

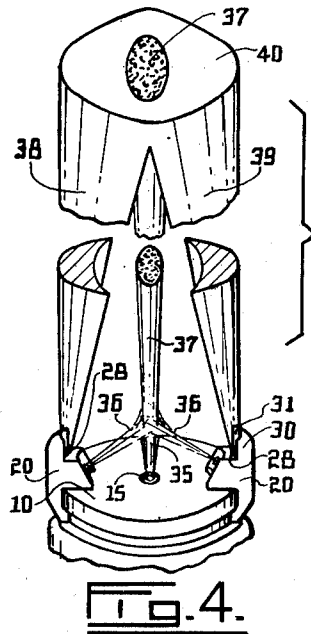
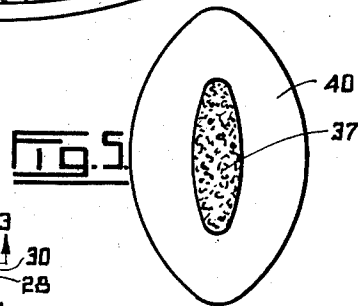
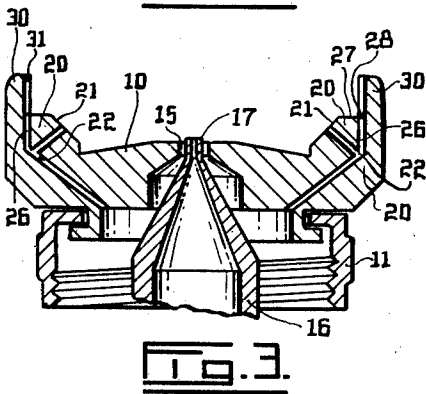
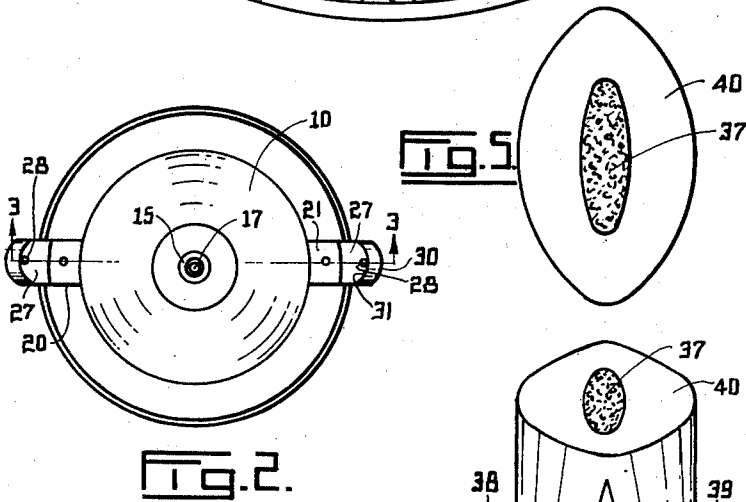
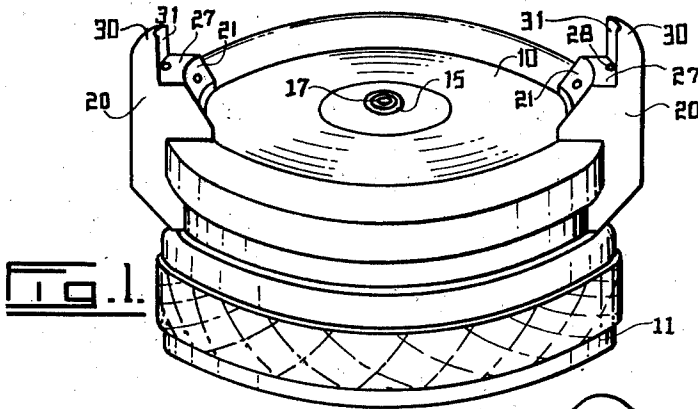
March 4, 1952

W. GRAY

2,587,993

SPRAY GUN AIR CAP

Filed Nov. 9, 1948



INVENTOR
WILLIAM GRAY
BY
Fetherstonhaugh & Co.
ATTORNEYS

UNITED STATES PATENT OFFICE

2,587,993

SPRAY GUN AIR CAP

William Gray, Vancouver, British Columbia,
Canada.

Application November 9, 1948, Serial No. 59,090

1 Claim. (Cl. 299—140.1)

1

2

This invention relates to improvements in air caps for spray guns for paint and other similar materials.

An object of the present invention is the provision of an air cap particularly for paint spray guns which prevents overspray, resulting in a greater concentration of paint on the work than has been possible heretofore, in a more even finish, quicker work, and cleaner spraying for indoor work.

Another object is the provision of a spray gun air cap which increases the distance paint may be sprayed, thus reducing the number of times a ladder has to be moved in order to do a given job.

Yet another object is the provision of an air cap for spray guns which results in spraying with clear edges and this permits spraying right up to a surface which is not to be sprayed without spattering said surface.

These objects are attained by providing an air cap for spray guns for paint and similar materials having an orifice through which material to be sprayed may be forced, and means for forming an air envelope around the sprayed material. Usually, paint and air are directed through a central orifice in the cap and air is directed towards each of two opposite sides of the paint and air mixture to form the latter into a substantially flat fan. Means have been provided in the cap for directing air around the sprayed material, thus forming an encircling envelope which confines the paint to the desired area.

An example of this invention is illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of the air cap,

Figure 2 is a plan view thereof,

Figure 3 is a cross section taken substantially on the line 3—3 of Figure 2, and including part of a spray head of a gun,

Figure 4 is a perspective view diagrammatically illustrating the formation of the air envelope around the sprayed material, and

Figure 5 diagrammatically illustrates the relationship of the sprayed material and air envelope at the time they reached the surface being sprayed.

Referring to Figures 1 to 3 of the drawings, 10 is an air cap having a rotatable collar 11 by means of which it may be secured to a spray head of an air gun, not shown, in the usual manner. The cap is preferably formed with a central orifice 15, and a nozzle 16, forming part of the usual spray head, see Figure 3, has a projection 17 which extends into the orifice 15, said orifice

being a little larger than the projection. Air nozzles in the form of shoulders 20 are located on opposite sides of the cap 10 and project outwardly therefrom. These shoulders are formed with inclined surfaces 21 facing inwardly of and upwardly from the cap, and passages 22 in said shoulders open out at one end centrally of the inclined surfaces 21, and at their opposite ends they communicate with the interior of the cap.

In the ordinary operation or equipment of this nature, paint is forced through the nozzle 16 and out through the orifice 15. At the same time, air under pressure is directed into the cap 10 and some of this air passes out through the orifice and some through the passages 22. The paint and air passing through the orifice mix and tend to form a cone from said orifice, and at the same time, the air from the passages 22 of the opposed air nozzles is directed against the opposite sides of the sprayed material to flatten it out into a substantially flat fan. The pressure of the air passing through the passages 22 must be carefully regulated in order to prevent the sprayed material from being divided into two sections.

Suitable means is provided for forming an air envelope around the sprayed material after it has left the orifice 15. One convenient way of accomplishing this is to form a passage 26 in each shoulder 20 which extends upwardly from the passage 22 and opens out through the top 27 of the shoulder, forming an air orifice 28 therein. The top or outer end 27 of each shoulder lies substantially at right angles to the path of the paint sprayed through the central orifice. This passage and its air orifice may be relatively wide and thin in cross section, or they may be circular in cross section, as shown. With this arrangement, air from within the cap 10 is directed through each orifice 28 substantially parallel with the sprayed material.

In this example, a deflector 30 projects outwardly from each shoulder 20 parallel with the axis of the cap at the air orifice 28 of said shoulder on the outer side of the orifice. The inner surface of each deflector is preferably curved around its air orifice towards the central orifice 15, as at 31. Actually, each orifice 28 is located at the base of the inner surface of the adjacent deflector substantially midway between the sides of the latter, see Figures 2 and 3. Thus, air issuing from each orifice 28 is curved and directed around the sprayed material issuing from the central orifice to form an air envelope around said material.

Referring to Figures 4 and 5, 35 represents the

3

paint and air mixture forced out through the orifice 15 of the cap. If the passages 22 are provided and open out through the inclined faces 21 of the shoulders 20, air represented at 36 strikes the material 35 on opposite sides thereof to flatten it out into a thin fan 37. At the same time, air from the orifices 28 is directed by the curved surfaces 31 of the deflectors 30 around the fan 37, as illustrated at 38 and 39. The air from the opposed air nozzles unites to form an air envelope 40 around the sprayed material, see Figure 5. Some of this envelope air mixes with the paint to help produce better atomization of the latter. The air envelope confines all the paint particles within itself to prevent any overspray. It is very difficult for any particles breaking away from the spray fan to penetrate the air envelope. This envelope also assists in preventing the fan from being divided by the air 36.

While circular orifices have been shown, it is to be understood that these orifices may be relatively wide and thin, and curved in the same manner as the surfaces 31 of the deflectors 30.

What I claim as my invention is:

An air cap for spray guns for paint and similar materials having a central orifice through which material to be sprayed may be forced, shoulders spaced from and located on opposite sides of the central orifice, said shoulders having flat outer ends lying substantially at right angles to the path of travel of the sprayed material, inclined surfaces on the shoulders facing inwardly of and upwardly from the cap, an air passage in each

4

shoulder opening out at one end through the inclined surface thereof and communicating at its opposite end with the interior of the cap, a deflector projecting outwardly from each shoulder end and having an inner surface curving towards the central orifice, an air orifice in the flat surface of each shoulder at the base of the inner surface of its deflector substantially midway between the sides of the latter, and an additional passage extending through each shoulder substantially parallel with the axis of the cap from its first-mentioned air passage to its air orifice, said deflectors directing air passing out through the air orifices from the additional air passages around the material sprayed from the central orifice to form an air envelope extending completely around said material.

WILLIAM GRAY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,741,169	Thompson	Dec. 31, 1929
1,786,394	Tracy	Dec. 23, 1930
1,860,129	Binks et al.	May 24, 1932
2,478,557	Bell et al.	Aug. 9, 1949

FOREIGN PATENTS

Number	Country	Date
508,719	Great Britain	July 5, 1939
659,062	Germany	Apr. 23, 1938