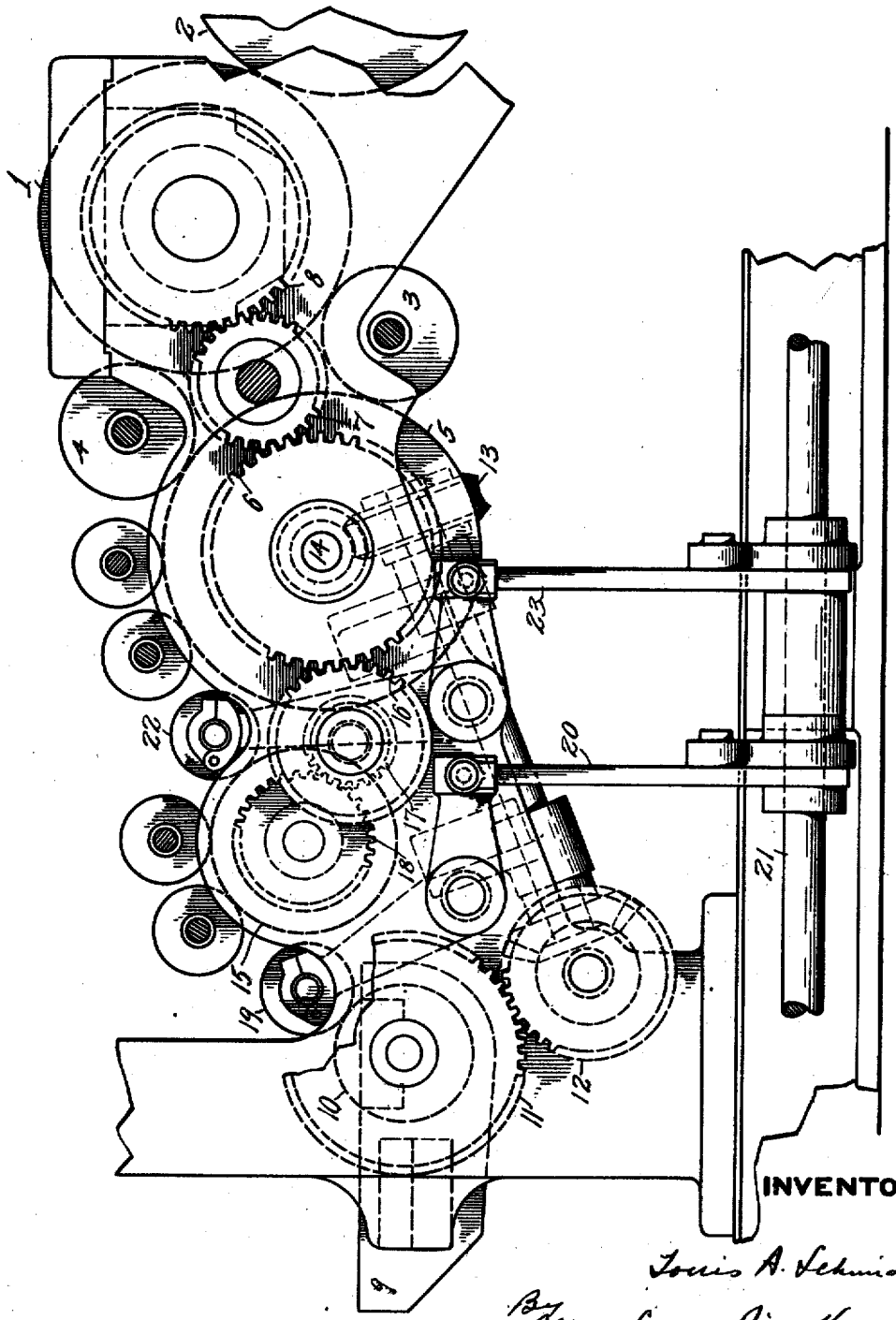
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INKING MECHANISM FOR HIGH SPEED PRINTING MACHINES.

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1,317,224. Patented Sept. 30, 1919.



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ATT'YS.

UNITED STATES PATENT OFFICE.

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INKING MECHANISM FOR HIGH-SPEED PRINTING-MACHINES.

1,317,224. Specification of Letters Patent. Patented Sept. 30, 1919.

Application filed February 5, 1917. Serial No. 146,664.

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 for High-Speed Printing-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in high speed inking mechanism for fast rotary printing machines.

In this class of machines there are usually employed a distributing cylinder which is driven at the surface speed of the form member of the couple, this speed in fast-running web machines, such as newspaper machines, being very high. Ink is supplied to this distributing cylinder from a fountain roll, which necessarily has a very much lower speed, by means of a vibrating ductor roll, the roll vibrating from the fountain roll to the cylinder. These vibrating rolls, to deliver their ink to the distributing cylinder, have to be in contact therewith, and are brought up to the high speed of this cylinder. This results, when the ductor is vibrated from the distributing cylinder to the slow-running fountain roll, in a very severe shock or jar, both to the ductor and to the fountain roll, causing rapid wear of the ductor roll and other disadvantages.

It is the special object of the present invention to provide a high speed inking mechanism for fast-running rotary machines which will reduce this shock or jar, both to the ductor roll and the fountain roll, positively controlling the speeds of the ductor and fountain rolls within limits which will avoid this shock or strain to an undue extent.

With these and other objects in view, the invention consists in certain parts and arrangements which will be described in detail in connection with the accompanying drawings, in which the figure is a side elevation (certain parts being broken away) of so much of an inking mechanism as is necessary for an understanding of the invention.

Referring now to the drawing, the invention is illustrated in connection with a rotary printing machine employing printing couples the members of which are cylinders, the form cylinder being marked 1 and the impression cylinder 2, though it will be understood that the invention, as to certain of its features, is intended to, and may, be employed with machines in which the printing couples may take different forms.

As is usual in inking mechanism of the type referred to, ink is distributed to the form cylinder 1 by distributing rolls 3, 4 which take ink from large distributing cylinder 5, this cylinder being driven in the construction shown through suitable gearing 6, 7 and 8 from the form cylinder and at the same surface speed. Ink is supplied to the mechanism from an ink fountain 9 having fountain roller 10 which is driven as usual at a slow rate of speed through suitable gears 11, 12 and worm gearing 13 from the shaft 14 of the large distributing cylinder 5.

Machines constructed in accordance with the invention will include ductor rolls for transferring the ink from the fountain roll to the distributing cylinder, and, in accordance with the invention, means will be provided whereby these ductor rolls will have their surface speed reduced and positively controlled from that of the distributing cylinder so that when contact with the fountain roll is made the strain or shock above referred to will be greatly minimized. While this may be effected in various ways, there will preferably be provided what may be termed an intermediate transfer cylinder 15 located between the large distributing cylinder 5 and the fountain roll 10, this cylinder being positively driven at a controlled surface speed as much less than that of the distributing cylinder as may be necessary or desired, being, in the best constructions, driven therefrom through a train of reducing gears 16, 17 and 18, this gearing being such, together with the gearing 11, 12 and 13, that the intermediate transfer cylinder 15 is driven at a surface speed about midway between that of the distributing cylinder 5 and the fountain roll 10, this speed having been found in practice to be very efficient.

Ink is delivered to the intermediate distributing cylinder 15 from the fountain roll by means of a ductor roll 19 which, in the present instance, is a vibrating roll, being vibrated between the fountain roll and the

transfer cylinder by the usual rod and arm construction 20 from a cam shaft 21 suitably mounted in the frame of the machine. From the intermediate transfer cylinder ink is delivered to the distributing cylinder 5 by a second ductor roll 22 which, in the present instance, is likewise a vibrating roll, being vibrated by the usual rod and arm construction 23.

With this construction it will be seen that when the ductor roll 22 is brought into contact with the transfer cylinder 15, the speed of the ductor, then running at the speed of the cylinder 5, is only reduced to the slower surface speed of this cylinder, and the shock or strain is very much less than if this roll were vibrated from the distributing cylinder 5 to the slow-running fountain roll 10. So, also, the speed of the ductor roll 19 is only that of the speed of the intermediate cylinder 15, and this is very much less than that of the distributing cylinder 5. Thus a smooth-running mechanism is provided, in which the shocks and strains on the parts are greatly reduced, with consequent increase of life in the rolls. Furthermore, the surface speed of the intermediate cylinder 15 can be regulated as desired through the reducing gearing, and thus the speed of the ductor roll 19, which acts directly on the fountain roll, positively controlled within desired limits.

While the invention has been shown in a preferred form, it will be understood that certain changes and variations in the particular parts and arrangements can be made without departing therefrom.

What is claimed is:—

1. In an inking mechanism for printing machines, the combination with a form member, of a high-speed distributing cylinder, a slow-running fountain roll, a ductor roll intermediate the distributing cylinder and the fountain roll and carrying ink therefrom, and positively operating means for causing the ductor roll to run at a controlled surface speed slower than that of the distributing cylinder, but higher than that of the fountain roll.

2. In an inking mechanism for printing machines, the combination with a form member, of a high speed distributing cylinder, a slow-running fountain roll, a ductor roll taking ink therefrom, an ink transfer cylinder to which ink is delivered from the ductor roll and located between it and the distributing cylinder, means for positively driving the transfer cylinder at a controlled surface speed less than that of the distributing cylinder, and means for distributing ink from the transfer cylinder to the distributing cylinder.

3. In an inking mechanism for printing machines, the combination with a form cylinder, of a distributing cylinder driven therefrom at the same surface speed, a slow-running fountain roll, an ink transferring cylinder from which ink is delivered to the distributing cylinder located between the distributing cylinder and the fountain, means for positively driving the transfer cylinder from the distributing cylinder but at a less surface speed, and a ductor roll transferring ink from the fountain roll to the transfer cylinder.

4. In an inking mechanism for printing machines, the combination with a form cylinder, of a distributing cylinder driven therefrom at the same surface speed, a slow-running fountain roll, an ink transferring cylinder located between the distributing cylinder and the fountain roll, means for driving the transfer cylinder at a surface speed about midway between that of the fountain roll and the distributing cylinder, a ductor roll transferring ink from the fountain roll to the transfer cylinder, and means for distributing ink from the transfer cylinder to the distributing cylinder.

5. In an inking mechanism for printing machines, the combination with a form cylinder, of a distributing cylinder driven therefrom at the same surface speed, a slow-running fountain roll, an ink transferring cylinder from which ink is delivered to the distributing cylinder located between the distributing cylinder and the fountain roll, means for positively driving the transfer cylinder from the distributing cylinder but at a less surface speed, a ductor roll transferring ink from the fountain roll to the transfer cylinder, and a second ductor roll transferring ink from the transfer cylinder to the distributing cylinder.

6. In an inking mechanism for printing machines, the combination with a form cylinder, of a distributing cylinder driven therefrom at the same surface speed, a slow-running fountain roll, an ink transferring cylinder located between the distributing cylinder and the fountain roll, means for driving the transfer cylinder at a surface speed about midway between that of the fountain roll and the distributing cylinder, a ductor roll transferring ink from the fountain roll to the transfer cylinder, and a second ductor roll transferring ink from the transfer cylinder to the distributing cylinder.

7. In an inking mechanism for printing machines, the combination with a form cylinder, of a distributing cylinder driven therefrom at the same surface speed, a slow-running fountain roll, an ink transferring cylinder from which ink is delivered to the distributing cylinder located between the distributing cylinder and the fountain roll, reduced speed gearing for driving the transfer cylinder from the distributing cylinder whereby the transfer cylinder is driven at a less surface speed, and a ductor roll trans-

ferring ink from the fountain roll to the transfer cylinder.

8. In an inking mechanism for printing machines, the combination with a form cylinder, of a distributing cylinder driven therefrom at the same surface speed, a fountain roll, connections including a worm and worm-wheel for driving the fountain roll at a slow rate of speed from the distributing cylinder, an ink transfer cylinder located between the distributing cylinder and the fountain roll, reduced speed gearing for driving the transfer cylinder from the distributing cylinder at a reduced surface speed, a ductor roll transferring ink from the fountain roll to the transfer cylinder, and a second ductor roll for transferring ink from the transfer cylinder to the distributing cylinder.

9. In an inking mechanism for printing machines, the combination with a form member, of a high speed distributing cylinder, a slow running fountain roll, ink transferring devices intermediate the distributing cylinder and fountain roll and transferring ink from the roll to the cylinder, and positively operating means for causing certain of the transferring devices to run at a controlled surface speed slower than that of the distributing cylinder, but higher than that of the fountain roll.

10. The combination with a ductor roller and form rollers, both free to rotate, of a series of rotary ink distributing and conveying rolls between them, and means for constantly driving certain of said rolls at different progressive surface velocities.

11. In an inking mechanism the combination of a source of supply, a printing cylinder and a series of forwarding and distributing rolls connecting the two, a plurality of which have surface velocities greater than the rolls from which they receive their ink.

12. In an inking device, the combination with a printing cylinder, of a series of rolls rotatable at different surface velocities, that of each being less than that of one between it and said printing cylinder.

In testimony whereof, I have hereunto set my hand.

LOUIS A. SCHMIDT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."