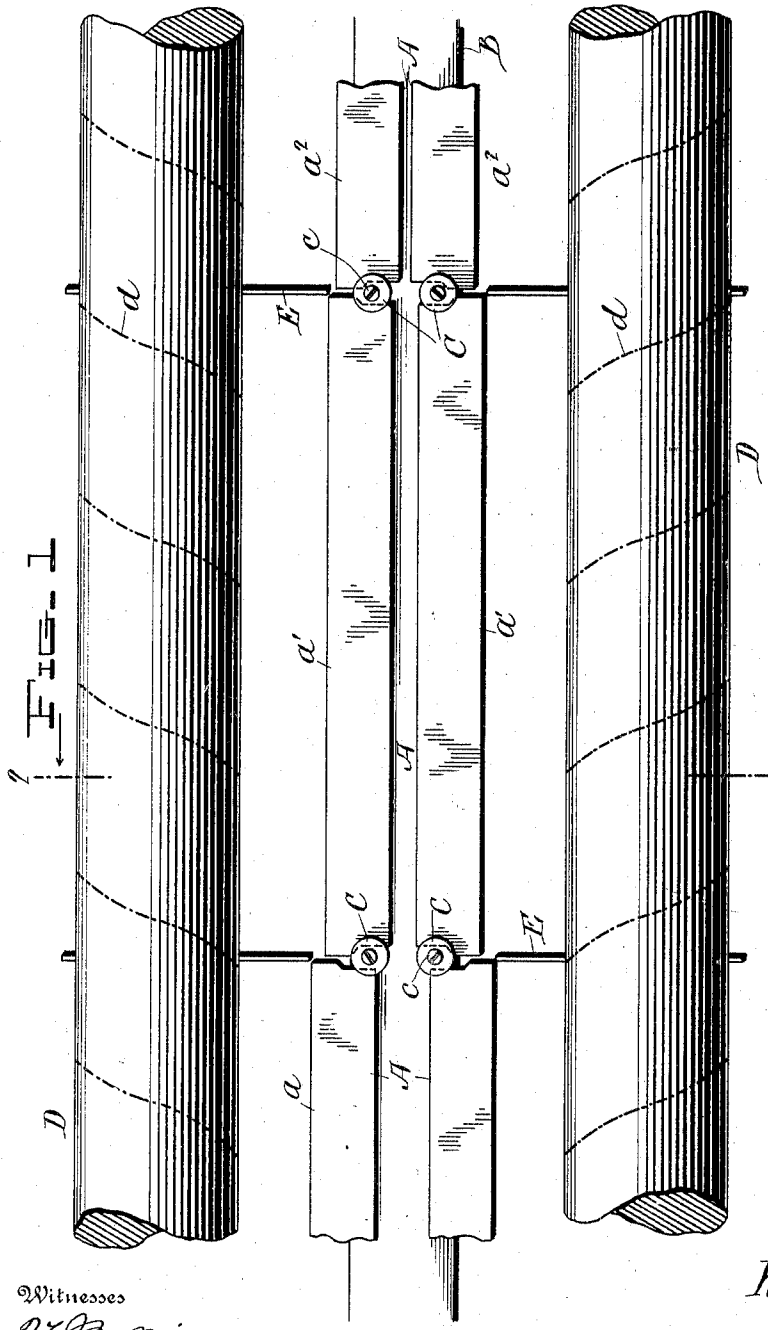
No. 788,618. PATENTED MAY 2, 1905.

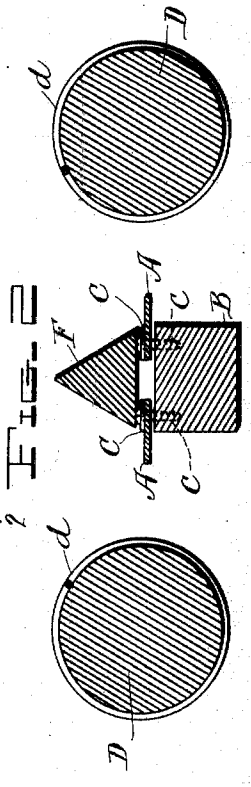
R. M. WIDNEY.

FRUIT GRADER AND SEPARATOR.

APPLICATION FILED JAN. 2, 1903.

2 SHEETS—SHEET 1.





Witnesses

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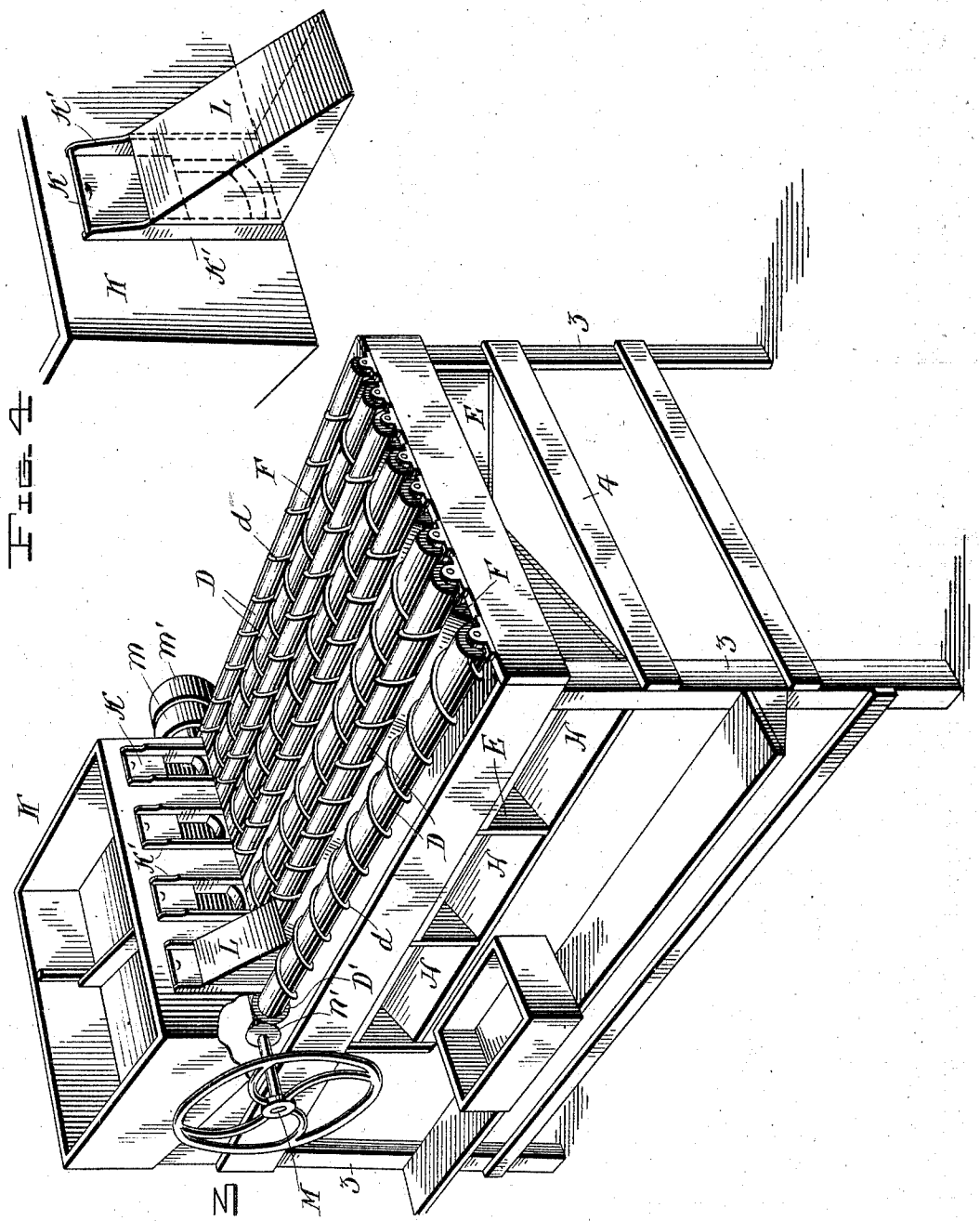


Fig. 4

Fig. 2

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UNITED STATES PATENT OFFICE.

ROBERT M. WIDNEY, OF FERNANDO, CALIFORNIA.

FRUIT GRADER AND SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 788,618, dated May 2, 1905.

Application filed January 2, 1903. Serial No. 137,618.

To all whom it may concern:

Be it known that I, ROBERT M. WIDNEY, a citizen of the United States, residing at Fernando, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Fruit Graders and Separators, of which the following is a specification.

This invention relates to that class of fruit-graders having open-bottomed passages or ways increasing in width step by step, whereby fruit, nuts, or other articles may be graded in size or separated into lots of uniform sizes in traversing from the head to the tail end of the machine.

One object of my invention is to so organize a machine of this character as to provide for the independent adjustment in width of each grading-section of a grading-passage.

A further object of the invention is to so organize a machine of this character as to adapt the grading-passages to the handling of products widely differing in size—as, for instance, oranges and olives.

Further objects of the invention will appear in the ensuing specification and will be pointed out in the claims.

In the accompanying drawings, Figure 1 is a top plan view showing a part of two grading-passages and parts of three grading-sections in each. Fig. 2 is a section on line 2 2 of Fig. 1, showing in addition a dividing-rib F between the grading-passages. Fig. 3 is a perspective view, partly in section, of a machine embodying my improvements. Fig. 4 is a perspective view, on a larger scale, showing the guiding hood or apron in position at a discharge-outlet of the hopper.

The same characters of reference are applied to identical parts in the several figures of the drawings.

The operative parts of the apparatus are carried by a frame consisting of side rails 1 and end rails 2, supported at a convenient height by legs or standards 3, braced by strips 4 of any suitable construction.

Mounted to rotate in bearings supported by the end rails 2 of the frame is one or more cylindrical rollers D, the number depending on the intended capacity of the machine. Eight of such rollers are shown in Fig. 3. These rollers D are provided each with a spirally-disposed rib or vane *d*, and arranged at a suitable distance from and parallel with the working face or side of each roll D is a bar B.

Secured to or upon each bar B, which I shall term "grade-bars," are grade-plates A, the working edges of which are parallel with the working side of an adjacent roll D, the space between the plates and roll constituting a grading passage or way increasing in width stepwise from the head to the tail of the machine. These plates are formed of longitudinal sections a a' a^2, &c., and are adjustably secured upon or to the grade-bar B to the end that each plate may be independently adjusted nearer to or farther from the roll, thus providing for a grading-passage that may be widened or narrowed equally throughout its length or that may be widened or narrowed to a greater extent opposite one section than at other points.

In Figs. 1 and 2 I have shown two rolls and an intervening grade-bar B, having secured to its upper surface and projecting from opposite sides thereof two grade-plates, forming, with the adjacent rolls, two grading-passages having three steps or widths. As shown, each plate is composed of three sections a, a', and a^2, these being secured to the grade-bar for independent adjustment by the washers C, overlapping end edges of the adjacent sections, and screws *c* passing through the washers between the ends of the sections and into the bar. It will be apparent that other means of securing the sections may be used; but I have adopted this means for economy in construction and as affording great facility for adjustments of the sections or for the removal of any one or more sections and the replacement thereof by one of different size.

Beneath the rolls D and grade-bar B are inclined chutes H to discharge the graded or sized material into a suitable receptacle placed at the lower end thereof, these chutes being of course of that grading-section of the passage immediately above it, and said chutes are separated from each other by partitions E. These partitions are adjustable horizontally toward and from the grade-bar in order that their in-

ner vertical edges may be positioned properly with relation to the tail ends of the respective sections a a' a^2 of the grading-plate A, as said sections are adjusted laterally on the grade-bar to form a wider or narrower grading-passage. As shown, said partitions E are slidably mounted at top in grooves of the framing and guided and supported laterally by the adjacent edges of the inclined bottoms of adjacent chutes.

Above the grade-bars and their grading-plates triangular bars F are secured, these, in conjunction with the rollers D, forming the limits or wall of the grading-passages, as shown in Figs. 2 and 3.

At the head end of the machine a hopper K is supported by the frame, having an inclined bottom to insure the feed of material to the feed-openings therein, these, as shown, being arranged one above each adjacent pair of grading-passages of the machine and being adapted to be closed by gates k, vertically movable in guides k', secured at either side of said feed-openings.

To regulate the feed of material to the grading-passages, I secure to the gate-guides triangular hoods L, the vertical sides of which extend above and in line with the tops of the rollers D appropriate to the several feed-openings, the upper wall of each hood being inclined, as shown. These hoods not only limit the feed of material to the capacity of the grading-passages, but their vertical side walls prevent the fruit from rolling out of said passages over the tops of the rolls.

Journaled in bearings secured to the side rails 1 of the frame is a shaft M, adapted to be rotated by means of a belt (not shown) and belt-pulleys m m', carried on one end of said shaft, or by a fly-wheel carried on the other end thereof. The shaft is provided beneath the hopper with beveled gear or friction wheels n', arranged in operative contact with similar wheels D', mounted on the rollers D, this arrangement providing for the rotation of the rollers to feed the material along the grading-passages.

As shown, the machine is fitted with eight rollers D, and four grade-bars B are employed in connection therewith to provide eight grading-passages, so organized as to be employed to grade two or more different products—say oranges and olives—by dividing the hopper by a central partition, as shown, and fitting the grade-bars with plates of a width adapted to the product.

The inclined faces of the bars F and the upward motion of the spiral vanes d of rollers D will tend to maintain the long axis of the fruit or nuts vertical, and thus present the short axis thereof to the grade-opening, thus grading the fruit by its smallest diameter.

I claim as my invention—

1. In a machine for grading fruit, the combination with a revoluble cylindrical roller having spiral vanes, and a fixed support parallel to said roller, of a grading-plate composed of longitudinal sections each independently adjustably secured to said fixed support.

2. In a machine for grading fruit, the combination with a revoluble cylindrical roller having spiral vanes and a fixed support parallel thereto carrying an adjustable step-by-step grading-plate, these elements forming a grading-passage, of adjustable partitions beneath the end of each grading-division of the grading-passage.

3. In a fruit-grading machine, the combination of two revoluble cylindrical rollers journaled parallel to each other and having spiral vanes of opposite pitch, a grade-bar secured between and parallel with said rollers, adjustable grade-plates carried thereby, one projecting toward each roller, a removable triangle bar secured above the adjacent edges of the grade-plates, a hopper having a feed-opening, and a hood secured about said openings with the lower edges of its side walls closely proximate to the upper central parts of the rollers.

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