

No. 636,245.

Patented Nov. 7, 1899.

B. CUNNINGHAM.
FRUIT EVAPORATOR.

(Application filed May 24, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1

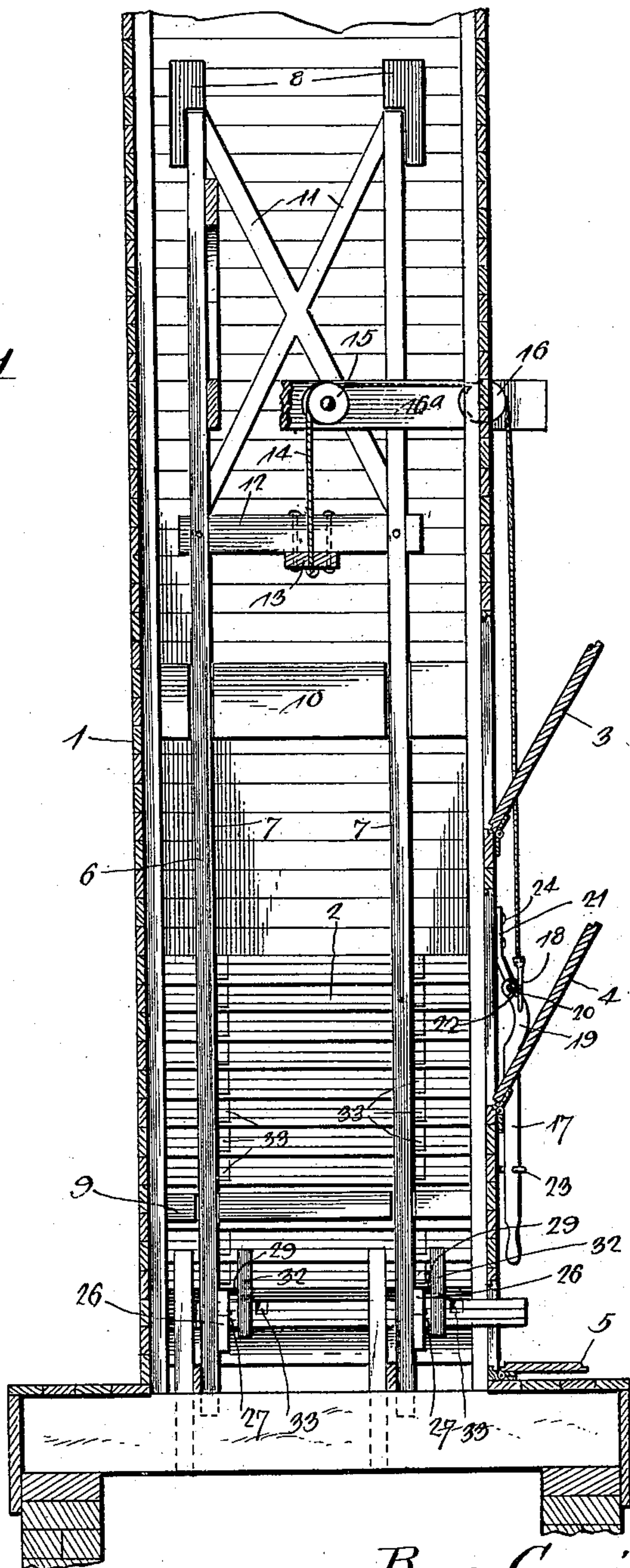
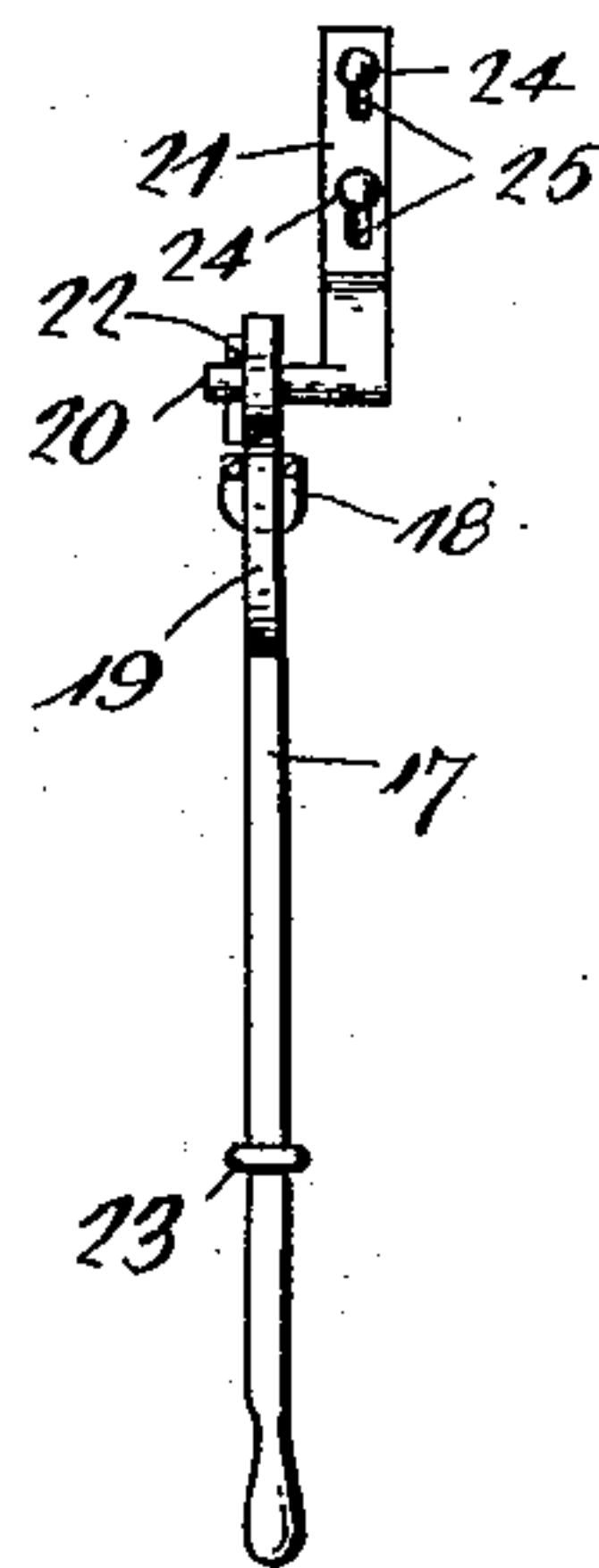


Fig. 4.



Witnesses
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2 Sheets—Sheet 2.

Fig. 2.

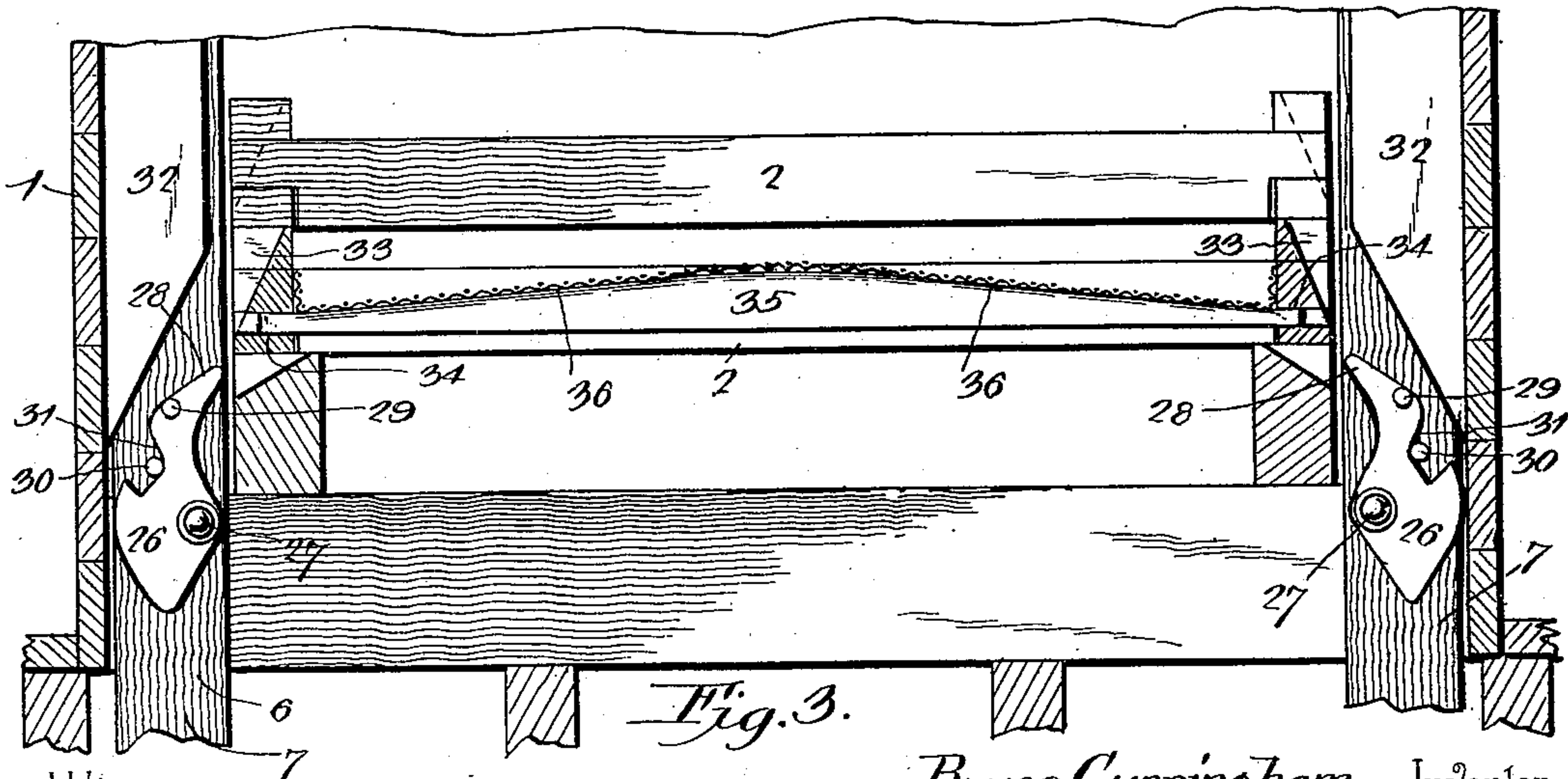
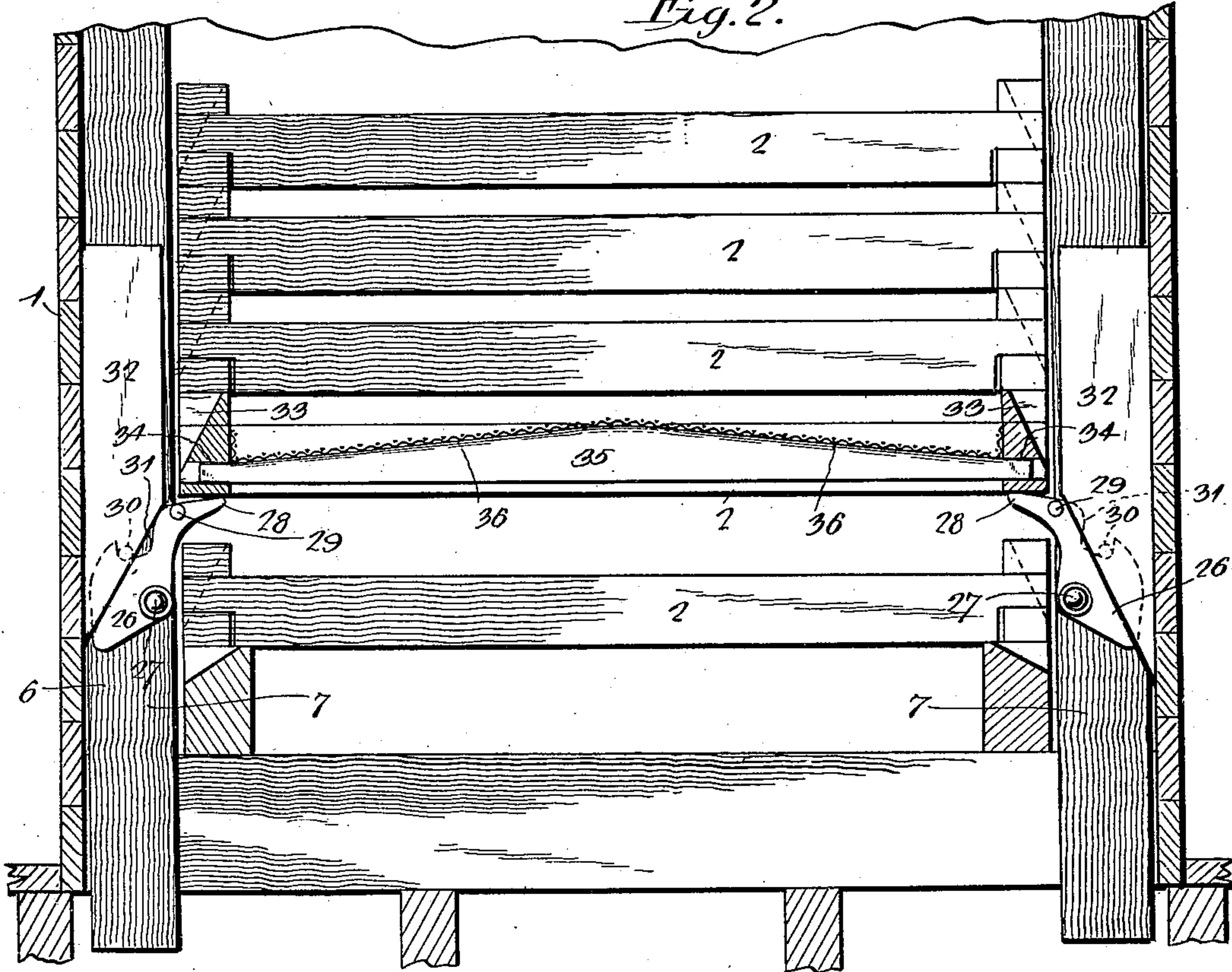


Fig. 3.

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UNITED STATES PATENT OFFICE.

BRUCE CUNNINGHAM, OF LIBERTY, OREGON.

FRUIT-EVAPORATOR.

SPECIFICATION forming part of Letters Patent No. 636,245, dated November 7, 1899.

Application filed May 24, 1899. Serial No. 718,099. (No model.)

To all whom it may concern:

Be it known that I, BRUCE CUNNINGHAM, a citizen of the United States, residing at Liberty, in the county of Marion and State of Oregon, have invented a new and useful Fruit-Evaporator, of which the following is a specification.

The invention relates to improvements in fruit-evaporators.

The object of the present invention is to improve the construction of that class of fruit-evaporators in which the trays are introduced at the top and removed from the bottom and to provide a simple, inexpensive, and efficient device adapted to lift the stack from the bottom tray, so that the latter may be removed, examined, and replaced, if necessary.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a vertical sectional view of an evaporator constructed in accordance with this invention. Figs. 2 and 3 are vertical sectional views of the lower portion of the evaporator, taken at right angles to Fig. 1 and showing the automatic dog in and out of engagement with the trays. Fig. 4 is a detail view illustrating the construction of the operating-lever.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a casing receiving a stack of trays 2 and provided with upper doors 3 and 4 and a lower door 5, through the door-opening of which the bottom tray of the stack is removed. Within the casing is arranged a vertically-movable frame or cage 6, composed of vertical bars 7, arranged in pairs at opposite sides of the casing and operating in ways formed by top, bottom, and intermediate guides 8, 9, and 10, and the guides 9 and 10 serve to close the space between the stack of trays and the sides of the casing, whereby the heat is prevented from passing around the sides of the trays and is caused to pass through the latter. The upper guides 8, which consist of blocks or pieces, are recessed at their inner sides, the recesses terminating short of the tops of the guides to provide

stops for limiting the upward movement of the frame or cage. The frame or cage is strengthened at its top by cross-braces 11 and horizontal bars 12, which are connected by a central bar 13. The frame or cage is moved vertically by a hoisting rope or cable 14, secured at one end to the centrally-arranged bar 13 and passing over upper guide pulleys or sheaves 15 and 16, preferably mounted in a diagonally-disposed supporting-bar 16^a and located at the center and one of the outer corners of the casing. The lower end of the rope or cable is connected with an operating-lever 17 by a link 18, which straddles the fulcrumed end of the lever and is adapted to prevent buckling or twisting of the parts when the operating-lever is swung downward to elevate the stack. The end 19 of the operating-lever is curved or bowed outward, as shown, and is perforated for the reception of a pivot 20, extending laterally from one end of the bracket or plate 21 and provided with a removable key 22, whereby the operating-lever is detachably mounted on the bracket or plate. The operating-lever is secured in its lower position when swung downward to elevate the stack by being engaged with a hook 23, and the bracket or plate 21, which is secured to the casing by bolts 24 or other suitable fastening devices, is provided with slots 25 for the reception of the same, whereby it is adapted to be adjusted to take up any slack of the cable. The lower end of the bracket or plate is bent outward to offset the pivot and the fulcrumed end of the operating-lever from the casing.

The stack is lifted to permit the bottom tray to be removed through the door 5 by means of automatic dogs 26, pivoted between their ends at 27 on the lower portions of the lifting-bars 7 of the vertically-movable frame. The lower portion of the dog 26 is enlarged to weight it at that point, whereby the upper engaging portion 28 is automatically thrown outward and held out of engagement with the trays when the lifting-bars are lowered. The engaging portion 28 of the dog is substantially L-shaped and provided with a horizontal pin 29, and the inward and outward movement or pivotal action of the dog is limited by a stop 30, mounted on the lifting-bar at a point above the pivot of the dog and located within

a recess 31 of the latter. The recess 31 forms inner and outer shoulders, and when the outer shoulder is in engagement with the stop the dogs provide rigid supports for the stack and are adapted to sustain the weight of the same.

When the lifting-bars are elevated, the dogs remain out of engagement with the trays a sufficient length of time to clear the bottom one and engage the tray next to the bottom, such inward movement of the dogs being effected by means of stationary wedge-shaped shifting devices 32, having tapering lower ends arranged to engage the lateral projections or pins 29. The trays are provided with recesses 33, located at their upper portions and adapted to permit the engaging upper ends of the dogs to move inward beneath the tray next to the bottom of the stack, and there is sufficient space between the shifting devices 32 and the stack to permit the pins to move vertically with the stack. The weight of the stack resting upon the engaging portions of the dogs is sufficient to prevent them from accidentally swinging outward; but as soon as the stack is lowered after the removal of the bottom tray the dogs will be automatically swung outward by their weighted lower portions.

Each tray is provided at each side with an opening 34, in which is arranged one end of a stretching device 35, tapered from its center to each end and presenting oppositely-inclined upper edges 36. This strip, which has a straight lower edge, is placed in the frame of the tray in an inverted position before the wire is applied, and after the tray is complete it is partially rotated to bow the wire upward, whereby the wire is stretched and prevented from sagging. The upwardly bowed or arched bottom of the tray is adapted to spread the fruit as it is placed upon the said bottom, and the latter cannot interfere with the upper passage of the hot air, like a downwardly bulged or sagging bottom. The sides of the trays preferably consist of three strips, the lower one being bored across its upper face at the center to provide the openings 34.

The invention has the following advantages: The dogs, which are positive and automatic in their operation, are adapted when the lifting-bars are raised to clear the lowermost tray and lift the stack therefrom, thereby freeing the bottom tray and permitting the same to be inspected, removed, and replaced, if necessary. The tapering shifting devices engage the laterally-disposed pins of the dogs and swing the latter inward, and the weighted lower portions of the dogs disengage the same from the stack when the pressure is removed after the stack is lowered. The trays have their bottoms bowed upwardly and stretched, and the tapering stretching device prevents the bottoms from sagging and inter-

fering with the passage of the hot air. Also the bottoms by being bowed upward are adapted to distribute the fruit as it is placed in the trays.

Changes in the form, proportion, size, and the minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

What is claimed is—

1. In an apparatus of the class described, the combination of the vertically-movable lift-bars, gravity-dogs pivotally mounted on the lift-bars, and normally swung to a position out of engagement with the trays, and a stationary shifting device separate from the lift-bars and coöperating with the gravity-dogs, to permit them to clear the bottom tray and to be forced into engagement with the next succeeding tray, substantially as described.

2. In an apparatus of the class described, the combination of the vertically-movable lift-bars, gravity-dogs pivotally mounted on the lift-bars, and provided at one side of their pivots with weighted portions, and at the opposite sides of the pivots with engaging points, and a stationary shifting device separate from the lift-bars, and arranged above the dogs to coöperate therewith and permit them to clear the bottom tray and be forced into engagement with the next succeeding tray, substantially as described.

3. A device of the class described comprising a lift or bar, a dog pivotally mounted thereon and having a weighted lower end and an engaging upper end, and a tapering shifting device located above the dog and adapted to permit the same to clear the bottom tray of the stack, substantially as described.

4. A device of the class described comprising a vertically-removable bar or lift, a dog pivotally mounted thereon and provided with a weighted lower portion and having a recess or opening, a stop mounted on the lift or bar and arranged in the recess or opening to limit the movement of the dog, and a shifting device arranged to permit the dog to clear the bottom tray of the stack, substantially as described.

5. A device of the class described comprising a lift or bar, a dog pivotally mounted thereon and having a projection or pin, and a tapering shifting device presenting an inclined face arranged to be engaged by the pin or projection, whereby the dog is permitted to clear the bottom tray of a stack, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

BRUCE CUNNINGHAM.

Witnesses:

H. A. JOHNSON,
FRED. HURST.