SCHMIDT, a citizen of the United States, residing at New York city, county of Kings and State of New York, have invented certain new and useful Improvements in Inking Mechanism, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improvements in inking mechanism for printing machines of the type shown in United States Patents No. 1,214,856, February 6, 1917, and No. 1,311,198, July 29, 1919, both to Bruce C. White.

In the type of inking mechanism shown in these patents, the ink is forced by separate pumps to the distributing surface under pressure and in regulated quantity, and preferably so that the supply of ink to each column or other section of the form may be varied as desired, in accordance with the matter to be printed, a plurality of separate pumps and conduits being provided, one for each column or section of the form for forcing the ink.

In the construction illustrated in these patents, means are provided for independently varying the adjustment of each pump or simultaneously adjusting or varying the ink supplied by all the pumps, or cutting off all the ink supplied by a certain number of pumps, as for instance, those supplying a page. It frequently happens that it is necessary or desirable to vary as by reducing or increasing the amount of ink supplied by a certain number of the pumps, as for instance, those supplying a page, simultaneously, part of the ink which is being fed in a predetermined regulated quantity being returned to the reservoirs or other ink container, and the desired quantity of ink be fed to its distributing surface without affecting in any way the adjustment of the pumps feeding other sections, as for instance, an adjoining page.

It is the especial object of the present invention to provide an improved construction for inking mechanism of the type referred to, whereby the ink delivered from a plurality of the conduits in the reservoir in a predetermined regulated quantity may be simultaneously varied without affecting the ink delivered from other conduits feeding from the reservoir so that, if desired for instance, a page of eight columns, or other predetermined number of columns or sections of the form or forms may have its ink supply increased or decreased, as desired without changing the individual regulating means of each pump or affecting the supply for other columns or sections fed from the reservoir.

A further object of the invention is to simplify the individual adjusting mechanism for the pumps and the pump operating mechanism as compared with the structures shown in the patents above referred to.

With these and other objects, not specifically referred to, in view, the invention will be described in detail in connection with the accompanying drawings which illustrate enough of an inking mechanism of the type to which the improvements are directed, as to enable the invention to be understood.

In the drawings:—

Figure 1 is a broken vertical sectional view through a pump reservoir showing a number of pumps and conduits in position to feed the maximum regulated quantity of ink to a set of sections or columns of the form, three of these pumps and conduits being shown.

Fig. 2 is a similar view, showing the position occupied by the parts when less than the regulated maximum quantity is being fed.

Figs. 3, 4 and 5 are vertical sectional broken views through the reservoir, the views being taken at right angles to the pumps of Figs. 1 and 2, showing two sets of pumps, feeding two different sets of columns or sections.

Fig. 6 is a partial plan or top view of one of the controlling frames looking in the direction of the arrow 7 in Fig. 1.

Referring now to these drawings in detail, the invention has been illustrated in connection with valveless plunger pumps, such as shown in the patents referred to, two sets of pumps being illustrated feeding to two different sets of sections or columns. While only three pumps are shown in each set it will be understood that any number of the pumps may be and are used according in number to the columns or other separate sections of the form or forms to be supplied with ink.

While the ink pumps are broadly of the valveless plunger type shown in the patents referred to above, an improved construction of such valveless plunger pumps and means for operating them is provided by the

present invention. In the construction shown, there is provided a reservoir 1, capacitated to carry the requisite amount of ink and to accommodate the desired number of pumps and operating mechanism therefor. This reservoir has a bottom 2 having openings or feeding out outlets 3, one such outlet and pump being provided for each column or section to be inked. In the reservoir is a frame 4 mounted to have a sidewise sliding movement in suitable guides 5, one of which is shown in Fig. 1, and this frame is provided with suction and discharge ports 6, one such port being provided for each conduit. Working in each of these ports is a valveless plunger pump having a plunger in the form of a rod 7 which intermediate its ends is provided with an operating collar 8 fast thereon. These plunger pumps are operated in any desired manner, being given a vertical movement for suction and discharge, and the frame 4 is given a sidewise sliding movement to alternately bring the ports 6 into communication with the ink in the reservoir 1 for suction and with the conduits 3 for discharge. While this may be effected in various ways, in the particular construction illustrated, there is provided a second frame 9 having apertures 10 through which the upper ends of the plungers 7 work and through which they extend. This frame 9 is grooved at 11 to receive an eccentric shaft 12 which at its end carries eccentric heads 13 fast on the frame. This shaft is driven in any suitable manner as by a gear 14 (see Fig. 3), driven from a gear 15 operated from any moving part of the machine, or in any other suitable manner.

Means are provided for the individual adjustment of each of the plunger pumps. While various adjusting devices may be provided whereby the regulated quantity of ink delivered by each pump may be individually varied, in the particular construction shown the reservoir is provided with a top 16 in which work threaded stops 17 one for each pump, each of these stops being provided with a knurled head 18 by which the stops may be turned to a higher or lower position in the top 16 to effect adjustment. These stops 17 form abutments against which the tops of the plungers 7 strike on the upward or suction stroke and thus regulate the amount of ink drawn on the suction stroke into the suction ports 6, before referred to. To compensate for the varying movement of the eccentric also and acting to lift the plungers on the suction stroke, each plunger has a spring 19 taking between the frame 9, before referred to, and a collar 20 on the plunger.

As the eccentric rotates in the heads 13, assuming that it is going to the right in Figs. 3 to 5, the frame 4 is given a sidewise movement to bring the ports 6 in communication with the bottom of the reservoir. As the movement of the eccentric continues the frame 9 is lifted through the heads 13 and this movement raises the plungers through the springs 19 until the ends of the plungers abut against the stops 17, the extent of this movement depending on the position of the stops. Any further movement of the eccentric is compensated for by springs 19. As the eccentric continues this movement and the frame 9 starts moving downwardly, it contacts with the collars 8, before referred to, and at this time the frame 4 has slid so as to bring the discharge port 6 into line with the conduits 3. The further movement of the eccentric causes the plungers now to start to move down and force the measured quantity of ink into the conduit.

With this construction a simple pumping mechanism is provided, and one in which the amount of ink delivered to the conduits may be simply and readily regulated, there being few ports and these ports readily accessible for adjustment or repair.

In accordance with the invention, means are provided whereby the ink supplied to a plurality of the conduits may be simultaneously increased or decreased, as desired, without interfering with the ink supplied to other conduits, so that for instance, a set of conduits feeding a page of matter may have the ink supplied thereto varied while an adjacent set of conduits, page, or other collection of sections or columns are unaffected and so that furthermore, the individual adjustment of the pump sections which are to have their ink supply varied as a unit is unchanged.

While this may be effected in various ways, there is provided for a certain number of pumps or set, as for instance, those making up a page, what may be termed a controller, by the adjustment of which all the pumps controlled by it have their ink supply simultaneously adjusted, so that a greater or less quantity of ink may be delivered from these pumps.

In the construction shown, there are two sets of pumps and two controllers, one for each set of pumps marked 21 and 22. It will be understood, however, that for each additional collection or set of pumps in which it is desired to vary the ink simultaneously, there will be provided a similar controller. While the particular construction of this controller may be widely varied, in the particular construction illustrated, it is in the form of a sliding frame or bar, this frame being arranged to slide between the bottom of the frame 4 and upper surface of the bottom 2 of the reservoir, before referred to. This controller is provided with discharge ports 23 arranged to be brought in full line with the ports 6 and the conduit ports 3, before referred to, through which

ports 23 the maximum regulated quantity of ink may pass to the conduits. The upper end of the discharge port 23 is widened or broadened, as indicated at 24 in Figs. 1 and 2, and adjacent this widened portion of discharge port 24 and separated therefrom by only a narrow ridge 25, is a by-pass or return port 26 which is in the form of a shallow groove. By shifting the controller frame or rod, as shown in Fig. 2, the ports 24 and 26 may be brought into such position that part only of the ink delivered by the plunger is sent through the port 24 to the conduit ports 3, a part of the ink being returned to the reservoir through the return port 26, the amount of ink thus returned depending on how much of the area of the port 26 is brought into communication with the discharge port 6 as will be readily understood.

The controller slide may be operated in any suitable manner. In the particular construction illustrated this slide at one end is recessed as at 27 in which recess takes a head 28 on an adjusting bar 29. This adjusting bar extends through a stuffing box 30 and has a threaded end 31 taking into an adjusting nut 32, the rod being operated in the nut by a suitable handle 33.

With this construction the controller bar or frame may be given a fine adjustment to increase or lessen the amount of ink simultaneously supplied by a plurality of the pumps forming a set of columns or sections, as for instance, a page, the pumps supplying another set as a page, for instance, from the same reservoir being unaffected, and the individual adjustment of the pumps being also unaffected.

While the invention has been shown and described in its preferred form, it will be understood that various forms of controllers may be provided for effecting the purpose, and that the controller may be used with other types of pumps than that illustrated, and that the invention is, therefore, not to be restricted to precisely the form shown and described.

What I claim is.

1. In an inking mechanism, the combination of a plurality of separate ink delivery conduits, for delivering an independent supply of ink for different columns or sections of the form, a plurality of pumps, one for supplying each conduit with ink, and means whereby the supply of ink from the pumps to certain of the conduits may be simultaneously varied without affecting the supply to other conduits.

2. In an inking mechanism, the combination of a plurality of separate ink delivery conduits arranged in sets for delivering an independent supply of ink to different columns or sections of the form, a plurality of pumps, one for supplying each conduit with ink, and controllers, one for each set for simultaneously regulating the quantity of ink delivered by the pumps of one set without affecting the supply delivered by another set.

3. In an inking mechanism, the combination of a plurality of separate ink delivery conduits for delivering an independent supply of ink to different columns or sections of the form, a plurality of pumps, one for supplying each conduit with ink, a controller for a predetermined number of pumps, and means for operating the controller to cause a portion of the ink supplied by the pumps to be diverted from the conduits.

4. In an inking mechanism, the combination of a plurality of separate ink delivery conduits arranged in sets for delivering an independent supply of ink to different columns or sections of the form, a plurality of pumps, one for supplying each conduit with ink, and a controller having ports through which a portion of the ink may be diverted from the conduits.

5. In an inking mechanism, the combination of a plurality of separate ink delivery conduits for delivering an independent supply of ink for different columns or sections of the form, a plurality of pumps, one for supplying each conduit with ink in regulated quantity, and means for diverting a portion of the ink supplied by certain of the pumps away from the conduits.

6. In an inking mechanism, the combination of a reservoir, a plurality of separate ink delivery conduits from the reservoir for delivering an independent supply of ink to different columns or sections of the form, a plurality of pumps, one for supplying each conduit with ink in regulated quantities, and means for diverting a portion of the ink supplied by certain of the pumps away from the conduit and returning it to the reservoir.

7. In an inking mechanism, the combination of a reservoir, a plurality of separate ink delivery conduits leading from the reservoir for delivering an independent supply of ink to different columns or sections of the form, a plurality of pumps in the reservoir, one for supplying each conduit with ink, and means whereby the supply of ink from certain of the pumps to the conduits may be simultaneously varied without affecting the supply to other conduits.

8. In an inking mechanism, the combination of a reservoir, a plurality of separate ink delivery conduits leading therefrom and arranged in sets for delivering an independent supply of ink to different columns or sections of the form, a plurality of pumps in the reservoir arranged in sets, one pump for supplying each conduit with ink, and controllers, one for each set for simultaneously regulating the quantity of ink deliv-

ered by the pumps of one set without affecting the supply delivered to another set.

9. In an inking mechanism, the combination of a reservoir, of a plurality of separate delivery conduits arranged in sets for delivering an independent supply of ink for different columns or sections of the form, a plurality of pumps in the reservoir arranged in sets, one pump for supplying each conduit with ink, and means for diverting a portion of the ink supplied by one set of pumps away from the conduits and back to the reservoir without affecting the supply delivered by another set.

10. In an inking mechanism, the combination of a plurality of separate ink delivery conduits for delivering an independent supply of ink to different columns or sections of the form, a plurality of pumps, one pump for supplying each conduit with ink, and a sliding frame provided with ports through which a portion of the ink supplied by the pumps may be diverted from the conduits and returned to the reservoir.

11. In an inking mechanism, the combination of a plurality of separate ink delivery conduits arranged in sets for delivering an independent supply of ink to different columns or sections of the form, a plurality of pumps one for supplying each conduit with ink, and a sliding frame for each set having ports through which a portion of the ink may be diverted from the conduits.

12. In an inking mechanism the combination of a reservoir, a plurality of separate ink delivery conduits, leading therefrom for delivering an independent supply of ink to different columns or sections of the form, a plurality of pumps in the reservoir one for supplying each conduit with ink, and a controller having ports through which a portion of the ink may be diverted from the conduits and returned to the reservoir.

13. In an inking mechanism, the combination with a reservoir, of a plurality of separate ink delivery conduits for delivering an independent supply of ink to different columns or sections of the form, a plurality of pumps one for supplying each conduit with ink, a sliding frame below the pumps through which a regulated quantity of ink may be delivered to the conduits, and ports in the frame through which a portion of the regulated quantity of ink may be diverted from the conduits, and means located outside the reservoir for operating the sliding frame.

14. In an inking mechanism, the combination of a reservoir, a frame therein, pump plungers extending through the frame, a second frame, suction and discharge ports in the second frame through which the plungers deliver ink, adjustable abutments for regulating the suction stroke of the plungers, means for moving the frame to lift the plungers for the suction stroke and to force them down for the delivery stroke, and springs on the plungers between the frame and the abutments.

15. In an inking mechanism, the combination of a plurality of separate ink delivery conduits for delivering an independent supply of ink for different columns or sections of the form, means for feeding ink to the conduits, and means whereby a portion of the ink fed to certain conduits may be diverted therefrom without affecting the supply to other conduits.

16. In an inking mechanism, the combination of an ink reservoir, a plurality of separate ink delivery conduits for delivering an independent supply of ink for different columns or sections of the form, means for feeding ink to the conduits, and a controller for diverting a portion of the ink fed to certain of the conduits and returning it to the reservoir.

In testimony whereof, I have hereunto set my hand.

LOUIS A. SCHMIDT.