March 20, 1928.

1,663,257

R. A. MacKENZIE

GRADING MACHINE

Filed Aug. 31. 1926

2 Sheets-Sheet 1

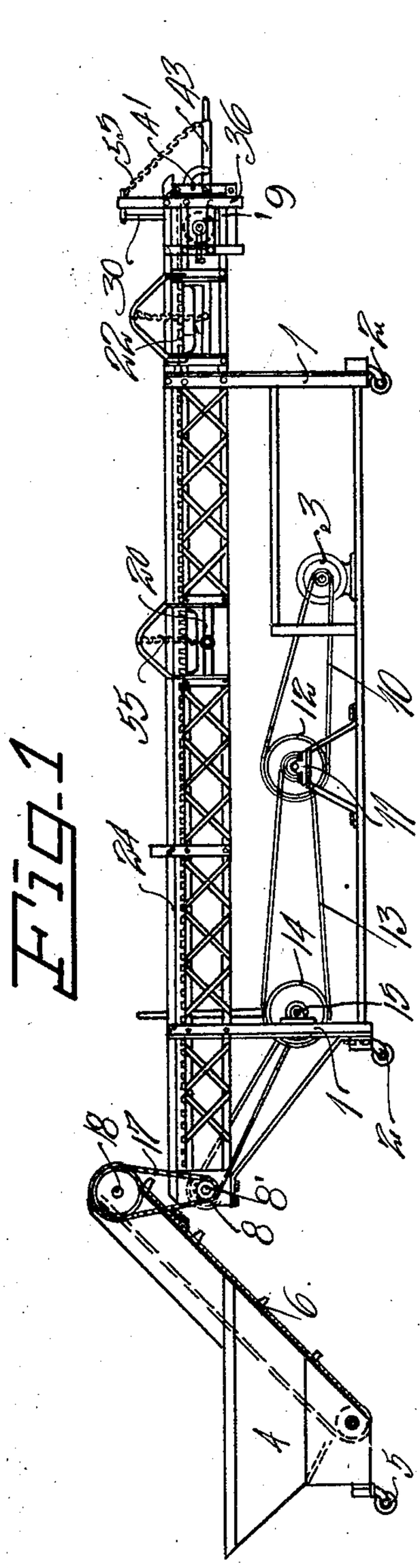


Fig. 1

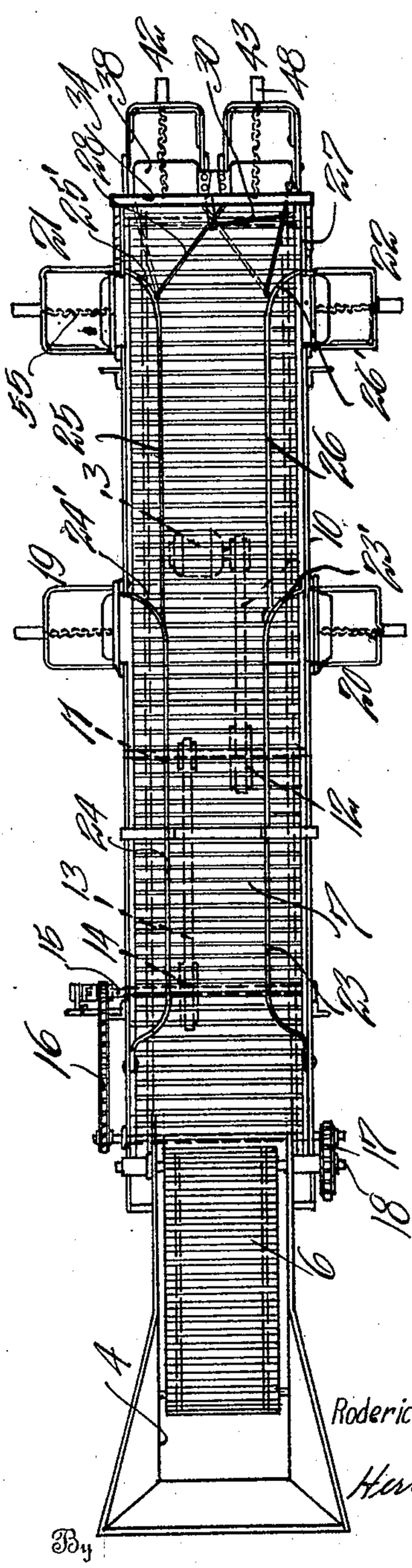


Fig. 2

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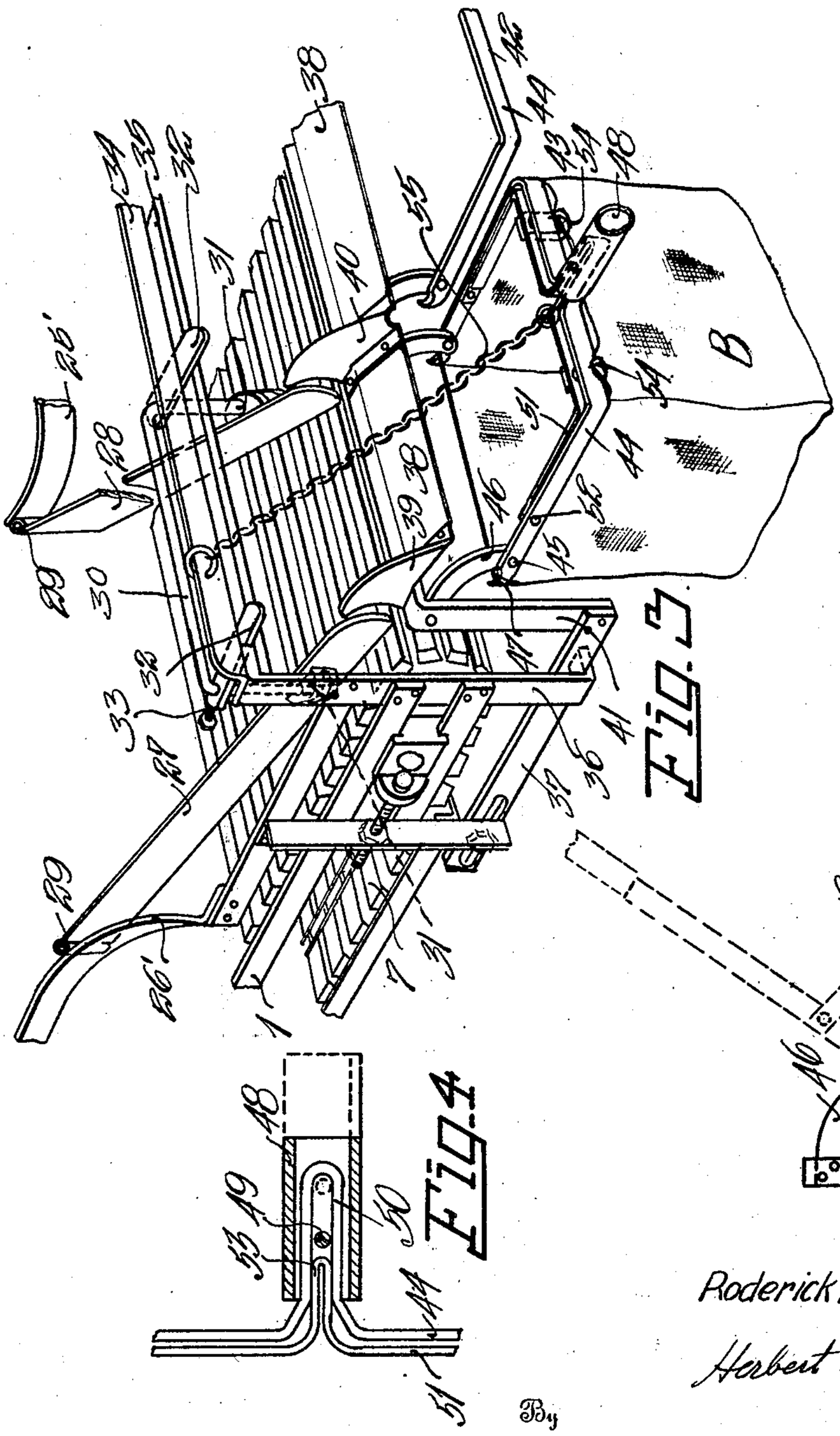


FIG. 3

FIG. 4

FIG. 5

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UNITED STATES PATENT OFFICE.

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GRADING MACHINE.

Application filed August 31, 1926. Serial No. 132,817.

My present invention relates to improvements in grading machines which while adapted for use in grading or sorting various commodities, is especially designed as a portable machine for use in grading and sorting potatoes. The machine is of the power operated type employing an endless carrier or conveyer to which the potatoes are elevated from a hopper and discharged upon the carrier or traveling table. Sorters or attendants are stationed along the longitudinally moving carrier or conveyer for manually sorting and distributing the potatoes of various grades to independent and separate portions of the endless carrier or traveling table. Some of the potatoes are delivered to laterally arranged bags or receptacles, and the remaining potatoes are carried toward and delivered to bags at the rear end of the traveling table or carrier, and means are provided for alternately distributing these last mentioned potatoes to one of a pair of bags or receptacles. The invention consists in certain novel combinations and arrangements of parts whereby the potatoes are conveyed and delivered into the waiting bags or receptacles as will hereinafter be more fully pointed out and claimed.

In the accompanying drawings I have illustrated one complete example of the physical embodiment of my invention wherein the parts are combined and arranged according to one mode I have thus far devised for the practical application of the principles of my invention.

Figure 1 is a view in side elevation of a power operating grading machine embodying my invention with the bags or receptacles omitted for convenience of illustration.

Figure 2 is a top plan view of the machine of Figure 1.

Figure 3 is a perspective view at the rear or delivery end of the machine showing one of the bags in position to receive potatoes.

Figure 4 is a detail view partly in section of the handle of one of the bag holders.

Figure 5 is a side view of one of the bag holders showing by dotted lines its position for discharging a bag of potatoes.

In Figures 1 and 2 the machine is illustrated as a portable machine that may be moved from place to place as desired and supported upon a main frame 1 having wheels 2. A motor 3 is indicated to supply power for operating the machine, and at the front end a hopper 4, partly supported from the main frame, and provided with supporting wheels 5, is equipped with an endless, inclined elevator 6 to feed the potatoes to the endless carrier or slatted, traveling table 7. The slatted traveling table 7 is of usual type and supported with sprocket chains on wheels or rollers 8 and 9 with their shafts (of which the shaft 8′ is the drive shaft) disposed transversely of the machine and journaled in suitable bearings.

For driving the operating parts of the machine a belt 10 conveys power from the motor to the countershaft 11 and a pulley 12 on the latter shaft, belt 13, and pulley 14 on the power shaft 15, transmit power through the chain 16 and suitable sprocket wheels to the drive shaft 8′ of the endless carrier.

The endless elevator 6 is also operated from the drive shaft 8′ through a sprocket drive 17 to the drive shaft 18 at the top of the elevator and located above the top of the front end of the main carrier or traveling table 7.

Provision is made for distribution of the graded potatoes at both sides of the main sorting table, as well as at the rear or delivery end of the table. For the lateral delivery a pair of bag holders indicated as a whole by the numerals 19 and 20 are located at opposite sides of the table, and a second pair of bag holders 21 and 22 are located at opposite sides of the table nearer the rear end of the table, as seen in Figure 2. Operatives are stationed at the sides of the table for picking up and sorting or grading the potatoes by depositing them upon different portions of the sorting table. Spaces for the various grades of potatoes are provided by means of a pair of longitudinally extending guide plates 23 and 24 located above the working flight of the endless carrier and supported in fixed position from the main frame. These plates or boards are spaced at equidistant sides of the longitudinal center of the sorting table to provide spaces for the different grades of potatoes, and the curved or outwardly flared ends 23′ and 24′ of the boards or plates direct the potatoes to the waiting bags 20 and 19 respectively. Extensions 25 and 26 of these guide plates are provided with flared ends 25′ and 26′ for directing or guiding potatoes to the bags held by the holders 21 and 22.

The potatoes that remain on the sorting table between the guide plates 23—26 and 24—25 travel with the slatted endless carrier or sorting table to the delivery end of the machine and are alternately deflected or guided to one of a pair of waiting bags as B suspended at the rear or delivery end of the machine.

For this purpose the longitudinally extending guide plates or boards 25 and 26 are provided with gates 27 and 28 pivoted at 29 to the boards or plates and adapted to swing in unison laterally of the slatted table to position to guide or deflect all of the potatoes traveling along the central longitudinal portion of the table.

These gates are suspended above the top of the sorting table by means of an inverted U-shape connecting bar or yoke 30, which at its ends is pivoted as at 31 to the free ends of the respective gates. This pivotal arrangement of the gates and yoke is such as to permit the gates to swing on their hinges 29 with their free ends moving across the end of the table as the yoke is bodily slid or shifted laterally of the machine and table. The shifting-yoke is provided with a pair of vertically adjusted slide plates 32, one located at each end of the yoke, and provided with set bolts or screws 33 to hold the plates in vertically adjusted position on the yoke to properly locate the gates over the sorting table.

These slide plates that extend longitudinally of the machine are supported and slidable between an upper edge-plate 34 and a lower, spaced, flat plate 35, which at their ends are secured to the upright posts 36 bolted to the end frame 37 which is rigid with the main frame 1 of the machine.

At the end of the sorting table and adjacent thereto a delivery chute is located and comprises a transversely extending plate or board 38 having two end walls 39 and an intermediate, dividing partition 40, and supported from an arched frame bar 41 secured to the frame 37.

The inner ends of the walls 39 and the partition 40 are inwardly curved to conform to the rounded ends of the gates 27 and 28 which are adapted to aline with a wall and the partition to form a chute delivering the potatoes to one of a pair of bags as B, which are supported in a pair of holders as 42 and 43 in Figure 2.

These holders are of similar construction and form extensions of the machine frame. Each holder comprises a U-shaped frame 44 disposed in horizontal position when in use and pivoted at 45 to an arm 46 secured to the arch bar 41 of the frame 37. At their inner pivoted ends the frames 44 are fashioned with bag-hooks 47 for suspending the bag B, and each U-shaped frame is provided with a tabular, slidable handle 48 disposed longitudinally of the machine. A pin 49 extends transversely through the tubular handle and is fixed therein to slide in a guide slot formed by the yoke 50 on the frame 44, which yoke projects into the tubular handle as best seen in Figure 4 and provides a support for the slidable handle.

An inner U-shaped bag holding frame 51 is pivoted at 52 to the sides of the main bag holding frame 44, and a lug 53 is provided on this inner frame and normally located within the yoke 50 of the outer bag holding frame when a bag is suspended therein. This inner frame also has a pair of suspending hooks as 54 for the bag, and it will be apparent that the bag is suspended by means of the two pairs of hooks 47 and 54 the former on the main bag holding frame and the latter on the inner bag-holding frame. By means of a suspending chain 55 attached at one end to the guide frame bar 34 connected at its other end to the handle 48 of the bag holder, the latter is supported, together with its pivotal supports 45 in horizontal position when the bag is being filled.

After the bag is filled, the handle 48 is slid to dotted position in Figures 4 and 5 to withdraw the slotted yoke 50 from the support of the lug 53 and by means of the handle the outer yoke 44 of the bag holder is turned upwardly to dotted position. The inner yoke of the bag holder which is released from the outer yoke by withdrawal of the handle is permitted to swing downwardly to dotted position. These reversely swinging movements of the inner and outer yokes of the bag holder bring the pairs of hooks 47 and 54 nearer together to permit ready release of the bag which has been supported or suspended at its upper edge from the four suspending hooks.

After the bag has been disengaged from the hooks the two yokes of the bag holder are returned to horizontal position, the tubular handle 48 is slid inwardly to engage and retain the lug 53 of the inner yoke, and the chain 55 holds the holder in position with an empty bag suspended therefrom. After a bag has been filled with potatoes, by grasping the two slide arms or plates 32, the gates may be shifted laterally for co-action with another end wall and partition forming a chute to fill a second bag. As the bags are filled the gates are alternately swung laterally of the sorting table in order that no time may be lost and the filling of the bags at the rear of the table is a continuous operation.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is—

1. The combination with spaced guide rails and their hinged gates, of an arched bar having pivotal connection with the free ends of the gates, a supporting frame, ad-

justable plates carried by the arched bar for slidable support on the frame, and means for securing the plates in adjusted position.

2. The combination with a fixed delivery chute having a dividing partition, of an arched bar having pivotal connection with the free ends of the gates, a supporting frame, adjustable plates carried by the arched bar for slidable support on the frame, and means for securing the plates in adjusted position.

In testimony whereof I affix my signature.

RODERICK A. MacKENZIE.