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Davis

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[54] **EXTENSION SPRAY GUN**

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[52] **U.S. Cl.** **239/195;** 239/281; 239/532

[51] **Int. Cl.**[2] **B05B 15/06**

[58] **Field of Search** 222/74, 174, 523; 239/165, 239/195–199, 280, 280.5, 281, 532, 588; 285/178; 287/DIG. 8; 403/350, 351, 352

[56] **References Cited**

UNITED STATES PATENTS

1,204,903	11/1916	Richter et al.	239/532 X
1,511,361	10/1924	Paasche	239/532 X
2,122,559	7/1938	Dapero et al.	239/532 X
2,256,248	9/1941	Hansen	287/DIG. 8
2,546,157	3/1951	Hume	287/DIG. 8
3,236,455	2/1966	Lewis et al.	239/280 X
3,645,450	2/1972	Calder	239/532 X

FOREIGN PATENTS OR APPLICATIONS

652,781	2/1963	Italy	239/281

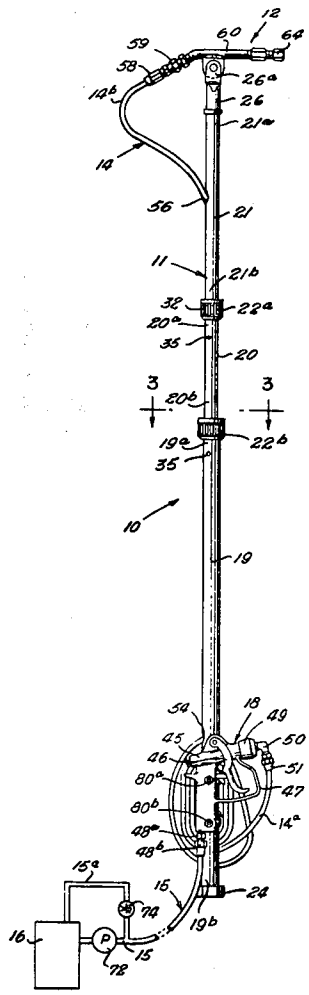
Primary Examiner—John J. Love

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[57] **ABSTRACT**

An extension spray gun comprising a telescopically extendable pole having a spray nozzle secured to one end of the pole and a valve secured to the other end to control flow of paint through a flexible hose connected to the spray nozzle.

6 Claims, 5 Drawing Figures



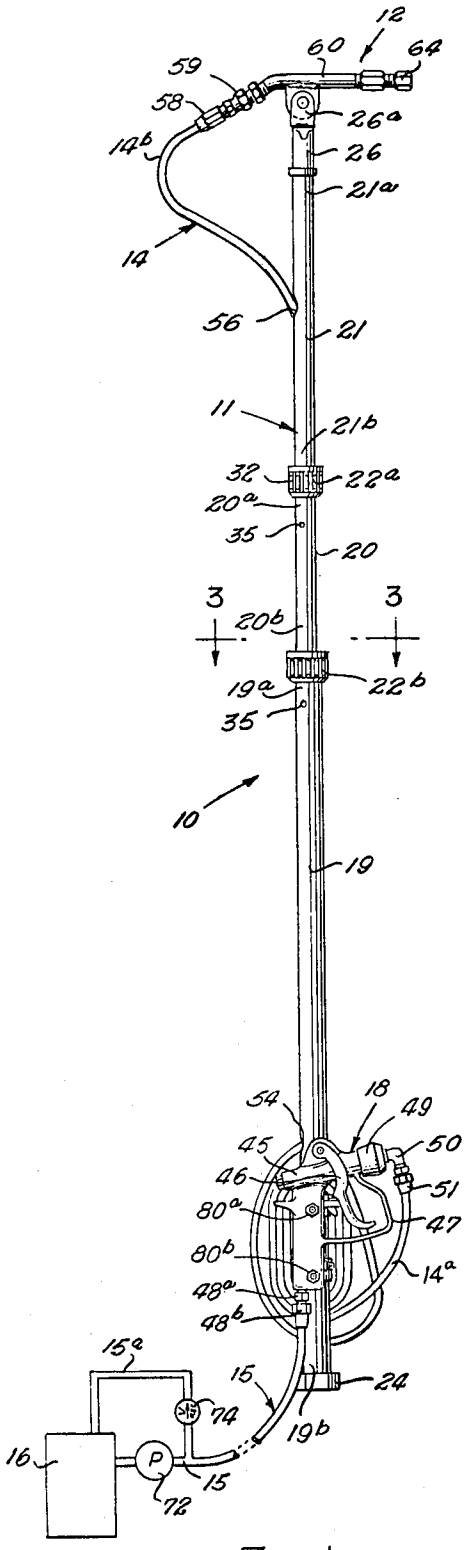

12
60
64
59
58
26a
14b
26
21a
14
56
21
11
21b
32
22a
20a
35
20
3
3
20b
19a
22b
35
10
19
54
18
49
45
50
46
51
80a
47
80b
14a
48a
48b
15a
15
24
74
19b
16
P
15
72

Fig. 1

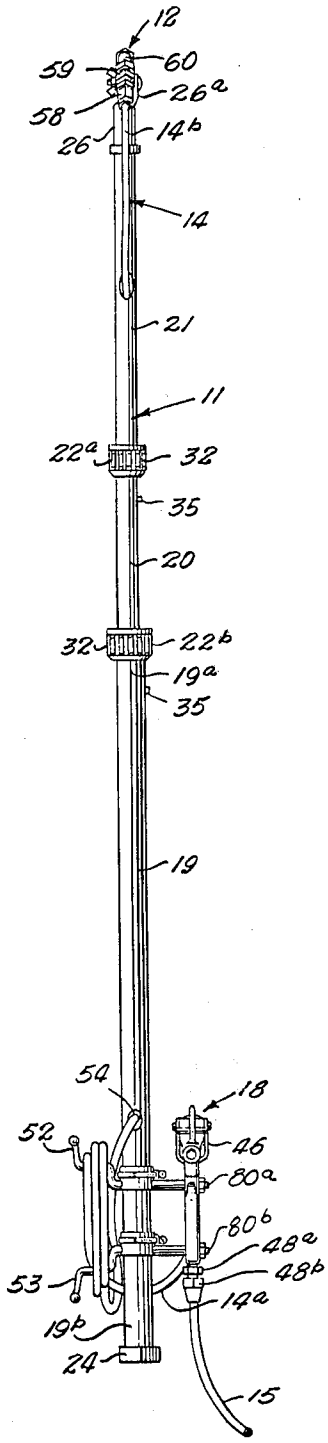

12
59
60
26a
58
14b
26
14
21
11
22a
32
35
20
32
22b
19a
35
19
54
18
52
46
80a
80b
48a
48b
53
14a
19b
24
15

Fig. 2

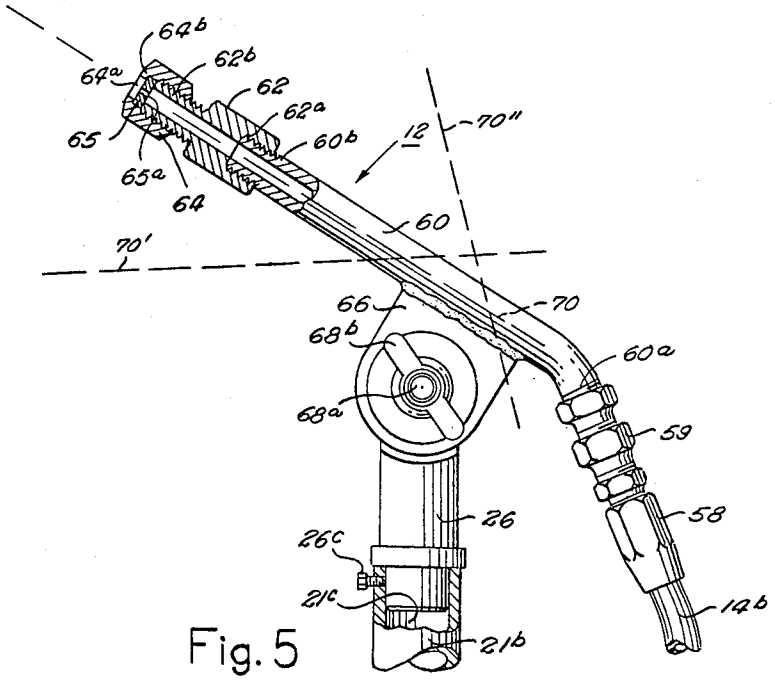


Fig. 5

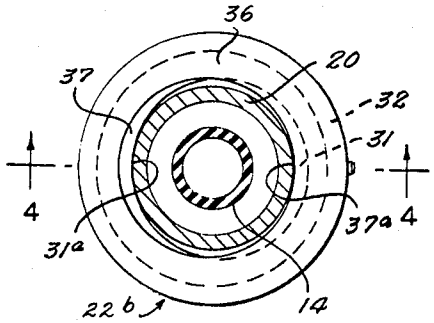


Fig. 3

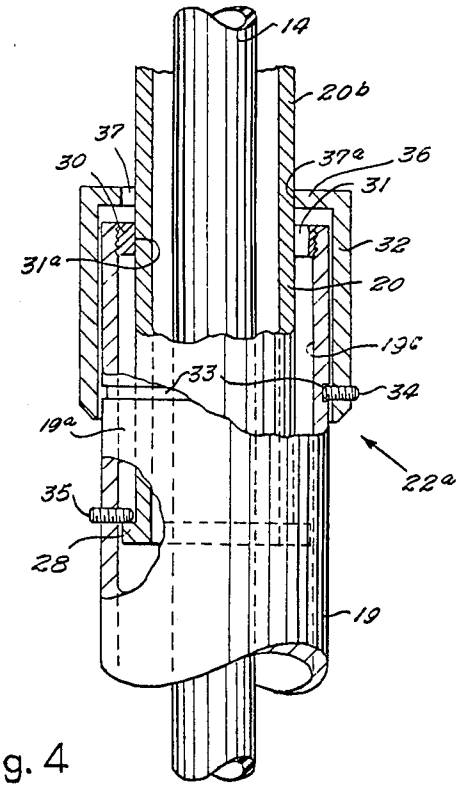


Fig. 4

EXTENSION SPRAY GUN

BACKGROUND OF THE INVENTION

Airless type paint spray guns are connected to pumps which delivers paint at pressures of, for example, 1,200–3000 psi through a spray tip or nozzle.

Heretofore, in order to reach high overhead locations, the painter has erected scaffolds which required a great deal of time and labor. Expense involved in acquiring, transporting, erecting and disassembling scaffolds is often a major portion of the total cost of a painting project.

Ladders may be used to reach high locations but only allow the painter to reach a limited area before moving the ladder.

Heretofore, no extension spray gun has been developed that is readily extendable and has a fully adjustable spray nozzle with all the capability of a regular spray gun.

SUMMARY OF INVENTION

I have devised an extension spray gun for spraying paint, varnish, shellac, and the like, which is readily extendable and fully adjustable to reach high overhead locations.

The apparatus basically comprises a pole, which is telescopically extendable having a locking device to lock it at any length desired; a spray nozzle pivotally connected to one end of the pole; and a valve located at the other end of the pole with a flexible hose extending between the valve and spray nozzle. The spray nozzle is adapted for use with standard spray tips and therefore has all of the capabilities of a regular spray gun. The flexible hose permits adjustment of the length of the pole without elaborate seal and swivel mechanisms employed in extension guns heretofore devised.

A primary object of the invention is to provide a spray gun which will reach high overhead areas while the painter is standing on the ground.

Another object of the invention is to provide an attachment for a conventional spray gun to eliminate the necessity for ladders and scaffolding thus reducing the time required to paint an overhead area.

A further object of the invention is to provide a spray gun having an extension which is readily adjustable to reach varying heights which a painter may encounter.

A further object of the invention is to provide an adjustable mounting for a pole supported spray nozzle which may be pointed at varying angles relative to the pole.

A still further object of the invention is to provide an extension for a spray gun having a flexible connection between a spray nozzle and a control valve such that the length of the extension is readily adjustable without change of equipment or use of tools.

Other and further objects of the invention will become apparent upon referring to the detailed description hereinafter following and to the drawings annexed hereto.

BRIEF DESCRIPTION OF THE DRAWING

Drawings of a preferred embodiment of the invention are annexed hereto so that the invention may be better and more fully understood, in which:

FIG. 1 is a front elevational view of the extension spray gun;

FIG. 2 is a side elevational view;

FIG. 3 is a cross-sectional view taken along line 3—3 of FIG. 1;

FIG. 4 is a cross-sectional view taken along line 4—4 of FIG. 3; and

FIG. 5 is a fragmentary elevational view of the nozzle head, parts being broken away to more clearly illustrate the details of construction.

Numeral references are employed to designate like parts throughout the various figures of the drawings.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring to FIGS. 1 and 2 of the drawing, the numeral 10 generally designates an extension spray gun having a telescopic pole 11, a nozzle spray head 12, a valve 18 attached adjacent the lower end of the pole 11, and a flexible hose 14 having a first end 14*a* connected to control valve 18 and a second end 14*b* connected to nozzle spray head 12.

Pole 11 comprises a plurality of hollow pole sections 19, 20, and 21 secured together by locking devices 22*a* and 22*b* for adjustment of the length of pole 11; and an adapter 26 secured to the upper end of pole 11. As will be hereinafter more fully explained, pole 11 may be shortened to substantially the length of base pole section 19 by sliding intermediate section 20 into base section 19 and end pole section 21 into intermediate pole section 20 and tightening locking devices 22*a* and 22*b*. The pole 11 may be extended to full length by pulling out sections 19, 20, and 21.

As best illustrated in FIG. 4 of the drawing, a spacer flange 28 is secured to the end 20*b* of intermediate pole section 20 and is slidably disposed in the bore 19*c* extending through hollow base section 19 of the pole 11.

Internal threads are preferably formed in the end 19*a* of the base section 19 to removably secure a circular plate 30 in bore 19*c*. The circular plate 30 has an aperture 31 extending therethrough which is preferably eccentric to the outer periphery of circular plate 30, as will be hereinafter more fully explained.

Locking devices 22*a* and 22*b* are preferably of substantially identical construction and each comprises a tubular collar 32 having an end plate 36 secured to one end thereof. The end plate 36 has an aperture 37 extending therethrough which is eccentric to the inner wall of the collar 32. The end 20*b* of intermediate section 20 extends through apertures 31 and 37 and the end 19*a* of base section 19 extends into tubular collar 32.

It should be readily apparent that rotation of collar 32 will result in movement of apertures 31 and 37 into or out of axial alignment.

Apertures 31 and 37 preferably have a diameter slightly greater than the outside diameter of intermediate section 20, permitting axial movement of section 20 when apertures 31 and 37 are axially aligned. However, movement of aperture 37 out of axial alignment with aperture 31 will move surfaces 31*a* and 37*a* into frictional engagement with the outer surface of intermediate section 20 of pole 11 such that sections 19 and 20 of pole 11 are restrained against relative movement.

The end 19*a* of base section 19 has a groove 33 formed in the outer surface thereof into which the end of set screw 34 extends. Set screw 34 is threadedly secured through the wall of collar 32 to limit movement of collar 32 longitudinally of base pole section 19.

The locking devices 22*a* and 22*b* are preferably adapted to permit longitudinal adjustment of sections

19, 20, and 21 while providing rigidity between the sections to prevent excessive flexure of the pole 11. As illustrated in FIG. 4 a set screw 35 extends through the wall of the base section 19 to limit movement of intermediate section 20 through the bore 19c. It should be appreciated that limiting spacing between spacer flange 28 and plate 30 provides rigidity between sections 19 and 20 of pole 11.

Valve 18 is a normally closed adjustable orifice type valve having a trigger 46 and trigger guard 47.

Valve 18 may assume any desired configuration such as that employed in conventional spray guns of the type manufactured by Spray Systems Company of Bellwood, Illinois or Nordson Corporation of Amherst, Ohio. However, if a conventional spray gun is employed to provide a control valve mechanism, the spray tip should be removed from the spray gun.

Valve 18 is secured by a suitable coupling to the end 14a of hose 14. In the illustrated embodiment of the invention, the coupling comprises a male connector member 50 threadedly secured to valve 18. A female connector member 51 is secured to the end 14a of hose 14 and is threadedly secured to male connector 50.

The end 14b of hose 14 has a female connector 58 secure thereto which is connectable to male connector 59 secured to nozzle spray head 12.

As best illustrated in FIG. 1, base pole section 19 has a passage 54 extending through the wall thereof through which hose 14 extends. Hose 14 extends longitudinally through bores 19c, 20c and 21c of pole sections 19, 20 and 21, respectively, and through passage 56 formed in the wall of end pole section 21.

Hose 14 preferably has a length exceeding the length of pole 11 when all of the pole sections 19, 20, and 21 are fully extended. When pole sections 19, 20 and 21 are retracted to shorten pole 11, the excess length of hose 14 is drawn through passage 54 and coiled around lugs 52 and 53 secured to base pole section 19.

As illustrated in FIG. 5, the nozzle spray head 12 comprises a hollow tubular body 60 having a deflected end portion 60a secured to connector 59 which is connectable to the female connector 58 secured to the end 14b of hose 14. End 60b of body 60 is externally threaded and extends into the female end 62a of tip adaptor 62. Tip adapter 62 has an externally threaded male portion 62b to which internally threaded tip cap 64 is threadedly secured.

Tip cap 64 has a passage 64a formed in the end thereof forming a shoulder 64b engaging one side of orifice plate 65 which is urged into sealing engagement with the end 62b of tip adapter 62.

The orifice plate 65 has an aperture 65a extending therethrough.

Tubular body 60 has an outwardly extending ear 66 welded or otherwise rigidly secured thereto intermediate opposite ends thereof. Ear 66 has an aperture extending therethrough and is pivotally attached to adapter 26 by adjustable means such as bolt 68a and wing nut 68b such that the axis 70 of tubular body 60, as shown by the dashed line, may be moved at any angle between the position shown by the dashed line 70' and the position by the dashed line 70'' making the nozzle head completely adjustable to any spray angle desired.

The adapter 26 has a flattened end 26a forming a lug having an aperture through which bolt 68a extends. The lower end 26b of adapter 26 extends into bore 21c of end section 21 and is restrained against movement by set screw 26c.

Extension spray gun 10 is connected by hose 15 to paint supply 16 having a pump 72 for pumping the paint from paint supply 16 through hose 15 to control valve 18. A pressure relief valve 74 is positioned between pump 72 and control valve 18 of extension spray gun 10 such that when valve 18 is closed back pressure is relieved through valve 74 and paint is recirculated to paint supply 16 through hose 15a.

Operation of the invention heretofore described is as follows:

Adjustment of spray nozzle 12 may be accomplished by loosening the wing nut 68b and moving the spray head 12 to the desired angle and then retightening the wing nut 68b.

The desired heighth is obtained by rotating collar 32 of locking device 22a to release end section 21 and moving end section 21 to the desired position then retightening collar 32. If additional heighth is desired, section 20 may be extended by rotating locking device 22b; extending intermediate section 20 and retightening locking device 22b. As additional heighth is needed hose is taken off lugs 52 and 53 and urged through passage 54 into the bore 19c extending through base pole section 19.

The extension spray gun 19 is then connected to a conventional pressurized paint supply 16. The extension spray gun 10 is then gripped with one hand about valve 18 for controlling movement of trigger 46 and another hand at the middle of base section 19 of pole 11.

From the foregoing it should be readily apparent that the preferred embodimemt herein described accomplishes the objects of the invention hereinbefore discussed.

It should be appreciated that other and further embodiments of the invention may be devised without departing from the basic concept thereof.

Having described my invention, I claim:

1. An extension spray gun comprising: a control valve; means to connect said control valve to a source of pressurized fluid; a tubular body; an orifice plate secured to a first end of said tubular body; a plurality of hollow pole sections, each of said pole sections having a bore extending therethrough; means telescopically securing each of said pole section to another pole section; means pivotally securing said tubular body to an end of one of said pole sections; a flexible hose extending through the bore in said hollow pole sections; means to secure a first end of said flexible hose to a second end of said tubular body; and means to secure a second end of said flexible hose to said control valve.

2. An extension spray gun comprising: a plurality of tubular pole sections having a bore extending longitudinally therethrough, said tubular pole sections having first and second passages formed therein communicating with said bore; a spray head; means to secure said spray head to one of said tubular pole sections; valve means; means to secure said valve means to one of said tubular pole sections; a flexible conduit extending into said first passage, through said bore, and out of said second passage; means to secure a first end of said flexible conduit to said spray head; means to secure a second end of said flexible conduit to said valve means; means to deliver pressurized fluid to said valve means; a circular plate having an aperture which is eccentric to the outer periphery of said circular plate; means se-

curing said circular plate in the bore of a first of said pole sections; a tubular collar having a bore formed therein; an end plate on said collar, said end plate having an aperture which is eccentric to the bore in the tubular collar; wherein an end of said first pole section extends into the bore in said tubular collar; and wherein an end of a second of said pole sections extends through the aperture in the end of the tubular collar and through the aperture in the circular plate such that upon rotation of said tubular collar said end plate will frictionally engage said second pole section.

3. The combination called for in claim **2** wherein the means to secure said spray head to one of said tubular pole sections comprises: pivot means securing said spray head to one of said tubular pole sections.

4. The combination called for in claim **2** wherein said spray head comprises: a hollow tubular body having first and second ends; a tip cap having a passage formed therein and a shoulder extending into said passage; an orifice plate; means securing said tip cap to the first end of said tubular body such that said shoulder urges said orifice plate into sealing engagement with the end of said tubular body; and the means to secure the first end of the flexible conduit to the spray head is secured to the second end of said tubular body.

5. An extension spray gun comprising: a control valve; means to connect said control valve to a source of pressurized fluid; a plurality of tubular pole sections having a bore extending longitudinally thereof, said tubular pole sections having first and second passages formed therein communicating with said bore; means telescopically securing each said tubular pole section to another tubular pole section; a hollow tubular body having first and second ends; means pivotally securing said tubular body to a first end of a first of said tubular pole sections; a tip cap having a passage formed therein and a shoulder extending into said passage in the tip cap; an orifice plate; means securing said tip cap to the first end of said tubular body such that said shoulder urges said orifice plate into sealing engagement with the end of said tubular body; a flexible hose extending into said first passage, through said bore, and out of said second passage; means securing a first end of said flexible hose to said control valve; means securing a second end of said flexible hose to said second end of said tubular body; and means securing said control valve intermediate opposite ends of a second of said tubular pole sections.

6. The combination called for in claim **5** wherein said means pivotally securing said tubular body to a first end of a first of said tubular pole sections comprising an outwardly extending ear secured to said tubular body, said ear having an aperture extending therethrough; an adapter body extending into the bore in the first end of said first pole section; means securing said adapter body relative to said first pole section; a lug on said adapter body, said lug having an aperture extending therethrough; and means extending through said aperture in said ear and through said aperture in said lug adjustably securing said lug relative to said ear.

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