

# PATENT SPECIFICATION



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## COMPLETE SPECIFICATION

### Coffee-making Machine

We, BREVETTI GAGGIA S.r.l., of Via Cadolini 24, Milan, Italy, a Body Corporate organised and existing under the Laws of Italy, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a coffee-machine for preparing so-called "express" coffee (viz. coffee made ready immediately, on the spot) in which the hot water is forced through the coffee powder by mechanical means such as a piston, no substantial super-atmospheric pressure existing in the boiler.

According to the invention there is provided a coffee-making machine using hot water under pressure, comprising a boiler, for containing hot water, means for heating the said water, a cylinder in said boiler, to be surrounded by the hot water, a piston working in said cylinder and actuated from outside the boiler and a filtercarrier with a filter for the coffee and an outlet underneath said cylinder, said cylinder being arranged in the lower part of the boiler adjacent said filter and connected directly with the boiler through openings in the cylinder wall controlled by the piston.

Thus the cylinder, in which the infusion is prepared, comes to be totally incorporated in the inside of said boiler in such a manner that the whole system remains at the calculated temperature which is the optimum for obtaining the best qualities of the coffee beverage.

Another important characteristic consists in that the piston acting inside said cylinder, besides its function as a pressure member, has also the function of an automatic valve for the passage of water from the boiler into the cylinder.

At the highest point of the boiler there is provided a weight valve setting the pressure and temperature inside the boiler, the weight

of said valve being calculated in such a manner that a suitable thrust of water in the cylinder is attained. If the internal pressure of the boiler has reached a certain predetermined value, said valve opens leaving a quantity of steam to pass to the atmosphere through a pipe, so as to make the operator aware that the machine is under the right pressure.

In this manner said valve has also the function of a vaporiser, which permits the use of the machine also for the preparation of hot drinks.

The invention is illustrated by way of example in the accompanying drawings, in which:—

Fig. 1 represents one embodiment of the machine in longitudinal section along the line X—X of Fig. 2: and

Fig. 2 is a front view of the same machine partly in section.

The base of the machine 1 which is made for example of light metal casting, is provided with a seat for accommodating a basin with a grid 3. These members are easily removable from their seat so that regular cleaning is possible. The base is also provided with holes for the mounting of a switch 1a and of an insulated electric cable 1b and with holes for fastening supporting standards 5, 6 and 7 of the body 10 by means of rods 8 screwed into holes 9 of the body 10 and secured to the base by nuts 4.

Said body 10 in turn carries an external jacket 11 of the boiler, on which a cover rests. The latter is united hermetically tight with the body 10, by means of gaskets 12, and by means of a rod 14, which also secures the jacket 11 of the boiler, and forms a fluid-tight receptacle.

In the body 10 is arranged an electric resistor 27 for heating the water in the boiler and it carries also the connection for a filter carrier 25 provided with a filter 24. To the terminals of an electric resistor 27 is

connected the electric cable 1b, which passing through the central supporting upright 5 is connected to the switch 1a and to the terminal 27a of the resistor 27.

5 In the body 10 is soldered a cylinder 17, to which a sieve 22 is fixed in the lower part by means of a resilient split ring 23. In said cylinder 17 there acts the piston 18, which is provided with two collar gaskets 10 20 enclosed between the upper ring 19 and the lower ring 21 in such a manner as to obtain a safe and perfectly tight seal during operation of said piston.

In the cylinder 17 there are provided holes 15 17a above the end of the stroke of the piston 18, so that the latter in its highest position, has the function of a valve and puts the boiler in communication with the cylinder, which is thus filled with water. 20 On lowering of the piston 18, the water is pushed with considerable pressure through the filter 24 containing the ground coffee, producing "cream" coffee.

The piston 18 is actuated by a hand lever 25 32 pivoted to a link 37 pivotally carried by a nut 38 screwed on the rod 14. The lever 32 is hingedly connected to a head piece 33 fixed on a rod 15 connected to the piston 18 and surrounded by a stroke limiting sleeve 30 16. The rod 15 can slide tightly through a stuffing box 34 provided on the cover 13 pressing a gasket 36 with an intermediate washer 35.

In the cover 13 a valve 51 is accommodated 35 in a hollow screw 50 screwed into said cover and having an upper gasket 48 in a valve-carrying body 54, which bears against a lower gasket 47 on the cover. Said valve-carrying body 54 is provided with a closure stopper 40 53. The valve 51 is under the action of a weight 52, which is calibrated at a pressure of about 1 atm. If the pressure exceeds the predetermined value, the steam escapes through the valve 51 and is collected in the 45 pipe 49, which has the function of a vaporiser for the heating of hot drinks, etc., and which makes the operator aware of the machine being under the right pressure.

Moreover, the cover 13 carries an inlet 50 member or body 43 for feeding water into the boiler. This body 43 is provided with a pipe 46 extending to a determined length into the inside of the boiler. In the pipe 46 there is also accommodated a small pipe 55 44 for venting air. The function of the pipe 46 is that of setting a maximum load level and of creating at the same time an air cushion in the upper part of the boiler. In this way, the machine when under pressure 60 creates initially a reserve of steam, which is useful for forcing the water into the cylinder 17 during operation.

The machine according to the present invention operates as follows :—

65 To prepare the machine, take off the

stopper 42 for water feed, by means of the handle 41, taking care to have the lever 32 completely lowered. Then fill the boiler until water overflows from the filling top and then close the stopper 42 again. 70

After having thus prepared the machine, close the electric circuit for heating, by means of the switch provided for this purpose, and in order to avoid any possible overheating of the filter carrier 25 and of the filter 24, 75 take care not to have them in the meantime accommodated in their seat.

When steam begins to escape from the vaporiser pipe 49, switch off the electric current by actuating the switch, unless it is 80 desired to warm up drinks to be served hot, with the vaporiser. In this condition, the machine is ready for operation and the filter carrier 25 containing the filter 24 can be screwed from the left to the right, after filling 85 the latter with coffee ground not excessively fine. Lift the lever 32 and keep it in this upper position for about 20 seconds and then press it down until the lever 32 has reached its lower position ; in this way one 90 cup of "cream" coffee will be obtained.

It should be noted that the arrangement of the resistor 27 in the boiler has been chosen in such a manner that said resistor remains always immersed in water even after maxi- 95 mum delivery from the boiler. After using the machine, it is advisable, after lifting the lever 32, to incline the machine towards the operator and to actuate the lever 32 as a pump in such a manner that the water remain- 100 ing in the boiler is completely expelled.

What we claim is :—

1. A coffee-making machine using hot water under pressure, comprising a boiler, for containing hot water, means for heating 105 the said water, a cylinder in said boiler, to be surrounded by the hot water, a piston working in said cylinder and actuated from outside the boiler, and a filter carrier with a filter for the coffee and an outlet under- 110 neath said cylinder, said cylinder being arranged in the lower part of the boiler adjacent said filter and connected directly with the boiler through openings in the cylinder wall controlled by the piston. 115

2. A coffee-making machine according to Claim 1, characterised in that the openings in said cylinder walls are provided below the top dead centre of the stroke of the piston, water being passed from the boiler 120 into the cylinder through said openings if the piston is in its highest lifted position, while said openings are closed by the said piston by its downward stroke.

3. A coffee-making machine according to 125 to either preceding claim, characterised in that a valve for controlling the pressure is provided in the cover of the boiler, said valve comprising a valve-carrying body, the valve proper being under the action of a weight 130

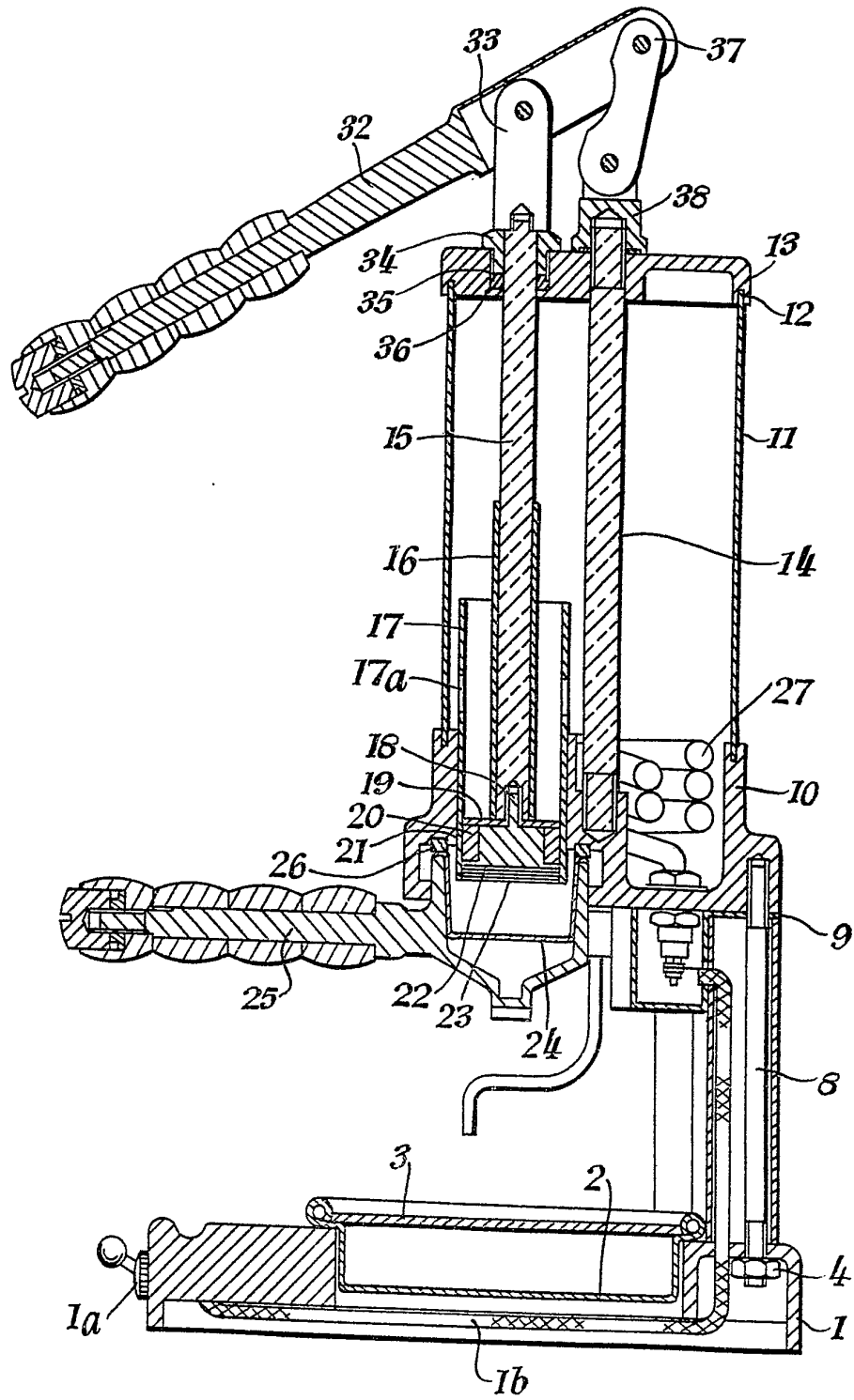
determining its maximum pressure, and an outlet pipe for the escape of steam in communication with the upper valve chamber.

4. A coffee-making machine according to any preceding claim, characterised in that a water inlet member is provided in the cover of the boiler and fitted with a pipe immersed inside the boiler for determining the maximum level of water introduced.

5. A coffee-making machine constructed and arranged substantially as described herein with reference to the accompanying drawings.

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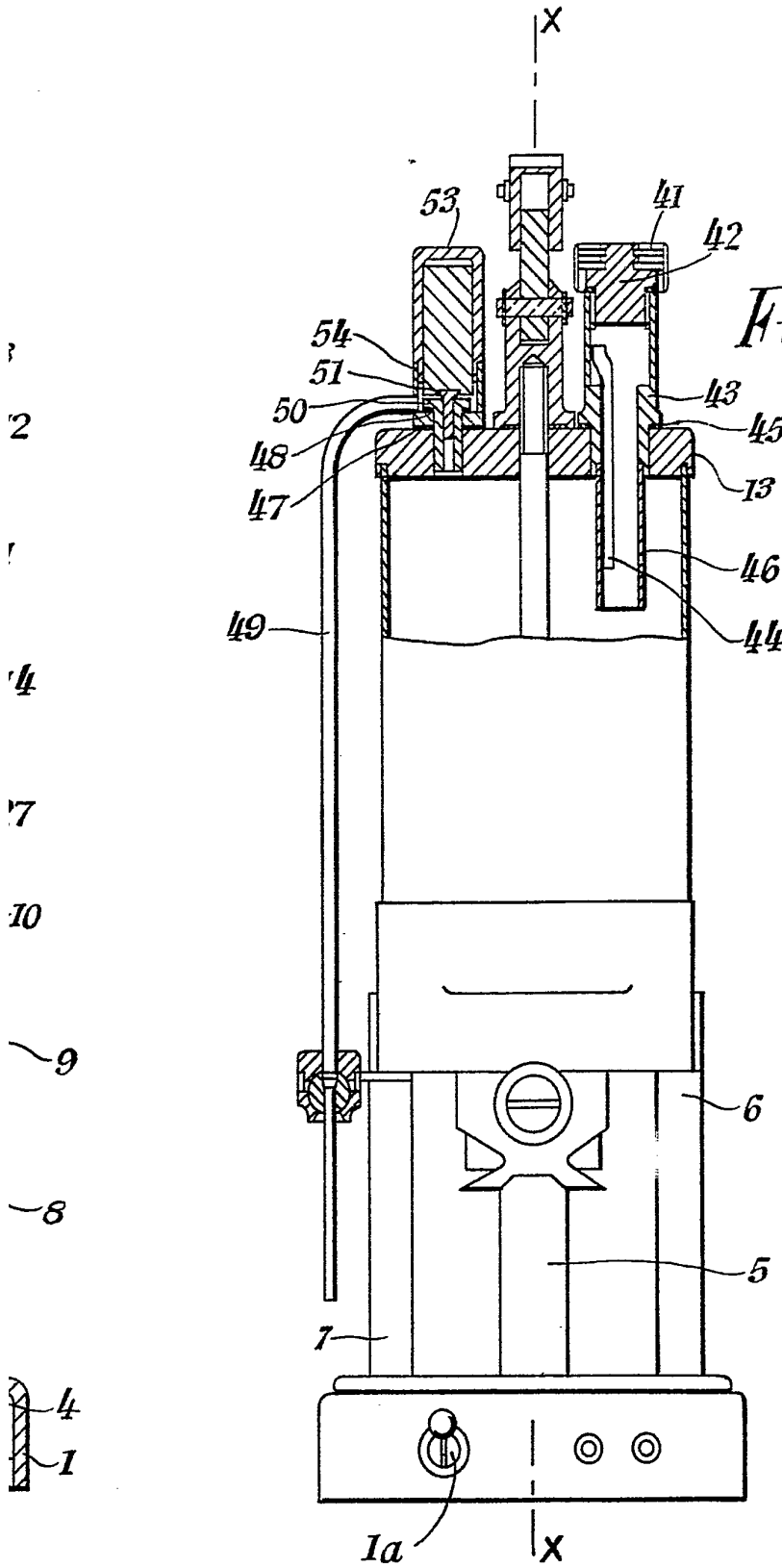
Fig. 1.



This drawing is a reproduction of  
the Original on a reduced scale.

SHEETS 1 & 2

*Fig. 2.*



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 2 SHEETS This drawing is a reproduction of  
 the Original on a reduced scale.  
 SHEETS 1 & 2

