A. C. DURDIN, Jr.

SUBMERGIBLE MOTOR.

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931,008.

Patented Aug. 10, 1909.

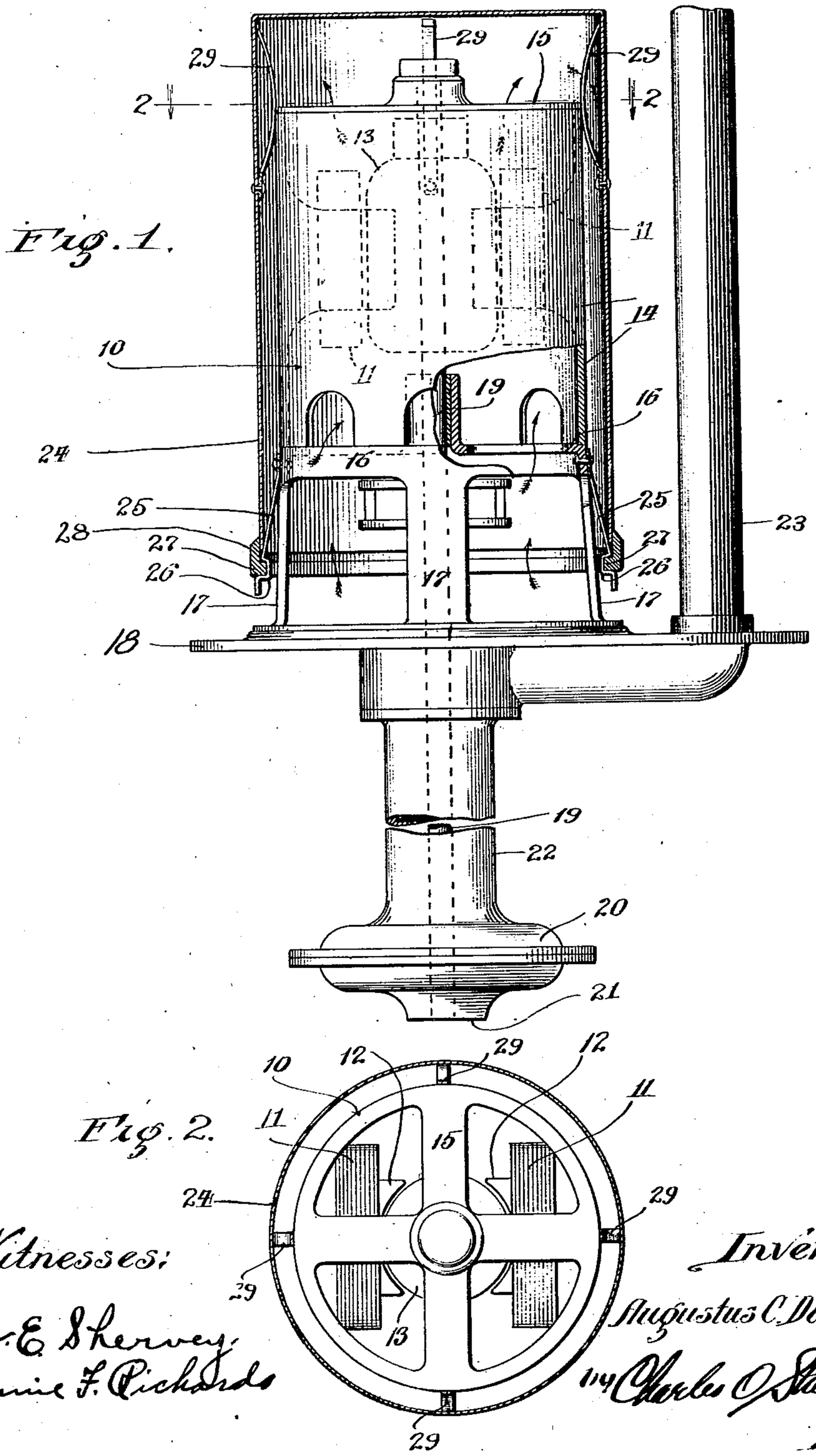

Fig. 1.

Fig. 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

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SUBMERGIBLE MOTOR.

No. 931,008. Specification of Letters Patent. Patented Aug. 10, 1909.

Application filed May 18, 1908. Serial No. 433,355.

To all whom it may concern:

Be it known that I, AUGUSTUS C. DURDIN, Jr., a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Submergible Motors, of which the following is a specification.

My invention relates to certain new and useful inventions in submergible motors and the object of the invention is to provide a motor, in combination with a hood or casing adapted to form an air chamber around the motor, whereby the device may be submerged in a body of water without endangering the motor itself.

To such end this invention consists in providing an air chamber around a motor, and to the other several novel features which will be fully described in this specification and more definitely pointed out in the claims appended hereto.

The invention is clearly illustrated in the drawing furnished herewith in which—

Figure 1 is a view partly in side elevation and partly in central vertical section, showing a device containing my improvements and Fig. 2 is a horizontal section taken on the line 2—2 Fig. 1.

Referring to these drawings 10, represents an electric motor of any well known type, which contains the usual field magnets 11, pole pieces 12, and armature 13. The pole pieces are carried by a shell, 14, which is connected at the top and bottom by spiders 15, 16, the lower spider 16, having downwardly extending legs 17, adapted to be supported upon a suitable base 18. The armature is mounted upon a shaft 19, which is journaled in suitable bearings carried by the spiders 15, 16, and said shaft extends down below the base to a suitable point, where it is employed to drive a pump 20. This pump may be of any well known type and the form indicated in the drawing represents a centrifugal pump having an intake 21, and a discharge casing 22, emptying into a discharge pipe 23.

Devices of this character thus far described are frequently employed to pump out flooded basements, cisterns, wells or the like, and it is quite obvious that they may be employed wherever it is desired to remove a body of water. Occasionally the water in the well rises up to a point where the motor is completely submerged and an occurrence of this kind usually destroys the motor. To avoid this difficulty, I surround the motor proper with an air chamber, which as shown in the drawing is formed by a hood or casing 24, which hood or casing is arranged to extend down considerably below the field magnets and armature or any other vulnerable parts of the motor. This shell or casing provides an air chamber which surrounds the motor, thus allowing a free circulation of air around the entire motor; air may also pass through the motor and around the armature, thus serving to cool the motor. The hood 24, is supported upon the motor as by means of spring clips 25, that are secured to the motor and said clips contain recessed portions 26, that engage with a flange 27. which is formed upon a ring 28, secured to the hood. These spring clips extend downwardly from their points of support at a slight angle so as to engage with the flange 27. A plurality of spacing clips 29, are secured to the hood near its upper end, which clips bear against the outer face of the motor and space the upper part of the hood away from the motor.

In operation, the motor drives the pump 20, and pumps the water up through the discharge pipe 23, from which it may be conducted away in any desirable manner. If now for any reason the water suddenly rises above the motor 10, the air within the hood will be compressed by the upward pressure of the water which enters the hood, and it will be impossible for the water to reach a point higher than the spider 16, unless the surrounding water should reach a height of ten or eleven feet above the motor, and as such an occurrence is a practical impossibility where devices of this character are used, the danger of injury to the motor from the surrounding water is reduced to a minimum.

The device is very useful as a bilge pump upon vessels inasmuch as the entire mechanism can be placed down in the hold of the vessel without danger of injury to the motor. There are many situations of a similar character where the device may be employed, where at the present time it is necessary to place the motor at a great height above the pump.

The advantages of this device are readily apparent. The ordinary air cooled motor

can be employed in positions where, heretofore it could not, because of the danger of being burned out by the rise of the level of the water to a point above the motor. The hood may be readily removed if it is necessary to get at the motor itself and is replaced by merely slipping it over the motor until the flange 27, engages with the recessed portions of the spring clips 25.

I am aware that various alterations and modifications of this device are possible without departing from the spirit of my invention and I desire therefore not to limit myself to the exact construction shown and described.

I claim as new and desire to secure by Letters Patent:

1. In a device of the class described, a motor having an inclosing wall surrounding the motor on its top and sides to form an air chamber which completely surrounds the motor and which chamber is open solely at the bottom to the outer atmosphere.

2. In a device of the class described, the combination with a motor, of means for insulating the motor away from water when said motor is submerged, comprising a removable hood which is open to the outer atmosphere solely at the bottom, and which surrounds the top and sides of the motor to provide an air chamber completely surrounding the motor.

3. In a device of the class described, the combination with an air cooled motor, of means for insulating the motor away from water when said motor is submerged, comprising a hood open to the outer atmosphere solely at its bottom and surrounding the motor on its top and sides, and extending down below the bottom of the motor and suitable means for supporting the hood upon the motor.

4. In a device of the class described, the combination with an electric motor having a vertically extending shaft, of means for insulating the motor away from water when said motor is submerged, comprising a removable hood which opens to the outer atmosphere solely at its bottom, said hood surrounding the top and sides of the motor to form an air chamber about the motor.

5. In a device of the class described, the combination with a motor, of a hood surrounding said motor and adapted to form an air chamber about the same and spring clips for positioning and securing said hood upon the motor.

6. In a device of the class described, the combination with an air cooled motor, of a hood surrounding said motor to form an air chamber about said motor, and hood supporting clips secured upon said motor.

7. In a device of the class described, the combination with a pump driving motor, of a hood surrounding said motor to form an air chamber about said motor, a flanged ring secured upon the lower edge of said hood and recessed spring clips secured upon the motor and engaging said flanged ring to support the hood in spaced relation with the motor.

8. In a device of the class described, the combination with a vertically extending pump driving motor, of a hood surrounding said motor to form an air chamber about said motor, clips for spacing the upper portion of the hood away from the motor and supporting clips for connecting and supporting the lower end of the hood upon the motor.

9. In a device of the class described, a motor having a hood which surrounds the motor on its top and sides, to form an air chamber which completely surrounds the motor, said hood being air tight above the lowest part of the vulnerable parts of the motor, and extending down below said vulnerable parts and containing an opening to the outer atmosphere in said downward extension.

In witness whereof I have executed the above application this 12th day of May, 1908, at Chicago, county of Cook and State of Illinois.

AUGUSTUS C. DURDIN, Jr.

Witnesses:

CHARLES O. SHERVEY,

FANNIE F. RICHARDS.