April 12, 1932. J. E. PERRIN 1,853,636

SPRAY GUN

Filed June 20, 1929

Fig. 1

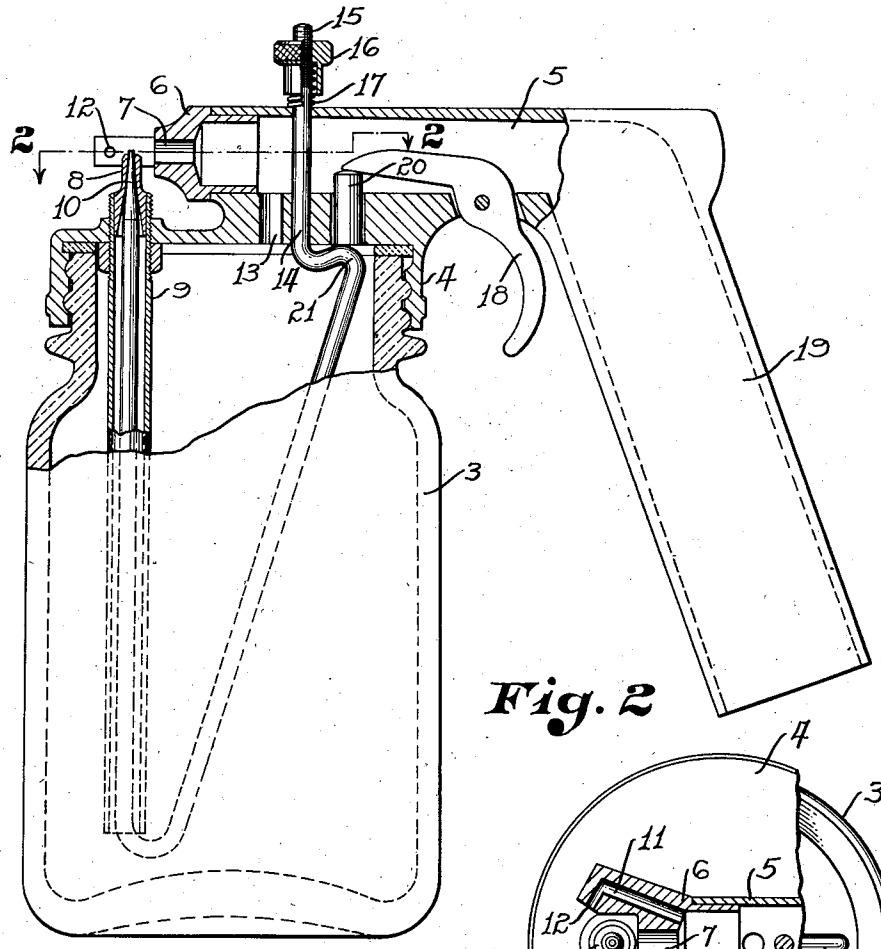
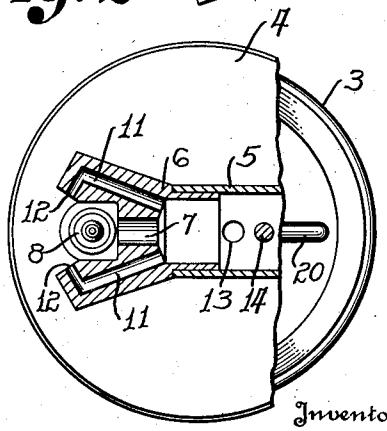


Fig. 2



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UNITED STATES PATENT OFFICE

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SPRAY GUN

Application filed June 20, 1929. Serial No. 372,247.

This invention relates to a spray gun for use in spray painting and similar operations, and particularly in operations which are not conducted on a scale large enough to justify the provision of the most elaborate equipment.

In spray guns as heretofore constructed, it has been customary to control the operation by means of an air valve which controls the flow of air from the compressor. In air compressors manufactured for sale at popular prices, the pressure developed is comparatively low and usually no safety valve is provided. If the air valve is closed for any length of time, therefore, the motor may become stalled. There is also a tendency for some of the material to run out of the nozzle and drip, if the air is shut off, especially if a cross jet spray is used, with pressure in the receptacle.

It is primarily for the purpose of overcoming the foregoing objections that the present invention has been perfected. In this connection the invention also consists in various details of construction and combinations of elements, which will be more particularly explained in connection with the accompanying drawings, illustrating one embodiment thereof.

In the drawings:

Figure 1 is a vertical sectional view of the invention as applied to a small receptacle.

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1.

In its present embodiment, the invention is applied to a liquid receptacle 3 having a cap or cover 4, on the upper side of which is formed an air chamber 5 adapted to be connected to a suitable source of compressed air. An air nozzle 6 is secured in the outlet end of the chamber 5 and is formed with a discharge port 7. Cooperating with the air nozzle is a vertically disposed liquid nozzle 8 secured in the upper end of a liquid conduit 9 extending through the cover 4 and having its inlet end near the bottom of the receptacle. The conduit 9 is normally arranged so that the outlet from the nozzle 8 is slightly below the center line of the air discharge port 7.

The flow of liquid through the nozzle 8 is controlled by a needle valve 10 cooperatively associated therewith. The air nozzle 6 is preferably provided with lateral passageways 11 terminating in oppositely disposed outlets 12 which are adapted to flatten the spray in a well-known manner. The air chamber 5 is also in communication with the surface of the liquid in the receptacle 3, through a port 13. Such pressure on the surface of the liquid is desirable in connection with this type of spraying apparatus.

In providing for the control of the spray by manipulation of the needle valve 10, the latter is formed with a shank extending through the inlet end of the conduit 9 and integrally connected with a rod 14 which extends upwardly through the cover and terminates in a threaded end 15. A nut 16, mounted on the threaded end 15, constitutes a seat for a spring 17 which normally holds the needle valve closed. The nut 16 may be adjusted to limit, as desired, the extent to which the needle valve may be opened.

As a convenient means for controlling the opening of the needle valve, a trigger 18 is mounted adjacent the handle 19 which constitutes a prolongation of the air chamber 5. The inner end of this trigger is adapted to bear against a plunger 20 which extends through the cover 4 and rests against an abutment 21 formed by bending the rod 14 just below the inner surface of the cover.

A spray gun constructed according to the invention is adapted to be used with an air compressor of small capacity. A comparatively small motor may be used and no safety valve is necessary. The flow of air is continuous and the operation of the spray gun is controlled by opening or closing the needle valve by means of the trigger 18. The needle valve is adapted to move vertically within the conduit 9 under the influence of the spring 17 or a comparatively slight pressure transmitted through the plunger 20, which is necessary to overcome the tension of the spring. The closure of the needle valve prevents dripping of the liquid when the spray is shut off and also precludes the possibility of stalling the motor.

While I have shown and described in detail the preferred embodiment of the invention, it is obvious that the same may be modified in various respects without departing from the scope of the invention as claimed.

What I claim is:

1. In a spray gun, the combination of a receptacle cover, a liquid conduit extending upwardly through the cover and terminating at its upper end in a nozzle, an air conduit mounted on the cover and adapted to cooperate with the liquid nozzle to discharge a spray, a valve for said liquid conduit, an abutment beneath the cover and connected with said valve, and means for opening and closing said valve, said means including a manually operable member extending through the cover into engagement with said abutment.

2. In a spray gun, the combination of a liquid receptacle provided with a cover, a liquid conduit and an air conduit secured to said cover and cooperatively arranged to discharge intersecting jets, a handle by which the receptacle and cover are supported, a valve associated with said liquid conduit, an abutment connected with the valve and disposed beneath the cover, a trigger adjacent said handle, and means reciprocably mounted in said cover and operable by said trigger to engage said abutment and actuate the valve.

3. In a spray gun, the combination with a receptacle cover, a liquid conduit extending upwardly through the cover and terminating at its upper end in a nozzle, an air conduit mounted on the cover and adapted to cooperate with the liquid nozzle to discharge a spray, a valve controlling the flow through said liquid conduit, a plunger mounted in said cover, a trigger operable to depress said plunger, means engageable by the plunger to open the valve, and means for closing said valve when the trigger is released.

4. In a spray gun, the combination of a receptacle cover, a liquid conduit extending upwardly through the cover and terminating at its upper end in a nozzle, an air conduit mounted on the cover and adapted to cooperate with the liquid nozzle to discharge a spray and also having a port through which pressure is communicated to the surface of the liquid to be sprayed, a valve controlling the flow through said liquid conduit, a reciprocable member mounted in the cover, a trigger operable to depress said reciprocable member, means engageable by said reciprocable member, as it is depressed, to open the valve, and means for again closing said valve when the reciprocable member is released.

In testimony whereof I have hereunto signed my name to this specification.

JAMES E. PERRIN.