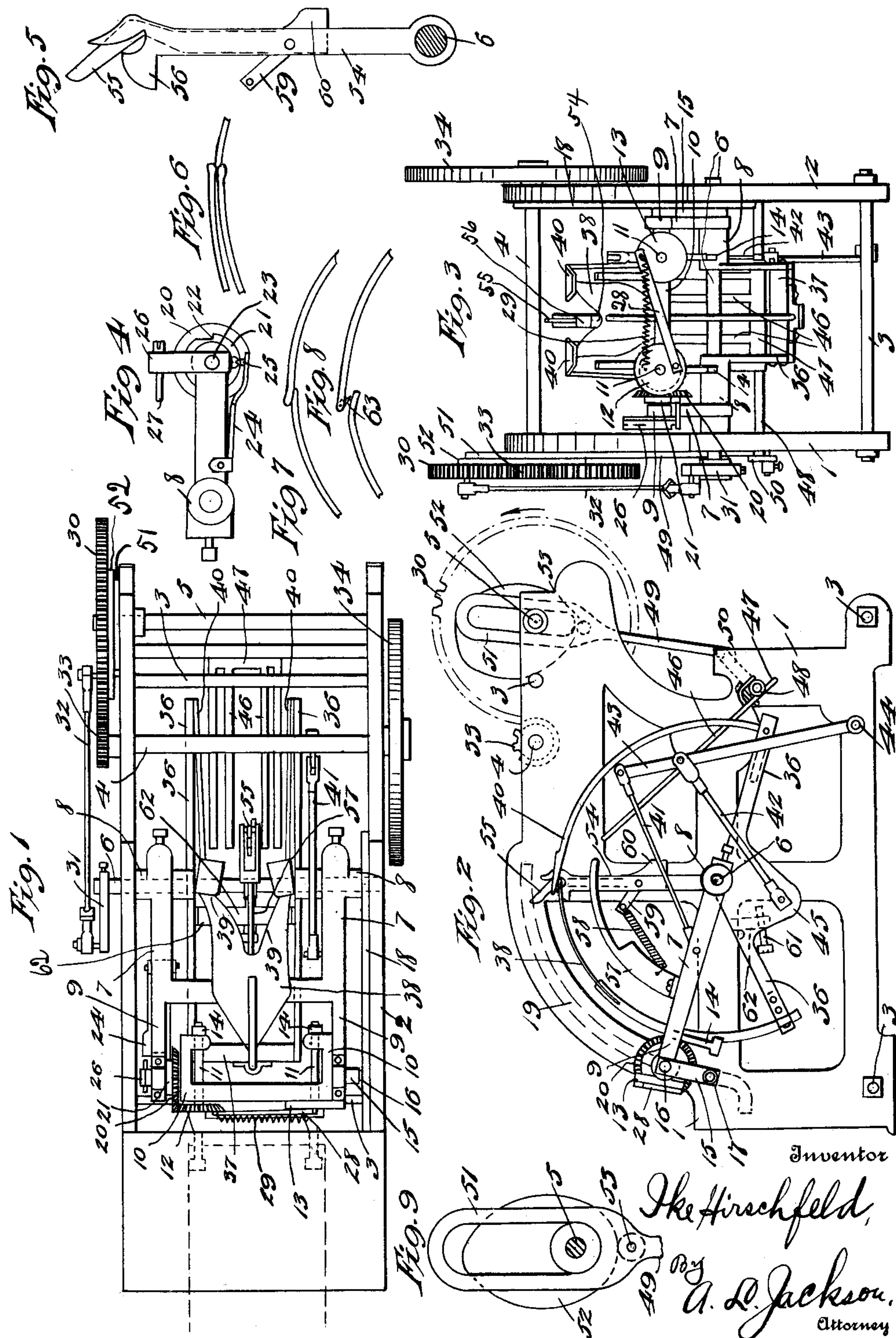


I. HIRSCHFELD.
BAG TURNER.
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BAG-TURNER.

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To all whom it may concern:

Be it known that I, IKE HIRSCHFELD, a citizen of the United States, residing at Fort Worth, in the county of Tarrant and State of Texas, have invented certain new and useful Improvements in Bag-Turners, of which the following is a specification.

My invention relates to bag turning machines and more particularly to machines for turning flour sacks; and the object is to provide a machine which will perform the whole act of turning a sack. As is well known, flour sacks are manufactured with the inside out and they must be turned before they are to be used. This requires the time of many persons in large factories.

The object of this invention is to provide a machine which, when a sack is fed to the machine, will take the sack and turn the sack ready for use, pull all the kinks out of the corners and discharge the sack from the machine, and to provide a machine which is simple in operation.

Other objects and advantages will be fully explained in the following description and the invention will be more particularly pointed out in the claims.

Reference is had to the accompanying drawings which form a part of this application.

Figure 1 is a plan view of the machine. Fig. 2 is a side elevation of the same, with the near frame piece removed and the drive pulley also removed, but showing in dotted outline the track for the roller guide. Fig. 3 is a front elevation of the machine. Fig. 4 is a detail view of a ratchet release. Fig. 5 is a detail of a sack gripping device for drawing the sack into position for discharging the sack from the machine and for pulling the kinks out of the corners of the sack. Fig. 6 is a detail view of a variation in the springs for holding the sacks while being turned. Figs. 7 and 8 are other variations of the same. Fig. 9 is a detail view of a cam and a yoke which is a continuation of a link bar.

Similar characters of reference are used to indicate the same parts throughout the several views.

The machine is provided with two upright frame pieces 1 and 2 which are connected by suitable cross-bars 3. The shafts 4 and 5

form additional connecting means. The shaft 6 also forms a connecting means for the two frame pieces. The machine is provided with a sack holding and starting mechanism and a sack holding and turning mechanism operated from a common rocker-shaft 6 and coöperating with each other in turning sacks and is also provided with a gripping member which coöperates with the latter mechanism and delivers the sack to a discharging mechanism.

The holding and starting mechanism has a yoke 7 provided with sleeve bearings 8 which are rigid with shaft 6. The yoke 7 has forwardly projecting arms or carrying members 9 on which is mounted a pivoted frame 10. Shafts 11 are journaled in the frame 10. A beveled gear wheel 12 is mounted on one of the shafts 11 and a disk 13 is mounted on the other shaft 11. Bag holding fingers 14 are made rigid with the shafts 11. Means are provided for rocking the frame 10. A crank arm 15 is rigid with the pivot journal 16 of the frame 10 and the outer end of the crank 15 is provided with a lug having a roller 17 thereon. A cam guide 18 is rigid with the frame 1 and conforms in contour to the forward upper part of the frame and has a cam groove 19, shown in dotted outline in Fig. 2, the lower end of the groove turning forward at the front end. The roller 17 runs in the cam groove 19 and will rock the frame 10 when the crank 15 reaches the lowest point. A beveled gear wheel 20 is loosely mounted on the pivot journal 23 of the frame 10 and meshes with gear wheel 12. A disk 21 is rigid with wheel 20 and has a shoulder 22. A spring 24 is attached to the bottom of the arm 9 and carries a lug 25 which is adapted to engage the shoulder 22. An arm 26 is rigid with the journal 23 and carries a lug 27 which is adapted to engage the spring 24. A bar 28 is pivotally connected to the disk 13 and to the gear wheel 12. A spring 29 is attached to the wheel 12 and to the disk 13. When the wheel 12 is rocked by the frame 10 and gear wheel 20, the disk 13 will be rocked by the bar 28. The wheel 12 will be held for a time by the lug 25 which engages the shoulder 22 until the spring 24 is depressed by the lug 27. The spring 29 will restore the disk 13 and the wheel 12 to their

relative normal positions after the lug 25 releases shoulder 22. The object of the mechanism described in this paragraph is to thrust the bag holding fingers 14 forward, as shown by dotted outline in Fig. 1, and to close these fingers toward each other so that they will go into a bag and when the lug 25 releases the shoulder 22, to spread the fingers 14 to hold the bag thereon for the turning operation. When the arms 9 bring the frame 10 down to the position shown in the drawings, a further motion of the arms 9 will cause the frame 10 to rock (by means of the crank-pin roller 17 running in cam groove 19) and thus thrust the fingers 14 forward, the frame 10 turning substantially to a vertical position and the fingers 14 to a horizontal position. At the same time the lug 25 is holding the wheel 20 stationary by means of shoulder 22, consequently the wheel 20 will cause the gear wheel 12 to rock the shafts 11 which carry the fingers 14 and thus at the same time the fingers 14 are being thrust forward to horizontal positions they are being turned toward each other until they are closed enough to go into a bag. The bag is then placed on the fingers 14. Just as the fingers 14 reach their closest limit, the lug 27 will depress the spring 24 and thus cause the lug 25 to release the shoulder 22 and the spring 29 will restore the wheel 12 and disk 13 to their relative normal positions and thus spread the fingers 14 inside the bag. The fingers 14 are thus spread before they leave the horizontal position. At this point of operation, the arms 9 start back upwardly and the fingers 14 go back to their normal holding positions, carrying the bag thereon, the fingers being forced back to normal positions by the crank pin roller 17 following the cam groove 19 in guide 18 and causing the wheel 12 to turn and the wheel 12 turning disk 13 by means of the bar 28. The bag is now in position to be turned.

The yoke 7 turns substantially 90 degrees on the shaft 6. This is accomplished by the gear wheel 30, crank 31 rigid with shaft 6, and the connecting rod 32 which is eccentrically connected to the wheel 30 and pivotally connected to the crank 31. The gear wheel 30 is driven by the pinion 33 which is rigid with shaft 4 and shaft 4 being driven by the power wheel 34 which is rigid with this shaft.

Another rocker frame or yoke 36 is mounted on the shaft 6 and provided with a cross-bar 37 at its forward end. This frame 36 carries bag holding and turning members which cooperate with the previously described bag holding mechanism. A spring member 38 is attached to the cross-bar 37 and provided at its rear end with spring fingers 39. Cooperating spring mem-

bers 40 are attached to the rear ends of the frame members 36. The spring members 38 and 40 meet and lap on each other enough to grasp the bag. The members 40 go inside the bag while the bag is held by the fingers 14, above described. The spring fingers 39 bear against the outside of the bag. The bag is thus clamped between the fingers 39 and the ends of the members 40. The bag is held by the fingers 14 while the yokes 7 and 36 are moving in opposite directions, the member 40 swinging forward toward the front of the machine and reaching substantially to the position of the frame 10 shown in the drawings. At the forward limit of the members 40, the bag is caught at the bottom in between the members 39 and 40. The yokes 7 and 36 then change directions, the members 39 and 40 pulling the bottom of the bag through the mouth thereof and finally pulling the bag entirely off the fingers 14. After the bag is pulled off the fingers 14, it is still held by the members 39 and 40. At this point, devices are used to pull the kinks out of the corners of the bag. The yoke 36 is rocked in the opposite direction to that of the yoke 7 and this is accomplished by the link bars 41 and 42. The link bar 41 is pivotally connected to one side of the yoke 7 and to a pivoted bar 43 which is pivotally connected to a cross-bar 44. The link bar 42 is pivotally connected to the bar 43 at a lower point than the bar 41 and projected on the opposite side of the shaft 6 and pivotally connected to a depending lug 45. When the yoke 7 is moving upwardly, the bar 41 will push the bar 43 backwardly. This will make the bar 42 pull on the lug 45 and thus pull the yoke 36, forward of the shaft 6, downwardly. This will make the yokes 7 and 36 rock in opposite directions.

Means are provided for gripping the bags and pulling the kinks out of the corners and for delivering the bags to the discharging member 46 which consists of a bar 47 which is rigid with a shaft 48 and which is provided with a plurality of long fingers 46 on which the bag falls. The shaft 47 is rocked by means of a cam 52 which is rigid with wheel 30 and by a link bar 49 which is pivotally connected to a crank 50 which is rigid with the shaft 48 and terminates in a yoke 51 which engages the shaft 5, but the movements of which are controlled by the cam 52. A roller 53 is mounted on the yoke 51 and the cam 52 bears against the roller 53 as the wheel 30 revolves and carries the cam 52. This action causes the shaft 48 to rock back and forth so that the arms or fingers 46 will throw the bag out of the machine. The drawings show the spring members 39 and 40 substantially at their backward limit of travel. In this condition

of the machine, the devices stand close to the bag which has been turned. The gripping devices are carried by a standard 54 which is loosely mounted on shaft 6. A lever 55 is pivotally mounted in the standard 54, the standard being slotted for receiving the lever 55. The standard 54 has a lip 56 forming a bearing which coöperates with the lever 55 for gripping the bags. A guide 57, consisting of a forked standard, is bolted to yoke 7 with the forked end engaging the standard 54. The lever 55 is held yieldingly against the bearing 56 by a spring 58 which is attached to the standard 57 and to a lug 59 projecting from the lever 55. When the spring members 39 and 40 have turned the bag, these members are standing substantially at the positions indicated in Figs. 1 and 2. On further motion of the working parts and the turning of the shaft 6, the standard 54 will be swung forward and the sack or bag will be caught between the lever 55 and bearing 56 and these members will bear against the bottom of the bag and spring members 39 and 40, moving in the opposite direction, will pull the kinks out of the corners and about the time the kinks are pulled out of the corners of the bag, the motion of the working parts will be reversed and the standard 54, the bag being caught and held by the lever 55 and bearing 56, will be swung toward the back end of the machine and by the time the standard has brought the bag onto the discharging fingers 46, the lug 60 of the lever 55 will strike a set screw 61 and cause the lever 55 to release the bag. The bag will be thrown out of the machine by the fingers 46 heretofore described. The set screw 61 is mounted in a cross bar 62 so that the set screw will project in the path of the lever 55 and stop the same. Figs. 6, 7, and 8 show variations in the spring members for grasping the bag to start the turning of the bag. Fig. 8 shows a dog 63 pivoted in the end of one of the spring members.

In operation, the machine is run until the arms or fingers 14 are brought to the position of the dotted outline in Fig. 1, and on a further motion the arms or fingers 14 will be turned toward each other far enough to allow a bag to be hung on the fingers or holders 14. A further drive of the machine will bring the fingers 14 back to the dotted outline of Fig. 1, the motion of the frame 10 being reversed at the time the fingers commence to spread for holding the bag thereon. On this reverse motion, the fingers 14 will first be brought to a vertical position, holding the bag. On a further drive, the fingers 14 start with the bag upwardly and toward the rear of the machine and the spring members 39 and 40 start toward the front of the machine, and the members 40

will pass into the bag and go to the bottom off the bag. By this time, the fingers 14 have changed positions with the ends of the members 39 and 40, the fingers 14 being at their highest point and close to the position of the lever 55 as shown in Figs. 1 and 2. In this position the bag is stretched full length and the turning is about to commence. The motion of the spring members 39 and 40 and the frame 10 with the fingers 14 will be reversed, the fingers 14 going toward the front of the machine or starting position and the spring members 39 and 40 going toward the rear of the machine. The bag will be gradually pulled off the fingers 14, going on the members 39 and off the members 40, and the bottom of the bag passing through the mouth and changing ends so that the members 39 will now be within the bag and the bottom of the bag standing near the lever 55 having left the fingers 14 entirely and having been turned. On further motion, the lever 55 with standard 54 will swing toward the front of the machine slightly and push on the bottom of the bag, shoving the same against the members 39 (which are now inside the bag) so that these members push the kinks out of the corners of the bag. By this time the bottom of the bag is gripped between the lever 55 and the bearing 56. On further motion, or further drive, of the machine, the motion of the lever 55 with its standard and the members 39 is reversed. The lever 55 with its bearing 56 will pull the bag under the members 40 and off the members 39 and as the lug 60 of the lever 55 strikes the set screw 61, the lever will release the bag and drop the same on the fingers 46 which will throw the bag out of the machine. The standard 54 must be yieldingly mounted on the shaft 6 to prevent the bearing 56 and the lever 55 from tearing the bag when these members are pushing the bag against the members 39 to remove the kinks from the corners of the bag. The spring 58 holds the standard 54 in place, coöperating with the guide member 57.

What I claim is,—

1. A bag turning machine comprising a frame, a rocker-shaft journaled in said frame, a bag receiving and holding yoke and a bag holding and turning yoke mounted on said shaft, means carried by the former yoke for receiving and stretching the bag to be turned, means for rocking said yokes in opposite directions for turning the bag and a gripping device for bearing against the bottom of the turned bag for pressing the kinks out of the corners and removing the bag from said turning yoke.

2. A bag turning machine comprising a frame, a rocker-shaft journaled in said frame, a bag receiving and holding yoke

and a bag holding and turning yoke mounted on said shaft, means for driving said yokes in opposite directions, means carried by the former yoke for receiving and stretching bags, and bag turning members carried by the latter consisting of a pair of yielding arms for entering the unturned bag and a pair of yielding arms extending on the outside of the bag and the pairs of arms cooperating with each other.

3. A bag turning machine comprising a frame, a rocker-shaft journaled in said frame, a bag receiving and holding yoke and a bag holding yoke mounted and turning on said shaft, means for rocking said yokes in opposite directions, a pivoted frame mounted in the former yoke, means mounted in said pivoted yoke for holding and stretching bags, means mounted on the bag holding and turning yoke cooperating with said pivoted yoke for turning bags, a gripping device for detaching the bag from said holding and turning yoke and means for throwing the bags out of the machine.

4. A bag turning machine comprising a frame, a rocker - shaft journaled in said frame, a bag receiving and holding yoke and a bag holding and turning yoke mounted on said shaft, means for rocking said yokes in opposite directions, each one of said yokes having gripping devices for holding bags and each yoke cooperating with the other for turning bags, and a gripping device for pressing against the bottom of the turned bag for removing kinks therefrom and for removing the bag from said bag holding and turning yoke.

5. A bag turning machine comprising a frame, a rocker-shaft journaled in said frame, a bag receiving and holding yoke and a bag holding and turning yoke mounted on said shaft, means for rocking said yokes in opposite directions, each yoke having gripping devices for holding bags and each yoke cooperating with the other for turning bags, and means for pressing against the bottom of the bag after it is turned for straightening the corners thereof and for detaching bags from said holding and turning yoke.

6. A bag turning machine comprising a frame, a rocker-shaft journaled in said frame, a bag receiving and holding yoke and a bag holding and turning yoke mounted on said shaft, the former yoke having members for stretching and holding the mouth of the bag open and the latter having means entering into the bag, and cooperating means engaging the outside of the bag for gripping the bottom of the bag and pulling the same through the mouth thereof, and means for rocking said yokes in opposite directions.

7. A bag turning machine comprising a frame, a rocker-shaft journaled in said

frame, a cam truck mounted on said frame, a bag receiving and holding member and a bag holding and turning member mounted on said rocker shaft, means for rocking said members in opposite directions, the former member carrying a pivoted yoke, pivoted fingers mounted on said yoke, means operatively connecting said yoke with said track for closing and opening said fingers, and means carried by the bag holding and turning member for cooperating with said fingers for turning bags.

8. A bag turning machine comprising a frame, a rocker-shaft journaled in said frame, a bag receiving and stretching and holding member mounted on said shaft, a bag holding and turning member mounted on said shaft and provided with a pair of yielding members entering within the unturned bag and extending to the bottom thereof and a pair of yielding members exterior to the bag and pressing the bag against the interior yielding members for cooperating with said stretching and holding member for turning bags, and means for rocking said bag stretching and holding member and said holding and turning member in opposite directions.

9. A bag turning machine comprising a frame, a bag receiving and holding member shiftably mounted on said frame, a bag holding and turning member shiftably mounted on said frame and cooperating with the former member for turning bags, means for shifting said members past each other in opposite directions, and spring gripping members mounted on said shaft for pressing against the bottom of the turned bag and for detaching the bag from said holding and turning member.

10. A bag turning machine comprising a frame, a rocker-shaft journaled in said frame, a bag receiving and holding yoke and a bag holding and turning yoke mounted on said rocker-shaft, the former member having means for stretching and holding a bag open at the mouth and the latter member having means for gripping the bottom of the bag and pulling the same through the mouth thereof, a detaching member for pressing against the bottom of the stretched bag after it is turned for straightening the bag and for gripping the bag to detach the same from said turning means and for delivering the bag to a discharging member, and means for rocking said yokes in opposite directions.

11. A bag turning machine comprising a frame, a rocker shaft journaled in said frame, a bag receiving and holding yoke and a bag holding and turning yoke mounted on said shaft, the latter yoke having a pair of yielding gripping members projecting backwardly for entering the unturned bag and a

pair of yielding members projecting forwardly and coöperating with the first mentioned yielding members for gripping the bag to detach the same from said receiving
5 and holding yoke and simultaneously turn the bag and to remove same from said backwardly projecting members and to place the turned bag on said forwardly projecting members, and means for detaching the bag from said forwardly projecting members. 10
In testimony whereof I set my hand this 3rd day of May, 1915.

IKE HIRSCHFELD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."