May 31, 1938. J. T. PETERSON 2,119,056

METHOD OF MAKING A SPRAY GUN

Filed Feb. 8, 1935

FIG. 1

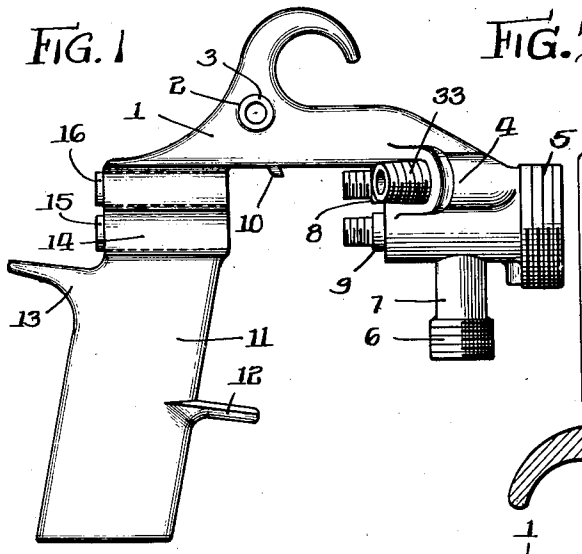
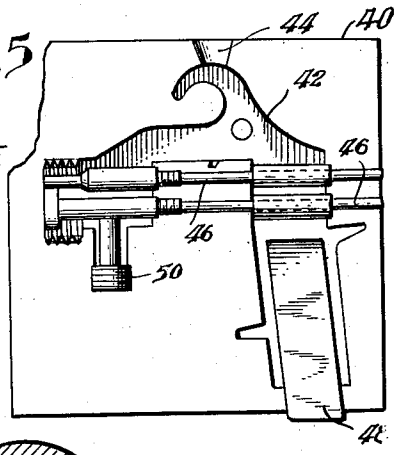


FIG. 5



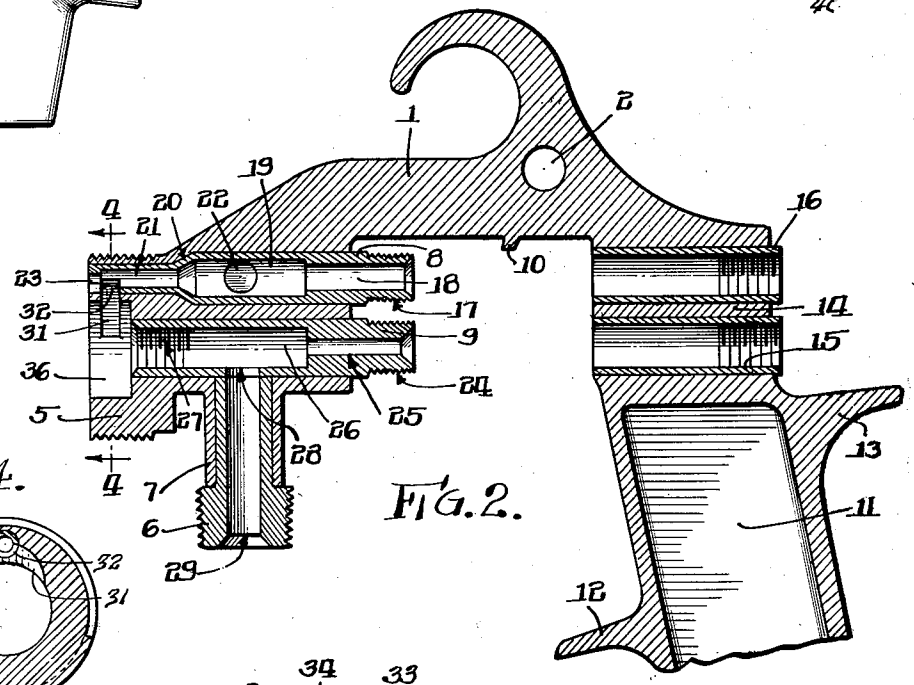
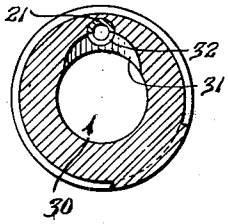


FIG. 2.

FIG. 4.



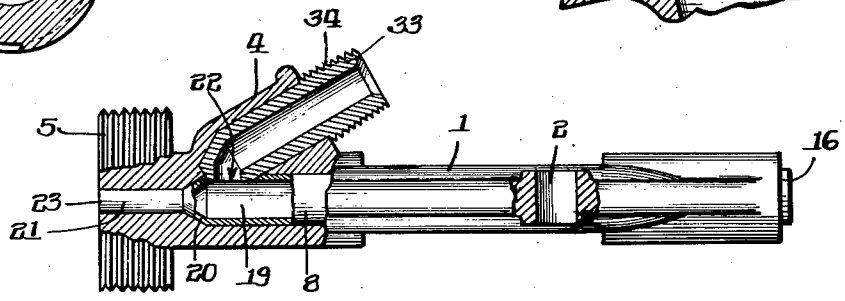


FIG. 3

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METHOD OF MAKING A SPRAY GUN

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2 Claims. (Cl. 22—203)

This invention relates to a new and improved spray gun, and method of manufacturing it.

More particularly, this invention relates to the manufacture of spray guns to be used for applying paints and lacquers to surfaces.

An object of this invention is to provide a simple, quickly made, and economical spray gun.

Another object of this invention is to provide a method of manufacturing a spray gun, wherein the amount of machining necessary in the course of the manufacture is simplified, made more economical, and substantially reduced in amount.

Another object of this invention is to provide a method for making the machined casting of a spray gun in a more simple and efficient manner.

Another object of this invention is to provide a spray gun in which both by reason of the fewer number of parts, and the simpler more efficient method of preparing the casting, a highly efficient spray gun can be made at a lower price.

Another object of this invention is to provide a spray gun with a simplified construction, especially with respect to the nozzle thereof, whereby the gun is capable of better fan spray adjustment, and more constant air flow.

Another object of this invention is to provide a spray gun in which there is a less amount of material of the casting brought in contact with the material being sprayed whereby when alkaline paints are used, the chemical action of the alkali in the paint will be rendered less deleterious in its actions upon the gun.

Numerous other objects and advantages will be apparent throughout the progress of the following specification.

The accompanying drawing illustrates a selected embodiment of the invention, and the views thereof as shown in the accompanying drawing, are as follows:

Fig. 1 is an elevation of the finished casting before the working parts have been applied thereto.

Fig. 2 is a cross-sectional view of the casting shown in Fig. 1.

Fig. 3 is a plan view of the casting in Fig. 1, partially cross-sectioned to show the interior construction at the forward end of the gun.

Fig. 4 is a cross-section of the casting shown in Fig. 2 about the lines 4—4.

Fig. 5 is an elevational view of a die casting mold for forming the casting shown in Figs. 1 to 4 and comprising the liners supported in operative position prior to casting, the mold being shown with the top removed.

In general, this invention consists in designing spray gun casting so that the machined parts can be prepared on inserts of some metal, preferably brass or steel, and arranging the machined inserts within the mold in cooperation with the cores therein. Because the machined portions of a spray gun casting generally, and particularly the type or design shown in the present embodiment are largely in a "straight-line-bore" arrangement, the method of this invention is peculiarly applicable and efficient. When the casting is poured and cooled, it will be found that the casting is finished except for cleaning up and polishing. Thereby, the difficulties of machining the casting after it is poured are entirely obviated.

In the present invention, the spray gun comprises the casting 1, which has transverse holes 2 into which a hollow internally threaded bushing 3 is fitted. The casting also comprises a side arm portion 4, and a nozzle portion 5, as well as a downwardly extending material-intake portion 7, which has been cast around the machined insert 6. The forward portion of the gun is cast around the machined inserts 8, 9 and 10. The casting 1 is further provided with a trigger stop 10. The handle portion of the gun is integrally formed in the casting, and comprises the handle 11, which is fitted with the finger rest extensions 12 and 13. The handle 11 terminates upwardly into the shank portion of the gun, which is cast around the two machined inserts 15 and 16, substantially as shown. As may be seen in the cross-section of Fig. 2, the machined inserts 15 and 16 are both internally threaded. The insert 8 which is placed in the forward portion of the gun is previously prepared with an external thread 17 and an internally drilled hole 18, which opens into a forwardly opened chamber 19. The forward termination of this chamber 19 in the insert 8 forms a taper-seat 20 which in turn leads into the passage 21. The insert 8 in the finished gun also is provided with a hole 22 in the side of the chamber 19, and the small hole 23 located at the forward end of the passage 21, but it is probably just as convenient to drill these latter holes 23, 22 after the casting is finished, although if it becomes desirable, such holes may be previously drilled and then plugged.

The forward end of the gun is furthermore provided with the insert 9, which is located perpendicularly beneath the insert 8. This insert 9 is externally threaded with the thread 24, and is drilled with a centrally located hole 25, which opens into the chamber 26. The forward end of this chamber 26 is internally threaded with the

thread 27. This chamber 26 in the finished casting is also provided with a downwardly opening hole 28, which leads into the material intake pipe 29. This hole 28, however, may be conveniently drilled after the casting is finished, although it may be drilled prior to casting, and loosely plugged.

The forward end of the casting is furthermore provided with a downwardly extending material intake pipe 6, which is previously threaded and drilled as an insert in similar manner to the inserts 8 and 9 above described. This insert 6 is so placed that the material in the casting forms about it as a sort of retaining sheath 7.

In connection with the making of these castings it has been discovered that although this invention is widely adaptable to all kinds and sorts of castings and various casting materials, it is particularly efficient where the material being molded is die cast metal. It should be pointed out that when this method of making castings is used in connection with the molding of die cast metal, the molten material is forced into the mold under pressure; whereas, when it is used with other types of material, such as, for instance, aluminum, the molten material may be poured into a sand casting. It should be pointed out, furthermore, in connection with this invention, that in selecting the material out of which the major portion of the casting is to be made, that material should have a solidification range in which the highest temperature reached is substantially below the melting point of the material out of which the inserts are made. By solidification range is meant the range in temperature during which the material passes from its fluid or molten state to its solid state.

After the casting is poured with the inserts in place as above described, it is still necessary to machine the nozzle portion 5 by threading the same and milling out a slot 31 in the upper portion of the inside of the nozzle, which extends up into and through the lower wall of the passage 21 in the insert 8, as shown in Fig. 4. The nozzle portion of the gun, of course, is cast to contain the chamber 30.

The finished casting, as shown more clearly in Figs. 1, 2, 3, and 4, provides suitable conduits for the passage of air and liquids to be sprayed, as well as supporting members for the air valves and solid material valves together with controlling means therefor. A suitable nozzle may also be provided for the present device.

A suitable mold for forming the aforementioned casting is shown more clearly in Fig. 5 and comprises a block of material 40, being hollowed out centrally at 42 to the general outer form of the final casting. The block is provided with a sprue for introducing the molten material into the mold. It will be noted that the respective liners are supported upon bars 46 and that a core member 48 extends into the portion of the mold corresponding to the handle of the finished casting to provide the hollow interior portion. The machined tubular sleeve or liner 6 has a threaded portion positioned in a suitable depression 50. It will be understood that the mold is provided with a second block (not shown) which is positioned adjacent the face of the block 20 to close the interior space 42 of the mold and retain the bars 46 and the member 48 in the machined insert 6 in the position shown. The supporting bars may be readily withdrawn from the liners when the casting is removed from the mold.

Changes may be made in the method of practicing this invention, as well as in the form, construction and arrangement of the parts of the embodiment above discussed without departing from the spirit of the invention or sacrificing any of its advantages, and the right is hereby reserved to make all such changes as fairly fall within the scope of the following claims.

Having thus described this invention, what is claimed as new and desired to be secured by Letters Patent is:

1. The method of manufacturing spray gun castings which comprises providing a plurality of individual tubular machined liners from a metal having a relatively high melting point and corresponding to the passages in the completed spray gun, providing a mold for said spray gun, said mold having portions for engaging each of said tubular liners and rigidly supporting each of said liners individually and separately in continuous abutting relationship and in such order as to define the lining of the interior passages in the spray gun, said inserts being freely separable from each other and from the mold, and molding an outer casting about said rigidly supported liners to the final shape of the gun with a metal having a relatively low melting point whereby to maintain the separate portions of the lining rigidly in said aligned position and provide a unitary article.

2. The method of manufacturing spray gun castings which comprises providing a plurality of individual tubular machined liners from a metal having a relatively high melting point and corresponding to the passages in the completed spray gun, providing a mold for said spray gun, said mold having portions for engaging each of said tubular liners and rigidly supporting each of said liners individually and separately in continuous abutting relationship and in such order as to define the lining of the interior passages in the spray gun, said inserts being freely separable from each other and from the mold, and molding an outer casting about said rigidly supported liners to the final shape of the gun with a moldable material having a relatively low molding temperature whereby to maintain the separate portions of the lining rigidly in said aligned position and provide a unitary article.

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