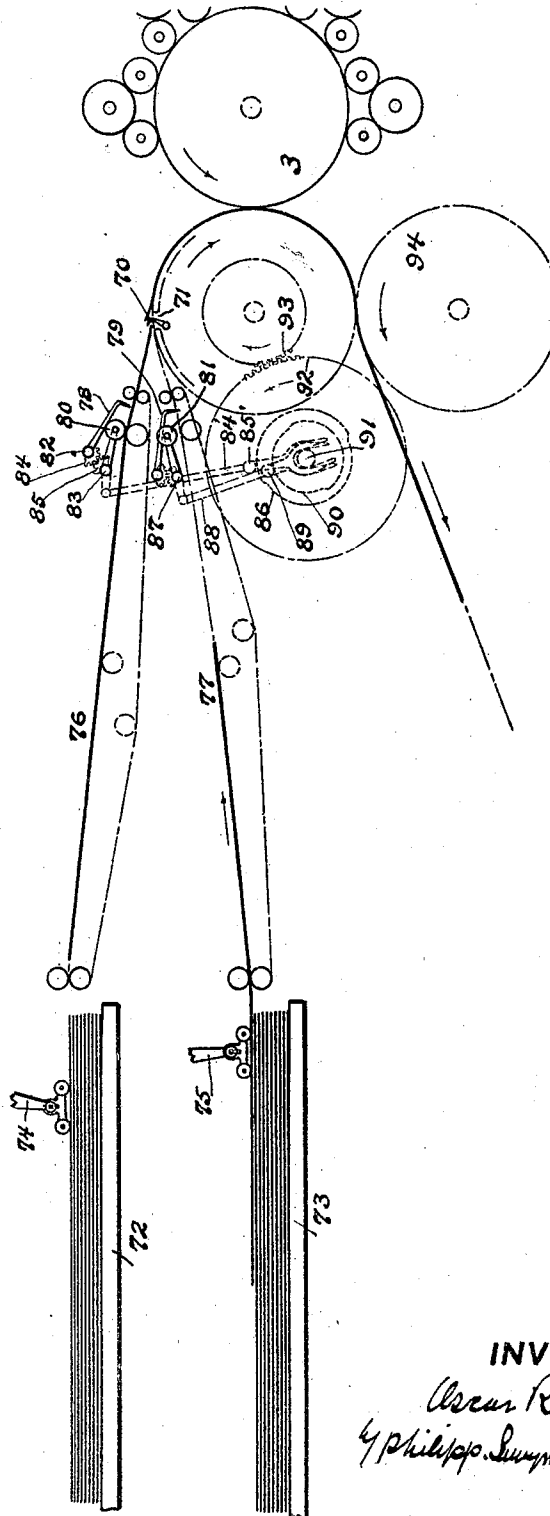


O. ROESEN.
 PRINTING MACHINE.
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1,007,008.

Patented Oct. 24, 1911.



WITNESSES.
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UNITED STATES PATENT OFFICE.

OSCAR ROESEN, OF NEW YORK, N. Y., ASSIGNOR TO R. HOE AND CO., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PRINTING-MACHINE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, OSCAR ROESEN, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Printing-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improvements in printing machines.

The invention has for its object to produce a high speed rotary printing machine to which sheets may be fed with accuracy and great rapidity, thereby enabling a large product to be obtained, and in which the construction of the cylinders is such that substantially the entire circumference of the printing cylinder may be used for printing plates, so that the machine is capacitated to produce sheets which are substantially equal in length to the circumference of the cylinder.

With these and other objects not specifically referred to in view, the invention consists in certain constructions and in certain parts, improvements and combinations as will be hereinafter fully described and then specifically pointed out.

Referring to the accompanying drawing, the figure represents diagrammatically a construction of printing machine embodying the invention.

Referring to said drawing, 1 indicates the impression cylinder of a rotary printing couple and 3 the cooperating printing cylinder. The impression cylinder is provided with sheet taking devices which may be of any suitable construction. In the particular construction illustrated, these sheet taking devices comprise a set of grippers 70 operating through a gap 71. The surface of this impression cylinder is unbroken, except for this gripper gap, so that the entire surface, with the exception of this gripper gap, may be utilized for impression purposes. This enables substantially the entire circumference of the printing cylinder 3 to be utilized for the purpose of carrying plates, that is to say, the plates may be placed upon this cylinder 3 so as to cover its entire surface with the exception of that portion which comes opposite the gap in which the sheet taking devices of the cylinder, 1 operate. Inasmuch as the gap in

which the sheet taking devices operate may be made narrow, sheets may be printed on the couple which are substantially equal in length to the circumference of the cylinders, since the width of the gap may be made to correspond to the combined width of the margins on the head and tail of the sheets.

Machines embodying the invention will include means for supporting piled sheets, the sheets being brought into register and fed to the couple on each revolution of the cylinders. In the construction illustrated, the sheets are supported by two tables 72, 73, the sheets being automatically fed from these tables by feeding devices 74, 75. The construction of automatic feeding devices of this character is well understood and since the particular construction of them has no relation to the present invention, the diagrammatic illustration of them is sufficient.

The means for delivering the pile sheets and for effecting the register may be varied. In the construction illustrated, the sheets from the table 72 are delivered through a pathway 76 of the usual type and the sheets from the table 73 may be delivered through a similar pathway 77. The construction of pathways of this character is well understood in the art and the diagrammatic illustration of them is, therefore, regarded as sufficient.

The register of the sheets is effected, in the particular construction shown, by drop guides 78, 79, and when this form of registering device is adopted, drop rolls, as 80, 81, may be employed in connection therewith to start the sheets after they have been registered against the guide. These guides and drop rolls, when employed, may be operated in any suitable manner. In the construction illustrated, the drop guide 78 is pivoted on a shaft 82 and the drop roll 80 is carried on arms extending from a shaft 83, these two shafts 82, 83, being connected by intermeshing toothed segments 84, 85. The shaft 83 may be operated from a cam rod 84' provided with a roll 85', this roll running on a cam 86. The drop guide 79 and roll 81 may be similarly operated, the shaft 87, on which the arms carrying the roll 81 are mounted, being operated from a cam rod 88 provided with a roll 89 which cooperates with a cam 90. The two cams 86 and 90 may be mounted on a shaft 91

driven through a suitable gear, indicated at 92, from a gear 93 on the shaft of the impression cylinder. It is apparent that with the construction illustrated, as each drop guide is raised, its corresponding drop roll will be lowered into operative position, and vice versa. The cams 86 and 90 alternately operate the rolls and drop guides, thus enabling sheets to be fed in succession from the piles, that is to say, a sheet will first be fed from one pile, the next sheet from the second pile, and so on. Further, in the particular construction illustrated, the pathways are arranged to converge, so that both pathways deliver the sheets to the same point in the revolution of the cylinder. The registering devices should be located as close to the cylinder as practicable so that the chance of the sheets losing register through their transit from the registering devices to the sheet taking devices will be minimized.

It will be noted that the construction illustrated provides a sheet feeding machine in which very high speeds may be obtained, since the speed of the cylinder is practically only limited by the character of the printing which it is desired to obtain. Further, only a single set of plates need be employed, and practically the entire circumference of both cylinders may be employed for printing and impression purposes, since the tail of a sheet being printed and delivered may extend from the gripper gap by the amount of the margin thereon, as the grippers in opening and taking a succeeding sheet will push the tail of the preceding sheet out of the way. After being printed, the sheets may be delivered in any suitable manner, as, for instance, through the agency of the cylinder 94.

Changes and variations may be made in the construction by which the invention is carried into effect. The invention is not, therefore, to be confined to the particular construction hereinbefore described and illustrated in the accompanying drawing.

What is claimed is:—

1. The combination with a continuously operating impression cylinder having a single set of sheet taking devices on the cylinder, the surface of the cylinder being unbroken except at the point of operation of the sheet taking devices, of a continuously operating printing cylinder corresponding in diameter with and cooperating with the impression cylinder, said printing cylinder having a plate receiving surface coextensive circumferentially with the impression surface of the impression cylinder, means for supporting a plurality of piles of sheets, and means for registering and delivering a sheet from said piles to the sheet taking devices of the impression cylinder, on each revolution thereof, the sheets being delivered from the several piles in succession.

2. The combination with a continuously operating impression cylinder having a single set of sheet taking devices on the cylinder, the surface of the cylinder being unbroken except at the point of operation of the sheet taking devices, of a continuously operating printing cylinder corresponding in diameter with and cooperating with the impression cylinder, said printing cylinder having a plate receiving surface co-extensive circumferentially with the impression surface of the impression cylinder, means for supporting a plurality of piles of sheets, sheet forwarding pathways arranged to deliver sheets to the same point in the revolution of the cylinder, registering devices in the pathways, and means for successively operating the registering devices to effect the delivery of the sheets successively from the sheet supports.

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

OSCAR ROESEN.

Witnesses:

F. W. H. CRANE,
LOUIS ROEHM.