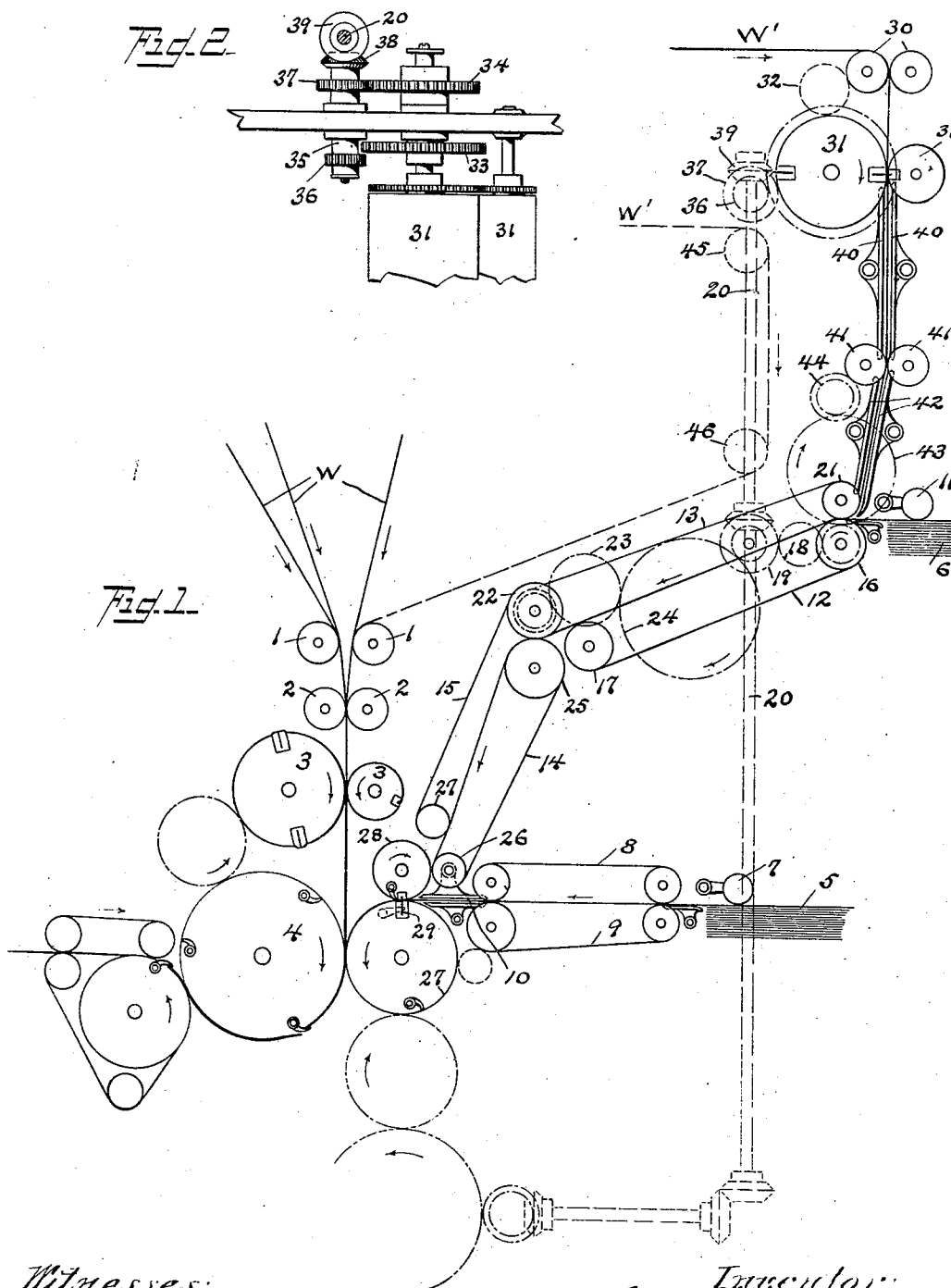


E. P. SHELDON.
PRINTING MACHINE.
APPLICATION FILED JUNE 22, 1907.

1,055,497.

Patented Mar. 11, 1913.



Witnesses:
A. White
A. Journey.

Inventor:
Edward P. Sheldon
by his Attys:
Phillips, Swann, Rice & Kennedy.

UNITED STATES PATENT OFFICE.

EDWARD P. SHELDON, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO
R. HOE AND CO., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PRINTING-MACHINE.

1,055,497.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Application filed June 22, 1907. Serial No. 380,223.

To all whom it may concern:

Be it known that I, EDWARD P. SHELDON, a citizen of the United States, residing at New York, county of Kings, 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 certain improvements in printing machines.

Machines have been heretofore constructed in which a web or a plurality of webs have been forwarded and cut into sheets and such machines have included devices whereby sheets from a source of supply independent of the web, such, for instance, as a pile, have been forwarded to be associated with the web sheets, such association being effected by a collecting cylinder. This class of machines is especially desirable in establishments where it is desired to incorporate with the product of a high speed web machine specially printed sheets such as colored pictures, or sheets printed in such a manner that they can be more practically produced on special printing machines, such as lithographic or flat bed machines. It has been found, however, that the machines referred to lack that flexibility of product which is sometimes desired. It sometimes happens, for instance, that a publisher desires to issue from his machine a product such as has been described having a cover or specially printed sheets, or both, of such a class that the cover and specially printed sheets should be produced on lithographic or flat bed machines, and at other times he may desire to introduce a specially printed sheet which can be produced on a web machine. In this latter case, he may desire to introduce this specially printed sheet directly with the web sheets, as, for instance, when it is to form the cover of an uncollected product, in which case the independent source of sheet supply before referred to might be cut out. Again, he may desire to introduce specially printed sheets from his machine with a collected product which may or may not include the sheets from the independent source of sheet supply.

It is the object of this invention to produce a printing machine which shall be capacitated to form a product which may consist of web sheets and specially printed

sheets, the construction of the machine being such that the specially printed matter may be introduced in sheet form from a source of supply, such as a pile, independent of the webs which forms the main product, or in web form at the speed of the main webs of the machine, or in web form at a speed which will enable the specially printed sheets from the web to be associated with a collected product from the main webs, or specially printed matter may be introduced both in the form of sheets from an independent source of supply, such as a pile, or from a web.

Referring to the drawings—Figure 1 70 illustrates in diagrammatic side elevation a machine embodying the invention. Fig. 2 is a detail view illustrating certain gearing which may be employed.

Machines embodying the invention will include means for forwarding a web or webs from which the main product of the machine is to be produced. These means will vary according to the particular construction of printing machine in which the invention is embodied. In the construction illustrated, these means consist of a pair of bending rolls 1 and a pair of drawing-off rolls 2. These rolls, in the particular construction illustrated, deliver the webs W, three of which are shown, to a pair of cutting cylinders 3 of usual construction, the sheets thus formed being delivered, in the particular construction illustrated, to a collecting cylinder 4. The cylinder illustrated is of the ordinary three-part type.

Machines embodying the invention will also be provided with means for supplying specially printed sheets thereto, and in the best constructions these sheets will be taken from a pile or piles. Two piles, 5, 6, are illustrated. The sheets may, if desired, be removed from the pile 5 by an automatic feeding mechanism of any usual type, the forwarding roller of which is indicated diagrammatically at 7. These sheets may be passed along a pathway formed by tapes 8, 9 supported and operated in the usual manner, these tapes operating to deliver the sheets to a pair of guides 10. The sheets from the pile 6 may be automatically removed from the pile, if desired, by an automatic feeding mechanism of any approved type, the drop roller of such mechanism being indicated at 11. Sheets from this pile 110

enter a pathway which may be formed in any approved manner. In the construction illustrated, it consists of pairs of tapes 12, 13, and 14, 15. The tapes 12 run around a driven roll 16 and a roll 17, the roll 16 being driven by an intermediate, indicated at 18, from a gear 19, on a standing shaft 20. The tapes 13 run around a roll 21 and then around a driven roll 22, this roll being driven, as illustrated, by gears 23 24 from a gear on the standing shaft. The tapes 14 run around a roll 25 and then around a driven roll 26. The tapes 15 run around the driven roll 22 before described and then around a roll 27. The two tape pathways described may serve to forward the sheets from the piles and they may be delivered to the web sheets in any desired manner. As illustrated, these pathways deliver to a pair of cylinders 27, 28. As the mechanism is organized, in the particular machine shown, these pile sheets are double length sheets and are to be cut in half and successively delivered to the three-part collecting cylinder. The cylinder 28 is employed as a detaining cylinder for the second half of the sheets so as to effect the proper interval between the delivery of the halves of the sheets to the three-part collecting cylinder. This cylinder also acts as a cutting cylinder in connection with the cylinder 27 which is provided, in the construction illustrated, with a knife 29. The specific mechanism by which the various operations of these cylinders are effected has no bearing on the present invention and is not, therefore, illustrated or described.

Machines embodying the invention will also be provided with means for forwarding an additional web, and these means will vary according to the character of the machine in which the invention is embodied. In the construction illustrated, this additional web, marked W', is shown, according to one arrangement of the machine, as being forwarded by a pair of drawing rolls 30. These rolls serve to forward the web at a lesser speed than the main webs. These rolls deliver the additional web to a pair of cutting cylinders 31, which cylinders, of course, run at a proper speed to sever the additional web into sheets, as desired. These cylinders 31 may be intergeared as illustrated (see Fig. 2) and they serve to drive the rolls 30 by an intermediate 32. The cylinders 31 may be in turn driven from the standing shaft 20 before referred to and the construction may be such that the speed of the cutting cylinders and the forwarding rollers 30 may be varied according to the number of collections to be made by the collecting cylinder 4. While the particular construction by which this result, when it is desired, may be effected, Fig. 2 illustrates a suitable change gearing for this purpose.

According to this construction, the shaft of one of the cylinders 31 is provided with two gears 33, 34, both of which are fast on the shaft. A stud shaft 35 is provided which carries two gears 36, 37 both of which are fast on the shaft, but it may be slid along the shaft so that the gear 37 may be in or out of mesh with the gear 36, and the gear 36 may be in or out of mesh with the gear 33. This stud shaft 35 may be driven by bevel gears 38, 39, the gear 39 being mounted on the standing shaft. According to the gearing illustrated, when the gears 37 and 34 are in mesh, the web W' will be forwarded at half the speed of the main webs W. When the gears 36, 33 are in mesh, that web will be forwarded at one-quarter the speed of the main webs. According to this construction, therefore, the collecting cylinder 4 may make either two or four collections from the main webs and the sheets from the web W' will be delivered in the proper time for these collections. After the sheets are cut from the web W', they will be forwarded in any suitable manner, as by the metallic sheet guides 40. These sheets, as they are associated with sheets from the main webs, should be brought up to the speed of these webs. This may be accomplished in any approved manner. In the construction shown, two speeding-up rollers 41 are employed for this purpose, these rollers receiving the sheets from the guides 40 and delivering them to a similar pair of guides 42. These speeding-up rolls may be driven by suitable gearing, indicated at 43, 44, from the shaft which carries the roll 16. The guides 42, in the particular construction illustrated, serve to deliver the sheets to the sheet pathway formed by the tapes 12, 13, 14, 15 before referred to. If desired, this supplementary web W', either specially printed or not, may be run uncut directly to and associated with the webs W. This course of the web is indicated by dotted lines in Fig. 1, the web in this instance passing over a pair of guide rolls 45 46.

It will be understood that the construction described provides an exceedingly flexible machine so far as the products are concerned and one which is well-adapted to the varying products desired by the publishers of periodicals which vary considerably in their character.

The printing mechanism which is not illustrated, while it may be of any usual type, may be assumed to be, for the purposes of description, a two-deck machine, each deck having pairs of printing couples six pages wide, such mechanisms being well-known in the art. With this construction, the three webs W may be obtained from the lower deck, the usual slitting and associating mechanisms being employed, and, if desired, a similar product may be

obtained from the upper deck. The upper deck may be run as an independent machine and produce a cover two pages wide, the web in that case following the course of the web W' and being run in with the webs W, as indicated. This construction will give a sixteen page product which might consist of twelve pages and a cover, the pile feeds being cut out. Again, by running the upper deck as an independent machine and as a double ender, the web may issue as a cover printed in black on the inside and in three colors on the outside. This web following the course of the web W' might be delivered to a collected product from the main webs which would vary according to the number of webs run and the number of collections, the pile feeds being cut out. Again, by running either or both of the pile sheet feeds, the product may be again varied as to the number of sheets and the product also varied as to the character of the specially printed sheets. Other variations in the product which can be produced by this mechanism will readily suggest themselves to those skilled in the art.

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 drawings.

What is claimed is:—

1. The combination with means for forwarding a web and cutting it into sheets, of a collecting cylinder independent of the cutting means, a source of sheet supply, a pathway along which sheets from said source may be forwarded to be associated with said web sheets, means for forwarding an addi-

tional web at a lesser speed than that of the first named web and for converting it into sheets, and means for bringing the sheets from the additional web up to the speed of the other web and for delivering it to the sheet pathway.

2. The combination with means for forwarding a web and converting it into sheets, of a collecting cylinder, a pathway along which sheets may be forwarded to be associated with said web sheets, means for forwarding an additional web at a lesser speed than that of the first named web, means for varying the speed of this web in accordance with the number of collections made by the collecting cylinder, means for converting this additional web into sheets and for bringing the sheets therefrom up to the speed of the other web, and means for delivering them to the sheet pathway.

3. The combination with means for forwarding a web and cutting it into sheets, of a collecting cylinder independent of the cutting means, a pathway along which sheets may be forwarded to be associated with said web sheets, means for forwarding an additional web at a lesser speed than that of the first named web and converting it into sheets, means for bringing the sheets from the additional web up to the speed of the other web and for delivering them to the sheet pathway, and means for associating said web uncut and at full speed with the other web.

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

EDWARD P. SHELDON.

Witnesses:

F. W. H. CRANE,
LOUIS ROEHM.

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