

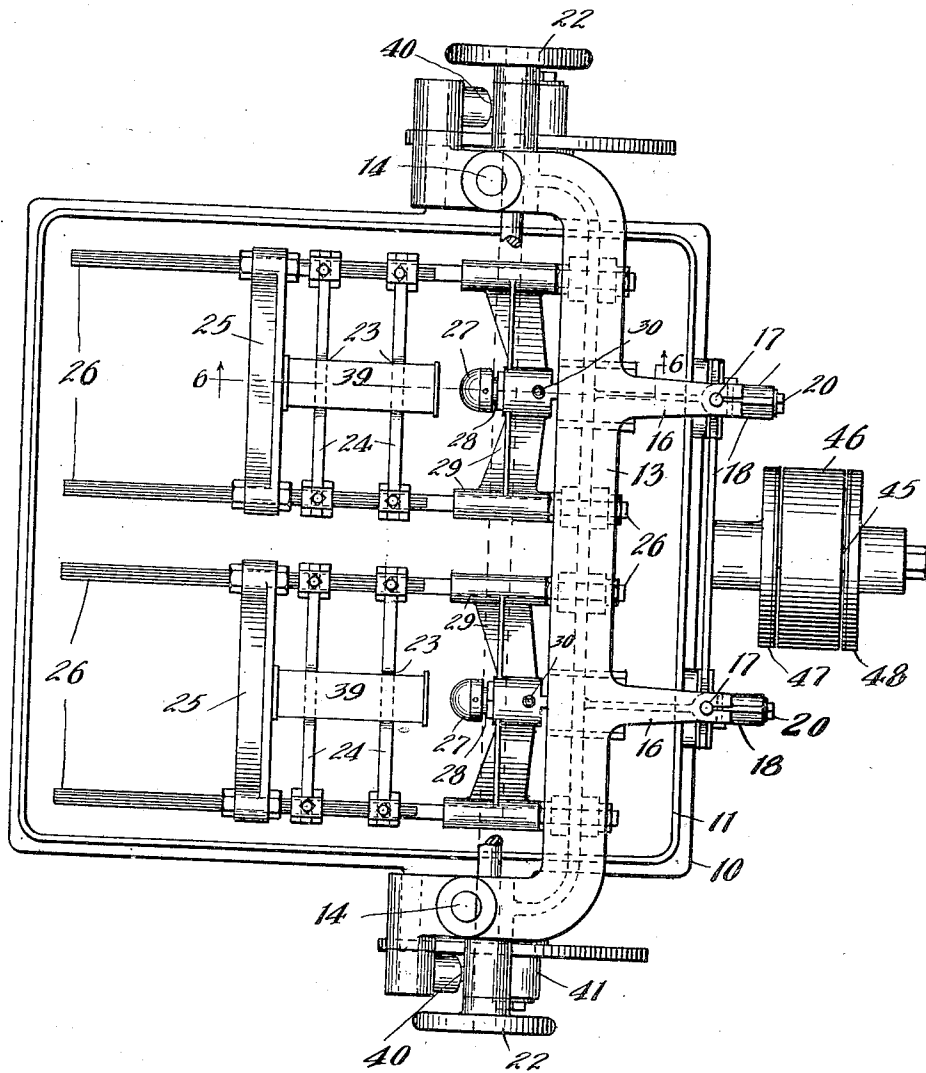
F. RUDOLPHI.  
TWO POCKET CAN TESTER.  
APPLICATION FILED AUG. 7, 1911.

1,126,089.

Patented Jan. 26, 1915.

5 SHEETS—SHEET 1.

Fig 1



Witnesses:

Wm. Geiger  
Pearl Abrams

Inventor:

Frank Rudolphi  
By Munday Evans, Attest, V. Clarke, his

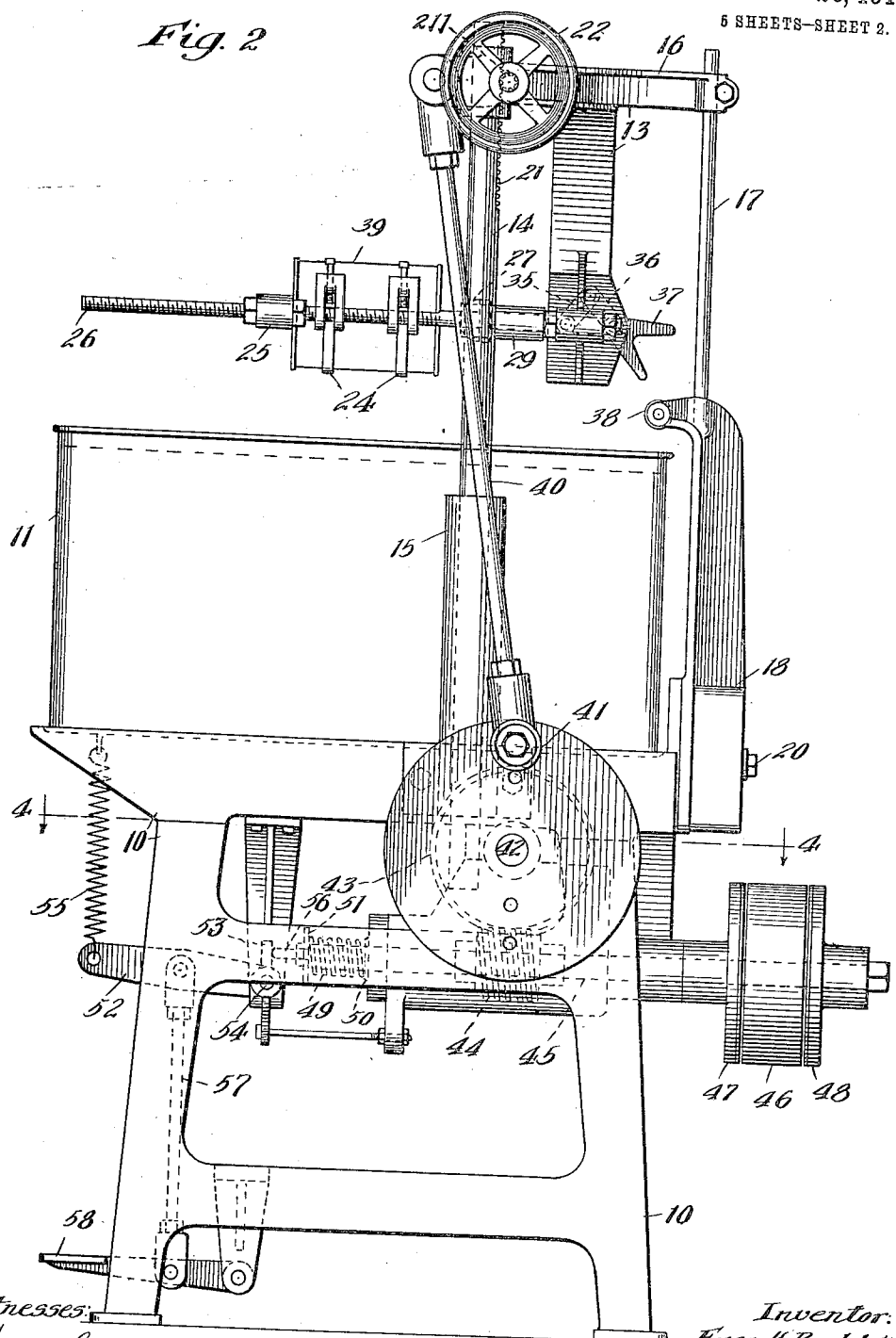
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5 SHEETS—SHEET 2.

Fig. 2



Witnesses:  
Wm. Geiger  
Paul Abramson

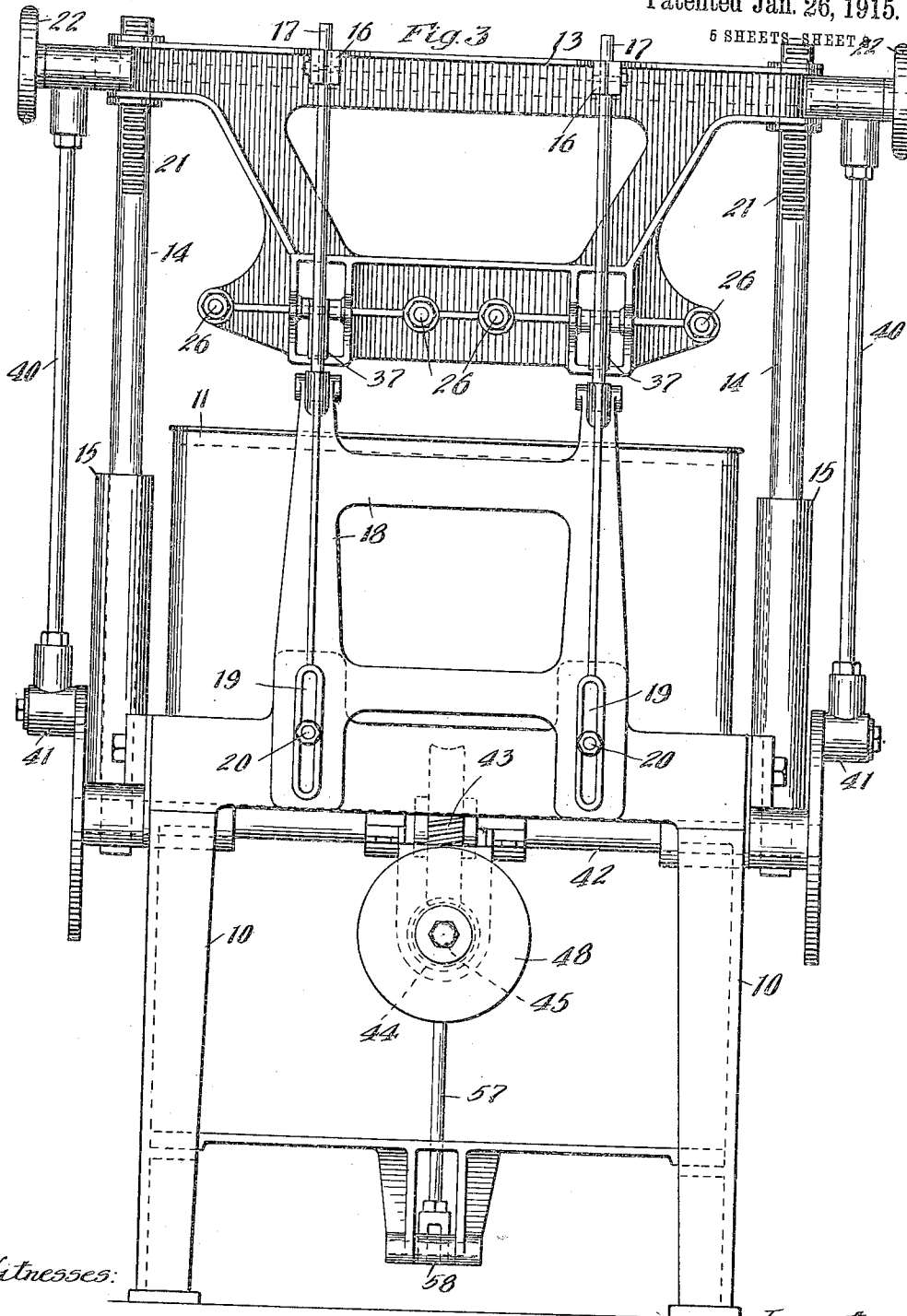
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Witnesses:

Wm Geiger  
Carl Ahrens

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5 SHEETS—SHEET 4.

Fig. 4

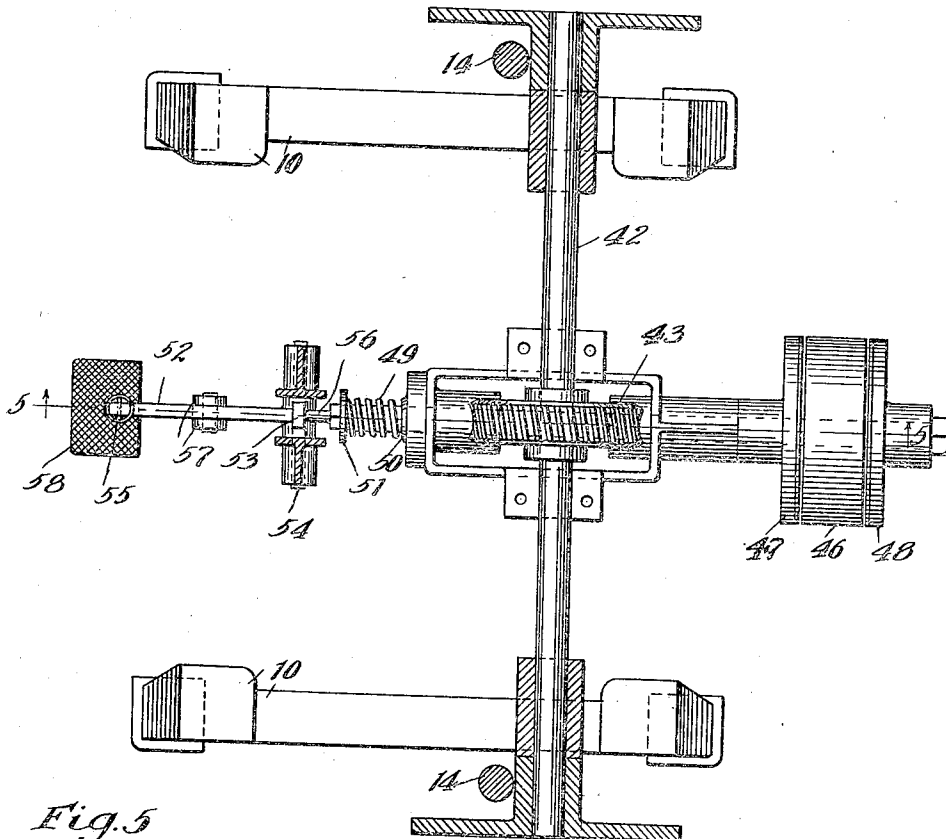
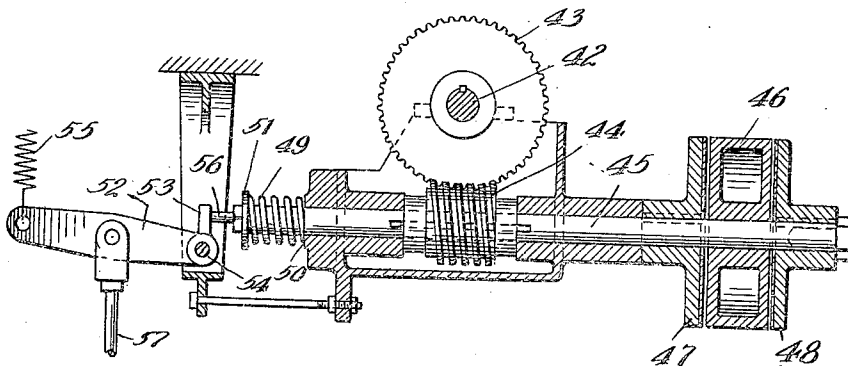


Fig. 5



Witnesses:

Wm. Geiger  
Paul Abrams.

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Frank Rudolphi  
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5 SHEETS—SHEET 5.

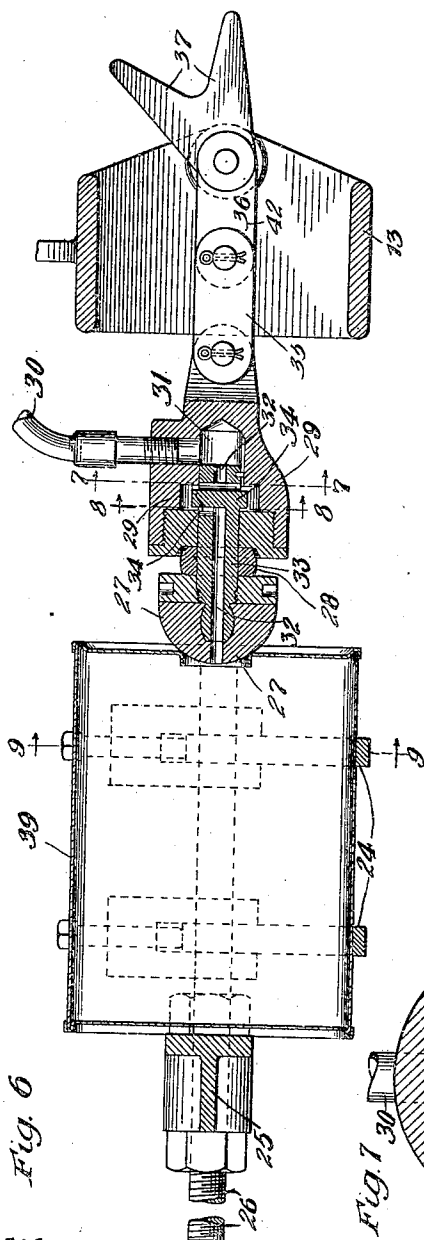


Fig. 6

Witnesses

Wm. Geiger  
Paul Abrams.

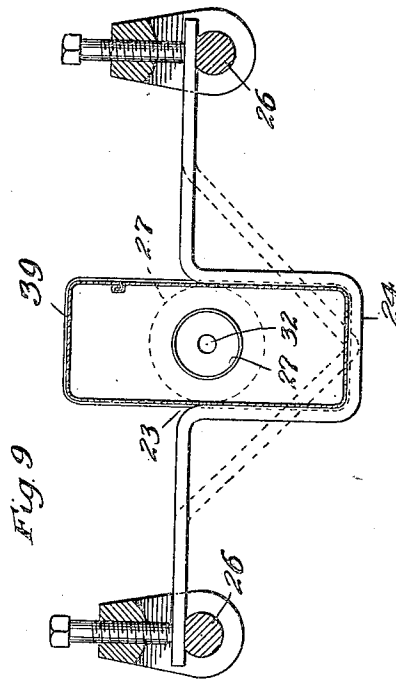


Fig. 9

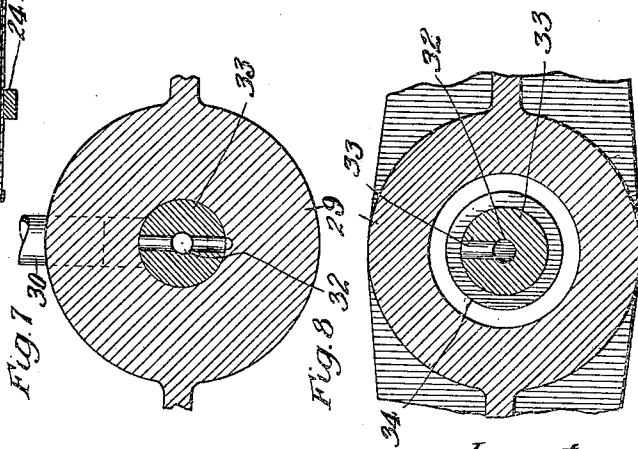


Fig. 7

Fig. 8

Inventor:  
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# UNITED STATES PATENT OFFICE.

FRANK RUDOLPHI, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN CAN COMPANY, OF  
NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

## TWO-POCKET CAN-TESTER.

1,126,089.

Specification of Letters Patent.

Patented Jan. 26, 1915.

Application filed August 7, 1911. Serial No. 642,705.

*To all whom it may concern:*

Be it known that I, FRANK RUDOLPHI, a citizen of the United States, residing in New York, in the county of New York and State of New York, have invented a new and useful Improvement in Two-Pocket Can-Testers, of which the following is a specification.

This invention relates to an improvement in machines for testing cans by closing the same air tight and submerging them in water, and the invention consists in the means employed for carrying the cans into and out of the water; and it further consists in the novel devices and parts and combinations of parts and devices herein-after more particularly set forth and made the subject of claims.

In the accompanying drawing which forms a part of this specification, Figure 1 is a plan view of the improved testing machine. Fig. 2 is a side elevation of the same. Fig. 3 is an end elevation of the same. Fig. 4 is a horizontal section on the line 4—4 of Fig. 2. Fig. 5 is a partial vertical section on line 5—5 of Fig. 4. Fig. 6, upon a somewhat larger scale, is a sectional view of one of the can holders and its improved mechanism, taken on the line 6—6 of Fig. 1. Fig. 7, upon a larger scale, is a vertical section on the line 7—7 of Fig. 6. Fig. 8 is a vertical section on the line 8—8 of Fig. 6 and Fig. 9 is a vertical section on the line 9—9 of Fig. 6.

The general nature of the operation of this machine is as follows: A single operator takes two cans in his hands at one time and places them both in a two pocket carrying receiver, which is operated to clamp the cans and close them air tight by a suitable sealing device, and at the same time to admit to the interior of the can a charge of compressed air. The sealed cans are then carried down into the water by a crank movement gradually increasing in speed until the cans are submerged, when the downward movement continues with a decreasing speed permitting the cans to remain an appreciable length of time under the water. During this time if there shall be any leaks in the can, the compressed air will cause bubbles to arise in the water, and thus indicate the leak. The continued movement of the machine then carries the cans up again out of the water to their first position, and

releases them from the clamping action of the seal so that the operator may lift the tested cans out and separate the leaky ones and the sound ones from each other and place two new cans in the carrier to repeat the operation.

In said drawing, 10 represents the framework of the machine upon which is mounted the tank 11 adapted to hold the water in which the cans are to be submerged.

13 is a cross head adjustably mounted upon the uprights 14, which uprights slide up and down freely through the socket guides 15, preferably one at each side of the machine. The cross head 13 is provided with the extensions 16, 16, which extensions are fitted to slide up and down upon the vertical rods 17, 17, connected at their lower ends to the adjustable upright frame 18. The frame 18 is made adjustable upon the general framework of the machine by the slots 19 and the bolts 20. The uprights 14 are adjustably connected to the cross head 13 by means of a rack 21 and a pinion 211 shown in dotted lines operated by the hand wheel 22. It will be seen that by means of the adjustment just described, the cross head and all of its attachments may be adjusted up or down with relation to the tank. The purpose of this adjustment is manifold: to accommodate the motion of the cross head to the operating devices and also to lengthen or shorten the time of submergence of the cans in the water in the testing operation.

Mounted on the cross head 13 are the two can cradles or pockets 23, each consisting of a cradle 24 and an abutment piece 25, all adjustably mounted on the rods 26 extending from the said cross head. Mounted to slide on said rods 26 are the clamping and sealing devices, each consisting of the sealing head 27, preferably made of rubber and mounted yieldingly by the interposition of the rubber spring 28 on the sliding frame 29. An air pipe 30 leading from a compressed air supply opens into a chamber 31 connecting with the air passage 32 leading to the interior of the can. This air passage 32 is connected to move with the sealing head 27, being pierced through the plunger 33 that slides in the frame 29. At the rear end this plunger is formed into a flange 34, constituting a valve. The general result is that when the resilient sealing head is pressed against the can to close and seal it,

the rubber spring 28 is compressed, causing the valve to open to permit the passage of the compressed air into the can. This valve, when the sealing head is removed from the can is closed by the resilience of the compressed rubber spring. The sealing head is moved to seal the can and to unseal the same by a toggle 35, 36, and a pivoted bell crank 37. When the can carrier starts to move down, the bell crank 37 presently engages the stationary roller 38 on the framework of the machine, and the further downward movement of the carrier by swinging said bell crank lever causes the toggle to move the sealing head toward the can 39 and to force the latter against the abutment 25 and thus to effect the sealing of the can, which remains sealed until the carrier returns after the submergence is over, when, nearing its final upper passage, the toggle again engages said roller in the opposite direction and again operating the toggle in the reverse movement withdraws the sealing heads from the cans, leaving the latter free to be removed from their pockets and assorted to the sound or leaky lots.

The raising and lowering of the can carrying receivers and their sliding cross head is effected by means of the pitman 40, the crank 41 and crank shaft 42. The crank shaft is rotated by means of the screw gear 43 from the worm 44, said worm being keyed to the sliding shaft 45. On the sliding shaft 45 is loosely mounted a band wheel 46, placed between the two friction disks 47, 48, the final disk 48 being fixed rigidly to the shaft and the disk 47 being keved to the shaft to permit the latter to slide through it. A strong spring 49 setting against the stationary bearing 50 exerts its pressure on the flange 51, secured to the end of the shaft 45 tending to pull said shaft through its bearings and to draw the final friction disk 48 against the band wheel 46 and to draw the band wheel against the second friction disk 47 and thus workably connect the band wheel with the worm on the shaft, causing said worm wheel to revolve to operate the gear 43, the crank shaft 42, the crank 41 and the pitman 40, thus imparting up and down movement to the cross head 13 to which said pitman is attached. It will be noted, of course, that the movement of the cross head 13 obeys the law of all crank and pitman movements, in that it starts at one end of the stroke from nothing, increasing its speed gradually to the full peripheral speed of the crank pin, and diminishing at the other end of its stroke again gradually to nothing, so that the movement of the can carrying receivers or pockets is a corresponding movement from a state of momentary rest in one position to a state of momentary rest in another position through a gradually increasing and

decreasing rate of speed of movement. This movement is admirably adapted for the purpose of giving to the operator time at one end to remove the tested cans, to feed in the new cans, and at the other end to observe the air bubbles, if any shall appear indicating the leaky cans.

To control the application of the power of the band wheel to the worm shaft, the bell crank 52, 53, fulcrumed at 54 to the frame of the machine is provided. The long arm 52 of the bell crank is normally held up by the spring 55, and the short arm 53 of said bell crank bears against the end of the shaft 45, said shaft being provided with a stud 56 to afford a bearing point. A vertical rod 57 pivoted to the long arm 52 of the bell crank is carried down and pivoted to the foot treadle 58. When the operator places his foot upon the treadle 58 and depresses the same, this swings the short arm 53 of the bell crank away from the end of the shaft and permits the strong spring 49 to come into action, setting the friction disks against the band wheel at both sides and connecting said band wheel frictionally with the shaft. When the foot is removed from the treadle 58, the spring 55 lifts the long arm of the bell crank, and compressing the spring 49, disconnects the friction disks from the band wheel, which now running free, imparts no motion to the worm and its gear and consequently the crank stops at whatever point it may happen to stand at that moment. This arrangement enables the operator to start and stop the rising and falling can carrier as desired, the falling and rising continuing so long as the treadle is depressed, and ceasing when the treadle is released by the removal of the foot.

By providing the tester with two pockets instead of one, its capacity is doubled, because the single operator can as readily handle two cans to place them in the pockets, to watch their submergence and leak indications and to remove them from the pockets after testing, as he could one, and it is found that this is true, no matter at what speed the machine is run; that is to say, if he can handle a single can in the time the machine gives, he can handle two in the same time.

I claim:—

1. The combination with a tank, of a set of guides, a cross head mounted to move up and down in said guides, can holding pockets mounted on said cross-head and means for charging the can and sealing the same, and a power operated crank and pitman for raising and lowering the cross head carrying said can pockets, substantially as specified.
2. The combination with a tank, of a set of guides, a cross head mounted to move up and down in said guides, can holding pock-

ets mounted on said cross-head and means for charging the can and sealing the same, a power operated crank and pitman for raising and lowering the cross head carrying  
5 said can pockets, a toggle and bell crank on the cross head and a stop on the frame to be encountered by said bell crank for automatically sealing and opening the cans, substantially as specified.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."