



(19)

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(11)

EP 0 831 230 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
25.03.1998 Bulletin 1998/13

(51) Int. Cl.⁶: **F04B 23/06**, F04B 41/02

(21) Application number: **97202738.7**

(22) Date of filing: **04.09.1997**

(84) Designated Contracting States:
**AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE**
Designated Extension States:
AL LT LV RO SI

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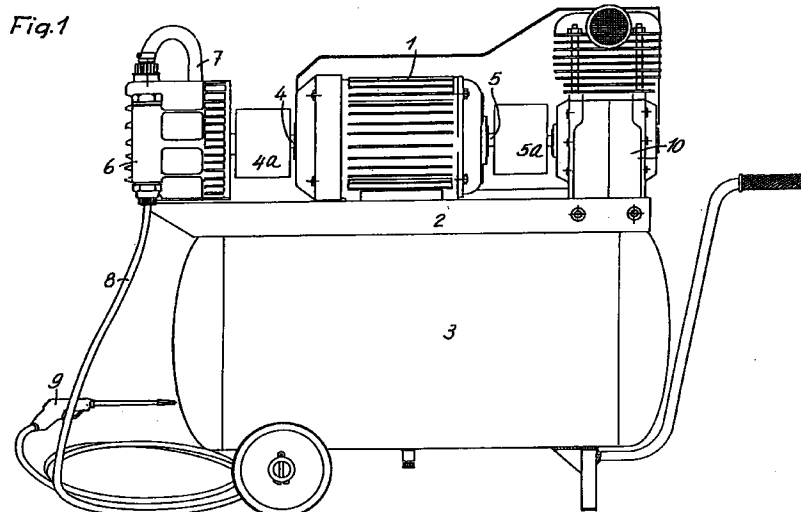
(30) Priority: **19.09.1996 IT MN960029**

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(54) Combined two-function air compressor and jet washer device

(57) A combined two-function air compressor and jet washer device, comprising an electric motor (1) the shaft of which is provided with means for its selective connection to the air compression unit and to the jet washer pump, the electric motor being of the type having two directions of rotation, the means for selectively

connecting the shaft (4, 5) to the air compression unit (10) and to the jet washer pump (6) being two free wheels (41 and 51) mounted such that they have opposite dragging directions.



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Description

This invention relates to a combined two-function air compressor and jet washer device for non-professional use.

Low-capacity air compressors comprising a compressed air receiver supporting the unit for compressing air drawn from the atmosphere and the electric drive motor therefore, and jet washers comprising a pump which draws water from a feed line and delivers it to a hose provided at its end with a jet gun, are both widely used.

These devices are both very costly and require a certain storage space, which greatly limit their use in the private sector.

To obviate these drawbacks, devices are known comprising in a single unit an electric motor provided with means which enable it to be selectively connected to an air compressor and to a jet washer pump which are situated on the same support, preferably consisting of the compressed air receiver, as described in Italian patent application MN95A000008 in the name of the present applicant.

Known devices have however a series of problems concerning the selective operation of the pump or compressor, achieved by frontal connectors which to pass from one function to the other require a series of operations to be carried out in which considerable attention has to be paid by the operator in order to prevent erroneous operation or damage to the machine.

In this respect, it is apparent that if the operator forgets to disconnect one of the two appliances, ie pump or compressor, when the other appliance is to be used, he not only causes undesirable overloading of the motor but also probable damage to that appliance which was not to be used.

An example would be the use of the compressor with the water pump also in operation, but not necessarily connected to the water supply.

The object of the present invention is to provide a unit able to act both as an air compressor and as a jet washer, in which to pass from one function to the other the operator has to operate only one control, and in which disengagement of the function not to be used is automatically ensured.

Said object is attained within the framework of a reliable, simple and economical mechanical arrangement suitable for private use.

Said object is attained according to the invention by a combined device for the two functions of air compressor and jet washer, comprising an electric motor with two directions of rotation provided with means for its selective connection to the air compression unit and to the jet washer pump, the shaft of said electric motor being connected respectively to the air compression unit and to the jet washer pump by two free wheels mounted with opposite dragging directions.

Further characteristics and advantages of the

invention will be apparent from the description of some preferred but not exclusive embodiments thereof, illustrated by way of non-limiting example on the accompanying drawings, in which:

Figure 1 shows a first embodiment of the invention; Figure 2 shows a second embodiment of the invention;

Figure 3 is a section on the plane III-III of Figure 2; Figure 4 is a plan view of a third embodiment of the invention.

In said Figure 1, the reference numeral 1 indicates the electric motor with two directions of rotation mounted, as in the case of the other components to be described, on a frame 2 fixed to the top of the compressed air receiver 3.

Both ends 4 and 5 of said electric motor 1 emerge from its casing.

The shaft end 4 is connected via the free wheel 41 to the jet washer pump 6, the suction side of which can be connected to a water feed line by means of the hose 7, its delivery side being connected to the hose 8 which terminates with the jet gun 9.

The shaft end 5 is connected via the free wheel 51 to the unit 10 compressing the air to be fed to the receiver 3, said free wheel 51 being mounted with its dragging direction opposite that of the free wheel 41.

In this manner for each of the two directions of rotation of the electric motor 1, only one of the two members, ie of the pump 6 and the unit 10, is driven.

It will be assumed for example that when the ends 4 and 5 of the output shaft of the electric motor 1 rotate clockwise, the free wheel 41 rotates the member connected to it, whereas the free wheel 51 operates idly.

In this situation, the device hence operates as a jet washer because whereas the pump 6 is rotated, the air compression unit 10 is at rest.

To switch the device functions in order to convert it into an air compressor, it is sufficient to reverse the direction of rotation of the electric motor, the conversion then being automatic.

In this respect, with its direction anti-clockwise, the free wheel 51 locks to rotate the member connected to it, with the result that the air compression unit 10 is operated while the pump 6 remains inactive.

A different embodiment of the invention is shown in Figures 2 and 3.

In this embodiment the shaft of the electric motor 11 has only one output end 110, which is permanently connected to the shaft 111 of the air compression unit 16.

The shaft 111 is connected via the free wheel 12 to the jet washer pump 13 and, via the interposed free wheel 14 having the opposite dragging direction to the free wheel 12, carries the cam 15 (see Figure 3) which operates the connecting rod 161 of the air compression unit 16.

It is apparent that when the electric motor assumes the direction of rotation for which the free wheel 12 is active, the device operates as a jet washer because the operating cam 15 for the connecting rod 161 of the air compression unit 16 remains immobile as the respective free wheel 14 is idle. 5

In contrast, on reversing the direction of rotation of the motor 11 the free wheel 14 is locked and the air compression unit 16 is operated, whereas the free wheel 12 is idle and consequently the pump 13 is inactive. 10

Figure 4 shows a further embodiment in which the output shaft of the electric motor 17 has two ends 171 and 172 emerging from the casing.

On the end 171 there is keyed the free wheel 181 for connection to the pulley 182 operating the drive belt 183 for the air compression unit 184. 15

On the shaft end 172 there is keyed the free wheel 191 for connection to the jet washer pump 192 and having the opposite dragging direction to the free wheel 181. 20

The method of operation of this embodiment is the same as the preceding.

From the description it is apparent that all the objects of the invention relative to the ease of function switching from jet washer to air compressor and vice versa are attained, with the guarantee that only one of the two functions is active. 25

The invention is susceptible to numerous modifications all falling within the scope of the inventive concept, for example the linkages comprising the free wheel which connect the electric motor to the pump and to the compressor can assume any form. 30

Claims 35

1. A combined two-function air compressor and jet washer device, comprising an electric motor the shaft of which is provided with means for its selective connection to the air compression unit and to the jet washer pump, characterised in that the electric motor is of the type having two directions of rotation, the means for selectively connecting the shaft to the air compression unit and to the jet washer pump being two free wheels mounted such that they have opposite dragging directions. 40 45
2. A device as claimed in claim 1, characterised in that both the ends of the electric motor shaft emerge from the casing and are connected, via the free wheels of opposite dragging directions, to the air compression unit and to the jet washer pump respectively. 50
3. A device as claimed in claim 1, characterised in that only one end of the electric motor shaft emerges from the casing for connection via a first free wheel to the jet washer pump, and carries, by way of a 55

second free wheel with the opposite dragging direction to the first free wheel, the operating cam for a connecting rod of the air compression unit.

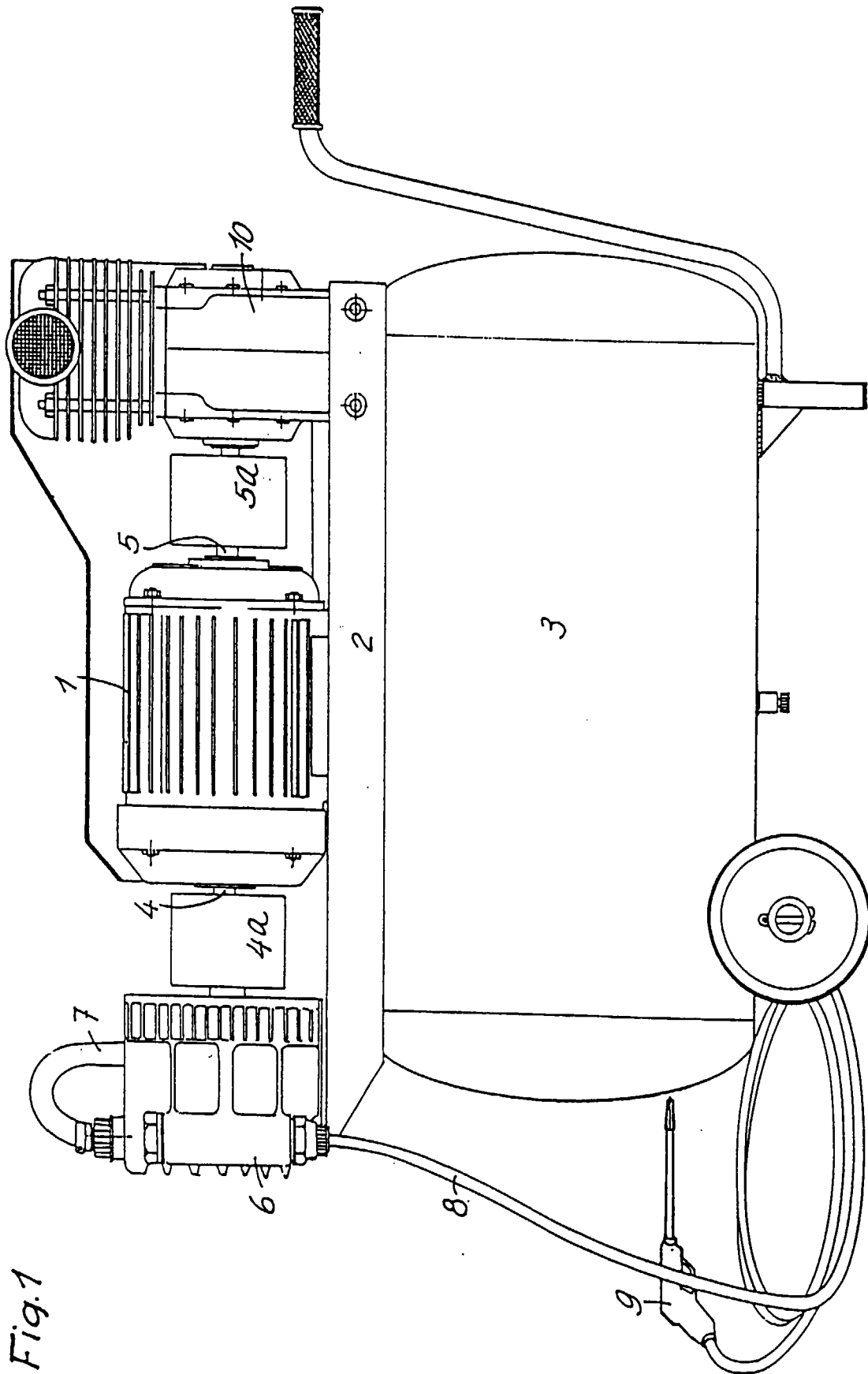


Fig.1

Fig. 2

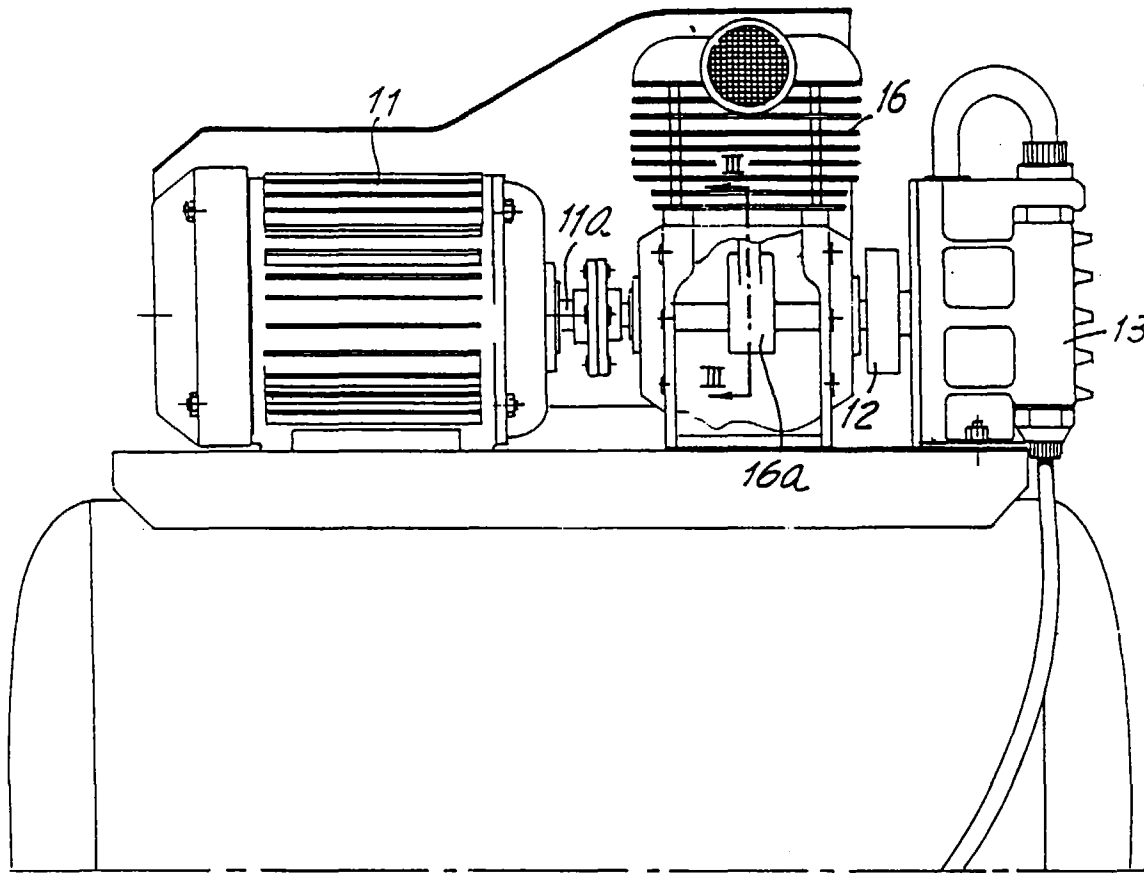


Fig. 4

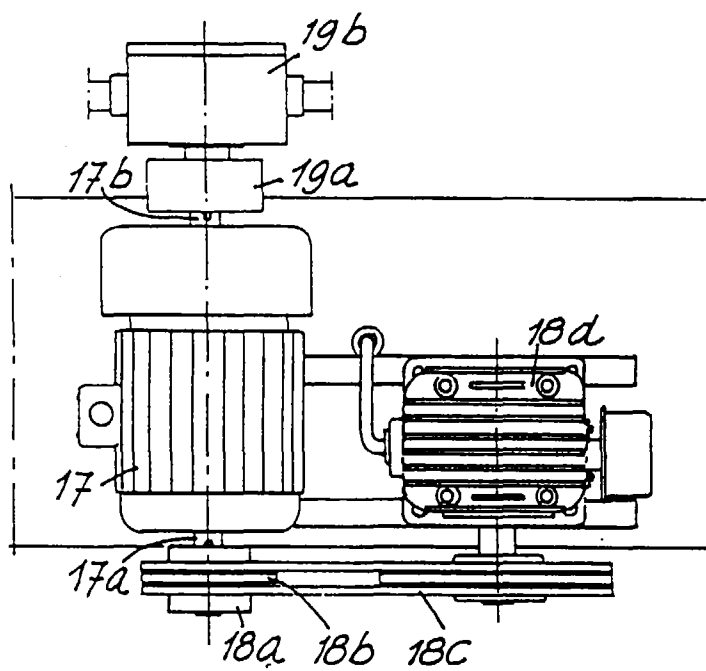


Fig. 3

