No. 704,278. Patented July 8, 1902.

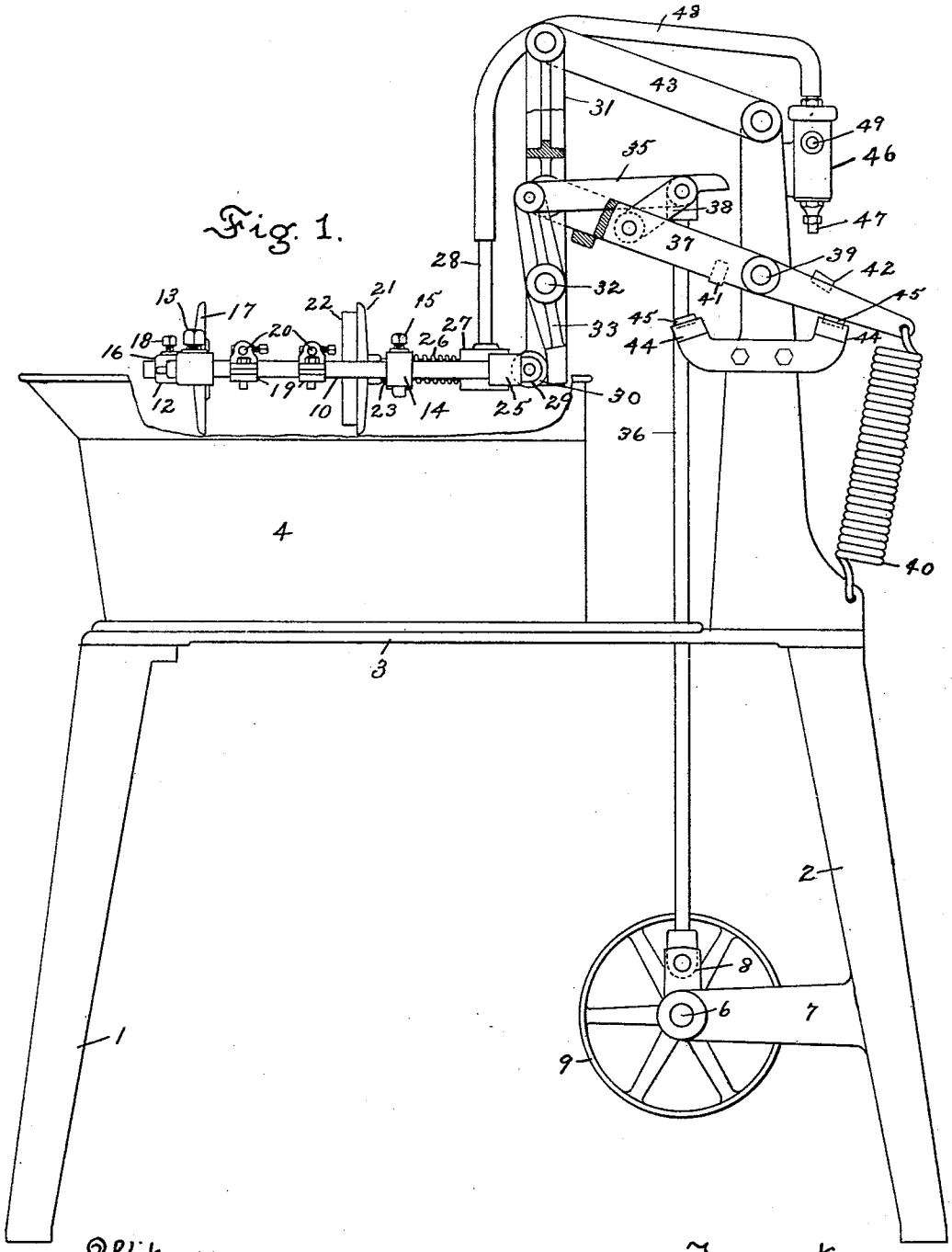
W. H. H. STEVENSON.

CAN TESTING MACHINE.

(Application filed May 15, 1901.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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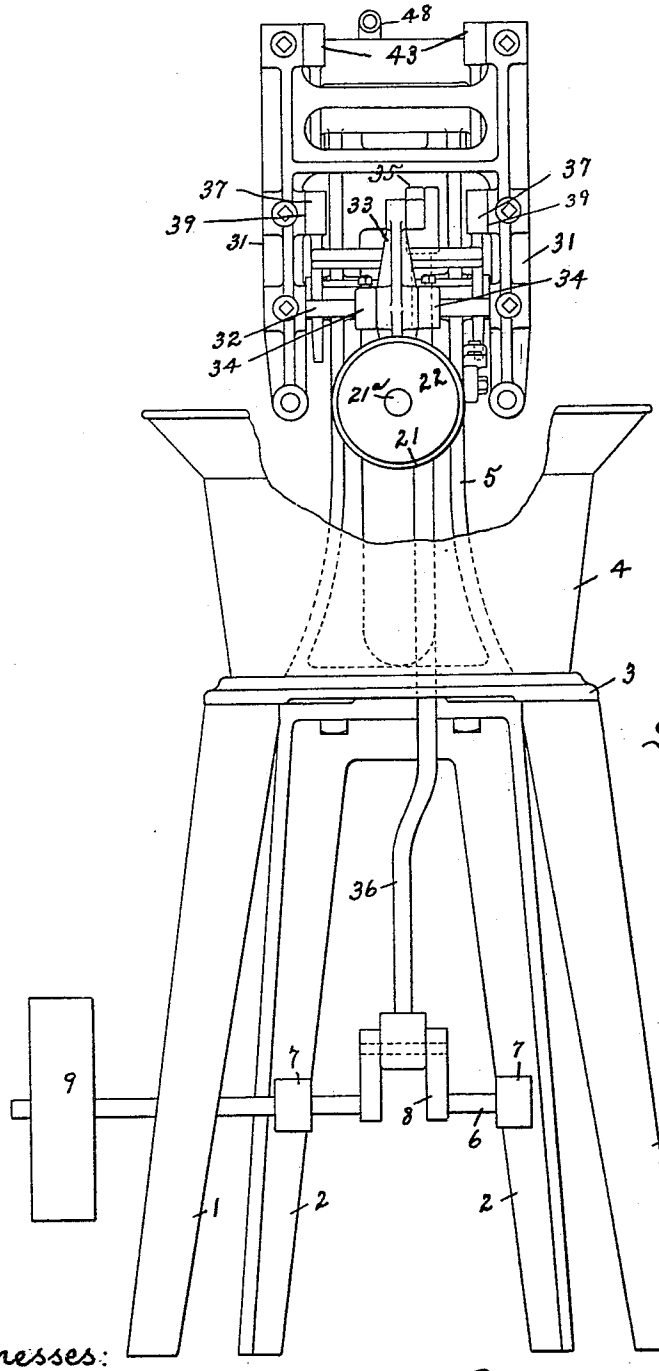


Fig. 2.

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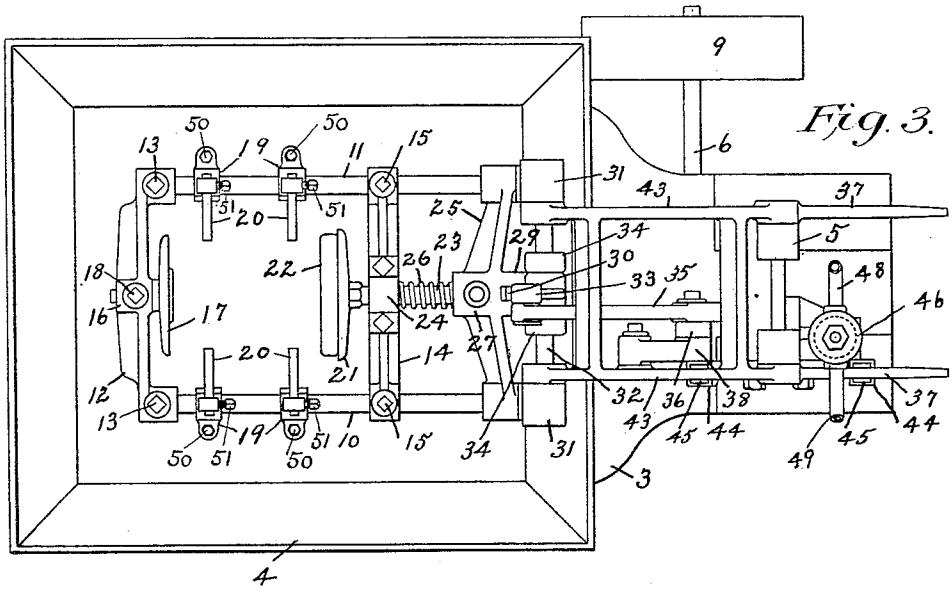


Fig. 3.

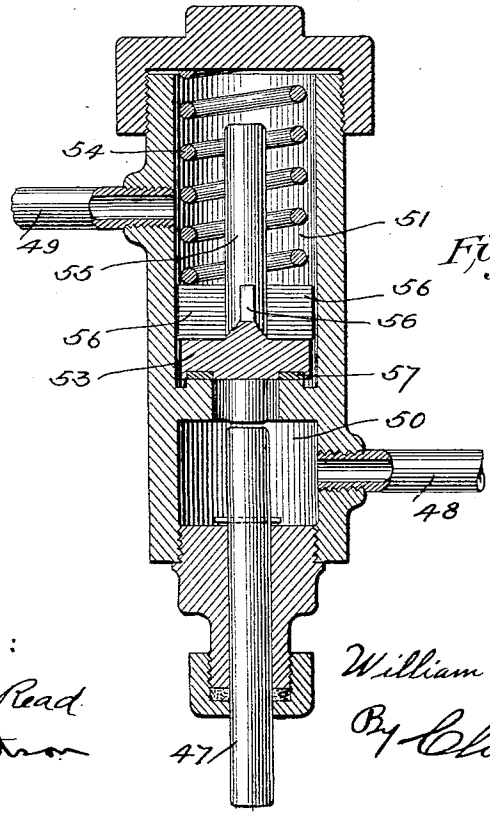


Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM H. H. STEVENSON, OF BALTIMORE, MARYLAND.

CAN-TESTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 704,278, dated July 8, 1902.

Application filed May 15, 1901. Serial No. 60,267. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. H. STEVENSON, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Can-Testing Machines, of which the following is a specification.

This invention relates to improvements in can-testing machines of that class in which air is forced into the can after the latter has been immersed in water.

The object of the invention is to provide a machine of this class which will completely close the head of the can before the can-carrying frame begins to move down toward the water.

A further object of my invention is to provide a machine of the class above mentioned in which the can-carrying frame has a vertical movement which permits of the use of a much smaller water-tank than has previously been used in machines of this character.

Heretofore in machines of this class it has been the practice to close the end of the can and admit air thereto as the can-carrying frame moves down into the water, which frequently allowed the water to enter the can before the end thereof had been completely closed. My present invention overcomes this objection by completely closing the head of the can before the can-carrying frame begins to move down into the water and holds it in this position until the can-carrying frame returns to its normal position.

The invention consists of the new and novel parts and combination of parts hereinafter more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my machine, partly in section and having the water-tank broken away in order to show the can-carrying frame. Fig. 2 is a front elevation, the water-tank being broken away and having part of the can-carrying frame removed to show the movable clamping-head; and Fig. 3 is a plan view of same. Fig. 4 is a detailed vertical sectional view, on an enlarged scale, of the air-valve.

While I have illustrated my invention as a power-machine, it is obvious the same may be operated by a treadle and may also be used in gangs.

Similar numerals refer to like parts throughout the several views.

Referring to the accompanying drawings, forming part of this specification, 1 designates the front legs; 2, the rear legs; 3, the top of the frame or table upon which the water-tank 4 rests, and 5 an upright at the rear of the frame to which the operative parts of my machine are supported.

6 is the power-shaft for driving the machine, which is journaled in bearings 7, projecting from the rear legs 2, and is provided with a crank or eccentric 8 and a pulley 9, to which power is transmitted from any suitable source.

The can-carrying frame is rectangular in form, consisting of the side bars 10 and 11 and a cross-head 12, held in position by the set-screws 13, and a cross-bar 14, held in position by set-screws 15, a central perforated hub 16 for the reception of the stem of the fixed head 17, which latter serves the purpose of clamping one end of the can. (Not shown.) This head 17 is held in position by the set-screw 18. Secured to the side bars 10 and 11 by the dogs 19 are two or more fingers 20, which serve as a rest upon which to lay the can when feeding the machine. The dogs 19 are made of two pieces and clamp the bars 10 and 11 and are held thereto by the set-screws 50. The fingers 20 have one end inserted in an aperture in the upper half of the said dogs 19 and are held thereto by the set-screws 51.

21 is a movable clamping-head, which is provided on its face with an elastic packing 22 of a size larger than the opening of the head of the can in order to form an air-tight joint when the head 21 is brought up against the can. This head 21 is provided with a central aperture 21^a and has projecting rearward from its center a tube 23, which is supported in a bearing 24 on the cross-bar 14 and is secured in the perforated boss 27 in the movable cross-bar 25. This cross-bar 25 is movable upon the side bars 10 and 11 and is held to its normal position by the spring 26, which surrounds the tube 23 between the cross-bars 14 and 25.

The cross-bar 25 is provided with a perforated boss 27 for the connection of the tube 23 and of the pipe 28, through which air is ad-

mitted to the head 21. At the rear of the cross-bar 25 is provided a bifurcated projection 29, between which is journaled the roller 30.

The can-carrying frame is secured to the lower end of the vertical pivoted frame 31. Extending across this frame 31 is a shaft 32, upon which is journaled a rock-arm 33, the lower end of which latter impinges against the roller 30 and serves to force the clamping-head 21 forward against the tension of the spring 26. The rock-arm 33 is held to its position on the shaft by means of the collars 34. To the upper end of the rock-arm 33 is pivoted a rod 35, the end of which latter is pivoted to the upper end of the rod 36. The rear end of the rod 35 and the upper end of the rod 36 are connected to one side of the fulcrumed frame 37 by the toggle 38.

The frame 37 is fulcrumed to the upright 5 at 39 and has its front end spivoted to and carries the vertical frame 31. The rear ends of the said frame 37 are provided with springs 40 to hold it to its normal position and lugs 41 and 42, for a purpose which will hereinafter appear.

A pivoted metal frame 43 connects the upper end of the upright 5 and the frame 31 and serves to hold the latter in a vertical position.

The buffers 44 are provided to limit the movement of the fulcrumed frame 37 and are provided with rubber or other elastic cushions 45.

46 is a normally closed valve secured to the upright 5 and having a stem 47 projecting from the lower end thereof and a rubber or other suitable tube 48 leading therefrom to the pipe 28, through which air is supplied to the can to be tested. This valve is connected at 49 with any suitable supply of air. Any other suitable form of air-valve may be employed. This valve 46 is composed of two communicating chambers 50 and 51, provided with the pipe connections 48 and 49, respectively. The stem 47 projects up into the chamber 50 and is held in position by the pin 52. The chamber 51 is provided with a piston 53, which is held normally seated by the spring 54, surrounding the stem 55 of the said piston. Projecting laterally from the said stem 55 are four wings 56, which extend nearly to the sides of the chamber 51 and prevent the piston 53 from moving laterally to any great extent. The piston 53 is provided with a packing 57 to insure an air-tight joint when the said piston is seated. The upper end of the valve 46 is provided with a cap which may be removed when it is desired to remove the operative parts of the valve. Air is supplied to the valve through the connection 49 and enters the chamber 51. When the lug 42 on the frame 37 impinges against the stem 47, it forces the latter upwardly against the piston 53, unseating the latter and allowing the air to pass from the chamber 51 to the chamber 50 and through the pipe 48 to the head 21.

The operation of the device is as follows: A can is first laid upon the fingers 20 with its bottom resting against the fixed head 17. As the rod 36 is drawn down by the revolution of the shaft 6 the rear end of the rod 35 will also be drawn downward and at the same time be forced toward the rear of the machine by means of the toggle-pin 38, causing the rock-arm 33 to rock on the shaft 32 and the lower end thereof to impinge against the roller 30 and force the sliding cross-bar 25 forward against the tension of the spring 26, carrying with it the movable head 21, the rubber packing 22 impinging against the head of the can and forming an air-tight joint between the said head and can. When the rear end of the rod 35 comes in contact with the lug 41, its movement will be arrested and the front end of the fulcrumed frame 37 will be drawn downwardly against the tension of the springs 40, carrying with it the frame 31 and carrying-frame until the can is completely submerged in the water in the tank 4. Just before the completion of the downward travel of the front end of the frame 37 the lug 42 on the rear end impinges against the stem 47 and unseats the piston 53 of the valve 46 and allows air to pass through the tube 48, pipe 28, tube 23, and the movable head 21 to the can to be tested. After the operation is completed the frame 37 is returned to its normal position by the springs 40.

It will be seen that by the use of my machine the head of the can to be tested is clamped by the movable head and an air-tight joint formed between the two before the can is moved toward the water, which prevents any water whatever from entering the can.

It will be seen that the can-carrying frame has a vertical movement which permits of the use of a smaller water-tank than is used with previous machines of this class.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a can-testing machine, the combination of a tank; a can-carrier; a movable head to clamp and close the head of the can; and means which on its preliminary stroke will force the movable head against and close the head of the can and then force the carrier downwardly, as and for the purpose described.

2. In a can-testing machine, the combination of a tank; a can-carrier; means to raise and lower said can-carrier; a longitudinally-movable head for clamping and closing the can having a predetermined movement in advance of the movement of the can-carrier; and means to operate said head, as and for the purpose described.

3. In a can-testing machine, the combination of a tank; a can-carrier; means to raise

and lower the can-carrier; a movable head to clamp and close the head of the can; and means to automatically operate the movable head to close the head of the can before the can-carrier is moved, as and for the purpose described.

4. In a can-testing machine, the combination of a base having an upright at the rear end thereof; a tank; a frame fulcrumed to said upright; a can-carrier carried by said frame; a movable head to clamp and close the head of the can; means to operate the movable head to close the head of the can before the can-carrier begins its downward movement; and means to admit air to the can after it has been submerged, as and for the purpose described.

5. In a can-testing machine, the combination of a base having an upright at the rear thereof; a tank; a frame fulcrumed to said upright and carrying a vertically-movable frame; a can-carrier secured to the said vertically-movable frame; a movable head to close the head of the can; a rock-arm carried by the vertical frame; means to rock the said arm to cause the movable head to clamp and close the head of the can before the can-carrier begins its downward movement; and means to operate the fulcrumed frame to raise and lower the can-carrier, as and for the purpose described.

6. In a can-testing machine, the combination of a tank; a can-carrier; means to raise and lower the can-carrier; a movable head having a hollow tube connected thereto through which air is supplied to the can; a main shaft journaled to the frame; a rock-arm connected with the main shaft to operate said head, as and for the purpose described.

7. In a can-testing machine, the combination of a frame having an upright at the rear thereof; a shaft journaled to said frame; a metal frame movably connected to said upright; a normally closed air-valve; a movable head to clamp and close the head of the can; a tube leading from the air-valve to the movable head; and means connecting with the main shaft to cause the movable head to clamp and close the can and then lower the can-carrier into the tank, as and for the purpose described.

In testimony whereof I affix my signature in the presence of two witnesses.

WILLIAM H. H. STEVENSON.

Witnesses:
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CHAPIN A. FERGUSON.