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PUMP FOR SPRAYING APPARATUS

Filed Jan. 29, 1929

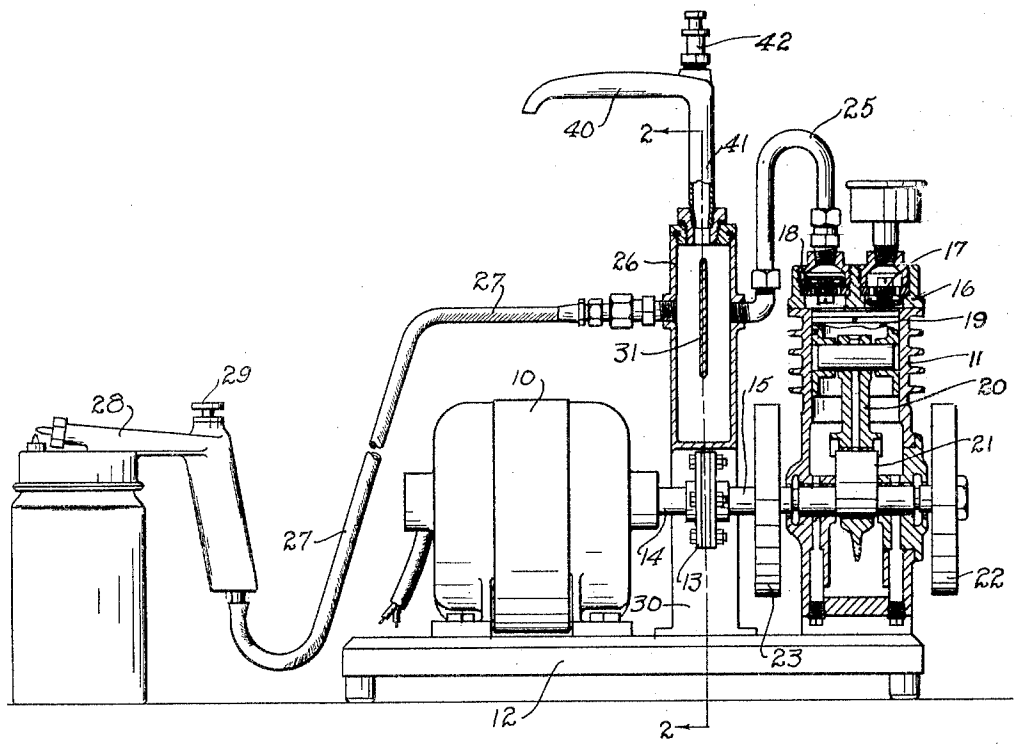


FIG_1

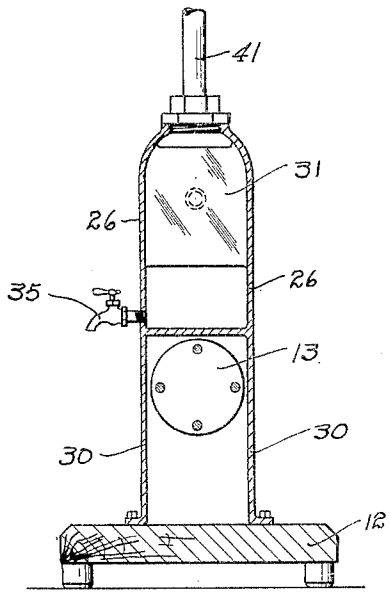


FIG_2

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UNITED STATES PATENT OFFICE

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PUMP FOR SPRAYING APPARATUS

Application filed January 29, 1929. Serial No. 335,941.

This invention relates to spraying apparatus and particularly to a portable power operated device which is suitable for spraying paint, varnish and the like. It is well known that the spraying of relatively heavy liquids requires a substantially high pressure of air, and that such pressure is supplied by large power driven compressors. For spraying use in homes and other places however, which are not equipped with air under relatively high pressure, the application of spraying apparatus has been limited to small work for which a hand spray produces satisfactory results.

In developing a relatively small power spray unit such as one wherein the power apparatus is portable, we have found that a motor driven compressor unit in order to be sufficiently light in weight must operate at a speed approximately 2,000-revolutions per minute. We have also found that in developing a compressor unit having these characteristics, that the unit has a tendency to vibrate and move across the floor upon which it is located. Experimental efforts were made to avoid such action by using pistons and other internal parts of relatively light material and by balancing the rotative parts, but notwithstanding the finest degree of balance, the unit continued to creep across the floor.

The principal object of the present invention therefore, is the production of a power operated compressor, which is sufficiently light in weight that it may be readily carried by one hand, and easily transported from place to place, and yet will possess sufficient power to permit relatively heavy liquids to be used in the spray gun. A further object of our invention is to make a power compressor unit, which may be operated at a high rate of speed and which, when so operated, will not creep across the floor.

We accomplish the above objects by mounting a single cylinder air compressor and a directly connected electric motor upon a common portable base. The air supplied from the compressor is passed through a moisture separator, and is then conducted through flexible hose to an atomizer of conventional design. The compressor operates at relatively high speed so as to produce the necessary power from a relatively small compressor. To prevent creeping of the power unit during operation, we mount a flywheel on each side of the compressor. Since the crank shaft constitutes an extension of the armature shaft of the motor, the flywheels, compressor and motor all operate at the same rate of speed.

Referring now to the drawings, Fig. 1 is a side elevation, partly in section, of a power spray apparatus made in accordance with our invention and Fig. 2 is a vertical section taken through the apparatus on a plane indicated by the line 2—2 in Fig. 1.

In the preferred form, the apparatus embodying our invention comprises an electric motor 10, and a direct connected air compressor 11, which are mounted upon a common base 12. A flexible coupling 13 provides a connection between the armature shaft 14 of the motor and the crank shaft 15 of the compressor. The compressor shown is a single cylinder unit having a cylinder head 16 which carries an intake valve 17, and an outlet valve 18.

The valve openings are disposed directly above the head of the piston 19 to minimize friction of air flow. The piston may be connected to the crank shaft through a connecting rod 20 which operates upon an eccentric 21 upon the crank shaft 15. The crank shaft, as shown, is journalled in bearings on opposite sides of the eccentric, and is extended beyond the crank case. A flywheel 22 may then be mounted on the crank shaft extension while another flywheel 23 is mounted on that part of the shaft, which is disposed between the coupling and the crank case. We have

found that flywheels arranged in this manner enable the compressor to be operated at the speed of the motor without the vibration causing the unit to creep across the floor. Such result has been accomplished without effecting an accurate dynamic balance of the reciprocating parts of the compressor.

Air flowing from the compressor passes through a conduit 25, then into a moisture separator 26, and then through a flexible conduit 27 to a spray gun indicated in general at 28. A thumb operated valve is shown adjacent the handle of the spray gun for controlling the air flow through the apparatus in the usual way. The moisture separator is shown as a hollow casing which is supported by legs 30, and which is fastened by suitable securing members to the base 12. The separator straddles the coupling and provides a suitable protecting device therefor. A baffle 31 extends across the separator chamber and deflects air entering the separator from conduit 25 and since the outlet of the separator is disposed on that side of the baffle opposite the inlet, the moisture will have a tendency to collect on the bottom of the separator, from whence it may be drained through a valve 35.

To make the power unit portable, we provide a handle 40 which may be attached to the unit adjacent the mid portion thereof. The separator being disposed between the motor and compressor makes a suitable place for attaching the handle. By making the vertical portion 41 of the handle hollow, a passageway is provided for the attachment of a safety valve 42.

In view of the foregoing description, it will be obvious that we have provided a power spraying unit which is sufficiently light in weight to be portable, and yet which possesses sufficient power to atomize relatively heavy liquids. This device provides therefore a relatively inexpensive unit which greatly extends the field of usefulness for spraying apparatus.

We claim:

A motor compressor unit comprising in combination, a portable base, an electric motor and an air compressor mounted thereon, said motor having an armature shaft and the air compressor having a crank shaft, said shafts being substantially in alignment with each other, a flexible coupling providing an operative connection between the shafts, the crank shaft being extended outside the compressor, a flywheel mounted on the crank shaft on each side of the compressor, a moisture separator also mounted on the base, and having vertically extending portions in close proximity to the coupling and providing a shield therefor, and having a moisture chamber above the coupling, a baffle within the chamber, said chamber having an inlet disposed on one side of the baffle and an outlet disposed on the other side of the baffle, means connecting the inlet to the compressor and a flexible discharge conduit connected to the outlet, and the upper end of the moisture separator terminating in a handle, said handle being disposed adjacent the center of gravity of the entire unit whereby the unit may be raised and transported with one hand.

In testimony whereof, we hereunto affix our signatures.

WALTER R. BAUMAN.
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