Jan. 10, 1928.

1,655,804

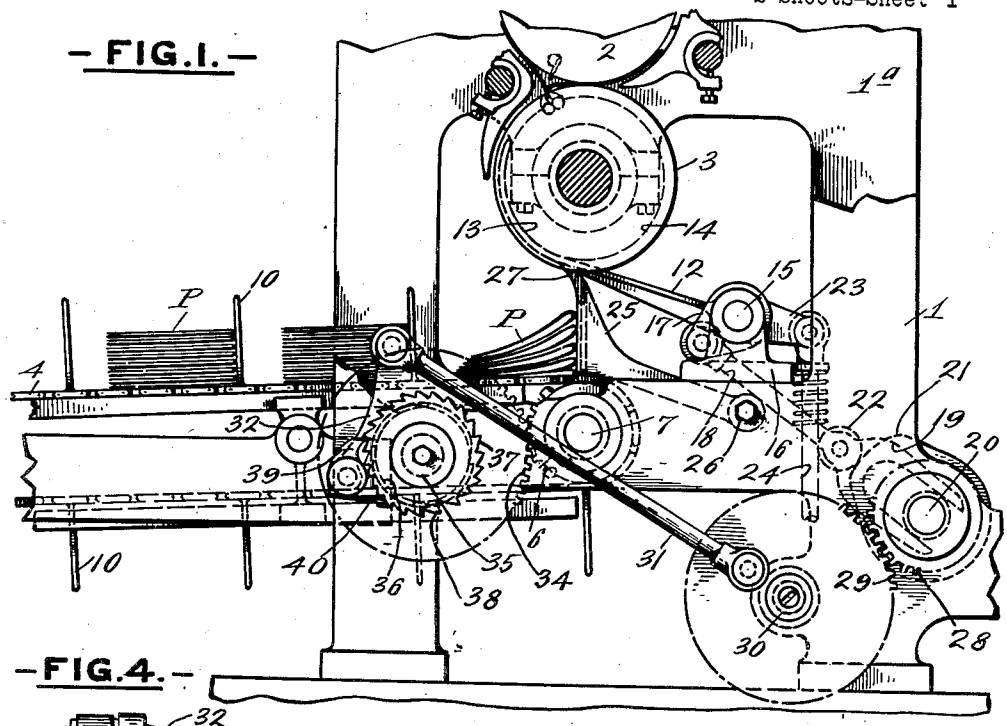
A. M. ZUCKERMAN

DELIVERY MECHANISM

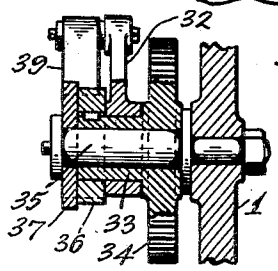
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2 Sheets-Sheet 1

-FIG.1.-



-FIG.4.-



-FIG.2.-

INVENTOR.

Adolph M Zuckerman

By Philipp Sawyer Nice Kennedy

ATTYS

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A. M. ZUCKERMAN

DELIVERY MECHANISM

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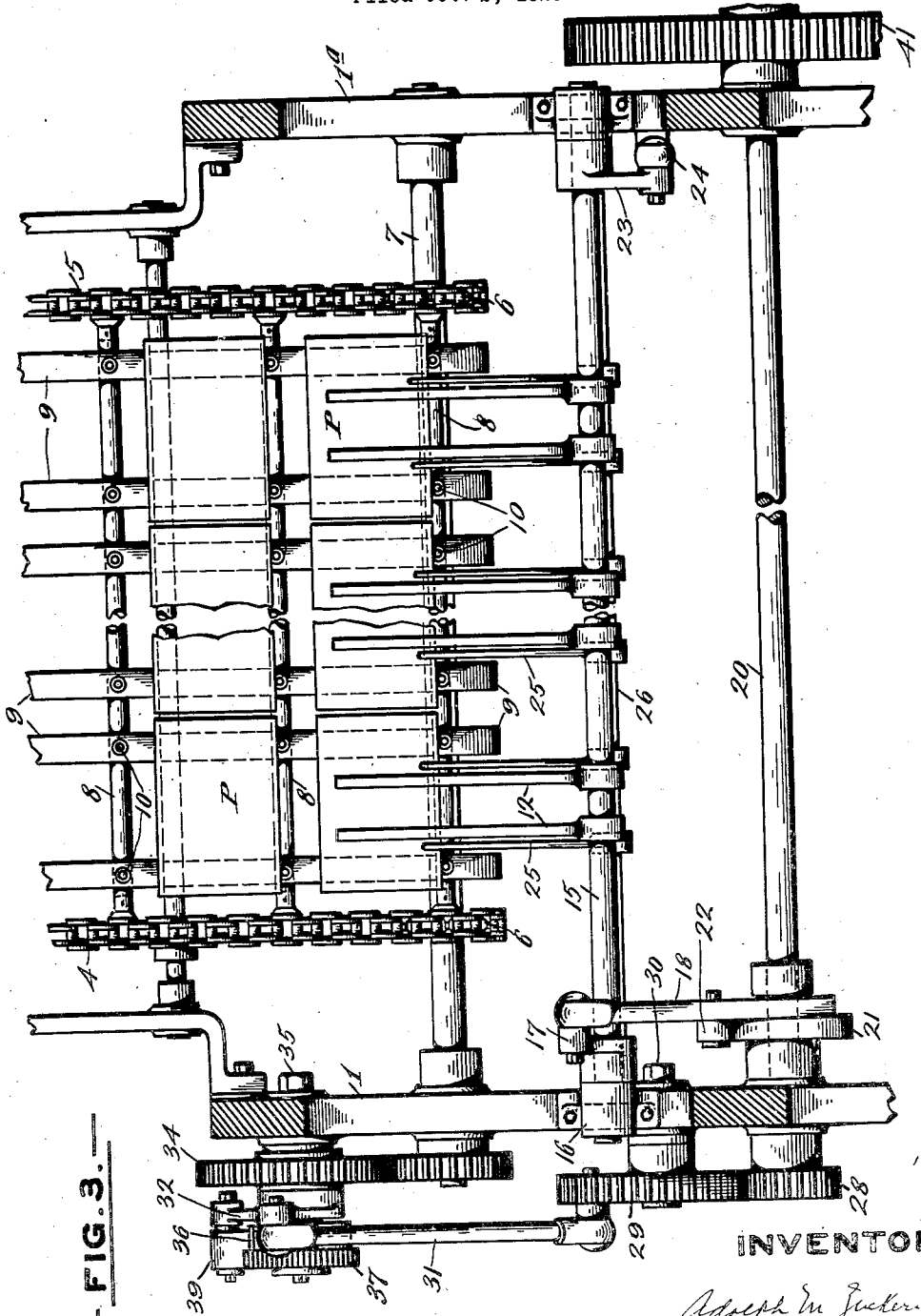


FIG. 3.

INVENTOR.

Adolph M. Zuckerman

By Philip Lawyer Rice & Kenney

ATTYS.

Patented Jan. 10, 1928. 1,655,804

UNITED STATES PATENT OFFICE.

ADOLPH M. ZUCKERMAN, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO R. HOE AND CO., INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

DELIVERY MECHANISM.

Application filed October 2, 1923. Serial No. 666,080.

This invention relates to certain improvements in delivery mechanisms for delivering folded products in piles, and particularly such class of mechanisms where the piled products are counted.

In deliveries of this type the folded products are deposited by the folding mechanism on the pile receiver which is usually in the form of a traveling carrier provided with pockets, this carrier being given, by appropriate mechanism an intermittent step-by-step movement, the carrier being moved ahead a pocket length after a predetermined number of products have been deposited in the pockets. With this class of delivery various difficulties have been experienced, for instance, to get an accurate piling of the products, particularly when the signatures are comparatively small, the distance between the pocket and the point at which the products are released from the folding cylinder should not be very great, as otherwise the products tend to turn in all directions and do not pile in an orderly manner. Again, in the case of fairly thick products, such as, for instance, a magazine, the product when released from the folding cylinder tends to open up at the fold and so when the product is dropped into the pocket it will take up too much of the height of the pocket, that is, eight or ten products will occupy the space designed for say twenty-five, and as the pocket is filled, the following products tend to drag or rub against the folding cylinder causing a smut on the top sheet of the product or causing a choke in the delivery.

The present invention has for one of its objects to provide a mechanism which will act to press down or flatten the folded back of each successive product as the product is deposited on the pile support so that the predetermined number of products may be placed in the pile without danger of the top products being smutted or the delivery being choked.

A further object of the invention is to provide such a mechanism which will also act to position the books on the pile as they are piled in the pocket.

Another object of the invention is to produce such a construction which will be of simple form and efficient in operation and which may be employed without complicating the step-by-step deliveries which are now in use.

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

In the drawings—which show the preferred embodiment of the invention—

Figure 1 is an end elevation, partly in section, with the frame partly broken away, of so much of a delivery as is necessary for the understanding of the invention;

Figure 2 is a similar view showing the parts in a different position;

Figure 3 is a plan view taken on the line 3—3 of Fig. 2, looking in the direction of the arrow; and,

Figure 4 is a detail sectional view of one form of a ratchet mechanism which may be employed for effecting a movement of the carrier.

Referring now to these drawings—

The various parts of the mechanism are or may be supported in side frames 1, 1ª, of any usual or desired configuration. In the particular machine chosen to illustrate the invention, the products indicated by P are forwarded from a printing machine not shown, to a pair of folding cylinders 2, 3, and are deposited by the folding cylinder 3 onto a pile support. In the machine shown the products are counted, a predetermined number of products being delivered on a support and the particular support illustrated is a traveling carrier provided with a plurality of product-receiving pockets, this carrier being given a step-by-step movement to advance a pocket into receiving position after a preceding pocket has had a predetermined number of products deposited therein. As shown, this carrier includes a pair of chains 4, 5. These chains, at one end, pass over driving sprockets 6 mounted on cross shaft 7 suitably supported in the side frames 1, 1ª, of the machine, before referred to, the idler sprockets at the other end of the chains not being shown. These chains carry a plurality of cross bars 8, these cross bars carrying belts or tapes 9, these belts or tapes being divided into pockets by fingers 10 carried by the belts and

bars, these pockets being capacitated to receive the desired number of products.

In accordance with the invention, mechanism is provided for pressing down or flattening the folded back or edge of each product as it is delivered from the folding cylinder into the pocket and, in the best constructions, these means will also act to assist in the positioning of the products in the pocket. While various devices may be employed for this purpose, in the particular construction illustrated, there is provided a plurality of stripper fingers 12, which act to strip the folded product from the folding cylinder 3, these stripper fingers being formed with curved ends 13 which are arranged to set into grooves 14 formed in the cylinder wall. To afford a simple construction, these stripper fingers are utilized for effecting the flattening or pressing down of the folded backs of the books. The fingers are, therefore, mounted to have a swinging movement from the cylinder to the bottom of the pocket, the fingers being arranged to move between the pocket fingers 9 of the delivery carrier. While various mechanism may be employed for effecting this pressing movement of the fingers, in the particular construction illustrated, the fingers are carried on a rock shaft 15 supported in brackets 16 in the side frames, before referred to. This shaft, at one end, has fast thereon a lever 17 to the arm of which is secured one end of a forked rod 18, the forked end 19 of this rod taking over a driven shaft 20 suitably journaled in the side frames 1, 1^a, before referred to. Fast on the shaft 20 is an operating cam 21 and the forked rod 18 has secured thereto a cam roll 22 which runs on the cam 21 on the shaft 20. Also fast on the shaft 15, preferably at the end opposite the lever 17, is a lever 23 to one arm of which is secured a spring rod construction 24, this spring rod acting to keep the cam roll in operative position on the cam and to keep the stripper fingers 12 in the raised position shown in Fig. 1.

Located adjacent to the stripper fingers 12 is a plurality of stop fingers 25, these stop fingers being carried on a cross shaft 26 supported in the frames of the machine, before referred to, these stop fingers preferably having curved ends 27 and assisting the stripper fingers 12 in positioning the folded products in the pockets of the carrier. With this construction, as the cam roll 22 rides on the high part of the cam 21, through the rod 18 and lever 17, the shaft 15 is positively rocked and the stripper fingers 12 given a quick downward slapping movement which effects a flattening or pressing down of the folded products which have been deposited in the pocket, the parts being timed so that these stripper fingers are given their pressing movement as each product is stripped off by them and deposited in the pocket. The stripper fingers are, as shown in Fig. 2, of a sufficient length so as to bear a substantial distance inward from the folded edge of the product when they are in pressing position, as shown in Fig. 2, so as to effect a good flattening or pressing of the folded back of the product. These fingers, furthermore, act in conjunction with the guide fingers 25 to position the products in orderly piles in the pockets. It will be seen that with this construction a very simple and effective mechanism is provided for flattening the products and one which, as shown and described, adds but a minimum amount of mechanism to the delivery. This is particularly advantageous where two deliveries are arranged close together.

Any suitable means may be employed for effecting an intermittent movement of the delivery carrier. In the particular construction illustrated the driven shaft 20 is provided at one end with a gear 28 which meshes with a gear 29 supported on a hub 30 mounted in the side frame 1, before referred to. This gear has secured thereto one end of a link 31, the other end of this link being secured to one arm of a lever 32 journaled on a hub 33 of a gear 34 mounted on a stud 35 suitably supported in the side frame 1, before referred to. On the hub 33, adjacent the lever 32, is secured a ratchet wheel 36 and adjacent the ratchet 36 is a second slightly larger ratchet 37, this ratchet being loosely mounted on the stud 35. The operating teeth of the ratchet 37 are cut so that the bottom of the teeth are above the outside periphery of the ratchet 36. One or more of the teeth, as for instance as shown at 38, of the ratchet 37, are cut deeper than the others, the bottom of such deep cut teeth being in line with the bottom of the teeth of the ratchet 36 as shown in Fig. 1. Co-operating with the ratchets is an operating pawl 39 pivotally mounted on the lever 32 and normally pressed into operating position by a spring 40. The operating face of the pawl is as wide as both ratchet 36 and 37 and will pass over ratchet 36 except when it drops into the deep teeth 38 of ratchet 37, in which case, the pawl will engage the ratchet 36 and thus operate to rotate the gear 34 and cause the carrier to advance a pocket length. The shaft 20 may be driven in any suitable manner, as by a gear 41 on the end of the shaft opposite the gear 28, before referred to, this gear being driven through suitable connections not shown at the speed of the folding cylinder 3.

While the invention has been shown and described in what is believed to be its best form, it will be understood that various changes and variations may be made in the specific constructions shown and described

without departing from the invention as defined in the claims hereunto annexed.

What I claim is:

1. In a delivery, the combination with means for forwarding folded products, a traveling carrier provided with pile supports to which the products are delivered flatwise in piles, means for giving the carrier a horizontal movement away from the forwarding means, and means for pressing or flattening the folded backs of certain products on their fold lines after the products have been delivered on a pile, said pressing means acting on the same pile a number of times during the completion of the pile.

2. In a delivery, the combination with means for forwarding folded products, a traveling carrier provided with pile supports on which the products are delivered in piles, means for effecting an intermittent movement of the carrier, and means for flattening or pressing down the folded backs of certain products on their fold lines after the products have been delivered on a pile, said pressing means acting on the same pile a number of times during the completion of the pile.

3. In a delivery, the combination with a folding cylinder, a traveling carrier provided with pile supports to which the products are delivered in piles, means for intermittently moving the carrier horizontally away from the cylinder, and means for flattening or pressing down the folded backs of certain products on their fold lines after they have been delivered on a pile, said pressing means acting on the same pile a number of times during the completion of the pile.

4. In a delivery, the combination with a folding cylinder, a traveling carrier provided with pile supports on which the folded products are assembled in piles, stripper fingers for stripping folded products from the cylinder, and means for forcing the fingers into pressing relation with the back of a product after it has been delivered on a pile support.

5. In a delivery, the combination with a folding cylinder, a delivery mechanism to which folded products are delivered from the cylinder in piles, stripper fingers for stripping the product from the cylinder, and means for operating the stripper fingers to press down or flatten the folded edge of each product after it is stripped from the cylinder.

6. In a delivery, the combination with a folding cylinder, a delivery mechanism to which folded products are delivered from the cylinder in piles, stripper fingers for stripping the product from the cylinder, means for operating the stripper fingers to press down or flatten the folded edge of each product after it is stripped from the cylinder, and guide fingers arranged adjacent the stripping fingers.

7. In a delivery, the combination with a folding cylinder, a delivery mechanism having a horizontal movement away from the cylinder to which folded products are delivered from the cylinder in piles, stripper fingers for stripping the products from the cylinder, means for normally holding the fingers in stripping position, and means for rocking the fingers to press or flatten out the folded backs of certain products on their fold lines after they have been stripped from the cylinder and delivered to a pile.

8. In a delivery, the combination with means for forwarding products, means for delivering the products flatwise in piles with a horizontal movement away from the forwarding means, and means engaging a product on its fold line for pressing out or flattening the product after it has been delivered on the pile, said pressing means acting on the same pile a number of times during the completion of the pile.

9. In a delivery, the combination with a folding cylinder, a travelling carrier provided with a pile support on which the products are assembled flatwise in piles, strippers for stripping folded products from the cylinder, and means for forcing the strippers into pressing relation with certain products on their fold lines after they have been delivered on the pile support.

10. In a delivery, the combination with means for forwarding folded products, means for delivering the products flatwise in piles, and means for striking certain products on their fold lines after they have been delivered on a pile for flattening the products, said pressing means acting on the same pile a number of times during the completion of the pile.

In testimony whereof, I have hereunto set my hand.

ADOLPH M. ZUCKERMAN.