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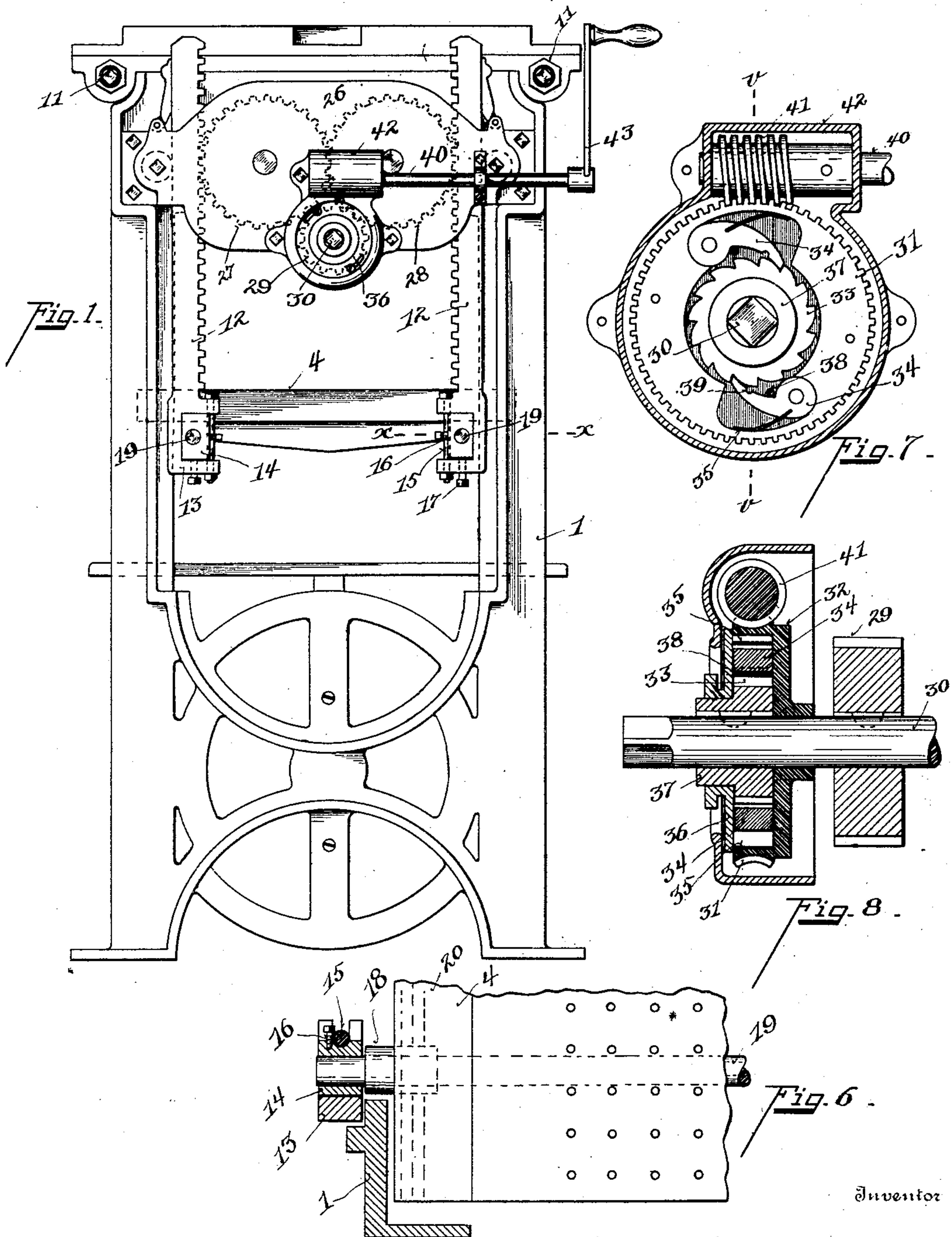
PATENTED JAN. 26, 1904.

S. H. LEAVENWORTH.
CANDLE MOLDING MACHINE.

APPLICATION FILED JULY 28, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses
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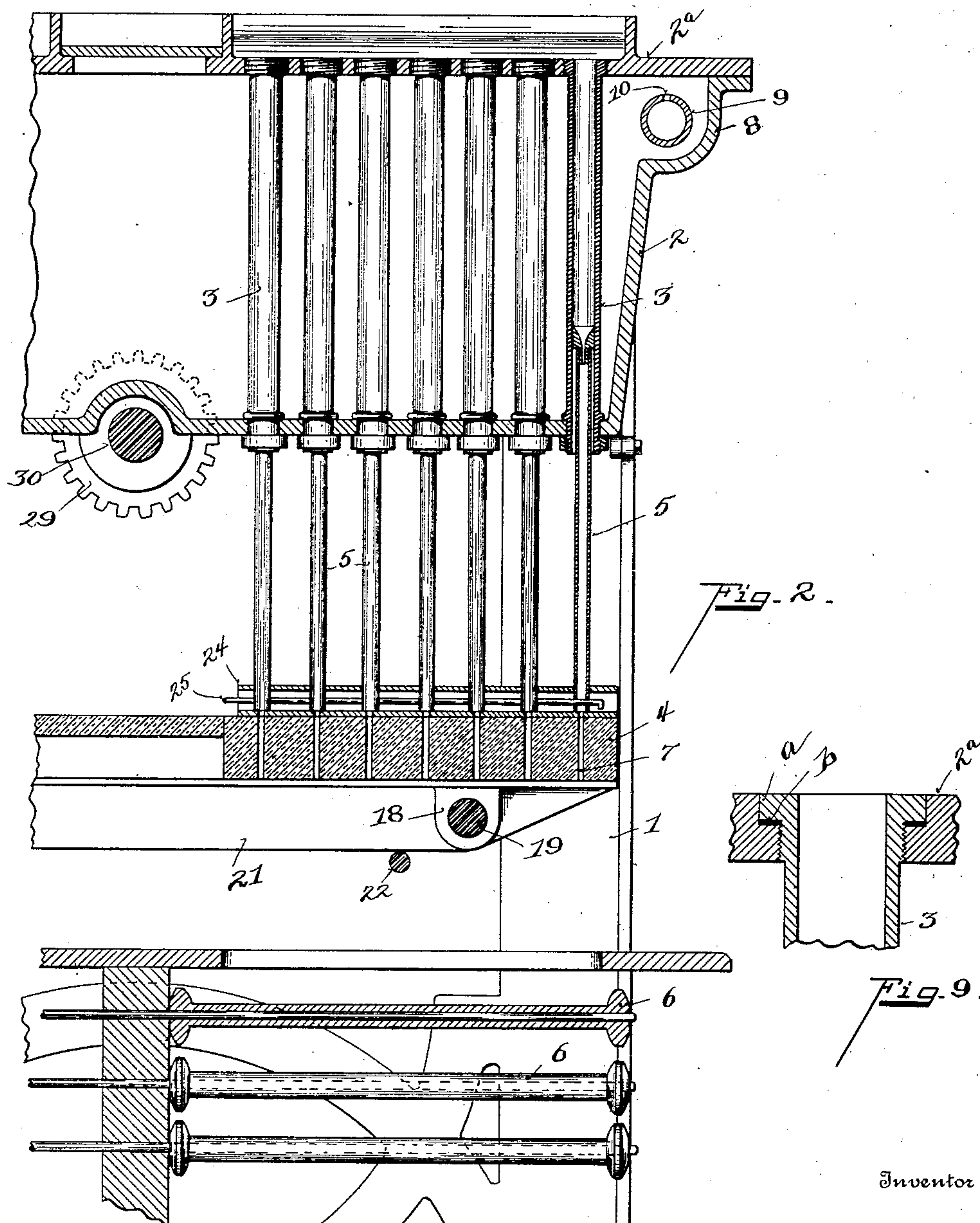
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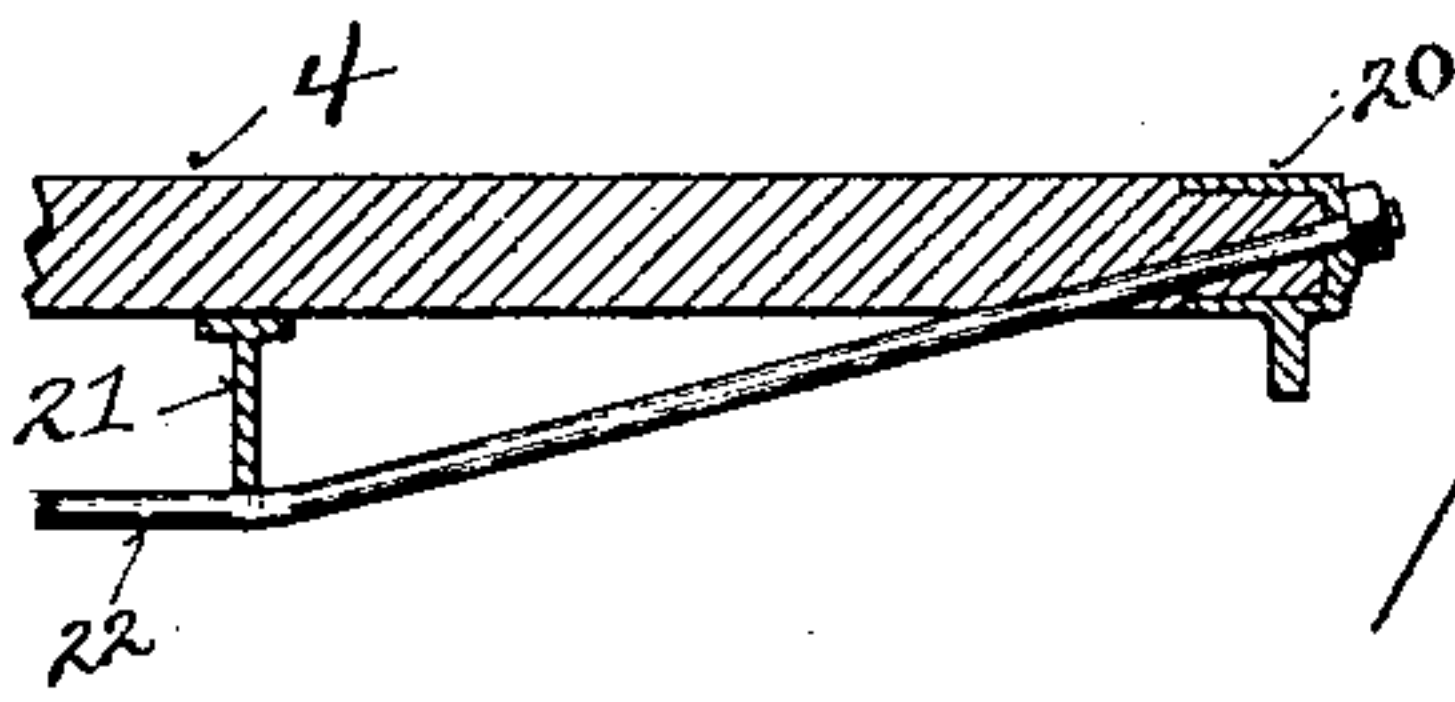
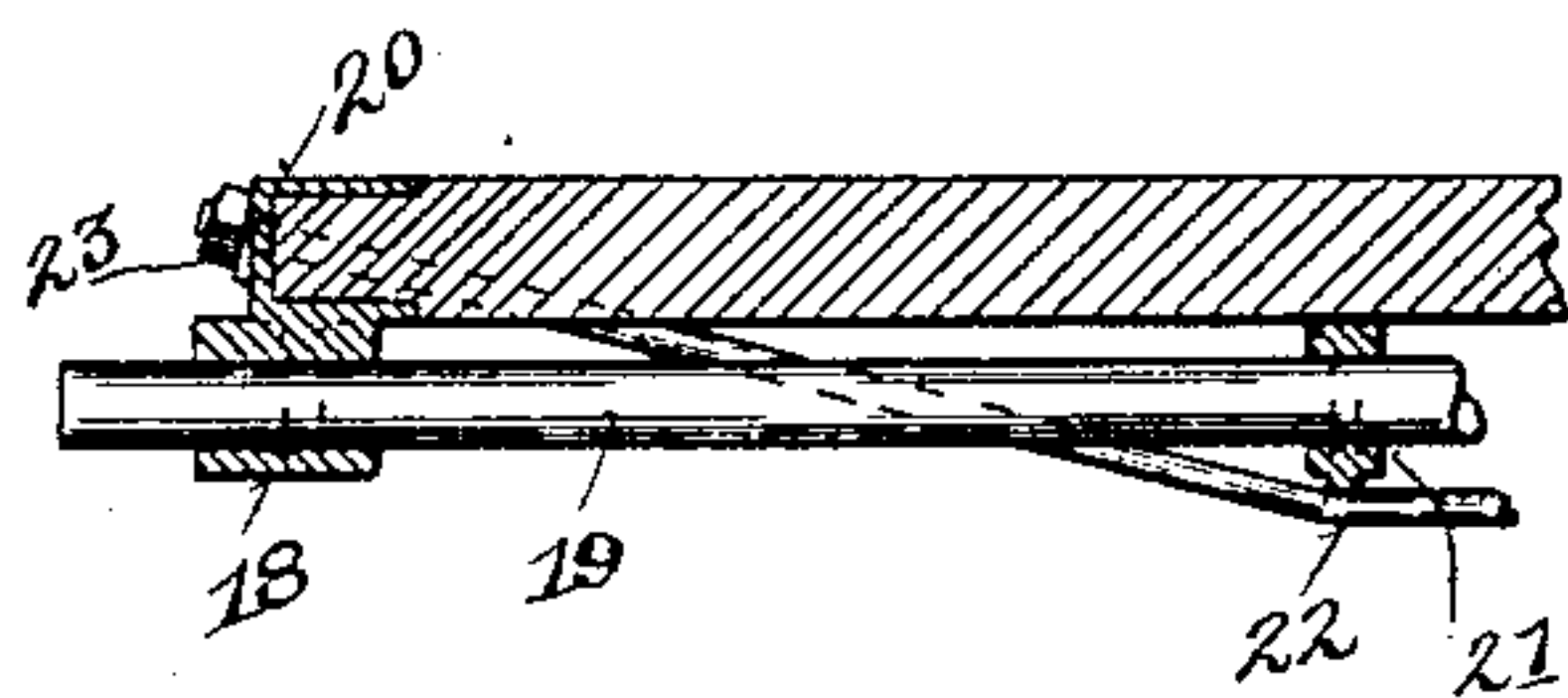
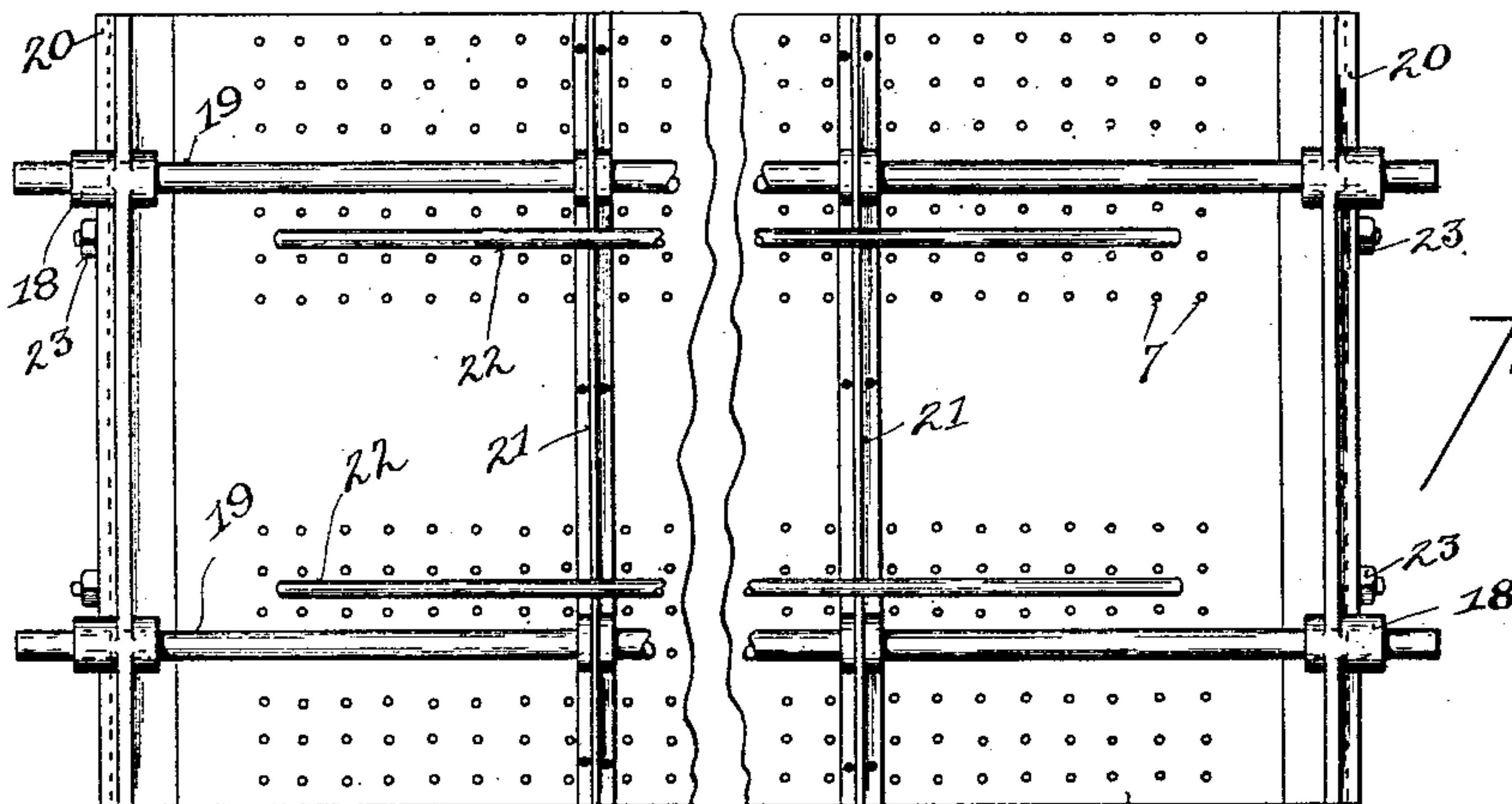
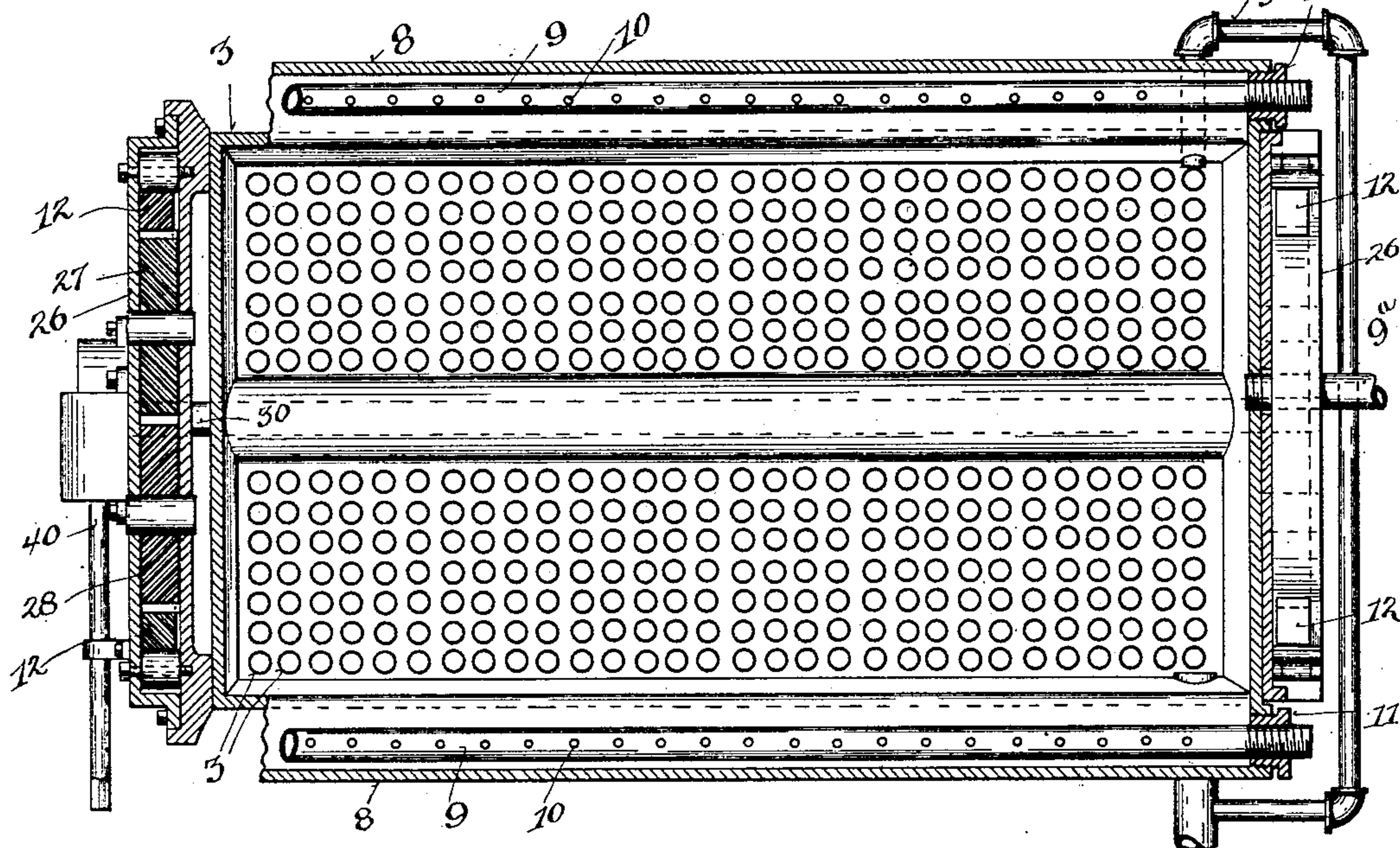
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UNITED STATES PATENT OFFICE.

SETH H. LEAVENWORTH, OF CINCINNATI, OHIO, ASSIGNOR TO HOMAN & COMPANY, OF CINCINNATI, OHIO.

CANDLE-MOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 750,662, dated January 26, 1904.

Application filed July 28, 1903. Serial No. 167,366. (No model.)

To all whom it may concern:

Be it known that I, SETH H. LEAVENWORTH, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Candle-Molding Machines, of which the following is a specification.

My invention relates to an improved machine for making candles.

One of the objects of my invention relates to an improved mechanism for expressing the candles from the molds.

Another feature of my invention relates to the specific construction of the cross-head.

Another feature of my invention relates to the operation of the cooling-tank.

In general my invention relates to the improvement of the machine in various structural details, the features of which are more fully set forth in the description of the accompanying drawings, forming a part of this specification.

Figure 1 is a side elevation of my improved candle-molding machine. Fig. 2 is a central vertical section. Fig. 3 is a horizontal section of the cooling-tank. Fig. 4 is a reverse plan view of the plunger supporting the cross-head. Fig. 5 is a sectional view of the same. Fig. 6 is a section on line *x x*, Fig. 1, showing in plan a portion of the cross-head. Fig. 7 is a front view of the power-expressing mechanism for removing the candles from the molds. Fig. 8 is a section on line *v v*, Fig. 7. Fig. 9 is an enlarged sectional view of the preferred form of candle-mold head secured in position.

1 represents the frame of the machine, at the top of which is a cooling-water tank 2, provided with candle-molds 3. These molds are secured at the upper ends to the cover-plate 2^a, preferably as shown in Fig. 9, in which *a* represents a flange projecting from the mold and adapted to seat within the plate and being flush therewith.

b represents a packing or washer for sealing the joint.

4 represents a cross-head under the molds

having the plungers 5 entering the molds from below.

6 represents the spindle for the wicking, the wicking going up through the holes 7 in the cross-head 4, and through the plungers 5 into the molds 3, and held in alinement by the usual form of rack placed upon the top of the tank-cover 2^a.

When the plungers are down, as shown in Fig. 2, the melted material is poured into the molds, the water in the tank cools and solidifies the material in the usual manner, and the candles are then ready to be expressed from the molds.

The tank 2 is provided at each side with the overhanging eaves 8, at the top of which are the overflow-pipes 9, provided with the orifices 10. The ends of these pipes are supported in removable bushings 11, so that the pipe 9 may be detached for cleaning. 9^a represents the supply water-pipe and 9^b the discharge water-pipe.

Following is the description of the method of mounting the cross-head 4 on the lifting-racks 12, (see Figs. 1, 2, and 6:) At each end of the tank are the two racks 12, one in each corner, the rack-teeth facing each other. The racks on the lower ends are provided with the clamping-jaws 13, in which are supported the pillar-blocks 14.

15 represents bolts for closing the jaws 13 and holding the pillar-blocks 14 in place.

16 represents bolts for holding the pillar-blocks laterally.

17 represents adjusting-bolts carried by the lower jaw of the clamps 13, upon which adjusting-bolts the pillar-blocks 14 are seated for vertical adjustment.

The cross-head 4 is provided with the depending bracket 18, in which are the supporting-rods 19, the ends of shafts 19 engaging into the pillar-blocks 14, as shown in Figs. 1, 2, and 6. It is very important that this cross-head 4 be held in a true horizontal plane, and the supporting mechanism just described provides means for accurately maintaining a true horizontal disposition of the cross-head. In order to preserve the true horizontal position

of the cross-head, it is also necessary that the cross-head itself be specifically constructed in a manner which will prevent all danger of warping, and to do this we have provided the following devices, (see Figs. 4 and 5:) The cross-head 4 is provided with the edge metallic binding and bracing strips 20 and the intermediate binding and bracing strips 21, the binding-strips 20 being provided with the brackets 18, already described, for engaging the supporting-rods 19. These rods 19 also pass through bosses on the intermediate braces 21.

22 represent bent truss-rods which engage through the strips 20 on one side of the cross-head which emerge from the bottom of the cross-head 4, then bent substantially parallel with the cross-head 4, at the middle engaging the two intermediate binding-strips 21, thence turning up through the bottom of the cross-head 4, and emerging through the opposite binding-strips 20 on the other side of the cross-head. 23 represents the nuts engaging said truss-rods 22 for taking them up. Obviously the strips 20 and 21 brace the cross-head in one direction of strain, and the truss-rods 22 counterbrace the cross-head in a transverse direction of strain, the truss-rods 22 having a clamping relation with all four of the bracing-strips 20 and 21.

In order to support the plunger-rods on the cross-head 4, I provide a plate 24 above the cross-head 4, said plungers passing through retaining-orifices in the plate 24 and seating upon the cross-head 4 over the respective holes 7, as shown in Fig. 2.

25 represents retaining-pins, each passing through a row of plungers between the cross-head and the plate 24, as shown in Fig. 2.

In order to lift the cross-head initially with great power, overcoming the adhesion of the candle to the molds and afterward rapidly expressing the freed candle from the molds, I provide the following expressing mechanism, (shown in Figs. 1, 7, and 8:)

26 represents a gear-supported plate bolted at each end of the tank, upon which is journaled the intermeshing gear-wheels 27 and 28.

29 represents driving gear-wheels intermeshing with gear-wheels 27 and 28. Gear-wheels 29 at each end of the tank are fixed to the driving-shaft 30.

31 represents a worm-wheel provided with the peripheral flange 32.

33 represents a ratchet-pinion fixed on shaft 30 for driving the same.

34 represents pawls pivoted to the disk of the worm-wheel 31 under the peripheral flange 32. The ends of these pawls engage into the teeth of the ratchet-wheel 33, being normally held in this position by means of the spring 35.

36 represents a plate journaled on the hub 37 of the ratchet-wheel 33, said plate being provided with the pins 38, and the pawls are

provided with the detents or notches 39. By turning the plate 36 on the hub 37 the pins 38 may be caused to engage the notches 39 of the pawls 35 and hold the pawls out of engagement with the teeth of the ratchet-wheel 33.

40 represents a worm-shaft provided with a worm 41 in the housing 42, the worm 41 engaging the teeth of the worm-wheel 31.

43 represents a handle adapted to be socketed either upon the ends of worm-shaft 40 or driving-shaft 30. Worm-wheel 31 is loose on shaft 30, but may be fixed thereto in one direction of rotation by means of the pawl-and-ratchet mechanism 33 34. By this means when the handle 43 is socketed on the worm-shaft 40 great power may be employed to raise the plunger, overcoming the initial adhesion of the candle to the molds. When once the candles are free from the molds, they can be easily expressed by quick feed—i. e., gear-wheels 27, 28, and 29—and handle 43 may be therefore removed from shaft 40 and fixed on shaft 30, in which instance the pawls act as stop on the reversing motion of the shaft 30.

The device which I have thus described in detail affords the greatest facility for conveniently manipulating and perfectly adjusting the machine. The features and other structural elements of improvements are hereinafter claimed as the invention.

Having described my invention, I claim—

1. In a machine for making candles, a cooling-tank, molds therein, a cross-head under the tank, plungers thereon entering the molds, lifting-racks having clamping-jaws at their lower ends, the cross-head being supported in said jaws, means carried by said jaws for adjusting the cross-head at each corner, and means for raising and lowering the racks, substantially as specified.

2. In a machine for making candles, a cooling-tank, molds therein, a cross-head under the tank, plungers thereon entering the molds, lifting-racks having clamping-jaws at their lower ends, the cross-head having at each end a pillar-block supported by the said clamping-jaw and means carried by each clamping-jaw for adjusting each pillar-block, substantially as specified.

3. In a machine for making candles, a cooling-tank, molds therein, a cross-head under the tank, plungers thereon entering the molds, lifting-racks having clamping-jaws at their lower ends, the cross-head having on the under side two or more cross-rods, a pillar-block in each clamping-jaw, supporting one end of said rods, and means for adjusting the pillar-block in the jaws, substantially as specified.

4. In a machine for making candles, a cross-head for expressing the candles from the molds, the cross-head having at each edge and intermediate thereto, parallel binding and bracing strips projected below the cross-head, transverse truss-rods extended through the

sides of the end bracing-strips, through the side edges of the cross-head, and across the bottom edges of the intermediate bracing-strips, and means for governing the tension of said truss-rods, substantially as specified.

5 5. In a machine for making candles, a cross-head for expressing the candles from the molds, the cross-head having at each edge and intermediate thereto, parallel binding and
10 bracing strips projected below the cross-head, transverse truss-rods extended through the sides of the end bracing-strip, through the side edges and bottom of the cross-head, under the bottom edges of the intermediate bracing-strips, means for governing the tension
15 of said truss-rods, transverse supporting-rods under the cross-head engaging through the bracing-strips, the ends of said supporting-rods, projecting laterally beyond the cross-head, and a lifting device engaging the ends
20 of said supporting-rods, substantially as specified.

6. In a machine for making candles, a cross-head for expressing the candles from the
25 molds, the cross-head having at each edge and intermediate thereto, parallel binding and bracing strips projected below the cross-head, transverse truss-rods extended through the sides of the end bracing-strips, through the
30 side edges and bottom of the cross-head under the bottom edges of the intermediate bracing-strips, means for governing the tension of said truss-rods, transverse supporting-rods under the cross-head engaging through
35 the bracing-strips, the ends of said supporting-rods, projecting laterally beyond the cross-head, lifting-racks, each having a clamping-jaw at its lower end, a pillar-block held by each jaw, engaging the ends of the cross-head,
40 supporting-rods and means for adjusting said blocks in said jaws, substantially as specified.

7. In a machine for making candles, molds, plungers and cross-head, racks supporting the cross-head, intermeshing gears supported in
45 engagement with the racks, a driving-shaft, a worm-shaft, pawl, ratchet and worm mechanism for imparting either a power-feed or a fast feed to said expressing mechanism, substantially as specified.

50 8. In a machine for making candles, the frame, molds, plungers, cross-heads and lift-

ing-racks for the cross-head, a plate supported by the frame, intermeshing gear-wheels journaled on the plate engaging said racks, a driving-shaft, a driving gear-wheel thereon, in
55 mesh with one of the first-named gear-wheels, a worm-shaft, worm, pawl-and-ratchet mechanism adapted to be thrown into and out of driving relation with said driving-shaft, and means for rotating said shafts whereby a
60 power-feed or fast feed may be imparted to the expressing mechanism, substantially as specified.

9. In a machine of the class described, an expressing mechanism consisting of lifting-
65 racks, a stationary supporting-plate, intermeshing gear-wheels thereon engaging the racks, a driving-shaft, and intermeshing gear-wheel thereon in train with the first-named gear-wheels, a ratchet-pinion fixed on the end
70 of said driving-shaft, a worm-wheel loose on the end of said driving-shaft, pawls pivoted to the worm-wheel, and engaging said ratchet-teeth, a worm-shaft engaging said worm-wheel, and means for disengaging the pawls
75 from the ratchet-teeth, substantially as specified.

10. In a machine of the class described, an expressing mechanism consisting of lifting-
80 racks, a stationary supporting-plate, intermeshing gear-wheels thereon engaging the racks, a driving-shaft, intermeshing gear-wheels thereon, in train with the first-named gear-wheels, a ratchet-pinion fixed on the end
85 of said driving-shaft, a worm-wheel loose on the end of said driving-shaft, a pawl pivoted to the worm-wheel and engaging said ratchet-teeth, a worm-shaft engaging said worm-wheel, a disk loose on the driving-shaft adapted to be rotated thereon by hand to lift said
90 pawls from engagement with the ratchet-teeth, and means for rotating said worm and driving shafts, whereby a power-feed or fast feed may be imparted to the expressing mechanism, substantially as specified. 95

In testimony whereof I have hereunto set my hand.

SETH H. LEAVENWORTH.

Witnesses:

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