

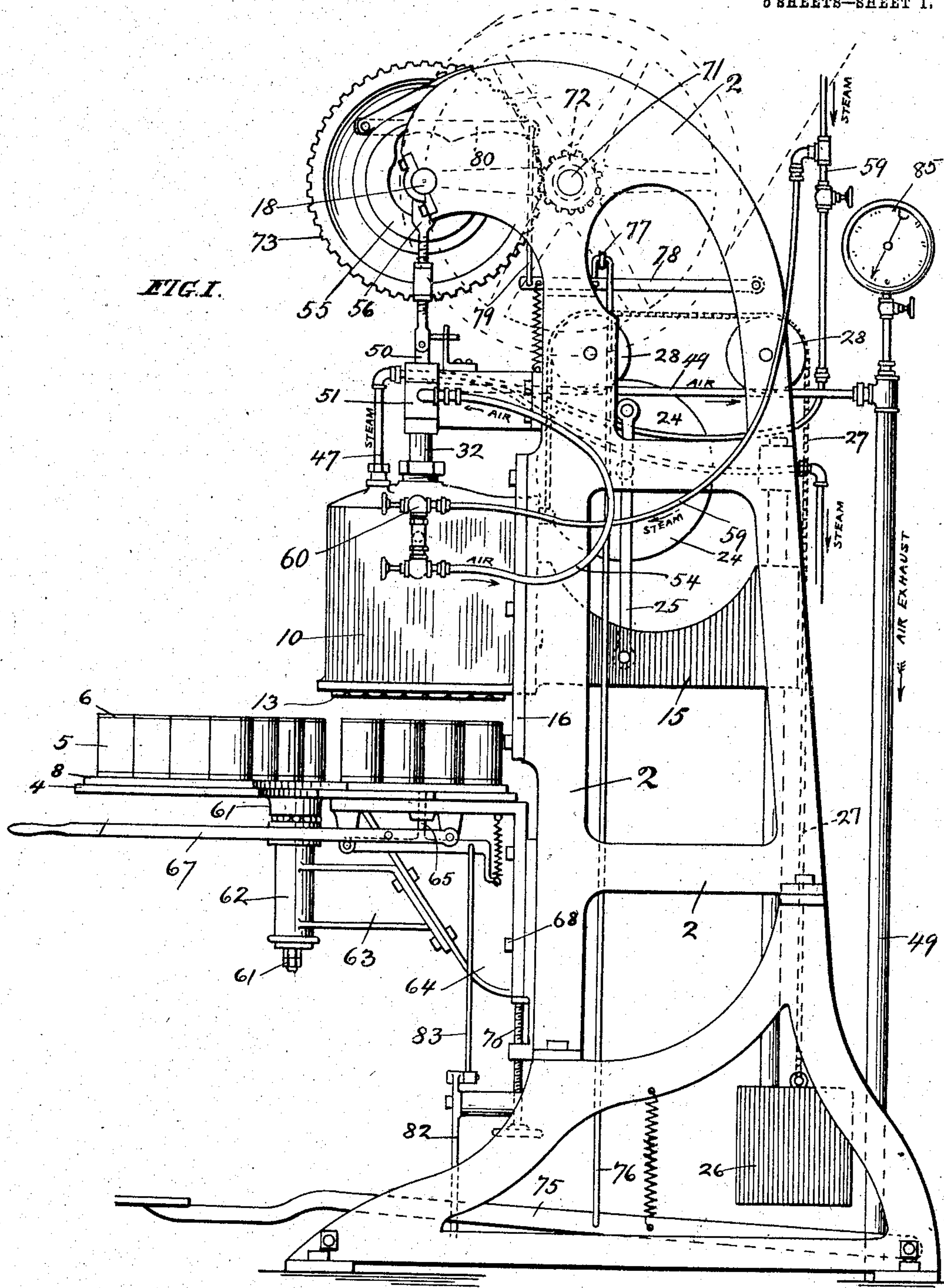
No. 781,087.

PATENTED JAN. 31, 1905.

E. NORTON & J. G. HODGSON.  
AUTOMATIC VACUUM CAN SEALING MACHINE.

APPLICATION FILED NOV. 8, 1900.

6 SHEETS--SHEET 1.



WITNESSES:  
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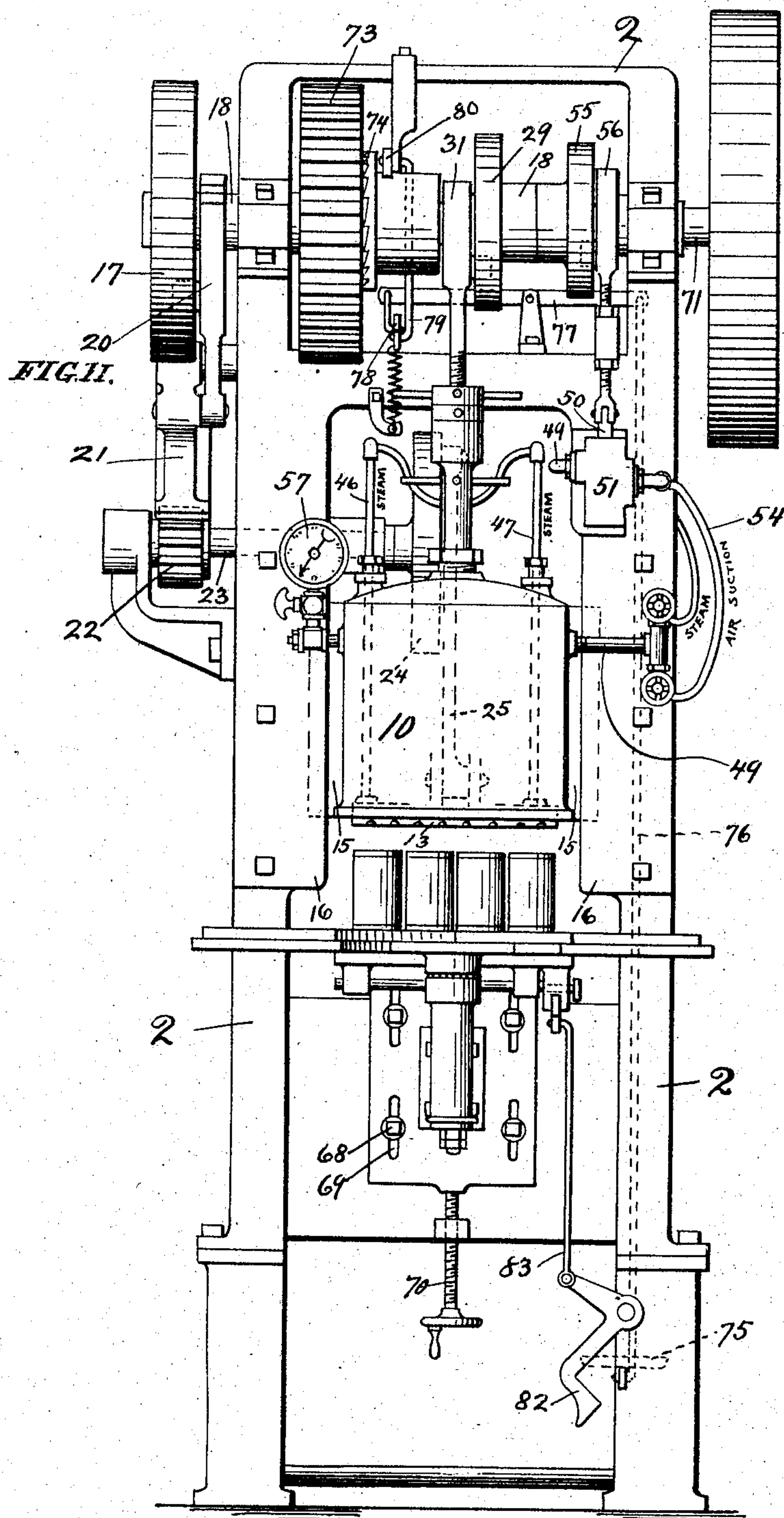
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APPLICATION FILED NOV. 9, 1900.

5 SHEETS—SHEET 2.



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5 SHEETS—SHEET 3.

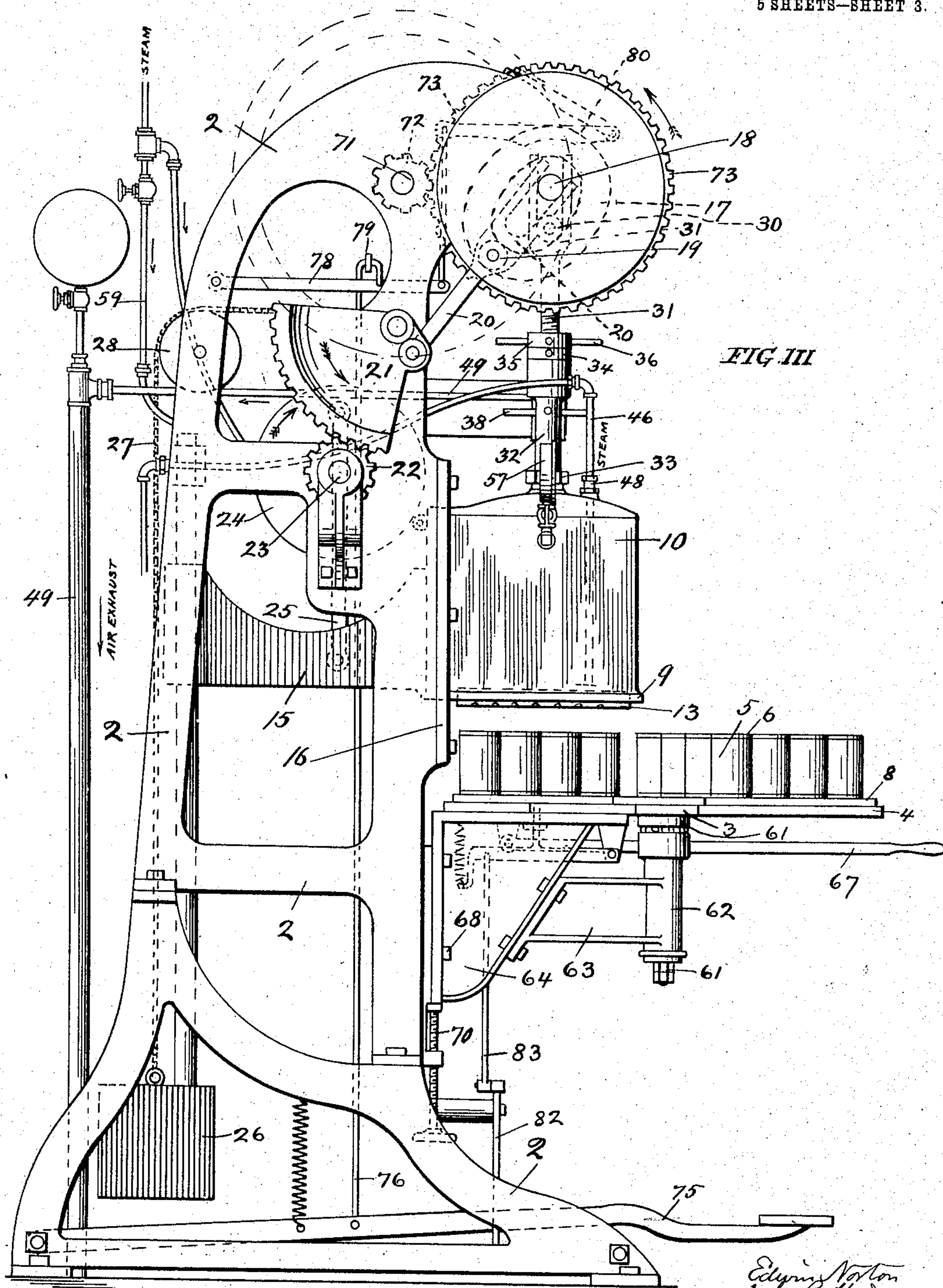


FIG. III

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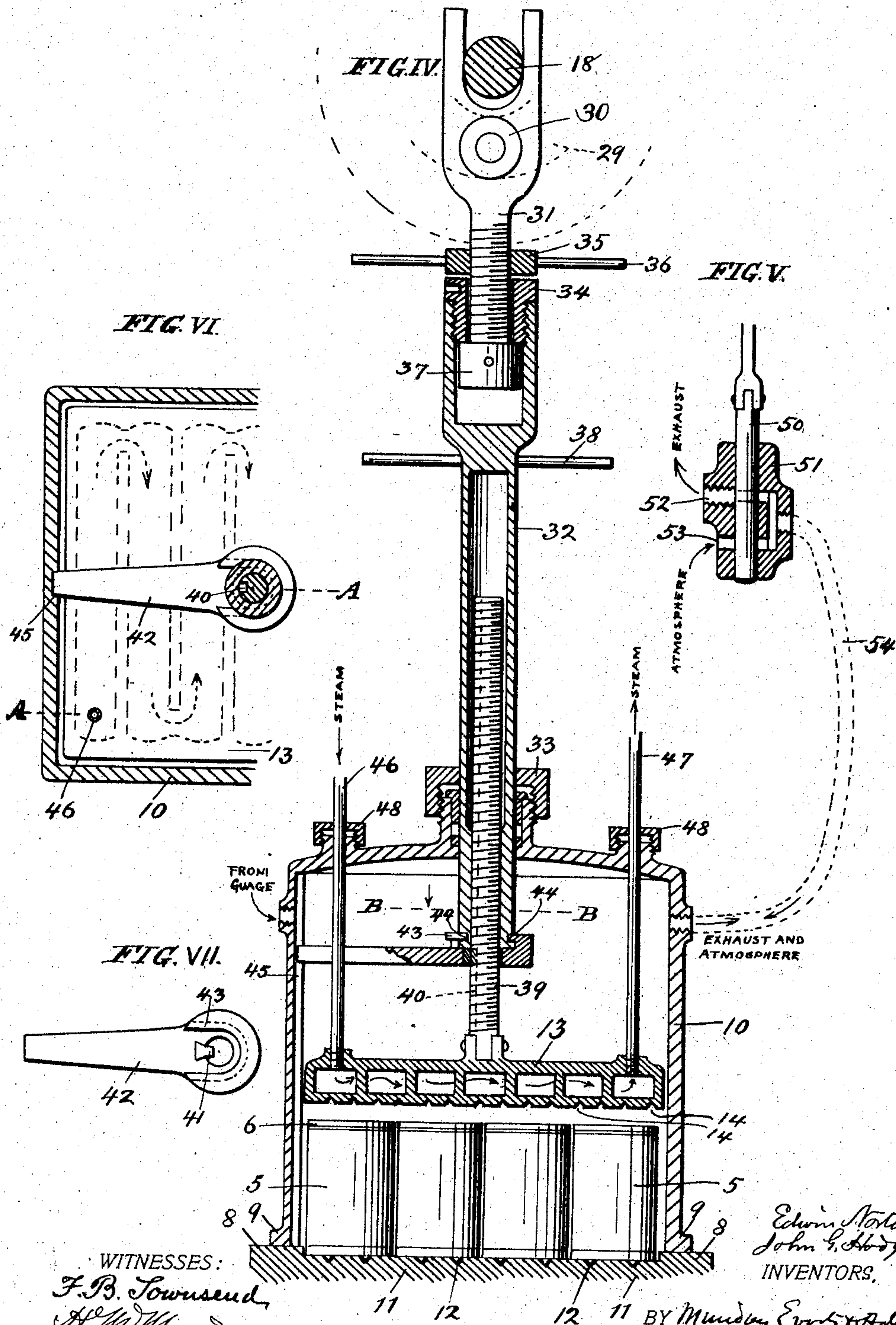
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5 SHEETS—SHEET 5.

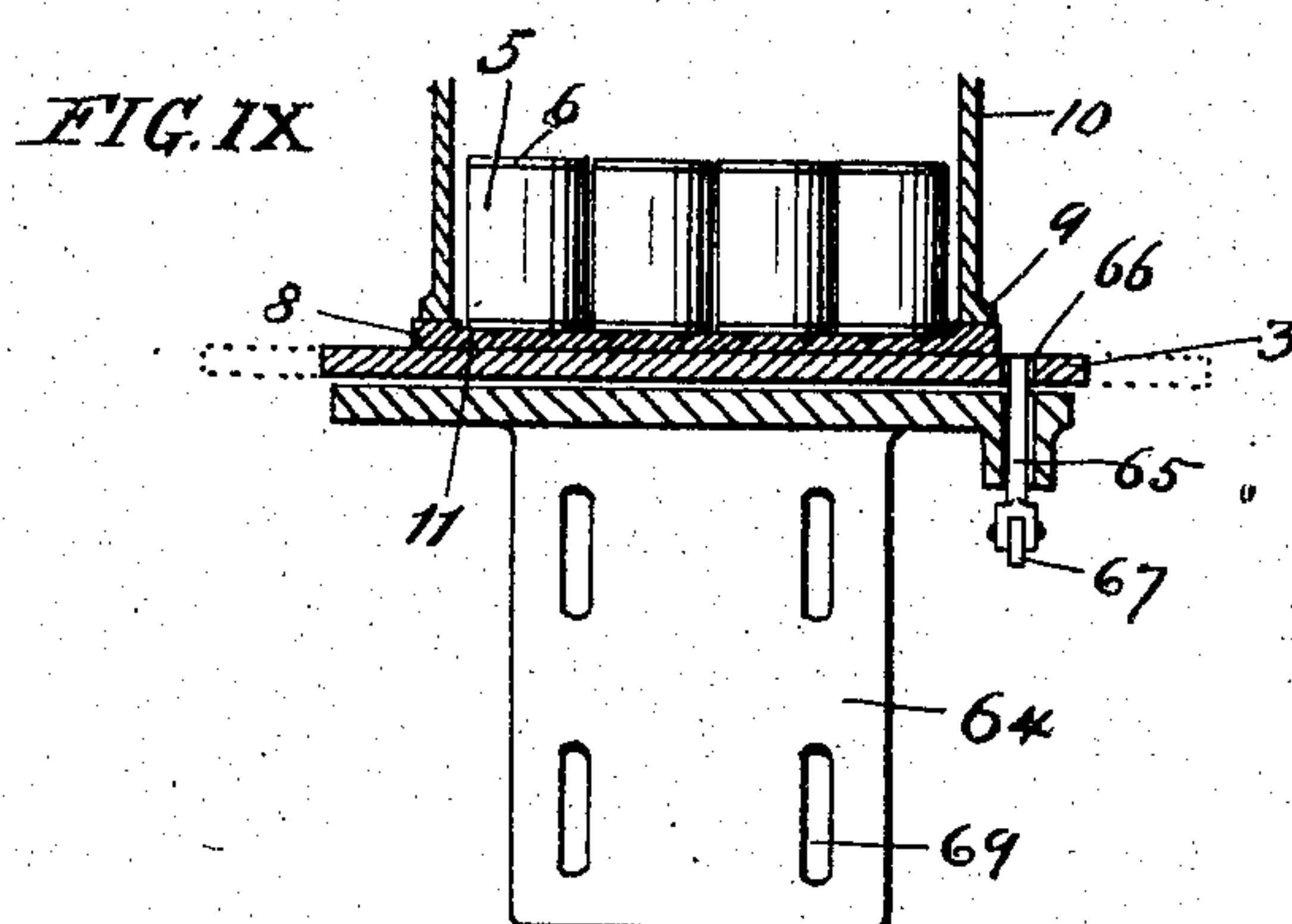
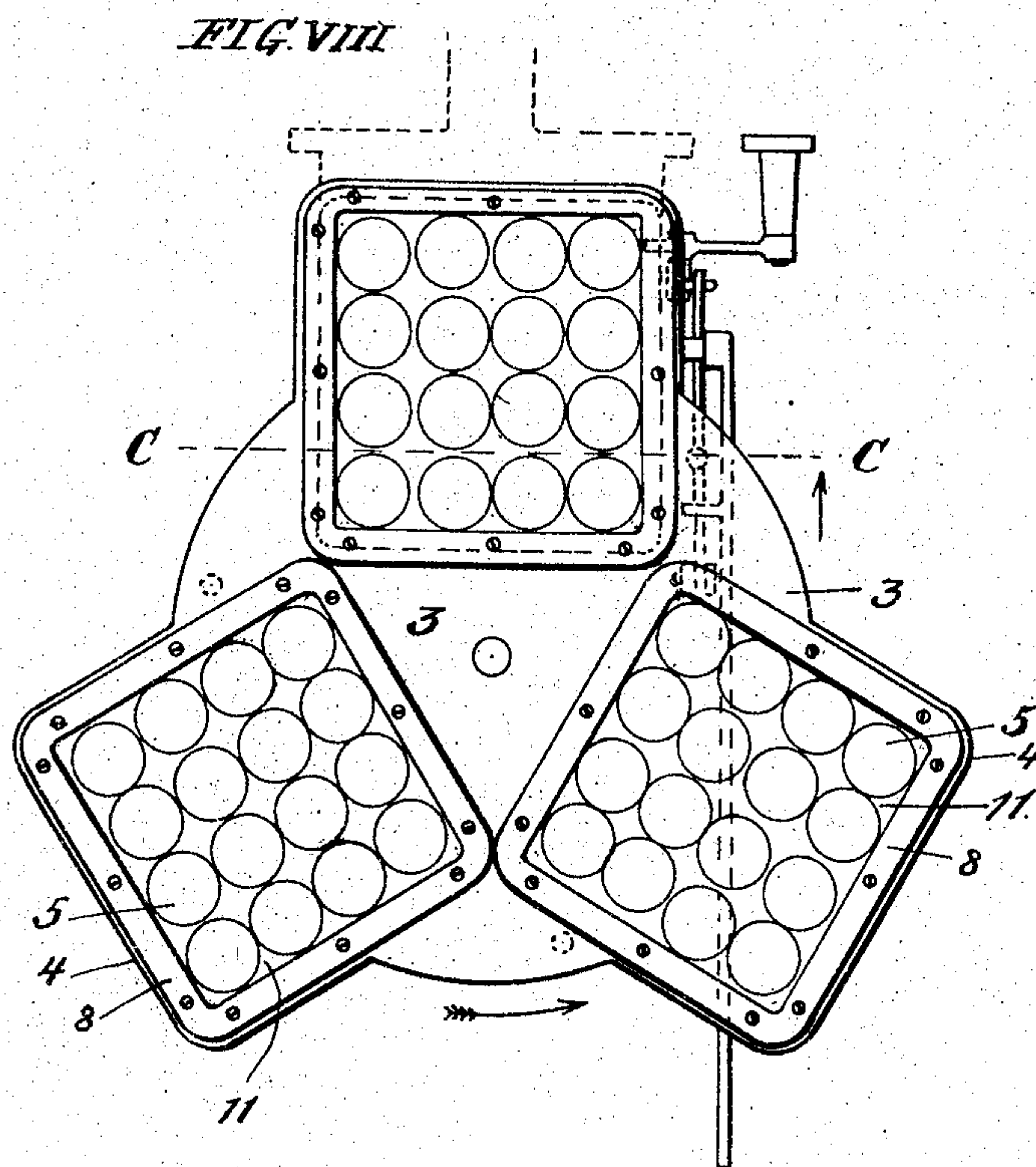
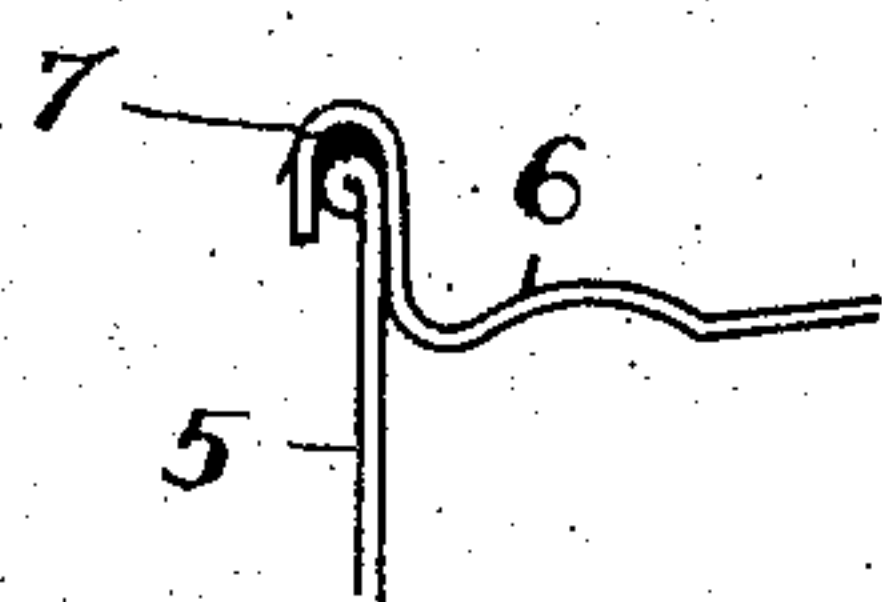


FIG. X



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# UNITED STATES PATENT OFFICE.

EDWIN NORTON AND JOHN G. HODGSON, OF MAYWOOD, ILLINOIS,  
ASSIGNORS TO THE AUTOMATIC VACUUM CANNING COMPANY,  
OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## AUTOMATIC VACUUM CAN-SEALING MACHINE.

SPECIFICATION forming part of Letters Patent No. 781,087, dated January 31, 1905.

Application filed November 9, 1900. Serial No. 35,904.

*To all whom it may concern:*

Be it known that we, EDWIN NORTON and JOHN G. HODGSON, citizens of the United States, residing in Maywood, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Automatic Vacuum Can-Sealing Machines, of which the following is a specification.

Our invention relates to machines for hermetically sealing in vacuum the covers on cans or jars for preserving food and other articles.

In the accompanying drawings, forming a part of this specification, Figures I and III are side elevations of a machine embodying our invention looking from opposite sides. Fig. II is a front elevation. Fig. IV is a detail vertical section through the receiver, taken on the broken line A A of Fig. VI. Fig. V is a detail vertical section through the valve. Fig. VI is a detail section on line B B of Fig. IV. Fig. VII is a detail plan view of the guide-arms in the receiver. Fig. VIII is a detail plan view of the rotary table and can-holders thereon. Fig. IX is a section on line C C of Fig. VIII, and Fig. X is a detail sectional view of a portion of the can and its cover.

In the drawings, 2 represents the frame of the machine.

3 is a rotary table having a series of can-holders 4 thereon, each preferably adapted to receive a number of cans or jars 5 thereon, the covers 6 of which are to be hermetically sealed thereto in vacuum by means of the packing 7, interposed between the can or jar and its cover. Each of the can-holders 4 is furnished with sealing ring or pad 8, of rubber or other suitable elastic material, which is engaged by the rim 9 of the bell or receiver 10 of an air-pump or other vacuum-producing device, so as to close the receiver air-tight and seal the can-holder to the receiver, with the cans resting thereon within the receiver, the can-holder and receiver being the one movable in respect to the other to enable the two to be clamped or pressed together. Each of the can-holders 4 is further provided with a rubber or other elastic pad 11, so as to form

a firm but slightly yielding or compressible seat for each of the cans or jars placed on the holder to compensate for irregularity in their shapes, lengths, or sizes, and thus insure a proper forcing home and seating of the covers upon each and all of the cans or jars on the holder. The bell or receiver sealing-pad 8 and the can-sealing pad 11 are preferably made integral with each other or in one piece of rubber. To prevent the vacuum or atmospheric pressure from holding the cans or jars fast on the pad 11 after the vacuum is broken in the receiver, and thus rendering it difficult to remove the sealed cans from the machine, the can-sealing pad 11 is provided with grooves 12 for admitting air under the bottom of the cans or jars as they rest on the pad.

Inside the receiver or bell 10 is a hollow steam-heated movable follower-plate or platen 13, which operates after the air has been exhausted from the receiver and from the cans or jars therein to force the cover 6 home upon the can or jar 5 and to compress, heat, and soften the packing 7, and thus hermetically seal the cover to the can or jar. The packing 7 is preferably of a rubber-cement-like composition which is softened by heat. The bottom face of the hollow heated platen 13 is furnished with channels 14 to prevent any danger of the same sticking to the covers of the sealed cans by atmospheric pressure. After the covers have thus been forced home on the cans or jars in the receiver the vacuum in the receiver is broken by admitting air thereto, and then the receiver and can-holder are separated, one or the other of which, preferably the receiver, has a reciprocating movement for this purpose of opening and closing the receiver.

The receiver or bell 10 is secured to or made integral with a slide 15, which is reciprocated up and down, as required, in suitable guides 16 on the frame of the machine and held in position to press the receiver down firmly against the padded can-holder 4 while the air is being exhausted from the receiver by means of a cam 17 on the cam-shaft 18 engaging a roller 19 on a forked lever 20, which operates



a segment-gear 21, meshing with a gear 22 on the shaft 23, that has a crank-wheel 24, connected by a link 25 with said receiver-slide 15. A weight 26, connected to the receiver by a chain 27 passing over pulleys 28, counterbalances the receiver and insures smoothness of movement in sealing the receiver to each of the can-holders in turn.

The hollow platen or follower-plate 13 is given its required up-and-down movement by means of a cam 29 on the cam-shaft 18 engaging a roller 30 on the forked link 31, which is adjustably connected to the platen 13 through the sleeve 32, extending through a stuffing-box 33 into the receiver. The link 31 is connected to the sleeve 32 by a hollow screw 34 in the sleeve 32, jam-nut 35, having handle 36 and collar 37 on the threaded lower end of the link 31. The sleeve 32 has a handle 38 for turning it and is adjustably connected to the platen by a screw-stem 39, having a spline 40 engaging a projection 41 on the guide-arm 42, which has a flange 43 fitting in an annular groove 44 in the lower end of the sleeve 32. The guide-arm 42 fits at its outer end in a vertical groove 45 in the receiver, which thus prevents the platen 13 and the screw-stem 39, secured thereto, from turning.

Steam or other fluid to heat the hollow platen 13 is admitted thereto through the steam inlet and outlet pipes 46 47, which pass through suitable stuffing-boxes 48 in the receiver to permit the necessary reciprocating of the platen in respect to the receiver.

49 is the air-exhaust pipe leading from the receiver to a vacuum-pump or other means for exhausting the air from the receiver and from the cans or jars contained therein, and 50 is the valve. The valve-shell 51 has two ports 52 and 53, the latter communicating with the outer air. The section or portion 54 of the exhaust-pipe between the receiver and the valve-shell is preferably a flexible pipe to permit the up-and-down movement of the receiver. To prevent sudden suction of the air from the receiver and consequent disturbing of the covers resting loosely on the cans or jars or withdrawal of the contents of the cans therefrom, the valve 50 is given a gradual movement in opening the exhaust-port 52, this being done by a cam 55 on the cam-shaft 18 operating through the adjustable connecting-link 56. A gage 57 indicates to the operator the degree of vacuum secured. A steam-pipe 59, having valve 60, connects with the pipe 49 leading to the receiver, so that steam may be occasionally admitted thereto to clean or blow it out.

The can-holder table 3 has an upright shaft or pivot 61 turning in a bearing 62 on the bracket 63, and the frame 2 has a firm shelf or support 64 adjustably secured thereto to support the table against the thrust or downward pressure of the bell or receiver 10 in sealing each can-holder to and within the re-

ceiver or bell. The table is locked with its can-holder sealing-pad in proper registry with the bell by means of spring bolt or lock 65, which enters a hole 66 in the table and is withdrawn to permit the table to be again turned by means of a lever 67. The supporting-shelf 64 is adjustably secured to the frame by bolts 68, passing through slots 69 in the back or upright portion of said shelf, and the same is adjusted up and down, as may be required, for operating upon cans or jars of different sizes by a hand-screw 70.

One revolution of the cam-shaft 18 operates automatically to first depress the receiver or bell 10 and seal it to the can-holder, then to gradually open the exhaust-valve and hold it open to its full extent for the required time to permit a vacuum to be produced within the receiver and the air to be effectually withdrawn from the cans or jars therein through their open mouths or upper ends, upon which the covers loosely rest, then to move the heated platen or follower down upon the covers, and thus force them firmly home upon the cans or jars and heat and soften the packing between the covers, and thereby hermetically seal the covers to the cans or jars, then to open the air-inlet port to the receiver and break the vacuum therein, and thus cause the atmospheric pressure on the outside of the cans or jars to seal and secure the covers thereto by a vacuum-seal, and, finally, to withdraw the receiver and platen from the vacuum-sealed cans and permit them to be removed from the machine. The required motion is communicated to the cam-shaft 18 from the driving-shaft 71 through a gear 72 thereon, which meshes with a loose gear 73 on the cam-shaft, to which loose gear the cam-shaft is connected and disconnected after one complete revolution by any suitable clutch mechanism, as 74, which is operated to clutch the shaft to the loose gear by a clutch lever or treadle 75 through suitable connections 76, 77, 78, 79, and 80. To prevent the cam-shaft from being clutched to its loose driving-gear 73 except when the table 3 is locked in position for one of its can-holders 4 to properly register with the bell or receiver 10, the table-lock or its operating-lever is provided with a safety-trip 82, connected thereto by a link 83, which prevents the clutch treadle or lever 75 from being depressed except when the table-lock is in place to lock the table in position.

In operation while the covers are being hermetically sealed to the cans or jars on one of the holders 4 cans or jars are placed on another holder, and the sealed cans or jars are removed from the third holder, so that the sealing may be done very rapidly and cheaply.

The steam-gage 85 indicates the degree of vacuum produced by the air-pump, while the gage 57 indicates the degree of vacuum secured in the receiver at each operation upon each lot of cans on the holder.



We claim—

1. In a machine for vacuum-sealing cans or jars, the combination with a receiver open at its lower end, of a series of flat can-holders, an intermittently-movable carrier upon which the can-holders are mounted, and means for sealing the can-holders, each in turn, and the receiver together, substantially as specified.

2. In a machine for vacuum-sealing cans or jars, the combination with a receiver open at its lower end, of a can-holder plate, a movable carrier upon which the can-holder plate is mounted, means for forcing and sealing together the holder and receiver, and a sealing-pad between the can-holder and receiver, substantially as specified.

3. In a machine for vacuum-sealing cans or jars, the combination with a reciprocating receiver having an exhaust-pipe connected therewith, of a flat can-holder having a sealing-pad, and an intermittently-movable carrier upon which the can-holder is carried, means for automatically reciprocating the receiver, and means for operating the carrier, substantially as specified.

4. The combination with a can-holder plate having an elastic pad thereon for a plurality of cans or jars to rest upon at a time, of a bell-shaped receiver and a follower-plate or platen within the receiver for pressing a plurality of covers home upon the cans or jars, the lower edge or rim of said bell-shaped receiver engaging said elastic pad to hermetically close the receiver, substantially as specified.

5. The combination with a can-holder of a receiver and a heated follower-plate or platen within the receiver bearing against the rim of the cover to force the same home on the can and soften the packing between the can and the cover at the rim thereof, substantially as specified.

6. The combination with a can-holder of a receiver and a hollow steam-heated follower-plate or platen within the receiver bearing against the rim of the cover to force the same home on the can and soften the packing between the can and the cover at the rim thereof, substantially as specified.

7. In a machine for vacuum-sealing covers to cans or jars, the combination with a receiver of a heated plate or platen for forcing the covers home on the cans or jars and heating and softening the packing between the cover and the cans or jars, substantially as specified.

8. The combination with an intermittently-movable table having a series of flat can-holders provided each with a sealing-pad and adapted each to receive and support a plurality of cans or jars thereon, of a bell-shaped receiver coöperating in turn with each of the can-holders, substantially as specified.

9. The combination with a movable table having a series of flat can-holders, provided each with a sealing-pad and adapted each to

receive and support a plurality of cans or jars thereon, of a bell-shaped receiver mounted on the frame of the machine and having an air-exhaust and adapted to inclose or surround the cans or jars on the holders and coöperating in turn with each of the can-holders, substantially as specified.

10. The combination with an intermittently-rotating table having flat can-holders furnished each with a sealing-pad and adapted to receive and support a plurality of cans or jars thereon, of a reciprocating receiver adapted to inclose the cans or jars on the holders and having an air-exhaust pipe connected therewith, a movable platen within the receiver and means for reciprocating the receiver, substantially as specified.

11. The combination with a rotary table having can-holders furnished with sealing-pads of a receiver and a reciprocating hollow steam-heated platen within the receiver, substantially as specified.

12. The combination with a flat can-holder of a bell or receiver, a sealing pad or ring between the two, means for automatically forcing together and separating the receiver and holder, and a carrier for moving the can-holder into registry with the receiver, said receiver being relatively fixed, substantially as specified.

13. The combination with a flat can-holder of a bell or receiver having an exhaust, a sealing pad or ring between the two, means for automatically forcing together and separating the receiver and holder, a movable platen within the receiver, and a carrier for moving the can-holder into registry with the receiver, said receiver being relatively fixed, substantially as specified.

14. The combination with a flat can-holder of a bell or receiver, a sealing pad or ring between the two, means for automatically forcing together and separating the receiver and holder, a movable platen within the receiver, means for automatically operating the platen, and a carrier for moving the can-holder into registry with the receiver, said receiver being relatively fixed, substantially as specified.

15. The combination with a flat can-holder of a bell or receiver, a sealing pad or ring between the two, means for automatically forcing together and separating the receiver and holder, a movable platen within the receiver, and means for automatically operating the platen, an exhaust-valve and means for automatically operating said valve, and a carrier for moving the can-holder into registry with the receiver, said receiver being relatively fixed, substantially as specified.

16. The combination with a can-holder of a sealing-pad, a reciprocating receiver, a movable hollow heated platen, a valve for the receiver, and a cam-shaft furnished with cams for automatically operating said receiver, platen and valve, substantially as specified.



17. The combination with a rotary table having can-holders of a receiver and means for locking the table in position for its can-holders to register with the receiver, and a reciprocating plate or platen within the receiver for forcing the covers home on the cans, substantially as specified.
18. The combination with a rotary table having can-holders of a receiver and means for locking the table in position for its can-holders to register with the receiver, and means for automatically closing together and separating the holder and receiver, and a reciprocating plate or platen within the receiver for forcing the covers home on the cans, substantially as specified.
19. The combination with a rotary table having can-holders of a receiver and means for locking the table in position for its can-holders to register with the receiver, and means for automatically closing together and separating the holder and receiver, and a safety trip or device to prevent the closing of receiver and holder except when the table is locked in position, substantially as specified.
20. The combination with a can-holder of a sealing-pad, a reciprocating receiver, a movable hollow heated platen, a valve for the receiver, and a cam-shaft furnished with cams for automatically operating said receiver, platen and valve, a power-gear loose on said cam-shaft and a clutch and clutch lever or treadle for imparting a single revolution at a time to said cam-shaft, substantially as specified.
21. The combination with a rotary table having can-holders thereon of a reciprocating receiver, a reciprocating platen within the receiver, a valve, a cam-shaft and cams for operating said receiver, platen and valve, a lock-bolt for locking the table in position for its can-holders to register in turn with the receiver, a loose power-gear on the cam-shaft, a clutch and clutch lever or treadle, and a safety trip or device to prevent the operation of said clutch lever or treadle except when the table is locked in position, substantially as specified.
22. The combination with a flat can-holder, of a receiver having an open lower end and adapted to inclose a plurality of cans or jars at a time, a movable follower-plate or platen within the receiver adapted to bear and press against the rims of a plurality of can-covers, and an elastic pad or seat adapted to receive and support a plurality of cans for the cans or jars to rest upon when in the receiver, to compensate for slight inequalities in length or shape of the cans or jars, the lower edge or rim of said bell-shaped receiver engaging said elastic pad to hermetically close the receiver, substantially as specified.
23. The combination with a can-holder plate having a sealing-pad thereon, of a reciprocating receiver having an air-exhaust and adapted to inclose a plurality of cans or jars at a time, and a can seat or pad adapted to receive and support a plurality of cans said can seat or pad having channels or grooves to prevent the cans or jars adhering thereto by atmospheric pressure when the vacuum in the receiver is broken, said receiver having an open lower end engaging said pad on said can-holder plate, substantially as specified.
24. The combination with a rotary table having can-holder plates furnished with sealing-pads of a receiver having an air-exhaust and an open lower end and adapted to inclose and surround a plurality of cans or jars at a time, and a shelf or support beneath the table to resist the thrust or pressure of the receiver, and a reciprocating plate or platen within the receiver for forcing the covers home on the cans, substantially as specified.
25. The combination with a can-holder plate having an elastic pad for the cans or jars to rest upon, of a receiver adapted to inclose and surround the cans and having an open lower end engaging said plate, and a follower-plate or platen within the receiver and adapted to press against a plurality of covers, and an adjustable screw-threaded connecting stem and sleeve for adjusting the position of the platen in respect to the receiver, the lower edge or rim of said receiver engaging said pad to hermetically close the receiver, substantially as specified.
26. The combination with a receiver having an air-exhaust and adapted to inclose a plurality of cans or jars at a time, of a can-holder plate, a follower-plate or platen within the receiver and adapted to press against a plurality of covers, and an elastic or yielding pad between said plates to compensate for inequalities in the length of the cans, the lower edge or rim of said receiver engaging said pad to hermetically close the receiver, substantially as specified.
27. The combination with a receiver having an air-exhaust and adapted to inclose a plurality of cans or jars at a time, of a movable follower-plate or platen within the receiver and adapted to press against a plurality of covers, and an elastic seat or pad for the cans or jars to rest upon when in the receiver to compensate for slight inequalities in length or shape of the cans or jars, said pad having openings or grooves to prevent the cans sticking thereto, the lower edge or rim of said receiver engaging said pad to hermetically close the receiver, substantially as specified.
28. The combination with a reciprocating receiver having an air-exhaust and adapted to inclose a plurality of cans or jars at a time, of a movable follower-plate within the receiver and adapted to press against a plurality of covers, means for automatically operating the said follower-plate and an adjustable screw-threaded stem and sleeve connected to said follower-plate, substantially as specified.
29. The combination with a receiver, having



an air-exhaust, and within which a plurality of cans or vessels may be placed, of a movable follower-plate or platen within the receiver for simultaneously pressing the covers upon a plurality of cans or vessels, and a yielding pad or device to compensate for inequalities and cause the covers to be properly seated upon the cans or vessels, the lower edge or rim of said receiver engaging said pad to hermetically close the receiver, substantially as specified.

30. In a machine for vacuum-sealing cans or jars, the combination with a can-holder plate adapted to support thereon a plurality of cans, a reciprocating bell-shaped receiver open at its lower end and adapted to inclose a plurality of cans, a reciprocating slide connected to said receiver, guides for said slide, a flexible air-

exhaust pipe connected to said receiver, means for reciprocating said receiver, a valve for said exhaust, and means for opening and closing said valve, substantially as specified.

31. The combination with a bell-shaped reciprocating receiver open at its lower end, of a horizontally-moving can-holder plate adapted to move under the receiver with cans thereon and be sealed thereto, and a sealing-pad interposed between said receiver and can-holder, the lower edge or rim of said receiver engaging said pad to hermetically close the receiver, substantially as specified.

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