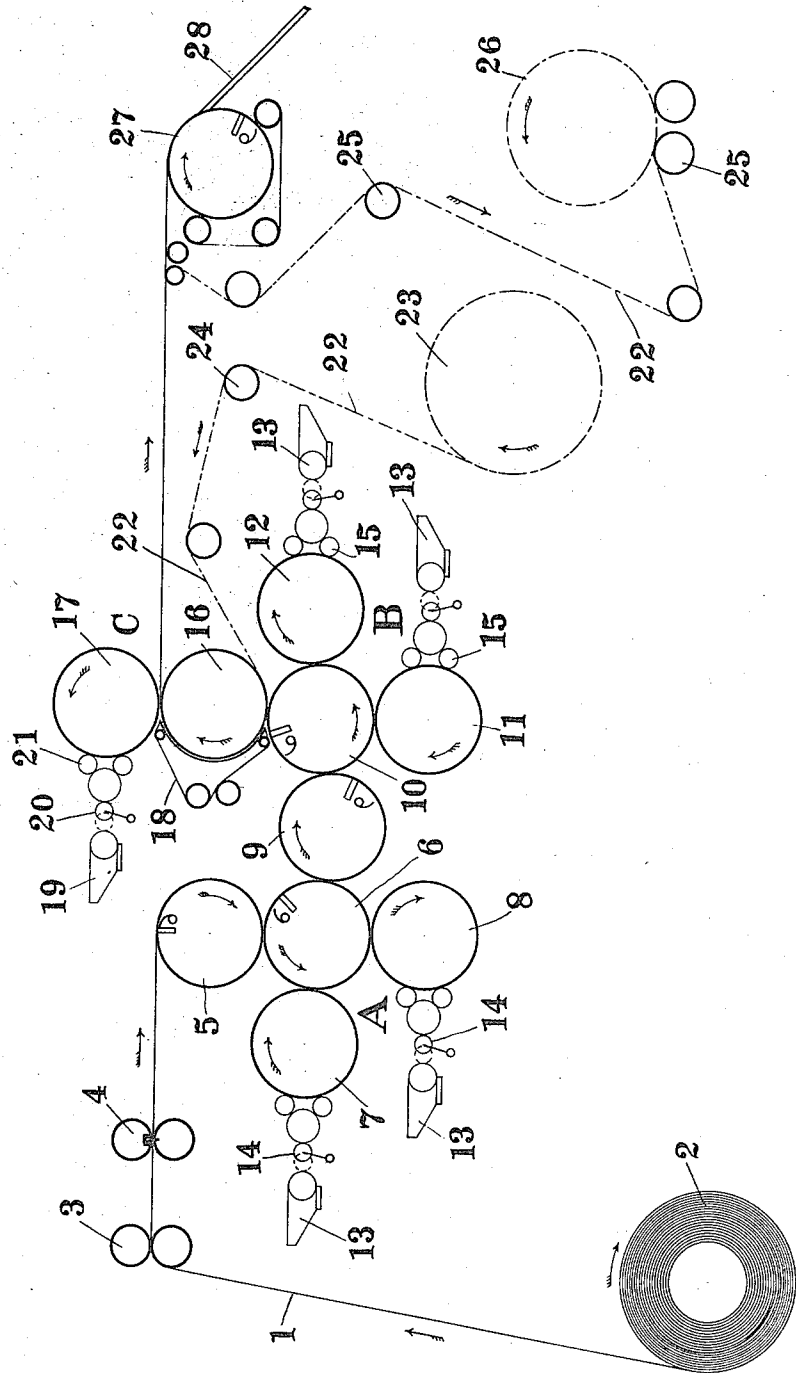


E. W. DEAN.
 PRINTING MECHANISM.
 APPLICATION FILED FEB. 21, 1906.

965,502.

Patented July 26, 1910.



WITNESSES:

J. C. [Signature]
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UNITED STATES PATENT OFFICE.

EDMUND W. DEAN, OF DOVER, NEW HAMPSHIRE, ASSIGNOR TO KIDDER PRESS COMPANY, OF DOVER, NEW HAMPSHIRE, A CORPORATION OF WEST VIRGINIA.

PRINTING MECHANISM.

965,502.

Specification of Letters Patent. Patented July 26, 1910.

Application filed February 21, 1906. Serial No. 302,204.

To all whom it may concern:

Be it known that I, EDMUND W. DEAN, residing at Dover, in the county of Strafford and State of New Hampshire, have invented certain new and useful Improvements in Printing Mechanism, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to printing mechanism and, more particularly, to a rotary printing press designed to effect printing in colors.

It has for one of its objects to provide in a printing press of the above type a single printing group capable of printing in a plurality of colors upon sheets previously cut in the press.

Another object hereof is to provide a plurality of serially arranged groups of printing cylinders, each group printing upon the same side of a sheet in a plurality of colors, said printing groups being also designed to cooperate with each other to produce multicolored printing and to deliver a sheet printed in a plurality of colors to a perfecting printing couple.

A still further object is to provide an improved printing press of the above type wherein the arrangement of the cooperating parts is such that multicolored printing is accomplished in a more efficient and economical manner than has heretofore been attained.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the mechanism hereinafter described and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing, I have shown diagrammatically one of the various possible embodiments of my invention.

Rotary printing presses of this general type, and especially those wherein printing in two or more colors is produced, as heretofore constructed, not only require the employment of a large number of cylinders with a consequent great expenditure of power to operate the press, but the com-

plexity of the mechanism renders the successful operation thereof difficult to accomplish. By the arrangement of printing mechanism which I shall presently describe, I have eliminated these and other objections and have attained many positive advantages, as will be apparent.

In the mechanism which has been selected to illustrate the preferred embodiment of my invention, the web 1 from which are cut the sheets to be printed is supplied from a roll 2, being drawn therefrom by suitable feed rollers 3 and delivered thereby to cutting cylinders 4 which sever the web into sheets of the required length. Transfer cylinder 5 arranged in advance of cutting cylinders 4 delivers the sheets to the first printing group A, comprised in the present instance by impression cylinder 6 and its mating form or plate cylinders 7 and 8.

Transfer cylinder 9 receives the sheets from printing group A and conveys the same to a second printing group B comprised by impression cylinder 10 and plate cylinders 11 and 12. The several plate cylinders are each provided with a set of inking devices represented diagrammatically herein by fountain 13, ductor 14, and distributing rolls 15. It will be understood, of course, that the machine as arranged for operation will be provided with the usual number of ink-supplying and distributing rollers. Several of them have been omitted from the drawing in the interest of clearness of illustration.

A perfecting printing couple C comprised by impression cylinder 16 and form cylinder 17 is arranged to receive the sheets from printing group B, said sheets being guided about impression cylinder 16 by a suitably supported endless band 18 or other mechanism. Form cylinder 17 is also provided with an ink fountain 19, from which ink is supplied by ductor 20 to inking rolls 21. Impression cylinder 16 carries an offset web 22, which feeds from a supply roll 23 passing over idlers 24 and returns over idlers 25 to a rewinding roll 26. This offset web contacts with the sheet when the same is delivered from printing group B. Arranged in advance of perfecting printing couple C is an accumulating cylinder 27 upon which the printed sheets are carried until removed by fly 28.

It will be understood, of course, that the several transfer and impression cylinders are provided with the usual grippers arranged to be opened and closed at the proper points of rotation of the cylinders for the reception and delivery of the sheets to the mechanism arranged in advance thereof. Grippers of the type above referred to and their operating means being commonly employed in rotary printing presses, I do not deem it necessary to describe them further than to say that their operations are so timed that a sheet when delivered from the grippers of one cylinder are seized by the grippers of the succeeding cylinder and so on until the printing upon a sheet is completed.

Having thus described my invention, the operation thereof is as follows: It may first be noted that ink fountains 13 of printing groups A and B are supplied with inks of different colors. In actual practice, four colors are all that are required, giving the three primary colors, yellow, red and blue, and another color, usually black or brown, designed to be used when text is printed in connection with colored illustrations. The several rollers and cylinders being suitably driven with the same peripheral velocities by means, not shown, the web 1 is fed from supply roll 2 through the instrumentality of feed rollers 3 and after being cut by cutting cylinders 4 is conveyed by transfer cylinder 5 between impression cylinder 6 and plate cylinders 7 and 8 of printing group A, each of said plate cylinders operating to print thereon different colored impressions. The sheet partly printed in colors is then transferred by cylinder 9 to impression cylinder 10 of printing group B and between said impression cylinders and plate cylinders 11 and 12, by means of which other colors are impressed thereon, whence the sheet is guided about the impression cylinder 16 of perfecting couple C and between said cylinder and perfecting plate cylinder 17. During the passage of the sheet about the impression cylinder 16, the same is held in contact by guiding band 18 or other mechanism with offset web 22 which travels over said cylinder thereby insuring against blotting or smearing of the multicolored impressions. The operation of the perfecting printing couple C completes the printing upon the sheet, and the same is delivered to accumulating cylinder 27 and removed therefrom by fly 28.

Throughout this specification and claims the terms "form cylinder" and "plate cylinder" have been employed synonymously to indicate a cylinder provided with printing devices, and by the term "transfer cylinder" is meant any device having means to transfer a sheet from one printing group to a succeeding group in the series.

It will thus be seen that I have provided

simple and efficient means for accomplishing the objects of my invention, the printing operation being accomplished by the employment of relatively few printing cylinders, and the arrangement thereof being well adapted to attain the objects of my invention in an economical manner.

It will be understood that while, in this illustrative embodiment of my invention, I have shown each printing group as provided with two plate or form cylinders and two sets of inking devices, more or less than this number may be equally well employed without departing from the scope or the spirit of my invention.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention could be made without departing from the scope thereof, I intend that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense. I desire it also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention, which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new, and desire to secure, by Letters Patent, is:—

1. In a rotary printing press, in combination, with means for feeding the web, cutting devices arranged in advance of the feeding means and adapted to sever the web into a plurality of sheets, a printing group supplied with inks of different colors adapted to effect printing upon sheets severed from the web, a transfer cylinder arranged intermediate the cutting means and said printing group, a second printing group supplied with inks of different colors adapted to effect printing upon said sheets, a transfer cylinder arranged intermediate said printing groups, a perfecting printing couple adapted to complete the printing upon said sheets, said perfecting couple being arranged in advance of said second printing group and adapted to receive the sheets from said second printing group, an accumulating cylinder for receiving said completely printed sheets, and a fly adapted to remove said sheets from said accumulating cylinder.

2. In a rotary printing press, in combination with means for feeding the web, cutting devices arranged in advance of the feeding means and adapted to sever the web into a plurality of sheets, a printing group adapted to effect printing upon sheets severed from said web, a transfer cylinder arranged intermediate the cutting means and said printing group, a second printing group adapted to effect printing upon said

5 sheets, a transfer cylinder arranged intermediate said printing groups, a perfecting printing couple adapted to complete the printing upon said sheets arranged in advance of said second printing group, an accumulating cylinder for receiving said completely printed sheets, and means for conveying said sheets from said perfecting

printing couple to said accumulating cylinder.

In testimony whereof I affix my signature, in the presence of two witnesses.

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EDMUND W. DEAN.

Witnesses:

H. M. SEAMANS,
R. F. MARTIN.