

No. 667,538.

Patented Feb. 5, 1901.

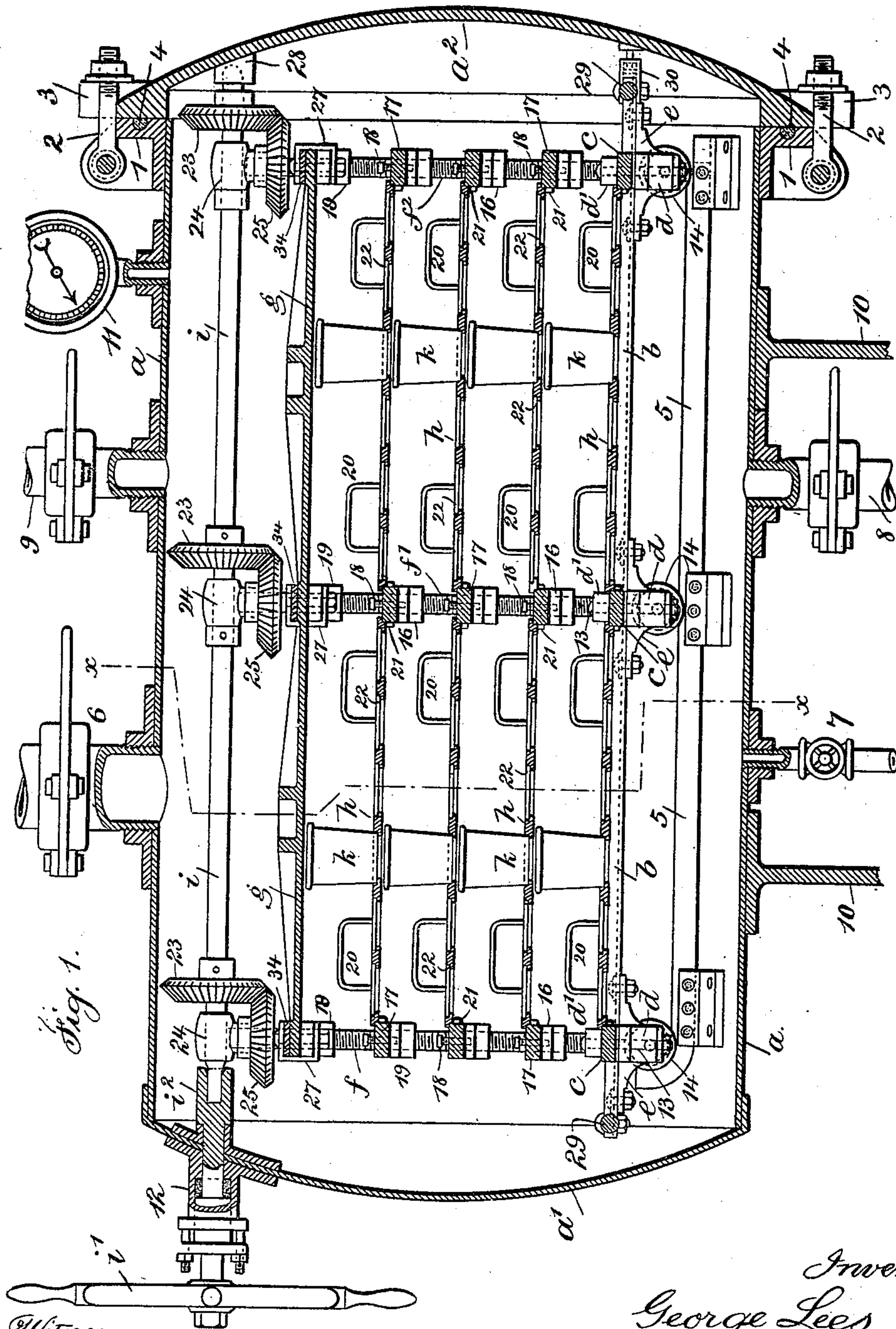
G. LEES.

APPARATUS FOR CANNING FOOD.

(Application filed Oct. 11, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

Fig. 2.

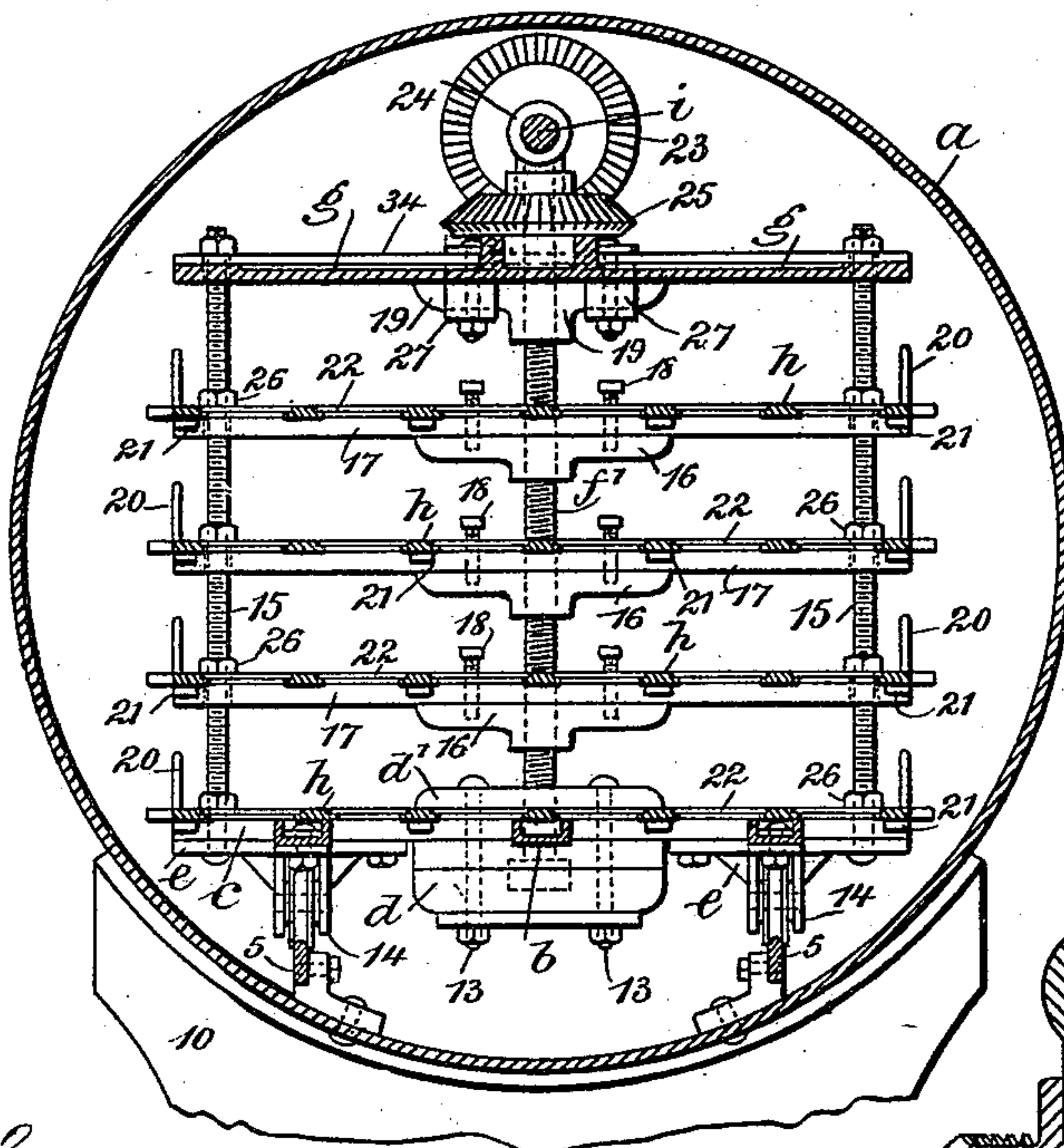


Fig. 3.

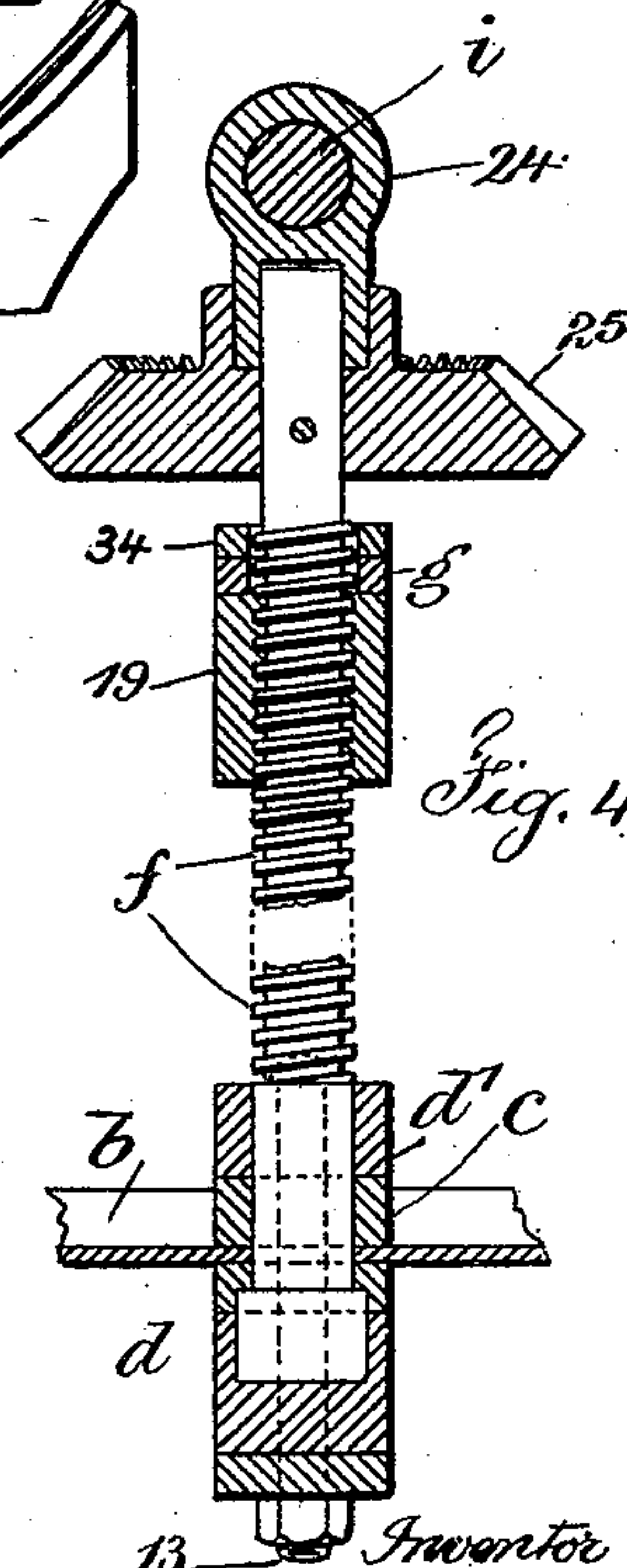
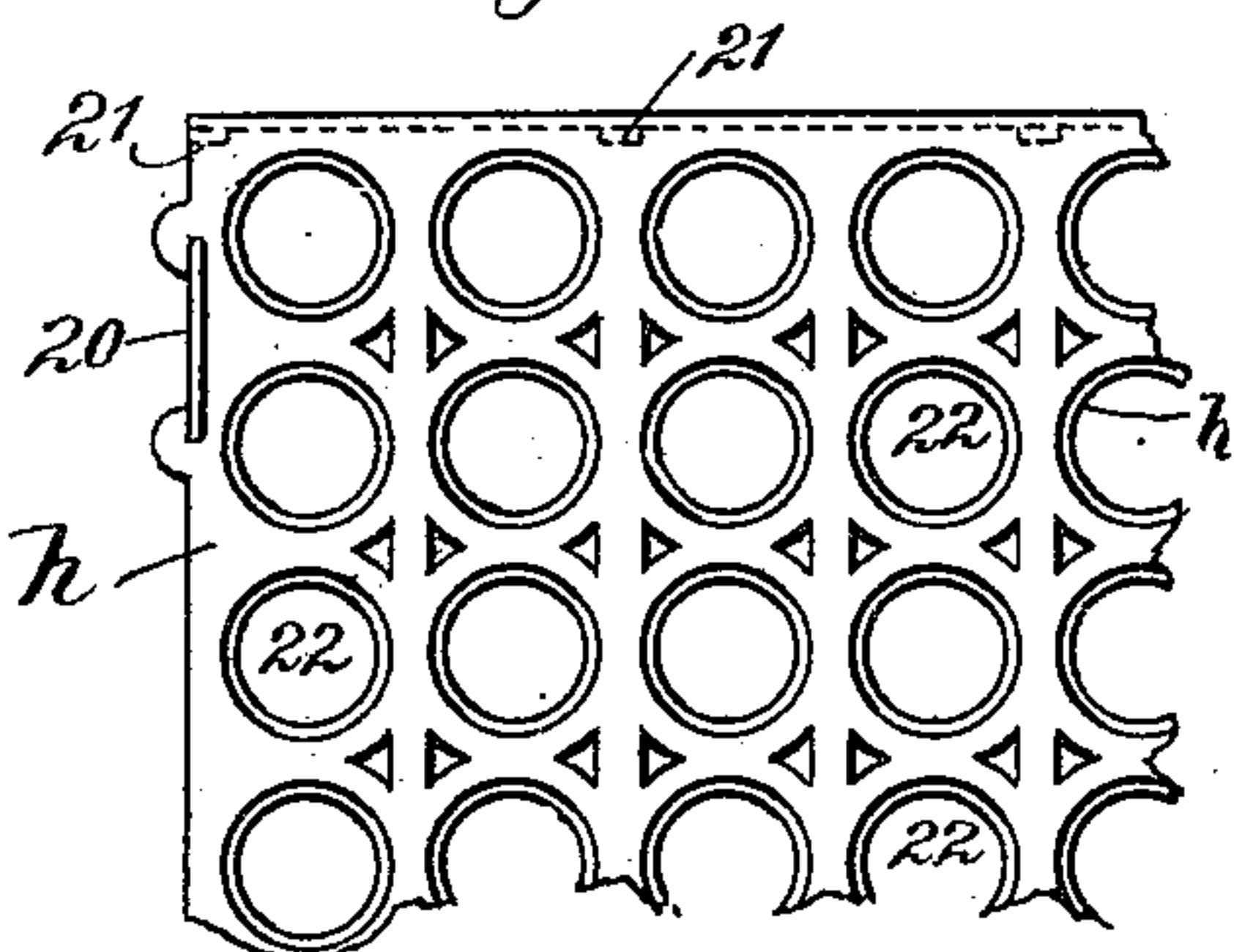


Fig. 4.

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APPARATUS FOR CANNING FOOD.

SPECIFICATION forming part of Letters Patent No. 667,538, dated February 5, 1901.

Application filed October 11, 1900. Serial No. 32,692. (No model.)

To all whom it may concern:

Be it known that I, GEORGE LEES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented an Improvement in Apparatus for Canning Food, of which the following is a specification.

My invention is designed as an improvement upon the devices shown and described
10 in my renewed application for Letters Patent, Serial No. 19,624, filed June 8, 1900, and duly reallocated June 15, 1900.

My present invention, the same as that of my former application, relates to devices for
15 exhausting the air from cans containing various articles or kinds of food for their preservation and in which cans a vacuum was formed and the can sealed by atmospheric pressure.

20 My present invention has for its object the improvement of the devices for receiving the cans and holding the same and the covers thereon during the operation of exhausting the air and sealing the cans.

25 In carrying out my invention I employ a vacuum-tank in which is a track and a carriage for receiving the cans charged with the articles of food, the carriage being run in and out of the tank upon the track, and I employ
30 devices of peculiar form for receiving and supporting the cans and for bringing the superposed groups of cans down upon one another and holding the same with their covers securely in place before the air is admitted
35 into the cylinder or tank. I also employ special devices for supporting the trays of cans and for progressively and evenly lowering the same to place and also special devices for actuating the lowering devices, so that
40 they all operate in unison, all of which are hereinafter more particularly set forth.

In the drawings, Figure 1 is a vertical longitudinal section representing my improvements. Fig. 2 is a cross-section at the line
45 xx of Fig. 1. Fig. 3 is a partial plan view of one of the trays for receiving and supporting the cans; and Fig. 4 is a partial section and elevation, in large size, of the devices for lowering and raising the superposed groups
50 of cans.

The vacuum-tank comprises a cylinder a ,

which may be of any desired length and is provided with a closed end a' and an annular flange 1 at the open end, said flange in its surface being provided with a gasket 4, preferably of rubber. The removable end a^2 is
55 preferably hinged to the annular flange 1, the said end being provided around its periphery at spaced-apart intervals with forked lugs 3, and the annular flange is provided with swinging arms 2, pivoted to supports extending radially from the said flange and agreeing in position with the forked lugs 3, the said arms having threaded ends and nuts and being
60 adapted to swing over between the forked lugs, so that the nuts bear against the outer surfaces of the said lugs to hold the end a^2 against the flange 1 and close the vacuum-tank. Within the tank is a track 5, the innermost ends of which are upwardly curved
70 to form stops for the wheels of the carriage-body. Said tracks are suitably supported from the cylinder a . I provide the vacuum-tank with an air-exhaust pipe and valve 6, a steam-inlet pipe and valve 7, a fluid-inlet
75 pipe and valve 8, and a fluid-exhaust pipe and valve 9, and I support the vacuum-tank by suitable frames 10, placed beneath the tank, and a vacuum-gage 11 is employed to advantage and a stuffing-box at 12 in the closed end.
80

The carriage-body is composed of parts securely connected together. These parts comprise the longitudinal U-shaped bars b and three transverse solid bars c , extending across the bars b and let into the flanges thereof and
85 securely connected thereto. At the longitudinal center and the respective ends of the carriage-body I provide blocks $d d'$ above and below the bars $b c$, and tie-bolts 13 securely connect the said blocks and bars together at these
90 places. I also provide X-brackets e upon opposite sides of the carriage-body and coming beneath the outer of the three bars b . These brackets are securely connected to the under surfaces of the bars b and c , said brackets
95 carrying wheels 14, resting upon the track 5, and by means of which wheels and track the carriage-body is supported and moved in and out of the vacuum-tank.

At the respective ends of the carriage-body
100 I prefer to place bars 29, forming handles by which the carriage and the load of superposed

cans thereon are readily drawn back and forth upon the track 5. There are screw-standards 15 in three pairs at the ends and central portion of the carriage-body, the lower ends of which standards pass through and are secured to the bars *c*, and in the longitudinal center of the carriage-body and between the pairs of screw-standards there are operating-screws $f f' f^2$, with enlarged bases or heads in the blocks *d*, which enlarged heads form a fixed point of support and prevent the screws being separated from the said blocks when pressure is applied. These operating-screws $f f' f^2$ pass through brackets 16, to which are connected rest-rails 17 by screw-pins 18, the said brackets and rails extending transversely of the carriage-body and forming supports for the several trays *h*. At the rear of the carriage-body and preferably on the axial center thereof I place a cylinder 30 and on the inner surface of the removable end α^2 a piston, the parts acting together as an air or spring cushion to force the carriage-body and its load when within the tank against the curved ends of the rails 5 and hold the same in place, so that there is no movement of the carriage-body and its load upon the track while the goods within the cans are being treated within the vacuum-tank.

At the upper ends of the operating-screws $f f' f^2$ there are brackets 19, and the press-plate *g*, which extends the full length and width of the carriage, is secured to the several brackets 19 by bolts which pass through the brackets and through U-shaped straps 27, which straps assist in connecting the parts securely together. The trays *h* are alike and are each provided with handles 20 and offset recesses 22 for the cans and into which the cans *k* set, and the under opposite edges of the said trays *h* are grooved or offset and provided with guide-lugs 21. These trays, when the carriage is out of the vacuum-tank, are slid sidewise in and out of the carriage, the grooves or offsets in the respective opposite edges fitting the corners of the rest-rails 17 and the guide-lugs 21 coming against the surface of the said rest-rails, so that the trays are supported upon the rest-rails, with their load of cans, and by the handles 20 are readily removed from or placed upon the carriage. Figs. 1 and 2 of the drawings show the various trays in position.

A central horizontal shaft *i* is located above the press-plate *g* of the carriage, said shaft passing through two-part sleeves 24 on the upper ends of the operating-screws $f f' f^2$ and squared at its forward end and received into a coupling end i^2 upon the shaft of the wheel i' , which shaft passes through the stuffing-box 12, and the rear end of the shaft *i* is rounded and is received into a recessed boss 28 on the inner surface of the removable end α^2 . In this way bearings are formed for the respective ends of the shaft, and the shaft is rotated by the wheel i' . Keyed to this shaft are the bevel-gears 23, adjacent to the sleeves 24,

and these gears mesh with bevel-gears 25, surrounding and keyed to the upper ends of the screws $f f' f^2$, each of said gears 25 having an upward-projecting collar receiving one part of each of the two-part sleeves 24 and forming guides for the parts of the said sleeves 24 within the said collars and around the upper end of the said operating-screws, the said gears 25, with the screws, rotating around and within the parts of the said sleeve, as will be seen specially with reference to Fig. 4.

The screw-standards 15 are provided with adjustable stop-nuts 26 so placed as to limit the upward position of the rest-rails 17 and the cans held upon the trays supported by said rails, it being possible to depress or lower the said rest-rails and trays below the said nuts 26 and also to lower the press-plate *g*, but not to raise said parts above the said nuts.

In the operation of the hereinbefore-described device and for the purpose of closing the cans by covers held by atmospheric pressure the end α^2 of the vacuum-tank is swung to one side and the carriage-body is upon a track outside of the vacuum-tank. The trays are filled with cans, upon which the covers rest loosely. The trays, with the cans, are then slid into the carriage, resting upon the rails 17, the various groups of cans being separated by a small space from the trays with the cans that come next above. The carriage, with the cans, is then rolled into the tank upon the track, the squared end of the shaft *i* placed in the coupling i^2 , the end α^2 closed, so that the rounded end of the shaft *i* is within the boss 28, and the end hermetically closed. In this condition the articles of food in the cans may be steam-cooked by steam admitted at the inlet pipe and valve 7, or they may be treated by a pickling or other preservative fluid introduced by the pipes and valves 8 or 9 and removed therefrom thereby. After the operations for treating the articles of food in the cans have been performed the air is exhausted from the tank by suitable devices through the air-exhaust pipe and the valve 6 closed to maintain a vacuum in the tank. The wheel i' , its shaft, the coupling thereto, and the shaft *i* are then turned, operating the gears 23 and 25 and turning the screws $f f' f^2$ to first lower all of the trays and cans except the lowermost, so as to bring the upper trays down upon the covers of the under cans and finally the press-plate down upon the covers of the uppermost cans to hold all of the can-covers down tightly upon the can-bodies. After this the valve of the air-pipe 6 is opened and air admitted, so that the atmospheric pressure within the cylinder is the same as outside, the pressure sealing the covers upon the cans and perfecting the closure of the cans. The wheel i' , the shaft *i*, and the gears 23 and 25 are then turned in the reverse direction, so as to raise all of the trays and cans except the lowermost trays and cans to

separate the various trays and cans from one another and the press-plate *g* from the uppermost series of cans. The end a^2 is then released and swung upon its hinges. The carriage is then drawn out and the trays, with the sealed cans, removed, so that fresh cans can be placed on the trays to repeat the operations hereinbefore described.

Above the press-plate *g* and transversely of the center and ends of the same I prefer to employ bars 34, through which pass the upper ends of the screw-standards 15 and operating-screws $f f' f^2$. These bars 34 hold and maintain the screw-standards 15 in relation to one another and to the operating-screws.

I claim as my invention—

1. In an apparatus for canning food, the combination with the cylinder, a removable end, a track within the cylinder and a carriage movable upon said track, of devices for receiving and supporting the superposed groups of cans, means for guiding said receiving and supporting devices and means for progressively and evenly lowering the same to place for bringing the cans down upon one another and holding the same with their covers securely in place, and devices for actuating the lowering devices so that they will all operate in unison, substantially as set forth.

2. In an apparatus for canning food, the combination with the cylinder, a removable end, a track within the cylinder and a carriage movable upon said track, of a series of removable trays for receiving and supporting the superposed groups of cans, standards connected to and supported by the carriage and devices connected to the standards for receiving and holding the trays and the cans, devices connecting with and for raising and lowering the said tray-supporting devices and movable with the carriage, and means attached to and movable with the carriage and other and separate means extending outside of the tank and adapted to connect therewith, whereby the trays and cans are lowered or raised at the will of the operator and from outside of the cylinder, substantially as set forth.

3. In an apparatus for canning food, the combination with the cylinder, a removable end, a track within the cylinder, and a carriage movable upon said track, of screw-standards in pairs connected to the carriage, operating-screws intermediate to the screw-standards and connected to the said carriage, devices serving as supports and through which the said standards and operating-screws pass, the said devices being raised and lowered by the said screws, trays for supporting the cans resting upon the said devices, a shaft and gears for rotating the screws and means outside of the cylinder coupled with the said shaft for operating the same, substantially as set forth.

4. In an apparatus for canning food, the combination with the cylinder, a removable

end, a track within the cylinder and a carriage movable upon said track, of screw-standards in pairs connected to the carriage, operating-screws intermediate to the screw-standards and connected to the said carriage, rest-rails extending transversely of the carriage and brackets connected therewith and through which brackets and rest-rails the screw-standards and operating-screws pass, a press-plate extending across above the carriage and connecting the various screw-standards and operating-screws, trays supported by the brackets and rest-rails, the said trays supporting the cans and extending across between the opposite edges of the said rest-rails, and means for rotating the operating-screws for raising and lowering the trays, substantially as set forth.

5. In an apparatus for canning food, the combination with the cylinder, a removable end, a track within the cylinder and a carriage movable upon said track, of screw-standards in pairs connected to the carriage, operating-screws intermediate to the screw-standards and connected to the said carriage, rest-rails extending transversely of the carriage and brackets connected therewith and through which brackets and rest-rails the screw-standards and operating-screws pass, a press-plate extending across above the carriage and connecting the various screw-standards and operating-screws, trays supported by the brackets and rest-rails, the said trays supporting the cans and extending across between the opposite edges of the said rest-rails, a shaft above the carriage and press-plate and occupying the axial center of the carriage, sleeves in which said shaft is supported, gear-wheels in pairs upon the said shaft and upon the operating-screws, a wheel outside of the cylinder, a shaft on which the same is mounted passing through the cylinder and a coupling connecting the shaft to the shaft of the gears, substantially as and for the purposes set forth.

6. In an apparatus for canning food, the combination with a cylinder adapted to be closed and hermetically sealed and a carriage movable into and out of the same and rest-rails extending across the carriage, of a series of trays each tray comprising a plate having offset can-recesses at spaced-apart intervals, handles 20 by which the tray is lifted and the opposite edges of the tray offset or grooved and guide-lugs 21 adjacent to the said grooves and adapted to come against the faces of the rest-rails when the trays are in place, substantially as set forth.

7. In an apparatus for canning food, the combination with the cylinder, a removable end, a track within the cylinder, of a carriage movable upon the said track, composed of parallel longitudinal U-shaped bars, transverse bars connected to the U-shaped bars, brackets at the intersections of the transverse and longitudinal bars, and wheels supported by the said brackets, screw-standards rising from

the transverse bars, operating-screws intermediate to the screw-standards and having enlarged lower ends, connected blocks also at the intersections of the longitudinal and transverse bars and to which the said blocks are secured, trays for supporting superposed groups of cans, devices carrying the same and guided by the screw-standards and raised and lowered by the operating-screws, and means for actuating the operating-screws, substantially as set forth.

8. In an apparatus for canning food, the combination with the cylinder, a removable end and track within the cylinder, of a carriage movable upon the said track and composed of parallel longitudinal U-shaped bars, transverse bars connected to the U-shaped bars, brackets at the intersections of the transverse and longitudinal bars, and wheels supported by the said brackets, screw-standards rising from the transverse bars, operating-screws intermediate to the screw-standards and having enlarged lower ends, connected blocks also at the intersections of the longi-

tudinal and transverse bars and to which the said blocks are secured, rest-rails and brackets connected together in series and through which the pairs of screw-standards and the operating-screws pass and by which operating-screws the said rest-rails and brackets are raised and lowered, trays receiving groups of cans and adapted to rest upon the edges of the said rest-rails in superposed order, a press-plate through which the screw-standards and operating-screws also pass, the said press-plate coming above the superposed groups of screws, and means substantially as shown and described for rotating the operating-screws to lower the groups of superposed cans and ultimately bring the press-plate down upon the covers thereof to simultaneously close all the cans, substantially as and for the purposes set forth.

Signed by me this 4th day of October, 1900.
GEO. LEES.

Witnesses:

WILLIAM J. LEES,
C. C. BONE.