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Publication number:

**0 221 584  
A2**

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## EUROPEAN PATENT APPLICATION

21 Application number: 86201671.4

51 Int. Cl.4: **D06F 25/00** , **D06F 58/18** ,  
**D06F 58/24**

22 Date of filing: 29.09.86

30 Priority: 02.10.85 GB 8524254  
02.10.85 GB 8524255  
02.10.85 GB 8524256

43 Date of publication of application:  
13.05.87 Bulletin 87/20

84 Designated Contracting States:  
DE FR GB IT

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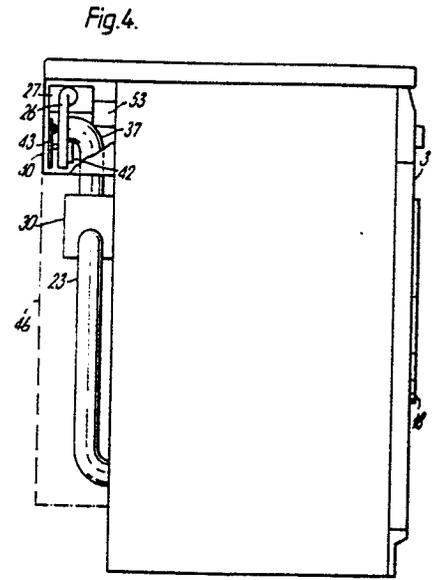
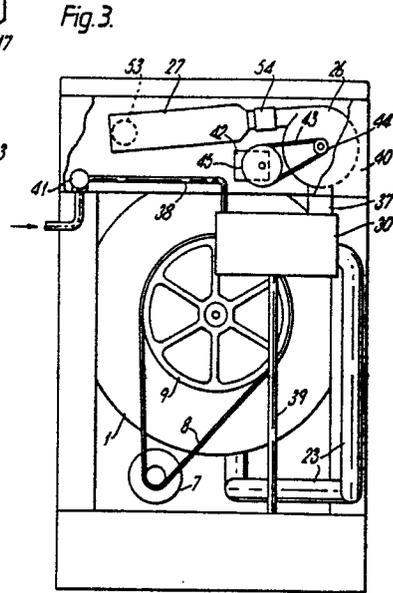
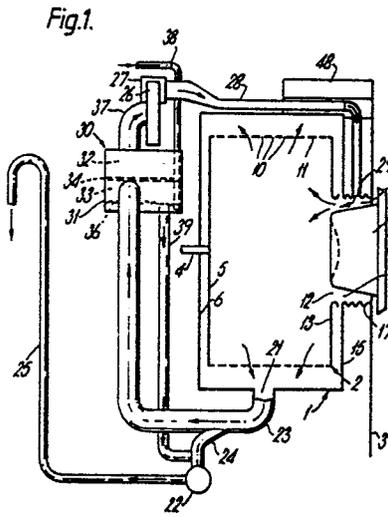
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### 54 Machine for washing and drying domestic laundry.

57 A machine for washing and drying domestic laundry comprises a cabinet (3) containing a stationary cylindrical tank (1) for holding washing liquor and a rotatable perforated drum (2) within the tank in which the laundry is washed and subsequently tumble-dried. For drying the laundry a stream of hot air produced by a fan (26) and heater (27) flows through a narrow duct (28) into the drum, the moist air leaving through an outlet (21) in the bottom of the tank which also serves for the removal of the dirty washing liquor. After being dried in a condenser - (30) the air returned to the fan for recirculation in the machine. A small high-speed fan is used which delivers air at high pressure and velocity so that air ducts of small cross-section can be used. The fan and the heater are housed in a box (40) which is attached to the back of the cabinet. With this ar-

rangement, and the use of small-section air ducts, a standard washing machine can readily be converted into a washer/dryer.

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## MACHINE FOR WASHING AND DRYING DOMESTIC LAUNDRY

This invention relates to a machine for washing and drying domestic laundry, comprising a cabinet containing a stationary tank for holding washing liquor, a perforated drum within the tank for holding laundry to be washed and subsequently dried in the drum, the drum being rotatable inside the tank about a horizontal axis, a fan and a heater for generating a stream of hot air for drying the laundry, and ducts for conducting the hot air from the heater into the drum and for conducting away from the tank the air which passes from the drum into the space between the drum and the tank via the perforations in the drum. This air may be exhausted to the exterior of the cabinet or it may be cooled to remove moisture from it by condensation and then be returned to the fan for recirculation in the machine. These washing and drying machines are often referred to as "washer/dryers".

The market for washer/dryers is at present quite small and this fact, coupled with the high cost of developing special machines, makes it an attractive proposition to convert an existing washing machine into a washer/dryer.

An arrangement for effecting such a conversion is disclosed in US-PS 2,680,917. In this known arrangement a unit comprising a fan, a heater and hot air ducts is provided for attachment to the back of the cabinet of a washing machine. The unit is very bulky, however, and covers the entire area of the back of the cabinet. Also, it simply discharges the hot air from the heater into the space between the stationary tank and the perforated drum within the tank, with the result that much of this air will escape directly through the vent openings which are provided in the wall of the cabinet and will not pass through the drum. Since no ducts are provided for conducting the hot air into the drum, the problem of accommodating such ducts within the interior of the washing machine does not arise in the known arrangement. It is an object of the present invention to contribute to a solution to this problem and also to enable a conversion unit to be constructed which will occupy much less space than the known unit.

According to the invention there is provided a machine for washing and drying domestic laundry, comprising a cabinet containing a stationary tank for holding washing liquor, a perforated drum within the tank for holding laundry to be washed and subsequently dried in the drum, the drum being rotatable inside the tank about a horizontal axis, a fan and a heater for generating a stream of hot air for drying the laundry, and ducts for conducting the hot air from the heater into the drum and for conducting away from the tank the air which

passes from the drum into the space between the drum and the tank via the perforations in the drum, characterised in that the fan is a high-speed fan and together with the heater and a motor for driving the fan is housed in a box which is mounted on the outside of the back of the cabinet.

With a high-speed fan a high pressure is developed, so that the heater may have a small heater chamber and air ducts of small cross-sectional area. Such ducts can readily be accommodated in the limited space available between the internal components of the machine. The high pressure of the air system also allows the air, at high velocity, to leave the tank through the relatively small hole which is normally provided in the bottom of the tank for the removal of the dirty washing liquor and rinsing water. Due to the small size of the fan and the heater chamber, the box in which the fan and heater are housed on the back of the cabinet adds very little to the depth of the machine.

In washer/dryers which have a detergent distributor located above the tank, a clearance is usually required between the detergent distributor and the tank to allow for the vibration of the tank as the drum accelerates at the beginning of the spinning operation. An embodiment of the invention which has a detergent distributor located above the tank and which utilises the clearance between the distributor and the tank to accommodate part of the duct which conducts the hot air from the heater into the drum is characterised in that this duct is made of an elastomeric material and extends across the top of the tank between the tank and the detergent distributor and down the front of the tank between the tank and the front wall of the cabinet to discharge into the drum through the front of the tank, at least the portion of the duct which extends between the tank and the detergent distributor having a flattened shape with an elongate cross-section. The utilisation of the narrow space between the detergent distributor and the tank to accommodate the portion of the hot-air duct which extends across the top of the tank is made possible by the use of an elastomeric material for the duct and the flattened shape of the duct, since the resulting flexibility of the walls of the duct allows them to absorb any shocks caused by vibratory contact between the tank and the duct.

An embodiment of the invention in which the front walls of the cabinet, the tank and the drum are formed with aligned openings through which laundry can be loaded into the drum, and a flexible annular seal extends between the front walls of the cabinet and the tank and is fixed to these walls around the openings therein, is characterised in

that the hot-air duct is connected at its discharge end to an aperture in the wall of the seal so as to discharge into the drum through the aperture and through the openings in the front walls of the tank and the drum. This arrangement avoids any need to interfere with the construction of the tank or the drum.

A discharge nozzle is preferably provided at the discharge end of the hot-air duct to direct the hot air stream from the duct into the drum, the nozzle having a discharge aperture which faces towards the opening in the front wall of the drum.

A simple method of connecting the hot-air duct to the aperture in the seal is provided in an embodiment of the invention which is characterised in that the portion of the hot-air duct which extends down the front of the tank also has a flattened shape with an elongate cross-section, and in that the aperture in the seal has an elongate shape corresponding to that of the cross-section of the hot-air duct at the discharge end thereof and extends in the circumferential direction of the seal end is surrounded by a wall which projects from the outer side of the seal and over which the discharge end of the duct fits.

One embodiment of the invention is characterised in that the wall which surrounds the aperture in the seal is supported internally by a rigid sleeve which has an elongate cross-section corresponding to the shape of the aperture in the seal and which also forms said discharge nozzle, the sleeve having a wall portion which projects from the inner side of the seal in a direction towards the opening in the front wall of the drum to form the discharge aperture of the nozzle.

In washer/dryers which comprise a condenser for removing moisture from the air used in the drying operation so that this air can be recirculated in the machine, the moist air being passed over cooling water in the condenser to effect the condensation, the duct through which the moist air is brought to the condenser is commonly employed to carry away the condensate and the used cooling water. With a high-speed fan the air duct cannot be used satisfactorily for this purpose since, due to its high velocity, the air flow in the duct will tend to impede the flow of water down the duct and even to drag water back into the condenser.

An embodiment of the invention which comprises a condenser for removing moisture from the air conducted away from the tank so that this air can be recirculated in the machine, the moist air being passed over cooling water in the condenser to effect the condensation, and ducts being provided for conducting the air from the tank to the condenser and from the condenser to the inlet of the fan, is characterised in that the condenser comprises upper and lower elongate chambers ex-

tending substantially horizontally one above the other and communicating with one another at one end, the lower chamber having at or adjacent its other end an inlet for the moist air and the upper chamber having an outlet through which air can leave the condenser, and the condenser further having an inlet through which cooling water can be fed to the lower chamber and an outlet in the bottom of the lower chamber through which cooling water and condensate can leave this chamber, the latter outlet being surrounded by a wall which projects upwardly from the bottom of the lower chamber and which acts as a weir to determine a constant level of cooling water in the lower chamber.

In a preferred construction the condenser comprises a vessel having the form of a U lying on its side with one limb directly above the other, the upper limb constituting the upper chamber of the condenser and the lower limb constituting the lower chamber and the connection between the limbs constituting a passage through which the chambers communicate with one another at said one end.

With this simple construction the condenser can be manufactured cheaply as a plastics moulding, preferably a blow moulding, to minimise the number of joints and keep the tool cost low. A simple stiffening of the moulding can be obtained by forming a rigid web between two parts of the moulding which form the upper and lower chambers of the condenser vessel.

A simple means of forming the wall around the outlet in the bottom of the lower chamber is provided in an embodiment of the invention which is characterised in that a pipe is connected to the outlet in the bottom of the lower chamber to conduct cooling water and condensate away from this chamber, and an end portion of said pipe projects upwardly into the lower chamber to form said wall.

An embodiment of the invention will now be described by way of example with reference to the accompanying drawings, in which

Figure 1 is a diagrammatic part-sectional side elevation of a washing and drying machine in which the air is recirculated via a condenser, the cabinet of the machine, with the exception of the front wall, being omitted for the sake of clarity,

Figure 2 is a diagrammatic rear elevation of the machine shown in Figure 1, with the whole of the cabinet omitted,

Figure 3 is a schematic rear elevation of a washing and drying machine according to an embodiment of the invention in which the air is recirculated as in the arrangement shown in Figures 1 and 2,

Figure 4 is a side elevation of the machine shown in Figure 3,

Figure 5 is a plan view of part of the interior of the machine shown in Figures 3 and 4, showing the duct through which hot air is conducted from the heater into the drum,

Figure 6 is a sectional front elevation of the upper part of the machine shown in Figures 3 and 4, the section being taken on the line VI-VI in Figure 5,

Figure 7 is a fragmentary sectional view taken on the line VII-VII in Figure 6 and drawn to a larger scale,

Figure 8 is a plan view of the hot-air duct shown in Figures 5 to 7,

Figure 9 is a longitudinal sectional view of the duct taken on the line IX-IX in Figure 8,

Figure 10 is an end view of the duct looking in the direction of the arrow X in Figure 8,

Figure 11 is a view similar to Figure 2 illustrating a preferred embodiment of the condenser, the same reference numerals being used for corresponding parts in the two figures, and

Figures 12, 13 and 14 are side, plan and end views respectively, drawn to a much larger scale, of the condenser shown in Figure 11.

The washing and drying machine shown diagrammatically in Figures 1 and 2 comprises a stationary tank 1 of cylindrical form for holding washing liquor and within the tank a rotatable perforated drum 2 for holding the laundry to be washed and dried. The tank 1 is suspended in a cabinet, of which the front wall is shown at 3 in Figure 1. The tank is arranged with its axis disposed horizontally, and the drum is rotatably supported in the tank coaxially therewith by a shaft 4 which projects from the rear end wall 5 of the drum and is journaled in a bearing (not shown) in the rear end wall 6 of the tank. Outside the tank the shaft 4 receives drive from an electric motor by which the drum 2 can be rotated at low speed in alternate directions during the washing and tumble-drying operations and at high speed in one direction only during the spinning operation. The motor is not shown in Figures 1 and 2 but Figure 3 shows a motor 7 which drives the drum of the machine shown in that figure through a belt 8 and a pulley 9 keyed on the shaft 4 of the drum.

The drum 2 has perforations 10 (Figure 1) in its cylindrical wall 11 and a large circular central opening 12 in its front end wall 13 through which the laundry can be loaded into the drum. The tank 1 has a similar opening 14 in its front end wall 15 and a corresponding opening is provided in the front wall 3 of the cabinet, the three openings being coaxial with one another. A flexible annular seal 17, for example, a rubber bellows seal, is fixed to the front end wall 15 of the tank 1 around the opening 14 therein and to the front wall 3 of the cabinet around the corresponding opening in this wall. For

closing this opening a hinged porthole door 18 is provided on the front wall of the cabinet, the door being arranged to seat in a water-and air-tight manner on a rim of the seal 17 at the front edge of the seal, and the construction of this seal and the door 18 being such as to leave an annular space 19 between the seal 17 and a transparent portion 20 of the door which has a frusto-conical shape and protrudes into the openings 14 and 12 in the front of the tank 1 and the drum 2.

In the bottom of the tank 1 is an outlet 21 through which the dirty washing liquor and rinsing water is removed from the tank by a pump 22. The water expelled from the laundry during the spinning operation is also pumped from the tank through the outlet 21. A pipe 23 leads away from this outlet and has a branch 24 which is connected to the inlet of the pump 22. A drainage pipe 25 is connected to the outlet of the pump.

Following the spinning operation the laundry is tumble-dried in the drum 2 by passing a stream of hot air over the laundry while the drum is rotated at low speed in alternate directions. The stream of hot air is produced by a high-speed fan 26 and an electric heater 27. Hot air from the heater flows into the drum 2 through a duct 28 which passes over the top of the tank 1 and down the front of the tank to discharge into the interior of the drum 2 through an aperture 29 in the wall of the bellows seal 17, the space 19 between the seal 17 and the protruding portion 20 of the door 18, and the openings 14 and 12 in the front walls of the tank and the drum. The hot air passes over the laundry in the drum 2 to extract moisture therefrom and then flows through the perforations 10 in the cylindrical wall 11 of the drum into the space between this wall and the surrounding wall of the tank 1. The moist air leaves this space via the outlet 21 in the bottom of the tank and the pipe 23, which serves as a duct for conducting the moist air to a condenser 30. Alternatively, the pipe 23 can be arranged to discharge the moist air to atmosphere externally of the machine, preferably through a lint filter and if desired through an extensible hose.

The condenser 30 comprises a container 31 which is divided internally into upper and lower chambers 32 and 33 respectively by a horizontal partition 34 which ends some distance from one wall of the container to leave an opening 35 through which the chambers communicate with one another. The pipe 23 opens into the lower chamber 33 through the opposite wall of the container 31 so that the moist air flowing from the pipe 23 is constrained to flow over the surface of a quantity of cooling water 36 in the bottom of the container 31. The water vapour in the air is condensed by this cooling water and precipitated from the air stream, which then flows through the opening 35 into the

upper chamber 32 of the container, whence it is conducted by a duct 37 to the inlet of the fan 26. The container 31 has a large volume in order to reduce the velocity of the air flow over the cooling water 36. This water is fed into the container during the drying operation through a valve-controlled inlet pipe 38 and leaves the container through an outlet pipe 39. One end of this pipe projects up into the lower chamber 33 through the bottom of the container; the other end is connected to the branch pipe 24 which connects the pipe 23 to the pump 22. The depth of the cooling water in the chamber 33 is determined by the height to which the end of the pipe 39 projects into the chamber. The container should, of course, be mounted well above the level to which the tank 1 is filled with water for the washing operation in order to avoid flooding the container.

The washing and drying machine shown in Figures 3 and 4 is similar in construction and operation to the machine shown diagrammatically in Figures 1 and 2 and described above, and corresponding parts of the machines bear the same reference numerals. Figures 3 and 4 show the whole of the cabinet of the machine with the exception of the back panel, which has been removed so that the tank 1 and the drive 8,9 from the motor 7 to the shaft 4 of the drum can be seen. Figures 3 and 4 also show schematically a box 40 in which the fan 26 and heater 27 are housed and which is attached by screws or bolts (not shown) to the rear of the cabinet. The rear wall of the box 40 in Figure 3 and a side wall in Figure 4 have been broken away to show the parts which are housed in the box. In addition to the fan and the heater these parts include a valve 41 for controlling the water feed to the condenser 30 through the pipe 38 and an electric motor 42 for driving the fan, the drive being transmitted through a belt 43 and pulleys 44 and 45 on the shaft of the fan impeller and the motor shaft respectively. The condenser 30 is mounted on the back of the machine directly beneath the box 40, the water pipe 38 and air duct 37 extending through holes in the bottom of the box. The cabinet has a specially shaped back panel to cover the condenser, which panel is represented by dot-dash lines 46 in Figure 4.

The fan 26 is driven at very high speed, for example, 7,000 r.p.m., in order to deliver air at high pressure and velocity. This allows a small fan and a heater with a small heater chamber to be used so that the dimensions of the box 40 can be kept to a minimum. When the box is fitted on the back of a standard washing machine to convert it into a washer/dryer, the overall depth of the machine can still be kept within the European standard of 60 cm. The air pressure at the fan outlet may be within the range 4 cm to 8 cm of water. With a high air

pressure the air ducts may have a small cross-sectional area. This is of particular benefit in the case of the hot-air duct 28 (Figures 1 and 2) which extends from the heater 27 across the top of the tank 1, since the interior of a washing machine tends to be particularly congested in this region. The corresponding region of the interior of the washing and drying machine of Figures 3 and 4 is shown in Figures 5 and 6, from which it can be seen that the space above the tank 1 is largely occupied by a vibration-damping mass 47, for example, a concrete block, which is secured to the tank, and a detergent drawer 48 which dispenses detergent etc. for the washing operation. A good clearance is needed between the detergent drawer and the top of the tank 1 to allow for the amplitude of vibration of the resiliently suspended tank when the speed of the drum passes through the resonant frequency at the beginning of the spinning operation, and this clearance is utilised to accommodate the portion 49 of the hot-air duct 28 which extends across the top of the tank 1. This portion and the portion 50 which extends down the front of the tank have a flattened shape with an elongate cross-section, the two flat major walls of the portion 49 being stiffened in the lateral direction by ribs 51. The duct has a corrugated neck portion 52 of circular cross-section which is connected to an outlet duct 53 from the heater 27, the inlet of which is connected to the outlet of the fan 26 at 54. Between the neck portion 52 and the portion 49 the duct 28 has a portion 55 in which the cross-section of the duct gradually changes from a circular to an elongate shape. At its discharge end the duct 28 is connected to the aperture 29 in the wall of the bellows seal 17 which extends between the front end wall 15 of the tank 1 and the front wall 3 of the cabinet. As shown in Figures 6 and 7, this aperture is of elongate shape to match the cross-section of the portion 50 of the duct 28 and extends in the circumferential direction of the seal 17. The aperture 29 is surrounded by an upstanding wall 56 which projects from the outer side of the seal 17 and over which fits the end of the duct portion 50. The wall 56 is supported internally by a rigid sleeve 57 which is made of a plastics material and which has an elongate cross-section corresponding to the shape of the aperture 29. The sleeve 57 is formed with outwardly directed flanges 58 which engage over the edges of the wall 56 to secure the sleeve in the aperture 29, and a stiffening web 59 is formed across the middle of the sleeve. The sleeve 57 also forms a discharge nozzle for the duct 28, for which purpose the sleeve has a wall portion 60 which projects from the inner side of the seal 17 and curves round in a rearward direction to form a rearwardly facing discharge aperture 61 which directs the hot air stream from the duct 28

towards the central opening 12 (Figure 1) in the front wall of the drum 2. Due to this and to the high velocity of the air stream, very little hot air escapes into the gap between the front walls of the tank and the drum and by-passes the interior of the drum. To prevent small items of laundry entering this gap, an annular rim (not shown) is provided on the seal 17.

The duct 28 is made of a heat-resistant elastomeric material, for example, silicone rubber, which allows it to be routed through the narrow space between the detergent dispenser 48 and the tank 1. Shocks caused by contact between the duct and the tank as the latter vibrates during acceleration of the drum to its spin speed are absorbed by deformation of the flexible walls of the duct. The elastomeric material and flattened shape of the duct 28 allow the duct to expand under the pressure of the air when the fan comes into operation and to collapse when the fan stops.

Although they are not shown in the drawings, thermostats are provided to control the drying temperatures, and the drying cycle is controlled by an adjustable timer (not shown).

A preferred construction of the condenser 30 is shown in Figures 11 to 14. In this construction the condenser comprises a vessel 61 having the form of a U lying on its side with one limb directly above the other. The upper limb constitutes an elongate upper chamber 32 of the vessel and the lower limb an elongate lower chamber 33, the two chambers extending substantially horizontally. The connection between the two limbs constitutes a passage 62 through which the chambers communicate with one another at one end. Adjacent its other end, in one side, the lower chamber 33 has an inlet 63 for the moist air, to which inlet the pipe 23 is connected. In the top of the upper chamber 32, near the end thereof which is remote from the passage 62, is an outlet 64 through which air can leave the vessel 61. This outlet is connected to the duct 37 leading to the inlet of the fan 26. Also in the top of the upper chamber 32, directly above the passage 62, is an inlet 65 for cooling water, to which inlet a valve-controlled feed pipe 38 is connected. During the tumble-drying operation, cold water from the household supply is fed continuously to the lower chamber 33 via the pipe 38, which extends down through the passage 62 to a point just above the bottom of the lower chamber. Water leaves this chamber through an outlet 66 in the bottom of the chamber and the pipe 39, which is connected at one end to the outlet 66 and at the other end to the branch pipe 24 which connects the pipe 23 to the pump 22. As indicated in dot-dash lines in Figure 4, the upper end of the pipe 39 extends into the lower chamber 33 for a short distance to form a wall 67 projecting upwardly from the bottom of the

chamber 33 around the outlet 66. As shown in Figure 11, this wall acts as a weir to determine a constant level of cooling water 68 in the lower chamber. The moist air conducted into the chamber 33 by the pipe 23 flows over the surface of this water, and the water vapour in the air is condensed thereby and precipitated from the air stream. The air flow over the water outlet 66 tends to pick up a part of the water, creating droplets above the outlet and so assisting the action of the condenser. From the lower chamber 33 the air flows through the passage 62 into the upper chamber 32 and thence through the outlet 64 into the inlet duct 37 of the fan 26 for recirculation in the machine. In the upper chamber 32, drops of water picked up by the air flow over the cooling water in the lower chamber are deposited on the walls of the upper chamber before the air accelerates into the fan inlet duct 37. These drops of water run down to the bottom of the upper chamber and thence back into the lower chamber, the bottom wall of the upper chamber sloping downwardly from the side walls to facilitate this, as can be seen in Figure 14.

The chambers 32 and 33 have a substantially larger cross-sectional area than the pipe 23 in order to reduce the velocity of the moist air entering the condenser and flowing over the cooling water 68.

The condenser vessel 61 can be manufactured cheaply as a plastics moulding, preferably a blow moulding in, for example, polypropylene, so as to have the minimum number of joints and to keep the tool cost low. To stiffen the moulding a rigid web 69 is formed between the two parts which constitute the upper and lower chambers of the condenser vessel.

## Claims

1. A machine for washing and drying domestic laundry, comprising a cabinet containing a stationary tank for holding washing liquor, a perforated drum within the tank for holding laundry to be washed and subsequently dried in the drum, the drum being rotatable inside the tank about a horizontal axis, a fan and a heater for generating a stream of hot air for drying the laundry, and ducts for conducting the hot air from the heater into the drum and for conducting away from the tank the air which passes from the drum into the space between the drum and the tank via the perforations in the drum, characterised in that the fan is a high-speed fan and together with the heater and a motor for driving the fan is housed in a box which is mounted on the outside of the back of the cabinet.

2. A washing and drying machine as claimed in Claim 1 and having a detergent distributor located above the tank, characterised in that the duct which conducts the hot air from the heater into the drum is made of an elastomeric material and extends across the top of the tank between the tank and the detergent distributor and down the front of the tank between the tank and the front wall of the cabinet to discharge into the drum through the front of the tank, at least the portion of the duct which extends between the tank and the detergent distributor having a flattened shape with an elongate cross-section.

3. A washing and drying machine as claimed in Claim 1 or 2 and in which the front walls of the cabinet, the tank and the drum are formed with aligned openings through which laundry can be loaded into the drum, and a flexible annular seal extends between the front walls of the cabinet and the tank and is fixed to these walls around the openings therein, characterised in that the hot-air duct is connected at its discharge end to an aperture in the wall of the seal so as to discharge into the drum through the aperture and through the openings in the front walls of the tank and the drum.

4. A washing and drying machine as claimed in Claims 2 and 3, characterised in that a discharge nozzle is provided at the discharge end of the hot-air duct, the nozzle having a discharge aperture which faces towards the opening in the front wall of the drum.

5. A washing and drying machine as claimed in Claims 2 and 3 or Claim 4, characterised in that the portion of the hot-air duct which extends down the front of the tank also has a flattened shape with an elongate cross-section, and in that the aperture in the seal has an elongate shape corresponding to that of the cross-section of the hot-air duct at the discharge end thereof and extends in the circumferential direction of the seal and is surrounded by a wall which projects from the outer side of the seal and over which the discharge end of the duct fits.

6. A washing and drying machine as claimed in Claims 4 and 5, characterised in that the wall which surrounds the aperture in the seal is supported internally by a rigid sleeve which has an elongate cross-section corresponding to the shape of the aperture in the seal and which also forms said discharge nozzle, the sleeve having a wall portion which projects from the inner side of the seal in a direction towards the opening in the front wall of the drum to form the discharge aperture of the nozzle.

7. A washing and drying machine as claimed in any of the preceding claims and which comprises a condenser for removing moisture from the air con-

ducted away from the tank so that this air can be recirculated in the machine, the moist air being passed over cooling water in the condenser to effect the condensation, and ducts being provided for conducting the air from the tank to the condenser and from the condenser to the inlet of the fan, characterised in that the condenser comprises upper and lower elongate chambers extending substantially horizontally one above the other and communicating with one another at one end, the lower chamber having at or adjacent its other end an inlet for the moist air and the upper chamber having an outlet through which air can leave the condenser, and the condenser further having an inlet through which cooling water can be fed to the lower chamber and an outlet in the bottom of the lower chamber through which cooling water and condensate can leave this chamber, the latter outlet being surrounded by a wall which projects upwardly from the bottom of the lower chamber and which acts as a weir to determine a constant level of cooling water in the lower chamber.

8. A washing and drying machine as claimed in Claim 7, characterised in that the condenser comprises a vessel having the form of a U lying on its side with one limb directly above the other, the upper limb constituting the upper chamber of the condenser and the lower limb constituting the lower chamber and the connection between the limbs constituting a passage through which the chambers communicate with one another at said one end.

9. A washing and drying machine as claimed in Claim 8, characterised in that the vessel is manufactured as a plastics moulding with a stiffening web between two parts of the moulding which form the upper and lower chambers of the vessel.

10. A washing and drying machine as claimed in Claim 7, 8 or 9, characterised in that a pipe is connected to the outlet in the bottom of the lower chamber to conduct cooling water and condensate away from this chamber, and an end portion of said pipe projects upwardly into the lower chamber to form said wall.

11. A washing and drying machine as claimed in any of Claims 7 to 10 and comprising a pipe for feeding cooling water to the condenser, characterised in that a valve for controlling the water feed to the condenser through said pipe is housed in said box.

12. A washing and drying machine as claimed in Claim 11, characterised in that the condenser is mounted beneath said box, the feed pipe for the cooling water and the duct for conducting the air from the condenser to the inlet of the fan passing through the bottom of the box.

13. A machine for washing and drying domestic laundry, substantially as herein described with reference to the accompanying drawings.

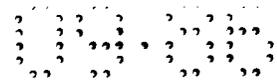


Fig.1.

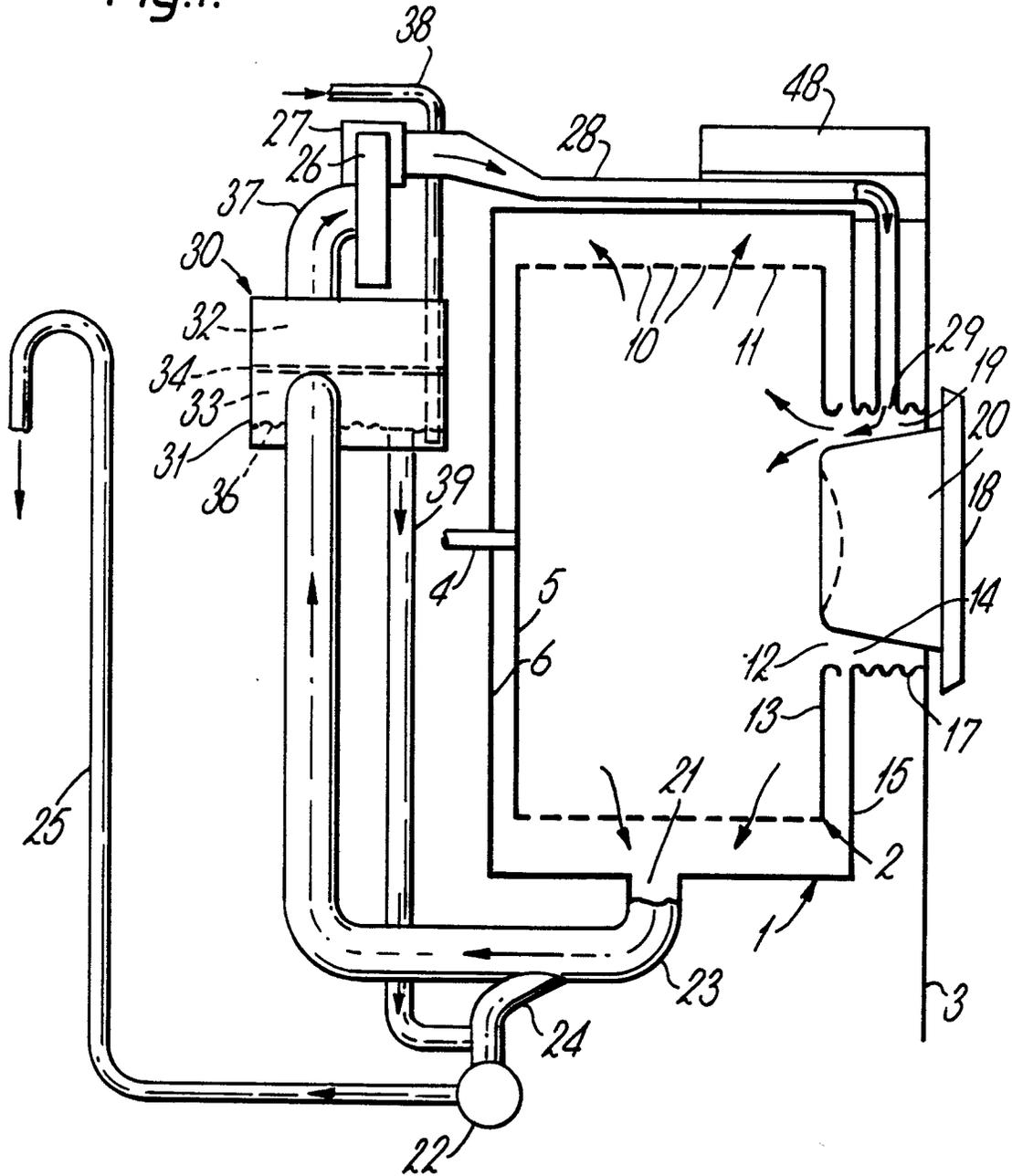




Fig. 2.

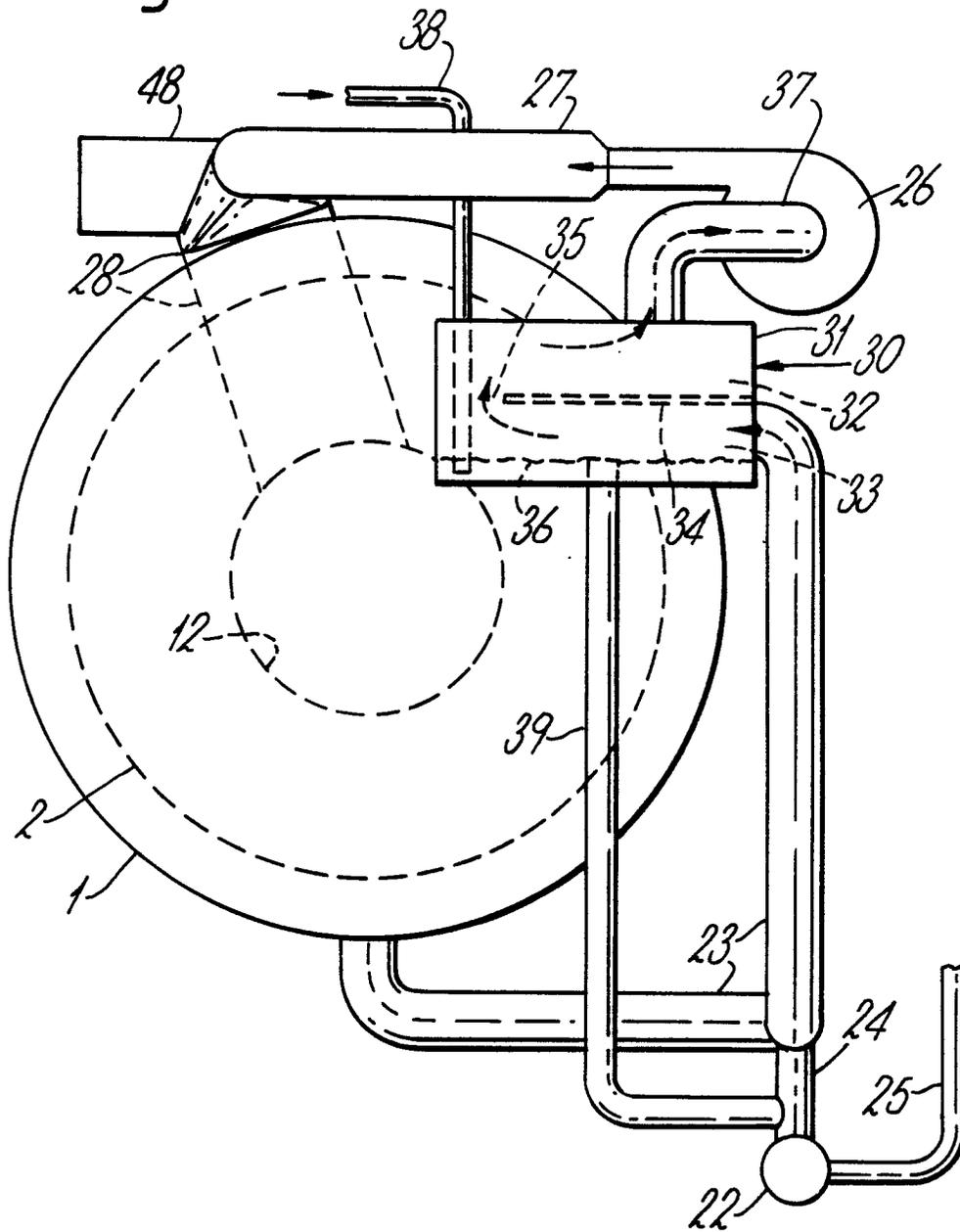


Fig. 3.

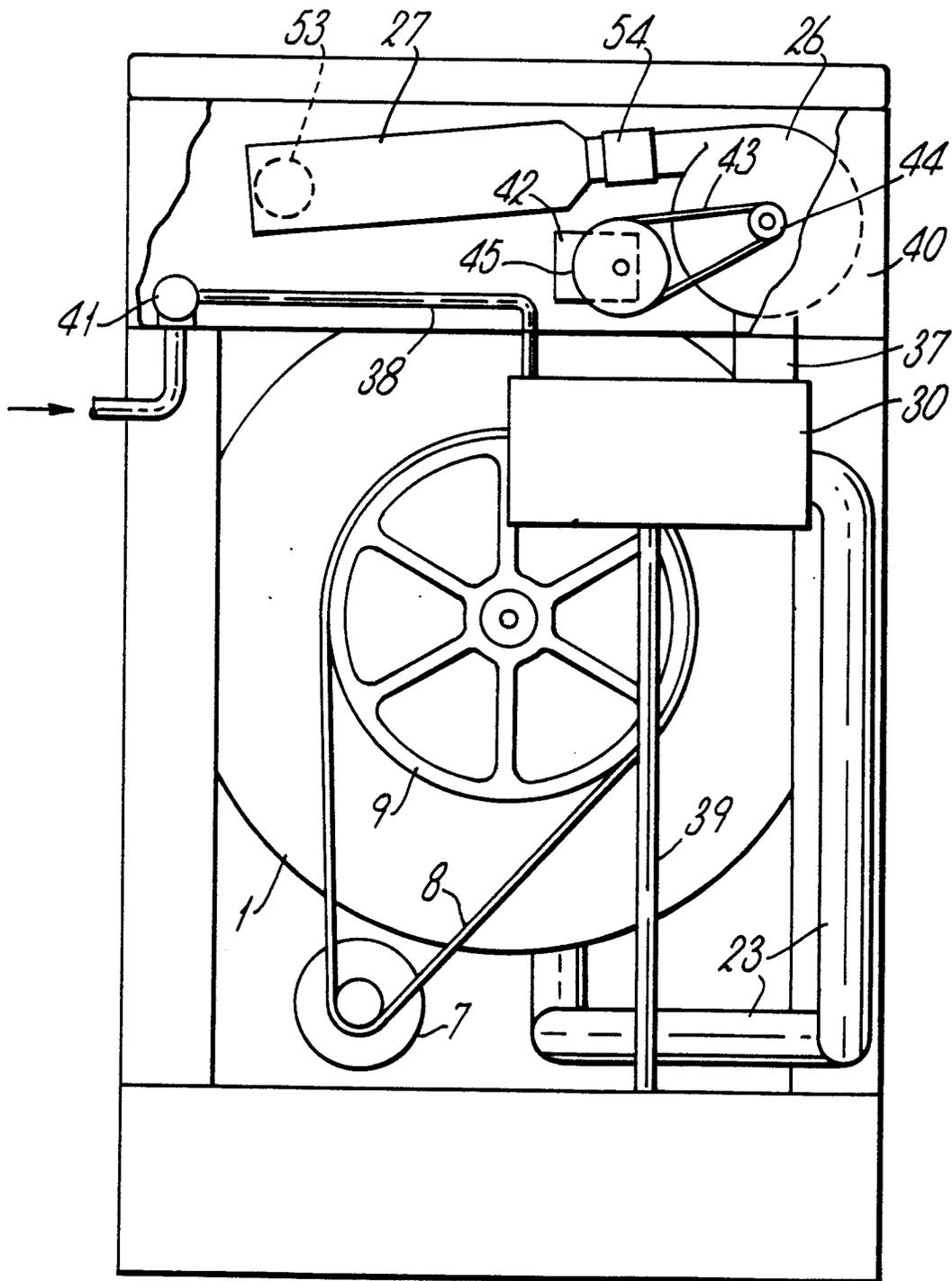
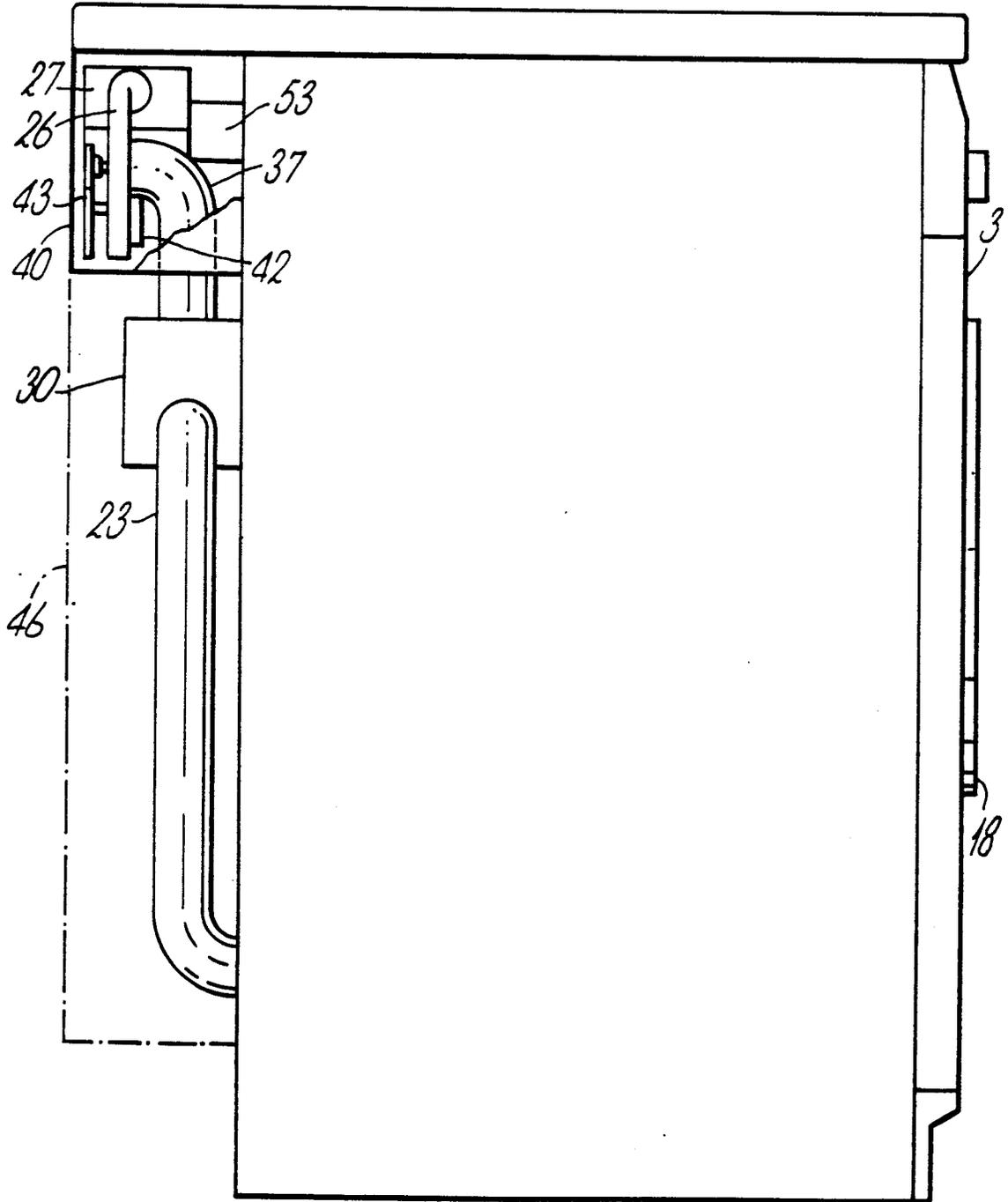


Fig.4.



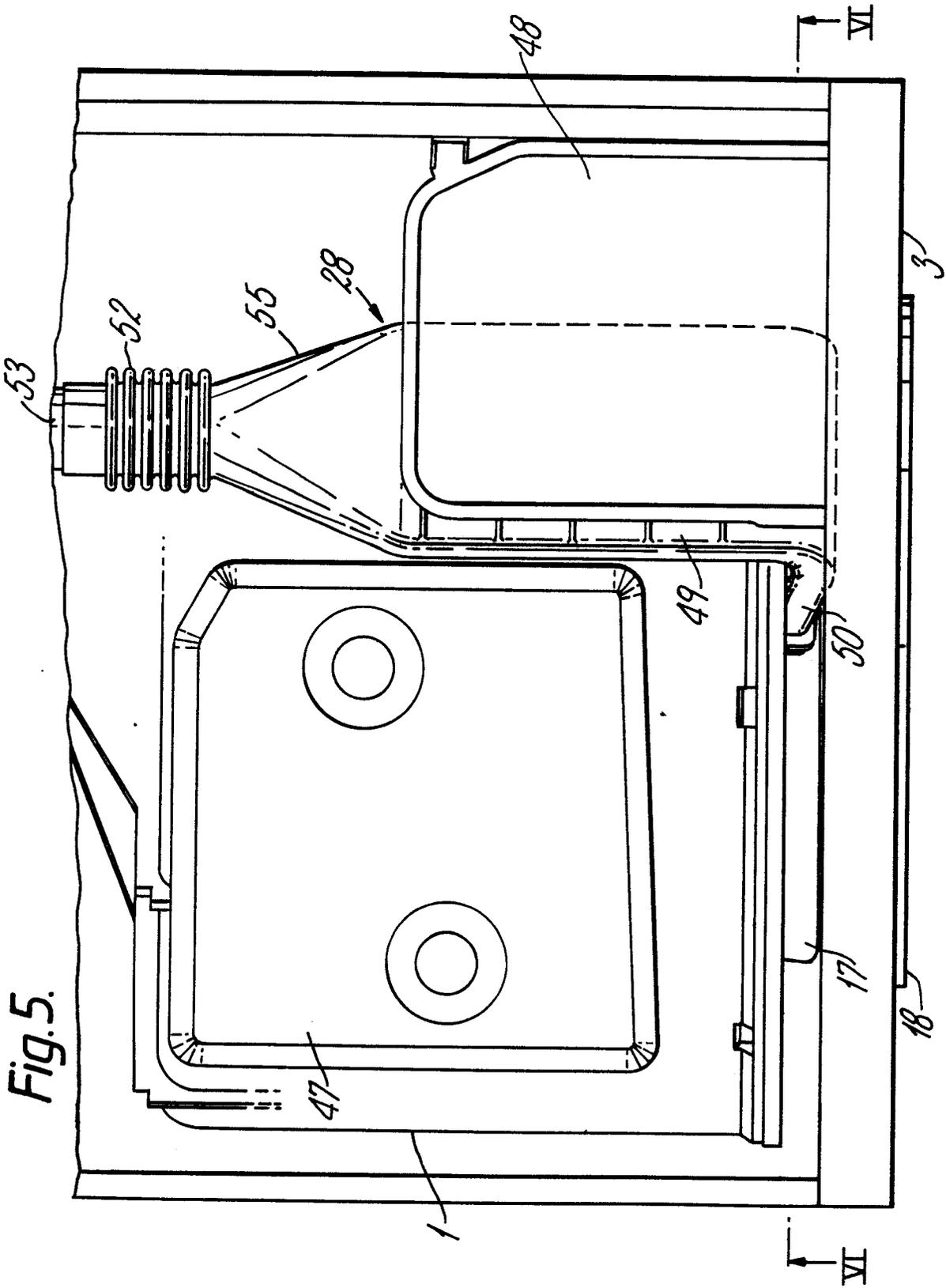


Fig. 5.

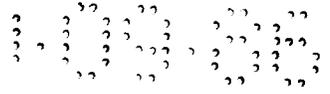
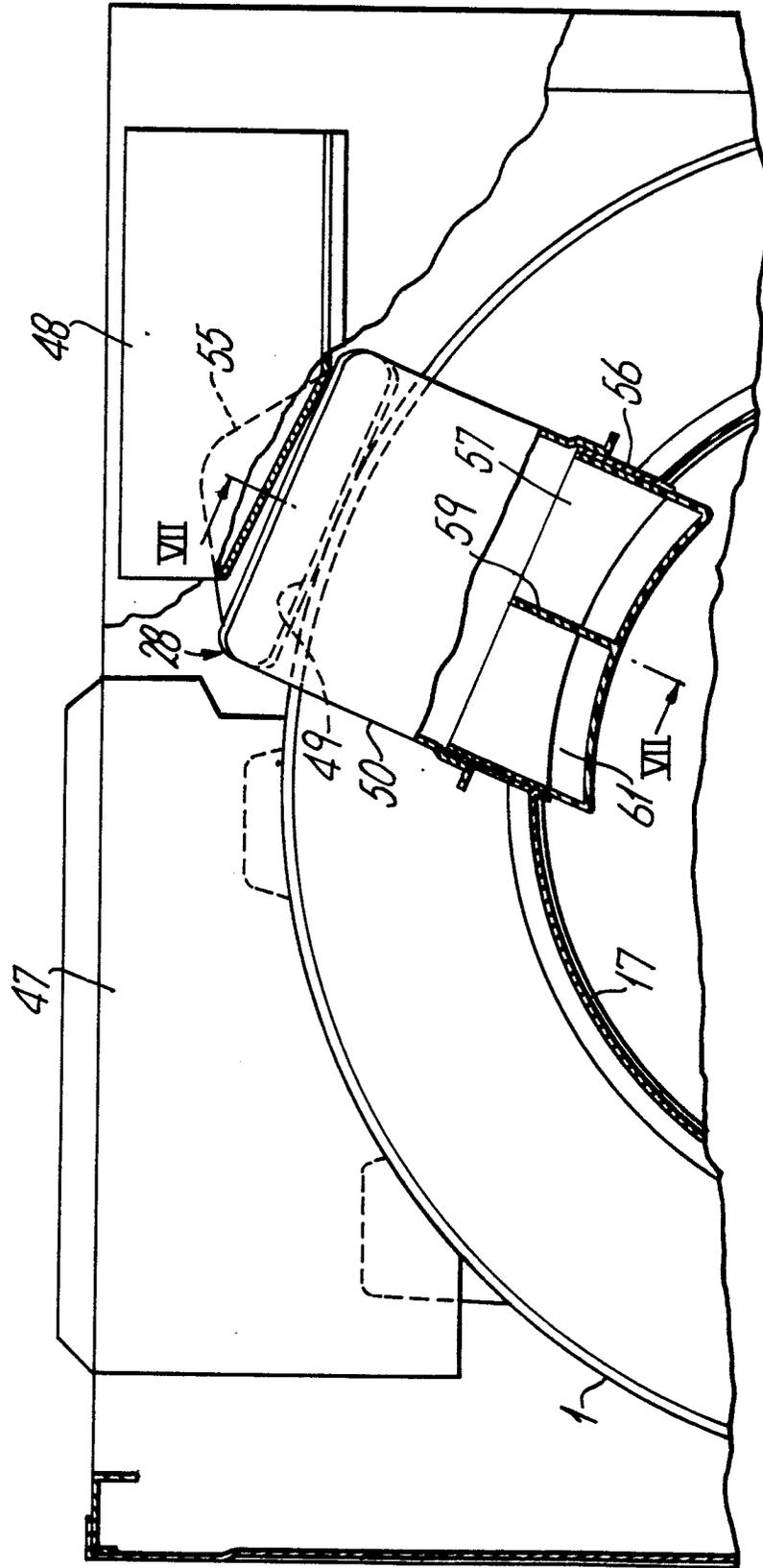
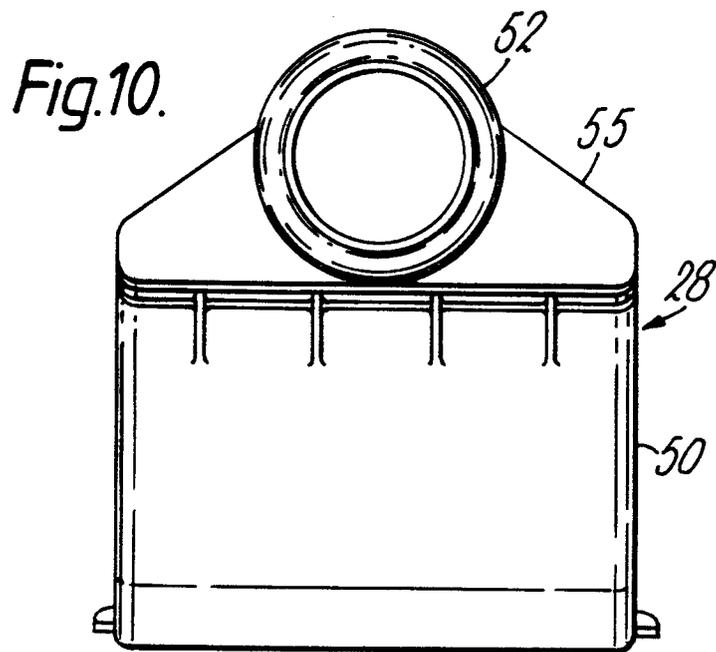
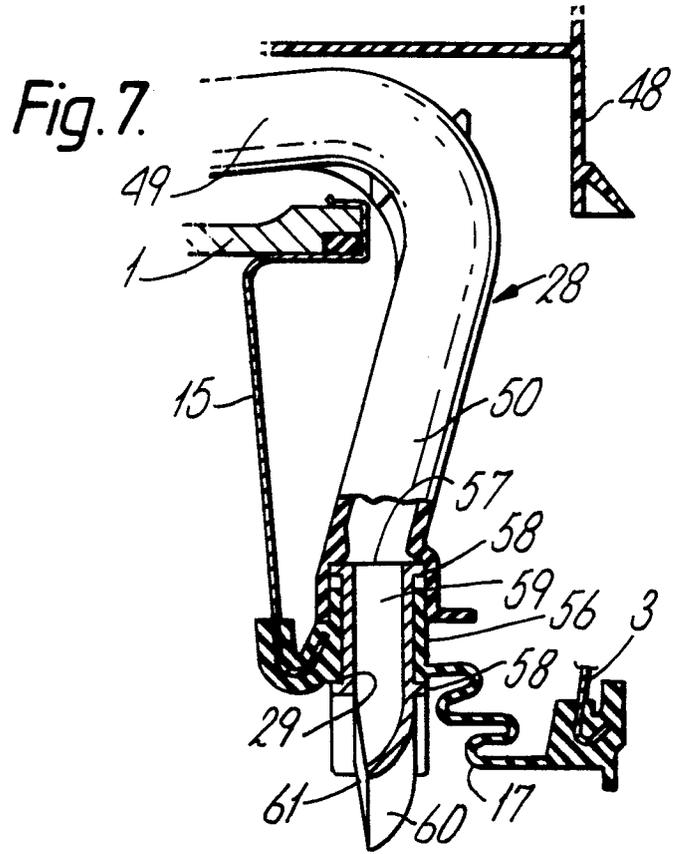
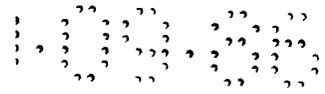


Fig.6.





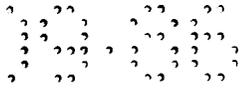


Fig. 8.

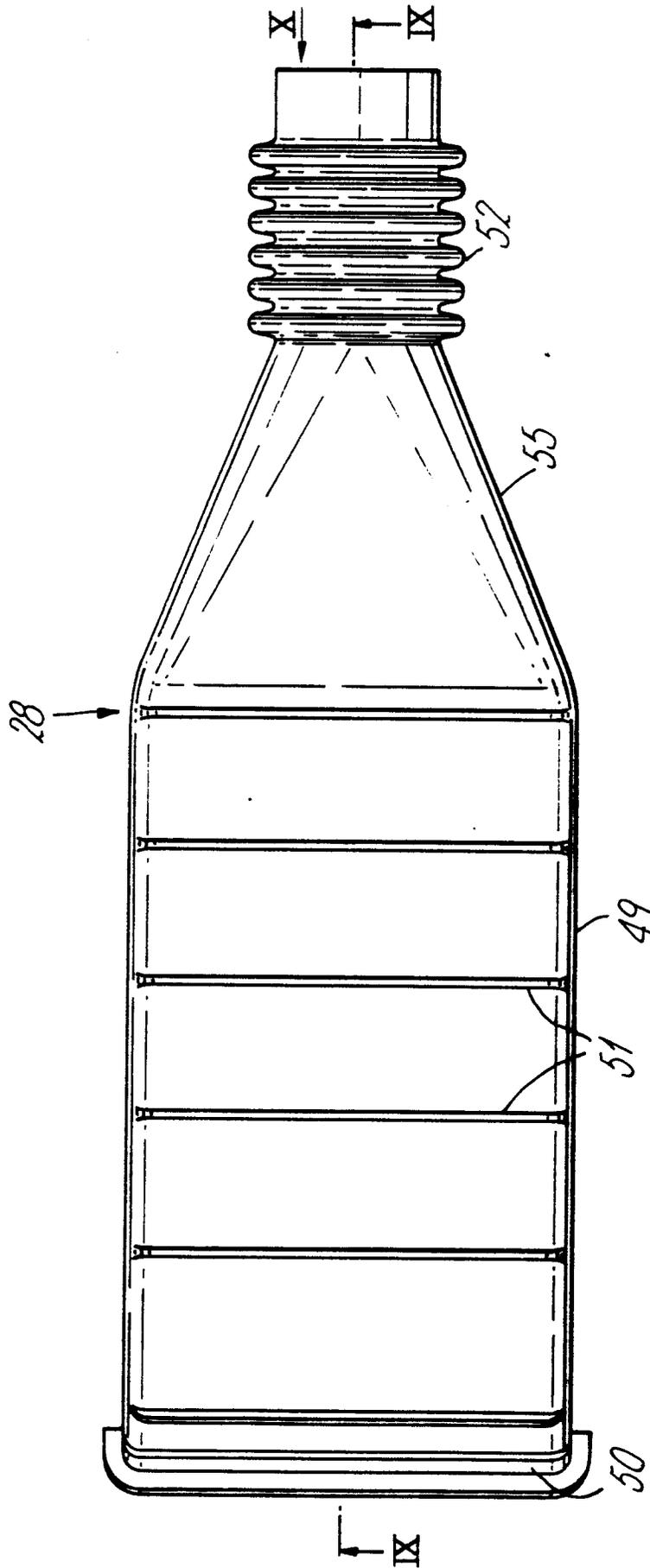




Fig. 9.

