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H. J. SADLER ET AL

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MOTOR DRIVEN PUMP

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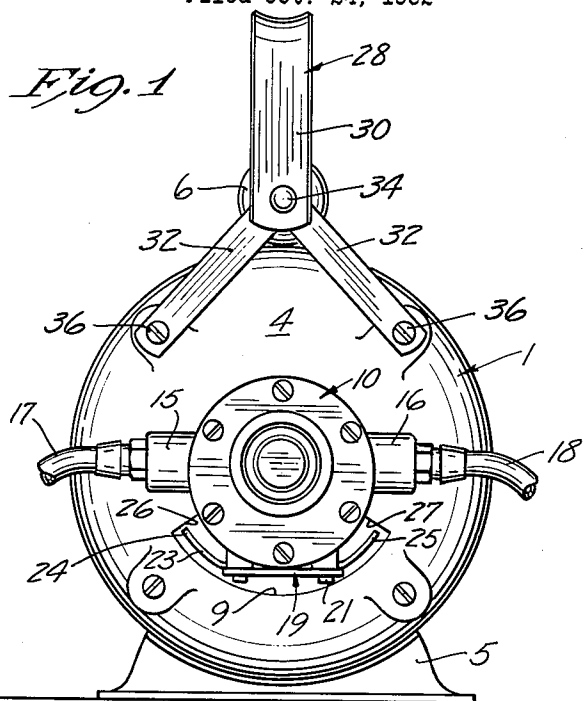
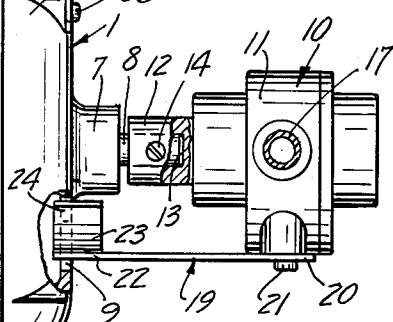
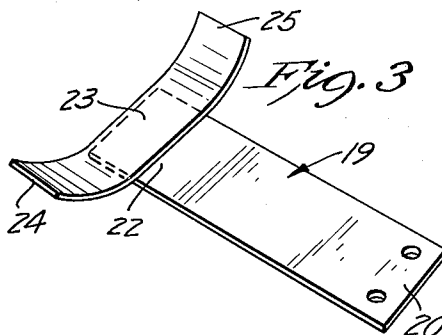
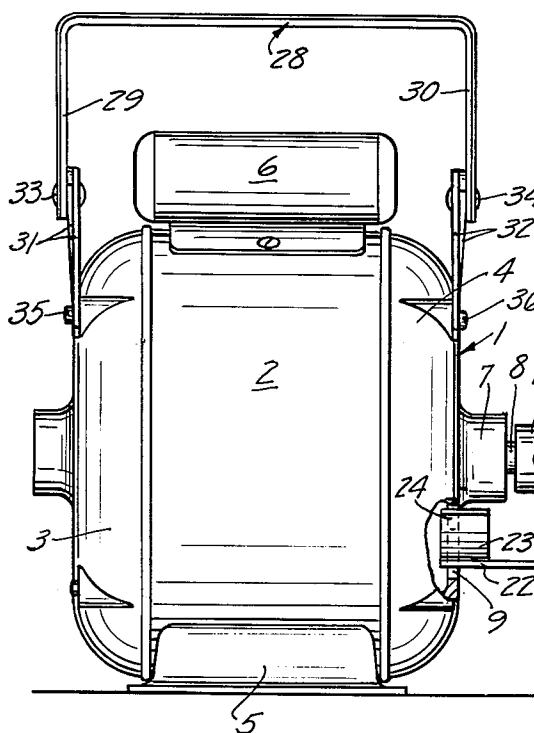


Fig. 2



INVENTORS
HARRY J. SADLER
ERNEST E. COOK
BY

Merchant & Merchant
ATTORNEYS

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MOTOR DRIVEN PUMP

Harry J. Sadler and Ernest E. Cook, Minneapolis, Minn.

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1 Claim. (Cl. 103—87)

Our invention relates generally to fluid pumps and more specifically to means for coupling a fluid pump to a motor.

An important object of our invention is the provision of a pump which may be quickly and easily mounted on any one of a wide variety of electrical motors without requiring the use of special tools and without the necessity of altering said motors to accommodate the pump.

Another object of our invention is the provision of coupling means whereby the pump is supported solely by the motor so as to enable the pump to be moved from place to place with the motor as a single unit and to preclude the necessity for a special supporting base for the motor.

Another object of our invention is the provision of means for mounting a pump impeller shaft on a motor shaft whereby the weight of the pump is carried by the motor shaft, and of a torque arm mounted on the pump and engageable with a portion of the motor to prevent rotation of the pump housing with respect to the motor housing.

A still further object of our invention is the provision of pump mounting means as set forth which is simple and inexpensive to manufacture and which is rugged in construction and durable in use.

Still another object of our invention is the provision of a pump equipped motor as set forth having handle means whereby the motor and pump may be easily carried by the operator.

The above and still further highly important objects and advantages of our invention will become apparent from the following detailed specification, appended claim, and attached drawings.

Referring to the drawings, which illustrate the invention, and in which like characters indicate like parts throughout the several views:

Fig. 1 is a view in end elevation of a pump mounted on an electrical motor in accordance with our invention, some parts being broken away;

Fig. 2 is a view in side elevation of the motor and pump of Fig. 1, some parts being broken away and some parts being shown in section; and

Fig. 3 is a view in perspective of the torque arm of our invention.

In the preferred embodiment of the invention illustrated, the numeral 1 indicates in its entirety a conventional electric motor, the casing housing of which comprises a hollow generally cylindrical housing member 2 and end wall or end bell members 3 and 4. A base member 5 is suitably anchored to the housing member 2 to support the motor in its normal operative position. The motor 1 may be one of any number of types in common use and, if desired, may be of the capacitor variety utilizing a condenser contained within a casing 6 suitably anchored to the housing member 2. As shown the end bell or end wall member 4 is formed to pro-

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vide a bearing boss 7 through which the motor shaft 8 extends. Radially outwardly of the shaft 8, preferably therebetween and the bottom of the motor 1, is a ventilator opening 9 such as is commonly found in electric motors designed for general use.

A fluid pump 10 includes a pump housing 11 and an impeller shaft 12 projecting outwardly therefrom, said shaft 12 having an axial opening 13 therein for the reception of the motor shaft 8 and means for rigidly securing the shaft 8 against relative rotary and axial movements with respect to the impeller shaft 12, said means preferably being in the nature of a set screw or the like 14. The pump 10 may be of any suitable positive displacement type and is provided with an inlet 15 and an outlet 16 to which are connected inlet and outlet conduits 17 and 18 respectively. The conduit 17 may be assumed to extend to a suitable source of fluid, whereas the conduit 18 may be assumed to extend to the desired point of delivery.

With the above arrangement, it will be noted that the weight of the pump 10 is supported entirely by the motor shaft 8. For the purpose of preventing relative rotary movement between the motor housing 1 and the pump housing 11, we provide a torque arm 19 the outer end 20 of which is rigidly secured to the bottom of the pump housing 10 by machine screws or the like 21, and the inner end 22 of which has rigidly secured thereto, by welding or the like, an elongated cross member 23 extending transversely thereof. The torque arm 19 is so disposed with respect to the motor 1 and the pump 10 that the cross member 23 is received within the ventilator opening 9 in the end bell 4 of the motor. The opposite ends 24 and 25 of the cross arm 23 are adapted to engage the opposite ends 26 and 27 respectively of the ventilator opening 9 to positively limit relative rotary movement between the motor 1 and the pump housing 11. Thus, the pump 11 is not dependent upon the conduits 17 and 18 to hold the same against rotary movement which would otherwise be imparted thereto by the friction therebetween and the rotary parts therein not shown but connected to the impeller shaft 12 and if desired the conduits 17 and 18 may be in the nature of flexible hoses, thus permitting the motor and pump to be moved about as desired. The torque arm 19 and cross member 22 or 23 are preferably made from resilient sheet metal, the arm 19 being of sufficient rigidity to adequately hold the pump housing 11 against rotary movement. The cross member 23 may be easily bent and trimmed to fit ventilator openings of various sizes and shapes, thus enabling the pump and torque arm to be applied to motors of various makes of manufacture. It will be noted by reference to Fig. 1 that the inner end of the torque arm 22 and the cross member 23 are of such thickness relative to the radial width of the opening 9 that they do not interfere with ventilation of the motor 1. In this connection it will be noted that the cross member 25 and said opening 9 define passages for the free movement of air therethrough.

To enable the entire unit to be easily transported from one location to another as a unit, we provide handle means adapted to be secured to the motor 1. Said handle means comprises an inverted generally U-shaped bail 28, the depending leg portions 29 and 30 of which are pivotally secured to the upper ends of bracket members 31 and 32 respectively as indicated at 33 and 34 respectively. The bracket members 31 diverge in a downward direction and at their lower ends are rigidly secured to the end bell or wall section 3 by screws or bolts 35, see Fig. 2. Preferably, the screws 35 are those which secure at end bell 3 to the center housing section 2. Likewise the bracket members 32 are rigidly secured at their lower ends to

the motor housing member or end bell 4 by machine screws or the like 36. With this arrangement, the motor and pump may be picked up with one hand and easily carried to any desired location for use or storage.

Our novel pump and motor combination lends itself readily to a wide variety of uses wherever a temporary pump set up is required. The above has been thoroughly tested and found to be completely satisfactory for the accomplishment of the objectives set forth; and while we have shown and described a commercial embodiment of my novel motor and pump arrangement, it will be understood that the same is capable of modification without departure from the spirit and scope of the invention as defined in the claim.

What we claim is:

In a device of the class described, a motor including a housing and a motor shaft projecting outwardly from one end of the housing, said one end of the housing having an elongated ventilator opening radially spaced from said shaft, a pump including a pump housing and a rotary impeller shaft projecting outwardly therefrom, means rigidly mounting said impeller shaft on the motor shaft for

common rotation therewith, a torque arm anchored at one end to said pump housing and extending toward said motor, and an elongated cross member extending transversely of the other end of said torque arm and rigidly secured thereto, said cross member being received in the ventilator opening of said motor housing and being of sheet metal bendable to conform generally to the shape of the ventilator opening, the opposite ends of said cross member engaging opposite ends of said opening to positively limit relative rotary movement between the motor housing and said pump housing, said cross member and said opening providing a passage for the free movement of air therethrough.

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