July 26, 1927. 1,637,170

A. M. ZUCKERMAN

ASSOCIATING AND DELIVERY MECHANISM

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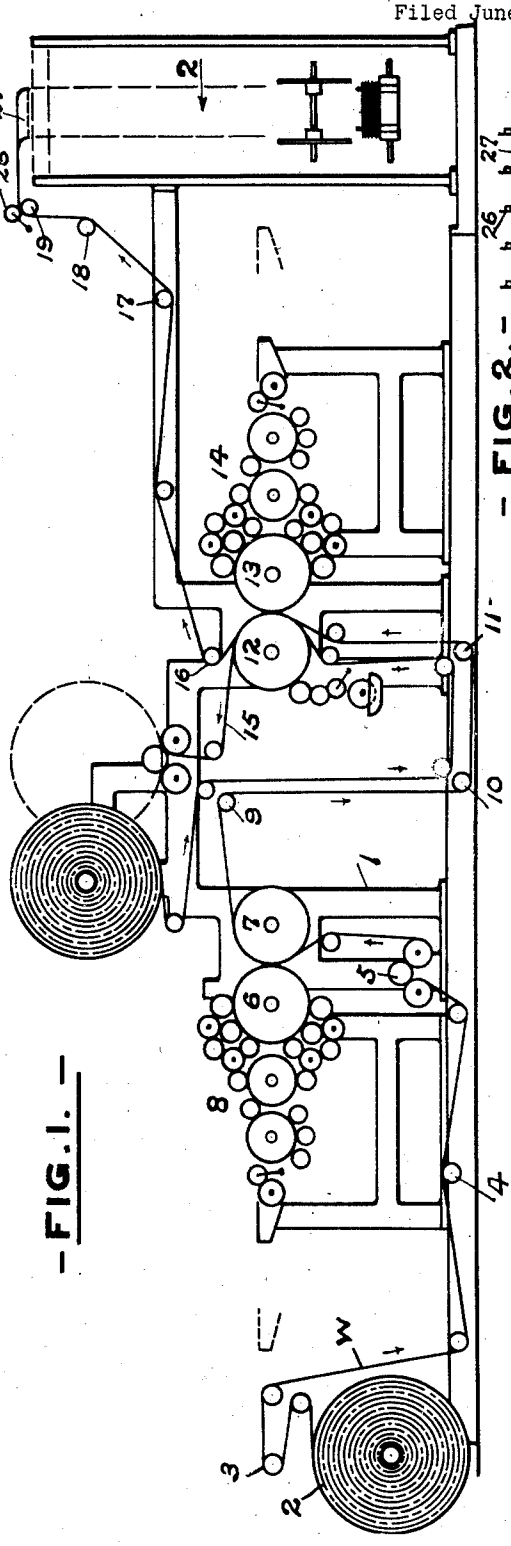


FIG. 1.

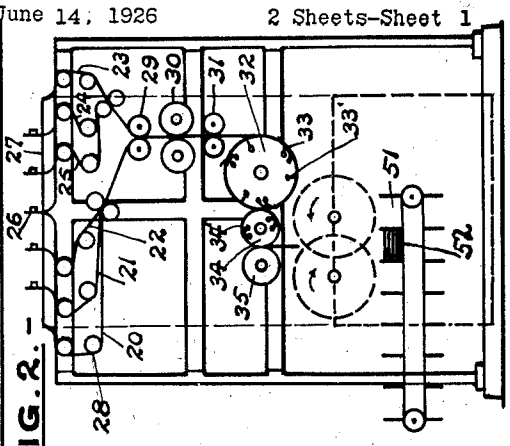


FIG. 2.

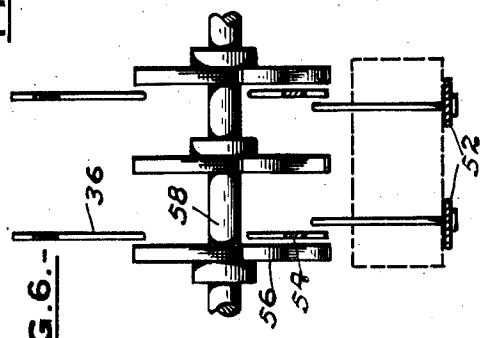


FIG. 6.

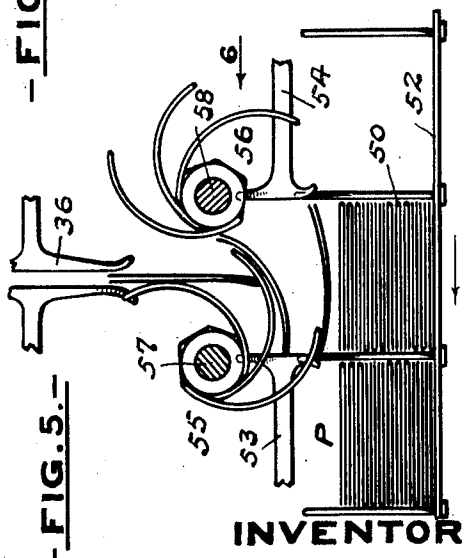


FIG. 5.

INVENTOR

Joseph M. Zuckerman

Philip J. Lawyer Richards

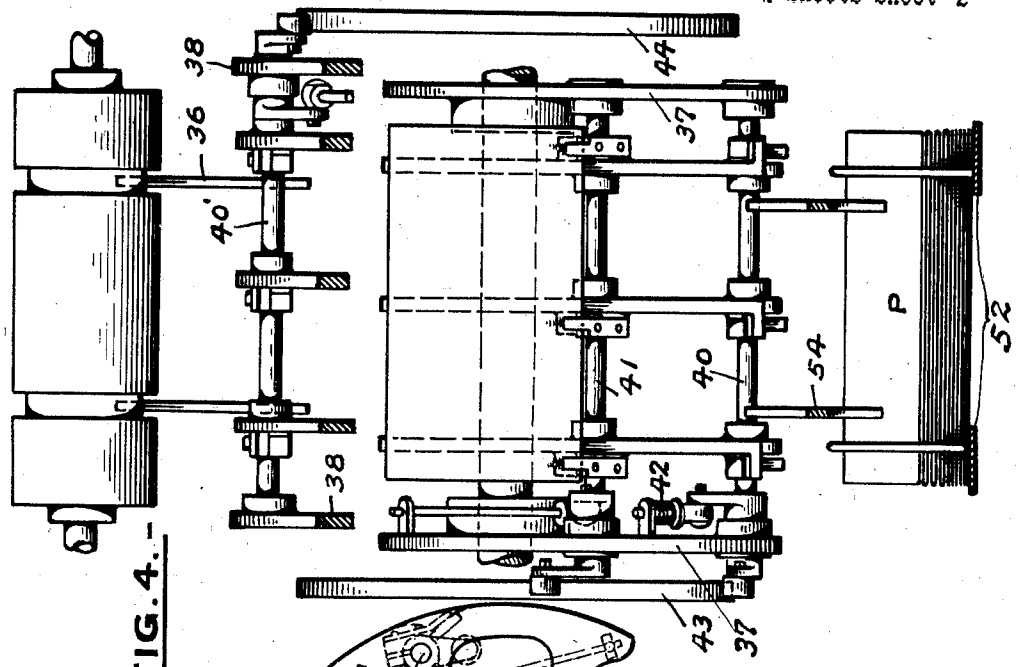
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July 26, 1927. 1,637,170

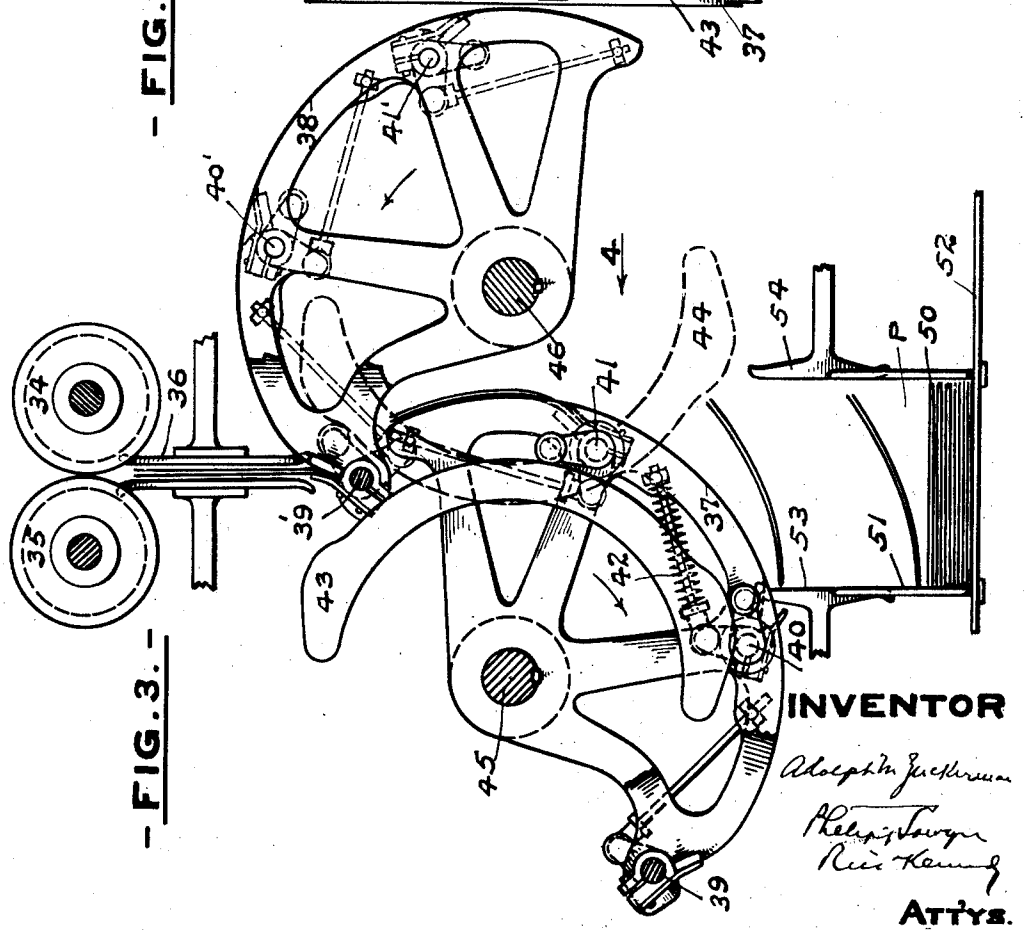
A. M. ZUCKERMAN

ASSOCIATING AND DELIVERY MECHANISM

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- FIG. 4. -



- FIG. 3. -

INVENTOR

Adolph M. Zuckerman

Rhetts, Towson & Rees Kenney

ATTYS.

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UNITED STATES PATENT OFFICE.

ADOLPH M. ZUCKERMAN, OF NEW YORK, N. Y., ASSIGNOR TO R. HOE & CO., INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

ASSOCIATING AND DELIVERY MECHANISM.

Application filed June 14, 1926. Serial No. 115,721.

This invention relates to certain improvements in associating and delivery mechanism for printed products.

In the production of certain classes of printed products, as, for instance, pamphlets, magazines or the like, or other products in the form of signatures, it may be desirable to deliver these products in sets made up of a predetermined number of units, these units being associated so that one set containing several signatures, or like products, may be easily separated from a preceding or succeeding set which has been delivered in a pile or stack. In the production of these products, furthermore, the products are usually printed on webs and printed two or more pages wide, the webs being slitted or divided to form two or more volumes or units of the set.

It is the special object of the present invention to provide a machine for doing this in which the mechanism is of simple form and which will function to separate the products into easily distinguishable sets at high speeds.

With this and other objects not specifically referred to in view, the invention consists in certain novel parts, arrangements and combinations which will be described in connection with the accompanying drawings, and the novel features pointed out in the claims hereunto annexed.

In these drawings,—

Figure 1 is a diagrammatic side elevation of a printing press and a folder illustrating the application of the invention;

Figure 2 is a front view of the folder in Fig. 1 looking in the direction of arrow 2 of that figure;

Figure 3 is an end view on an enlarged scale of a preferred form of delivery mechanism for accomplishing the objects of the invention;

Figure 4 is a side view of the mechanism shown in Fig. 3 looking in the direction of arrow 4 of that figure;

Figure 5 is an end view of a modified form of delivery mechanism which may be employed if desired, and

Figure 6 is a side view of the delivery shown in Fig. 5 looking in the direction of arrow 6 of that figure.

Referring now to these drawings, the machine selected to illustrate the invention is a rotary web printing and perfecting machine in which the web is printed six pages wide. It will be understood, however, that as to certain of its features the invention is not to be limited to such a machine, or to the printing of a product six pages wide.

In the machine illustrated, the operative parts are supported in the usual side framing 1, which may be of any suitable or desired configuration, depending upon the printing units which are to be supported. The web W is drawn from a web roll 2 over suitable tension rolls 3, 4 and feeding-in rolls 5 to form and impression cylinders, indicated by the numerals 6, 7, the form cylinder 6 being inked by a suitable inking mechanism, indicated generally by the numeral 8. From the first printing couple 6, 7, the web is led over suitable guide rolls 9, 10 and 11, to and between impression cylinder 12 and form cylinder 13 of a perfecting couple, this form cylinder 13 being inked by any usual or desirable inking mechanism, such as indicated by the numeral 14. If desired, an offset web 15 may be used for preventing offset on the newly printed web.

The web, in the particular construction illustrated, is printed six pages wide, and this web, after it leaves the printing couple 12, 13, passes over suitable guide rolls 16, 17 and 18 to a drag roll 19, where it is slit or divided into six webs or ribbons 20, 21, 22, 23, 24 and 25, by slitters 26. Each of these webs passes over an angle bar 27 and suitable guide rolls 28, and these webs are associated at a pair of nipping rolls 29. After association, the webs pass to a pair of cutting cylinders 30, by which they are cut into sections of any desired length. From the cutting cylinders the products are directed by a pair of forwarding rolls 31 to a collecting cylinder 32 provided with sheet taking devices, as grippers 33, and folding blades 33′. From this cylinder 32 the products are transferred to a folding cylinder 34, having folding jaws 34′, which cooperates with the pressure roll 35, this cylinder acting to forward the products to the delivery.

It is desirable that these products be forwarded for final delivery so that they are separated into readily distinguishable sets of any desired number of products. In accordance with the invention, therefore, a simple means for effecting this is provided. In the specific construction illustrated, the products are arranged in sets of three with the

fold line of any set arranged in the reverse position from the fold line of a preceding or succeeding set. While the particular construction for effecting this may be varied within certain limits, the mechanism will include a pair of receivers by which the products are alternately taken in sets of a predetermined number, as, for instance, the first receiver takes three products and delivers them with their fold lines in a certain position, and the second receiver takes the succeeding three products and delivers them with their fold lines in the reverse position. In the particular construction shown, referring to Fig. 3, the products are delivered from cylinder 34, through a suitable guide 36, to a pair of receivers 37, 38 which act alternately to take a plurality of products and deliver them with their fold lines reversed. The receivers will include rotary members in the form of segmental cylinders which are provided with sheet taking devices in the form of grippers. Where, as in the present instance, the products are to be arranged in sets of three, each of the segmental cylinders 37, 38 is provided with three sets of sheet taking devices, as grippers 39, 40 and 41 and 39′, 40′ and 41′. These grippers, where grippers are employed, are of the ordinary type, being closed by springs 42 and opened by cams 43, 44. These cylinders 37, 38 are mounted on suitable shafts 45, 46 and are driven in the direction of the arrows, that is, the cylinders are driven so as to rotate in reverse directions past the end of the guide 36, the cutting away of the cylinders rendering this possible.

It will be seen that the cylinder 37 will take three products and deposit them on a pile, indicated at P, with their fold lines at the left hand side. After this cylinder 37 has taken three products, the cylinder 38 takes three products and as this cylinder operates in the opposite direction will deposit the products with their fold lines in the reverse direction, as indicated at 50 in Fig. 3. With this construction, therefore, a very simple mechanism has been provided for arranging products in sets of a like number with the fold lines of the products reversed so that the sets are easily distinguishable. It will, of course, be understood that the products may be delivered in various ways, but a pile delivery such as that shown is a convenient one in which the products are received in pockets 51 in a carrier 52 which may be intermittently operated through any suitable mechanism, not illustrated. Suitable guides 53, 54 may be provided for guiding the products to the piles.

If desired, under some circumstances, a delivery as shown in Fig. 5 may be employed. In this construction there are shown two fans 55, 56, each of the fans in the present instance having three blades. These fans are mounted on suitable shafts 57, 58, and are driven in reverse direction, as indicated by the arrows in the figure. It will be observed that these fans have blades only on one side so that they can pass each other at the end of the guide 36 and alternately deliver three products on the pile.

While the invention has been shown and described in its preferred form, it will be understood that certain changes and variations may be made in the construction illustrated without departing from the invention as defined in the appended claims.

What I claim is:

1. In a delivery, the combination of means for forwarding folded products, of a pair of receivers to which the products are forwarded, and means for operating the receivers to deliver the products so that the fold line of a plurality of products is in reverse position relatively to the fold line of a plurality of adjacent products.

2. In a delivery, the combination of means for forwarding folded products, of a pair of rotary receivers to which the products are forwarded, and means for operating the receivers to deliver the products so that the fold line of a plurality of products is in reverse position relatively to the fold line of a plurality of adjacent products.

3. In a delivery, the combination of means for forwarding folded products, of a pair of receivers each arranged to alternately receive a plurality of products to which the products are forwarded, and means for operating the receivers to deliver the products with their fold lines in reverse position.

4. In a delivery, the combination of means for forwarding folded products, of a pair of rotary receivers each arranged to alternately receive a plurality of products, and means for rotating the receivers to deliver the products with their fold lines in reverse position.

5. In a delivery, the combination of means for forwarding associated products, of a guide through which the products are forwarded, a pair of receivers alternately taking a plurality of products from the guide and assembling them together with the fold line of the products from each receiver in opposite positions.

6. In a delivery, the combination of means for forwarding associated products, of a guide through which the products are forwarded, a pair of rotary receivers alternately taking a plurality of products from the guide and assembling them together with the fold line of the products from each receiver in opposite positions.

7. In a delivery, the combination of means for forwarding associated products, of a pair of receivers operating in different directions to which the products are forwarded, and means for operating the receivers to de-

liver their products in the same pile or stack with the fold line of the products from each receiver in reverse position.

8. In a delivery, the combination of means for forwarding associated products, of a pair of rotary receivers operating in different directions to which the products are forwarded, and means for operating the receivers to deliver their products in the same pile or stack with the fold line of the products from each receiver in reverse position.

9. In a delivery, the combination of means for forwarding associated products, of a guide, a pair of segmental receivers operating in reverse directions and alternately taking a plurality of products from the guide and delivering them in the same pile or stack with their fold lines in reverse position.

10. In a delivery, the combination of means for forwarding associated products, of a guide through which the products are forwarded, and a pair of segmental receivers each acting to take a plurality of products and deliver them with their fold lines reversed.

11. In a delivery, the combination of means for forwarding associated products, of a pair of segmental receivers, and means for actuating the receivers to each take a plurality of products and associate them with their fold lines reversed.

12. In a delivery, the combination of means for forwarding associated products, of a pair of segmental receivers, means for actuating the receivers to each take alternately a plurality of products, and a delivery to which the receivers deliver the products with the fold lines of the products from each receiver in reverse position.

In testimony whereof, I have hereunto set my hand.

ADOLPH M. ZUCKERMAN.