

Feb. 27, 1945.

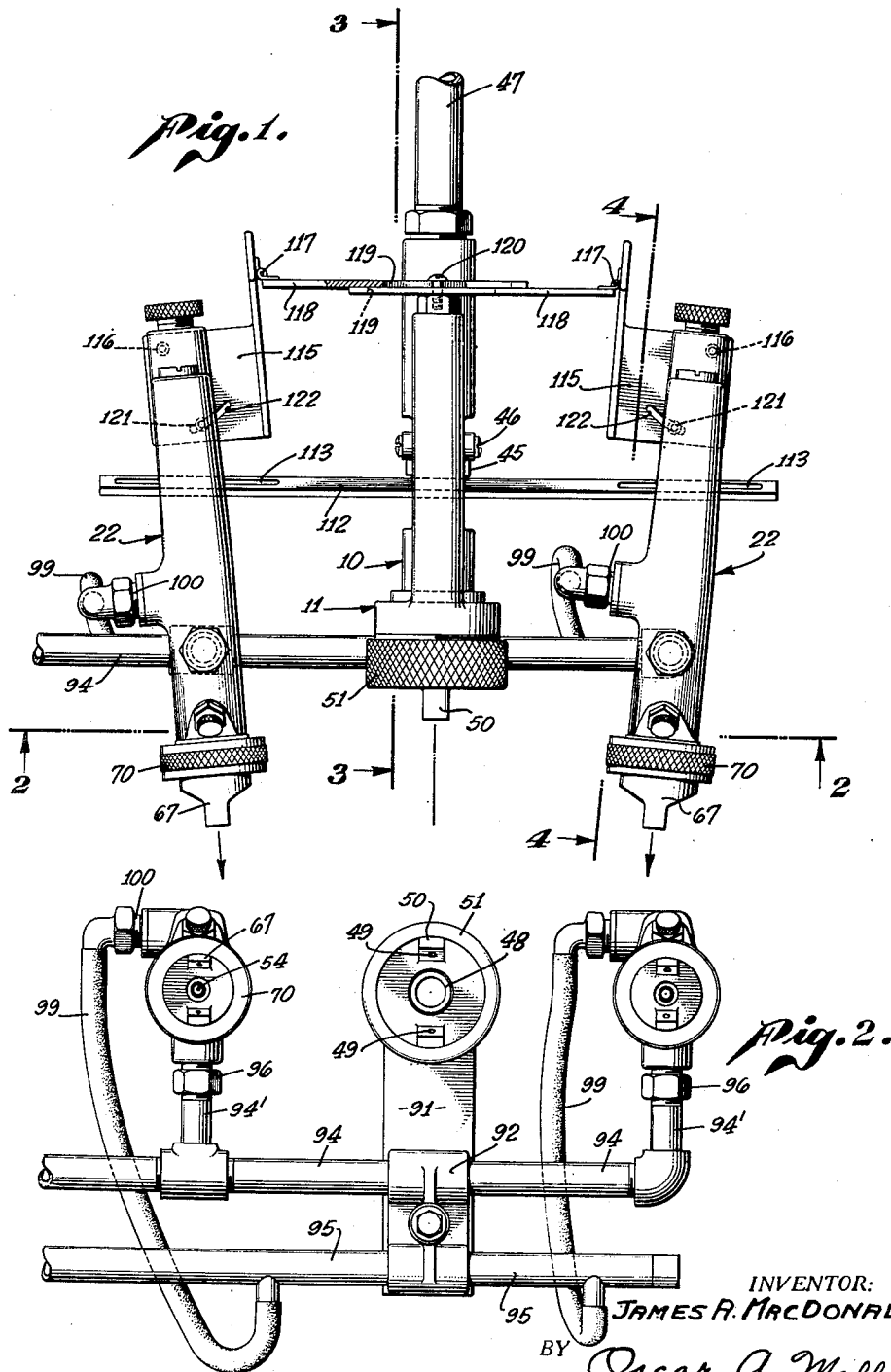
J. A. MacDONALD

2,370,408

SPRAY GUN APPARATUS

Filed Feb. 9, 1942

2 Sheets-Sheet 1



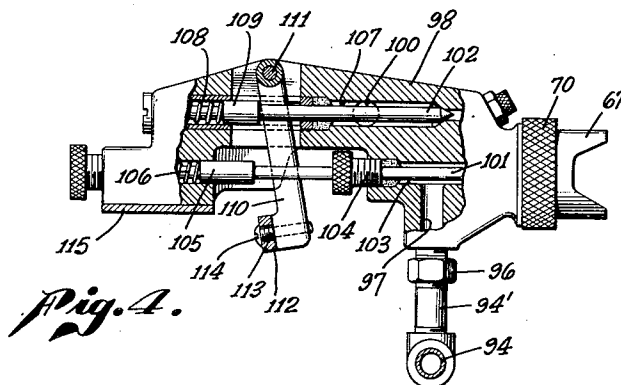
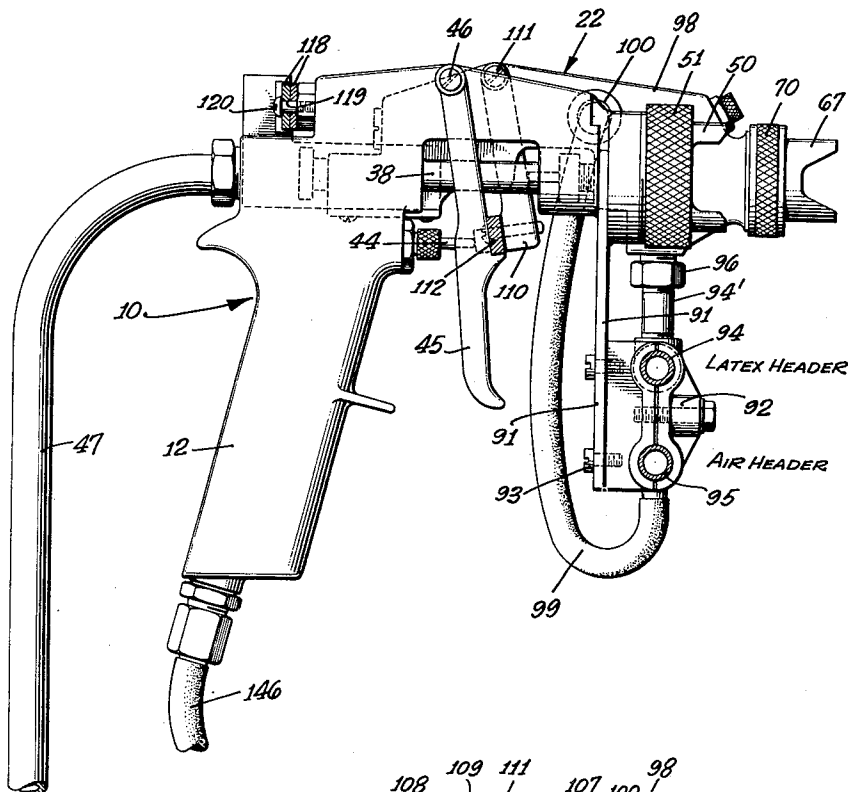
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SPRAY GUN APPARATUS

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3 Claims. (Cl. 91—45)

This invention relates to spraying apparatus, and more particularly to apparatus of the spray gun type adapted to be held and manipulated by the hand of the operator.

An object of the present invention is to provide a hand held and manipulated apparatus embodying a plurality of spray guns for spraying convergent streams of material on a surface to be coated, in which the spray guns are adjustable to vary the angles that the convergent streams make with each other.

Another object of the invention is to provide an improved hand held and manipulated apparatus, including a plurality of guns for spraying different streams of material on a surface to be coated and to govern the operation of the spray guns from a single control point readily accessible to the operator.

A further object of the invention resides in the provision of a hand held and manipulated assembly embodying a plurality of guns for spraying different streams of material on a surface to be coated, in which operation of the spray guns is governed by a common control actuated by the hand of the operator supporting the assembly.

Another object of the invention is to provide a plurality of spray guns adapted to be held and manipulated by the hand of the operator and to be controlled by such hand so as to selectively determine the discharge of materials from the respective guns.

The invention also contemplates a manually held and manipulated assembly embodying a gun capable of spraying one type of material, such as solid or semi-solid particles, and one or more other guns for spraying a second type of material, such as a binding agent for such particles, in which the guns are governed by a common control so as to institute operation of the solid or semi-solid particle spray gun before spraying of the binding agent from the other gun or guns.

One form which the invention may assume is exemplified in the following description and illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is a top plan view of one embodiment of the invention;

Fig. 2 is a front view of the apparatus taken generally along the line 2—2 of Fig. 1;

Fig. 3 is a section along the line 3—3 of Fig. 1;

Fig. 4 is a section taken approximately along the line 4—4 in Fig. 1.

In the general aspects of the invention, it is proposed to provide a portable multiple spray

gun combination that can be held in an operator's hand for movement and control by this hand. The operator can grasp one of the guns, which supports the other gun or guns.

The guns are so arranged with respect to each other as to discharge convergent streams of material that intersect to form an intimate mixture before deposition on the surface to be coated or sprayed. For the purpose of increasing the scope of operation of the portable apparatus, the guns are adjustably mounted with respect to each other to allow the angle of convergence therebetween to be altered.

In the following description, particular reference will be made to discharging particles from one of the guns and a latex binder from the other gun or guns capable of coating the cork particles to cause them to adhere to one another and to the surface being coated. However, it is to be understood that the specific reference to such materials throughout this description is not to be considered as limiting the invention, since it is possible to spray and admix other materials than the ones mentioned.

The particular spray gun apparatus disclosed in Figs. 1 to 4, inclusive, includes a central or primary spray gun 10 designed to discharge a stream or jet of cork particles and to be held in the hand of the operator for movement in any desired spraying direction. The body 11 of this gun consists of a lower handle 12 for grasping by the operator's hand, and an intermediate portion 13 through which an air and cork particle mixture can pass.

Two liquid latex guns 22 are disclosed in the drawings, one on each side of the cork particle or flock gun 10. The latex guns are preferably so adjusted as to have paths of discharge which intersect the path of discharge of material from the flock gun. In other words, the latex guns are angled toward each other and toward the flock gun so that the streams of material ejected from the guns intersect in advance thereof at some desired point, where they thoroughly admix before engaging the surface to be coated by the resulting mixture.

The flock or cork particle gun 10 consists of the main body 11 having the depending handle 12 through which, as in standard practice, flows to the nozzle jets or discharge holes 49. The flow of air is valve controlled by valve means which is operable through means of a valve stem 44. The forward portion of this stem extends from the body to a point where it is engageable by a trigger 45 pivotally mounted on a bearing

pin 46 fixed to the body 11. By depressing the trigger 45, the valve means is opened and air is permitted to flow through the valve to the discharge holes 49.

Air borne cork particles from a suitable source enter a discharge pipe 38 through tubing 47 for ejection through the nozzle 48 at the outlet end of the gun 10. These cork particles are joined by air flowing through discharge holes 49 formed in an air cap 50 held on the body 11 around the nozzle 48 by a retainer nut 51. The discharge holes 49 are so arranged as to cause air ejected therefrom not only to mix with the cork particles emanating from the nozzle 48, but also to determine the spray pattern of such particles, which preferably is a fan shape diverging outwardly in a plane substantially at right angles to the plane of the guns.

The flock gun 10 carries a depending support 91 to which a bracket 92 is secured by the screws 93. Latex and air headers or conduits 94, 95 are held in spaced relation in this bracket and extend transversely of the flock gun on opposite sides thereof, with the latex header 94 provided with upwardly extending nipples 94' coupled to the latex guns 22 by suitable unions 96. This union, nipple and latex header arrangement not only supports the latex gun 22 from the flock gun 10, but it also furnishes a conduit for the passage of latex through the header, nipple and union into the latex inlet 97 in the body 98 of the gun. Air is conveyed from the air header 95 through suitable tubing 99 to the air inlet 100 of each gun.

Each of the latex guns 22 is of a well known design and each includes a fluid nozzle 54 and an air cap 67 having discharge holes as shown. The air cap 67 is held in place by a retainer nut 70. The spray pattern is, of course, determined by the air cap position and is preferably of a fan shape diverging outwardly in a plane at right angles to the plane of the gun.

The latex flow is controlled by needle valve 101, and the air flow is controlled by a needle valve 102. The latex needle valve 101 extends through the discharge passage 103 and packing and packing nut 104 across a space where it is fixed to a guide 105 movable within the rearward body portion of the gun. The guide bears against a coil spring 106 tending to urge the needle valve 101 to closed position. In a similar manner, an air needle valve 102 is provided in the air passage 107 of the gun, and is normally urged to closed position by a return spring 108 bearing against its guide portion 109. The needles 101, 102 are retracted against the force of their respective springs by a secondary trigger 110 mounted on a bearing pin 111 on each gun and capable of engaging the forward portions of the needle guides 105, 109 to retract them against the springs 106, 108 and remove the needles from their seats, for discharge of both air and latex in proper fashion from the guns.

All of the guns are controlled by the primary trigger 45 mounted on the flock gun 10. An operating bar 112 is secured to this trigger and extends on opposite sides of the gun for attachment to each secondary trigger 110. This mode of attachment consists of an elongated slot 113 provided at each end of the operating bar 112 adapted to receive a pin 114 threaded or otherwise secured to the secondary trigger 110. The pin and slot arrangement is provided so as to permit angular adjustment of each latex gun 22 about the axis of the nipple 94' without inter-

ference from the operating bar 112. The pin 114 is capable of sliding within the slot 113 whenever such adjustment is made.

When the primary trigger 45 on the flock gun 5 is depressed to permit air to pass through it, the operating bar 112 also depresses the secondary triggers 110, causing them to retract their associated air needle valves 102 and latex needle valves 101 to allow discharge of latex from the 10 spray guns 22. It is preferred to so arrange the control as to be capable of discharging cork particles only from the apparatus, or of discharging cork particles before latex is discharged. This purpose is accomplished by providing a 15 certain amount of lost motion between the secondary triggers 110 and the guides 105 attached to the latex needles 101. When the primary trigger 45 is depressed, its associated air valve 36 is immediately opened. The secondary triggers 110 also open the air needle valves 102 of 20 the latex guns, but the liquid needles 101 are not immediately withdrawn to permit discharge of latex, since the secondary triggers 110 have not yet moved through the space initially provided 25 between them and the guides 105 to contact the latter and retract the latex needles. Thus, discharge of cork particles from the flock gun 10 can occur before discharge of latex from the other guns 22, and if desired, a partial depression 30 of the primary trigger 45 allows cork particles to be discharged without corresponding discharge of latex.

The latex guns 22 are adjustable about the respective axes of their nipples 94' to vary the 35 angles that they make with each other and with the cork gun 10. A plate 115 is mounted on a pivot pin 116 secured to the rearward portion of the body 98 of each latex gun and has one member of a hinge 117 secured thereto, the other 40 member being fastened to an adjusting bar 118 having a slot 119 adapted to receive a clamp screw 120 threaded into the body 11 of the cork gun. It is to be noted that the plates 115, hinges 117 and adjusting bars 118 extend toward each 45 other so as to be clamped in any position of adjustment by the single screw 120.

If the angle of one of the guns 22 is to be 50 altered, its associated union 96 is loosened, as well as the clamp screw 120. The gun is then turned on its nipple 94' to the desired angle and the union 96 tightened. Such turning also affects a shifting of the plate 115 and its adjusting bar 118. The plate pivots on its pin 116, and after the 55 necessary adjustment has been made, it is held in its new position with respect to the gun by a clamp screw 121 extending through an arcuate slot 122 in the plate and into the body 98 of the latex gun. The adjusting bars 118 are also held 60 in their new and altered position by tightening the clamp screw 120.

It is therefore apparent that a spray gun apparatus has been provided in which the relative 65 angles of discharge of the guns are variable, and in which all of the guns are operable from a single source of control. The entire apparatus can be held in the hand of the operator, who also has full finger control over the operation of the apparatus to selectively determine if cork 70 particles only are to be sprayed on the surface to be coated, or both cork particles and latex. Such control of the various guns is accomplished in a comparatively simple manner, requiring the use of only a comparatively few lines leading from sources of supply to the guns, making it easier 75 for the operator to manipulate the apparatus

without danger of entanglement in these lines or tubing.

While preferred embodiments of the invention have been disclosed herein, it is to be understood that various changes may be made in its construction by those skilled in the art without departing from the spirit of the invention as defined in the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. An apparatus of the character described, including a primary spray gun having a hand hold portion and an adjacent primary trigger for controlling discharge of material from said gun, a secondary spray gun carried by said primary gun and having a secondary trigger for controlling discharge from said secondary gun, and means interconnecting said triggers for movement together.

2. An apparatus of the character described, including a primary spray gun having a hand hold portion and an adjacent primary trigger for controlling discharge of material from said

gun, a secondary spray gun carried by said primary gun and having a retractable valve for controlling discharge from said secondary gun, a trigger mounted on said secondary gun for co-operation with said valve to retract the same, and means interconnecting said triggers for movement together.

3. An apparatus of the character described, including a primary spray gun having a hand hold portion and an adjacent primary trigger for controlling discharge of material from said gun, a secondary spray gun carried by said primary gun, means for mounting the secondary spray gun on said primary gun for adjustment with respect thereto to enable the angle of discharge of said secondary gun to be varied relative to said primary gun, a secondary trigger for controlling discharge of material from said secondary gun, and means interconnecting said triggers for movement together, said means being adjustable to compensate for adjustment in the position of said secondary gun with respect to said primary gun.

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