

No. 731,828.

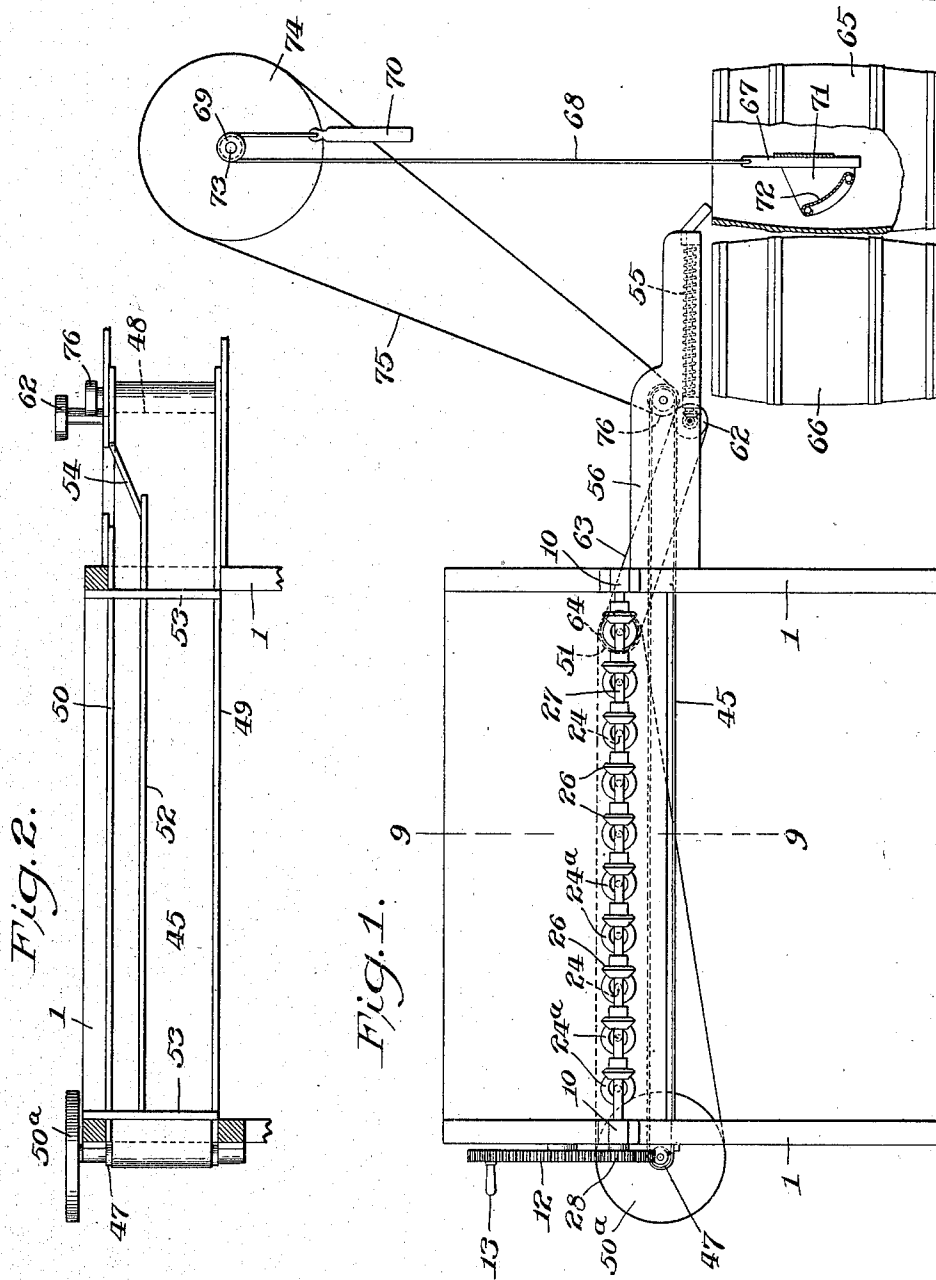
PATENTED JUNE 23, 1903.

J. J. WHITE.
MACHINE FOR ASSORTING FRUIT.

APPLICATION FILED MAR. 12, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES:
R. P. Pample
W. W. Canby

INVENTOR
Joseph J. White
BY
A. V. Groupes
ATTORNEY.

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Fig. 3.

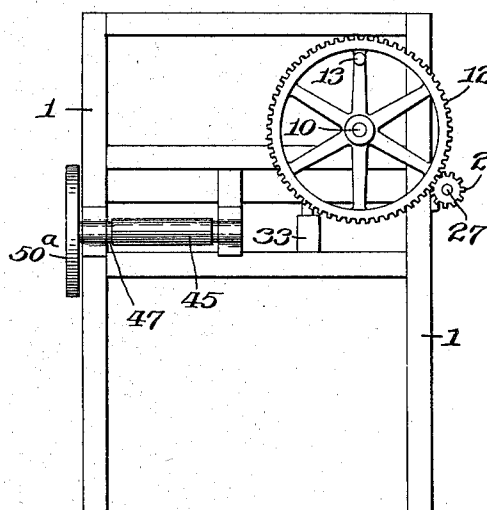


Fig. 4.

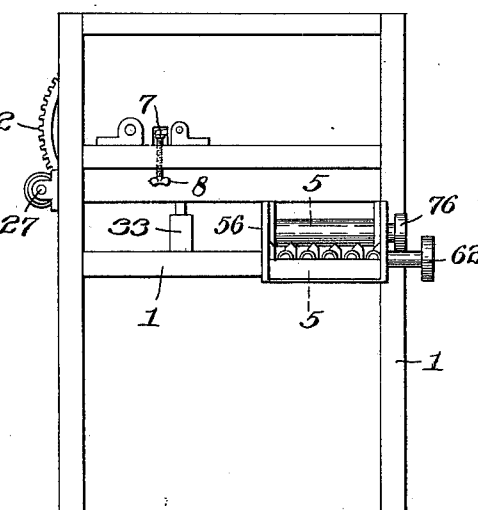


Fig. 5.

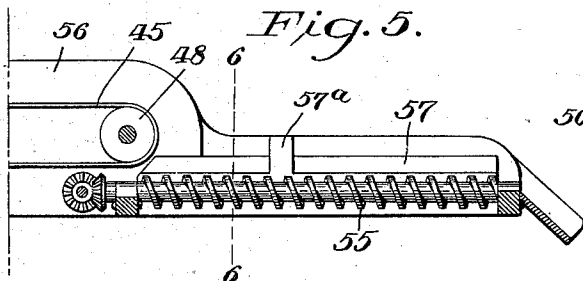


Fig. 6.

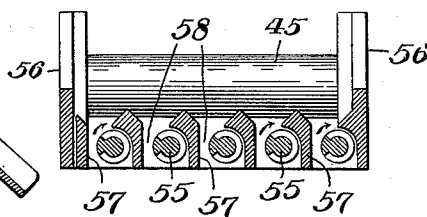
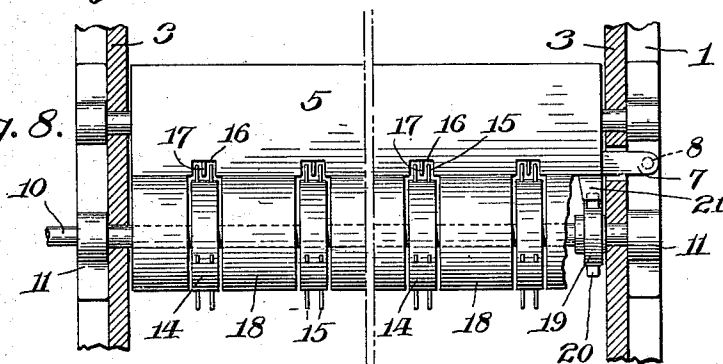


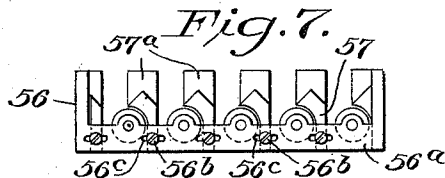
Fig. 8.



WITNESSES:

R. Samble.
W. H. Canby

Fig. 7.



INVENTOR

Joseph J. White

BY

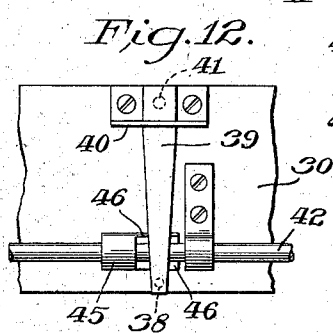
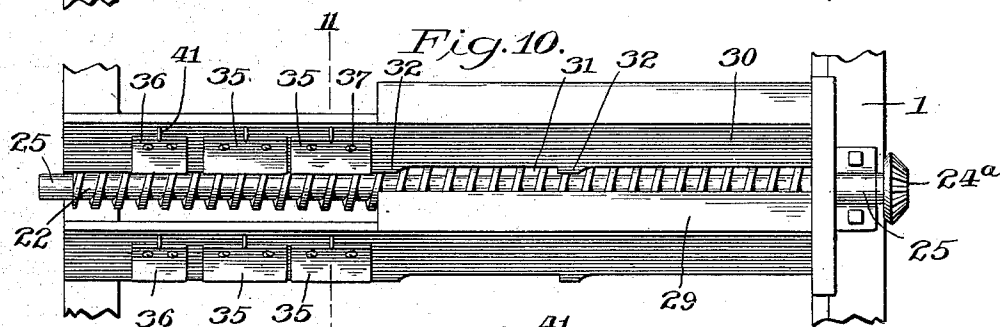
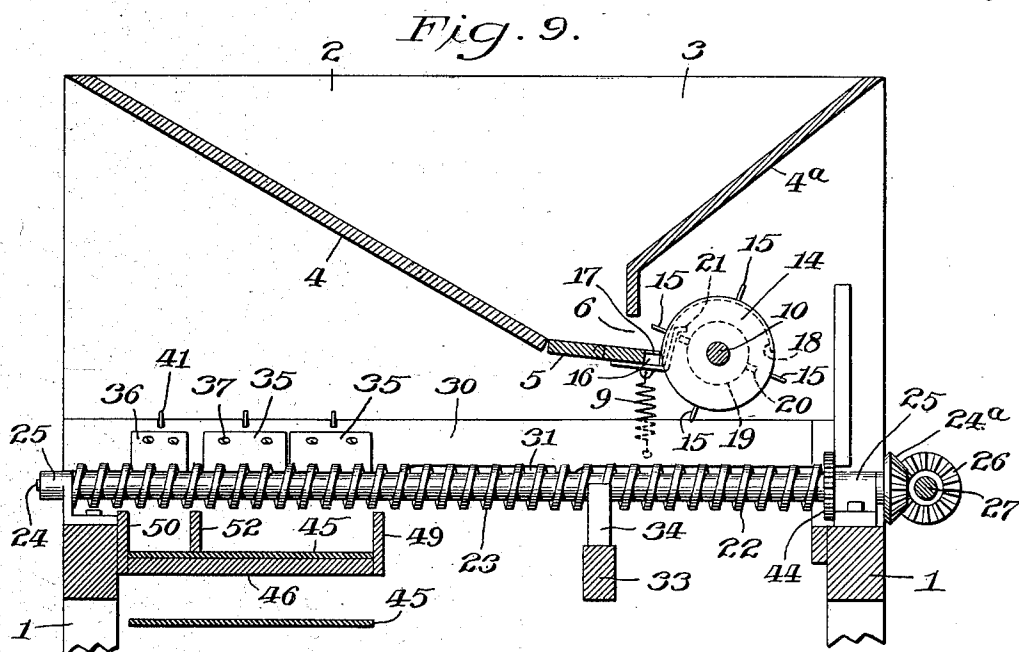
A. V. Grouper
ATTORNEY.

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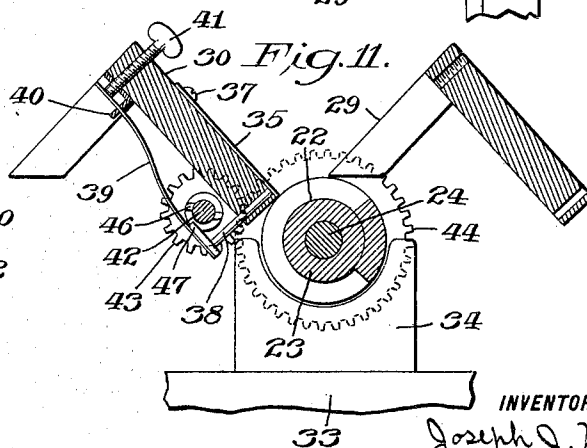
NO MODEL.

3 SHEETS—SHEET 3.



WITNESSES:

R. H. Gamble
W. W. Canby



INVENTOR

Joseph J. White
BY

A. V. Group
ATTORNEY.

UNITED STATES PATENT OFFICE.

JOSEPH J. WHITE, OF NEW LISBON, NEW JERSEY.

MACHINE FOR ASSORTING FRUIT.

SPECIFICATION forming part of Letters Patent No. 731,828, dated June 23, 1903.

Application filed March 12, 1902. Serial No. 97,865. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH J. WHITE, a citizen of the United States, residing at New Lisbon, in the county of Burlington and State of New Jersey, have invented certain new and useful Improvements in Machines for Assorting Fruit, of which the following is a specification.

This invention relates to machines for assorting fruit, and has reference more particularly to cranberry-assorting machines.

The leading feature of my invention consists in the employment of a fruit-selecting plate in combination with means for jarring the same for selecting the sound from the unsound berries.

The invention also includes various novel features of construction and combinations of parts, all of which will be hereinafter fully described and claimed.

In the drawings, Figure 1 is a side elevation, partly in section, of a machine embodying my invention. Fig. 2 is a plan of the off-bearing belt and adjuncts, showing a portion of the frame in section. Figs. 3 and 4 are elevations of the two opposite ends of the machine. Fig. 5 is a sectional detail as on the line 5 5 of Fig. 4. Fig. 6 is a similar detail as on the line 6 6 of Fig. 5. Fig. 7 is an end elevation of the extension 56 of the frame of the machine and adjuncts. Fig. 8 is a sectional plan of the shaker, take-up wheels, and adjuncts. Fig. 9 is a transverse vertical section as on the line 9 9 of Fig. 1. Fig. 10 is a plan of one of the screw conveyers, its adjacent fruit-selecting plates, and adjuncts. Fig. 11 is a transverse vertical section as on the line 11 11 of Fig. 10. Fig. 12 is a detail of one of the spring-hammers and adjuncts.

Numeral 1 designates the frame of the machine, and 2 a suitable hopper supported therein in which the berries are contained. This hopper comprises vertical end walls 3, connected by downwardly-converging side walls 4 4^a, and a movable bottom 5, termed a "shaker," pivoted at its ends to bearings on the frame. The forward wall 4^a terminates on a vertical line slightly above the shaker, thus affording an elongated opening 6 for the passage of the berries. One end of the shaker is provided with a lug 7, which projects outwardly through an opening in the end of the

hopper and is held normally against an adjusting-screw 8 by the action of a suitable spring 9.

Extending adjacent to and parallel with the opening 6 is a rotatable shaft 10, which is journaled in bearings 11 at the respective ends of the hopper. One end of this shaft projects outwardly and is provided with a gear-wheel 12, having thereon a handle 13, by means of which the machine is operated.

Fixedly arranged on the shaft 10 at intervals apart are a series of take-up wheels 14, which are provided on their peripheries with radially-projecting pins 15, preferably arranged in pairs, as shown. The peripheries of the wheels 14 revolve in close proximity to the forward edge of the shaker, there being provided recesses 16 in the shaker for the upward passage therethrough of the pins 15. Centrally-located pins 17 serve to prevent the berries from escaping through the recesses 16, and guard-plates 18, arranged on the shaker, prevent their escape laterally of the take-up wheels.

On one end of the shaft 10 is a wheel 19, provided with studs 20, which during the rotation of the shaft engage a projection 21 on the shaker against the action of the spring 9, thus agitating the shaker and insuring the passage of the berries through the opening 6. By manipulating the screw 8 the movement of the shaker may be varied and the supply of berries to the take-up wheels nicely regulated. During the rotation of the shaft 10 the berries are engaged by the pins 15 on the wheels 14 and successively transferred to a series of conveyers 22, which are arranged directly beneath the take-up wheels. These conveyers may be of any appropriate construction. In the present instance I employ screws 23, fitted to shafts 24, which are mounted in bearings 25, transversely of the machine. The shafts 24 are provided with bevel gear-wheels 24^a, which coact with similar gear-wheels 26 on a longitudinally-arranged shaft 27. One end of this shaft extends outwardly and is provided with a pinion 28, which is engaged by the gear-wheel 12 and thereby driven.

Arranged parallel with each conveyer is a pair of oppositely-inclined walls 29 30, which receive and guide the berries as they are de-

livered from the superposed take-up wheels and carried onward by the conveyer, the lower edge of the wall 30 being cut away to afford a space 31 between the wall and the conveyer. The top of the conveyer revolves toward this space and discharges there-
 5 through any crushed berries, vines, dirt, &c., that may accompany the berries as they pass through the machine. The space 31 is inter-
 10 rupted, as at 32, to insure the discharge of any crushed berries, &c., that may be carried forward therethrough—that is to say, any berries that may lodge between the wall 30 and the body of the conveyer 22 will be carried
 15 onward by the conveyer through the space 31 and will be forced out of the latter upon meeting either of the lugs 32.

To clear the conveyer of any vines, &c., that may depend from the berries being car-
 20 ried onward thereby, I arrange on a common bar 33, below each conveyer and in close proximity to the latter, a clearing-block 34, which projects upwardly and embraces the under side of the conveyer. The vines, &c.,
 25 when they meet this clearing-block are thereby disengaged from the onwardly-moving berries and drop from the machine.

Arranged on the inclined wall 30 are plates 35 35 36, termed "selecting-plates," which
 30 may be of any shape and size for their intended purpose. One or more of these plates may be employed with each conveyer. I preferably construct the plates of "sound-
 35 ing-board," although any suitable material may be used. These plates rest upon the wall 30 and are secured thereto near their upper edges by means of screws 37, their lower or free ends extending downwardly to
 40 meet the conveyer and terminating on a line parallel therewith. Secured to the under side of the plates are centrally-located pins 38, which project through perforations in the wall 30. Bearing against the pins 38 are
 45 spring-hammers 39, which extend through brackets 40, secured to the under side of the wall, and are provided with adjusting-screws 41 for regulating the pressure against the pins 38.

Mounted in bearings on the under side of
 50 the wall 30 is a shaft 42, provided with a gear-wheel 43, which coacts with a similar wheel 44 on the conveyer-shaft 24 and is thereby driven. The shaft 42 is provided, adjacent each hammer, with a collar 45, from which
 55 project pins 46, adapted during rotation of the shaft to act against an opposing shoulder 47 on the hammer 39, which in turn strikes the pins 38, thereby imparting a jarring action to the selecting-plate.

60 By manipulating the screws 41 the force of the blows struck by the hammers may be regulated, and consequently the jarring action of the plates varied.

The selecting-plates are adapted to act
 65 upon the berries in a manner to remove the sound ones from the conveyer and permit the soft or unsound berries, which are unaffected

ed by the selecting-plates, to be carried onward to the end of the conveyer, at which point they drop from the machine.

To insure the discharge of all the sound berries from the conveyer, I employ in the present instance three plates 35 35 36 and adjust the screws 41 so as to produce the same jarring action upon the plates 35 35 and a
 75 greater range of jarring action upon the plate 36. By adjusting the screws 41 in this manner I am enabled to discharge berries from the conveyer at different points, according to their various degrees of soundness, and
 80 thereby separate from the very sound berries, known as "firsts," those of a lesser degree of soundness, known as "seconds."

The very sound berries, or firsts, as they are advanced by the conveyer respond
 85 quickly to the slight jarring action of the plates 35 35 and are thereby discharged from the conveyer, while the seconds pass the plates 35 35 unaffected thereby and respond to the greater jarring action of the plate 36,
 90 which in turn discharges them from the conveyer. The berries as they are thus discharged from the conveyer are received upon an off-bearing belt 45, which is supported on
 95 a table 46, longitudinally of the machine, and passes around rollers 47 48, mounted in bearings on the frame, the table 46 being provided with lateral guard-rails 49 50, between which the berries are carried.

The shaft of the roller 47 is provided with
 100 a pulley 50^a, which is belted with a pulley 51 on one of the shafts 24, whereby motion is imparted to the off-bearing belt.

The firsts are kept separate from the seconds on the off-bearing belt by a longitudi-
 105 nally-arranged partition-rail 52, supported by bars 53 53, secured to the frame.

Pivoted to the rail 50 and extending diagonally to meet the rail 52 is a gate 54, which deflects the seconds laterally of the off-bearing belt, from which they drop into a suitable receptacle below. If desired, the gate may be swung parallel with the rail 50 and the seconds carried onward with the firsts.

I employ a mechanism at the delivery end
 115 of the machine to separate the larger from the smaller berries of a predetermined size. This mechanism comprises a series of parallel screw conveyers 55, mounted in bearings on transverse bars 56^a of an extension 56 of
 120 the frame and having arranged adjacent each conveyer a vertical wall 57, providing a space 58 between the wall and the conveyer through which the small berries drop.

The walls 57 are secured to the transverse
 125 bars 56^a by screws 56^b, which extend through slots 56^c in said bars. By this construction I am enabled to adjust the walls 57 toward and from the conveyers 55, and thereby regulate the size of the berries to be delivered at the
 130 ends of said conveyers.

The conveyers are provided with bevel gear-wheels 59, which coact with similar wheels 60 on a transverse shaft 61, which is

provided with a pulley 62, driven by a belt 63 from a pulley 64 on one of the shafts 24.

The berries after being delivered from the off-bearing belt rest against the walls 57 and the bodies of the conveyers 55. The conveyers, revolving in the direction indicated by the arrows, carry the large berries throughout their lengths without bruising and deposit them in a suitable receptacle 65, while the berries of a smaller diameter than the space 58 drop therethrough into a suitable receptacle 66 below.

I provide the upper inclined faces of the walls 57 with projections 57^a, which retard the forward movement of any berries not resting directly upon the conveyers until said conveyers are clear to receive said berries, thereby insuring the passage of the berries along the conveyers 55 in succession.

To prevent the berries from bruising as they drop from the machine into the receptacle 65, I employ a cushioning device 67, which is suspended by a cord 68, passing around a pulley 69 and provided with a counterweight 70. The cushioning device comprises a frame 71, provided with a flexible member 72, arranged on a curve, as shown. This flexible member receives the berries as they drop from the conveyers 55 and gradually checking their momentum permits them to fall into the receptacle without bruising.

The pulley 69 is mounted on a conveniently-located shaft 73. This shaft is provided with a larger pulley 74, which is driven by a belt 75 from a pulley 76 on the shaft of the roller 48. As the pulley 69 is slowly rotated the cushioning device is gradually raised and kept a short distance above the berries as they fill the receptacle. The cushioning device may be raised by the mechanism just described or by hand, as desired.

While my invention is herein described in a desirable and practicable form, yet I do not limit myself to this particular construction, as the same be greatly modified without departing from the invention.

I claim—

1. In a machine of the character described, the combination of a fruit-selecting plate, a support therefor, and means for jarring the said plate.

2. In a machine of the character described, the combination of a plurality of fruit-selecting plates, a support therefor, means for imparting different jarring actions to said plates, and means for introducing fruit to said plates.

3. In a machine of the character described, the combination of a fruit-selecting plate, a conveyer arranged adjacent thereto, means for jarring the plate, and means for actuating the conveyer.

4. In a machine of the character described, the combination with a hopper, of means for successively removing berries therefrom, a conveyer, a fruit-selecting plate arranged adjacent thereto, means for jarring the same, and means for actuating the conveyer.

5. In a machine of the character described, the combination with a hopper, of a wheel, rotating means therefor, means on said wheel for successively removing berries from the hopper, a conveyer, a fruit-selecting plate arranged adjacent thereto, means for jarring said plate, and means for actuating the conveyer.

6. In a machine of the character described, the combination with a hopper having an opening therein, a shaker arranged adjacent the opening, actuating means therefor, means for successively removing berries from the hopper, a conveyer, a fruit-selecting plate arranged adjacent thereto, means for jarring the plate, and means for actuating the conveyer.

7. In a machine of the character described, the combination of a fruit-selecting plate, a hammer for imparting a jarring action thereto, means for actuating the hammer, a conveyer arranged adjacent the plate, and means for actuating the conveyer.

8. In a machine of the character described, the combination of a fruit-selecting plate, a spring-hammer for imparting a jarring action thereto, an adjusting-screw for the hammer, means for actuating said hammer, a conveyer arranged adjacent the plate, and means for actuating the conveyer.

9. In a machine of the character described, the combination of a conveyer, a wall arranged adjacent thereto, a fruit-selecting plate on said wall, a pin on said plate, a spring-hammer bearing against said pin, and means for actuating said hammer.

10. In a machine of the character described, the combination of a conveyer, actuating means therefor, a wall arranged adjacent the conveyer, a fruit-selecting plate on said wall, a pin bearing against said plate, a spring-hammer bearing against said pin, a shaft, actuating means therefor, and a collar on said shaft provided with projections for engaging said hammer.

11. In a machine of the character described, the combination of a screw conveyer, actuating means therefor, a wall arranged adjacent the conveyer so as to afford a space between said wall and conveyer, a lug on said wall projecting into said space, a fruit-selecting plate on said wall, and means for jarring said plate.

12. In a machine of the character described, the combination of a screw conveyer, actuating means therefor, a pair of oppositely-inclined walls, a clearing-block adjacent the conveyer, a fruit-selecting plate, and means for jarring the same.

13. In a machine of the character described, the combination with a hopper, of means for successively removing berries therefrom, a pair of oppositely-inclined walls, a conveyer, actuating means therefor, a fruit-selecting plate, and means for jarring the same.

14. In a machine of the character described, the combination with a hopper, of means for

successively removing berries therefrom, a pair of oppositely-inclined walls, a conveyer, actuating means therefor, a clearing-block adjacent the conveyer, a fruit-selecting plate, and means for jarring the same.

15. In a machine of the character described, the combination with a hopper, having an opening therein, a shaker adjacent the opening, means for agitating said shaker, means adjacent said opening for successively removing berries therefrom, a conveyer, actuating means therefor, a fruit-selecting plate adjacent the conveyer, and means for jarring the plate.

15 16. In a machine of the character described, the combination with a hopper having an opening therein, of a spring-controlled shaker pivoted adjacent the opening, an adjusting-screw for said shaker, a shaft, actuating means therefor, means on said shaft for agitating said shaker, means adjacent said opening for successively removing berries therefrom, a conveyer, actuating means therefor, a fruit-selecting plate adjacent the conveyer, and means for jarring the plate.

17. In a machine of the character described, the combination with a hopper, of means for successively removing berries therefrom, a conveyer, actuating means therefor, a plurality of fruit-selecting plates, means for imparting different jarring actions thereto, an off-bearing belt, actuating means therefor,

and a partition-rail arranged adjacent said belt.

18. In a machine of the character described, the combination of a receptacle, a cushioning device therein, and means for gradually raising said device.

19. In a machine of the character described, the combination of a receptacle, a cushioning device therein, including a flexible member arranged on a curve and adapted to check the momentum of the falling fruit, and means for gradually raising said device.

20. The combination of a receptacle, a cushioning device arranged therein, a pulley, a cord on said pulley attached to said cushioning device, and a counterweight attached to said cord.

21. In a machine of the character described, the combination of a conveyer for receiving the fruit, actuating means therefor, a wall provided with an inclined face and arranged adjacent the conveyer, a projection on said inclined face whereby the forward movement of berries not resting directly upon the conveyer is retarded.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH J. WHITE.

Witnesses:

RALPH H. GAMBLE,
ANDREW V. GROUPE.