May 14, 1957 H. F. KLAUSS 2,791,967

TOY MOTOR-PUMP UNIT

Filed March 30, 1954

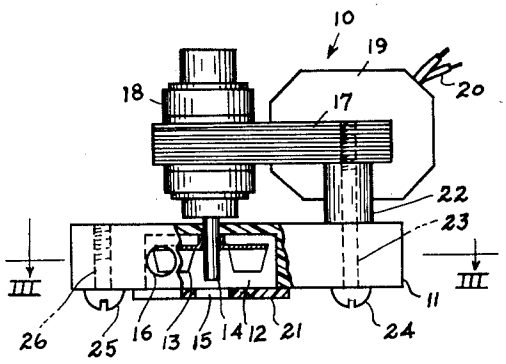


FIG. 1.

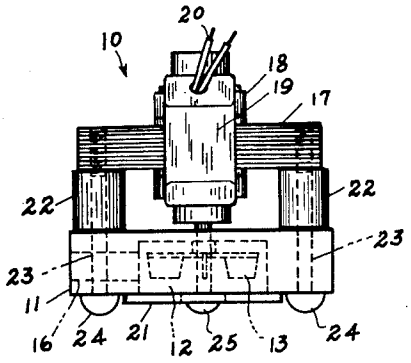


FIG. 2.

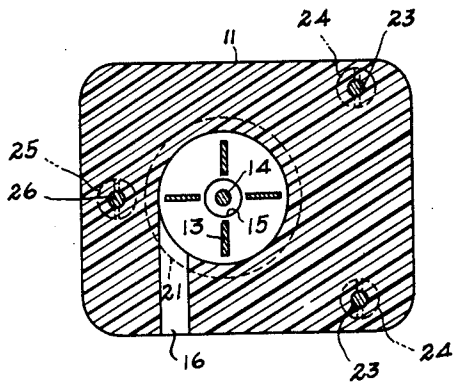


FIG. 3.

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TOY MOTOR-PUMP UNIT

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1 Claim. (Cl. 103—87)

My invention relates to miniature electrically driven pumps, particularly designed for hydraulic display devices and toys. More especially, my invention consists in certain new and useful improvements in a miniature motor-pump unit. Economy in manufacture, simplicity in construction, and dependability in service comprise the more important objects of the invention.

The invention will be understood upon reference to the accompanying drawings, in which:

Fig. 1 is a view of a motor-pump unit of the invention in side elevation, with a part of the body of the pump shown in vertical section;

Fig. 2 is a view of the unit in end elevation; and

Fig. 3 is a view of the unit in horizontal section, as seen on the plane III—III of Fig. 1.

Referring to the drawings, the motor-pump unit **10** in service is adapted to stand in a shallow pool of water. The pump of the unit comprises a body **11** preferably formed of a plastic material, such as a block of cellulose acetate, which may be readily machined to required form. Alternatively, the pump body may be fashioned in an injection molding machine of one of the known plastic molding compounds. The pump body includes an impeller chamber **12** having an impeller **13** fixed on a vertical shaft **14**. An inlet **15** for liquid opens centrally through a cover-plate **21** secured to the pump body and forming the bottom wall of the impeller chamber **12**, while an outlet **16** opens laterally from such chamber. The body **11** of the pump, it will be noted, extends laterally outward from the chamber **12** in a general horizontal plane, whereby the body of the pump is adapted to provide a steady base upon which the motor-pump unit may stand in a shallow pool of water, without the need of anchors or other devices to hold the unit in place during operation.

Above the body of the pump an electric motor is integrally mounted, such motor comprising an armature or stator **17**, having a flat laminated body of armature iron, as shown in Figs. 1 and 2, that extends parallel to the horizontal body **11** of the pump. The armature or stator is recessed in the usual way to receive a rotor **18** that is united to the rotary shaft **14** of the pump impeller **13**. As shown, the body of the stator comprises a flat assembly of armature sheet iron extending in a horizontal plane that parallels the body **11** of the pump. An induction coil **19**, wrapped around the body of the armature, is energized by circuit wires **20** leading to a suitable source of electric current. When the coil **19** is energized the motor operates to drive the pump impeller **13**, whereby water is drawn through inlet **15** from the pool of liquid, in which the unit stands, and is expelled through outlet **16**.

The motor is integrated to the pump body by means of two pedestals **22**. The pedestals **22** may comprise tubes of plastic material standing vertically between the horizontally extended stator **17** and the horizontally extended pump body **11**, and through each tube a screw **23**, passing upwardly through the body **11** of the pump, extends astraddle the coil **19** into threaded engagement with the stator **17** of the electric motor. One pedestal **22** is located on each side of the armature coil **19** (Fig. 2), and, as appears in Fig. 1, the stator **17** extends laterally from the pedestals and forms a cantilever support for the rotor **18** of the motor and said pump impeller. A very rigid and effective integration of the motor and pump is thus obtained. The heads **24** of the screws **23** provide feet upon which the motor-pump unit may stand, and a third foot is provided by the head **25** of a dummy screw secured in the pump body. Thus, an inexpensive but extremely efficient standing motor-pump unit is provided.

The application for these Letters Patent comprises a restriction of my application Serial No. 257,861, filed November 23, 1951, now abandoned.

Within the terms of the appended claims many other variations and modifications of the structure described may be made without departing from the spirit of the invention.

I claim:

A motor-pump unit adapted to stand, self-sustained, in a shallow pool of liquid, said unit comprising a pump housing including an impeller chamber having an inlet and outlet, an impeller in said chamber, the body of said housing being extended from said chamber in a general horizontal plane to provide a stand for the support of said motor-pump unit, an electric motor arranged above said pump housing, said motor comprising a stator and a rotor, said stator having a flat laminated armature iron body extending above and substantially parallel to said housing, an electric energizing coil wound on the stator body adjacent to one side thereof, two pedestals straddling said coil and rigidly uniting the stator body to said housing, the body of said stator extending laterally from said coil and from the tops of said pedestals and providing a cantilever support for said rotor, and a shaft extending downwardly from said rotor to the pump impeller in said chamber.

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