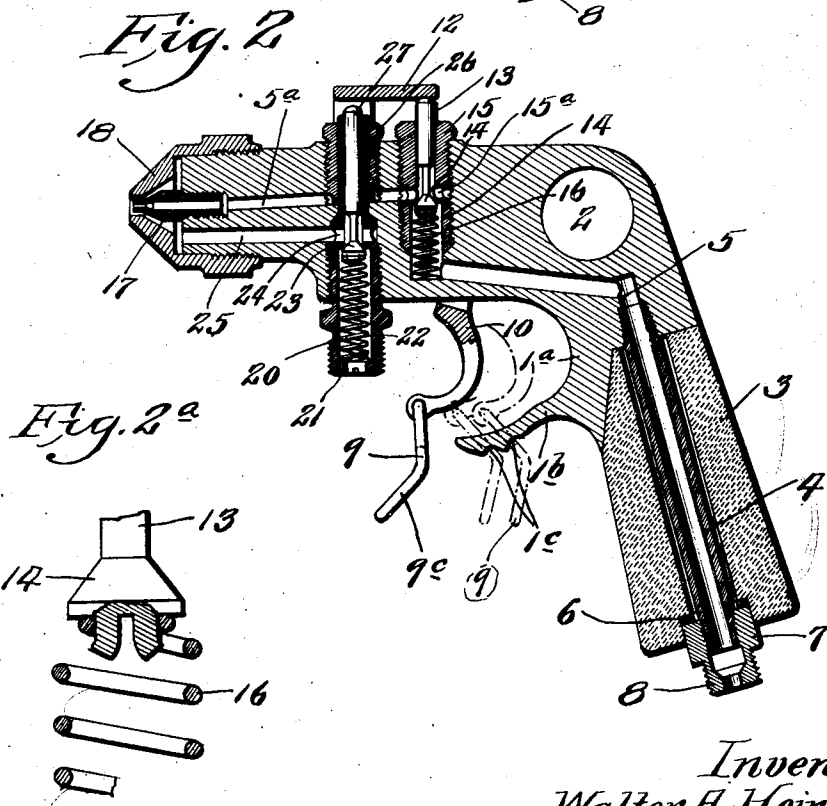
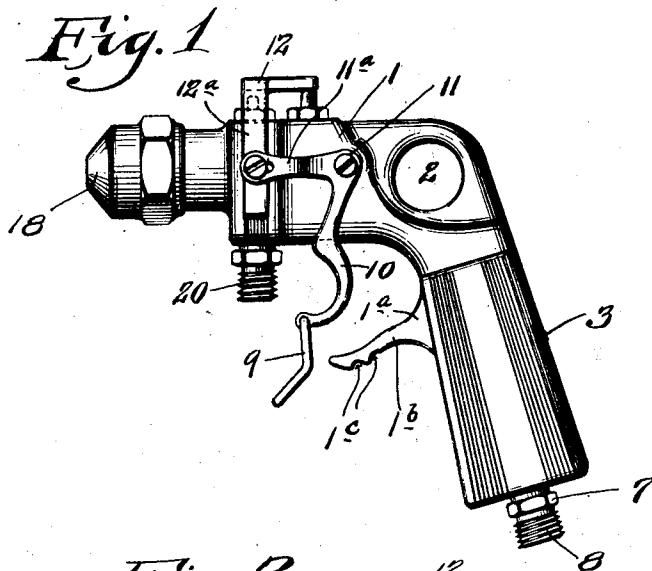


W. A. HEINRICH.
 SPRAY GUN.
 APPLICATION FILED JUNE 1, 1920.

1,382,640.

Patented June 28, 1921.
 2 SHEETS—SHEET 1.

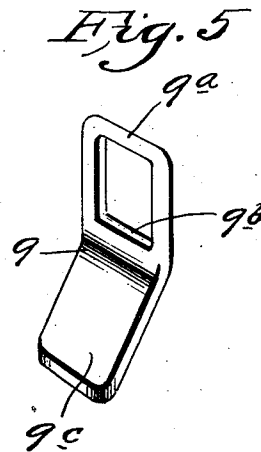
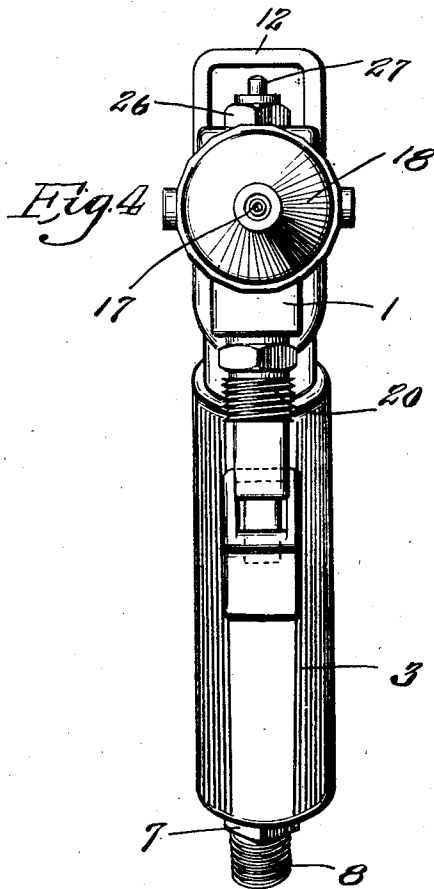
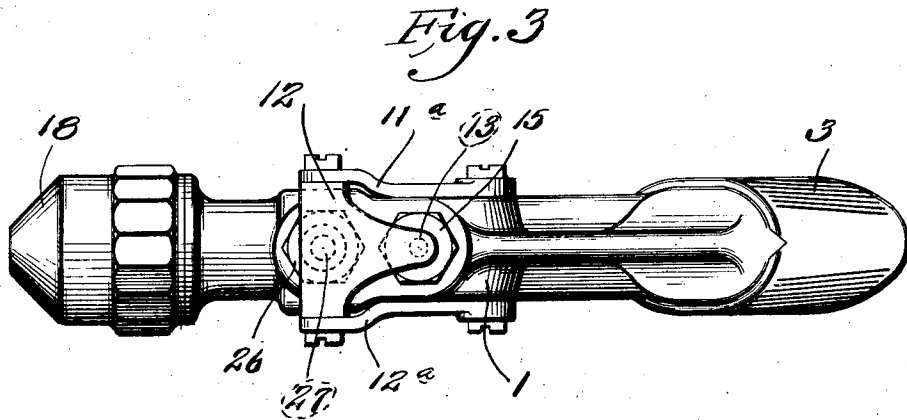


Inventor
 Walter A. Heinrich
 BY J. P. Cornwall Atty.

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 By *J. P. Cornwall* Atty

UNITED STATES PATENT OFFICE.

WALTER A. HEINRICH, OF ST. LOUIS, MISSOURI, ASSIGNOR TO W. N. MATTHEWS AND BROTHER, INC., OF ST. LOUIS, MISSOURI, A CORPORATION OF NEW MEXICO.

SPRAY-GUN.

1,382,640.

Specification of Letters Patent. Patented June 28, 1921.

Application filed June 1, 1920. Serial No. 385,652.

To all whom it may concern:

Be it known that I, WALTER A. HEINRICH, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Spray-Guns, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevational view of my improved spray gun;

Fig. 2 is a vertical sectional view through the same;

Fig. 2^a is a detail view showing the manner of arranging the springs under the valves;

Fig. 3 is a top plan view;

Fig. 4 is a front elevational view;

Fig. 5 is a detail view of the trigger lock.

This invention relates to a new and useful improvement in spray guns for applying or projecting paint or other liquids or powders and the like to surfaces to be covered in spray form by a liquid or powder forced from the gun by air or gas under pressure.

The objects of the present invention are to simplify the construction and cheapen the cost of manufacture in guns of the character described, the simplicity of construction enabling them to be readily cleaned, and by virtue of the small number of moving parts involved the liability of the gun getting out of order is reduced.

Another feature of my invention is to provide a trigger lock whereby the trigger which controls the air and fluid supply may be locked in one of several retracted positions depending upon the amount of fluid and air it is desired to play on the surface to be covered.

In the drawings, 1 indicates a casting having a reduced portion at the junction of the barrel and handle, in which reduced portion is an opening 2 by which the gun may be hung upon a nail or other support when not in use. 3 is a handle which may be of any suitable material, said handle being formed with a longitudinally disposed opening through which passes a tube 4 screwed into the casting 1 and communicating with a conduit or passage 5 in the casting. 6 is a washer seated against a shoulder in the lower end of the handle and against which washer impinges a nut 7

whereby the handle is held in position, said nut 7 having a threaded extension 8 forming a nipple for the attachment of a flexible tube leading from some suitable source of compressed air supply.

The casting 1 is provided with a downward extension 1^a having a flat rear face to cooperate with a tapered flat face formed on the handle, whereby when the nut 7 is screwed home, the handle is held firmly in position, the flat cooperating faces just referred to preventing the handle from turning. This extension 1^a is also provided with a trigger guard 1^b which not only serves to protect the trigger but affords a rest or support for the operator's finger in manipulating the gun. On the forwardly extending end of this trigger guard are notches or recesses 1^c, there being preferably two or more of these notches for cooperating with a trigger lock 9 pivotally suspended from the lower end of a trigger 10. This trigger lock is shown in Fig. 5 and consists of a looped upper portion, the upper cross-bar 9^a of which loop is pivotally mounted in the trigger while the lower edge 9^b of the loop is designed to be seated in one or another of the recesses 1^c, depending upon how far it is desired to hold the trigger retracted in a locked position. The depending portion 9^c of the trigger lock is so positioned that if the trigger is locked and at any time it is desired to release the trigger, thereby shutting off the air and fluid supply to the gun, it is only necessary for the operator to move his finger,—it may be the one located immediately under the trigger guard, forwardly, thus "knocking off" the trigger lock and permitting the trigger to move forwardly under the impelling action of its controlling springs, to be hereinafter described thereby permitting the valves to be closed. Ordinarily, this trigger lock is left free, i. e., dangling in the air, and when so free the operator can manipulate the trigger to eject sprays of short duration without having to bother with the trigger lock. When, however, the operator desires to lock the trigger either fully retracted or in some intermediate position, he adjusts the trigger lock into the proper corresponding notch where it will be held by the forward pull of the trigger, and thus the operator will be relieved of the necessity of exerting a constant pressure, say, with his index finger on the trigger to

hold it in a retracted position either full or partial where a spray of long duration is desired. It has been found empirically that the strain on the operator's finger or fingers is quite severe where the trigger is to be held retracted for hours at a stretch and the tendency of the operator is to either release the trigger partially or wholly upon some pretext to give his fingers a rest.

The trigger 10 is bifurcated at its upper end and pivoted at 11 on each side of the casting 1, the prongs of the bifurcation having forwardly extending members 11^a which are pivotally connected to the legs 12^a of an inverted U-shaped member 12, said legs being preferably guided in grooves in the side walls of the casting 1. The pivotal connection between the arms 11^a and the legs 12^a possesses sufficient lost motion or play to provide for the free movement of the parts, as for instance, a longitudinally disposed slot in the arms 11^a, shown in Fig. 1, may be provided so as to enable the parts to articulate without binding.

The saddle of the inverted U-shaped member 12 extends across the barrel of the gun, as shown in Figs. 3 and 4, and is normally held upwardly by means of a plunger 13 arranged on the upper end of the stem of a valve 14, which valve coöperates with a seat in a threaded valve plug 15 screwed into the casting 1. The valve and plunger are held upwardly by means of a spring 16 and in order that the spring may be withdrawn when it is desired to clean the parts and the saddle is removed and the valve plug 15 backed out, the upper convolution of spring 16 is squeezed in and around the flaring projection extending from the bottom face of valve 14.

The air passage or conduit 5 before referred to opens into the lower end of the bore in casting 1 which receives the spring 16, and when the valve 14 is unseated by being depressed, the air will pass upwardly through and around the spring beyond the valve, through ported openings 15^a in the valve plug and into the conduit 5^a communicating therewith and preferably located centrally with respect to the forward end of the barrel or casting. A nipple 17 is secured into the forward end of the barrel or casting 1, this nipple having a constricted centrally arranged opening through which air is forced under pressure so as to draw the paint or fluid or powder behind it, and which may be said to issue from the nozzle 18 in "side flow formation".

In tests, it has been found that by adjusting the nozzle 18 which is threaded onto the forward end of the barrel, the spray may be made either coarse or fine; and in certain of these adjustments, it has been found that the suction on the fluid or paint can reduce the pressure to a vacuum reading of from

twenty-one to twenty-two inches with fifty to sixty pounds air pressure. Of course, less air pressure can be employed and probably from thirty-five to forty pounds will be generally used, as this is sufficient for ordinary purposes and will throw a spray having the desired pattern but will not produce such a high vacuum. Of course, the pattern may also be regulated for given distances within the range of the gun by adjusting the nozzle 18, which adjustment in regulating the diameter of the pattern will also change the spray from fine to coarse depending upon the size of the pattern at a given distance.

A flexible pipe (not shown) is connected to a threaded hollow nipple 20 screwed into the casting 1 and preferably between the barrel and trigger. This nipple has a threaded ring 21 screwed into its lower end which forms a seat or bearing for spring 22, which spring holds a valve 23 up to its seat, which seat is formed at the upper end of the nipple plug 20 and opens into a ported opening 24 which communicates with a conduit or passage 25 leading to a chamber in the nozzle around the nipple 17, whereby a side-flow of the liquid to be sprayed is thus attained.

The nipple 20 is provided with a beveled tight joint immediately above the ported opening 25 and the upper end of said nipple is mounted in a plug 26 screwed into the casting 1, the lower end of which plug is cut away to permit the air in passage 5^a to pass there-around.

27 is a plunger secured to the valve stem of valve 23, and, as shown in Fig. 2, this plunger terminates slightly below the cross-piece 12 of the saddle member, whereas the plunger 13 bears directly under the saddle member and holds it in its elevated position.

The operation of the device is very simple. A flexible air tube (not shown) leading from a suitable source of compressed air, or gas, supply, is connected to the nipple 8 and a flexible pipe (not shown) leading from a source of paint, or other liquid or powder, to be sprayed, is connected to the nipple 20. The trigger is now operated and the nozzle 18 adjusted to secure the proper pattern of the spray at the desired distance, after which if the spray is to be applied for periods of short duration, the trigger lock 9 is left free; but if the spray is to be applied for a period of long duration, the trigger lock is manipulated into one or another of the notches depending upon the character of spray required. When the trigger is pulled, the air is first admitted through the nipple 17, after which the valve 23 is opened to permit the liquid to be sprayed to be drawn around the nipple 17 and forced out through the opening in the nozzle 18. In this manner the liability of shooting out a solid

stream of liquid is avoided when the trigger is first opened, as would be the case, in all probability, were the valve 23 opened either slightly before or contemporaneously with the valve 14. So, likewise, when the trigger is released, the liquid being sprayed is first shut off, after which the air valve is closed. This has a tendency to clean the end of the nipple 17 and prevent dripping. I deem this sequential operation of the air and liquid valves quite important in the practical operation of the device.

What I claim is:

1. In a device of the character described, the combination of a casting formed with passages for air or gas and liquid or powder to be sprayed, valves in control of said passages, a trigger for operating said valves, a trigger guard on a downward extension formed on said casting, the rear face of said trigger guard being flattened, a hollow handle having a flattened tapered portion for engaging the flattened face of a casting, a tube screwed into the casting and establishing communication between one of the passages in the casting and a nipple at the lower end of the handle, a nut integral with the nipple and adapted to impinge against the lower end of the handle to hold said handle to its seat.

2. In a device of the character described, the combination of a casting formed with a barrel portion at its forward end, a depending handle secured to said casting at its rear end, there being passages for air or gas and liquid or powder formed in said casting, one of said passages (for the air or gas) being centrally located and communicating with a nipple having a constricted opening at its front end and the other of said passages (for liquid or powder) opening through the front end of the barrel, a nozzle screwed into the front end of the barrel and surrounding the nipple and forming a chamber for the liquid or powder entirely around the same, valves for controlling said air and liquid passages, said valves having stems of different lengths extending to the exterior, a saddle member

guided in grooves outside of the casting and adapted to bear directly upon the ends of said stems for sequentially operating said valves, and a trigger connected to said saddle member for operating the same.

3. In a device of the character described, the combination of a casting having air or gas and liquid or powder passages there-through, valves for controlling said passages, said valves having flared or flattened projections, springs for holding said valves to their seats, each of said springs having a coil or convolution closed tightly upon said flattened projection on its cooperating valve, plungers connected to the valves and extending to the exterior, a saddle member cooperating with said plungers to unseat the valves, and a trigger connected to said saddle member for operating the same.

4. In a device of the character described, the combination of a casting having passages for air or gas and liquid or powder, valves for controlling said passages, a saddle member for operating said valves, a trigger for actuating the saddle member, a trigger guard on the casting having a notch formed therein, and a trigger lock pivotally mounted on the trigger and adapted to be seated in the trigger guard to hold the trigger in a retracted position.

5. In a device of the character described, the combination of a casting having passages for air or gas and liquid or powder, valves for controlling said passages, a saddle member for operating said valves, a trigger for actuating the saddle member, a trigger guard on the casting having a plurality of notches or recesses on its underside, and a trigger lock pivotally mounted in a trigger and designed to cooperate with one or another of said notches on the trigger guard, whereby the trigger may be locked in different retracted positions to effect an adjustment of the valves to secure different atomizations.

In testimony whereof I hereunto affix my signature this 27th day of May, 1920.

WALTER A. HEINRICH.