

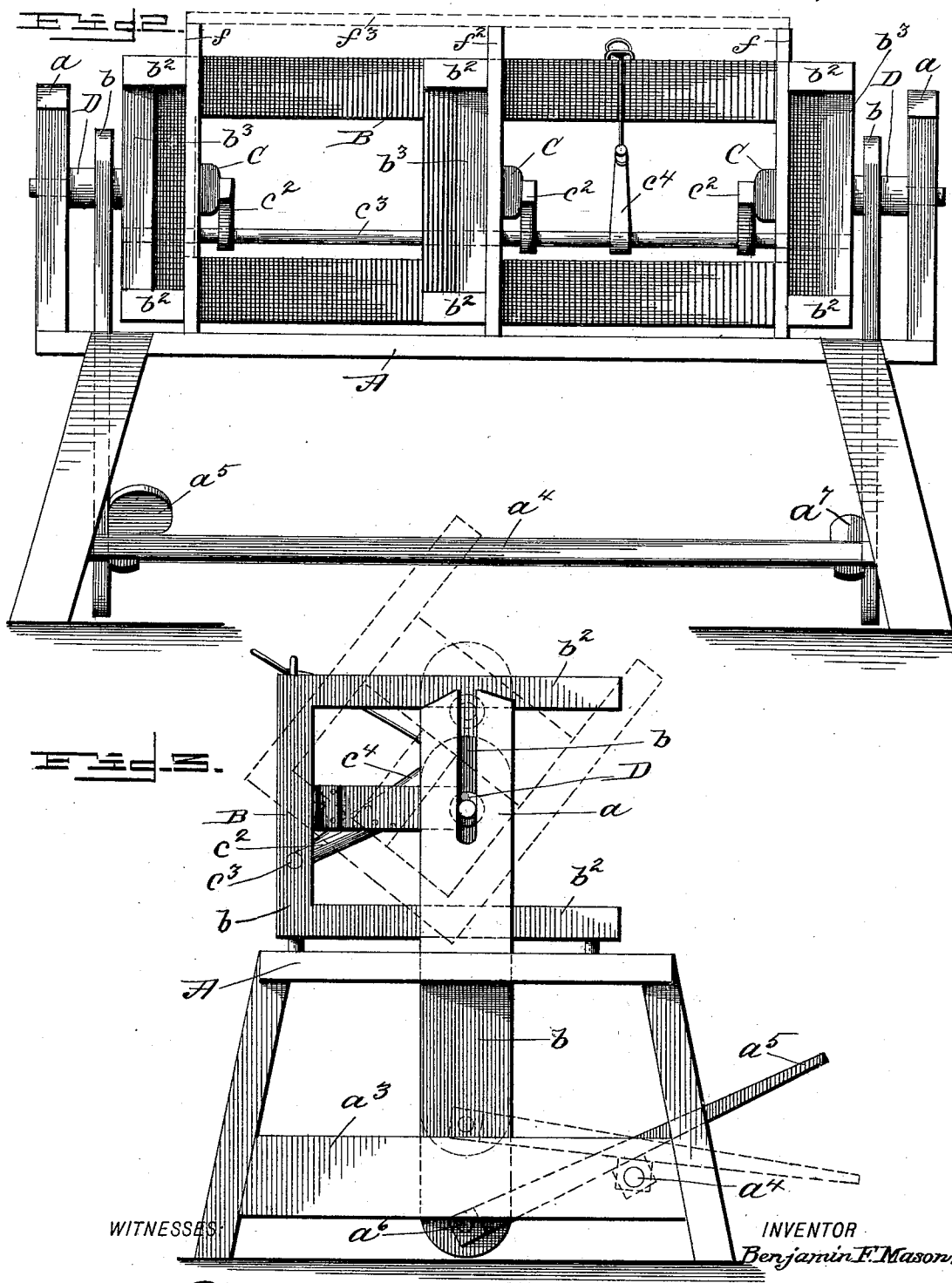
(No Model.)

3 Sheets—Sheet 2.

B. F. MASON.
BOX MAKING MACHINE.

No. 508,032.

Patented Nov. 7, 1893.



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Chas. Rhodes.

INVENTOR
Benjamin F. Mason.

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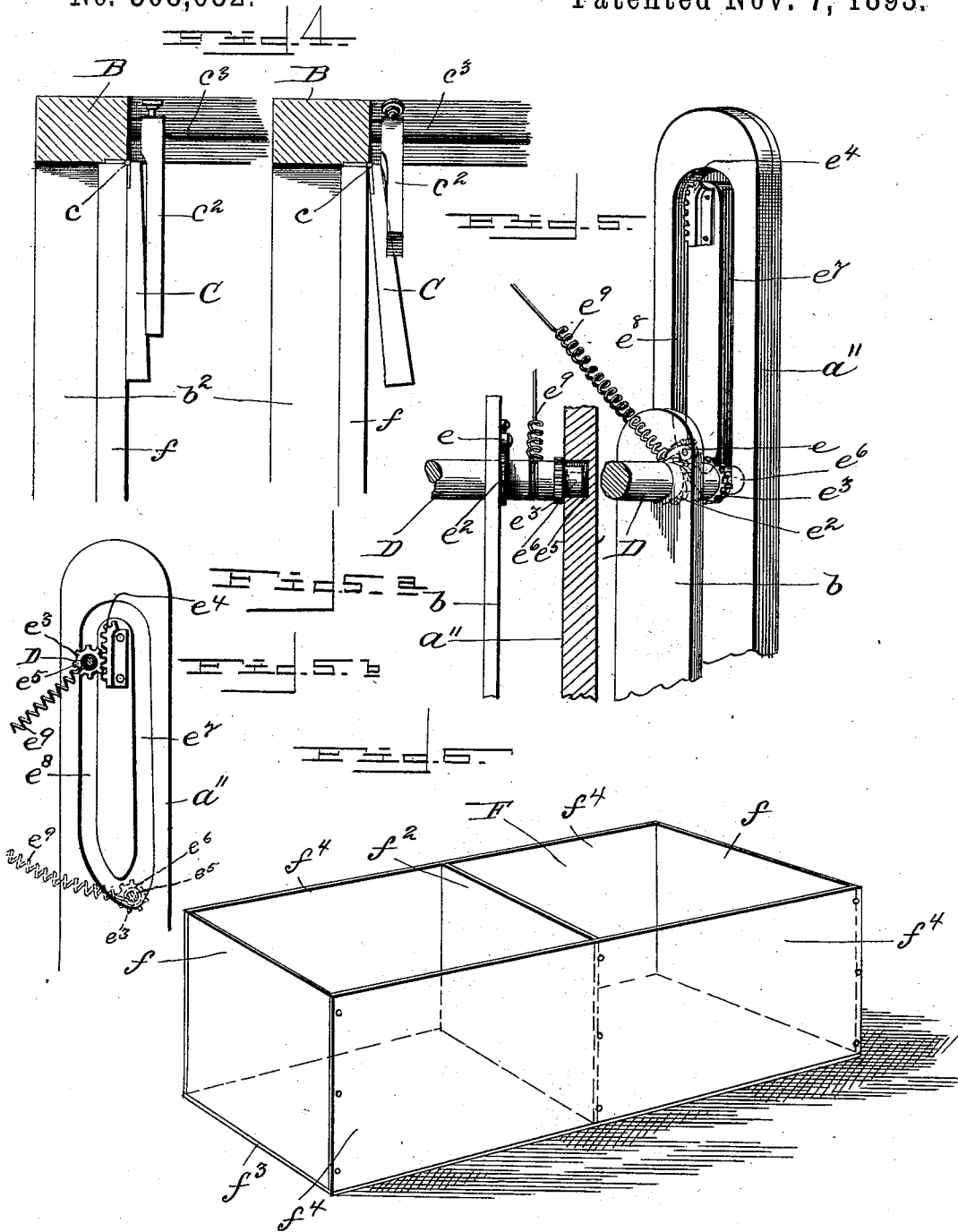
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UNITED STATES PATENT OFFICE.

BENJAMIN F. MASON, OF WILDWOOD, FLORIDA.

BOX-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 508,032, dated November 7, 1893.

Application filed December 6, 1892. Serial No. 454,268. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. MASON, a citizen of the United States, residing at Wildwood, in the county of Sumter and State of Florida, have invented certain new and useful Improvements in Box-Making Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in box making machines, particularly to that class known as fruit and vegetable packing or shipping boxes.

The object of the invention is to provide a suitable machine of such novel construction, whereby all measuring, adjusting, &c., in the construction of this class of box, shall be entirely dispensed with.

A further object is to employ such novel means, whereby certain members of a box, after being properly secured on the clamping frame, remain in such position without further adjustment throughout the entire operation, or until the remaining members have been attached, to complete the box.

A further object is to provide a revolubly mounted clamping frame, and means for automatically or manually rotating the same when elevated, thus greatly facilitating the ready operation, and increasing the efficiency of the machine.

A further object is to present a simple and inexpensive construction in a box making machine and at the same time, one that shall be capable of rapid action, producing as a result, satisfactory and accurate work.

With these objects in view, the invention consists in certain novel details of construction, combinations and arrangements of parts, to be hereinafter more fully described.

In describing the invention in detail, reference is had to the accompanying drawings forming part of this specification, wherein like letters indicate corresponding parts in the several views, in which—

Figure 1. is a view in perspective of one form of machine embodying my improvements.
Fig. 2. is a view in front elevation of the same, showing a box in the first stage of construction.
Fig. 3. is an end view showing by dotted

lines the operation of the revolubly mounted clamp frame. Fig. 4. illustrates detailed views of one of the clamps. Fig. 5, is a detail view in perspective illustrating a modified form of construction. Fig. 5^a, is a view in elevation of a portion of the same showing the ratchet and pawl mechanism. Fig. 5^b, is a detail face view of one of the standards, showing the guide slots and the pinion engaging the rack, also by dotted lines, the normal position of the stud shaft when the frame is at rest. Fig. 6. is a detailed perspective view showing one form of completed box.

In the drawings, "A" indicates a bench or table having at each end thereof the standards or uprights "a a" and adjacent these uprights, the slots "a² a²" which latter are adapted for the reception of the clamp frame supports "b b." Suitably mounted between the cross braces "a³ a³" is a rock shaft "a⁴" having a foot lever "a⁵" secured thereto, the said lever connecting with the lower end of the left hand support "b" and the link "a⁷" forming a similar connection with the right hand support, as is clearly shown in Fig. 1. Thus as the foot lever is depressed, these supports are forced upwardly through the slots in the bench top to elevate the clamp frame "B." This frame may be constructed and proportioned to contain any desired number of clamps as will be readily understood, the distance between the same corresponding with any determined length of compartment of the box. Each clamp comprises a backing formed of the outwardly projecting arms "b² b²" and the vertical brace "b³." The clamp proper "C" hinged at "c" is provided with an inclined or tapering surface which is adapted to be engaged by a pressure arm "c²" mounted on a shaft "c³" the said shaft being journaled in frame "B" (as shown) and controlled and actuated by a hand lever "c⁴." Extending in opposite directions from each of the backers on the extreme ends of the frame "B" are short shafts "D" journaled to turn loosely in apertures "b'" in the upper ends of the supports "b" and having their outer ends reduced to enter and project slightly beyond the slots "a' a'" formed in the standards or uprights "a a." Thus it will be readily obvious that any one of a number of clamp frames, with the number of backers

and the distance between the same varying, may be readily adjusted or substituted for that shown on the machine.

Referring to Fig. 3, wherein the rotary movement of the clamp frame is illustrated, it will be observed that with a machine constructed as there shown, the force of gravity tends to effect the first quarter revolution of the frame as it is elevated, thus making the circular adjustment partially automatic; furthermore, when the frame is nicely balanced, that is to say when the spindles or stud shafts are well journaled, it requires but a slight pressure of the hand to rotate the same, when elevated.

Referring to Figs. 5, 5^a and 5^b I have illustrated a slightly modified mechanism, by which the clamping frame when elevated, may be automatically rotated through an arc of ninety degrees. This mechanism comprises the ratchet disks —e²—e²— which are keyed or otherwise secured on the stud-shafts —D— of the clamping frame adjacent the outer faces of the frame supports —b—b—, and on these supports, spring pressed pawls —e—e— are pivotally secured and adapted to engage said disks, thus limiting the frame to revolve in but one direction. The stud-shafts —D— are reduced at their outer extremities to form spindles —e⁵—e⁵— on which are mounted anti-friction rollers —e⁶—e⁶—. These rollers are adapted to enter and move in endless guide slots —e⁷—e⁸— formed in the faces of the standards —a''—a''—. Thus, as the foot-lever is depressed, the frame will be carried upwardly by its supports —b—b— with the frictional rollers —e⁶—e⁶— traveling in the vertical portion —e⁷— of the advance slots and arriving at or near the limit of its upward movement, the rollers will be drawn toward the rear or horizontally and into the return slot e⁸— by the action of the springs —e⁹— which latter are suitably connected at one end with the stud shafts and secured at the opposite end to the table, adjacent the standards, so as to act or exert a pull on the frame only when the latter is elevated. It will be obvious, that these springs may be shortened if desired, to hold the clamp frame well down against the table, at the same time being capable of drawing the rollers rearwardly and into the return slot as above described. To prevent the rollers entering the return slots when the frame is elevated, these slots adjacent the lower ends are curved inwardly or toward the advance slots e⁷ so as to cause the roller to normally rest at the lower end, of the last named slots, as is clearly shown in Fig. 5^b.

To revolve the frame, it must be first elevated so as to swing clear of the table, and to effect this rotary movement automatically, I key on the stud-shafts adjacent the friction rollers, spur gears —e³—e³— which are adapted to engage segmental rack-bars —e⁴—e⁴—. These racks are secured to the vertical supports and in the path of travel of the gears, and as the frame is drawn into the return slot

by the action of the springs, the gears engage the racks, and as the frame is carried downwardly by its own weight or the action of the springs, it will be given a partial revolution, the ratchet and pawl holding it against backward movement.

In Fig. 6 the ends "f" and the partitions "f²" of the box "F" are placed in the clamps and the operating lever drawn downwardly to lock the same in position. One or more bottom boards or strips "f³" are then nailed on, and the foot lever depressed, which elevates the frame and effects an engagement between the pinions and segmental rack bars whereby the frame is given a quarter revolution. At the same time the springs "e" acting will tend to pull the rollers toward the rear and thus shift them to the return guides "e³," when the foot lever is released and the frame descends by its own weight and automatically adjusts itself to the proper position, that is to say for the attachment of the side boards or strips "f⁴" and after such pieces have been secured a similar operation will present the opposite side of the box as will be obvious.

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

1. In a box making machine, the combination with movable supports, of a clamping frame rotatably mounted thereon, and a stop arranged in the path of the clamping frame to check its rotary movement, as specified.

2. In a box making machine, the combination with movable supports, of a clamping frame rotatably mounted thereon, and a stop arranged in the path of the clamping frame to check its rotary and rectilinear movement, as specified.

3. In a box making machine, the combination with a rotatably mounted clamping frame, of movable supports whose direction of movement is perpendicular to the axis of the clamping frame and means for operating said supports, as specified.

4. In a box making machine, a supporting table, a revolubly mounted clamping frame arranged vertically movable thereon and normally held against rotation by engagement with the table, and means for elevating said frame, as specified.

5. A clamping frame, comprising a series of backers or stationary jaws, a corresponding series of movable jaws having the outer faces thereof inclined, and a rotatably mounted shaft carrying presser arms which are adapted to engage the inclined faces of said movable jaws to operate the latter, as specified.

6. In a box making machine, a supporting table, a clamping frame vertically movable in guides, a lever controlling said vertical movement, and means for automatically revolving said frame when the latter is elevated, as specified.

7. In a box making machine, a supporting table, a revolubly mounted clamping frame vertically movable in guides arranged on the

table, a foot lever connecting with said frame to raise and lower the same and means for effecting a quarter revolution of the frame when elevated, as specified.

5 8. In a clamping frame, a supporting table, a revolubly mounted clamping frame held vertically movable in slotted standards, a lever connecting therewith to raise and lower the same, a series of clamps carried by the
10 latter, each of said clamps comprising a backing and a hinged clamp jaw having an inclined face, a pressure arm mounted on a shaft journaled in said frame and adapted to engage the inclined face of said jaw and a
15 lever controlling the action of said arm, as specified.

9. In a box making machine, a supporting table having at each end a slotted upright and adjacent thereto suitable openings, of the
20 clamp frame supports, projecting through the openings the rock shaft having a foot lever and link secured thereon, said foot lever and link connecting with the lower ends of said supports, and the revolubly mounted clamp-
25 ing frame carrying a series of clamps and being provided with stud shafts loosely jour-

naled in said supports, said shafts entering slots formed in the uprights, as specified.

10. In a box making machine, a table, a vertically movable clamping frame arranged
30 thereon and revolubly mounted in suitable supports and means for automatically effecting a partial revolution of the frame when the latter is elevated, said means comprising the
35 ratchet disks — e^2 — and spur pinions — e^3 — mounted on stud shafts of the clamp frame, said shafts being provided with terminal anti-friction rollers, the pawls carried by the frame
40 supports engaging the ratchet disks, suitable tracks or ways adapted to receive and guide the terminal rollers of the said shafts, the
45 rack-bars into which the spur pinions work and the spring — e^2 — connecting with the frame whereby the latter is given a horizontal movement, as specified.

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

BENJAMIN F. MASON.

Witnesses:

J. E. WEATHERALL, Jr.,
W. C. G. KILGORE.