C. C. McINTOSH.

FRUIT SIZER.

APPLICATION FILED AUG. 2, 1910.

1,019,341.

Patented Mar. 5, 1912.

2 SHEETS—SHEET 1.

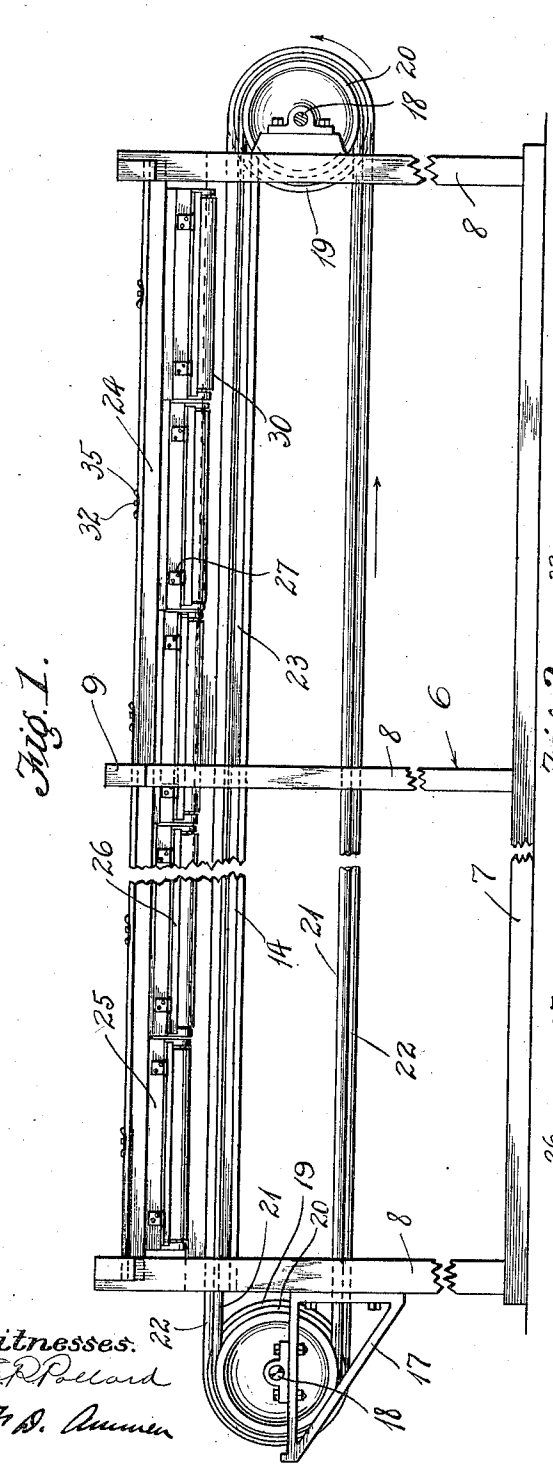

Fig. 1.

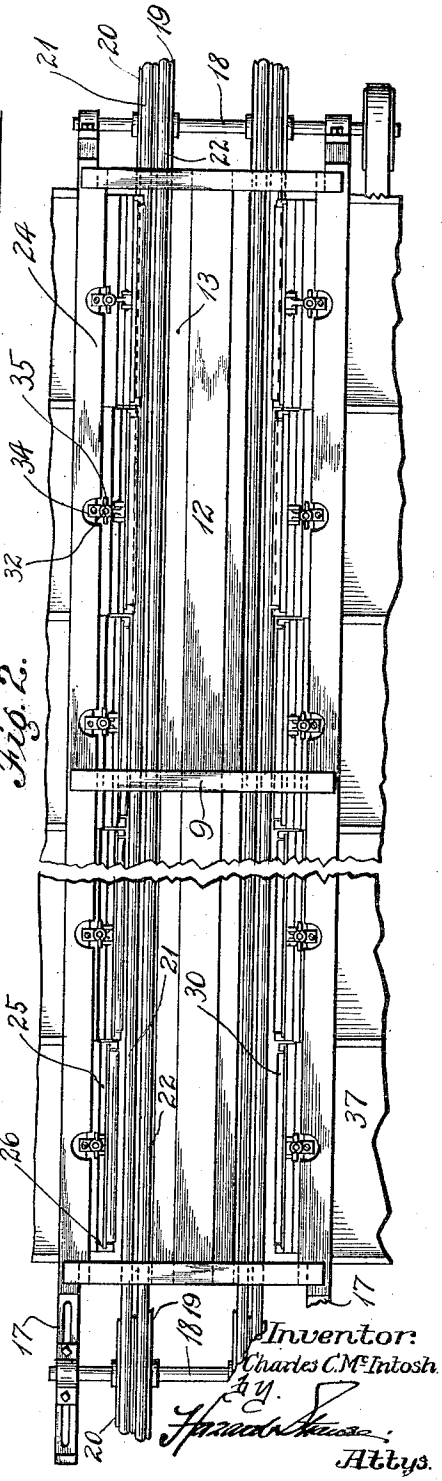

Fig. 2.

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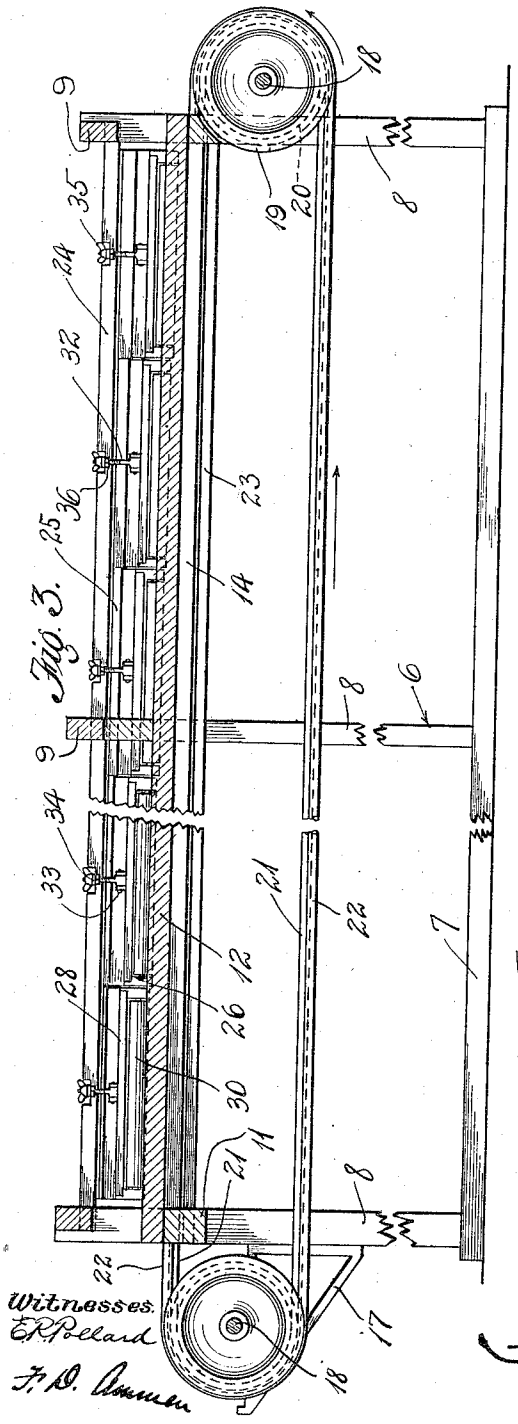

Fig. 3.

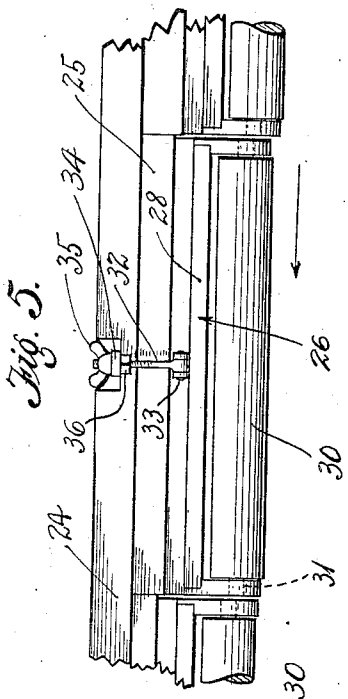

Fig. 5.

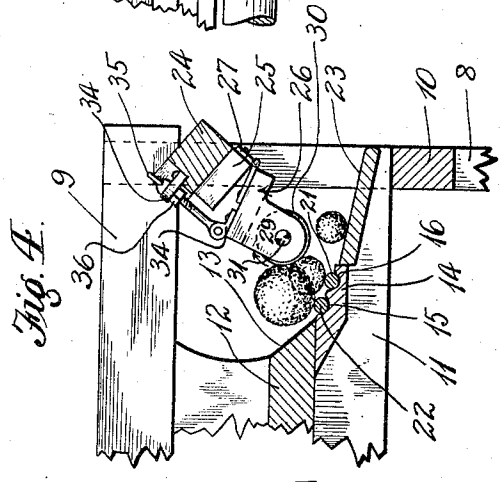

Fig. 4.

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UNITED STATES PATENT OFFICE.

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FRUIT-SIZER.

1,019,341. Specification of Letters Patent. Patented Mar. 5, 1912.

Application filed August 2, 1910. Serial No. 575,119.

To all whom it may concern:

Be it known that I, CHARLES C. McINTOSH, a citizen of the United States, residing at Los Angeles, county of Los Angeles, State of California, have invented new and useful Improvements in Fruit-Sizers, of which the following is a specification.

This invention relates to fruit sizers and the invention is particularly applicable to sizers for citrus fruit.

The object of the invention is to produce a device of this class which is simple of construction and which will operate accurately and efficiently.

The invention relates particularly to the means for mounting and adjusting the sizing devices.

In sizers of this class it is usual for fruit to pass between two members which are disposed apart and between which the fruit falls. This arrangement causes certain inaccuracies in sizing for the reason that the weight of the fruit tends to drop it between the members before the proper point in the sizer is reached.

One of the objects of the present invention is to overcome this defect and to produce a sizer in which the weight of the fruit has little effect on the sizing operation.

In the drawing forming a part of the annexed specification, Figure 1 is a side elevation of a sizer constructed in accordance with my invention, the middle portion of which is broken away. Fig. 2 is a plan of a sizer constructed in accordance with my invention, the middle portion of which is broken away. Fig. 3 is a longitudinal central section through the sizer, the middle portion thereof being broken away. Fig. 4 is a vertical cross section taken through one side of the sizer and illustrating the means for supporting and advancing the fruit, and showing the means for adjusting the sizing devices. Fig. 5 is an elevation looking downwardly and outwardly on the sizing mechanism shown in Fig. 4.

Referring more particularly to the parts, 6 represents the frame of the sizer which comprises sills 7 which rest upon the floor or ground, and upon these sills 7 a plurality of posts 8 are stepped, the upper end of said posts being connected by cross bars 9 as indicated. Near their upper ends the posts are connected by horizontal side stringers 10, and these side stringers support transverse bridges 11 as shown. These bridges 11 support a center board 12 which extends longitudinally from end to end of the sizer, said center board being provided with inclined side cheeks 13 as shown most clearly in Fig. 4. Just below the side edges of the center board 12 I provide longitudinally extending guide boards 14 and these guide boards have grooves 15 and 16 in the upper face thereof, the groove 15 being disposed inwardly with respect to the groove 16. On the ends of the frame 6, brackets 17 are mounted and these brackets support transverse shafts 18, said shafts being provided with double sheaves having grooved sections 19 and 20 in alinement respectively with the grooves 15 and 16. These sheaves are rigid on the shafts 18 and the sections 19 are slightly larger in diameter than the sections 20. Running longitudinally in the groove 15 I provide an endless cord or rope 21 which passes around the sheave sections 20 so as to be driven thereby and a smaller cord 22 runs in the groove 15 passing around the sheave 19 at the ends of the sizer.

At the sides of the guide board 14 I provide longitudinally extending delivery boards 23 which incline downwardly toward their outer edges as shown. Extending longitudinally of the frame and over these delivery boards 23 I provide adjusting rails 24, which rails are disposed in an inclined position as indicated in Fig. 4. On their inner and under faces these adjusting rails are provided with blocks 25 disposed at intervals along the length of the rails. To the under sides of these blocks 25, adjusting shoes 26 are attached by hinges 27 as shown, the axes of said hinges being horizontal and extending about parallel with the cords 21 and 22. These adjusting shoes 26 are in the form of bars 28 having inwardly and downwardly projecting ears 29 at the ends thereof and between each pair of ears a roller 30 is rotatably mounted on gudgeons 31 which are received in the ears as indicated in Fig. 5. As shown in Figs. 4 and 5 the upper edges of the bars 28 are provided with hanger-bolts 32 which are attached by pivot pins 33, and the upper ends of these bolts are threaded as shown and pass through anchor plates 34 which project up-

wardly on the upper sides of the rails 24 as indicated. The upper ends of these adjusting bolts 32 are provided with wing nuts 35 for adjusting the bolts and on the under sides of the anchor plates 34 check nuts 36 are provided for locking the bolts securely in any adjusted position. As indicated in Fig. 3 these sizing shoes are arranged end to end throughout the entire length of the machine and they are adjusted progressively so that the inner face of each roller projects slightly beyond the face of the adjacent roller at one end, and not quite so far as the adjacent roller at the other end, that is the inner faces of the rollers have a step-like arrangement from end to end of the machine.

The mode of operation of the sizer will be clear from inspection of Figs. 4 and 5. The fruit to be sized is placed on the cords 21 and 22 and the one of the shafts is driven so that the fruit is advanced by the cords longitudinally of the rollers. The upper cord 22 is intended to support the larger sizes of fruit and the lower cord supports the smaller sizes, and each roller is adjusted so that the fruit will lean against its face but substantially all the weight of the fruit will be supported on the cord. In this way there is a slight frictional contact between the side of the fruit and the side of the roller and this produces a slight drag upon the fruit as it is advanced by the cord so that the fruit rotates slowing in a backward direction as it advances, and the rollers rotate slowing in the direction indicated by the arrows. This turns the fruit over and over which is very desirable and tends toward accuracy of sizing. The fruit is of course fed onto the end of the machine where the rollers are closest to the cords, that is the fruit passes in the direction of the arrow indicated in Fig. 5 and the smaller sizes of fruit are supported on the cord 21; as the sizing proceeds the fruit passes under the faces of the corresponding rollers and passes laterally into bins or reservoirs 37 disposed at the sides of the machine. The small sizes fall first and the larger sizes of fruit pass on toward the other end of the sizer.

Special attention is called to the fact that the axis of rotation of each sizing roller is disposed longitudinally of the cord which supports the fruit which is to be sized and attention is also called to the fact that in adjusting the rollers they swing about the axes of the hinges, said axes being also parallel with the axis of the cord which is supporting the fruit which is being sized. Therefore it will be seen that in adjusting the rollers with respect to the cords, the inner face of each roller moves in an arc having its axis on the hinge. It should be noted that there is no separate adjustment of the ends of the rollers so that the rollers having been once alined they preserve a perfect alinement and this alinement is not disturbed in any way in making the adjustment of the roller. Attention is called also to the fact that by reason of the different diameters of the sheave sections 19 and 20 the cords are driven at different speeds, that is the cord 22 moves at a slightly increased speed. This arrangement operates to rotate the fruit whenever it comes in contact with both cords and this feature tends toward accuracy of sizing.

What I claim is:—

1. A fruit sizer comprising a laterally inclined supporting member, and rollers loosely journaled adjacent to said supporting member and adapted to prevent the fruit from prematurely rolling laterally from said support.

2. A fruit sizer comprising a laterally inclined supporting member, and a plurality of end to end rollers loosely journaled above said member and adapted to control the rolling of the fruit laterally across the same in accordance with the size of said fruit.

3. A fruit sizer comprising a supporting member having an inclined lateral tip surface, traveling belts moving along said surface for advancing and rotating the fruit, a series of rollers pivotally mounted above the said supporting member, means for raising and lowering said members to different heights with respect to the supporting member, whereby fruit of different size may be permitted to roll laterally from the supporting member at different points along the length thereof.

4. A sizer comprising a frame, a longitudinally disposed guide bar having a pair of longitudinally disposed grooves at different levels, cords passing longitudinally in said grooves, means for driving said cords at different speeds, a plurality of shoes having hinge connections supporting the same on the side remote from said cords, and means for adjusting said shoes on said hinge connections.

5. A fruit sizer comprising a sizing way made up of a laterally tipped supporting member, a fruit carrying means movable longitudinally of said supporting member for advancing the fruit, and a series of end to end cylinders loosely journaled above the said supporting member, and adapted to control the rolling of the fruit therefrom in accordance with the size thereof.

6. A fruit sizer, comprising an inclined support, a plurality of feeding belts arranged to travel longitudinally of said support whereby one belt is slightly lower than the other, the said belts being adapted to advance and rotate the fruit to be sized, and a series of end to end rollers loosely jour-

naled above and a little to one side of said belts, and means for independently adjusting the said rollers whereby they are adapted to control the rolling of the fruit laterally from said belts in accordance with the size of said fruit.

In witness that I claim the foregoing I have hereunto subscribed my name this 27th day of July, 1910.

CHARLES C. McINTOSH.

Witnesses:
F. D. AMMEN,
EDMUND A. STRAUSE.