H. M. BARBER.

SHEET DELIVERY MECHANISM FOR PRINTING PRESSES.

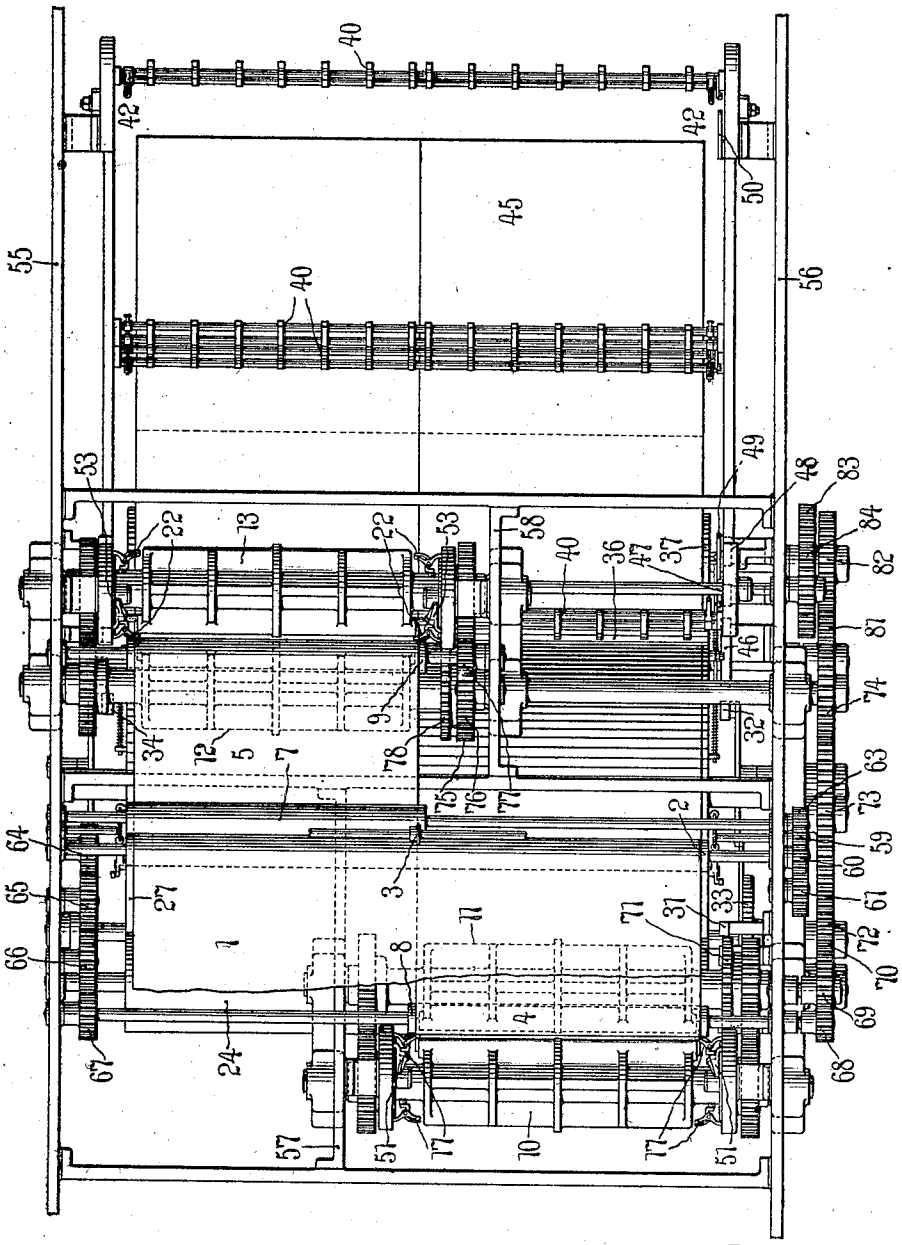
APPLICATION FILED JUNE 2, 1916. RENEWED MAY 12, 1919.

1,306,399.

Patented June 10, 1919.

3 SHEETS—SHEET 1.

Fig. 1.



Witness:
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Inventor:
Howard M. Barber
by attorneys
Brown & Seward

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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3 SHEETS—SHEET 2.

Fig. 3.

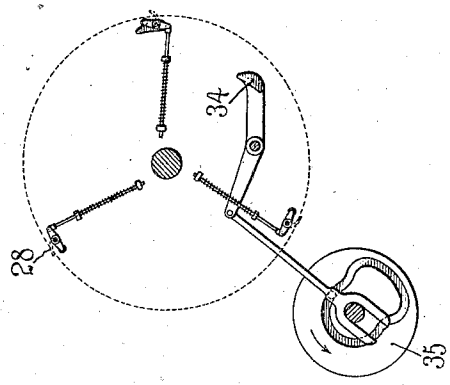


Fig. 2.

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3 SHEETS—SHEET 3.

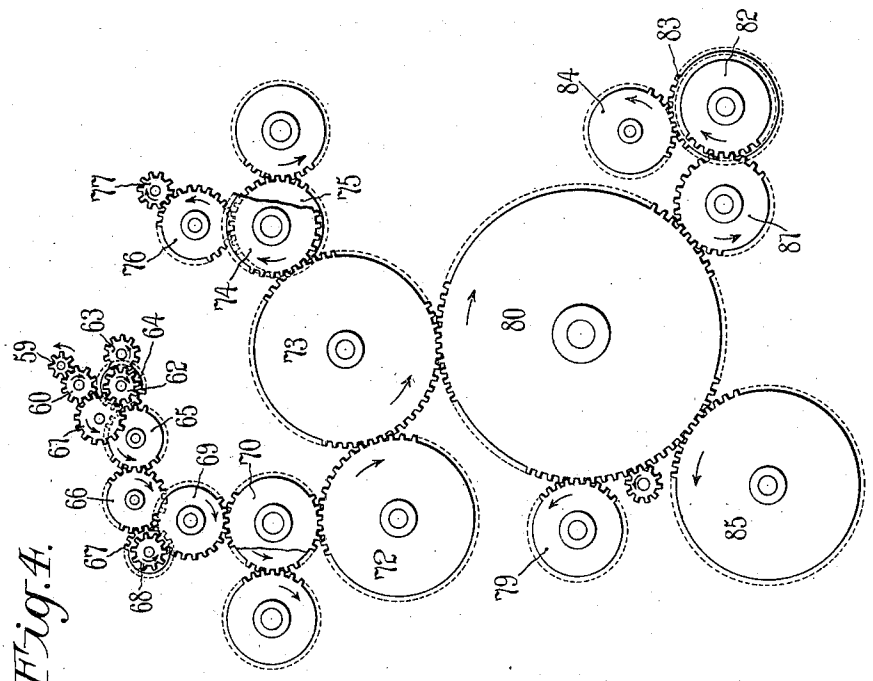


Fig. 4.

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UNITED STATES PATENT OFFICE.

HOWARD M. BARBER, OF STONINGTON, CONNECTICUT, ASSIGNOR TO C. B. COTTRELL & SONS COMPANY, OF NEW YORK, N. Y., AND STONINGTON, CONNECTICUT, A CORPORATION OF DELAWARE.

SHEET-DELIVERY MECHANISM FOR PRINTING-PRESSES.

1,306,399. Specification of Letters Patent. Patented June 10, 1919.

Application filed June 2, 1916, Serial No. 101,313. Renewed May 12, 1919. Serial No. 296,512.

To all whom it may concern:

Be it known that I, HOWARD M. BARBER, a citizen of the United States, and resident of Stonington, in the county of New London and State of Connecticut, have invented a new and useful Improvement in Sheet-Delivery Mechanism for Printing-Presses, of which the following is a specification.

In printing presses where very wide webs are printed, it has been found very difficult to accurately cut the web transversely by a single cutting mechanism as, for instance, by coacting rotary cutters, for the reason that it is almost impossible to keep the cutter blades from sagging; and it has also been necessary to materially slow up the travel of the wide web to permit it to be cut as it passes through said cutters.

The principal object of this invention is to provide means for slitting the wide web into two or more narrow webs, to provide separate sheet cutting means for each narrow web and to provide means for collecting groups of sheets cut from said narrow webs.

A further object is to provide means for delivering the groups of sheets flat and side by side if so desired.

My invention also more particularly includes the provision of means for passing the narrow webs and the sheets cut therefrom and collected, through the machine in different paths without lateral movement, the cutting devices for the narrow webs being of less length than the wide web and being arranged in different transverse planes, the sheet delivery mechanism being of the full width of the wide web.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 is a top plan view of so much of a flat sheet delivery mechanism for printing presses as will give a clear understanding of my invention,

Fig. 2 is a vertical longitudinal section through the same,

Fig. 3 is a detail section showing certain of the gripper operating cams not shown in Fig. 2, and

Fig. 4 is a detail view of the gearing for driving the several parts.

The wide web 1 is passed over a slitting roll 2 where it is slit longitudinally of its travel into narrow webs; in the present instance two narrow webs, by a slitting disk 3.

The two narrow webs 4 and 5 then pass between the rolls 6 and 7 and the narrow web 4 is passed rearwardly and around the roll 8 while the narrow web 5 is passed forwardly and around the roll 9. Two pairs of coacting rotary cutters 10, 11, and 12, 13, are arranged in different transverse planes, the cutters 10, 11, being used to cut sheets from the narrow web 4 and the cutters 12, 13, being used to cut sheets from the narrow web 5.

Means are provided for passing the narrow web 4 through the rotary cutters 10, 11, which means, in the present instance, is shown as an endless carrier, in which the side chains 14, which pass over the upper and lower sprockets 15, 16, are provided with side grippers 17 carried at intervals along the same and arranged to grasp the side edges of the narrow web 4 before the web reaches the rotary cutters 10, 11, and carry the web through said rotary cutters and finally direct the head of the narrow web into the guide 18.

Similarly, an endless carrier, comprising the side chains 19 passing over the pairs of upper and lower sprockets 20 and 21, having side grippers 22, is provided for carrying the narrow web 5 through the rotary cutters 12, 13, and direct the head of the narrow web into the guide 23.

A rotary sheet carrier 24 is provided with a set of grippers 25 arranged to transfer the sheets cut from the narrow web 4 to successive sets of grippers 26 on the rotary sheet collecting carrier 27. In the present instance, the carrier 27 is shown as being provided with three collecting surfaces and three sets of grippers 26. Three sets of grippers 28 on the rotary sheet collecting carrier 27 are arranged in alinement with the three sets of grippers 26, which sets of grippers 28 are arranged in the plane of the narrow web 5 and are operated to take the heads of the sheets cut from the narrow web 5 as they leave the guide 23.

A fixed cam 29 is arranged to control the operation of the grippers 25 on the rotary carrier 24 at the time of receiving the sheet cut from the narrow web 4 and a fixed cam 30 is arranged in position to operate the

grippers 25 at the time of transferring the said sheet to its set of grippers 26 on the rotary sheet collecting carrier 27.

A fixed cam 31 is arranged in position to control the operation of the sets of grippers 26 on the rotary sheet collecting carrier 27 at the point where they receive the sheets cut from the narrow web 4. A movable cam 32 controlled by a rotary cam 33 is arranged in position to control the operation of the grippers 26 to transfer a collected group of two sheets in the present instance cut from the narrow web 4.

A movable cam 34, controlled by a rotary cam 35, is arranged to control the operation of the grippers 28 to transfer a collected group of two sheets cut from the narrow web 5.

Rotary sheet carriers 36, 37, are provided, respectively, with sets of grippers 38, 39, for transferring the collected groups of two sheets each cut from the narrow webs 4 and 5 to successive sets of grippers 40 carried by the side chains 41 of an endless delivery carrier 42, which side chains pass over the inner and outer sprockets 43, 44. These grippers 40 are arranged to deposit the collected groups of sheets flat and side by side upon a suitable surface 45.

A fixed cam 46 is arranged to control the operation of the grippers 38 of the rotary sheet carrier 36 and fixed cams 47, 48, are arranged to control the operation of the grippers 39 of the rotary sheet carrier 37.

Fixed cams 49, 50, are arranged to control the operation of the sets of grippers 40 of the endless delivery carrier at their receiving and delivery points, respectively.

The cams for controlling the operation of the side grippers on the endless carrier which conveys the narrow web 4 through the rotary cutters 10, 11, are denoted by 51, 52, and the cams for controlling the operation of the side grippers of the carrier which conveys the narrow web 5 through the rotary cutters 12, 13, are denoted by 53, 54.

The side frames of the machine are denoted by 55, 56, and the intermediate short longitudinal frames by 57, 58. The rotary cutters 10 and 11 and the means for passing the narrow web 4 through the cutters are mounted between the side frame 56 and the intermediate frame 57. The rotary cutters 12 and 13 and the means for passing the narrow web therethrough are mounted between the side frame 55 and intermediate frame 58, thus locating the cutters for the two narrow webs in different transverse planes. The rolls 2, 6 and 7 extend the full width of the wide web and the rolls 8 and 9 extend preferably only the width of their respective narrow webs 4 and 5. The rotary carrier 24 and its grippers 25 extend preferably only the width and in the plane of the narrow web 4 while the rotary carriers 27, 36 and 37 and the endless carrier 42 extend the full width of the wide web so as to properly handle the sheets cut and collected from the narrow webs 4 and 5, respectively, side by side.

The shaft of the slitter 3 is geared to the shaft of the roll 2 through the gears 59, 60, and the shafts of the rolls 6, 7 and 8, are driven through the gears 61, 62, 63, 64, 65, 66, 67. The rotary cutters 10, 11, are driven through the gears 68, 69, 70. The endless carrier for feeding the web 4 through the cutters 10 and 11 is driven from the gear 71 on the shaft of the cutter 11. The rotary cutters 12 and 13 are driven through the gears 72, 73, 74, and the roll 9 is driven through the gears 75, 76, 77. The endless carrier for passing the narrow web 5 through the rotary cutter 12, 13, is driven through the gear 78.

The rotary carriers 24, 27, 36 and 37 are driven through the gears 79, 80, 81, 82, and the endless delivery carrier is driven through the gears 83, 84. The shaft for the rotary cams 33 and 35 is driven from the gear 80 through the gear 85.

From the above description, it will be seen that by providing a separate cutting mechanism for each narrow web, the cutting mechanisms are kept within a convenient length for accurate and rapid severing of the sheets from the narrow webs.

It will also be seen that by collecting the sheets a less number of deliveries is provided for and at the same time more weight for each delivery is provided for, which is particularly desirable where light weight material is being handled.

It will also be seen that the narrow webs and the sheets cut and collected therefrom may be passed through the machine without lateral movement.

It is evident that slight changes may be resorted to in the form, construction and arrangement of the several parts without departing from the spirit and scope of my invention; hence I do not wish to limit myself strictly to the structure herein shown and described, but

What I claim is:

1. Means for slitting a wide web into narrow webs and for leading the narrow webs through different paths, separate sheet cutting devices in said paths for said narrow webs, means for collecting groups of sheets cut from said narrow webs, and means for delivering the groups of sheets, side by side.

2. Means for slitting a wide web into narrow webs and for leading the narrow webs through different paths, separate sheet cutting devices in said paths for said narrow webs, means for collecting groups of sheets cut from said narrow webs, and means for delivering the groups of sheets flat and side by side.

3. Means for slitting a wide web into narrow webs and for leading the narrow webs through different paths, separate sheet cutting devices in said paths for said narrow webs and means for collecting groups of sheets cut from said narrow webs including a rotary carrier having independently operating sets of grippers.

4. Means for slitting a wide web into narrow webs and for leading the narrow webs through different paths, separate sheet cutting devices in said paths for said narrow webs, means for collecting groups of sheets cut from said narrow webs including a rotary carrier having independently operating sets of grippers, and means for delivering the groups of sheets.

5. Means for slitting a wide web into narrow webs, separate sheet cutting devices for said narrow webs, means for collecting groups of sheets cut from said narrow webs including a rotary carrier having independently operating sets of grippers, and means for delivering the groups of sheets including a carrier having a common set of grippers for taking the groups of sheets and delivering them side by side.

6. Means for slitting a wide web into narrow webs, separate sheet cutting devices for said narrow webs, a rotary sheet collecting carrier having alined independently operating sets of grippers for taking and collecting groups of sheets from their respective sheet cutting devices and a sheet carrier having a common set of grippers for taking the groups of sheets and delivering them side by side.

7. Means for slitting a wide web into narrow webs and leading the narrow webs through different paths, separate pairs of rotary cutters in said paths of less length than the wide web for cutting sheets from their respective narrow webs and a common means for collecting groups of sheets cut from said narrow webs, the narrow webs and the sheets cut therefrom being collected and passed through the machine without lateral movement.

8. Means for slitting a wide web into narrow webs, separate pairs of rotary cutters of less length than the wide webs for cutting sheets from their respective narrow webs and a rotary sheet carrier of the full length of the wide web having independently operating alined sets of grippers for collecting groups of sheets cut from said narrow webs.

9. Means for slitting a wide web into narrow webs, separate pairs of rotary cutters of less length than the wide webs for cutting sheets from their respective narrow webs and a rotary sheet carrier of the full length of the wide web having independently operating alined sets of grippers for collecting groups of sheets cut from said narrow webs, and a sheet delivery carrier having grippers of the full length of the wide web for delivering the groups of sheets side by side.

10. Means for slitting a wide web into narrow webs and leading the narrow webs through different paths, separate sheet cutting devices in said paths for said narrow webs, a common sheet collecting device and a common sheet delivery device, all operable to pass the narrow webs and the sheets cut therefrom through the machine without lateral movement.

In testimony that I claim the foregoing as my invention I have signed my name this 31st day of May, A. D. 1916.

HOWARD M. BARBER.

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