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A. J. KOLLMANN

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SPRAYER

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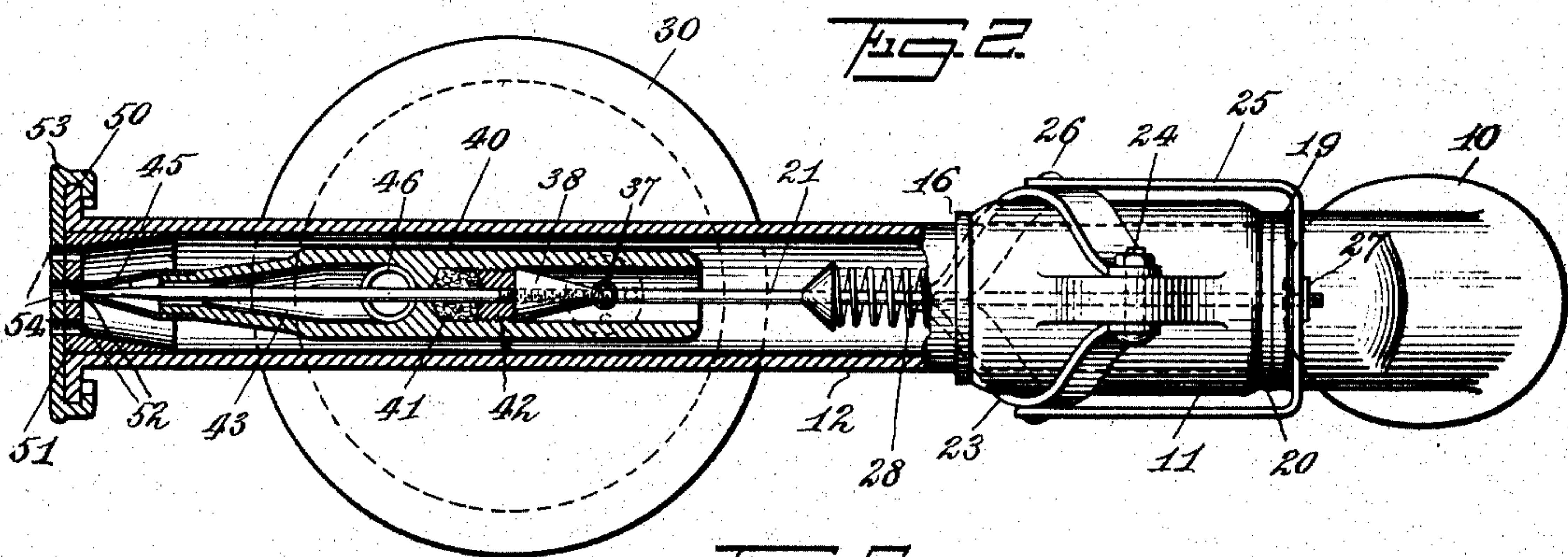
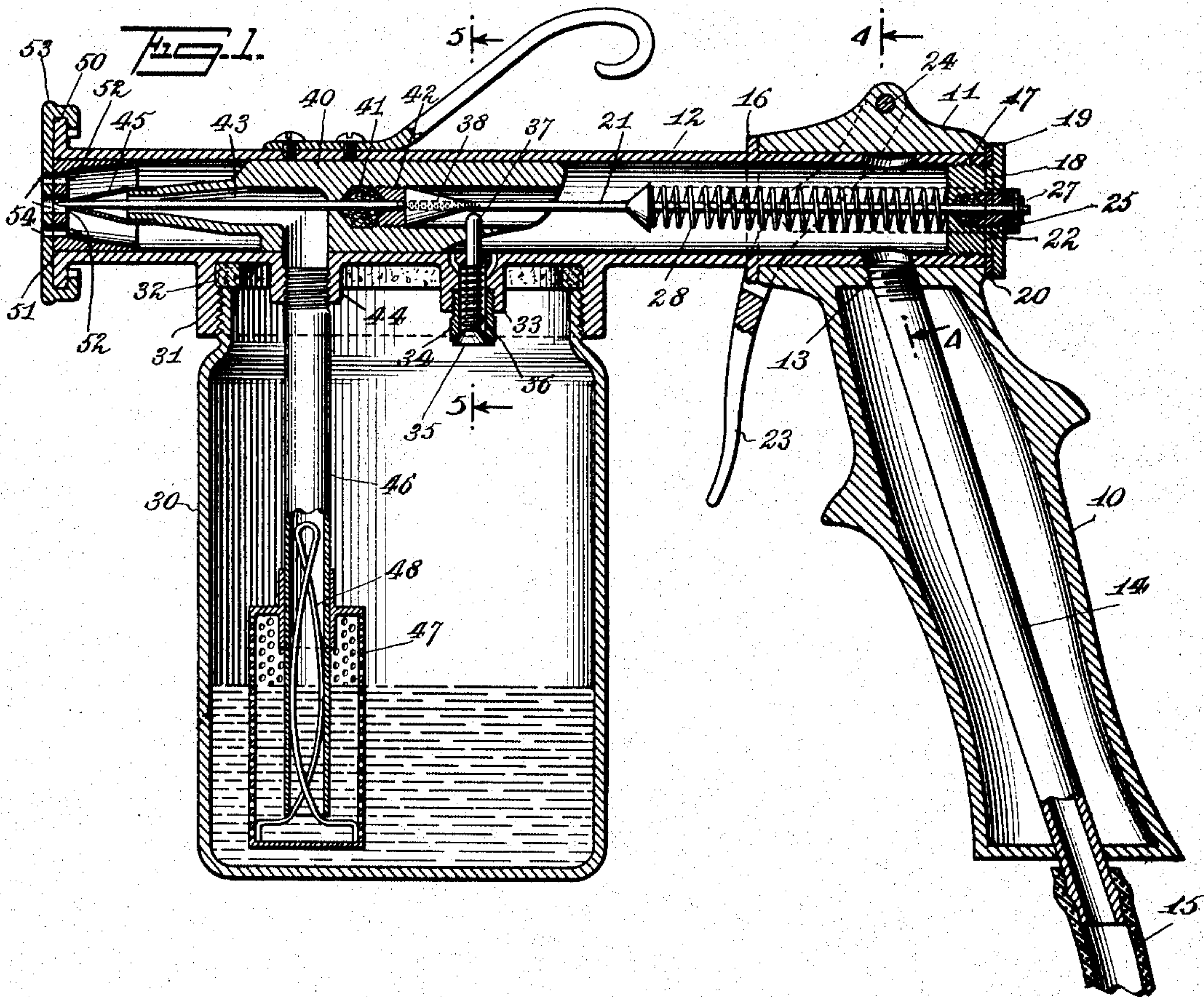
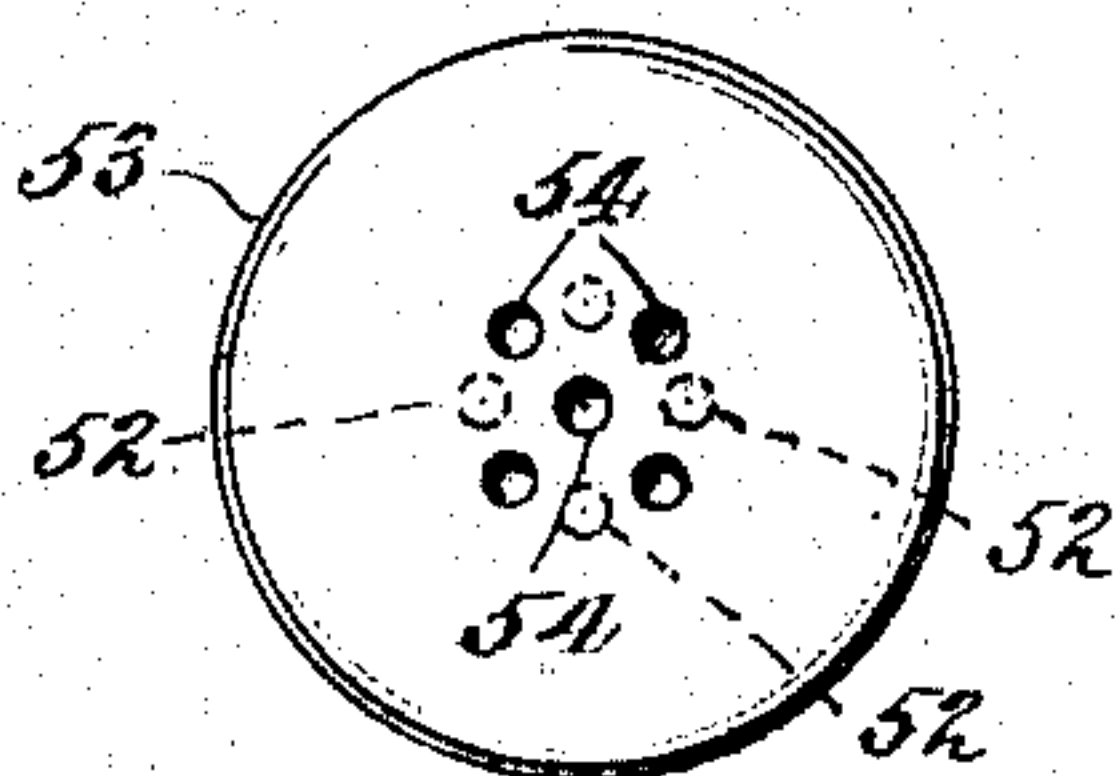


Fig. 6.



WITNESSES

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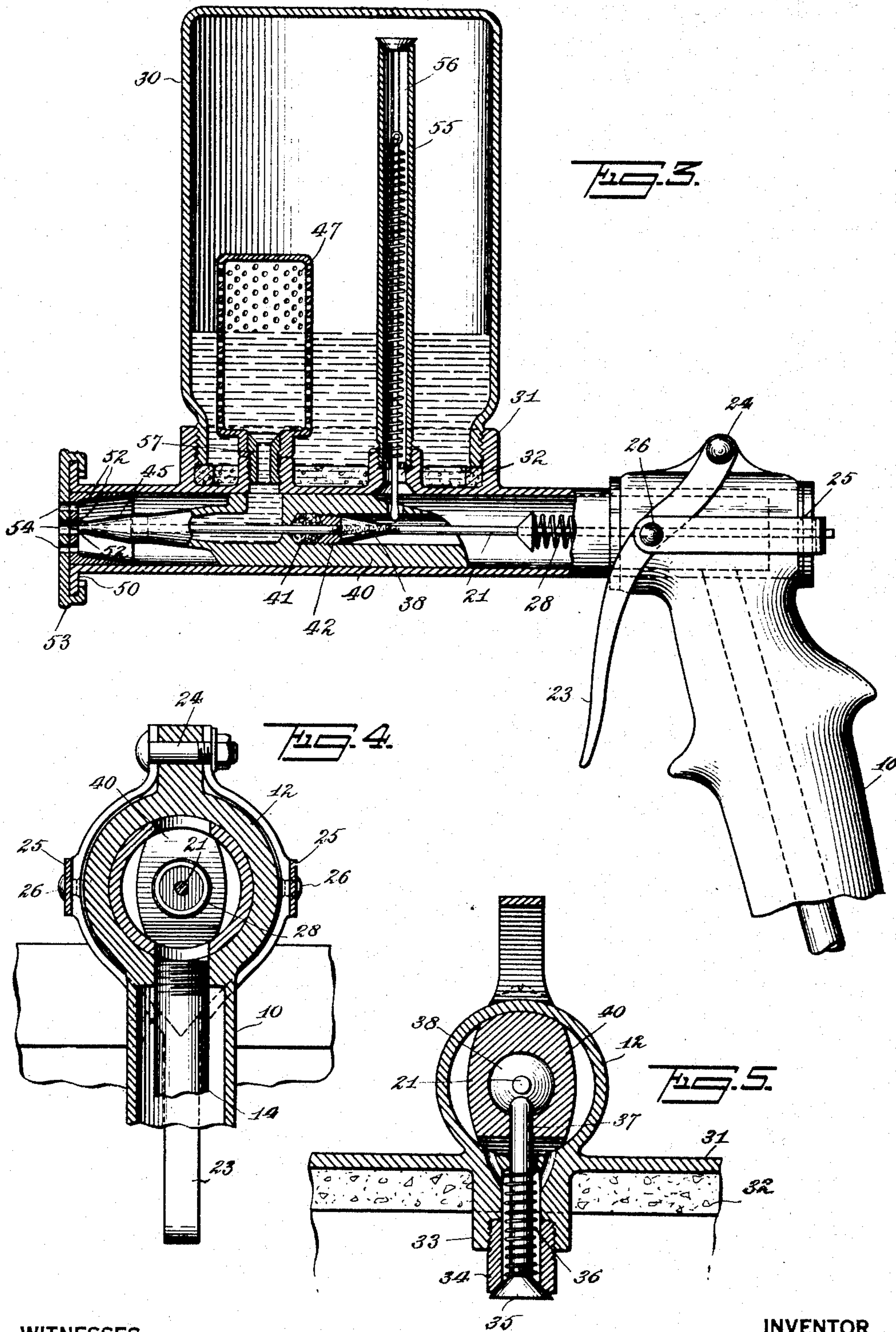
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## UNITED STATES PATENT OFFICE

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## SPRAYER

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This invention relates to sprayers.

It is among the objects of the present invention to provide a convertible sprayer which may be utilized as a gravity feed or force feed device.

A further object of the present invention is to provide a novel and improved sprayer in which trigger means are provided for jointly operating a plurality of valves to control a flow of fluid from the sprayer.

A further object of the present invention is to provide a convertible sprayer adapted for use in conjunction with an external supply of air and pressure.

Another object of the invention includes the provision of a novel adjustable nozzle means for controlling the configuration of the projected stream of sprayed material.

Other objects of the present invention include the combination and interrelation of parts, whereby the whole forms a simple efficient convertible structure readily designed to meet the demands of economic manufacture.

Numerous other objects and advantages of the present invention will be apparent from a consideration of the following specification taken in conjunction with the accompanying drawings, and in which

Figure 1 is a sectional view of one embodiment of my present invention shown as arranged for forced feed;

Fig. 2 is a top plan view partly in section, of the invention as arranged in Fig. 1;

Fig. 3 is a view similar to Fig. 1, showing the device arranged for gravity feed;

Fig. 4 is a sectional view taken on lines 4—4 of Fig. 1;

Fig. 5 is a sectional view taken on lines 5—5 of Fig. 1;

Fig. 6 is a front elevation of the spraying nozzle.

Referring more particularly to the drawings, the device preferably includes a handle 10, which is hollow as illustrated and of suitable configuration to provide ready gripping means. The upper end of the handle forms a tubular yoke 11, through which an apertured nozzle barrel 12 extends. The yoke 11 is apertured as at 13 and internally threaded

for the reception of a pressure supply tube 14, which extends through the handle for association with a suitable supply tube 15, as illustrated.

To provide for the conversion of the device from force feed to gravity feed, or vice versa, the barrel 12 is rotatably positioned within the yoke 11 and is provided with an extending flange 16 adapted to abut the forward face of the yoke 11. The rear end of the barrel 12 is internally threaded as at 17, for the reception of a securing plug 18, which is provided with an extending flange 19, which through the medium of the threads 17, engages a suitable packing 20, and in combination with the flange 16, retains the barrel against rotation. The plug 18 is centrally apertured for the reception therethrough of a valve-controlled rod 21. The plug 18 is provided with a suitable packing gland 22 which prevents leakage around the rod 21 as it passes through the plug 18.

For actuating the valve rod 21, a trigger 23 is provided, its upper end being bifurcated to pass around the yoke 11, the extremities of the furcations being pivoted as at 24 to the yoke. Intermediate the ends of the furcations, a substantially U-shaped actuating member 25 is provided joined to the yoke as at 26 at the extremities thereof, and through which the extremity of the valve rod 21 passes, the rod 21 being secured to the member 25 by provision of a suitable retaining pin and washer assembly 27. The valve rod 27 is normally urged forwardly by the provision of a suitable expansion spring 28. It will be seen that the trigger is also normally urged forwardly through the medium of the member 25 and its association as at 26 with the furcations of the trigger. It will also be seen that pressure upon the trigger moves the member 25 rearwardly and thus moves rearwardly the valve operating rod 21 against the tension of the expansion spring 28.

Referring more particularly to Fig. 1, when the device is used as a force feed sprayer, a spray material receptacle 30 is provided suspended from the barrel 12 by engagement thereof with an internally threaded flange 31 mounted upon the barrel 12, a



suitable washer 32 being provided between the receptacle 30 and the barrel 12. Associated with the flange 31 a valve member 33 is provided, within which a valve seat nipple 34 is secured, against which a mushroom valve 35 is adapted to seat, the valve being normally closed through the medium of a contractile spring 36, which surrounds a valve stem 37, which projects within the barrel 12 for actuation by a conical actuating member 38 mounted intermediate the ends of the operating rod 21. The conical member 38 is a preferably hollow and internally threaded as indicated, thus providing for separation of the ends of the rod 21 and for providing adjustment of the length of the rod, whereby the actuation of the plunger 37 by the member 38 may be controlled and also to effect adjustment of the extremity thereof with respect to the aperture in the member 45.

For directing the required amount of compressed air to the receptacle 30 and for immediately supporting the operating rod 21, a member 40 is provided within the barrel 12, and as shown in Fig. 5, is spaced from the sides of the barrel 12 to permit the passage of the compressed air therearound. Packing 41 is provided adjacent the aperture in the member 40, through which the rod 21 passes, the packing 41 being secured in position through a threaded retaining member 42 against which the rear flat face of the operating member 38 abuts, thus restricting the forward movement of the valve rod 21 under the influence of the spring 28.

For directing the fluid to be sprayed to the nozzle, the member 40 has an angularly characterized bore 43, one end of which extends through the side of the member 40 for association with an internally threaded nipple-receiving projection 44 of the barrel 12. The other end of the bore 43 extends axially of the barrel 12, its forward end tapering for association with a tapered discharge member 45, within which the forward end of the rod 21 is received and movable for closing the end thereof. This movement of the trigger simultaneously controls the valve 35 and the discharge of fluid through the bore 43. When the device is utilized in the position shown in Fig. 1, a nipple 46 is provided, which extends well within and approximately to the bottom of the receptacle 30, and is surrounded by a strainer 47, which is secured to the nipple by the provision of a spring member 48, which is receivable within the nipple and expands to retain the strainer 47 in the position as illustrated.

Referring more particularly to Fig. 6, the forward end of the barrel 12 is provided with an improved nozzle, the barrel 12 being flanged, as at 50, and having received in the extremity thereof, an internal stationary nozzle member 51, which is provided with a plu-

ality of apertures, shown by the dotted lines in Fig. 6 and indicated at 52, which preferably include one central aperture which receives the pointed extremity of the member 45, and a pair of horizontal and vertically arranged apertures on either side thereof. Associated with the flange 50, an outer nozzle member 53 is provided, adapted for rotation with respect to the barrel 12 and which includes the apertures 54, one of which at all times remains in registration with the center aperture 52, while the outer two may, by rotation of the member 53, be arranged for coincidence with either the vertical or horizontal apertures 52. Thus by rotation of the member 53, whereby the apertures 54 aline with the vertical apertures 52, a vertical fan-shaped spray results. A similar horizontal spray results through the association of the horizontal apertures 52 with the apertures 54, and by the alinement only of the central aperture 54 with the central aperture 52, the usual conical discharge of spray is provided for.

Referring more particularly to Fig. 3, it will be seen that by loosening of the plug 18, the barrel 12 and its associated parts may be revolved with respect to the handle 10, and the device may assume the position as shown in said figure for gravity feed of the sprayed material. In such case, the short nipple 34 and short valve stem 37 are replaced by the long nipple 55 shown in Fig. 3, and the long valve and valve stem indicated at 56. Thus air under pressure admitted to the handle is directed to the top of the receptacle 30 for exerting pressure to discharge the fluid from the receptacle. In this use of the device, the long nipple 46 is also done away with and a short nipple 57 is provided with which the strainer 47 is associated. It will be readily seen that the operation of the device is efficient in either position and that the change from one position to the other may be readily accomplished by interchange of the nipple 46 and bushing 34 and the provision of the valve assembly 56.

From the foregoing it will be readily seen that the present invention provides a novel and improved convertible pressure spray means which is simple and efficient in operation and which carries out the objects of the invention as herein set forth in a novel, approved and efficient manner.

It will be understood that numerous changes and modifications and the full use of equivalents in the structural features of the present invention may be resorted to without departing from the spirit or scope of the same as outlined in the appended claims.

What is claimed is:

1. A sprayer, including a handle, a barrel rotatably associated with said handle, and means for positioning said barrel to provide for gravity or pressure actuation of said sprayer, said means including a threaded plug



associated with said barrel for retaining the same in frictional engagement with said handle.

2. A sprayer, including a handle, a barrel rotatably associated with said handle, means for positioning said barrel to provide for gravity or pressure actuation of said sprayer, said means including a threaded plug associated with said barrel for retaining the same in frictional engagement with said handle, and a shoulder associated with said barrel for co-operation with said plug.

3. A sprayer, including a handle, a barrel rotatably associated with said handle, and means associated with said barrel whereby rotation of the same will provide for gravity or pressure operation of said sprayer, said means including a receptacle carried by said barrel for rotation therewith.

4. A sprayer, including a handle, a barrel rotatably associated with said handle, means associated with said barrel whereby rotation of the same will provide for gravity or pressure operation of said sprayer, said means including a receptacle carried by said barrel for rotation therewith, and valve means on said barrel in association with said receptacle.

5. A sprayer, including a handle, a barrel rotatably associated with said handle, means associated with said barrel whereby rotation of the same will provide for gravity or pressure operation of said sprayer, said means including a receptacle carried by said barrel for rotation therewith, and valve means on said barrel in association with said receptacle, said valve means including an axially movable rod within said barrel.

6. A sprayer, including a handle, a barrel rotatably associated with said handle, means associated with said barrel whereby rotation of the same will provide for gravity or pressure operation of said sprayer, said means including a receptacle carried by said barrel for rotation therewith, valve means on said barrel in association with said receptacle, said valve means including an axially movable rod within said barrel, and a valve stem operable thereby.

7. A sprayer, including a handle, a barrel rotatably associated with said handle, means associated with said barrel, whereby rotation of the same will provide for gravity or pressure operation of said sprayer, said means including a receptacle carried by said barrel for rotation therewith, and valve means on said barrel in association with said receptacle, said valve means including an axially movable rod within said barrel, and a valve stem operable thereby, said rod being provided with a camming surface for engagement with said valve stem.

8. A sprayer, including a handle, a barrel rotatably associated with said handle, means associated with said barrel whereby rotation of the same will provide for gravity or pres-

sure operation of said sprayer, said means including a receptacle carried by said barrel for rotation therewith, and valve means on said barrel in association with said receptacle, said valve means including an axially movable rod within said barrel, and a valve stem operable thereby, said rod being provided with a camming surface for engagement with said valve stem, and said valve means being adapted to control the supply of air under pressure to said receptacle under all positions thereof.

9. In a device of the character set forth, a handle, a rotatable barrel associated with said handle, and means for directing air under pressure through said handle to said barrel.

10. In a device of the character set forth, a handle, a rotatable barrel associated with said handle, means for directing air under pressure through said handle to said barrel, a supply chamber associated with said barrel, and valve means for controlling discharge of fluid from said chamber to said barrel.

11. In a device of the character set forth, a handle, a rotatable barrel associated with said handle, means for directing air under pressure through said handle to said barrel, a supply chamber associated with said barrel, and valve means for controlling discharge of fluid from said chamber to said barrel, said valve means including a valve for controlling the supply of air under pressure to said chamber.

12. In a device of the character set forth, a handle, a rotatable barrel associated with said handle, means for directing air under pressure through said handle to said barrel, a supply chamber associated with said barrel, valve means for controlling discharge of fluid from said chamber to said barrel, said valve means including a valve for controlling the supply of air under pressure to said chamber, a fluid supply conduit extending through said barrel, and removable extending means for said conduit.

13. In a device of the character set forth, a handle, a rotatable barrel associated with said handle, means for directing air under pressure through said handle to said barrel, a supply chamber associated with said barrel, valve means for controlling discharge of fluid from said chamber to said barrel, said valve means including a valve for controlling the supply of air under pressure to said chamber, a fluid supply conduit extending through said barrel, removable extending means for said conduit, and strainer means associated with said conduit.

14. In a device of the character set forth, a convertible gravity or pressure supply means, a barrel in combination therewith, and a discharge nozzle associated with said barrel, said nozzle including a stationary member having right-angularly disposed rows of apertures

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and a rotary member having a single line of apertures.

15. In a device of the character set forth, a convertible gravity or pressure supply means, a barrel in combination therewith, a  
5 discharge nozzle associated with said barrel, said nozzle including a stationary member having right-angularly disposed rows of apertures and a rotary member having a single  
10 line of apertures, and means for rotating said last-mentioned member for alinement with said vertical or horizontal apertures.

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