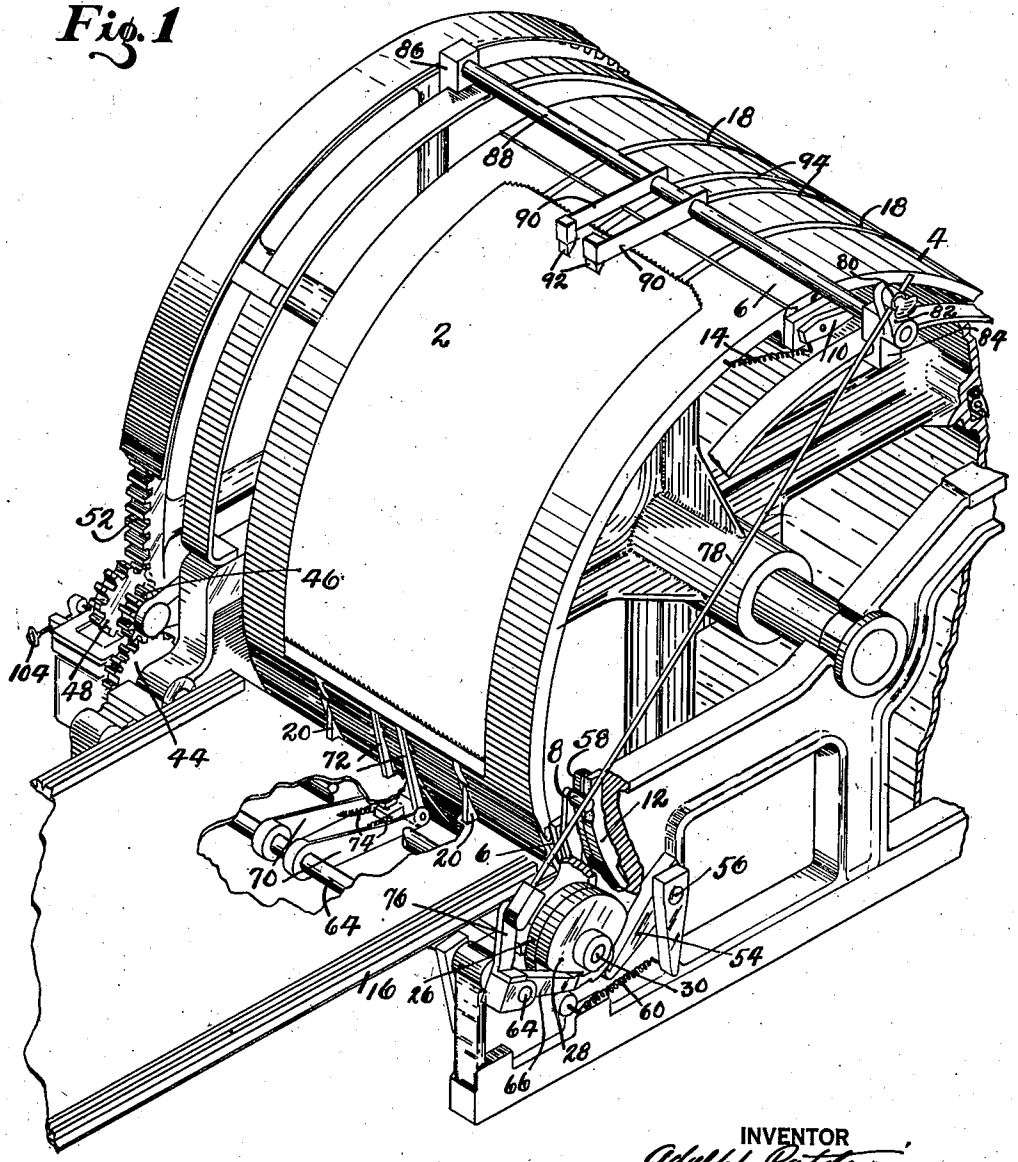
March 2, 1943. A. POTDEVIN 2,312,729

BAG MAKING MACHINE

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Fig. 1



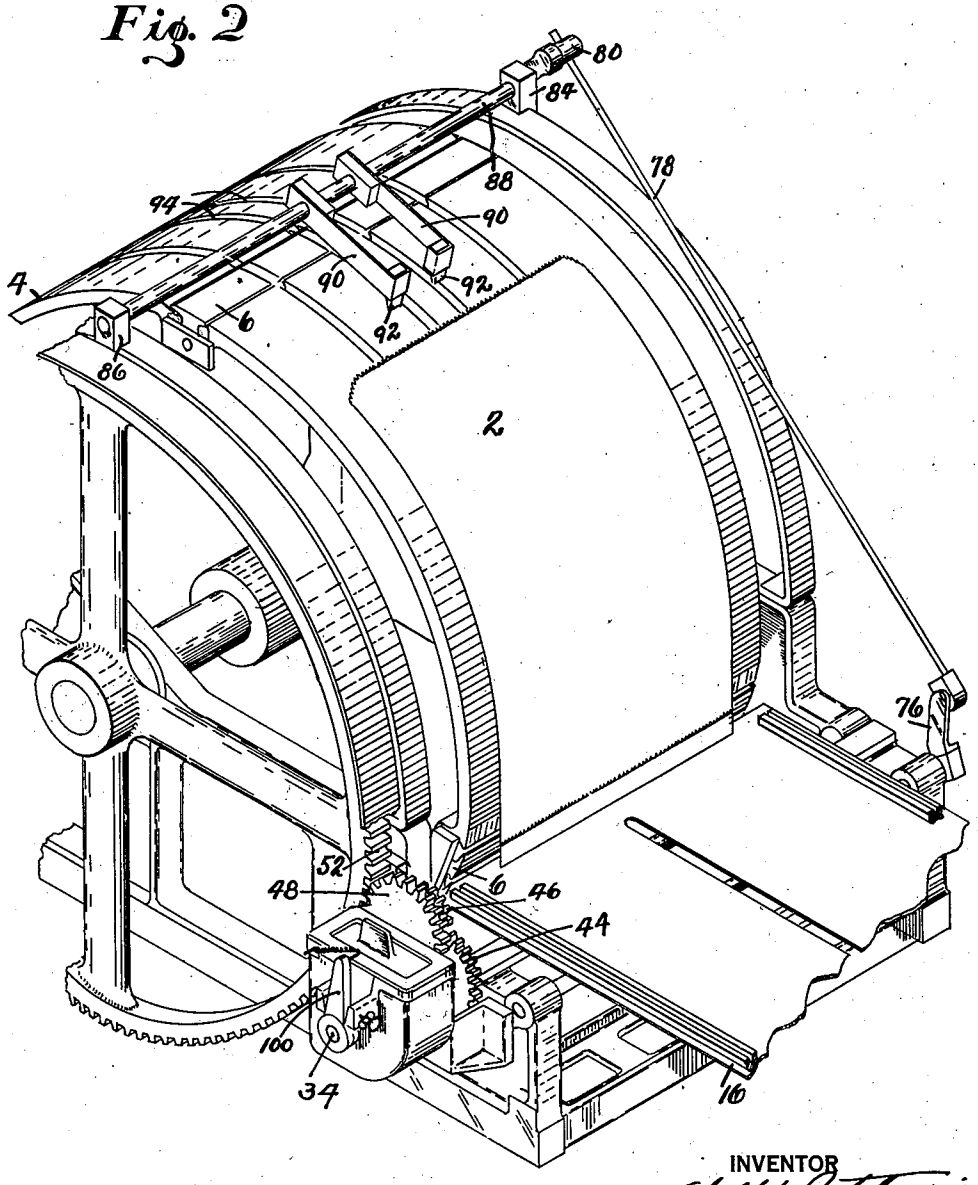

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Fig. 2




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BAG MAKING MACHINE

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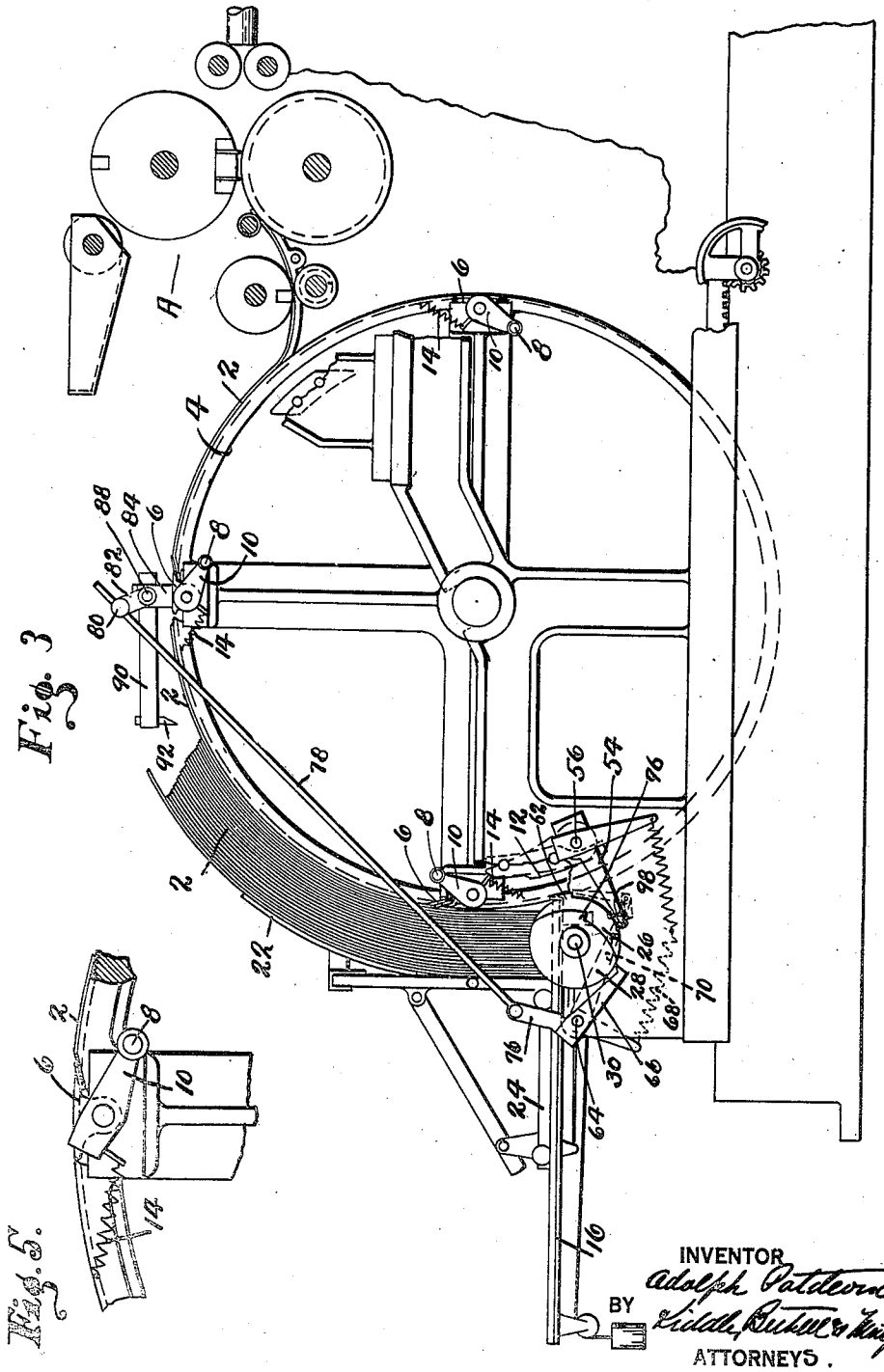


Fig. 3



Fig. 5.

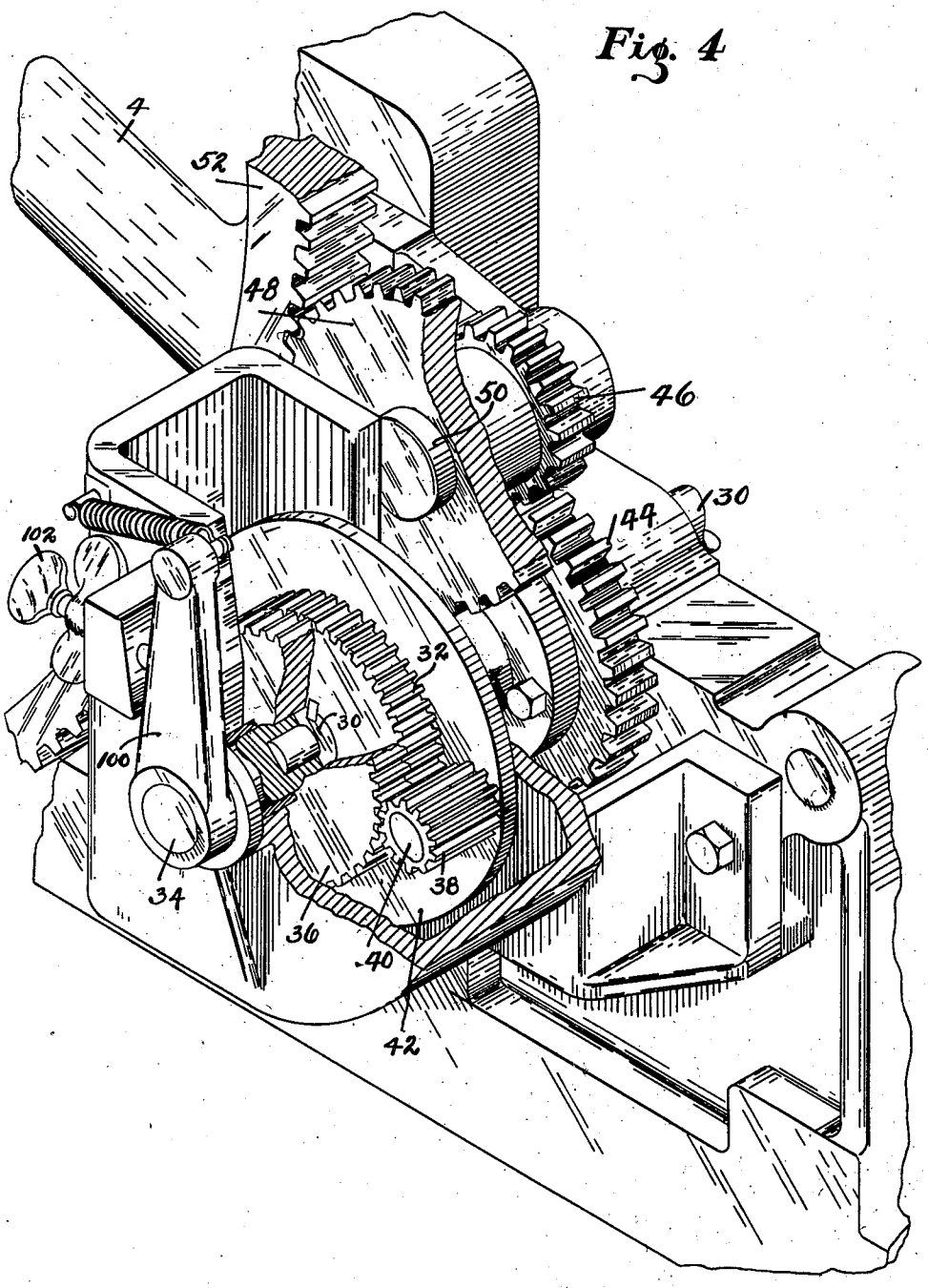
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BAG MAKING MACHINE

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Fig. 4




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# UNITED STATES PATENT OFFICE

2,312,729

## BAGMAKING MACHINE

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Application August 3, 1940, Serial No. 350,299

8 Claims. (Cl. 93—8)

This invention relates to apparatus for the pasting, folding and pressing of bottoms of bag tubes in connection with drum delivery and counting of the same, with particular reference to large bags such as those used for millinery and laundry trades and which have very little stiffness as compared with grocery bags, for example.

One of the objects of the invention is to provide a machine wherein the bottoms of the bag tubes are pasted, folded and pressed and delivered to a delivery drum where they are pulled positively into essentially a vertical position and remain stacked in this position, the bag at one end of the stack being in contact with the periphery of the delivery drum and conforming to it, while the other end of the stack is supported by a movable carriage. An accurate count of the bags is secured by misaligning one or more bags vertically at regular intervals, say, for example, at every twenty-fifth or fiftieth bag.

The material being handled may be tubed in any of the usual ways well known to those skilled in the art of bag making, and for this reason that part of the apparatus has not been illustrated.

In the accompanying drawings:

Fig. 1 is a perspective view taken at the delivery side of the drum and slightly to one side thereof;

Fig. 2 is a similar view taken slightly at the other side of the delivery drum;

Fig. 3 is a side elevational view showing not only the delivery drum but the bottom pasting, folding and pressing section;

Fig. 4 is an enlarged detail of the gear train for driving the counting mechanism; and

Fig. 5 is a detail of one of the delivery drum grippers.

Referring to the drawings in detail: The bag tube which, as already stated, is fabricated in any of the well known commercial ways is transferred from the fabricating apparatus to the bottom folding, pasting and pressing unit A and from here to the rotary delivery drum 4 where it is grasped and held in place by one of the gripper bars 6 with which this drum is provided. No attempt has been made to illustrate the bottom folding, pasting and pressing unit in detail.

The drum 4 with the bag clamped to it by the gripper bar 6 rotates until a roller 8 on an arm 10 (Fig. 3) which is attached to the gripper bar rides onto the fixed cam 12. This causes the gripper bar, normally held closed by a spring 14 to open and release the bag directly before the bottom or leading end of the bag is delivered to the table 16.

The periphery of the drum 4 is provided with circumferential grooves 18. Projecting into these grooves are strippers 20 carried by the table 16. These strippers are provided for preventing the bags from continuing with the delivery drum 4 below the table 16.

The bags, therefore, are delivered in an essentially vertical position, neatly stacked and supported on one side by the moving surface of the drum 4. The bags are supported on the other side by supports 22 which, as will be seen from Fig. 3, are curved to conform to the general outline of an average stack of bags. These supports are mounted on a movable counterweighted carriage 24. This carriage, as will be appreciated, is free to move away from the drum 4 as the bags are delivered, and back toward the drum as the operator removes the bags.

It is desired, in accordance with this invention, to have one or more bags project vertically above the majority of the bags at regular intervals to facilitate counting.

In this connection, inasmuch as the drum 4 and therefore the bag gripped thereto are traveling at high peripheral speed, the bag must be released by the gripper bar at a point short of the point at which the majority of the bags are released, must be positively stopped in a short interval of time and, of course, must be held at that point. Due to the momentum of the bags and the variable and generally inadequate coefficient of friction of the bag against the already delivered bag, it is not possible to release the bag from the gripper so that it will always project the desired distance above the majority of bags delivered. It becomes necessary, therefore, to hold the bag positively after it is released from the drum until the bags are being delivered again in the normal position.

26 and 28 designate counting cams which are mounted on a shaft 30 extending transversely of the machine beneath the table 16, this shaft, as illustrated in the drawings, making one revolution for every fifty bags delivered. This speed reduction can be obtained by extensive compound gearing or by the use of a worm and worm wheel. It is desirable, however, to be able to adjust the position of the counting cams 26 and 28 while the machine is running, after a change has been made in machine speed, bag size or paper quality. The speed-reducing gearing, therefore, as illustrated, comprises a gear 32 fixed to the end of the shaft 30 remote from the counting cams. Mounted on the same axis as gear 32 but fixed to a stub shaft 34 is gear 36. The gear 32 has one more tooth than the gear 36 but the two gears have the same pitch diameter.

38 designates a planetary gear meshing with the gears 32 and 36. The planetary gear revolves on a stud 40 mounted on a plate 42 which revolves about the shaft 30. Fixed to the hub of the plate 42 is a gear 44. Meshing with the gear 44 is a gear 46 on the hub of gear 48 which is mounted on stud 50. The gear 48 is driven by the drum gear 52.

By changing the position of the stud 50 it is possible to mesh the gears 48 and 44 and gears 46 and 52, thus doubling the revolutions of the plate 42.

As the plate 42 rotates, causing the gear 38 to roll about the gear 36, the gear 32 and consequently the shaft 30 advance one tooth per revolution of the plate. Thus, if the gear 36 should have forty-nine teeth and the gear 32 fifty teeth, in fifty revolutions of the plate 42 the shaft 30 will have made one complete turn. With one revolution of the shaft 30 the counting cycle is completed.

The two cams 26 and 28 on the shaft 30 and heretofore referred to, control the motion of the counting mechanism. A follower 54 is fixed to stub shaft 56 which passes through the cam 12, the inner end of this stub shaft carrying a cam 58. The follower 54 is kept in contact with the cam 26 by a spring 60. The high section 62 (Fig. 3) of the cam 26 causes the follower 54 to move downward and rotate the cam 58 into such a position that it is an upward extension of the working surface of the cam 12.

64 designates a shaft extending transversely of the machine beneath the table 16. This shaft carries a follower 66 whose motion is controlled by the profile of the cam 28. The follower is held against the cam by a spring 68.

Mounted on the shaft 64 about midway of the table 16 are arms 70 extending toward the drum 4, the free ends of these arms carrying pivotally mounted counting fingers 72. A spring 74 is secured to the tail of these fingers, and the normal position of the fingers is as shown in Fig. 1.

The cam follower 66 has an upwardly projecting tail 76 which is at about 90° to the follower, the free end of this tail being pivotally attached to one end of a rod 78. The other end of this rod passes through a stud 80 rotatively mounted on the end of an arm 82. At each side of the drum 4 are blocks 84 and 86 constituting bearing blocks for a shaft 88, this shaft carrying two arms 90.

The arms 90 overlie the surface of the drum 4 and the free end of each arm is provided with a block 92 having a high coefficient of friction such as rubber, for example.

With the machine in operation it will be apparent that as the cam 28 is rotated in a counterclockwise direction, as viewed in Fig. 3, through the gear train illustrated in Fig. 4, the follower 66 rises raising the fingers 72, these fingers, however, remaining in grooves 94 provided for that purpose in the periphery of the delivery drum 4. At the same time due to the movement of the follower 66 the blocks 92 carried by the arms 90 are raised as shown in Fig. 3 through the medium of the rod 78. While this action is taking place the high portion 62 of the cam 26 has moved the follower 54 downward so that cam 58 has become operative to open the clamp bar 6 to release the bag 2.

When the cam 28 has been rotated for a sufficient distance the follower 66 will drop from the high point 96 of the cam and the arms 70 on the shaft 64 will be moved upwardly quickly. Stop pins 98 limit this upward movement of the arms 70, but the fingers 72 are free to rotate about their pivotal attachment to the arms 70.

The upper ends of the fingers 72 project above the surface of the drum 4 directly behind the leading edge of the bag which has been released from the clamp bar 6 by the action of the cam 58. The fingers 72 press the leading edge of the bag against the bag already delivered while the rubber blocks 92 hold back the trailing end of the bag. The result of all this is that the bag is delivered in such a position that it is misaligned vertically with respect to the majority of the bags delivered. It might be assumed by the inexperienced that there is no necessity for the blocks 92, inasmuch as it would be expected that stopping the leading end of the bag would stop the bag. I have found, however, that on light papers and large bags, there is a tendency for the trailing end of the bag to follow the drum and fold under the main body of the bag. This action is effectually prevented by the blocks 92.

As the drum 4 continues to rotate the further rotation of the cams 26 and 28 allows the fingers 72 to be withdrawn into their initial position below the surface of the drum, the blocks 92 are raised, cam 58 becomes inoperative and the bags are delivered again in normal position.

It is desirable to be able to adjust slightly the position of the cams 26 and 28 with respect to the position of the gripper bars 6 while the machine is running. This is desirable for two reasons, partly because of the mechanical lag of the spring actuated parts which varies with the speed of the machine, and partly because of the varied surface quality of the paper used on the machine. The action of the blocks 92 depends upon friction so that it becomes desirable to have these blocks act at different times depending upon the surface quality of the various papers used. Referring to Fig. 4, it will be seen that the stub shaft 34 carrying the gear 36 is provided with an arm 100 which is held against rotation by adjusting screws 102 and 104. By manipulation of these screws the arm 100 is rotated in either direction rotatively to adjust the gear 36. This motion is transmitted through the planetary gear 38 to the gear 32 and consequently to the cams 26 and 28 which are on the same shaft. This adjustment can be made obviously with the machine at rest or in motion.

It is to be further understood that changes may be made in the details of construction and arrangement of parts herein described and illustrated without departing from the spirit and scope of the invention.

What I claim is:

1. In a bag making machine of the type wherein bags are gripped to a delivery drum for successive delivery, arresting means adapted to be interposed in the path of an advancing bag at regular intervals to arrest the progress of the same, and means for simultaneously engaging the outer face of the arrested bag.

2. In a bag making machine of the type wherein the bags are successively advanced and delivered by a delivery drum, fingers automatically actuated periodically into the path of an advancing bag positively to arrest the progress of the same, friction means for engaging the outer face of the arrested bag adjacent its trailing end, and a cam for controlling the operation of said fingers and said friction means.

3. A machine of the class described, comprising in combination a delivery drum for advancing

bags and delivering the same successively at a collecting station, a rod extending lengthwise of the drum, friction blocks carried thereby and overlying the drum, fingers adjacent the drum periphery and the collecting station, actuating means therefor for projecting the fingers intermittently into the path of the leading edge of a bag thereby to arrest the progress of the same, and a rod connecting said actuating means and the first mentioned rod whereby as the fingers are actuated the friction blocks will engage the face of the arrested bag adjacent the trailing end thereof.

4. A machine of the class described, comprising in combination a delivery drum for advancing bags and delivering the same successively at a collecting station, a rod extending lengthwise of the drum, friction blocks carried thereby and overlying the drum, fingers adjacent the drum periphery and the collecting station, actuating means therefor for projecting the fingers intermittently into the path of the leading edge of a bag thereby to arrest the progress of the same, and a rod connecting said actuating means and the first mentioned rod whereby as the fingers are actuated the friction blocks will engage the face of the arrested bag adjacent the trailing end thereof, said first mentioned rod being adjustable circumferentially of the drum to accommodate the machine to bags of different lengths.

5. In a bag making machine of the type wherein a delivery drum successively delivers the bags at a collecting station, arresting fingers for engaging the inner face of a bag at regular intervals adjacent the leading end of the bag to press the same outwardly away from the delivery drum against the immediately preceding delivered bag, actuating means for said fingers to actuate the same prior to the arrival of the engaged bag at the collecting station, friction blocks for engaging the opposite face of the same bag adjacent its trailing end and actuating means for said blocks operable to effect actuation of said blocks, simultaneously with the operation of said fingers.

6. In a bag making machine of the type wherein bags are successively advanced to and delivered at a delivery station by a rotating drum, arresting means comprising fingers adjacent the drum periphery, cam mechanism for intermittently moving said fingers to engage the rear face of a bag adjacent its leading end, and cam controlled fingers movable at the same time into frictional engagement with the outer face of the same bag adjacent its trailing end, thereby to arrest the progress of the bag.

7. A bag making machine of the type wherein bags are successively delivered at a collecting station, normally retracted fingers automatically projected at regular intervals into engagement with the rear face of a bag adjacent its leading end prior to the leading end of the bag reaching the collecting station, and fingers adapted at the same time to engage the outer face of the same bag adjacent its trailing end, whereby the progress of the bag will be arrested short of the delivery station.

8. A bag making machine of the type wherein a rotating drum advances and delivers bags successively at a collecting station, arresting means adapted to engage one face of a bag at regular intervals adjacent its leading end, actuating means for said arresting means adjustable while the machine is in motion to vary the time of operation of the said arresting means, and friction fingers operable intermittently to engage the outer face of the bag adjacent its trailing end simultaneously with the operation of the arresting means, whereby the progress of the bag will be arrested short of the delivery station.

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