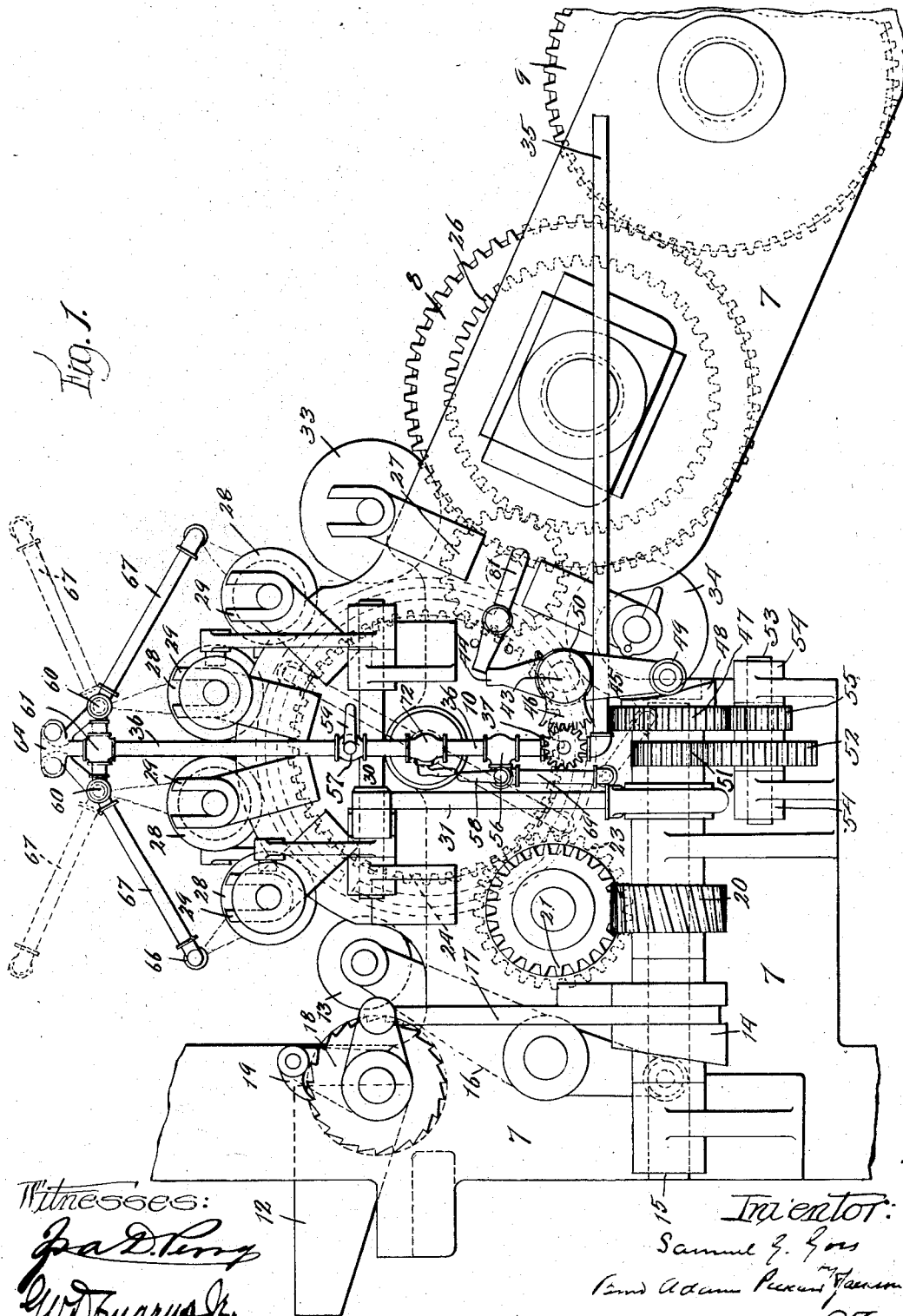


S. G. GOSS.
 INKING MECHANISM FOR PRINTING PRESSES.
 APPLICATION FILED MAY 20, 1909.

954,088.

Patented Apr. 5, 1910.

3 SHEETS—SHEET 1.



Witnesses:
Ed. D. Perry
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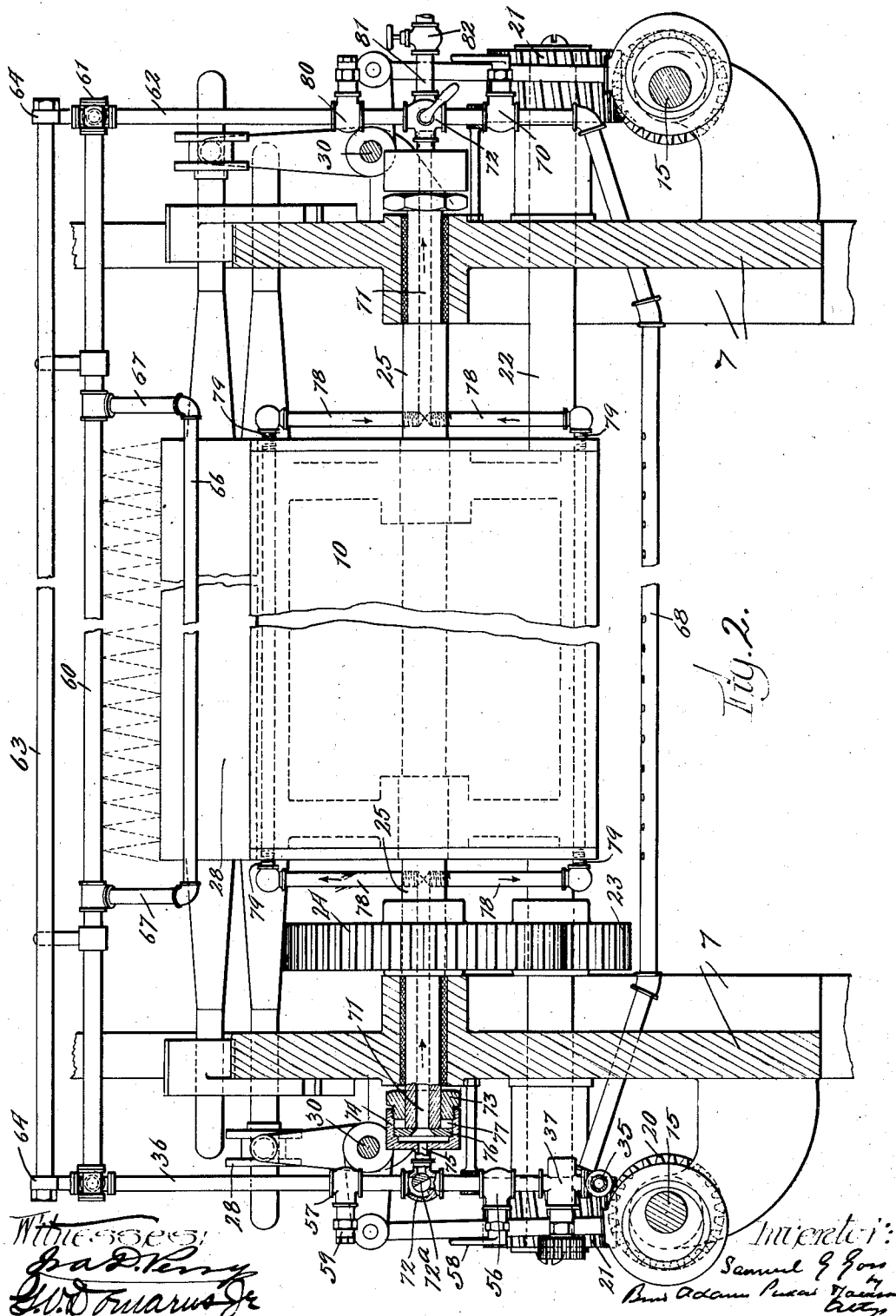
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3 SHEETS—SHEET 3.

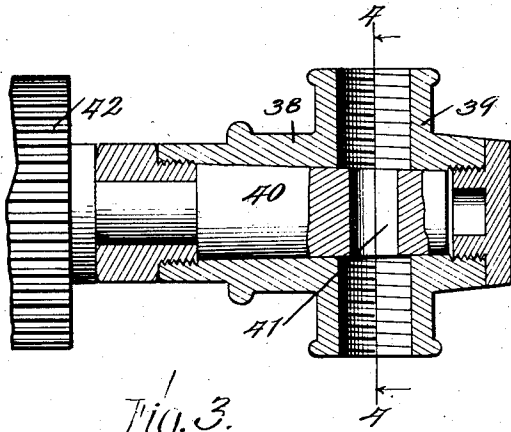


Fig. 3.

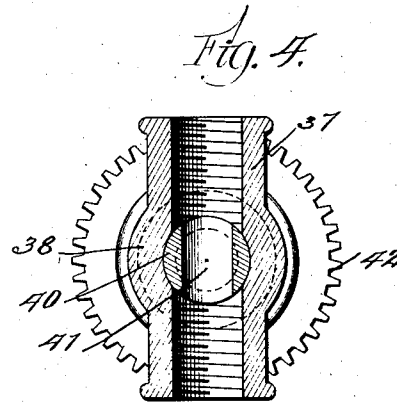


Fig. 4.

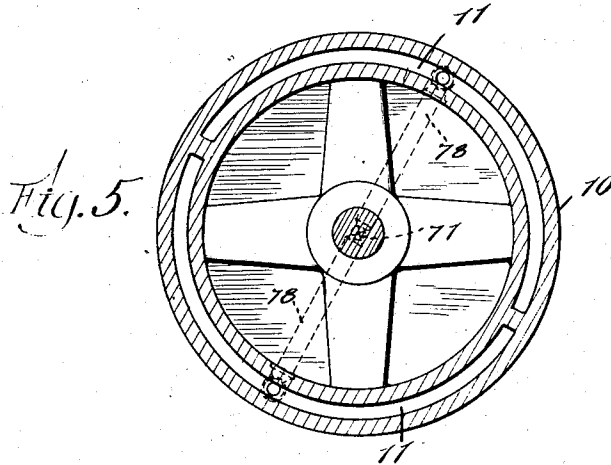


Fig. 5.

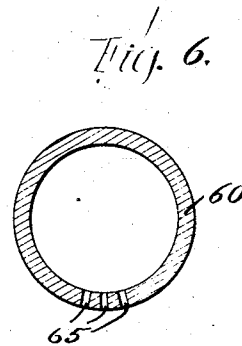


Fig. 6.

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UNITED STATES PATENT OFFICE.

SAMUEL G. GOSS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE GOSS PRINTING PRESS COMPANY, OF CHICAGO, ILLINOIS. A CORPORATION OF ILLINOIS.

INKING MECHANISM FOR PRINTING-PRESSES.

954,088.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed May 20, 1909. Serial No. 497,288.

To all whom it may concern:

Be it known that I, SAMUEL G. GOSS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Inking Mechanism for Printing-Presses, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to improvements in inking mechanism for printing presses, and its object is to provide a new and improved means for keeping cool the composition rollers of such inking mechanism so as to prevent their injury and consequent short life.

As is well-known, the inking rollers of printing mechanisms which operate upon the ink drum and printing plates are covered with what is known as composition and are arranged so as to rotate on the ink drum and at the same time are given a vibratory motion longitudinally of the drum. This causes friction between the parts, causing both the inking drum and the composition of the rollers to become heated in operation. This heating, as is well-known, injuriously affects the composition on the rollers and softens it, which very seriously shortens the life of the rollers. So susceptible is this composition to heat that in hot weather or in hot press rooms the rollers wear out much more rapidly through the heating than in a colder atmosphere.

My invention therefore relates to mechanism which will keep the rollers cool during their operation by discharging upon the rollers, either constantly or at suitable intervals, a blast or blasts of cold air, and also at the same time keeping the ink drum cool by sending to it a supply of cold air which passes through suitable passages in the ink drum cored out for the purpose. I accomplish this object by the means illustrated in the drawings and hereinafter specifically described.

That which I believe to be new will be pointed out in the claims.

In the drawings:—Figure 1 is an elevation of the inking mechanism from one side of the press, and of one of the plate and one of the impression cylinders of the press. Fig. 2 is an elevation of the inking mechanism seen from one end of the press. Fig. 3 is an enlarged detail, being a longitudinal section through the controlling valve. Fig.

4 is a section on line 4—4 of Fig. 3. Fig. 5 is a detail, being a cross section through the ink drum, showing the coring out of the same to provide passages for the cold air. Fig. 6 is a cross section of one of the discharge pipes, showing the orifices through which the air is discharged upon the composition rollers.

7 indicates the framework, and 8 and 9 respectively a plate cylinder and an impression cylinder.

10 indicates the ink drum, which, as is best shown in Fig. 5, is cored out so as to have hollow spaces 11 within its periphery which are closed at each end by the usual heads of the cylinder and adapted to receive a supply of cold air from the pipes hereinafter described.

12 indicates the usual inking fountain which is carried upon the frame 7.

13 indicates a feed inking roller, which, being swung back and forth between the fountain and the ink drum operates to convey ink from the fountain to the drum.

As the fountain and the feed inking roller form no part of my present invention and may be operated in any well-known manner, it is enough to say that they may be operated in any well-known manner, as by cams 14 on the driving shafts 15, operating upon one arm of the levers 16, and by eccentric-rods 17 on the shafts 15 and ratchet-wheels and pawls 18—19. The shafts 15 are driven by worms 20 which are driven by worm-gears 21 upon the shaft 22, which, by means of a gear 23 is driven by the gear 24 on the shaft 25 of the ink drum 10. The ink drum in its turn is driven by the usual gearing from the press, as by the gear 26 on the shaft of the impression cylinder 8, and intermediate gear 27 meshing with gears 24 and 26.

28 indicates the vibrating inking rollers which are mounted in sockets 29 and are vibrated in the usual manner, as by rock-shafts 30 actuated by the eccentric-rods 31 and eccentrics 32 on the shafts 15. These vibrating rollers 28 are of course covered with the usual composition and operate in the well-known manner upon the ink drum 10.

33—34 indicate form rollers which serve to convey the ink from the ink drum 10 to the plate cylinder 8 and are mounted and operate in the usual manner.

35 indicates a pipe which leads from any suitable source of cold air supply (not shown).

36 indicates an upright pipe which leads from the end of the supply pipe 35 to the devices hereinafter described.

37 indicates a valve which is interposed between the pipe 35 and upright pipe 36 and which operates when opened or closed to admit or shut-off the supply of cold air coming from the pipe 35 to the cooling mechanism hereinafter described. The valve 37 is best shown in Figs. 3 and 4.

38 indicates the valve casing, which is provided with a T-joint 39 into which the pipes 35 and 36 may be screwed.

40 indicates an ordinary rotatable valve, provided with a passage 41, which is journaled in the casing and has upon its stem a gear 42 by the rotation of which by the mechanism hereinafter described the valve 40 is opened or closed.

43 indicates a rock-shaft which is journaled in the framework, and is provided with arms 44 and 45.

46 indicates a segment which is fixed upon the rock-shaft 43 and is adapted to mesh with the gear 42 on the stem of the valve 40 whereby when said rock-shaft is rocked in the manner hereinafter described the valve 40 will be opened or closed.

47 indicates a gear which is loose on the shaft 15 and has upon its face a cam 48 which may be either secured thereto or formed integral therewith and which bears upon a roller 49 of the arm 45 of the rock-shaft 43. A spring 50 on the rock-shaft 43 operates to hold the roller 49 in constant engagement with the cam 48.

51 indicates a gear fast on the shaft 15 which meshes with gear 52 fast on a countershaft 53 which is journaled in suitable bearings 54 on the frame.

55 indicates a gear fast on the shaft 53 which meshes with gear 47. When the shaft 15 is driven as above described, the countershaft 53 will be driven by gears 51 and 52, and, through the gear 55, which meshes with the gear 47, the gear 47 will be rotated, rotating the cam 48 which operates to rock the rock-shaft 43. These gears are so proportioned to the speed of the shaft 15 and to the speed of the ink drum 10 that the gear 47 and its cam 48 will rotate once for every four revolutions of the drum 10, thereby giving to the rock-shaft 43 one forward and backward action for each four revolutions of the ink drum and therefore opening and closing the valve once for each four revolutions of the ink drum. While I find this speed preferable in practice, it may of course be varied according to circumstances.

56—57 indicate valves in the pipe 36 which are operated by hand-levers 58—59, respectively.

60 indicates pipes which are connected by the usual couplings 61 with the upright pipe 36 and with another upright pipe 62 upon the other side of the machine corresponding to the upright pipe 36. These pipes 60 are also supported by means of rods 63 in brackets 64 supported upon the upper ends of the pipes 36 and 62. The pipes 60 are perforated above the middle distributing rollers 28 by suitable openings, as 65 (see Fig. 6), through which cold air forced through the pipes from the supply pipe 35 may be discharged upon the middle distributing rollers 28.

66 indicates pipes having perforations similar to those described in pipes 60, and which, by means of connecting pipes 67, are swung upon the pipes 60 so that they may be brought closer to or farther from the exterior inking rollers 28, as indicated by solid and dotted lines in Fig. 1. The pipes 67 connect the pipes 66 with the pipes 60, so that the air forced into the pipes 60 will also pass into the pipes 66 to be discharged therefrom upon the exterior distributing rollers 28 and upon the inking roller 33. The lower end of the pipe 62 is connected with another discharge pipe 68 which leads across the machine to one side of the roller 34 and is perforated so as to permit the discharge of the air upon the inking roller 34. By means of a pipe 69, the pipe 68 is connected with the valve 56 in the upright pipe 36.

70 indicates a hand-operated valve near the bottom of the pipe 62 by means of which the connection between the pipe 62 and pipe 68 may be shut off. The valve 56 opening into pipe 68 operates to shut off the connection with the pipe 68 at the other end, when desired.

The shaft 25 of the ink drum 10 is provided at each end with an axial boring 71, which borings 71, by means of valved couplings 72, are connected with the pipe 36 at one end and the pipe 62 at the other end of the shaft. These connections may be made in any well-known way, for instance by the mechanism shown in section upon the left-hand side of Fig. 2, in which 73 indicates a collar which is revolubly mounted upon the shaft 25 air-tight therewith.

74 indicates a cap which is screw-threaded upon the collar 73 and connected with a coupling-joint 72 and is provided with an opening 75 registering with the openings 71 in the shaft 25.

76 indicates a circular plate secured upon the end of the shaft 25 and fitting air-tight into the interior of the cap 74 and provided with the usual packing 77 between it and the collar 73. By means of this mechanism, the air will pass into the openings 71 in the shaft 25 while it is rotating.

As is best shown in Fig. 1, the valved couplings 72 are provided with valves 72^a

which are adapted to be turned, as will be readily understood without detailed description, so as to open the passage from the pipe 36 directly into the drum 10, closing the pipe 36 above the drum, or so that the air may pass through the pipe 36 closing the passage into the drum, or so that the air may pass both ways. In addition to this, the valved coupling 72 upon the right hand side of the machine in Fig. 1 is provided with a tube 81 having a discharge valve 82 which may be either closed so as to prevent the escape of the air directly from the cored-out drum into the atmosphere and to cause it to flow around through the other pipes the valves being suitably arranged, or to permit its escape directly into the atmosphere without passing through the other piping, the other valves being closed, so that the air may pass only through the ink drum 10, if desired.

78 indicates diametrically-disposed pipes which are screwed into the shaft 25 and open at their inner ends into the openings 71. The outer ends of the pipes 78, by screw-couplings 79, are connected with the cored-out spaces 11 in the cylinder 10.

80 indicates a valve in the pipe 62 corresponding with the valve 57 in the pipe 36 and operated by hand in the same manner and serving to shut-off the upper part of the pipe 62 and therefore the pipe 60 and the pipe 66 from the return pipe 68.

Whenever the valve 37 is opened by the mechanism above described and all the other valves are open, the cold air from the pipe 35 will flow into the pipe 36, thence into the shaft borings 71 at the left-hand end in Fig. 2, through the left-hand coupling 72, valve 72^a being suitably turned, thence to the cored-out spaces 11 in the ink drum 10, out through the pipe 78 at the other end and into the lower portion of the pipe 62 through the coupling 72, at the right-hand end in Fig. 2, and through the pipe 68, discharging upon the form inking roller 34. Such portion of the air as is not discharged passes on into the pipe 69, and then through the valve 56 when it is open back into circulation again. If the valve 56 is closed, the air will be simply discharged through the perforations in the pipe 68 upon the roller 34. If the valve 59 is open the air will also pass up through the pipe 36 and be partially discharged through the perforations in the pipes 60 and 66 upon the inking rollers 28 and form roller 33, such portions as are not discharged passing on to be discharged in the upright pipe 62 and thence into the pipe 68. The connections, as above described, afford a circulation of air through the parts, as will be readily seen, whenever the valve 37 is opened to supply cold air, and the cold air discharged through the pipes operates to cool the composition rollers and also the ink drum which would otherwise tend to be-

come heated with the friction of the composition rollers and in turn tend to heat them. It will also be obvious from the above description that the cold air may be directed either through the ink drum alone or through the ink drum and thence into the piping for discharging upon either or all of the inking rollers, or may be excluded from the ink drum entirely and directed only through the piping to discharge upon all the inking rollers or different rollers individually. For instance, the other valves leading to the piping which discharges air upon the inking rollers being closed, the valves 72^a may be opened and the discharge valve 82 opened. In this case, the cold air will flow directly through the ink drum and not be discharged upon the inking rollers. Or the valve 72^a may be closed and the other valves in the piping be suitably opened so that the cold air will be shut off from the ink drum and be caused to be discharged upon the inking rollers. Without going into further details, it will be readily understood that these valves may be variously operated to cause the air to pass through the piping in a number of different ways so as to discharge as above suggested only through the ink drum, or only upon the inking rollers, or through the ink drum and through the piping upon the inking rollers, or upon all or selected portions of them.

The cam 48 is so constructed that when the roller 49 rides up the inclined surface of the cam and rocks the arm 45 to the right in Fig. 1, the valve 37 is closed, and opened when the roller 49 on the arm 45 descends to the lower portion of the cam, and the higher and lower portions of the cam are so proportioned as to give the desired periods of opening and closing said valve. I prefer to so construct the cam that the valve will be open during about one-half of the period of rotation and closed during the other half.

81 indicates a lever which is journaled upon any suitable portion of the framework and adapted to be swung by hand. One end of the lever 81 projects over the upper end of the arm 44 of the rock-shaft 43 and is adapted, when the arm 44 is swung to the left in Fig. 1 of the drawings by the riding of the roller 49 up the inclined surface of the cam, to be swung behind the arm 44 and operate as a stop to prevent the return of the rock-shaft by the action of the spring 50, thus holding the valve closed. This is used in case of any stoppage of the machine, either from breakdown or other cause which might occur at the time when the valve was open, causing a waste of air, the valve being thus held shut as long as may be desired. When it is desired to put the valve into operative position again, the lever 81 is swung back into the position shown in Fig. 1.

What I claim as my invention and desire to secure by Letters Patent is,—

1. The combination with an inking mechanism having an ink drum and inking rollers, of pipes in operative relation with said inking rollers and adapted to discharge cold air upon said inking rollers, pipes adapted to supply cold air to said ink drum, valve mechanism connecting said pipes, and automatically-operated mechanism adapted to open and close said valves at suitable intervals.
2. In an inking mechanism, the combination with an ink drum having an air chamber within and adjacent to its peripheral surface, of pipes adapted to supply cold air to said air chamber, valve mechanism in said pipes, and mechanism adapted to automatically open and close said valve mechanism.
3. In an inking mechanism, the combination with an ink drum having an air chamber within and adjacent to its peripheral surface, of pipes adapted to supply cold air to said air chamber, valve mechanism in said pipes, inking rollers, pipes placed in operative relation to said inking rollers and having discharge perforations therein, pipe connections adapted to supply cold air to the pipe connections with said drum and with said discharging pipes for said inking rollers, valve mechanism in said supply pipes, and mechanism adapted to automatically open and close said valves at suitable intervals.
4. In an inking mechanism, the combination with an ink drum cored out to provide an air space or spaces within and close to its periphery, pipes adapted to conduct a supply of cold air into and through said air spaces, inking rollers, perforated pipes in operative relation with said inking rollers and adapted to discharge cold air thereon, a supply pipe connected with said pipes leading to said air spaces and to said perforated pipes and adapted to be connected with a source of cold air supply, a rotary valve in said supply pipe having a gear upon its valve stem, a rock-shaft, a segmental gear on said rock-shaft meshing with the gear on said valve-stem, an arm on said rock-shaft, a shaft, means for driving said shaft, and a cam operatively connected with said last-named shaft and adapted to bear upon said arm on said rock-shaft to automatically open and close said valves at suitable intervals.

5. In an inking mechanism, the combination with an ink drum cored out to provide an air space or spaces within and close to its periphery, pipes adapted to conduct a supply of cold air into and through said air space, inking rollers, perforated pipes in operative relation with said inking rollers and adapted to discharge cold air thereon, a supply pipe connected with said pipes leading to said air space and to said perforated pipes and adapted to be connected with a source of cold air supply, a rotary valve in said supply pipe having a gear upon its valve stem, a rock-shaft, a segmental gear on said rock-shaft meshing with the gear on said valve-stem, an arm on said rock-shaft, a shaft, means for driving said shaft, a gear loosely mounted on said shaft and having a cam secured thereon adapted to bear on said arm to operate said rock-shaft to open and close said valve at suitable intervals, and gearing between said shaft and the gear loosely mounted thereon.
6. The combination with inking mechanism having a chambered ink-drum and inking rollers, of means for discharging cold air through said drum, and means for discharging the cold air after it has passed through said drum upon said inking rollers.
7. The combination with inking mechanism having an ink drum with an air chamber or chambers and having inking rollers, of means for discharging cold air into and through said ink drum and mechanism adapted to thence discharge the cold air upon said inking rollers or to discharge it directly from said drum into the atmosphere.
8. The combination with inking mechanism having a cored-out ink drum and inking rollers, of means for discharging cold air either through said drum or upon said inking rollers.
9. In an inking mechanism for printing presses, in combination, an ink drum provided with an air chamber or chambers, inking rollers, and means adapted to discharge cold air into said drum and thence after passing through said drum either into the atmosphere or upon said inking rollers.

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