March 24, 1925. 1,530,575

H. L. PEARL

VACUUM CLEANER

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FIG. 1.

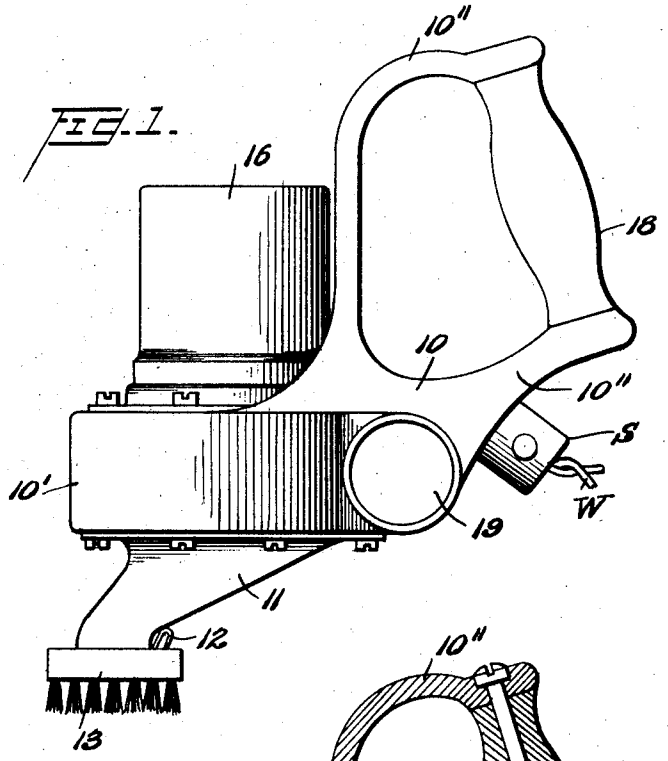
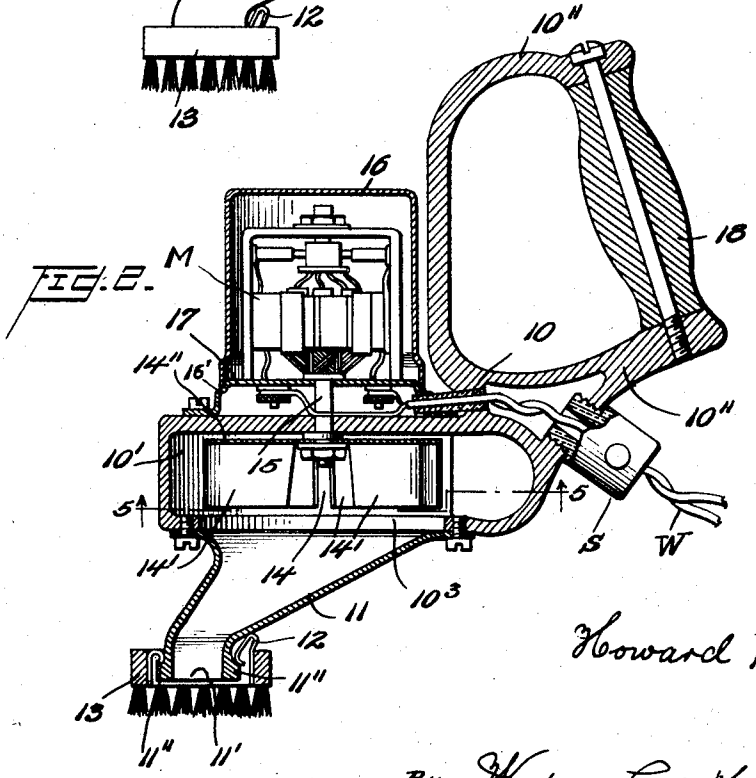


FIG. 2.



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FIG. 3.

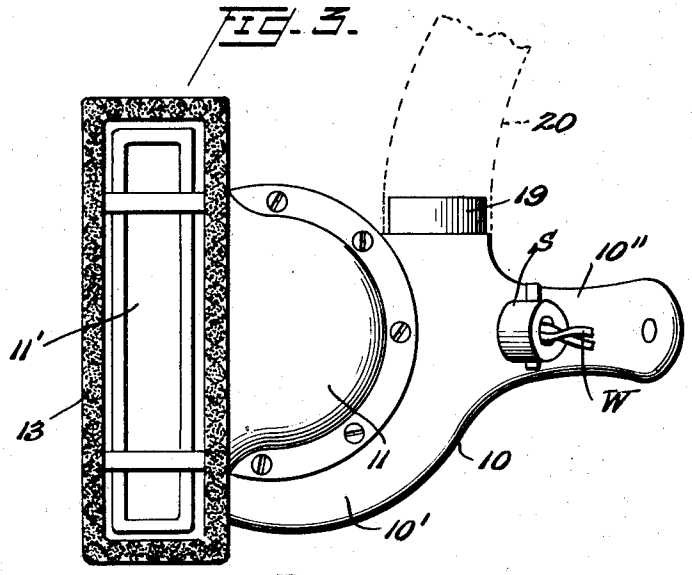


FIG. 4.

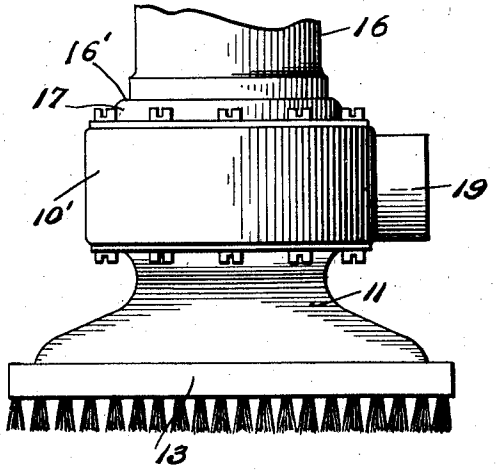
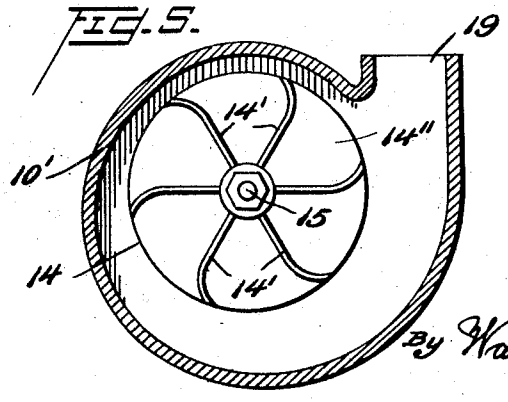


FIG. 5.



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UNITED STATES PATENT OFFICE.

HOWARD L. PEARL, OF GRAND RAPIDS, MICHIGAN.

VACUUM CLEANER.

Application filed June 25, 1921. Serial No. 480,402.

To all whom it may concern:

Be it known that I, HOWARD L. PEARL, a citizen of the United States, residing at Grand Rapids, Kent County, State of Michigan, have invented certain new and useful Improvements in Vacuum Cleaners, of which the following is a specification.

The present invention relates to suction cleaning devices and particularly to such devices which are light in weight and relatively small in size so as to be conveniently manipulated. Suction cleaners made in accordance with this invention are particularly useful in cleaning upholstery, especially the seats of railway cars and automobiles of the limousine type, where it is not possible to use sweeping devices and where ordinary suction cleaners can not be used because of the small space, and the difficult corners and angles.

The improved cleaning device comprises a body member, through which the suction conduit passes, the inlet opening of this conduit being at one extremity, and the handle by which it is gripped and held being at the other extremity, the edges of the inlet opening lying in a plane and the axis of the handle being disposed substantially at right angles to the plane. The suction conduit has the usual pump chamber which contains a rotary fan and a high speed electric motor is supported without the chamber, the shaft of this motor extending through the wall of the pump chamber and having the fan supported thereon. The motor is spaced from the fan chamber, the motor shaft passing through two transverse partitions so that there is little chance of dust passing from the suction conduit into the motor chamber to destroy the bearings. A feature of the invention resides in the formation of the fan housing and the main portion of the handle in one integral piece, which is preferably a casting, a sufficient opening being left in the wall of the fan housing for the insertion of the fan.

Other features of novelty and advantages of the invention will become apparent as it is disclosed, and it will be obvious to those skilled in the art that numerous changes may be made in the design and arrangement of parts without departing from the spirit of the invention, which is not limited to that particular form herein disclosed by way of example.

In the drawing Figure 1 is a side elevation of the cleaning device,

Figure 2 is a vertical section through the same,

Figure 3 is a bottom view of the cleaner,

Figure 4 is a front elevation of portion of the device, and

Figure 5 is a section on line 5—5 of Figure 2.

The body portion of the cleaner comprises an integral member 10 which is preferably a casting and which includes the fan housing 10′ and the handle supporting arms 10″, and the funnel-shaped member 11 which is secured by screws to the fan housing 10′ and the hollow interior of which comprises a portion of the suction conduit, its lower end 11′ being open and having its edges lying in a plane. The inlet 11′ is substantially rectangular in shape, as illustrated in Figure 3, and the exterior of member 11, adjacent this opening, is provided with longitudinal ribs or shoulders 11″ which serve to strengthen its lower end and which also serve as catches for the spring latch 12, which is the means by which the rectangular brush 13 is detachably secured to member 11. The circular opening 10^3 in casting 10 is of sufficient size to permit the insertion into the fan housing of the fan 14, which comprises a number of radial blades 14′, all secured to a plate 14″, and the entire fan being rigidly supported upon the shaft 15 of electric motor M.

The motor is supported within a casing 16, this casing fitting over a shoulder 16′ upon a cup shaped member 17, secured to the fan housing, the space between this member and the wall of the fan housing constituting a closed chamber. Dust from the suction conduit can not penetrate to the motor casing therefore, any dust which leaks into the chamber between the wall of the fan housing and member 17 being normally held therein.

Wires for connecting the motor to a suitable source of electric power are indicated at W, these wires passing through suitable insulating bushings and also through the switch S by means of which the circuit

through the motor is controlled. The electric motor is of the high speed type and is adapted to be run by current supplied by the ordinary automobile battery. The handle 18 is secured between the two handle supporting arms 10″, the axis of this handle being substantially at right angles to the plane of the edges of the inlet opening 11′ of the suction conduit. This is a particularly advantageous arrangement of parts where the device is to be manipulated by one hand of the operator to guide the cleaner into corners and other places difficult to reach. A firm grip may be obtained and at the same time the operator has perfect control over the instrument.

When the motor is operating, a strong suction is created at the mouth 11′ of the suction conduit, which will draw up dust and dirt from the surface of the article to be cleaned. In order to loosen particles of dirt, the operator may use the brush 13 and the particles dislodged by the bristles thereof will immediately be sucked up through the suction conduit. After passing through the fan housing, these particles issue through the outlet opening 19 and may either be caught in a bag of the usual type (not shown) or may be conducted away through a tube 20 indicated in dotted lines in Figure 3 to a point where the dirt may be discharged.

The improved cleaner above described may be conveniently secured upon automobiles, being of light weight and relatively small size, and may be used at any time, the operator merely connecting the wires W to the battery of the machine, by means of any suitable type of connector plug.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. In a vacuum cleaner of the class described, in combination a substantially cylindrical fan housing having a closed end, a cup-shaped member fastened to said end with its convex side out, a motor supported by said cup-shaped member, a housing enclosing said motor, means on said cup-shaped member to support said motor housing, a suction conduit connected to said fan housing and having an opening, the edges of which lie in a plane parallel to the closed end of said fan housing and at right angles to the shaft of said motor, and a spade type handle having its arms integral with the fan housing and its grip member slightly inclined toward said motor shaft at the top.

2. In a vacuum cleaner of the class described in combination, a substantially cylindrical fan housing having a closed end, a fan in said housing rotatably mounted on an axis at right angles to said housing end, a motor supported on said housing end, a closed chamber between said fan housing and said motor to prevent the entrance of dust to said motor bearings, a suction conduit connected to said fan housing opposite said motor, an inlet opening in said conduit having its edges lying in a plane at right angles to said fan axis and a spade type handle, the arms of said handle being integral with said fan housing, the grip member thereof being slightly inclined toward said fan axis at the top.

In testimony whereof I hereunto affix my signature.

HOWARD L. PEARL.