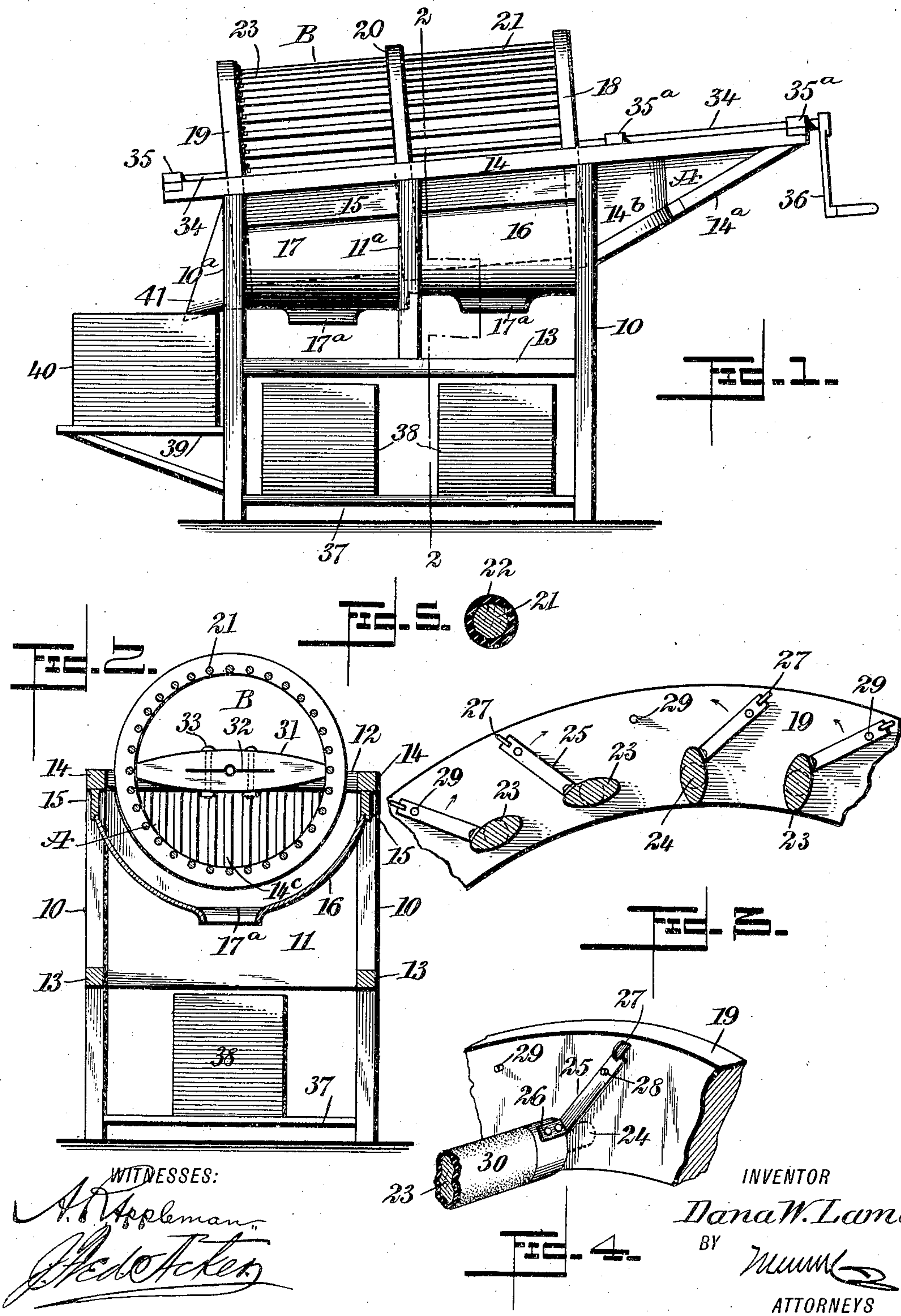


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D. W. LAMB.
POTATO OR FRUIT SORTER.
APPLICATION FILED DEC. 21, 1903.

NO MODEL.



UNITED STATES PATENT OFFICE.

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POTATO OR FRUIT SORTER.

SPECIFICATION forming part of Letters Patent No. 770,079, dated September 13, 1904.

Application filed December 21, 1903. Serial No. 186,023. (No model.)

To all whom it may concern:

Be it known that I, DANA W. LAMB, a citizen of the United States, and a resident of Pontiac, in the county of Oakland and State of Michigan, have invented a new and Improved Potato or Fruit Sorter, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a simple, durable, and economic machine for automatically sorting fruit and potatoes, particularly the latter, with reference to size and to relieve the material from dirt or other foreign matter prior to the passage of the material into the sorting element of the machine.

A further purpose of the invention is to provide a revoluble sorting-cylinder divided into continuous and communicating sections, one section, preferably the first one, having a series of separating-bars arranged with relation to each other, so that only the smallest size of the material fed to the cylinder will pass through the spaces between the bars, the next section being provided with adjustable separating-bars so formed and so arranged that the spaces between them may be varied in width according to the desired size of the article to be discharged at this section, together with means for holding such adjustable bars in adjusted position, all of the largest sizes of the article being discharged from the delivery end of the sorting-cylinder.

Another purpose of the invention is to provide each section of the sorting-cylinder with a box-chute, and, further, to provide the machine with means for supporting crates or other receptacles beneath the chutes and at the delivery end of the sorting-cylinder.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the machine. Fig. 2 is a vertical section taken practically on the line 2 2 of Fig. 1. Fig. 3 is a detail view of a portion of the rear head-ring of the

sorting-cylinder and a section through the separating-bars carried by the rear portion of the cylinder, illustrating the manner in which said bars may be adjusted and held in adjustment. Fig. 4 is a perspective detail view of a part of the construction shown in Fig. 3, and Fig. 5 is a transverse section through a fixed separating-bar on the first section of the sorting-cylinder.

The frame of the machine consists of front uprights 10 and rear uprights 10^a, the front uprights having a greater height than the rear ones, connecting intermediate cross-supports 11, upper connecting-bars 12, and longitudinal intermediate connecting-bars 13, which extend from the front to the rear uprights, the upper sills 14 resting on the upper ends of the front and rear uprights, which sills extend some distance beyond the rear uprights, but a much greater distance beyond the front uprights 10, so as to provide for the construction of a hopper A, having a downwardly-inclined bottom. This hopper is constructed by employing diagonalbeams 14^a in connection with the sills 14, which beams 14^a extend from the front end of the sills to an engagement with the front uprights 10, and side sections 14^b, which fill in the spaces between opposing projecting members of the sills 14 and the beams 14^a.

The side sections 14^b of the hopper A are so formed as to direct material placed in the hopper to the space between the side portions of the frame at the top, and the said hopper A is completed by providing a bottom constructed of a series of slats 14^c, (shown in Fig. 2,) so that the potatoes, fruit, or other material which may be fed to the hopper will be freed from all dirt or loose extraneous matter before the material passes to the sorting device proper to be hereinafter particularly described.

Side boards 15 extend downward from the sills 14 between the front and rear uprights 10 and 10^a, and these sills 14 are braced intermediate of their ends by vertical intermediate stanchions 11^a, extending from the longitudinal connecting-bars 13 to the said sills, as is shown in Fig. 1. Two hoppers 16 and 17,

made of light sheet-iron or equivalent material, are formed within the said frame at the top or upper side edges of the hoppers, being secured to the side boards 15 and the supports 5 11, as is illustrated in Fig. 2. These hoppers are provided with outwardly and downwardly flaring outlet-sections 17^a at their lower ends. The hoppers are preferably made inclined, but are more or less horizontal at their bot- 10 tom edges, as is shown in Fig. 1.

The device for sorting the material is practically a screen, but is preferably made in the form of a cylinder B. (Shown in Figs. 1 and 2.) In the construction of said cylinder an inlet 15 head-ring 18 is employed and an outlet head-ring 19, together with an intermediate ring 20. The intermediate ring 20 and the inlet head-ring 18 are connected by series of bars 21, preferably circular in cross-section and 20 provided with a covering 22, of rubber or other yielding material, (see Fig. 5,) so as not to injure or in any wise bruise delicate articles which may be passed between them. These bars 21 are fixed in the rings 18 and 20 in any 25 suitable or approved manner and are located at a predetermined distance apart.

When the machine is to be used for sorting potatoes, the space between the fixed bars 21 is sufficient only to permit the passage of 30 small potatoes. The rods or bars 21 and the rings 18 and 20 constitute the first section of the sorting device. The second section of the sorting device is constructed by connecting the outlet-ring 19 and the intermediate 35 ring 20 through the medium of a series of adjustable bars 23. These bars 23 are oval in cross-section, as is clearly shown in Fig. 3, and are provided with trunnions 24 at their ends, mounted to turn in the said rings 19 40 and 20. These adjustable bars 23 are located at predetermined distances apart, and the adjustable bars 23 and likewise the fixed bars 21 may be properly termed "separating-bars." Each adjustable separating-bar 23 is 45 provided with an operating-lever 25 at that end which is adjacent to the outlet-ring 19 of the sorting cylinder or screen B, and the attachment of the levers to the bars 23 is usually effected as is shown in Fig. 4, wherein it will be 50 observed that feet 26 are formed at an angle to the bottom portions of the levers, which feet are secured by rivets or otherwise to the said adjustable separating-bars 23. These levers 25 extend outward in substantially close relation 55 to the forward face of the rear or delivery ring 19 and are provided at their upper ends with thumb-pieces 27 in order that the said levers may be readily moved backward or forward to bring the adjustable bars 23 either to a ver- 60 tical or to a horizontal position, as is demonstrated in Fig. 3. These levers 25 are locked in position on the rear or outlet ring 19 when the adjustable bars are in either of the two positions above named, preferably by produc- 65 ing apertures 28 in the said levers, which

apertures are adapted to receive studs 29 or equivalent projections from the forward face of the said rear ring 19 of the cylinder, as is shown in both Figs. 3 and 4. The adjustable supporting-bars 23 are also preferably pro- 70 vided with an elastic or yielding covering or jacket 30, as is particularly shown in Fig. 4. It will thus be observed that by bringing the adjustable supporting-bars 23 to an upright position (shown at the right in Fig. 3) the 75 widest possible space is obtained between adjacent bars; but when the said bars are brought to the horizontal position (shown at the left in Fig. 3) the distance between opposing bars is lessened to the greatest possible extent. 80 Under this construction it is further obvious that provision may be made for either exceedingly small objects passing between the spaces between the adjustable separating-bars or objects of a larger size may pass through. 85

The first section of the sorting-cylinder is located over the chute 16, and the second section, provided with the adjustable separating-bars, is located over the chute 17. When the machine is used for sorting potatoes, the po- 90 tatoes are emptied into the hopper A, and the dirt will pass off through the slatted bottom of the hopper, as has been stated, and the contents of said hopper will run down into the bottom portion of the sorting-cylinder B, 95 which is so mounted in the frame described that the bottom portion of the cylinder will be practically on a plane with the bottom portion of the outlet end of the hopper. In mounting the said cylinder B it is given an 100 inclination downward in direction of the rear, as is illustrated in Fig. 1.

When the potatoes enter the cylinder B, which is to be revolved in a manner to be hereinafter stated, the small potatoes pass out 105 through the space between the fixed bars 21 into the chute 16, while the rest of the potatoes continue to travel down toward the outlet end of the cylinder. If exceedingly small or seed potatoes are to be separated, the adjust- 110 able bars 23 are placed in a horizontal position (shown at the left in Fig. 3) and the seed-potatoes will be discharged from this section. The size of the seed-potatoes thus delivered is regulated by the adjustment of the said 115 bars 23. Finally, the large or marketable potatoes find an exit at the rear or lower end of said cylinder, passing over a suitable chute 41, which may be a portion of the hopper 17.

Cross-bars 31 are secured in the forward 120 and rear heads of the sorting-cylinder B and the intermediate ring 20, one of which cross-bars is clearly shown in Fig. 2, and said bars will be referred to hereinafter as "head-bars." These head-bars occupy a central position 125 relative to the cylinder, and each head-bar is provided with a longitudinal slot 32, having a central circular formation, and bolts 33, provided with suitable nuts, are passed through the head-bars, crossing the slots 32, so as to 130

draw the slotted portions of the head-bars together when desired.

When the bolts 33 are loosened, a shaft 34 is passed through the circular central sections 5 of the slots 32 in the said head-bars, and then the bolts 33 are tightened, so that the sorting-cylinder is fastened to the shaft. The shaft 34 is of such length that it may be journaled in suitable bearings 35 at the rear end of the sill-section of the frame and in other bearings 35^a, located over the hopper A, as is shown in Fig. 1. This shaft may be revolved by power or by hand through the medium of an attached crank 36, as may be found most 15 desirable.

A platform 37 is constructed at the bottom portion of the frame adapted to receive, for example, two crates 38 or their equivalents, and thus the crates occupy such a position as 20 to receive the fruit or vegetables from the chutes 16 and 17. Another platform, 39, is erected at the lower portion of the rear of the frame, and this platform is adapted to support a crate 40 or like receptacle to receive 25 the larger products from the delivery end of the sorting-cylinder.

This machine is exceedingly simple, is well adapted for the purpose intended, and can be operated at little expense, and will readily 30 and cleanly separate material passed through it, and will grade the material accordingly as the adjustable separating-bars are set.

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

35 1. In a machine for sorting fruit and vegetables, a sorting-screen comprising rings, separating-bars oval in cross-section and having trunnions at their ends mounted to turn in the said rings, and levers for adjusting the 40 bars and extending in close relation to the face of one of said rings, the levers being formed at one end with feet arranged at an angle to the levers and secured to said bars, the free ends of said levers being provided 45 with thumb-pieces, and the levers having apertures adapted to receive studs projecting from the face of the said ring.

2. A sorting-cylinder, comprising an inlet-ring, an outlet-ring and an intermediate ring, 50 dividing the cylinder into two sections, fixed bars connecting the inlet-ring and the intermediate ring and forming the peripheral surface of one section, bars oval in cross-section and having trunnions at their ends mounted 55 to turn in the outlet-ring and the intermediate ring and forming the peripheral surface of the other section of the cylinder, levers for adjusting the pivoted bars, and having feet at one end secured to the bars, the said levers ex-

tending outward in close relation to the forward face of the outlet-ring, and means for holding the levers in adjusted position, as set forth.

3. In a machine for sorting fruit and vegetables, the combination with the frame of the 65 machine, of a sorting-cylinder having an inlet and an outlet ring at its ends and an intermediate ring dividing the cylinder into two sections each provided with peripheral separating-bars, a hopper supported on the frame 70 and connected with the inlet end of the cylinder, a cross-bar secured to each of the said rings, a shaft extending through the said cross-bars and projecting beyond the ends of the cylinder, means for fastening the said cross- 75 bars to the shaft, bearings carried by the frame at the rear of the cylinder, and bearings supported by the frame at the front of the cylinder and over the hopper, the projecting ends of the shaft being journaled in said bear- 80 ings, the said shaft being provided with means for turning the same, as set forth.

4. A sorting-cylinder having end openings and a peripheral surface consisting of longitudinal bars, which surface is divided into two 85 sections, the bars of one section being fixed and circular in cross-section, the bars of the other section being pivotally mounted and oval in cross-section, a covering of yielding material for the said bars, adjusting devices 90 for the pivoted bars, means for locking the adjusting devices in adjusted position, means for turning the cylinder, a hopper connected with one end of the said cylinder and having a slatted bottom, a chute at the other end of 95 the cylinder, and chutes beneath the sections of the cylinder, as set forth.

5. A sorting-cylinder having end openings and a peripheral surface consisting of longitudinal bars, which surface is divided into two 100 sections, the bars of one section being fixed and circular in cross-section, the bars of the other section being pivotally mounted and oval in cross-section, adjusting devices for the pivoted bars, means for locking the adjusting 105 devices in adjusted position, an elastic covering for the said bars, and a hopper connected with one end of the said cylinder, the said hopper having a slatted bottom, for the purpose described. 110

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DANA W. LAMB.

Witnesses:

ANDREW K. EDGAR,
JOHN H. GARRISON.