R. HOE.

INKING MECHANISM.

APPLICATION FILED JAN. 9, 1915. RENEWED NOV. 5, 1915.

1,185,667.

Patented June 6, 1916.

4 SHEETS—SHEET 1.

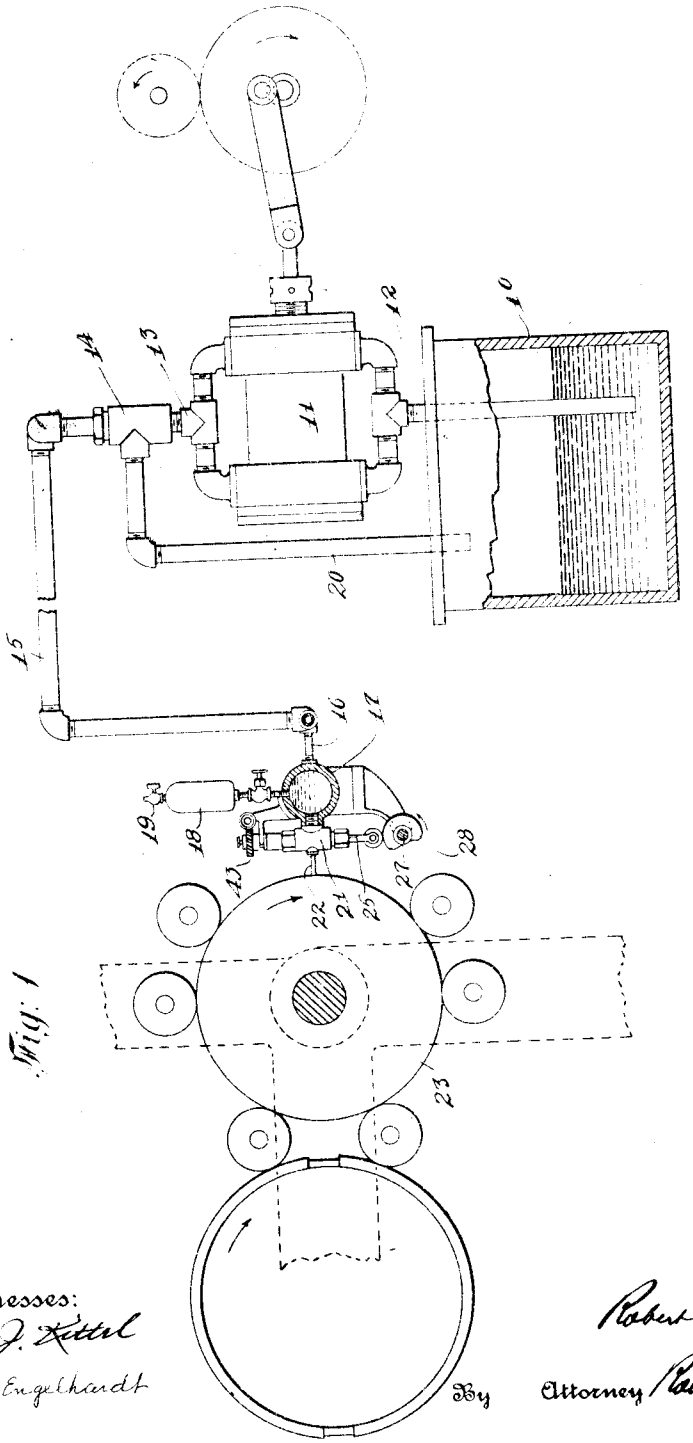


Fig. 1.

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4 SHEETS—SHEET 2.

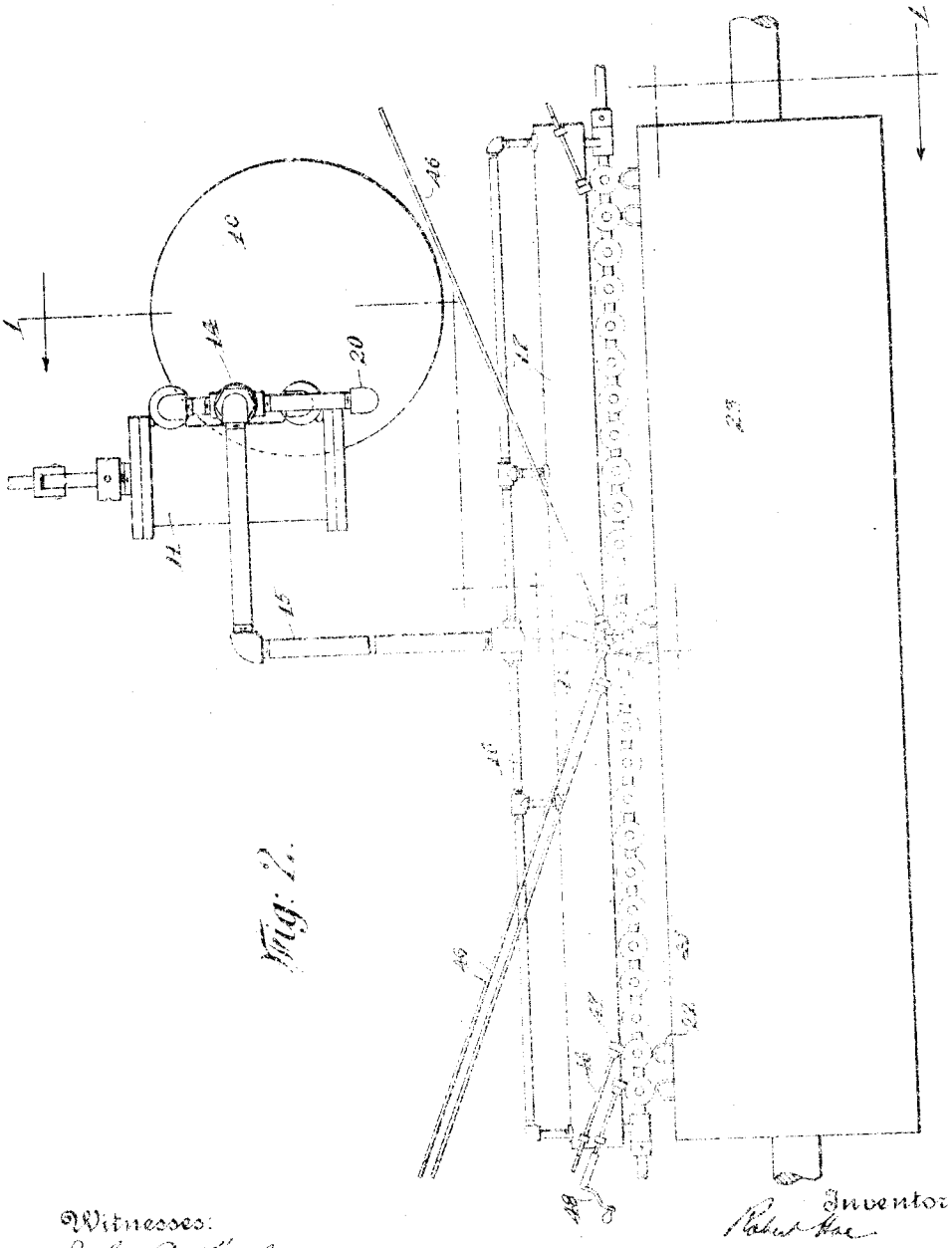


Fig. 2.

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4 SHEETS—SHEET 3.

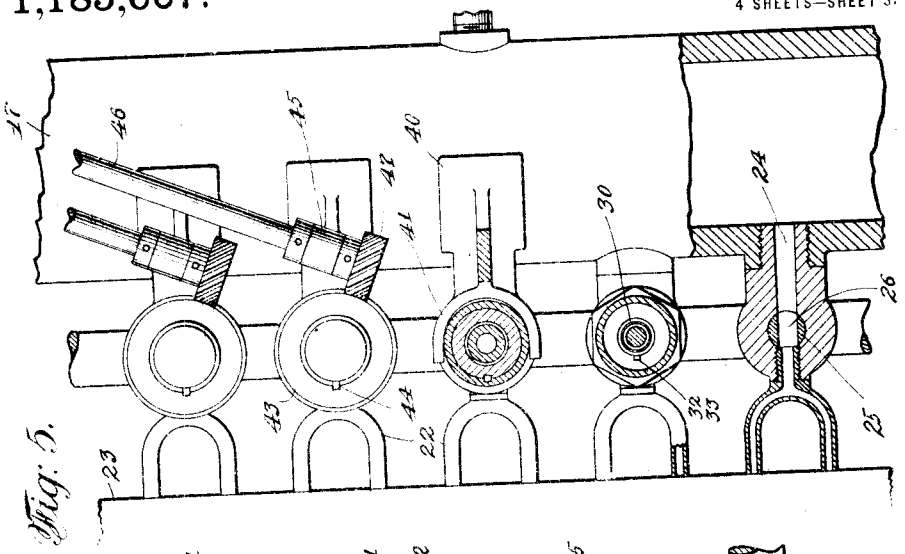


Fig. 5.

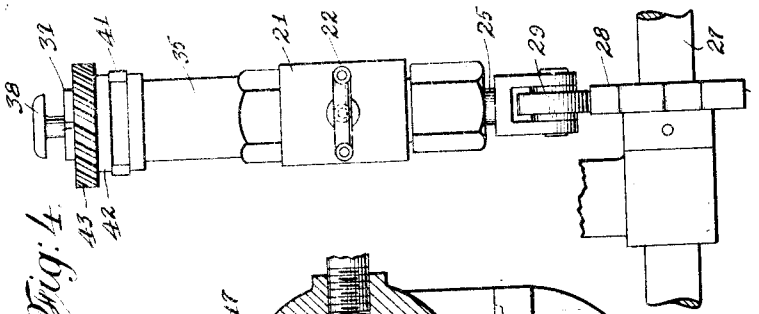


Fig. 4.

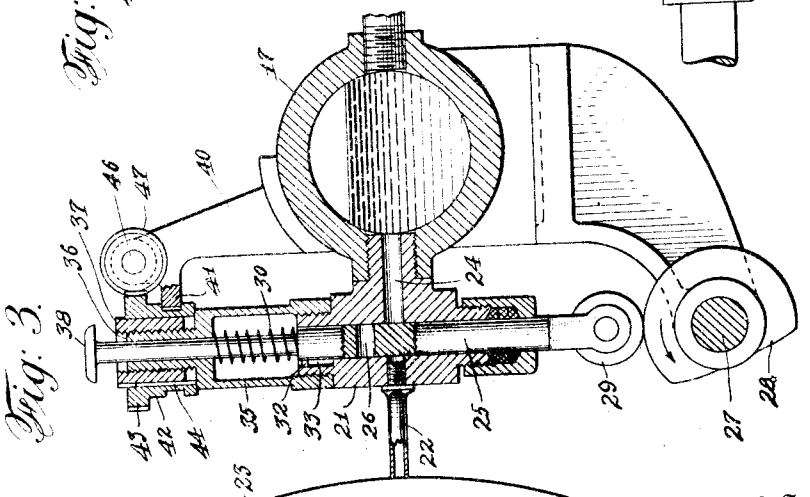


Fig. 3.

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4 SHEETS—SHEET 4.



Fig. 7.

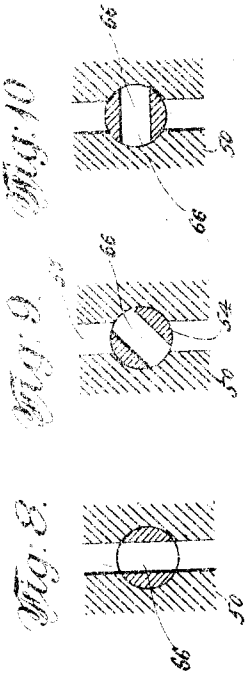


Fig. 10.

Fig. 9.

Fig. 8.

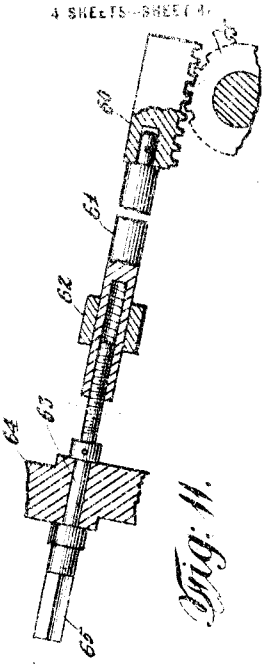


Fig. 11.

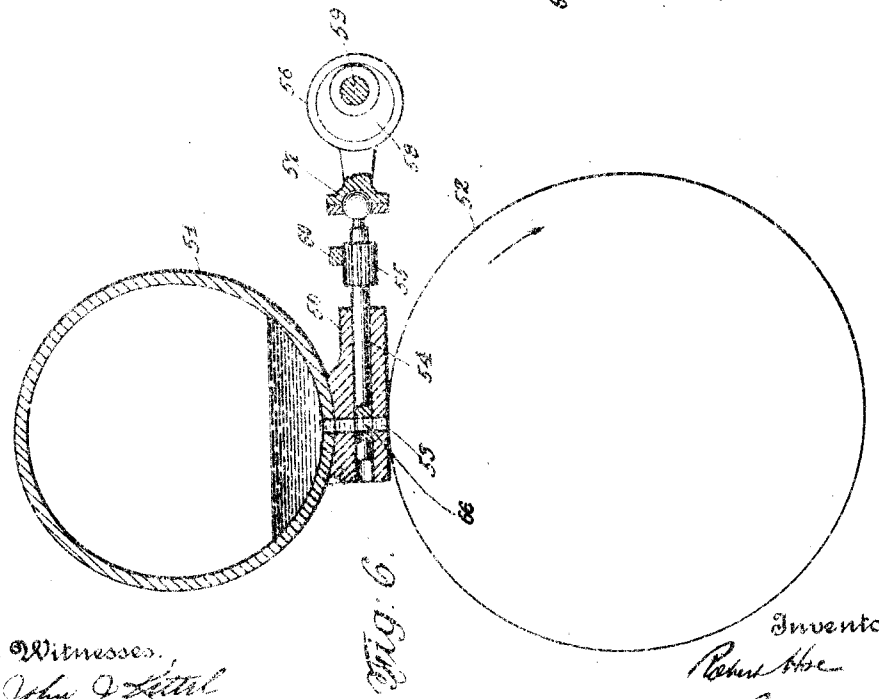


Fig. 6.

Witnesses.

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UNITED STATES PATENT OFFICE.

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INKING MECHANISM.

1,185,607. Specification of Letters Patent. Patented June 6, 1916.

Application filed January 9, 1915, Serial No. 1,298. Renewed November 5, 1915. Serial No. 59,139.

To all whom it may concern:

Be it known that I, ROBERT HOE, a citizen of the United States, residing at Battle Creek, in the county of Calhoun and State of Michigan, have invented new and useful Improvements in Inking Mechanisms, of which the following is a specification.

This invention relates to inking mechanism for printing presses.

One object of the invention is to provide a mechanism that may supply ink separately for each column of the printing and in which the feed may be independently adjusted for each column so as to secure the desired printing of all portions of the sheet or web.

Another object is to provide a mechanism that will eliminate the feeding of ink through flow apertures or slits which may become clogged by the thickening of the ink or the presence of impurities or coarse particles in the ink.

Another object is to secure these advantages in a simple form of mechanism; another is to utilize a pressure system for the feeding of ink; and still other objects will appear in the following description and appended claims.

Referring to the drawings: Figure 1 is a sectional end elevation of the improved inking mechanism taken on line 1—1 of Fig. 2; Fig. 2 is a plan view of the mechanism; Fig. 3 is a sectional side elevation showing details of the mechanism; Fig. 4 is a front elevation of the mechanism shown in Fig. 3; Fig. 5 is a plan view partly in section of a detail showing method of controlling the ink feed; Fig. 6 is a modification shown in sectional side elevation; Fig. 7 is a rear elevation showing adjustable means for the modified mechanism; Figs. 8, 9 and 10 are sectional views showing positions assumed by valve in the modified mechanism; and Fig. 11 is an end elevation, partly in section, of the mechanism for controlling the valve opening.

To reduce the inking mechanism to its simplest form, and to keep the ink in as good a condition as is possible, the invention embodies means for maintaining the ink under pressure in a closed conduit, and feeding it under pressure as desired.

As shown in Figs. 1 and 2, the ink is stored in a suitable tank 10, from which it is drawn by a pump 11 through pipe 12, the pump being driven by any suitable source of power. The ink is delivered from the pump to the outlet 13 and passes upward through pipe 15, manifold 16 and into ink container 17. The ink container, which may be any form of closed conduit, is provided with an air chamber 18 to secure a more uniform pressure upon the ink, and a vent cock 19 is also supplied. A relief valve 14 connected with the pump outlet has a discharge pipe 20 leading back into tank 10. In operation, the pump is driven continuously and causes a constant quantity of ink to be delivered at outlet 13. This supply is enough to keep the container 17 filled with ink under pressure, and the excess passes through relief valve 14 and pipe 20 back into the tank 10.

In order to control the feeding of ink from the container, a suitable valve mechanism is provided, which may be of any suitable form to secure a regular but an intermittent feed of the ink. A form of valve adapted for this purpose is shown in Fig. 3 and comprises a valve casing 21 suitably attached to the ink container 17 and provided with delivery tubes 22 which abut the periphery of a distributing roll 23 and which communicate with a duct 24 leading into the container 17. The valve is indicated at 25 and is provided with a port 26 which permits the flow of ink under pressure from the container 17 to the delivery tubes 22, as the valve is actuated. The valve is reciprocated from a cam shaft 27, equipped with a cam 28 which contacts with a roller 29 carried by the lower end of the valve, forcing the valve upward against the pressure of a spring 30 surrounding a reduced portion of the valve as shown in the figure. The valve is further provided with a pin 32 which slides in a key way 33 cut in the valve casing 21 so that the valve is held in fixed angular position.

By the mechanism thus described, it will be noted that when the press is operated, the ink will be delivered under pressure in intermittent jets upon the distributing roll. As shown in Figs. 2 and 5, there are a series of valves similar to the one described, all of which are driven from the single cam shaft 27, the respective cams being disposed about the shaft so as to render the load upon the shaft as uniform as possible. In the arrangement described, it will be further noted that the load upon the cam shaft is relatively light, as the work of moving the ink is performed by the pump 11.

Means are further provided for individual

adjustment of the valves whereby the ink supplied to any column may be regulated. As shown in Figs. 3 and 4, the valve casing 21 is equipped with a cap 35 which serves as an abutment for spring 30 and terminates in a threaded end 36. A nut 37 is mounted upon the threaded end 36, the rotation of the nut serving to move it in a vertical direction. The upper end of the valve 25 is provided with a tappet head 38 adapted to contact with the nut 37. The nut limits the downward movement of the valve, operating as a stop, and it is obvious that if the nut be adjusted to an extreme upper position, it will hold the valve in its closed position, shutting off the ink completely; likewise if the nut be lowered, the valve 25 will move downward, whenever permitted by the cam, so that the port 26 is more or less uncovered, according to the adjustment of the nut. In this way the extent of movement of the valve, and the ink feed, are controlled by the adjustment of nut 37.

To facilitate the adjustment of nut 37, the following mechanism is provided. As shown in Figs. 3 and 5, the ink container 17 is fitted with brackets 40 equipped with a yoke 41 supporting a bushing 42, the bushing being equipped with a spiral gear 43 and being adapted to rotate upon the yoke. The bushing has a spline and feather connection with the nut 37 as indicated at 44 so that rotation of the bushing will rotate the nut, but only the nut has a resultant vertical movement. The bracket 40 carries a bearing 45 in which is located a shaft 46 equipped with a spiral gear 47 meshing with gear 43. As shown in Fig. 2, the shaft 46 extends to one or the other side of the press where it is supported in a suitable bearing and terminates in a wrench head through which it may be rotated by a suitable wrench as indicated at 48.

Figs. 6 to 11 inclusive illustrate a modified form of mechanism securing the same results.

As shown in Fig. 6, the valve casing 50 is attached to the ink container 51 and abuts the distributing roll 52. A duct 53 leads from the container to the outer surface of the casing 50. Intercepting the duct is a valve 54, adapted to reciprocate in the casing 50, provided with a spur gear 55, and coupled to an eccentric strap 56 by a ball and socket joint 57. The strap 56 surrounds an eccentric 58 pinned to shaft 59. The shaft 59, being continuously driven, reciprocates the valve with a uniform extent of throw. The regulation of the ink supply is secured by an angular movement of the valve, as illustrated in Figs. 8, 9 and 10.

To rotate the valve a rack 60 is provided which meshes with spur gear 55. The rack is pinned to a rod 61 adapted to slide in a suitable bearing 62 but prevented from rotating therein. A stub shaft 63 engages a threaded recess in the rod 61 and is rotatably mounted in the frame 64 of the press, and is further equipped with a wrench end 65. As is obvious, rotation of the shaft 63 will cause a longitudinal movement of the rod 61 and rack 60, causing an angular movement of the valve which will determine the extent of opening of the port 66. As shown in Fig. 6, the gear 55 is of greater width than the rack 60, so that the valve and gear 55 may reciprocate without getting out of mesh with the rack, which has no lateral movement.

As in the former embodiment of the invention, the ink is maintained under pressure and is driven through the duct as the part 54 reciprocates.

I claim:

1. In an inking mechanism for printing presses, an ink container adapted to hold ink under pressure, valve mechanism for permitting the intermittent feeding of ink through passages from the container in different columns or sections corresponding with the matter to be printed, the valves controlling by their motion the feeding of the ink, and means to maintain the valves in motion during the actuation of the press.

2. In an inking mechanism for printing presses, an ink container adapted to hold ink under pressure, a series of valves and valve-controlled passages for intermittently supplying ink in different columns or sections corresponding with the matter to be printed, and means to maintain the valves in motion during the actuation of the press.

3. In an inking mechanism for printing presses, an ink container adapted to hold ink under pressure, and a series of intermittently operative valves for controlling the flow of ink from the container, the valves being adapted respectively to supply ink from the container in different columns or sections corresponding with the matter to be printed.

4. In an inking mechanism for printing presses, an ink container adapted to hold ink under pressure, a series of intermittently operative valves for supplying ink from the container in different columns or sections, and adjusting means for said valves whereby the supply of ink for any column may be regulated independently of the regulation for the other columns.

5. In an inking mechanism for printing presses, an ink container adapted to hold ink under pressure, a distributing roll, a series of passages between the container and the roll through which ink may be fed to the roll, a series of valves controlling the intermittent feeding of ink through the respective passages, and means to maintain the valves in motion during the actuation of the press.

6. In an inking mechanism for printing presses, an ink container adapted to hold ink

under pressure and having separate ink feeding openings for different columns or sections of the matter to be printed, intermittently operative valves controlling the feed of ink through the openings, means to maintain the valves in motion during the actuation of the press, and adjusting mechanism adapted to regulate the quantity of ink supplied for the different columns independently of one another.

7. In an inking mechanism for printing presses, an ink container adapted to hold ink under pressure, a distributing roll, mechanically operated valves for feeding the ink intermittently through passages to the roll for different columns or sections of the matter to be printed, the said mechanism including independently adjustable means whereby the ink supplied for a column may be individually regulated.

8. In an inking mechanism for printing presses, an ink container adapted to hold ink under pressure, a distributing roll, mechanically operated valves for feeding the ink intermittently through passages to the roll for different columns or sections of the matter to be printed, the said mechanism including means whereby ink is supplied from the container to the roll for the different columns or sections independently of each other.

9. In an inking mechanism for printing presses, an ink container adapted to hold ink under pressure, a distributing roll, and a series of valves operating mechanically to feed the ink separately for different columns or sections of the matter to be printed, whereby ink is supplied from the container to the roll for the different columns or sections independently of each other.

10. In an inking mechanism for printing presses, an ink container adapted to hold ink under pressure, a distributing roll, a series of feeding valves operating mechanically to feed the ink separately for different columns or sections of the matter to be printed, whereby ink is supplied for the different columns or sections independently of each other, and adjustable means for the valves whereby the ink supplied for the respective columns may be individually regulated.

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