

PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

A Coffee Infusion Preparing Machine with Hydro-compressor

I, AMOS BELTRAMI, an Italian citizen, trading as V.A.M. — Vetraria Ambrosiana Milano, of Corso Venezia No. 9, Milan, Italy, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to coffee infusion preparing machines of the kind having an electrically heated boiler and a cylinder and ram arrangement by means of which hot water is forced through powdered coffee.

The aim of the invention is to provide a machine of this kind which is simple to operate, is sturdy and robust even when it is manufactured in small sizes for domestic use and which can readily be dismantled for cleaning purposes.

According to the invention the boiler and cylinder of a machine of this kind are detachably mounted on a base member comprising a platform on which they rest and an upstanding part which extends upwardly at the side of the boiler. The cylinder and boiler are fixed in their position by a pivot on the upstanding part which engages a complementary part in the boiler wall and a half ring which embraces the cylinder and has an elastic member which grips the wall, the half ring having at its ends pieces which engage in grooves in the base member.

In the preferred construction the boiler and cylinder are closed at their upper ends by a lid which is retained in position by a spring clip on the lid which engages a member which is beneath the lid when it is closed and a lever operated crank is so arranged between the clip and the member that turning of the crank by means of the lever forces the clip off the member on to which it clips.

Also in the preferred construction the electrical heating unit is provided with connecting pins which plug into a socket

mounted beneath the unit. Thus the heating unit can readily be detached and in fact is no more difficult to remove than is a conventional electric light plug from its socket. In general the heating element will be of triangular cross-section and will be wound into a spiral so that it presents an upper plane in which one side of the triangle lies, this plane being that on which the boiler rests.

If desired a mirror can be provided beneath the heating unit which will direct radiations from the unit on to the boiler base. In such a construction the socket for the heating unit can conveniently be mounted in the centre of the mirror.

So that the invention will be clearly understood an example of a machine in accordance with it will now be described with reference to the accompanying drawings, in which:

Fig. 1 is a sectional view of the coffee infusion preparing machine of the invention;

Fig. 2 is an axial section in larger scale of the hydro-compressing group of the machine;

Fig. 3 is a section along line A-A of Fig. 1;

Fig. 4 is a section along line B-B of Fig. 1;

Fig. 5 is a perspective view of the mechanism for controlling the piston of the machine, and

Fig. 6 is a view of the machine with its main parts after dismantling the foot part and the operative parts of the machine itself.

Referring now more particularly to Figs. 1 and 6, the machine of this invention comprises a base member having a foot 1 and supporting arm 2, constituted by a single casting, on which is mounted a boiler 3. The supporting arm 2 extends upwardly in the rear part and at its uppermost part is shaped so as to partly surround the boiler 3. The body portion is supported at its sides on a platform constituted by two projecting elements 2'.

The boiler 3 rests on an insulated spiral

[Price 3s. 6d.]

Price 4s 6d

electric resistance element 4, the terminals 5 and 6 of which project downwardly and are inserted into connecting pins 7 and 8 respectively, which pins co-operate with a plug 9. The body of the plug is made of a refractory dielectric, for example steatite, and has mounted on it the screws 10 and 11 for the fastening of the electric conducting wires.

Plug 9 is centrally held by a concave reflector 12 having in it two narrow holes into which are inserted collars 13 and 14 of the plug body 9 which receive the terminals 5 and 6 of the resistance 4.

The protecting covering of resistance 4 is triangular in cross-section with one side facing upwards, so that the upper surface of the element lies all in one plane on which can rest the bottom 15 of boiler 3. In order to ensure that the upper surface of the element is in a single plane the downwardly directed corner of the triangular section lies on a V bent rod 16, which rests on shoulders 17,18 on the mirror 12.

The mirror 12 is supported on a rear spring 19, and on two front springs 20. The springs are wound respectively around bolts 19' and 20' in the foot part, wherein they are regulated as to their tension by means of nuts respectively 19" and 20". The load in said springs can thereby be so adjusted that the mirror pushes the rod upwardly to ensure the contact of the resistance 4 to the bottom 15 of boiler 3.

At the rear highest portion of arm 2 is a collar 22 into which penetrates a pivot 21, screwed in the collar and provided with a pin that locates in a cavity 23 on the wall of the boiler. This pivot can be screwed or unscrewed with respect to a knurled bush 21'. The screwing of pivot 21 in the collar 22 allows the centering of boiler 3, and co-operates in fixing the boiler to the foot part of the machine.

On the opposite side of the boiler to the upper part of the arm the boiler is held by a half ring 24 (Figs. 1, 3 and 6) provided with two laterally disposed, knurled gripping portions 25 and 26, two wedges 27 and 28, and an elastic blade 24', which blade is also semi-circular. Wedges 27 and 28 engage in grooves 29 at the ends of projecting arms 2', while the elastic blade 24' embraces the cylinder body 31 and the half ring 24 rests on a shoulder 30 on the cylinder 31.

The boiler is disengaged from the arm 2 by unscrewing pivot 21 and extracting the half ring 24, against the gripping action of blade 24'. When the half ring 24 is extracted, the boiler 3 can be completely disengaged together with the cylinder 31 and all parts that are connected to it, as shown in Fig. 6.

The disengagement of boiler and of the other parts allows direct accessibility to the electric resistance 4, which can easily be

disengaged from its seating by pulling the pins 7 and 8 from their location in plug 9.

Shoulder 30 on cylinder 31 is provided in order to allow the bayonet fitting of a filter cup that is provided for receiving the powdered coffee, said filter cup being held by biased planes 32.

The cylinder 31 is an integral part of boiler 3, and it communicates with the boiler by means of holes 3' that are opened when a piston 33 is raised up, to allow hot water into the cylinder space, which hot water is expelled from the cylinder by the action of the piston 33 during its downwards stroke.

Piston 33 is controlled by a lever 34 constituted by two arms that at one end are connected to a handle 35 (Fig. 3), and at the other end engage bolts of square cross-section which seat in recesses or bores 36 of square cross-section provided in the spherical cups 37 and 38. In the interior of handle 35 is a spring blade 35' the ends of which engage the ends of the lever arms 34 through the intermediary of elastic packings 34' and 34" in order to facilitate the opening of said lever arms 34 for disengaging the square cross-section bolts from the seatings 36, in the manner shown in dotted lines in Fig. 3.

The spherical cups 37 and 38 are rigidly connected to each other by means of two parallel bolts 39 and 40 (Figs. 1, 2, 3 and 5) and are held apart by said bolts. On bolt 39 is hinged the end of a piston rod 41, whilst on bolt 40 there is hinged a piston rod 42. Piston rod 41 has its other end fastened on the hinge pin 43 of piston 33, whilst piston rod 42 has its end fastened on hinge 44, situated underneath the cup 45 that forms the head of the cylinder.

When the piston is in its uppermost position, piston rods 41 and 42 are at the same level (see Fig. 2). By operating lever 34, both cups 37 and 38 are rotated, causing them to move downwardly, thus imposing on piston rod 41 a composite movement of rotation and translation. This causes a throw of the piston of such proportion as to cause it to run downwardly with a force corresponding to the force exerted on lever 34. The final position of cups 37 and 38, of the piston rod 41 and of the piston 33 is shown in dotted lines in Figs. 1 and 2.

The upper or head portion of cylinder 31 is constituted by a cup 45 that is engaged by means of a bayonet fitting within the inner portion of the cylinder. It may be engaged in some other manner provided that the form of connection is sufficiently secure to resist the load applied to it by the piston rod 42 when the lever 34 is operated. The hinge 44 is not directly connected to cup 45 but is connected to a plate 46 within the cup. The cup 45 is provided with a small handle 47, which engages in a bore in its base and the handle itself is axially bored and has passing

through it a bolt 48 which is connected to a metal plate 49 of the cover 50 of boiler 3. The upper end of the small handle 47 is reinforced, and is shaped for receiving the blades of an elastic clip 51 (Figs. 1, 2 and 4) which ensures that the cup is securely fixed to the cover of boiler 3. To this end, the clip 51 is fastened to the metal plate 49 by means of a collar supported by the bolt 48 itself. On the small handle 47 there is, underneath said clip 51, a shaft 52 the ends of which enter holes in the lateral walls of the cover 50, whilst an end projects outwards and bears a small lever 53. The shaft 52 is cranked so that by rotating the lever 53 the clip 51 is lifted and sprung over the end of the handle 47 thereby freeing cover 50 so that it can rotate on bolt 48, as shown in Fig. 4.

In Fig. 1 there is shown also in dotted lines the raised up position of the cover after disengagement of the small blade 51. The rotation of the cover 50 allows the ready accessibility of the internal part of boiler 3, so facilitating changing of the water in said boiler, and also rendering more rapid and easy all operations of cleaning of the boiler itself. Of course, the cover can also be completely removed by simply disengaging the bolt 48.

Above the cover is a handle 54 which is disposed apart from the cover in order to be isolated at least partially from the cover itself so that it will not be raised to such a temperature that it cannot be handled.

The taking away of the cover 50 allows access to the internal parts of the cylinder, which can be removed by simply rotating the cup 45 and by raising it in upwards movement, drawing with it the piston rods 41 and 42, the cups 37 and 38 and the piston 33 which are all connected to it (Fig. 5). Before this can be done the lever arms 34 must, of course, be disengaged.

The above described coffee infusion preparing machine of the invention can be modified in many different ways. It can, for example, comprise a number of units for the compression of the hot water through the coffee powder. Such a machine would be suitable for a large installation as used in bars, coffee houses and so on. The machine could be provided with one large boiler or a number of small boilers according to the number of distributing groups that are required.

WHAT I CLAIM IS:—

1. A coffee infusion preparing machine of the type set forth wherein the boiler and cylinder are detachably mounted on a base member comprising a platform on which they rest and an upstanding part which

extends upwardly at the side of the boiler and wherein the boiler and cylinder are fixed thereon by a pivot on the upstanding part which engages a complementary seating in the boiler wall and a half ring carrying an elastic member which embraces the cylinder, which half ring has end pieces which engage in grooves in the base member.

2. A machine according to Claim 1, wherein the boiler and cylinder are closed at their upper ends by a lid which is retained in position by a spring clip on the lid which engages on a member which is beneath the lid when it is closed and wherein a lever operated crank is arranged between the clip and the member so that rotation of the crank by the lever forces the clip off the member.

3. A machine according to Claim 1 or Claim 2, in which the boiler rests on and is heated by an electrical heating element of triangular cross-section wound into a spiral coil so that there is a plane for the boiler to rest on in which lies one side of the triangular section and in which the coil is supported on an elastically seated mirror arranged to reflect radiation from the element on to the base of the boiler.

4. A machine according to Claim 3, wherein the heating element has terminal pins which engage in sockets into which they can readily be plugged or unplugged.

5. A machine according to any preceding claim, wherein the ram is actuated by a hand lever through a mechanism constituted by two connecting rods, one of which is hinged to a cap at the upper end of the cylinder and the other on the ram and by two hemispherical pieces or circular plates disposed side by side with a gap between them to which the connecting rods are connected.

6. A machine according to Claim 5, having in the hemispherical or circular members square sockets for receiving the square sectional ends of the hand levers which operate the mechanism.

7. A machine according to Claim 5 or Claim 6, wherein the hand levers can be readily removed from their seats and wherein when the levers are removed the mechanism can be removed from the cylinder by lifting the cap to which the connecting rod is attached.

8. A coffee infusion preparing machine constructed and operating substantially as hereinbefore described with reference to the accompanying drawings.

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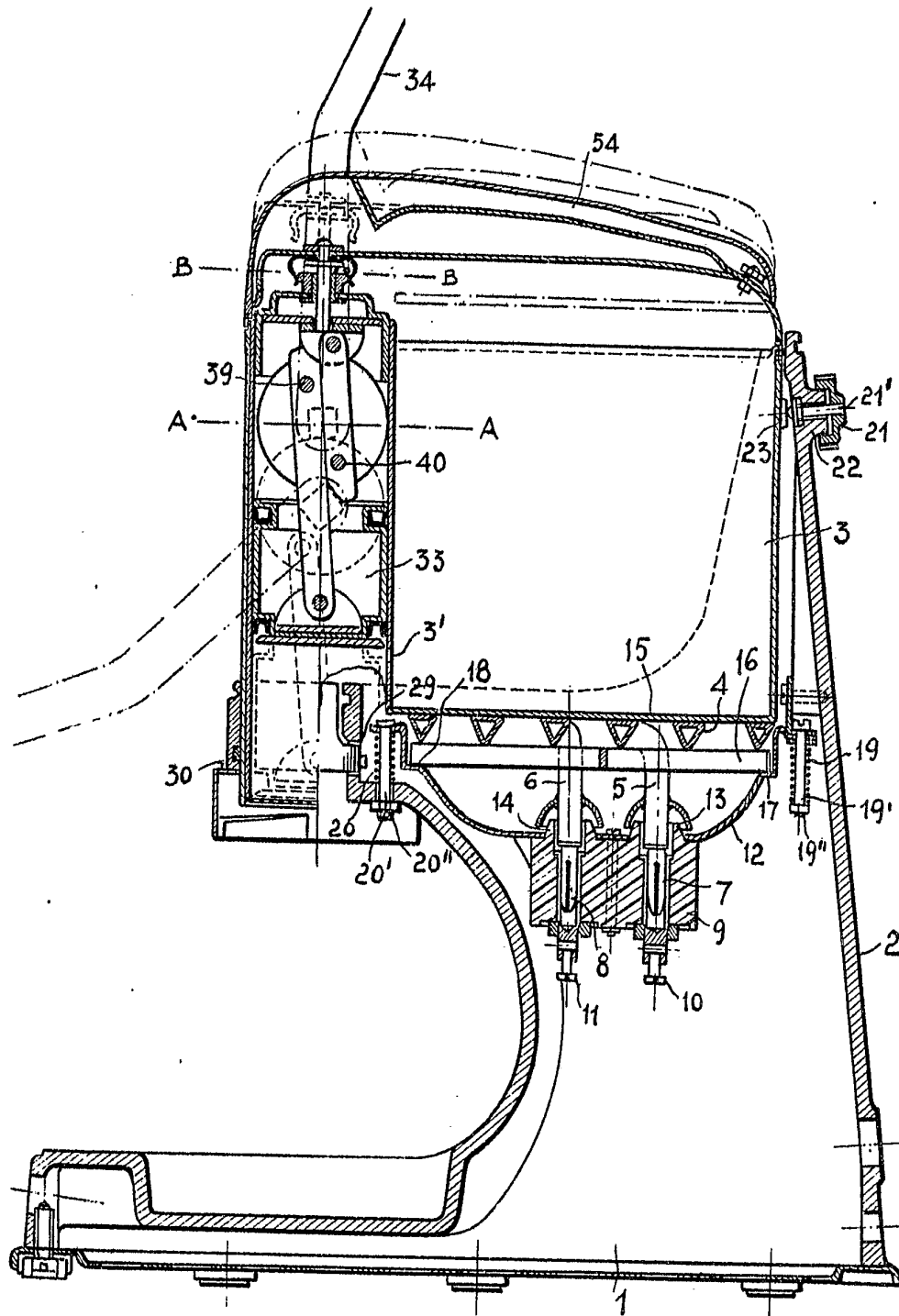


Fig. 1

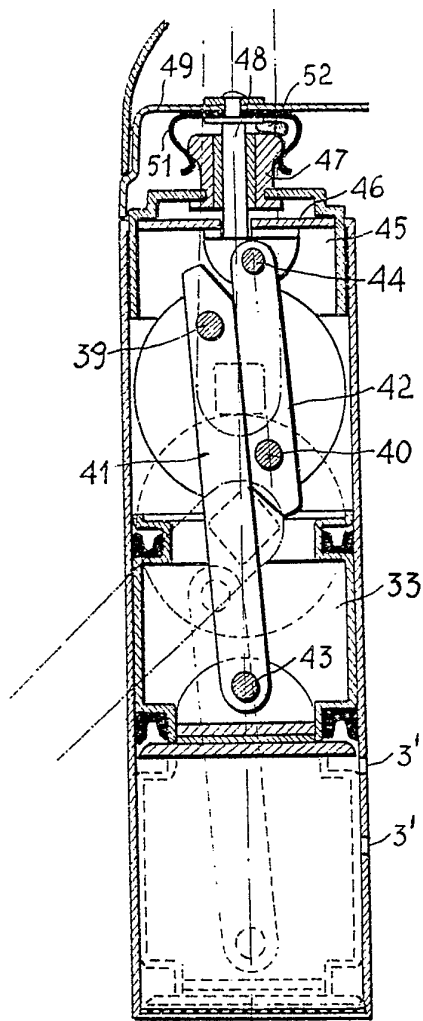


Fig. 2

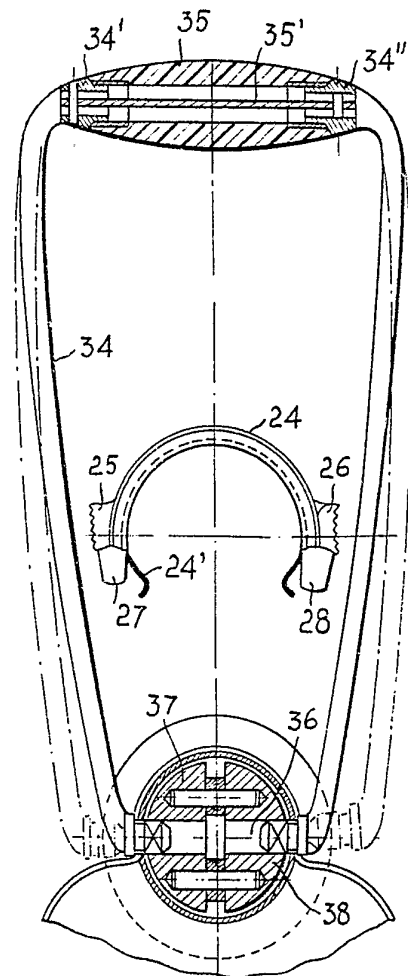


Fig. 3

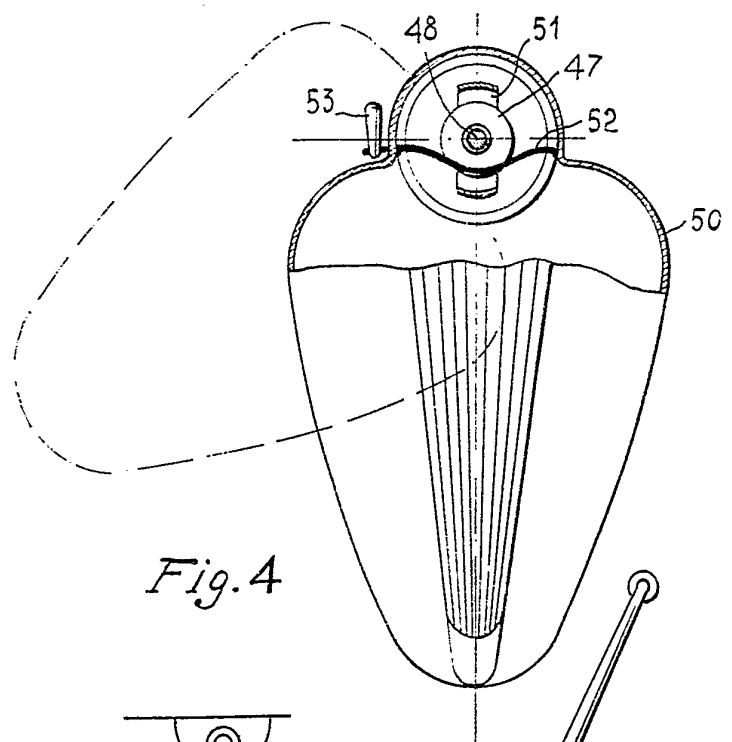
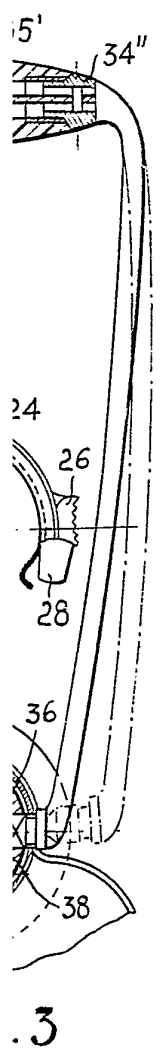


Fig. 4

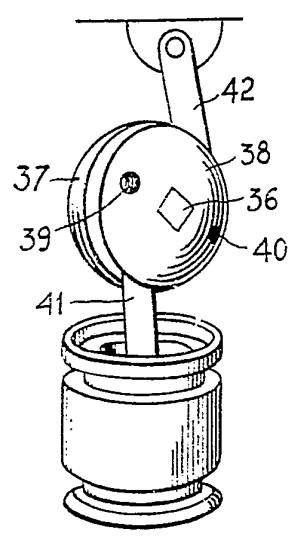


Fig. 5

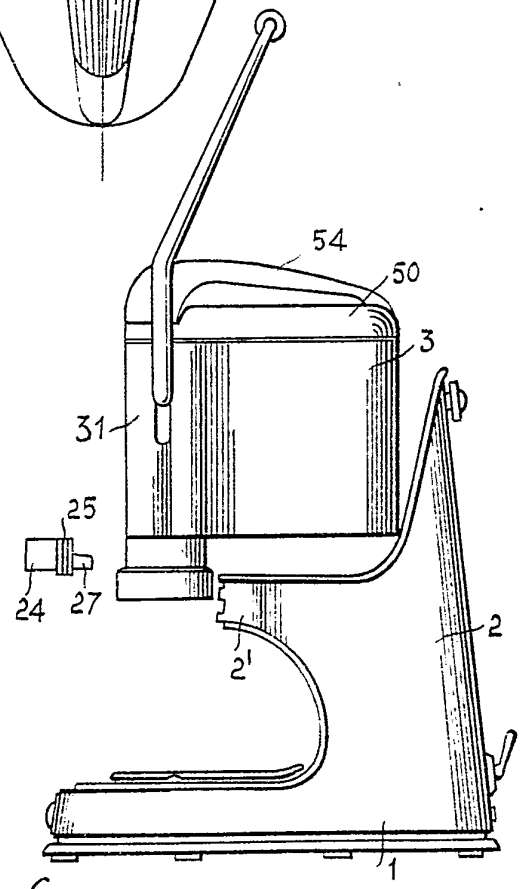


Fig. 6

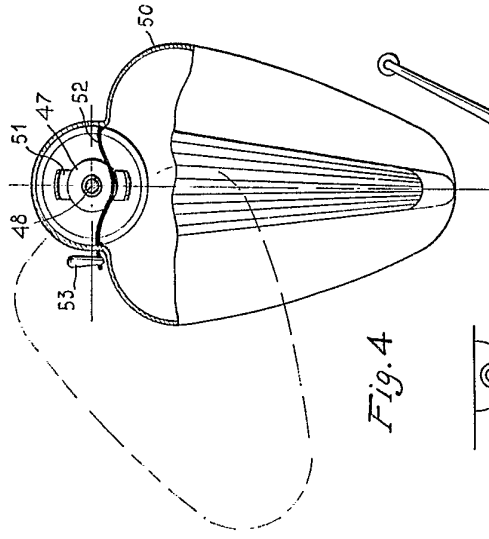


Fig. 4

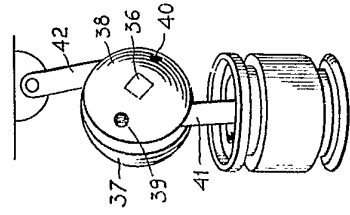


Fig. 5

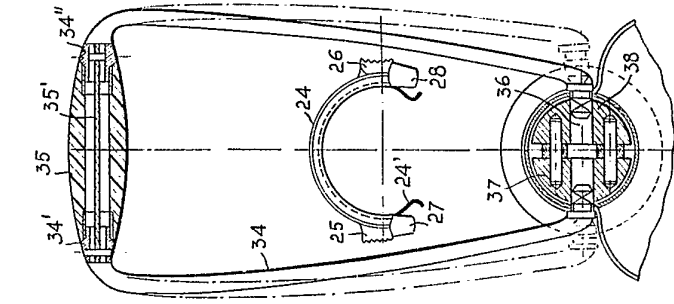


Fig. 3

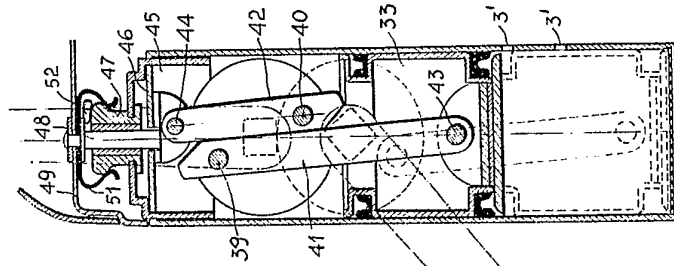


Fig. 2

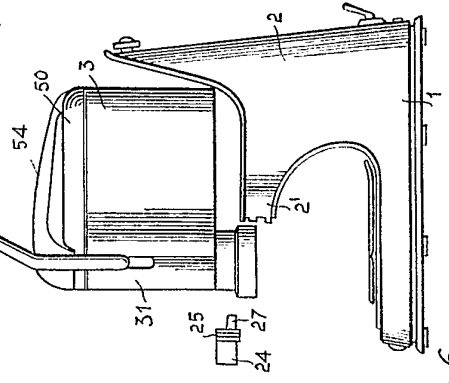


Fig. 6