No. 797,039. PATENTED AUG. 15, 1905.

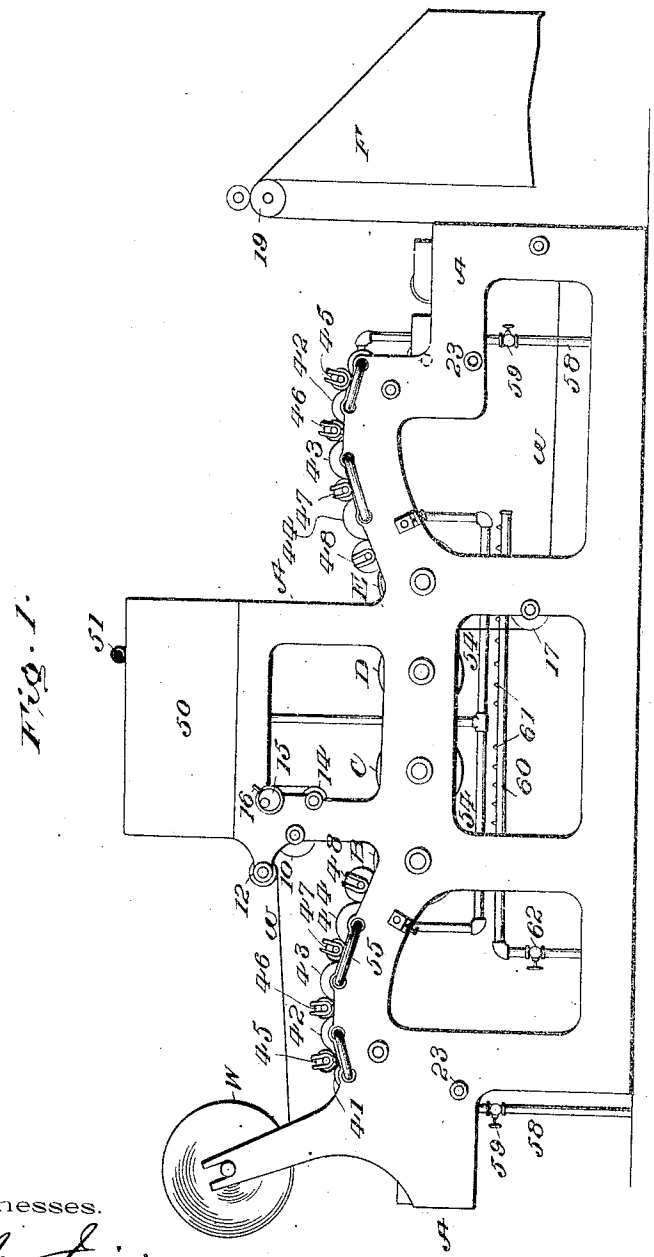
H. A. W. WOOD.

ROTARY WEB PRINTING PRESS.

APPLICATION FILED MAR. 4, 1898. RENEWED NOV. 23, 1904.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses.

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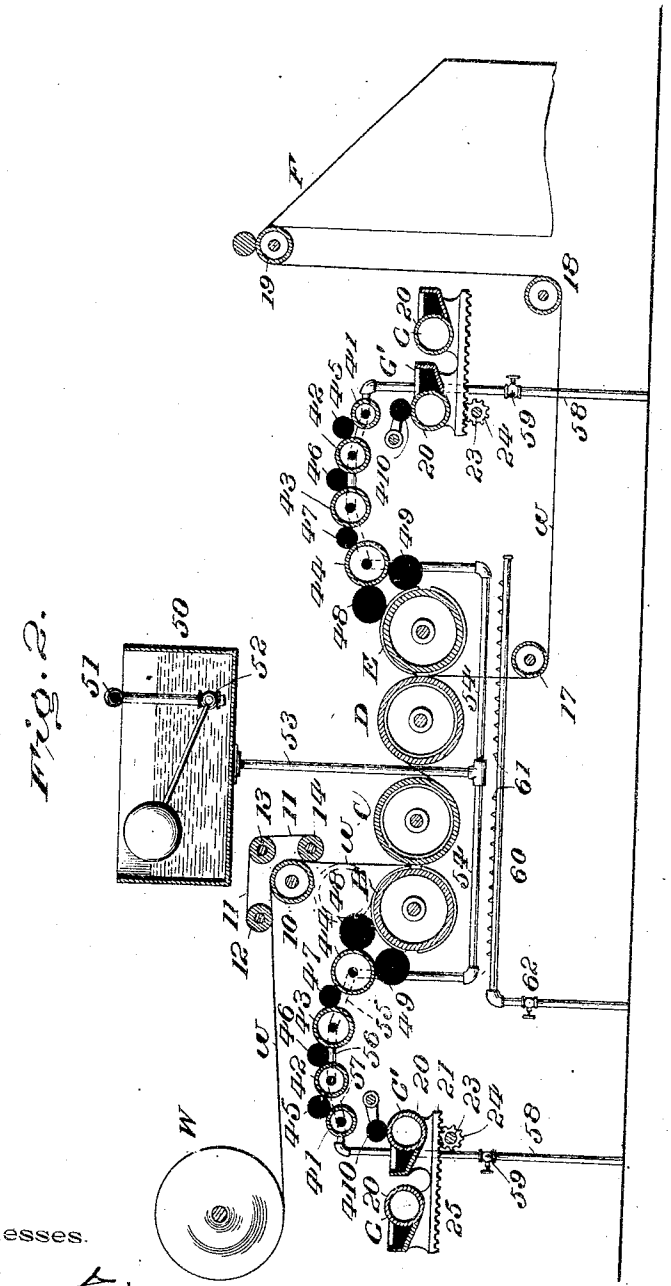
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3 SHEETS—SHEET 2.

Fig. 2.



Witnesses.

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3 SHEETS—SHEET 3.

Fig. 3.

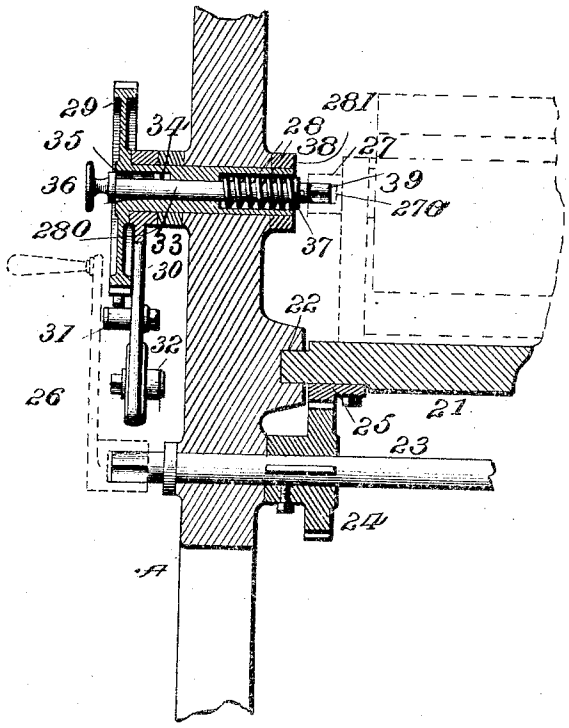


Fig. 4.

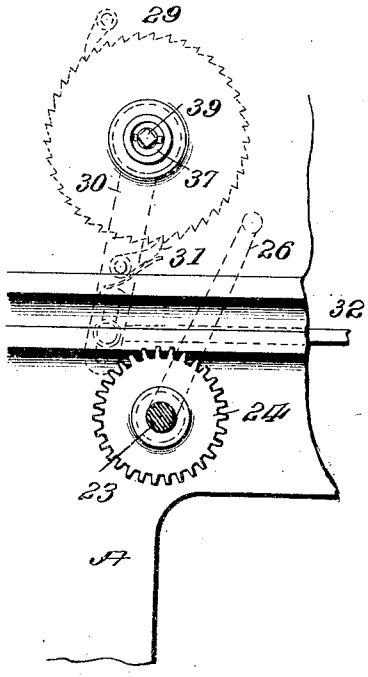
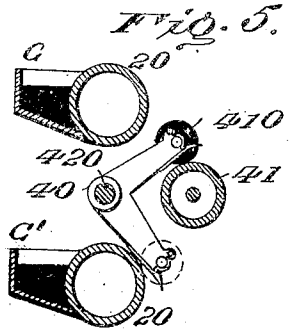


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

HENRY A. WISE WOOD, OF NEW YORK, N. Y., ASSIGNOR TO CAMPBELL PRINTING PRESS & MANUFACTURING COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

ROTARY WEB-PRINTING PRESS.

No. 797,039. Specification of Letters Patent. Patented Aug. 15, 1905.

Application filed March 4, 1898. Renewed November 23, 1904. Serial No. 233,953.

To all whom it may concern:

Be it known that I, HENRY A. WISE WOOD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Rotary Web-Printing Press, of which the following is a specification.

The aim of this invention is to improve the parts and operation of printing-presses, and especially relates to improvements in the inking apparatus thereof by which a very simple distributing apparatus is provided in which the composition rollers may be very easily placed in position or removed and in which the distribution is perfect. I have further improved the inking apparatus by providing means so that different qualities or colored inks may be supplied to the same distributing apparatus. I have further improved the inking apparatus by providing means whereby the ink-distributing apparatus can be kept at a constant temperature.

Referring to the accompanying three sheets of drawings, I have shown enough of one form of printing-press to illustrate how my improvements may be applied to the ordinary rotary web-printing press.

Referring to said drawings, Figure 1 is a side elevation of a printing-machine constructed with my improvements. Fig. 2 is a sectional elevation thereof. Figs. 3 and 4 are a sectional and side elevation, on an enlarged scale, of a detail of the inking apparatus; and Fig. 5 illustrates a modification hereinafter referred to at length.

Referring to the drawings and in detail, A designates the usual framing of the machine.

B designates the first printing-cylinder; C, the first-impression cylinder; D, the second-impression cylinder, and E the second printing-cylinder. These printing-couples are arranged and geared in any of the usual ways, so that if a web is led through the same the web will be printed on both sides, or perfected.

W designates the web-roll, which is mounted in the framing in any of the usual manners and from which the web *w* is led around a drum 10, which is continuously driven by any suitable gearing, as by an intermediate from cylinder B. Coacting with this drum is a set of tapes 11, which bear on said drum and which are led around the tape-pulleys 12, 13, and 14, as shown. The shaft that carries the tape-pulleys 13 may be mounted in eccentric boxes 15, which have suitable operating-handles 16, as shown, so that by adjusting these boxes the tension of the tapes may be adjusted to any desired degree. In some instances instead of using a set of tapes I may use an endless belt. The drum or roll 10 and the tapes are positively rotated to positively draw the web from the roll and forward the same into the bite of the first printing-couple. From the last printing-couple the web may be led around suitable rollers 17, 18, and 19 to any suitable folding device, as F.

I will now describe the details of my improved inking apparatus, and as the same construction is used in connection with each printing-couple a description of that used in connection with the first printing-couple will suffice.

G G′ represent two ink-fountains of any of the usual constructions. These fountains have the usual ink drums or rolls 20. These ink-fountains are arranged on a suitable plate or base 21, which is fitted to slide in suitable ways 22, formed in the framing. A shaft 23 is journaled in the frames under the base and carries pinions 24, which mesh with racks 25, secured to the base 21. The end of the shaft 23 may be provided with a squared head, and a suitable handle 26 may be arranged to fit thereon. By this construction the base 21 may be moved forward or backward in the framing and either fountain G or G′ brought into operative position. The shafts 27 of the fountain-rollers 20 project through the sides of the fountain-casings, as shown in Fig 3, and the back ends of the same are provided with suitable squared or broached sockets 270. A quill or bushing 28 is journaled in the frame, as shown, and has formed or fastened on the end thereof a ratchet-wheel 29. The quill is kept in place by means of collars 280 and 281. Hung on said quill 28 is a lever 30, which carries a spring-pressed pawl 31 for engaging the ratchet-wheel 29. This lever 30 is vibrated by a suitable link or connection 32, which is connected to any of the moving parts of the mechanism in the usual manner. The lever 30 is provided with a slot, so that the link or connection 32 may be adjusted on the lever 30 so that the ratchet-wheel may be turned more or less, as desired. In some instances I contemplate using the ordinary holding-ratchet in connection with the ratchet-wheel. A shaft 33 is fitted in the quill 28, as shown, and this shaft 33 is provided with a

key 34, which fits in a slot 35, cut in the quill 28. The end of this shaft 33 is provided with a suitable button or knob 36. A collar 37 is fitted on the shaft 33 near the inner end thereof, and a spring 38 is arranged between this collar and the shoulder formed in the quill, as shown in Fig. 3, so that the shaft 33 is normally held in its innermost position. The end of the shaft 33 is squared, as shown at 39, to fit into the socket 270 in the shaft 27 of the drum-roll 20. By this construction by pulling out the shaft 33 by means of the button 36 and by manipulating the handle 26 either fountain G or G′ may be brought into operative position. By arranging a plurality of fountains in this manner a very advantageous result is obtained, in that different qualities or colors of ink can be used in the same machine. If different quality of ink is desired, it is simply necessary to bring another fountain into operative position.

If a different-colored ink is desired, all that is necessary is to move the proper fountain into operative position and clean the distributing system or rollers. This can be very easily done.

In the ordinary construction where a different-colored ink is desired it is necessary to clean out the fountain and then put in the different-colored ink. It is a hard, difficult, slow, and dirty task to clean an ink-fountain, so that a different-colored ink can be placed therein. By the use of my improved device I dispense with all this trouble.

I contemplate in some cases using more than two fountains and so arranging the same that any fountain can be brought into operative position as desired.

This improvement is very advantageous in multideck-presses where it is desired sometimes to run a colored supplement, so that one web may be led through the machine and printed in color. A modification of ink-fountains to obtain this result is shown in Fig. 5. In this modification the two ink-fountains G and G′ are secured rigidly in the framing. Double-armed levers 40 are arranged so that the ductor-roll 410 can be placed in either arms thereof. In this construction only that fountain is operated with which the ductor-roll coacts. The ductor-roll levers are arranged on a suitable shaft 40, which is oscillated by any of the usual mechanisms, so that the ductor-roll will take ink from the drum-roller 20 of either fountain and deposit the same on the first distributing-roller 41.

42, 43, and 44 designate the subsequent distributing rollers or drums.

Arranged between the distributing-rollers 41 and 42 is a composition roller 45. Arranged between the distributing-drums 42 and 43 is another composition roller 46. Arranged between the drums 43 and 44 is another composition roller 47, and arranged between the distributing-drum 44 and the printing-cylinders are two composition or form rollers 48 and 49. The composition rollers 45, 46, 47, and 48 are arranged in any of the usual bearings in the side frames, and as the same run on top of the set of distributing-rollers it will be seen that the composition rollers may be very readily placed in position or removed. The lower form-roller 49 is mounted in suitable catches, so that it also can be very readily placed in position or removed.

It will be noted that the drum-cylinders or distributing-rollers 41, 42, 43, and 44 are of different sizes. The preferable arrangement is to make them of increasing diameters—that is, for example, the distributing-roller 41 may be five inches, the roller 42 may be six inches, the roller 43 may be seven inches, and the roller 44 may be eight inches. In this arrangement the circumferential distribution of ink is perfect, so that the ink which is placed upon the distributing-roller 41 in a lump, as it were, will be subsequently broken up and spread by the cylinders of varying diameters. In other words, as the cylinders do not register, the ink is effectually broken up and spread, and this is a much better operation than the common practice where the drum-cylinders are of the same diameter. I preferably vibrate two of the distributing-rollers, as 42 and 43, by any of the usual mechanisms not necessary here to show. It will be seen that this construction I obtain a perfect distribution by but six composition rollers and a distribution which I believe is the best of any device yet devised, due to the varying and increasing diameters of the drum-cylinders.

Another difficulty which arises in inking apparatuses as to-day constructed is that when the press is first started the ink is very hard and slow; but after the press has been run for some time the drum-cylinders will become hot, and then the distribution of ink will be very fast. This is one of the points that limits the speed of presses to-day. Further, in many press-rooms that have been unused through the day the temperature falls and when the presses are started the ink is hard and unyielding, bringing great strain on the rolls and general mechanism of the press, besides giving a product that is gray and not black. After the press is started and warmed up, if the press is run at such a speed as to unduly heat the distributing-rollers, the form or composition rollers will be distorted or spoiled and the press necessarily disabled.

To keep the drum-cylinders of the inking apparatus always at a proper temperature, I provide means for circulating cold water through the same and also means by which the water can be heated to bring the inking apparatus to the proper temperature, so that the press will easily start in proper operation. One way I may accomplish this is to mount a suitable tank, as 50, on the press-frame and

provide the same with a suitable water-supply 51, which may have a ball-cock valve 52, so that the tank will be always kept full of water. A pipe 53 leads from the tank and connects by branches 54 to each set of distributing devices. The water is first carried in through one journal of the distributing-roller 44, then by a suitable branch pipe 55 through the distributing-roller 43, then by a suitable branch 56 through the distributing-roller 42, and then by a suitable branch 57 through the distributing-roll 41, and thence by a suitable pipe 58 to the sewer or back to the tank by any suitable pump. Suitable valves, as 59, are provided in the pipe system that extends to each inking apparatus, so that the supply of water passing through each inking apparatus can be regulated. A suitable heating apparatus, as a gas-pipe 60, provided with a suitable number of jets 61, is arranged in connection with the pipe-line, as shown in Fig. 2. This gas-pipe is provided with a suitable valve 62. Before the press is started in operation this heating device is used, and hot water is thus first circulated through the ink-distributing apparatus. This will bring the ink-distributing apparatus to the proper temperature, so that when the press starts in operation the ink can be very evenly and accurately distributed, and by this means the parts can be very easily started in operation at full speed. After the press has been operated for a short time the heating device is cut out, and then the proper amount of cold water is circulated through each distributing apparatus, and this will overcome the heat generated by the friction of the parts and will keep the ink-distributing apparatus at a proper temperature so that the press can be run at a very high rate of speed.

By these improvements I am enabled to greatly improve the operation of rotary web-printing presses.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an inking apparatus, the combination of an ink-fountain, a plurality of distributing-drums of increasing diameters, a ductor for taking ink from the fountain and depositing it on the smallest of the ink-drums, small composition rollers arranged between the distributing-drums, and one or more composition rollers arranged between the ink-drum of largest diameter and the printing-cylinder, whereby the ink will pass progressively from the ink-fountain by said drums and composition rollers to the printing-cylinder.

2. In a printing-press, the combination of the printing-cylinder, a distributing apparatus for spreading ink and putting the same on the printing-cylinder, a plurality of ink-fountains, and a single ducting mechanism for supplying ink from either fountain to the same part of the distributing apparatus.

3. The combination with an ink-distributing apparatus, of a plurality of fountains, a ducting mechanism and means for moving the fountains so that either fountain can be brought into operative relation relatively to the ducting mechanism.

4. The combination with an ink-distributing device, of a plurality of ink-fountains, means for simultaneously moving the fountains so that any one fountain can be brought into operative position, and means for operating the fountain-roller of the fountain that is used.

5. The combination in an inking apparatus of a base, a plurality of ink-fountains mounted thereon, means for moving the base, an operating mechanism, and means for connecting the operating mechanism to the fountain that is adjusted to an operative position.

6. The combination in an inking apparatus of a plurality of fountains, means for moving the fountains so that any one of the same can be brought to an operative position, a ratchet mechanism, and means for connecting the ratchet mechanism to the fountain-roller, of the fountain that is adjusted to an operative position.

7. The combination of an ink-distributing apparatus, comprising a number of ink-distributing and composition rollers, and a water-circulating apparatus connected to circulate water successively through the distributing-rollers, said circulating apparatus comprising a tank, an automatic water-supplying device therefor, and a pipe leading from said tank, and connected by branch pipes so that the water will circulate successively through the several distributing-rollers.

8. The combination of an ink-distributing apparatus comprising a number of ink-distributing and composition rollers, a water-circulating device substantially as described for circulating water successively through said distributing-rollers, and a device arranged to heat the water.

9. The combination of an ink-distributing apparatus, comprising a number of ink-distributing and composition rollers, a water-circulating device for circulating water through the distributing-rollers, and heating means arranged so that either hot or cold water can be circulated through the distributing-rollers.

10. The combination of two ink-fountains, a distributing apparatus, a vibrating ductor and means so arranged that the ductor may take ink from either fountain and carry the same to the distributing apparatus.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

H. A. WISE WOOD.

Witnesses:
HENRY W. COZZENS, Jr.,
LOUIS W. SOUTHGATE.