April 26, 1932. C. A. ANDERSON 1,855,786

AIR EXTRACTING AND CAN CLOSING MACHINE

Filed Dec. 3, 1930 3 Sheets-Sheet 1

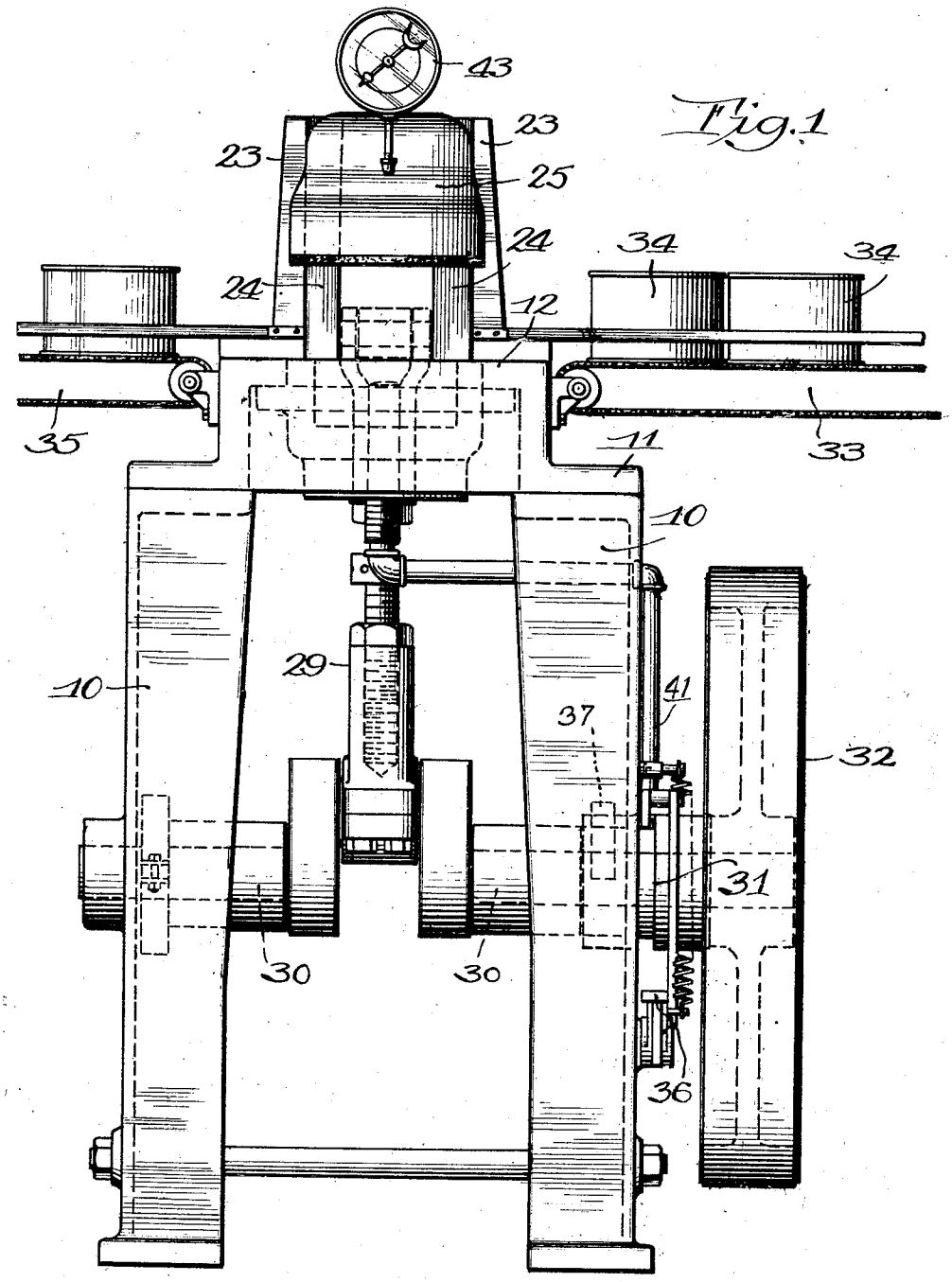

Fig. 1

Witness:
Chas. R. Fourse.

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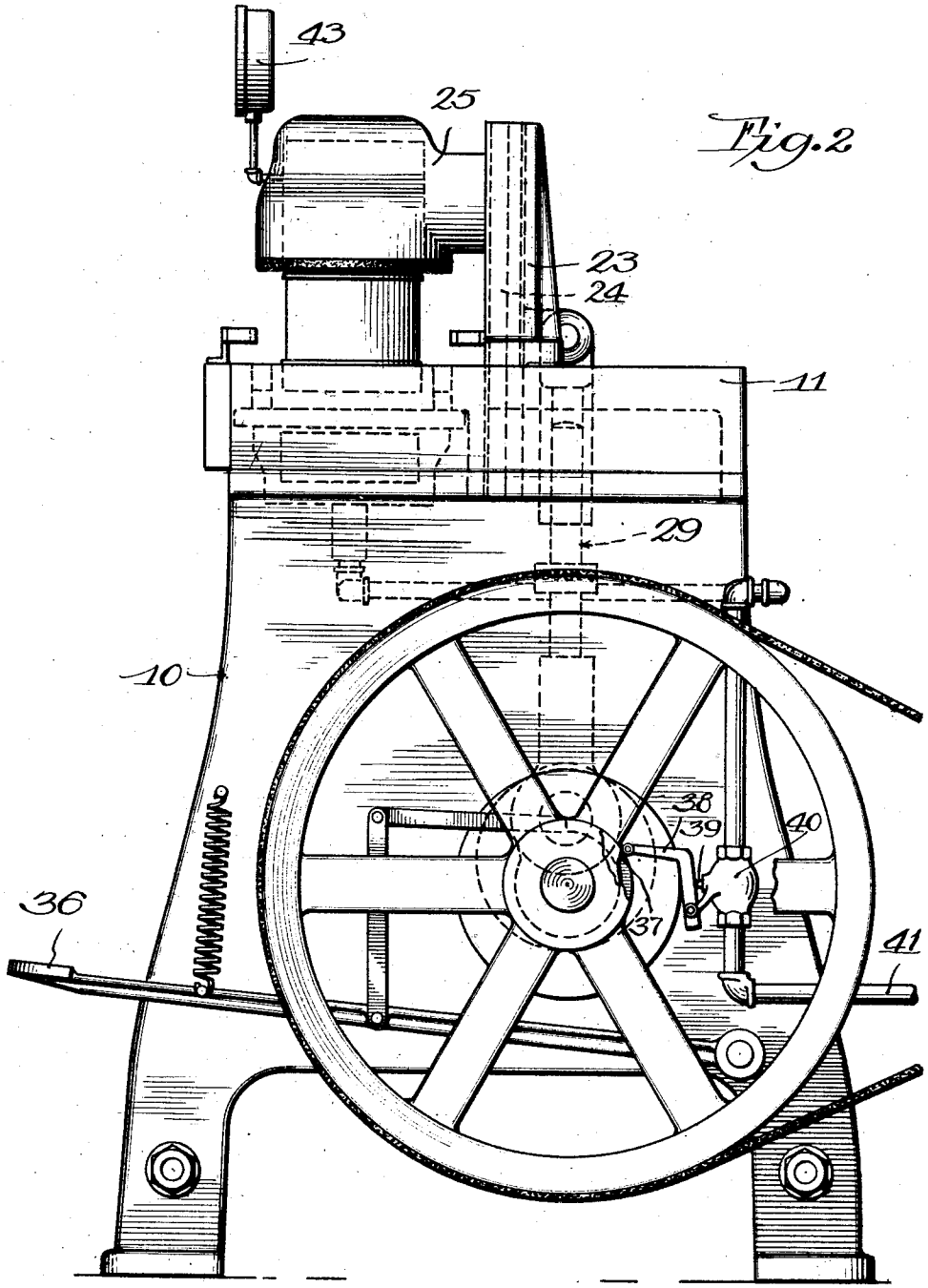

Fig. 2

Witness:
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Filed Dec. 3, 1930 3 Sheets-Sheet 3

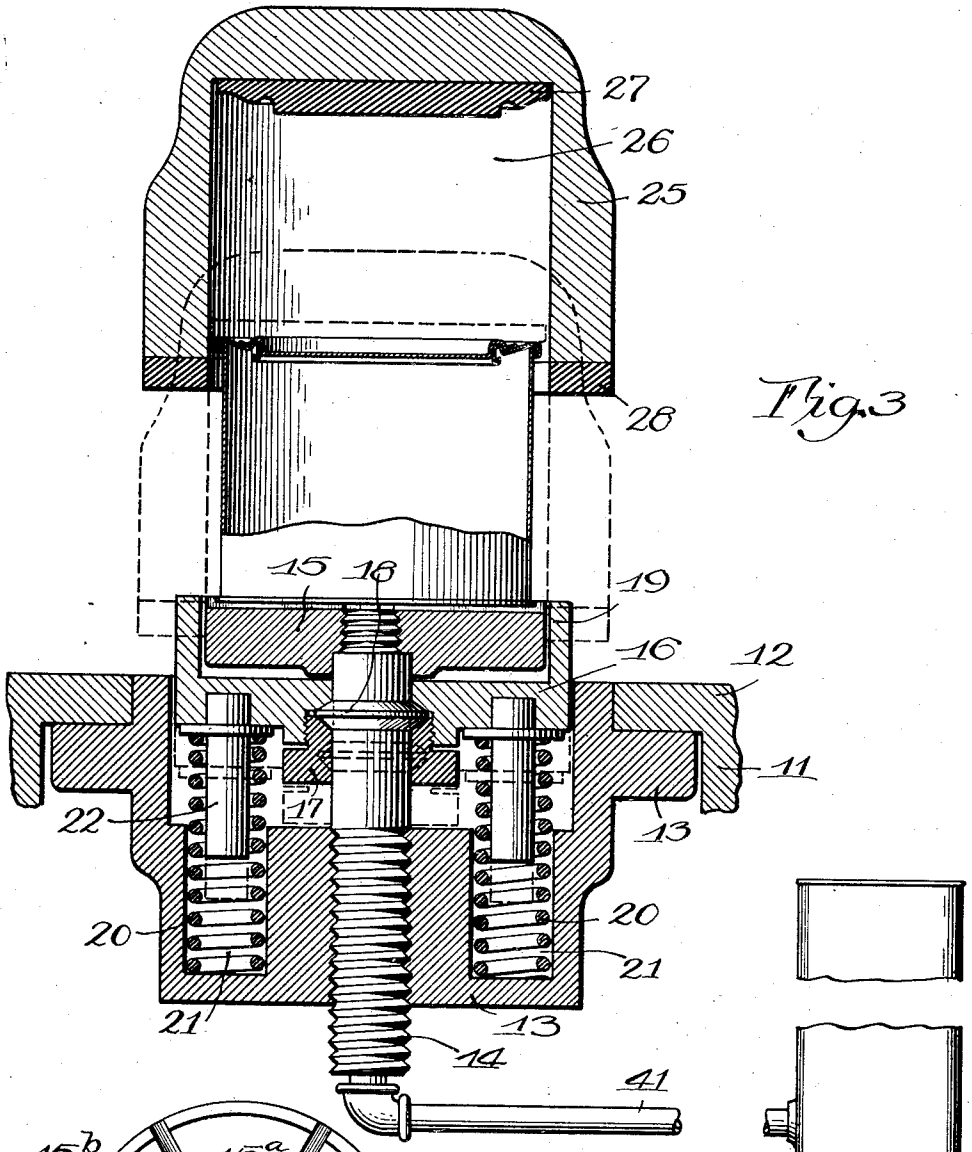

Fig. 3

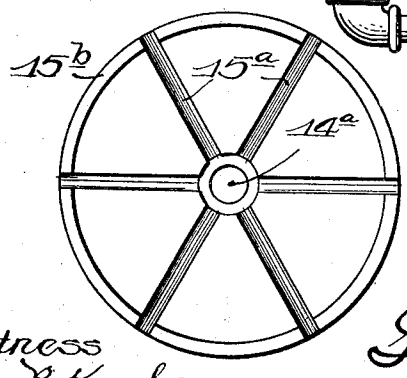

Fig. 4

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Patented Apr. 26, 1932 1,855,786

UNITED STATES PATENT OFFICE

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AIR EXTRACTING AND CAN CLOSING MACHINE

Application filed December 3, 1930. Serial No. 499,840.

This invention relates to improvements in air extracting and can closing machines.

One object of the invention is to provide a machine for extracting air from a can and pressing a friction type cover on the same for vacuum packing the contents of the can.

Another object of the invention is to provide mechanism comprising a pair of co-operating members adapted to be brought together to form an air tight enclosure for a can and a cover resting on a support in the enclosure, and from which enclosure and can the air can be extracted, after which by a movement of said members downwardly in unison while still maintaining their air tight relation the cover of the can can be pressed into sealing position thereon.

Other objects relate to various features of construction and arrangement of parts, which will be apparent from a consideration of the following specification and accompanying drawings, wherein

Fig. 1 is a front elevation of a machine embodying the present improvements.

Fig. 2 is a side elevation of the machine.

Fig. 3 is an enlarged vertical sectional view taken on line 3—3 of Fig. 2, parts being omitted for the sake of clarity, and

Fig. 4 is a top plan view of a can support.

In the drawings, a base or standard 10 is shown upon which is secured a bed 11. The bed 11 has a vertical recess therethrough and is provided with upper horizontal flanges 12, to which is secured a housing 13. In the form of the invention shown, the housing has a central threaded passage therein in which is positioned a pipe 14 provided with an intermediate portion 14*a* which has a smooth cylindrical wall. The upper end of the pipe is threaded to the can supporting member 15, which, as shown in Fig. 4, is provided with radial grooves 15*a*, whereby when a can is supported thereon air can flow to the passage in the pipe for exhausting the air, as will be hereinafter described. The member 15 is also provided with a marginal rib 15*b* for centering the can on the support. The housing 13 is recessed as shown in Fig. 3 to accommodate a hood closing or lower chamber forming member 16. The member 16 is recessed to enable it to slide vertically along the smooth cylindrical portion 14*a* of the pipe 14. A packing gland 17 is provided for securing the packing 18 in place and permitting the tightening of the same from time to time upon the pipe to prevent leakage of air upwardly around the exterior of the pipe. The base 16, as shown in Fig. 3, is provided with a flange 19 having its upper edge normally approximately in the plane of the support 15. The member 16 is held normally in the position mentioned by helical springs 20 which are positioned in recesses 21 in the housing 13 and which bear against the lower surface of the closing member 16. Guiding studs 22 for the springs preferably are provided as shown.

Secured to the upper surface of the bed 11 is a pair of vertical guides 23 having grooves in which slide a pair of slide members 24 to which is secured an upper chamber member 25 of hood-like shape. The member 25 has a cylindrical recess 26 open at the bottom, within which recess is secured a cover pressing member or die 27. The lower edge of the hood is provided with resilient material 28, such as rubber, for example. The hood 25 is adapted to be reciprocated as desired, by means of an arm or pitman indicated generally by the numeral 29, the lower end of which is secured to a crank shaft 30 adapted to be rotated through a clutch mechanism 31 by the belt driven pulley 32. It will be seen that as the pulley 32 is rotated the slide members 24 will be reciprocated in the guides 23, and the hood 25 will be thus moved toward and away from the chamber forming member 16. The extent of the downward movement of the hood or upper chamber forming member 25 is indicated by dotted lines in Fig. 3, in which it will be seen that the hood forms an enclosure with the member 16 when the hood has descended into contact with the flange 19. A further downward movement of the hood is permitted due to the resilient mounting of the member 16.

In Fig. 1 is shown a conveyor 33 arranged to convey cans 34 to the machine. A second conveyor 35 on the opposite side of the machine may be provided for carrying the cans away after the covers have been pressed into

position. In use, the operator moves the can from conveyor 33 to the support 15, the cover of the can resting loosely thereon. By pressing a foot pedal 36 downwardly the clutch 31 functions to rotate the shaft 30 a complete revolution, thereby causing the hood 25 to make a complete downward and upward stroke. When the hood 25 contacts with the closing member 16, thus forming an air tight chamber enclosing a can, a cam 37 carried by the crank shaft 30, actuates a pivoted lever 38 which depresses a plunger 39 of the valve 40 in the vacuum line 41, thus opening the valve and effecting communication with the hood chamber and the vacuum tank 42 or other suction means, whereupon the air is exhausted from the hood chamber and the can positioned therein. The hood 25 continues its downward movement to the dotted line position shown in Fig. 3, the resilient mounting of the hood closing member 16 permitting this movement as above mentioned. In actual practice the extent of the downward movement of the hood after initial contact with the closing member 16 is about one inch, during which period of movement the valve 40 is held open by the cam 37 for adequately exhausting the air. Just prior to the completion of the downward stroke of the hood, the cover closing member 27 is brought into contact with the cover and presses it into sealing position on the can. The cam 37 releases the lever 38 and permits the valve 40 to close, thus shutting off communication of the suction means or vacuum tank with the hood chamber prior to the separation of the hood from the closing member 16 during the upward stroke of the hood.

The clutch 31 above mentioned is of conventional construction and serves to effect one complete rotation of the shaft 30 each time the pedal is depressed and the foot removed. Since it forms no part, per se, of the present improvements, its details will not be described. After the completion of the upward stroke of the hood or to the position shown in Fig. 2, the operator shoves the can over to the conveyor 35 and slides the next can from the conveyor 33 upon the member 15 for similar operation. The pitman or arm 29 is adjustable in length, as shown particularly in Fig. 1, whereby the downward stroke of the hood can be adjusted in accordance with the height of the cans being operated on. A gauge 43 may be connected to the hood 25 for indicating the degree of vacuum in the can enclosing chamber.

The can may be of any suitable friction cover construction, the cover preferably being provided with a sealing compound to insure an air tight fit.

Although I have shown and described one embodiment of my invention for the purpose of illustration, I do not wish to be restricted specifically thereto, except as so limited by the appended claims.

I claim:

1. A machine of the class described comprising a recessed housing, a movable chamber base positioned in said housing, means for resiliently urging said base upwardly within the recess of said housing, a support for a can positioned above said base, a hood movable into contact with said base for forming an airtight chamber for said can and support, means comprising an air extraction duct communicating with said chamber for removing air from the same and said can, a cover seating member carried by said hood, and means for moving said hood and base downwardly against the action of said resilient means for effecting the engagement of said seating member with a cover on said can for pressing said cover into sealing position.

2. A machine of the class described comprising a housing, a support for a can associated therewith, a vertically reciprocal hood open at the bottom movable over said can and support, a bottom closing member for said hood resiliently supported by said housing and adapted to contact and move with said hood during a portion of each stroke thereof, air extraction means for extracting air from said hood and can, means for rendering said air extracting means effective during the downward stroke of said hood after contacting of the same with said bottom closing member, and a cover positioning member in said hood for pressing said cover into sealing position on said can during the final portion of the downward stroke of said hood.

3. A machine of the class described, comprising a stationary support for a can and a cover resting loosely thereon, a reciprocal hood open at the bottom adapted to move downwardly over said can and support, a closing member for said hood resiliently mounted adjacent said support and adapted to be moved by said hood during a portion of the downward stroke thereof, air extracting means communicating with the chamber formed by said hood and closing member, a valve for said extracting means, clutch controlled mechanism for actuating said hood, a cam actuated by said mechanism for opening said valve for rendering said extracting means effective for removing air from said chamber and can, and a cover positioning member carried by said hood for pressing said cover into sealing position on said can during the final portion of the downward stroke of said hood.

4. A machine of the class described comprising a stationary housing having a recess in the upper side thereof, a stationary support for a can having a cover loosely resting on the same, said support being positioned

concentrically with respect to said recess, a hood closing member resiliently mounted in said recess, a hood having an open bottom movable downwardly over said can and cover into contact with said closing member to form an airtight chamber enclosing said can and cover, said hood closing member being movable into said recess upon contact of the same by said hood, means for extracting air from said chamber during the downward movement of said closing member, and a cover seating member carried by said hood for pressing said cover into sealing position on said can during the final portion of the downward stroke of said hood.

5. A machine of the class described comprising a recessed housing having an air extraction tube extending through the same, a stationary support for a can on the upper end of said tube, a hood open at the bottom adapted to move downwardly over said can and support, a spring resisted hood closing member movable in said recess on said tube and adapted to contact with said hood for closing the open end thereof to form a vacuum chamber for said can and a cover resting loosely thereon, a cover positioning member carried by said hood for sealing said cover on said can during the latter portion of the downward stroke of said hood, and means for extracting air from said chamber through said tube after contact of said hood and closing member and prior to the sealing of said cover by said cover positioning member.

In testimony whereof I have subscribed my name.

CARL A. ANDERSON.