

Apr. 3, 1923.

H. M. BARBER

1,450,573

SHEET COLLECTING AND ASSOCIATING MECHANISM

Filed Nov. 30, 1921

2 sheets-sheet 1

Fig. 1.

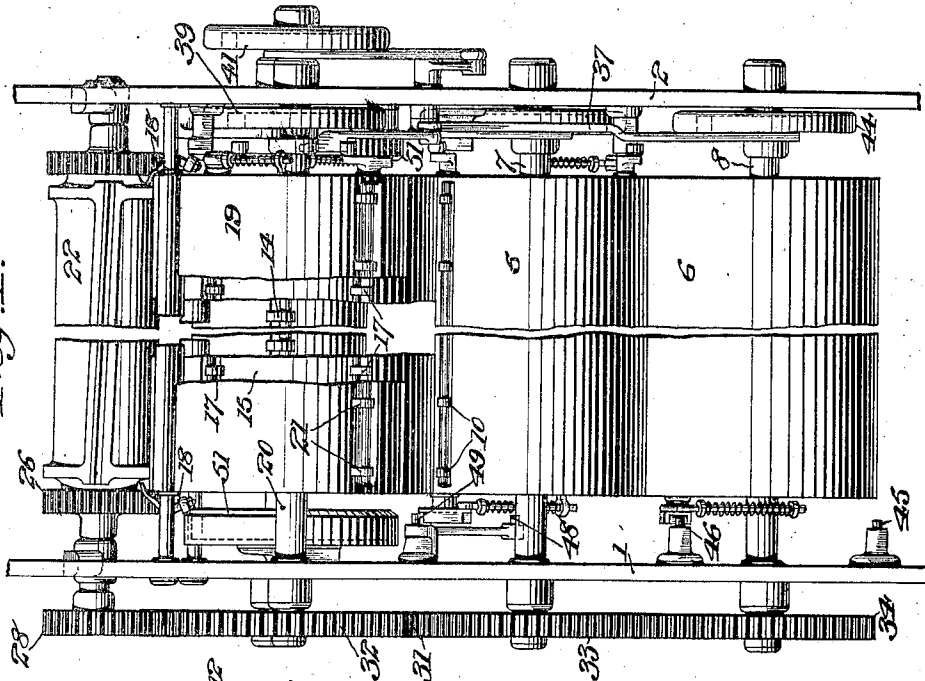


Fig. 2.

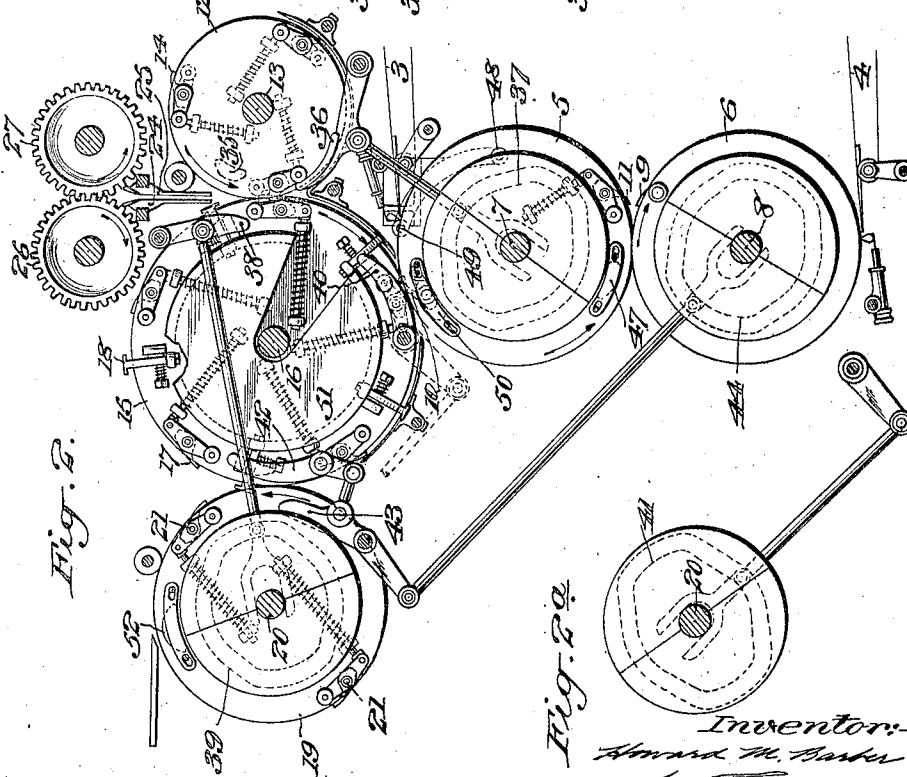
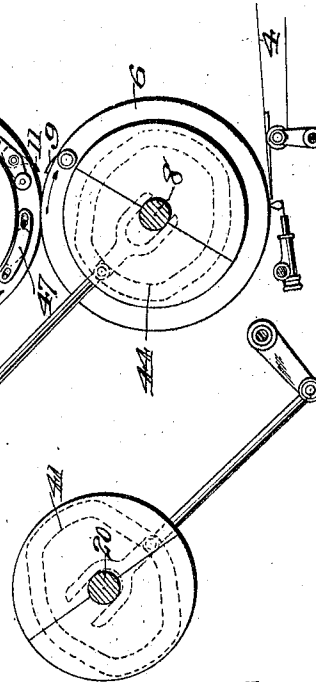


Fig. 2a.



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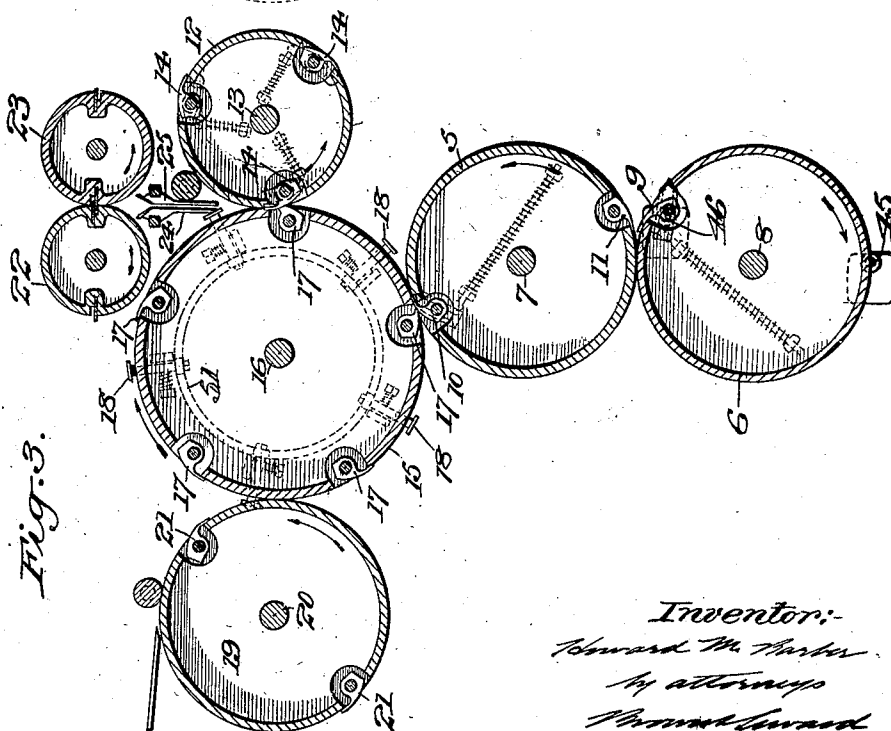
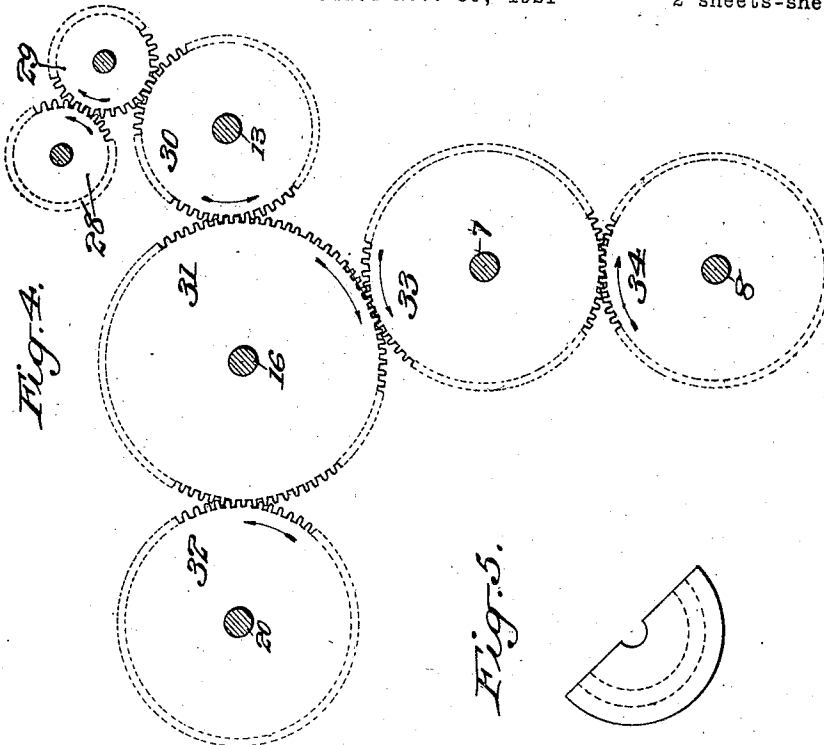
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2 sheets-sheet 2



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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., A CORPORATION OF DELAWARE.

SHEET COLLECTING AND ASSOCIATING MECHANISM.

Application filed November 30, 1921. Serial No. 518,982.

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 Collecting and Associating Mechanism, of which the following is a specification.

The object of my invention is to provide a novel sheet collecting and associating mechanism in which the same feeding means may be employed for introducing either covers or inserts, or both, to be combined with various paged products of the press, thereby obviating the necessity of using separate feeding means for the covers and inserts as has heretofore been common.

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

Fig. 1 represents the mechanism in end elevation.

Fig. 2 represents a longitudinal vertical section with the side frames removed.

Fig. 2^a represents a detail longitudinal vertical section through a portion of the mechanism in a different plane from Fig. 2.

Fig. 3 represents a longitudinal vertical section through the several cylinders.

Fig. 4 represents the gearing connecting the several shafts.

Fig. 5 represents a cam half section, such as would be used to change the two-lobed cams to one-lobed cams.

The side frames are denoted by 1 and 2. Portions of two extra sheet feeding mechanisms are represented by 3 and 4, each of which feeding mechanisms may be used for introducing either inserts or covers, as may be desired. The transfer cylinders 5 and 6 have their shafts 7 and 8 mounted in the side frames 1 and 2, the cylinder 6 being provided with head grippers 9 arranged to take the extra sheets from the feeder 4.

The transfer cylinder 5 is provided with a set of head grippers 10 for taking the extra sheets from the feeder 3 and it is also provided with a set of head grippers 11 for taking the extra sheets from the grippers 9 of the cylinder 6 fed by the feeder 4.

The collecting cylinder 12 has its shaft 13 mounted in the side frames 1 and 2, which cylinder is provided in the present instance with three sets of head grippers 14.

The collecting and associating cylinder

15 has its shaft 16 suitably mounted in the side frames 1 and 2, which cylinder is herein shown as being provided with five sets of head grippers 17, and five sets of side grippers 18 alternating with the head grippers.

The delivery cylinder 19 has its shaft 20 suitably mounted in the side frames 1 and 2, which cylinder in the present instance is shown as being provided with two sets of head grippers 21, arranged to take the successive collected and associated products from the cylinder 15 and deliver the same to any suitable folding mechanism, not shown herein.

I have shown a pair of coacting rotary cutters 22, 23, arranged to receive superimposed narrow webs from the press and to cut the same transversely into groups of sheets which are fed between guides 24, 25 to the coacting point between the cylinders 12 and 15, into position to be taken by either the grippers 14 or the grippers 17, as the case may be. These rotary cutters have geared connections 26, 27 as is usual. The driving connection between the several rotary elements includes the train of gears 28, 29, 30, 31, 32, 33, 34.

A removable fixed cam 35 is arranged in position to open the sets of grippers 14 on the cylinder 12 for receiving the groups of sheets from the guides 24, 25. A movable cam 36 is controlled from a removable cam 37, fixed to rotate with the cylinder 5. In the present instance this cam 37 is shown as a two-lobed cam. In certain instances to be hereinafter set forth, this cam will be a one-lobed cam. The movable cam 36 is arranged to be brought into and out of position to hold the sets of grippers 14 open when they coact with the sets of grippers 17 on the cylinder 15 to permit the said sets of grippers 17 to take the groups of sheets instead of being taken by the sets of grippers 14.

A movable cam 38 is controlled by a removable cam 39, fixed to rotate with the cylinder 19. In the present instance this cam 39 is shown as a two-lobed cam but in some instances as will be hereinafter set forth this cam will be a one-lobed cam. The movable cam 38 is arranged to hold the sets of grippers 17 open at the time of their coaction with the sets of grippers 14 when it is desired to have the sets of grippers 14 take the groups of sheets. A movable cam 40 is con-

trolled by a removable cam 41, fixed to rotate with the cylinder 19. In the present instance this cam is shown as a two-lobed cam, but in some instances as will be hereinafter set forth, it will be shown as a one-lobed cam. This cam 40 is arranged to control the operation of the sets of grippers 17 at the time they coast with the sets of grippers 10 and 11 of the cylinder 5, for the transfer of either inserts or covers or both from the cylinder 5 to the cylinder 15.

Interconnected movable cams 42, 43 are controlled by a removable cam 44, fixed to rotate with the cylinder 6. In the present instance this cam 44 is shown as a two-lobed cam, but in some instances as will hereinafter be set forth, it will be a one-lobed cam.

These movable cams 42, 43 are arranged in position to control the operation of the sets of grippers 17 and 21 on the cylinders 15 and 19 respectively at their point of coaction for the transfer of the product from the cylinder 15 to the cylinder 19.

The set of grippers 9 on the cylinder 6 are illustrated as tumbler actuated, the pin 45 being shown located in position to close the grippers onto the cover or insert sheet, fed from the feeder 4 and the pin 46 being shown in position to open the grippers 9 for transferring the cover or insert, as the case may be, to the cylinder 5.

A fixed cam 47 is arranged in position to operate the set of grippers 11 on the cylinder 5 to take a cover or insert from the set of grippers 9 on the cylinder 6. The set of grippers 10 on the cylinder 5 are shown as tumbler operated, the pin 48 being arranged to open the grippers and the pin 49 being shown in position to close the grippers onto the cover or insert, as the case may be, fed from the feeder 3. A fixed cam 50 is arranged in position to open both the sets of grippers 10 and 11 at their point of coaction with the sets of grippers 17 for transferring the covers or inserts, or both, from the cylinder 5 to the cylinder 15.

The sets of side grippers 18 are controlled by a fixed cam 51 whereby the side grippers may be closed onto the groups of sheets when it is desired to open the head grippers for the reception of the extra sheets.

A fixed cam 52 is provided in position for opening the grippers 21 on the cylinder 19 for delivering the products from the cylinder 19 to any suitable folding mechanism, not shown herein.

I will first describe the operation of the associating mechanism when the previously printed sheets are covers.

The groups of sheets from the main press may be collected on either the cylinder 12 or the cylinder 15. To the collected products from the main press the covers from the feeders 3 and 4 are successively fed and

are associated with their respective products at the center line between the cylinders 5 and 15. From this cylinder 15 the so collected and associated products are transferred to the cylinder 19 and from thence to any well known or approved folding mechanism.

When the previously printed sheets are to be used as inserts, the first group of main press sheets of each collection will be taken by the cylinder 12 and all subsequent groups together with the group taken by the cylinder 12 will be taken by the cylinder 15. The inserts fed from the feeders 3 and 4 are transferred by the cylinder 5 onto the empty surfaces of the cylinder 15 which occur when the first groups of sheets of successive collections are taken by the cylinder 12. When the collected groups of main press sheets are taken by the cylinder 15, they will be taken on top of the previously printed insert which is already located on the surface of the cylinder 15, thus bringing the insert into the center of the completed product when folded.

For a forty-eight page press arranged to deliver two twenty-four page products, each associated with a four page cover, the first group of main press sheets is taken by the cylinder 12. This group of sheets, together with the final group of the collection is taken by the cylinder 15. The full collection is held in register by the set of side grippers 18 on the cylinder 15, while the set of front grippers 17 are operated to take the cover introduced by the cylinder 5. In this instance the cams 37, 39, 41 and 44 are two-lobed cams, as shown in Fig. 2.

For a forty-eight page press arranged to deliver a forty-eight page product with a four page cover, the first three groups of main press sheets are collected on the cylinder 12. These sheets, together with the final group of the collection are taken by the cylinder 15. This collection of main press sheets is held in register on the cylinder 15 by the side grippers 18 while the front grippers are operated to take the cover from the cylinder 5. The above product can also be obtained by making all of the collections on the cylinder 15. This can be accomplished by removing the stationary cam 35 so that the grippers 14 on the cylinder 12 will remain closed. In this instance the cams 37, 39, 41 and 44 are one-lobed cams.

For a forty-eight page press arranged to deliver a forty-eight page product with both a four page insert and a four page cover, the first three groups of main press sheets will be collected on the cylinder 12, the insert being introduced from one of the feeders and deposited onto an empty surface on the cylinder 15. This cylinder 15 will next receive the full collection of the main press sheets on top of the insert. The cylinder

5 will then feed the cover on top of the collected product. In this instance the cams 37, 39, 41 and 44 will be one-lobed cams.

For a forty-eight page press arranged to deliver two twenty-four page products, each associated with a four page insert, the first group of sheets will be taken by the cylinder 12 and the insert will be deposited onto the empty surface of the cylinder 15 so that when the full collection of two groups of sheets is associated with the insert, the insert will come in the center of the folded product. In this instance the cams 37, 39, 41 and 44 will be two-lobed cams.

To change the two-lobed cams into one-lobed cams a half section containing one-lobe of each cam is removed and a half section containing a concentric semi-circular cam groove, such as that shown in Fig. 5, is inserted.

By the term "cylinder" I wish to include any rotary means for conveying the sheets through the prescribed paths and by the term "grippers" I wish to include any sheet engaging means suitable for this purpose.

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

What I claim is:—

1. Means for collecting main press sheets, two sources of extra sheet supply, and means for feeding the extra sheets alternately from both sources to the sheet collecting means to be associated with the collected main press sheets either as inserts or as covers.

2. Means for collecting main press sheets, two sources of extra sheet supply, and means for feeding the extra sheets alternately from both sources to the sheet collecting means to be associated with the collected main press sheets either as inserts or as covers or as both.

3. Means for collecting main press sheets, two sources of extra sheet supply, and two transfer cylinders, one arranged to take the extra sheets from one source and the other being arranged to take the extra sheets from the other source and also from the other transfer cylinder, and timed to feed the extra sheets successively to the sheet collecting means to be associated with the main press sheets either as inserts or as covers.

4. Means for collecting main press sheets, two sources of extra sheet supply, and two transfer cylinders, one arranged to take the extra sheets from one source and the other being arranged to take the extra sheets from the other source and also from the other transfer cylinder, and timed to feed

the extra sheets successively to the sheet collecting means to be associated with the main press sheets either as inserts or as covers or as both.

5. Two main press sheet collecting cylinders, two sources of extra sheet supply, and two transfer cylinders, one arranged to take the extra sheets from one source and the other being arranged to take the extra sheets from the other source and also from the other transfer cylinder, and timed to transfer them successively to one of the collecting cylinders to be associated with the main press sheets either as inserts or as covers.

6. Two main press sheet collecting cylinders, two sources of extra sheet supply, and two transfer cylinders, one arranged to take the extra sheets from one source and the other being arranged to take the extra sheets from the other source and also from the other transfer cylinder, and timed to transfer them successively to one of the collecting cylinders to be associated with the main press sheets either as inserts or as covers or as both.

7. Means for collecting main press sheets, two transfer cylinders, two sheet feeders arranged to feed extra sheets to their respective transfer cylinders, one of the transfer cylinders being arranged to take the extra sheets from the other transfer cylinder and to feed the extra sheets from both feeders successively to the collecting means, either as inserts or as covers.

8. Means for collecting main press sheets, two transfer cylinders, two sheet feeders arranged to feed extra sheets to their respective transfer cylinders, one of the transfer cylinders being arranged to take the extra sheets from the other transfer cylinder and to feed the extra sheets from both feeders successively to the collecting means, either as inserts or as covers or as both.

9. Two main press sheet collecting cylinders, two transfer cylinders, two sheet feeders arranged to feed extra sheets to their respective transfer cylinders, one of the transfer cylinders being arranged to take the extra sheets from the other transfer cylinder and to feed the extra sheets from both feeders to one of the collecting cylinders to be associated with the main press sheets, either as inserts or as covers.

10. Two main press sheet collecting cylinders, two transfer cylinders, two sheet feeders arranged to feed extra sheets to their respective transfer cylinders, one of the transfer cylinders being arranged to take the extra sheets from the other transfer cylinder and to feed the extra sheets from both feeders to one of the collecting cylinders to be associated with the main press sheets, either as inserts or as covers or as both.

11. Two collecting cylinders having head grippers arranged to be brought into and out of coaction at predetermined times in the collection of the main press sheets, two
5 extra sheet feeders and two transfer cylinders having head grippers timed to take the extra sheets from their respective feeders, one of the transfer cylinders having another set of head grippers timed to coact
10 with the other transfer cylinder grippers to take the extra sheets therefrom, the first named transfer cylinder grippers being timed to coact with the head grippers on one of the collecting cylinders to transfer
15 the extra sheets thereto.
12. Two collecting cylinders having head grippers arranged to be brought into and out of coaction at predetermined times in the collection of the main press sheets, two extra sheet feeders and two transfer cylinders having head grippers timed to take the extra sheets from their respective feeders, one of the transfer cylinders having another set of head grippers timed to coact
20 with the other transfer cylinder grippers to take the extra sheets therefrom, the first named transfer cylinder grippers being timed to coact with the head grippers on one of the collecting cylinders to transfer
25 the extra sheets thereto, said collecting cylinders having side grippers timed to hold the main press sheets when the head grippers are open for receiving the extra sheets.
- In testimony, that I claim the foregoing as my invention, I have signed my name
30 this 23d day of November, A. D. 1921.

HOWARD M. BARBER.