Jan. 4, 1944. S. BLEICHFELD 2,338,088

BAG SORTING APPARATUS

Filed April 8, 1942 3 Sheets-Sheet 1

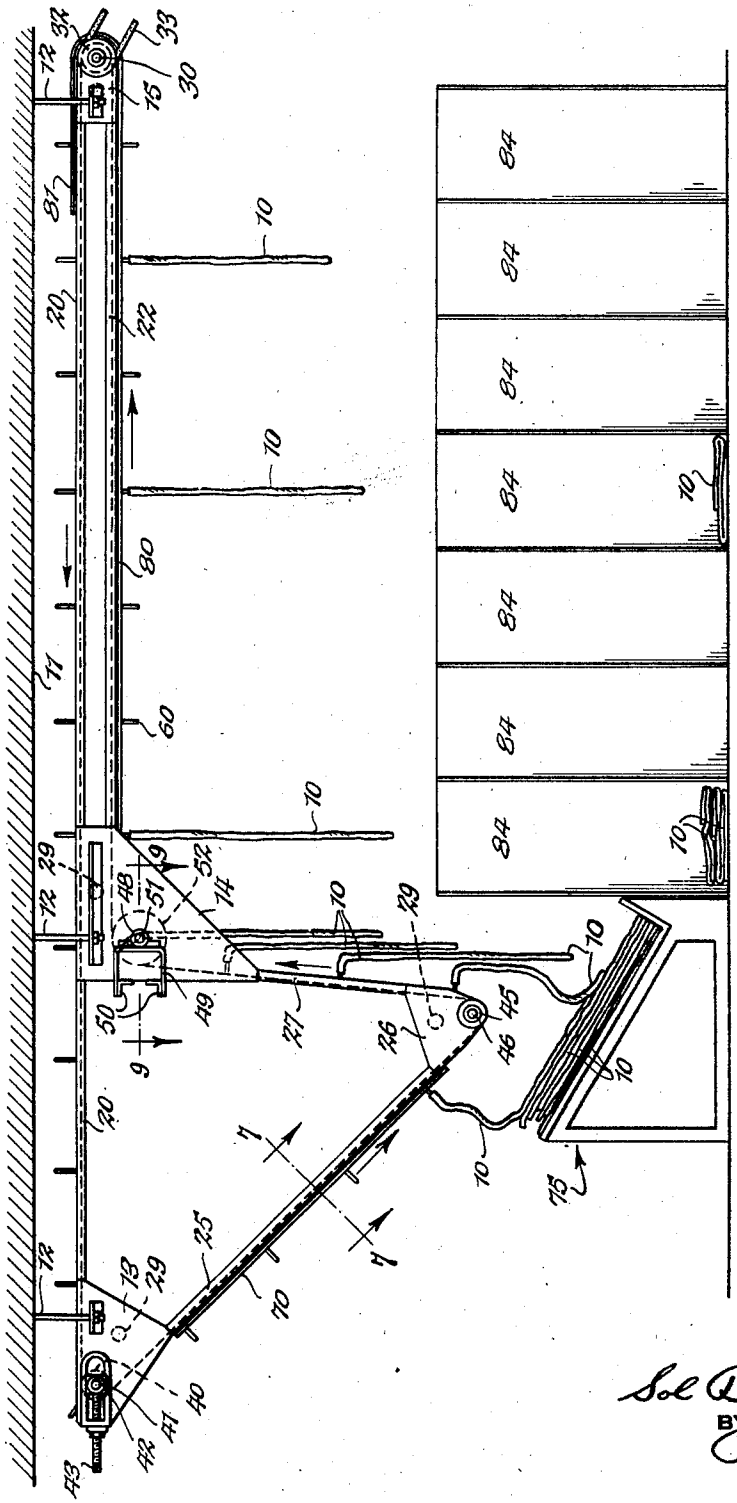

Fig. 1.

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BAG SORTING APPARATUS

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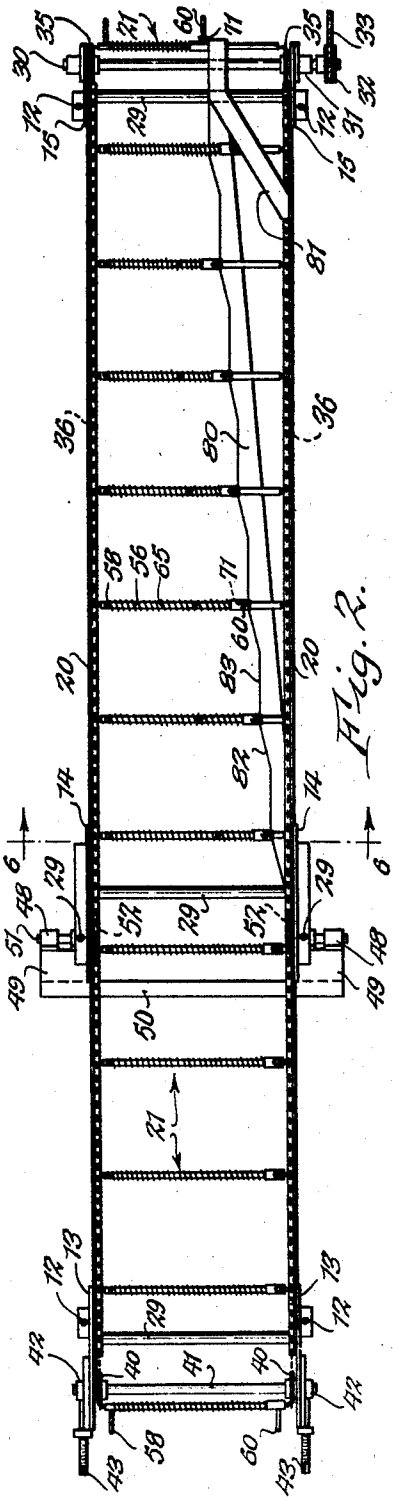

Fig. 2.

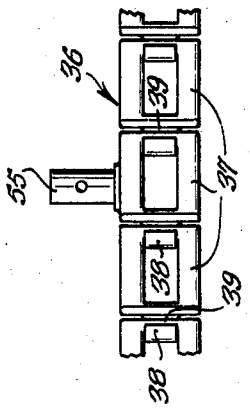

Fig. 4.

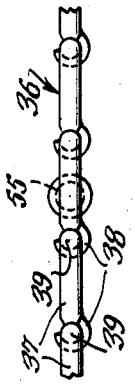

Fig. 5.

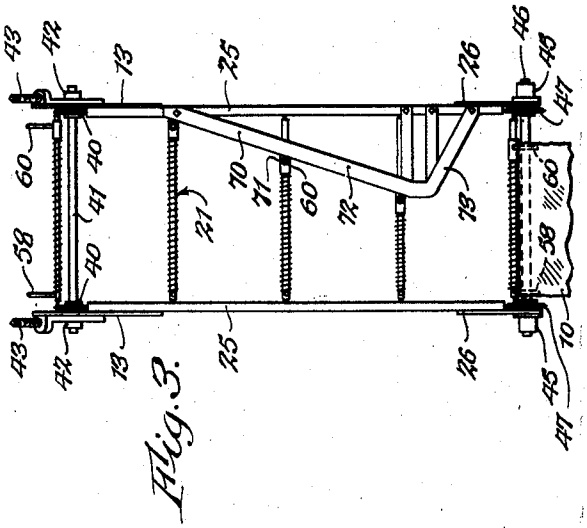

Fig. 3.

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BAG SORTING APPARATUS

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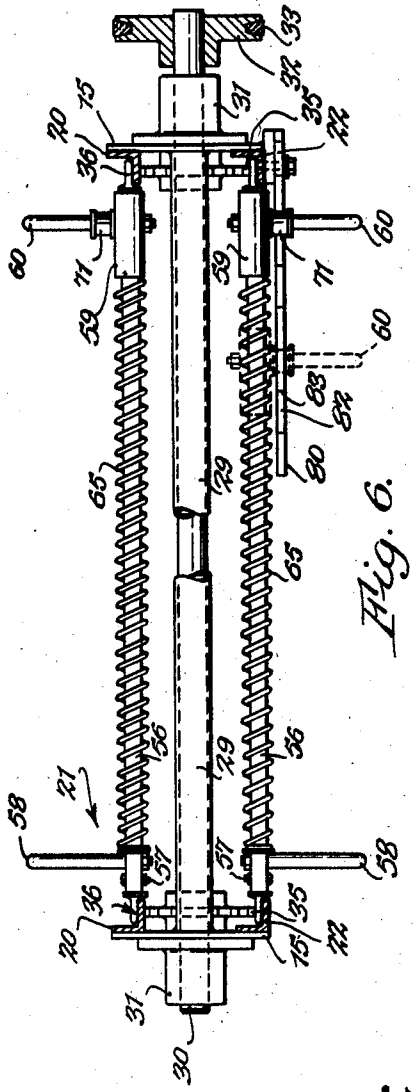

Fig. 6.

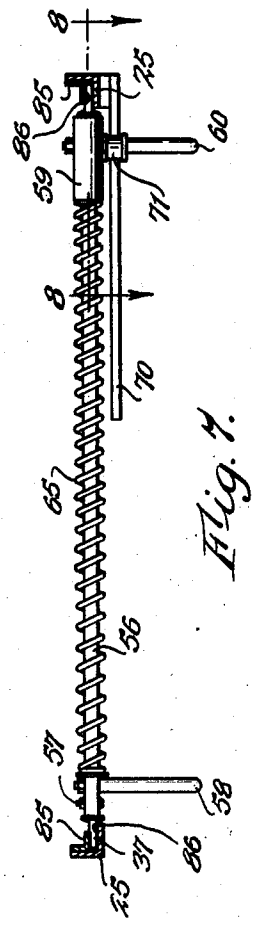

Fig. 7.

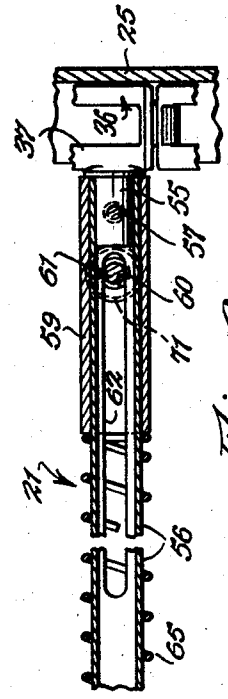

Fig. 8.

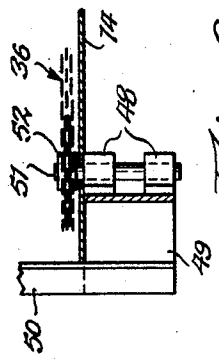

Fig. 9.

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2,338,088

BAG SORTING APPARATUS

Sol Bleichfeld, Buffalo, N. Y.

Application April 8, 1942, Serial No. 438,105

12 Claims. (Cl. 209—82)

This invention relates to apparatus for sorting bags and more particularly to such apparatus for sorting used cloth bags of different sizes, such used cloth bags being cleaned and now being sorted by hand, this involving, of course, a great deal of labor.

The principal object of the present invention is to provide such a bag sorting apparatus which automatically sorts and drops the bags into different bins in accordance with the various sizes of the bags across their mouths, this eliminating all manual labor with the exception of the necessity of an operator to feed the bags to the apparatus.

Another object of the invention is to provide such apparatus which will sort the bags of different sizes with great accuracy and properly deposit the bags in the different bins.

Another object of the invention is to provide such apparatus which can be adapted to any number of sizes, the apparatus shown being designed for seven different sizes of bags.

Another object of the invention is to provide such an apparatus in which the manual operation of feeding the bags to the apparatus is accomplished with the minimum amount of effort and with the greatest degree of convenience to the operator, and in which the handling of the bags is reduced to the maximum amount so that the work of handling the used bags is made agreeable and convenient.

Another object of the invention is to provide such apparatus in which the bags are caused to straighten out before being dumped into the various bins thereby to insure their being neatly and uniformly deposited in the bins from which they can be conveniently removed and packaged with a minimum amount of effort.

Another object is to provide such apparatus which is light in weight and can be conveniently suspended from the ceiling, thereby to avoid the necessity of a heavy framework for supporting the apparatus.

Other objects are to provide such apparatus which is simple in construction and which will stand up under conditions of severe and constant use without getting out of order or requiring repairs.

In the accompanying drawings:

Fig. 1 is a side elevation of a cloth bag sorting apparatus embodying my invention.

Fig. 2 is a top plan view thereof, the supporting hanger rods being shown in section, and some of the cross tubes being broken away.

Fig. 3 is an end elevational view, viewed from the feeding end of the apparatus and looking upwardly parallel with the feeding stretch of the conveyer on which the bags are hung.

Fig. 4 is an enlarged fragmentary plan view of one of the two chains which form a part of the conveyer for the apparatus.

Fig. 5 is a side elevation of the chain shown in Fig. 4.

Fig. 6 is an enlarged transverse section, taken on line 6—6, Fig. 2.

Fig. 7 is an enlarged transverse section, taken on line 7—7, Fig. 1.

Fig. 8 is a further enlarged section, taken on line 8—8, Fig. 7.

Fig. 9 is a fragmentary horizontal section, taken on line 9—9, Fig. 1.

Used cloth bags, such as the burlap bags 10 shown in the accompanying drawings, must be sorted accurately as to their sizes across their mouths or opened ends so as to enable them to be refilled with automatic filling machines. Thus, if an oversized bag is fitted to the neck of a filling machine, it is improperly held and liable to drop, this resulting, of course, in a large quantity of the material being spilled on the floor. Conversely, the effort required in attempting to fit an oversized bag to the filling spout of an automatic filling machine represents a waste of labor and a loss of time. The apparatus forming the subject of the present invention is primarily designed to sort used cloth bags in accordance with their mouth or transverse sizes, the apparatus automatically dumping the bags in their proper bins from which they can be conveniently removed and bailed or otherwise packaged and the user of the bags being assured that each bag is of the same size and that it will properly fit the spout of his filling machine.

The sorting apparatus is shown as suspended from the ceiling 11 of the plant by means of hanger rods 12, these hanger rods supporting angles which are suitably secured to side plates 13, 14 and 15 which form a part of the frame of the apparatus. These three plates 13, 14 and 15 are provided on opposite sides of the apparatus and on each side are connected by a pair of upper side channel bars 20 which extend the full length of the apparatus and have their horizontal flanges extending inwardly so as to provide an upper horizontal track for the conveying apparatus which is indicated generally at 21. Each pair of side plates 14 and 15 are similarly connected by a lower horizontal angle iron 22, these side angle irons 22 extending parallel with the upper angle irons or rails 20 and forming side

rails for the corresponding stretch of the conveyer 21. A pair of side angle irons 25 extends downwardly from the side plates 13 at the forward of feeding end of the apparatus and each is connected at its lower end to a side plate 26. These angle irons have their flanges extending inwardly in opposed relation to each other, as best shown in Fig. 7, and form the side rails for the conveyer 21 along the feeding stretch of the same. Each side plate 26 is connected with the companion side plate 14 by a side angle iron or rail 27, these rails supporting the conveyer 21 along the corresponding stretch of the conveyer. It will be noted that the side rails 27 incline at a slight angle from the vertical and that the side rails 25 which support the feeding stretch of the conveyer 21 are arranged at a substantial inclination of about 45°. The conveyer 21 moves in the direction of the arrows shown in Fig. 1 and it will therefore be seen that the upper stretch of this conveyer travels forwardly along the upper pair of side rails 20; downwardly and rearwardly along the side rails 25 at the feeding stretch or station of the machine; upwardly and slightly rearwardly along the side rails 27; and rearwardly and horizontally along the side rails 22 at the discharging or sorting station of the apparatus.

The frame of the apparatus composed of the various rails and side plates as above described is completed by cross members of any suitable form, these cross members being shown as comprising tubes 29 welded to and cross connecting each set of side plates 13, 14, 15 and 26, respectively.

The horizontal drive shaft 30 of the machine is journaled in bearings 31 which are secured to the side plates 15 of the frame and this drive shaft 30 is shown as driven by means of a pulley 32 and belt 33. A drive sprocket 35 is secured to each end of the drive shaft 30, these sprockets being arranged between the side rails 20 and 22 at each side of the apparatus, as best shown in Fig. 6. Each of these drive sprockets 35 drives a detachable link chain 36 which is shown in detail in Figs. 4 and 5, these chains forming a part of the conveyer 21. The detachable link chain is shown as comprising square links 37 each having a hook-shaped forward end 38 which detachably hooks around the rear cross bar 39 of the next preceding link 37, the links 37 being joined to provide the pair of endless chains 36 passing around and driven by the pair of drive sprockets 35.

At the forward end of the machine each of these chains pass around an idler sprocket 40, these idler sprockets 40 being suitably secured to an idler shaft 41 mounted in bearings 42 carried by each of the side plates 13. The bearings 42 are preferably rendered adjustable by means of adjusting screws 43 so that the tension of the two chains 36 can easily be adjusted by turning the screws 43 and moving the idler shaft 41 together with its idler sprockets 42 to take up the necessary amount of slack in the chains.

Each of the side plates 26 carries a bearing 45 in which an idler shaft 46 is journaled, this shaft carrying a pair of sprockets 47 around which the chains 36 pass. Each of the side plates 14 of the frame carries a pair of bearings 48. As best shown in Figs. 1 and 9, these bearings are arranged in axial horizontal alinement and are secured to a U-shaped bracket member 49, the legs of which are in turn secured to a pair of angle bars 50 which extend across the apparatus at the forward edges of the side plates 14 and form additional cross members of the frame. Each of the pair of bearings 48 carries an idler stub shaft 51 which in turn carries a sprocket 52, the chains 36 passing around these side sprockets. The shafts 51 are in the form of stub shafts, in contradistinction to the cross shafts 30, 41 and 46 for the other pairs of sprockets as above described so as to leave an unobstructed space for the passage of the bags 10 therebetween in a free hanging position as hereinafter described.

At spaced intervals the links 37 of each of the chains 36 is formed to provide an inwardly extending pin 55 which can be formed integrally with the link, the pins 55 of the two chains 36 registering with one another. Each pair of the pins 55 of the two chains supports a cross rod or tube 56 which, as best shown in Fig. 8, is fitted around its pins 55 and fastened by means of a bolt or cross pin 57 or in any other suitable manner, the cross rods or tubes 57 thereby being prevented from rotating. The left hand end of each cross rod or tube 56, as viewed from the front of the machine, carries a fixed finger 58, these fingers being arranged to project outwardly from the conveyer and hence extending upwardly when traversing the upper stretch of the conveyer and downwardly when traversing the lower stretch of the conveyer.

The opposite end of each cross rod 56 supports a sliding sleeve 59 which carries a pin 60, the stem 61 of this pin extending through a pair of slots 62 provided in the cross rod or tube 56. The slots 62 extend longitudinally of each cross rod or tube 56 and are arranged in opposed relation so that each pin 60 projects outwardly in the same direction as its companion fixed pin 58. Since each sleeve 59 is free to slide along its cross rod or tube 56, the fingers 60 are movable toward and from the fixed fingers or pins 58 but are prevented from turning around the cross rod or tube 56. Each sleeve 59 is yieldingly held against its supporting link 37 of the right hand chain 36, as viewed from the front of the machine, by a helical compression spring 65 which surrounds each cross rod or tube 56 and is interposed between the fixed finger 58 and the end of the movable sleeve 59.

To the right hand rail 25, as viewed from the front of the machine, is suitably secured a cam bar 70, this cam bar extending toward the opposite or left hand rail 25 and being arranged in the path of rollers 71 provided at the base of each of the movable fingers 60. The cam bar 70 is formed with a long leg 72 which engages the rollers 71 and gradually moves the passing fingers 60 toward their companion fixed fingers 58 as the conveyer traverses this part of the apparatus. After traveling over the high part of the cam bar 70, the rollers engage a short leg 73 of this cam bar, this short leg being arranged to permit each movable finger 60 to rapidly return to the right, as viewed from the front of the apparatus, and away from its fixed finger. It is during this rapid movement of each movable finger 60 away from its companion fixed finger 58 that the operator catches the mouth of the bag 10 between the fingers, these bags having been placed in a pile on an inclined table or rack 75 with their open ends or mouths at the upper end of the pile.

A discharging cam bar 80 is secured at its front end to the right hand rail 22, as viewed from the front of the machine. The cam bar 80 is arranged in the path of the rollers 71 of the mov-

able fingers 60 and is formed to provide a succession of evenly spaced salient faces 82 and lands 83, the salient faces 82 and lands 83 being in alternate relation to one another. Under each of the salient faces 82 and its succeeding land 83 is arranged a bin 84. These bins 84 can be of any suitable construction, but are preferably such as to permit the ready removal of the pile of bags 10 which are deposited therein. The rear end of the cam bar 80 curves around the rear end of the apparatus to form a continuation of the last land 83 and terminates in a return leg or cam part 81 secured to the corresponding rail 20. The movable fingers 60 return to their fully extended position by riding outwardly along this return leg 81.

To prevent upward movement of the conveyer chains 36 while traversing the cam bar 70, each of the rails 25 is provided along the inner side of its vertical flange with a small angle iron 85, the links of the two chains 36 passing through the channel 86 formed between the opposing flanges of the rails 25 and these angle irons 85 and hence being held against lateral displacement while traversing the rails 25.

In the operation of the apparatus the rotation of the drive shaft 30 by its drive pulley 32 effects a rotation of its drive sprockets 35 which mesh with the links 37 of the two drive chains 36. Each of these drive chains is thereby driven forwardly along the horizintal flange of its upper guide rail 20; around the idler sprocket 40 at the forward end of the machine; downwardly in the channel 86 formed between its rail 25 and angle iron 85; around its idler sprocket 47; up its rail 27; around its sprocket 52; rearwardly along the lower flange of its rail 22 and back around its drive sprocket 35. At spaced intervals the companion links of the two chains 36 carry the cross rods or tubes 56, each of which in turn carries the fixed finger 58 at its left hand end and the movable finger 60 at its right hand end, as viewed from the front of the machine. When the chains traverse the cam bar 70 at the front of the machine, the rollers 71 of the fixed fingers successively engage the rising part 72 of this cam bar and hence each movable finger 60 and its supporting sliding sleeve 59 is moved toward its fixed finger 58 against the resistance of its return spring 65. When the rollers 71 pass over the high part of the cam bar 70 and engage the short arm 73 of this cam bar each movable finger 60 is permitted to return to its original position, the finger being moved away from its companion fixed finger 58 by the return spring 65.

At this stage of the operation of the apparatus the operator seizes the open upper end of the top bag 10 supported on the table 75, catches one end of the mouth af this bag over the passing fixed finger 58 and places the other end of the mouth of the bag in position to be caught by the movable finger 60 as it is being moved away from its fixed finger by its spring 65 while traversing the short leg 73 of the cam bar 70. When this movable finger 60 has distended the mouth of the bag to its full extent, the bag is, of course, held between them movable finger and the companion fixed finger and hence is stripped from the pile of bags on the table 75 and is carried upwardly while the two chains 36 traverse the side rails 27. While so traversing this part of the apparatus, the bags 10 hang freely from their supporting fingers and since the sprockets 52 are not connected by a cross shaft, these bags continue to hang freely as the chains traverse the rails 22 of the frame.

In traversing these rails 22 of the main frame, the bags are brought into the zone of operation of the cam bar 80. If the bag 10 has the maximum size at its mouth or open end, the movable fiuger 60 supporting it is arranged so that its roller 71 engages the first salient face 82 and land 83 of the cam bar 80. Therefore with such bag of maximum size at its mouth, the movement of its movable finger 60 toward its fixed finger 58 by the very first salient face 82 of the car bar 80 causes such large mouthed bag to be released and to drop into the first bin 84. On the other hand, if the bag is of minimum size across its mouth or open end, it is carried along the cam bar 80 until the roller 71 of its movable finger 60 engages the very last salient face 82 and land 83 of the cam bar 80. This last salient face 82 effects an inward movement of the movable finger 60 so that this bag of minimim size across its open end is deposited in the very last bin 84. It will be seen that bags of intermediate size across their mouths or open ends will be dropped into corresponding intermediate bins 84 in accordance with the particular salient face 82 which is engaged, the particular salient face 82 engaged being determined by the original position of the movable finger 60 which is in turn determined by the particular length, across the open end or mouth, of the bag being carried.

It will therefore be seen that with the apparatus the bags are accurately sorted as to their size across their open ends or mouths and that the bags deposited in any one bin are all of the same size. The bags removed from any one bin can therefore be sold to a customer with full assurance that the bags will fit the particular filling machinery.

From the foregoing it will be seen that the present invention provides a sorting apparatus for cloth bags which accurately sorts the bags in accordance with the dimension of each bag at its open end and does so with a minimum amount of manual handling of the bags, the operator being merely required to present the mouth of each bag to the pair of expanding fingers of the conveyer as the conveyer traverses the short leg 73 of the cam bar 70. It will further be seen that the apparatus is light in weight and can be readily suspended from the ceiling and that it is of sturdy construction and will stand up under continuous service without getting out of order or requiring frequent repairs.

I claim as my invention:

1. Apparatus for sorting full size mouthed empty bags as to size across their open ends, comprising a conveyer successively traversing a bag receiving and a bag discharging station, a pair of fingers mounted on said conveyer for movement toward and from each other and adapted to engage the open ends of said bags placed therearound, means for yieldingly holding said fingers widely separated from each other to hold the open end of a bag in a stretched condition with the sides of the bag parallel with each other and to position said fingers from each other a distance determined by the size of the open end of said bag, a plurality of receivers at said discharging station and successively traversed by said conveyer, means at the first of said receivers to move said fingers together when widely spaced from each other to release bags of large side across their open ends into said first

receiver, and means at a subsequent receiver to move said fingers together when more closely spaced from each other to release bags of smaller size across their open ends into said subsequent receiver.

2. Apparatus for sorting full size mouthed empty bags as to size across their open ends, comprising a conveyer successively traversing a bag receiving and a bag discharging station, a pair of downwardly extending substantially straight fingers mounted on said conveyer for movement toward and from each other and adapted to engage the open ends of said bags placed therearound, means for yieldingly holding said fingers widely separated from each other to hold the open end of a bag in a stretched condition with the sides of the bag parallel with each other and to position said fingers from each other a distance determined by the size of the open end of said bag, a plurality of receivers at said discharging station and successively traversed by said conveyer, means at the first of said receivers to move said fingers together when widely spaced from each other to release bags of large size across their open ends into said first receiver, and means at a subsequent receiver to move said fingers together when more closely spaced from each other to release bags of smaller size across their open ends into said subsequent receiver.

3. Apparatus for sorting full size mouthed empty bags as to size across their open ends, comprising a conveyer successively traversing a bag receiving and a bag discharging station, a pair of downwardly extending fingers mounted on said conveyer for movement toward and from each other and adapted to engage the open ends of said bags placed therearound, means for yieldingly holding said fingers widely separated from each other to hold the open end of a bag in a stretched condition with the sides of the bag parallel with each other and to position said fingers from each other a distance determined by the size of the open end of said bag, means at said receiving station for moving said fingers toward and from each other to facilitate the application of a bag thereto, a plurality of receivers at said discharging station and successively traversed by said conveyer, means at the first of said receivers to move said fingers together when widely spaced from each other to release bags of large size across their open ends into said first receiver, and means at a subsequent receiver to move said fingers together when more closely spaced from each other to release bags of smaller size across their open ends into said subsequent receiver.

4. Apparatus for sorting full size mounted empty bags as to size across their open ends, comprising a conveyer successively traversing a bag receiving and a bag discharging station, a pair of downwardly extending substantially straight fingers mounted on said conveyer for movement toward and from each other and adapted to engage the open ends of said bags placed therearound, means for yieldingly holding said fingers widely separated from each other to hold the open end of a bag in a stretched condition with the sides of the bag parallel with each other and to position said fingers from each other a distance determined by the size of the open end of said bag, a plurality of receivers at said discharging station and successively traversed by said conveyer, a stationary cam at the first of said receivers engaging one of said fingers when widely spaced from the other finger and moving said fingers together when so widely spaced from each other to release bags of large size across their open ends into said first receiver, and a stationary cam at a subsequent receiver engaging one of said fingers when more closely spaced from the other finger and moving said fingers together when more closely spaced from each other to release bags of smaller size across their open ends into said subsequent receiver.

5. Apparatus for sorting full size mouthed empty bags as to size across their open ends, comprising an endless conveyer successively traversing a bag receiving and a bag discharging station, a plurality of narrow fingers arranged in spaced relation along one side of said conveyer, a plurality of narrow movable fingers arranged in spaced relation along the opposite side of said conveyer and each opposite a companion finger of said first fingers to form a plurality of pairs of narrow fingers on said conveyer adapted to engage the open ends of said bags placed therearound, means for guiding each of said movable fingers for movement toward and from its companion finger, means for yieldingly holding said fingers of each pair widely separated from each other to hold the open end of a bag in a stretched condition with the sides of the bag parallel with each other and to position the fingers of each pair from each other a distance determined by the size of the open end of said bag, a plurality of receivers at said discharging station and successively traversed by said conveyer, means at the first of said receivers to move each passing movable finger toward its companion finger when widely spaced therefrom to release bags of large size across their open ends into said first receiver, and means at a subsequent receiver to move each passing movable finger toward its companion finger when closely spaced therefrom to release bags of smaller size across their open ends into said subsequent receiver.

6. Apparatus for sorting full size mouthed empty bags as to size across their open ends, comprising a flexible endless conveyer mounted to rotate about horizontal axes to provide upper and lower stretches and having its lower stretch traversing a bag discharging station, a plurality of outwardly extending narrow fingers arranged in spaced relation along one side of said conveyer, a plurality of narrow movable fingers arranged in spaced relation along the opposite side of said conveyer and each opposite a companion finger of said first fingers to form a plurality of pairs of narrow fingers on said conveyer adapted to engage the open ends of said bags placed therearound, means for guiding each of said movable fingers toward and from its companion finger, means for yieldingly holding said fingers of each pair widely separated from each other to hold the open end of a bag in a stretched condition with the sides of the bag parallel with each other and to position the fingers of each pair from each other a distance determined by the size of the open end of said bag, a plurality of receivers at said discharging station under said lower stretch of said conveyer and successively traversed thereby, means at the first of said receivers to move each passing movable finger toward its companion finger when widely spaced therefrom to release bags of large size across their open ends into said first receiver, and means at a subsequent receiver to move each passing movable finger toward its companion finger when closely spaced therefrom to release bags of smaller size across their open ends into said subsequent receiver.

7. Apparatus for sorting full size mouthed

empty bags as to size across their open ends, comprising a flexible endless conveyer, means for supporting said conveyer to traverse a noncircular path and to provide a downwardly moving stretch at one end traversing a receiving station and leading to a horizontally movable lower stretch traversing a bag discharging station, a plurality of outwardly extending narrow fingers arranged in spaced relation along one side of said conveyer, a plurality of narrow movable fingers arranged in spaced relation along the opposite side of said conveyer and each opposite a companion finger of said first fingers to form a plurality of pairs of narrow fingers on said conveyer adapted to engage the open ends of said bags placed therearound, means for guiding each of said movable fingers toward and from its companion finger, means for yieldingly holding said fingers of each pair widely separated from each other to hold the open end of a bag in a stretched condition with the sides of the bag parallel with each other and to position the fingers of each pair from each other a distance determined by the size of the open end of said bag, a plurality of receivers at said discharging station under said lower stretch of said conveyer and successively traversed thereby, means at the first of said receivers to move each passing movable finger toward its companion finger when widely spaced therefrom to release bags of large size across their open ends into said first receiver and means at a subsequent receiver to move each passing movable finger toward its companion finger when closely spaced therefrom to release bags of smaller size across their open ends into said subsequent receiver.

8. Apparatus for sorting full size mouthed empty bags as to size across their open ends, comprising a flexible endless conveyer, means for supporting said conveyer to traverse a noncircular path and to provide a downwardly and rearwardly moving stretch at its forward end traversing a received station and leading to a horizontally movable lower stretch traversing a bag discharging station, a plurality of outwardly extending narrow fingers arranged in spaced relation along one side of said conveyer, a plurality of narrow movable fingers arranged in spaced relation along the opposite side of said conveyer and each opposite a companion finger of said first fingers to form a plurality of pairs of narrow fingers on said conveyer adapted to engage the open ends of said bags placed therearound, means for guiding each of said movable fingers toward and from its companion finger, means for yieldingly holding said fingers of each pair widely separated from each other to hold the open end of a bag in a stretched condition with the sides of the bag parallel with each other and to position the fingers of each pair from each other a distance determined by the size of the open end of said bag, a plurality of receivers at said discharging station under said lower stretch of said conveyer and successively traversed thereby, means at the first of said receivers to move each passing movable finger toward its companion finger when widely spaced therefrom to release bags of large size across their open ends into said first receiver and means at a subsequent receiver to move each passing movable finger toward its companion finger when closely spaced therefrom to release bags of smaller size across their open ends into said subsequent receiver.

9. Apparatus for sorting full size mouthed empty bags as to size across their open ends, comprising a flexible endless conveyer, means for supporting said conveyer to traverse a noncircular path and to provide a downwardly and rearwardly moving stretch at its forward end traversing a receiving station and leading to an upwardly and rearwardly moving stretch in turn leading to a horizontally movable lower stretch traversing a bag discharging station, a plurality of outwardly extendingd narrow fingers arranged in spaced relation along one side of said conveyer, a plurality of narrow movable fingers arranged in spaced relation along the opposite side of said conveyer and each opposite a companion finger of said first fingers to form a plurality of pairs of narrow fingers on said conveyer adapted to engage the open ends of said bags placed therearound, means for guiding each of said movable fingers toward and from its companion finger, means for yieldingly holding said fingers of each pair widely separated from each other to hold the open end of a bag in a stretched condition with the sides of the bag parallel with each other and to position the fingers of each pair from each other a distance determined by the size of the open end of said bag, a plurality of receivers at said discharging station under said lower stretch of said conveyer and successively traversed thereby, means at the first of said receivers to move each passing movable finger toward its companion finger when widely spaced therefrom to release bags of large size across their open ends into said first receiver, means for sliding movement on each of said cross rods adjacent the other chain, means for yieldingly holding said fingers on each cross rod widely separated from each other to hold the open end of a bag in a stretched condition with the sides of the bag parallel with each other and to position the fingers on each cross rod a distance determined by the size of the open end of said bag, a plurality of receivers at said discharging station under said chains and successively traversed thereby, means at the first of said receivers to move each passing movable finger toward its companion finger when widely spaced therefrom to release bags of large size across their open ends into said first receiver, and means at a subsequent receiver to move each passing movable finger toward its companion finger when closely spaced therefrom to release bags of smaller size across their open ends into said subsequent receiver.

10. Apparatus for sorting full size mouthed empty bags as to size across their open ends, comprising a pair of parallel spaced chains, means for supporting said chains to traverse a noncircular path and to traverse a bag discharging station, a plurality of cross rods connecting said chains at spaced intervals, a narrow finger fixed to one end of each of said cross rods adjacent one of said chains, a narrow movable finger mounted for sliding movement on each of said cross rods adjacent the other chain, means for yieldingly holding said fingers on each cross rod widely separated from each other to hold the open end of a bag in a stretched condition with the sides of the bag parallel with each other and to position the fingers on each cross rod a distance determined by the size of the open end of said bag, a plurality of receivers at said discharging station under said chains and successively traversed thereby, means at the first of said receivers to move each passing movable finger toward its companion finger when widely spaced therefrom to release bags of large size across their open ends into said first receiver, and means at a subsequent receiver to move each passing movable finger toward its companion finger when closely spaced therefrom to release bags of smaller size across their open ends into said subsequent receiver.

11. Apparatus for sorting full size mouthed empty bags as to size across their open ends, comprising a pair of parallel spaced chains, means for supporting said chains to traverse a noncircular path and to traverse a bag discharging station, a plurality of cross rods connecting said chains at spaced intervals, a narrow finger fixed to one end of each of said cross rods adjacent one of said chains, a narrow movable finger

mounted for sliding movement on each of said cross rods adjacent the other chain, a helical compressoin spring surrounding each rod and interposed between the fingers mounted thereon to hold the fingers on each cross rod widely separated from each other and to hold the open end of a bag in a stretched condition with the sides of the bag parallel with each other and to position the fingers on each cross rod a distance determined by the size of the open end of said bag, a plurality of receivers at said discharging station under said chains and successively traversed thereby, stationary cam means at the first of said receivers to move each passing movable finger toward its companion finger when widely spaced therefrom to release bags of large size across their open ends into said first receiver, and stationary cam means at a subsequent receiver to move each passing movable finger toward its companion finger when closely spaced therefrom to release bags of smaller size across their open ends into said subsequent receiver.

12. Apparatus for sorting full size mouthed empty bags as to size across their open ends, comprising a pair of parallel spaced chains, means for supporting said chains to traverse a noncircular path and to traverse a bag discharging station, a plurality of tubes connecting said chains at spaced intervals, a narrow finger fixed to one end of each of said tubes adjacent one of said chains, the opposite end of each of said tubes being longitudinally slotted on its opposite sides, a sleeve slidingly mounted on said slotted end of each of said tubes, a narrow movable finger fast to said sleeve and having a stem projecting through said slots, a helical compression spring surrounding each of said tubes and interposed between its fixed finger and its movable sleeve to hold the fingers on each cross rod widely separated from each other and to hold the open end of a bag in a stretched condition with the sides of the bag parallel with each other and to position the fingers on each cross rod a distance determined by the size of the open end of said bag, a plurality of receivers at said discharging station under said chains and successively traversed thereby, means at the first of said receivers to move each passing movable finger toward its companion finger when widely spaced therefrom to release bags of large size across their open ends into said first receiver, and means at a subsequent receiver to move each passing movable finger toward its companion finger when closely spaced therefrom to release bags of smaller size across their open ends into said subsequent receiver.

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