Dec. 23, 1947. A. J. ERSTED 2,433,035

BAG DELIVERY MECHANISM

Filed Sept. 12, 1944 2 Sheets-Sheet 1

FIG. 1

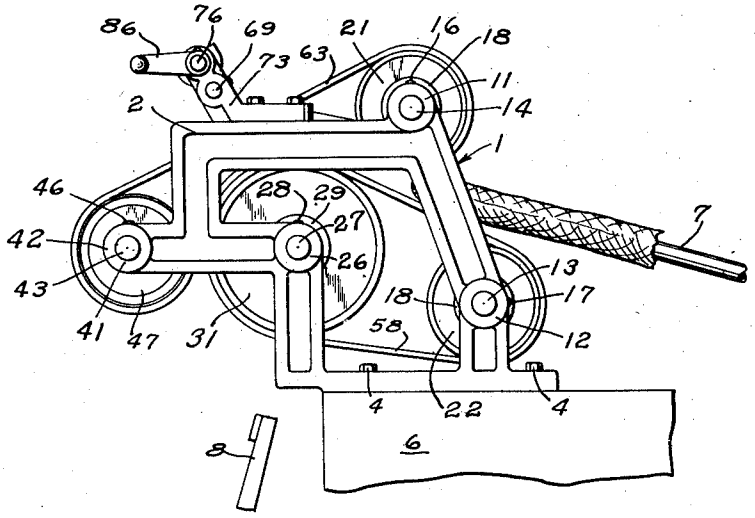
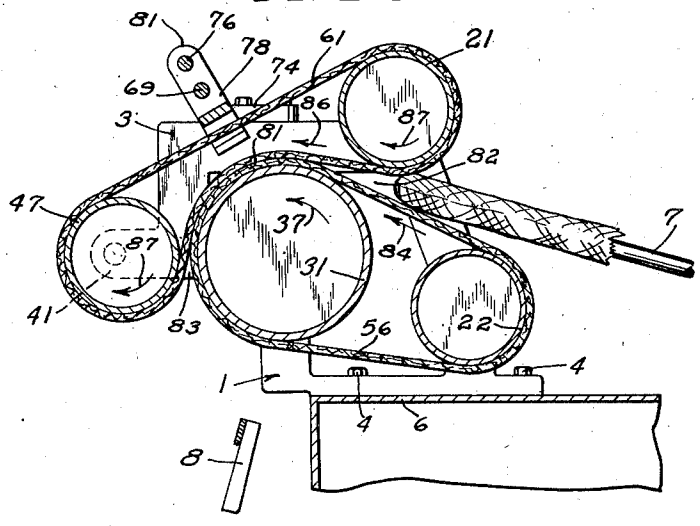


FIG. 2



INVENTOR
ALFRED J. ERSTED
BY
Hans G. Hoffmeister
ATTORNEY

Dec. 23, 1947. A. J. ERSTED 2,433,035

BAG DELIVERY MECHANISM

Filed Sept. 12, 1944 2 Sheets-Sheet 2

FIG. 3

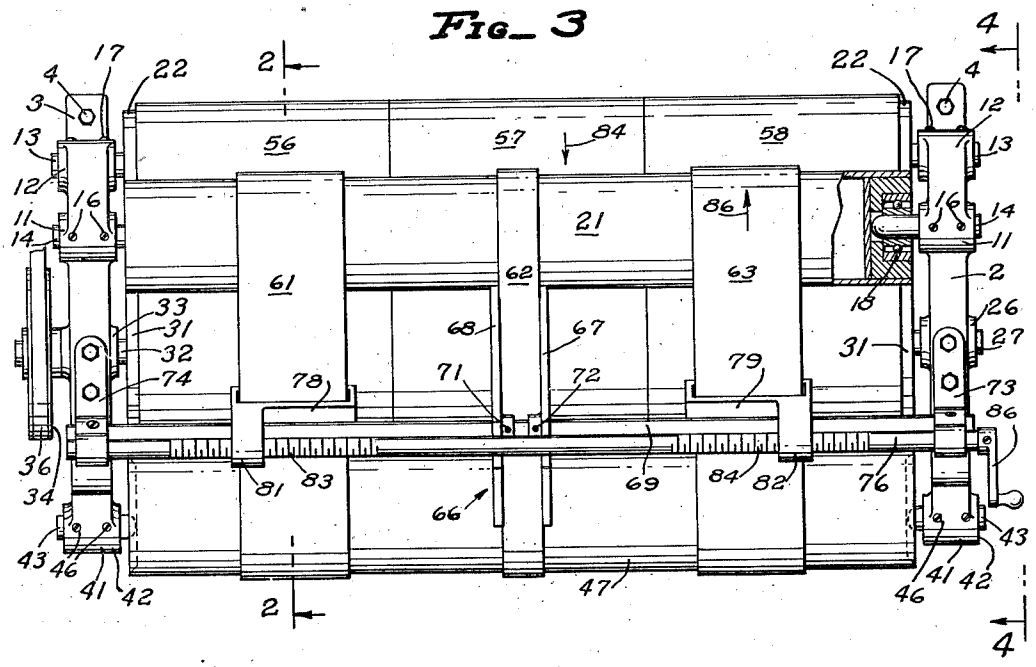


FIG. 4

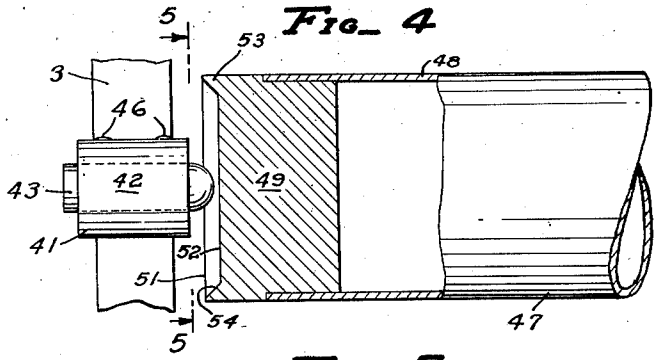
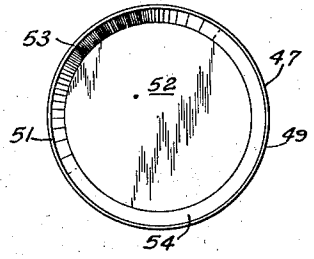


FIG. 5



INVENTOR
ALFRED J. ERSTED.
BY
Hans G. Hoffmeister
ATTORNEY

Patented Dec. 23, 1947

2,433,035

UNITED STATES PATENT OFFICE

2,433,035

BAG DELIVERY MECHANISM

Alfred J. Ersted, Atherton, Calif.

Application September 12, 1944, Serial No. 553,722

3 Claims. (Cl. 223—40)

1

The present invention relates to a bag delivery mechanism for bag turning machines.

One object of the present invention is to provide an improved bag delivery mechanism for removing the turned bags from the ram of the bag turning machine and for delivering the same to the bag discharge mechanism of the machine.

Another object is to provide a bag delivery mechanism wherein the opposing bag removing and delivery belts are automatically held in continuous frictional contact with each other to assure efficient removal of the turned bags from the ram and their proper delivery to the bag discharge mechanism of the bag turning machine.

Another object is to provide a bag delivery mechanism wherein the idler belts are automatically held under continuous tension in contact with the drive belts adjacent the periphery of the drive roll to thereby exert a continuous pressure against the drive belts to hold them in firm frictional contact with the drive roll.

Another object is to provide a bag delivery mechanism which operates efficiently with non-elastic belts such as fabric or composition belts.

Other and further objects and advantages of the present invention will become apparent from the following description and drawings in which:

Fig. 1 is a side view of the bag delivery mechanism of the present invention in conjunction with certain parts of a bag turning machine cooperating therewith.

Fig. 2 is a longitudinal section of Fig. 1 taken along line 2—2 of Fig. 3.

Fig. 3 is an enlarged plan view of the bag delivery mechanism shown in Fig. 1.

Fig. 4 is an enlarged detail view partially in section and partially in elevation of a portion of the belt tensioning or floating roll of the bag delivery mechanism and retaining guide therefor.

Fig. 5 is an end view of the belt tensioning roll taken along line 5—5 of Fig. 4.

For purposes of illustration, the bag delivery mechanism of the present invention has been illustrated in connection with a portion of a bag turning machine such as shown in Patent No. 2,295,940, issued September 15, 1942, to A. J. Ersted, it being understood, however, that the mechanism of the present invention is also adaptable for use in connection with other bag turning or handling machines, as will be obvious to those skilled in the art.

Referring now to the drawings and especially to Figs. 1 to 3 thereof, 1 indicates the frame structure of the bag delivery mechanism which comprises supporting brackets 2 and 3 secured

2

in spaced relation by means of bolts 4 to the rear end 6 of the bag turning machine intermediate the ram 7 and bag discharge mechanism 8 thereof.

Each of the brackets 2 and 3 is provided at the front end thereof with a plurality of bosses 11 and 12 within which stationary bearing pins 13 and 14 are fixed by means of set screws 16 and 17. Rotatably mounted on the bearing pins 13 and 14 by means of roller bearings 18, only one of which has been shown in Fig. 3, are an upper idler roll 21 and a lower idler roll 22 which extend transversely between the brackets 2 and 3 over substantially the entire width therebetween.

The bracket 2 is further provided with a boss 26 within which a stationary bearing pin 27 is fixed by means of set screws 28. Positioned behind the lower idler roll 22 between the brackets 2 and 3 and rotatably mounted with one of its ends on the bearing pin 27 by means of a roller bearing 29 (Fig. 1), in a similar manner as shown in connection with roll 21 in Fig. 3, is a large drive roll 31. The drive roll 31 extends transversely between the brackets 2 and 3, and is of the same length as the idler rolls 21 and 22, and fixed to the other end of the drive roll 31 is a drive shaft 32 rotatably mounted within a bearing 33 of the bracket 3. Keyed to the free end of the drive shaft 32, which extends beyond the bearing 33 exterior of the bracket 3, is a drive pulley 34 which is driven through a belt 36 by the drive mechanism of the bag turning machine to effect rotation of the drive roll 31 in the direction of arrow 37 (Fig. 2) in timed relation with the operation of the ram 7 and bag discharge mechanism 8.

The rear end 41 of each bracket 2 and 3 is provided with a boss 42 within which a stationary bearing and retaining pin 43 is held in fixed position by means of set screws 46.

Positioned between the bearing pins 43 transversely between the brackets 2 and 3 is a rear idler roll 47 which comprises a tubular portion 48 the ends of which are closed by heavy end members or plugs 49 (Fig. 4) fixed thereto in any convenient manner. The outer end 51 of each plug 49 is recessed so as to form an end face 52 surrounded by an annular wall or flange 53 provided with an outwardly tapered retaining surface 54 (Figs. 4 and 5). The idler roll 47 is of the same length as rolls 21, 22, and 31 previously mentioned herein, and all rolls are horizontally disposed in parallel relation and in transverse alignment with respect to each other.

Trained around the lower idler roll 22 and the drive roll 31 are endless drive or bag delivery belts 56, 57, and 58 preferably of non-elastic material such as leather, fabric, or any other suitable composition. These belts are placed side by side on these rolls and are of such width as to cover substantially the entire length of the rolls. The length of these belts should be such that the belts are fairly taut on the rolls.

Trained around the idler rolls 21 and 47 are endless idler or presser belts 61, 62, and 63 preferably of the same non-elastic material as belts 56, 57, and 58. The idler belts 61, 62, and 63 are of lesser width than the drive belts 56 to 58.

The center belt 62 is guided by a bag and belt guide 66 comprising spaced guide plates 67 and 68 secured in fixed position to a stationary rod 69 by means of set screws 71 and 72, respectively. The rod 69 is carried by belt shifter supports 73 and 74 within which a belt shifter rod 76 is rotatably mounted (Figs. 1 to 3).

The side belts 61 and 63 are guided by belt shifting forks 78 and 79, respectively. The forks 78 and 79 are slidably mounted on the rod 69 and comprise interiorly and oppositely threaded sleeve portions 81 and 82 cooperating with correspondingly threaded portions 83 and 84, respectively, of the shifter rod 76, so that upon rotation of the rod 76 by means of the handle 86 in one or the other direction, the forks 78 and 79 are shifted toward or away from each other whereby a corresponding shifting of the belts 61 and 63 is obtained. This permits adjustment of the belts 61 and 63 for various widths of bags to be handled by the bag delivery mechanism.

The idler rolls 21 and 47 are so positioned with respect to the drive roll 31 and idler roll 22 in the frame 1 that the lower run of each idler belt 61, 62, and 63 is in contact with a substantial portion of its cooperating drive belt adjacent the periphery of the drive roll 31, as shown at 81 in Fig. 2, and the idler and drive belts diverge at the front and rear end of the bag delivery mechanism so as to form a V-shaped bag receiving mouth 82 and discharge throat 83. The length of the idler belts 61, 62, and 63 is such that the idler roll 47 is disposed in freely suspended or floating position with the retaining pins 43 out of contact with the tapered surfaces 54 of the roll so that the whole weight of the roll 47 bears against the belts 61, 62, and 63 and holds the same continuously taut with their lower runs partially wrapped around the drive belts whereby the idler belts are held with continuous substantially equal pressure in frictional contact with the drive belts adjacent the upper peripheral portion of the drive roll 31 as shown at 81.

In the operation of the bag delivery mechanism of the present invention, the drive roll 31 is continuously rotated in the direction of arrow 37 (Fig. 2) in timed relation to the operation of the ram 7 and bag discharge mechanism 8 of the bag turning machine whereby a corresponding rotation of the idler roll 22 and travel of the drive belts 56, 57, 58 in the direction of arrows 84 (Figs. 2 and 3) is effected. In view of the frictional contact between the drive belts 56, 57, and 58 and the idler belts 61, 62, and 63, respectively, the idler belts are driven in the direction of arrows 86 (Figs. 2 and 3) and the idler roll 21 and floating roll 47 are rotated in the direction of arrows 87 (Fig. 2) therewith.

Therefore, when a bag is introduced by the ram 7 into the bag receiving mouth 82 into frictional contact with the drive and idler belts, the bag is gripped thereby, removed from the ram, and advanced between the drive belts 56, 57, 58 and the idler belts 61, 62, 63 toward the discharge throat 83 from which the bag is discharged in a downward direction upon the fly of the discharge mechanism 8 which subsequently discharges the bag from the bag turning machine.

In view of the automatically maintained tension of the idler belts and the continuously sustained yielding pressure of the idler belts against the drive belts under the weight and lateral tilting action of the floating roll 47 a firm frictional contact between opposing belts is established so that the idler belts are driven without slippage by the drive belts. Likewise, during the advancement of a bag between the belts firm frictional contact between the bag and opposing belts is established under the action of the floating roll 47 whereby the driving connection between the belts is maintained through the medium of the bag and a proper advancement of the bag is assured. Furthermore, the pressure exerted by the idler belts against the drive belts 56, 57, and 58 forces the latter into firm frictional contact with the drive roll 31 so that the drive belts are driven thereby without slippage although they may not be taut on the rolls 31 and 22 or have become slack under the continuous operation.

It will therefore be seen that instead of the elastic rubber belts heretofore employed, which maintain their tension and frictional contact due to their inherent elasticity, non-elastic belts such as fabric or composition belts may be used since, the action of the floating idler roll 47, as hereinbefore explained, maintains a correct tension of the idler belts and a firm frictional contact between the idler and drive belts (either directly or through the medium of the bag) as well as the drive belts and the drive roll.

The retaining pins 43 are so adjusted that they are slightly spaced from the end faces 52 of the roll 47 so that the roll may tilt slightly endwise and float vertically and horizontally in a universal manner to maintain the belts 61, 62, and 63 taut even though they may be of slightly different length or have stretched to different degrees in service. However, the retaining pins 43 should be sufficiently close to the rolls so as to engage the tapered surfaces 54 upon excessive movement of the roll to thereby restrict the universal floating movement of the roll 47 within desired limits and to support the roll in case of belt breakage.

I desire it to be understood that the invention is not limited to the particular application or precise details of construction illustrated, but that various applications, modifications, and variations may be resorted to without departing from the spirit or scope of the invention, and I deem myself entitled to all such applications, modifications, and variations as come within the scope of the claims appended hereto.

Having thus described my invention and in what manner the same may be used, what I claim and desire to protect by Letters Patent is as follows:

1. A bag delivery mechanism comprising an endless bag delivery belt trained around a drive roll and an idler roll rotatably mounted in parallel and spaced relation in a frame, an endless presser belt in frictional engagement with said bag delivery belt adjacent the periphery of the drive roll and overhanging the same, said pressure belt being trained around an idler roll rotatably mounted on said frame above said delivery

belt in parallel relation to said drive roll, and a universally movable idler roll within the overhanging portion of the pressure belt and solely supported thereby for maintaining the pressure belt taut and in yieldable engagement with the bag delivery belt, said universally movable idler roll having an end surface and an annular retaining surface on either end, and means fixed to said frame and cooperating with the end and retaining surfaces of said universally movable roll for limiting the universal movement thereof.

2. A bag delivery mechanism comprising a support, a horizontally disposed drive roll and a horizontally disposed idler roll rotatably mounted in spaced and parallel relation on said support, a drive belt trained around said drive and idler rolls, a second horizontally disposed idler roll rotatably mounted on said support parallel to and above said drive roll and first mentioned idler roll and in spaced relation to said drive belt, a free floating idler roll adjacent and parallel to said drive roll, an endless idler belt trained around said free floating roll and said second idler roll and overlying a portion of said drive belt in yielding engagement therewith, said free floating roll being unsupported by said support whereby the idler belt is maintained under continuous tension and in frictional engagement with the drive belt under the gravity action of said floating roll upon the idler belt, each end of said free floating idler roll having a recess formed by a straight end face of the roll and an annular wall adjacent the same, means for driving said drive roll to effect travel of the engaging belt portions in a common direction toward said floating roll, and retaining means

on said support disposed in closely spaced relation to the end faces of the floating roll and extending into said recesses for limiting the floating movement of the floating roll relative to said support.

3. In a bag delivery mechanism comprising an endless bag delivery belt trained around a rotatable drive roll and an idler roll, and an endless presser belt partially overlying said delivery belt and having one end of its loop trained around a freely rotatable roll and the other end of its loop overhanging the delivery belt, the combination with said pressure belt of a free floating idler roll disposed within the overhanging loop thereof, each end of said floating roll being provided with an annular flange defining a circular recess therewithin, and means adjacent each end of the floating roll and projecting into the circular recess for engaging the annular flange upon excessive floating movement of the floating roll to thereby maintain the floating movement of said roll within a predetermined limit.

ALFRED J. ERSTED.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,432,426	Taggart	Oct. 17, 1922
1,513,473	Ackerman	Oct. 28, 1924
1,544,192	Smith	June 30, 1925
1,849,045	Wolf	Mar. 8, 1932
2,295,940	Ersted	Sept. 15, 1942