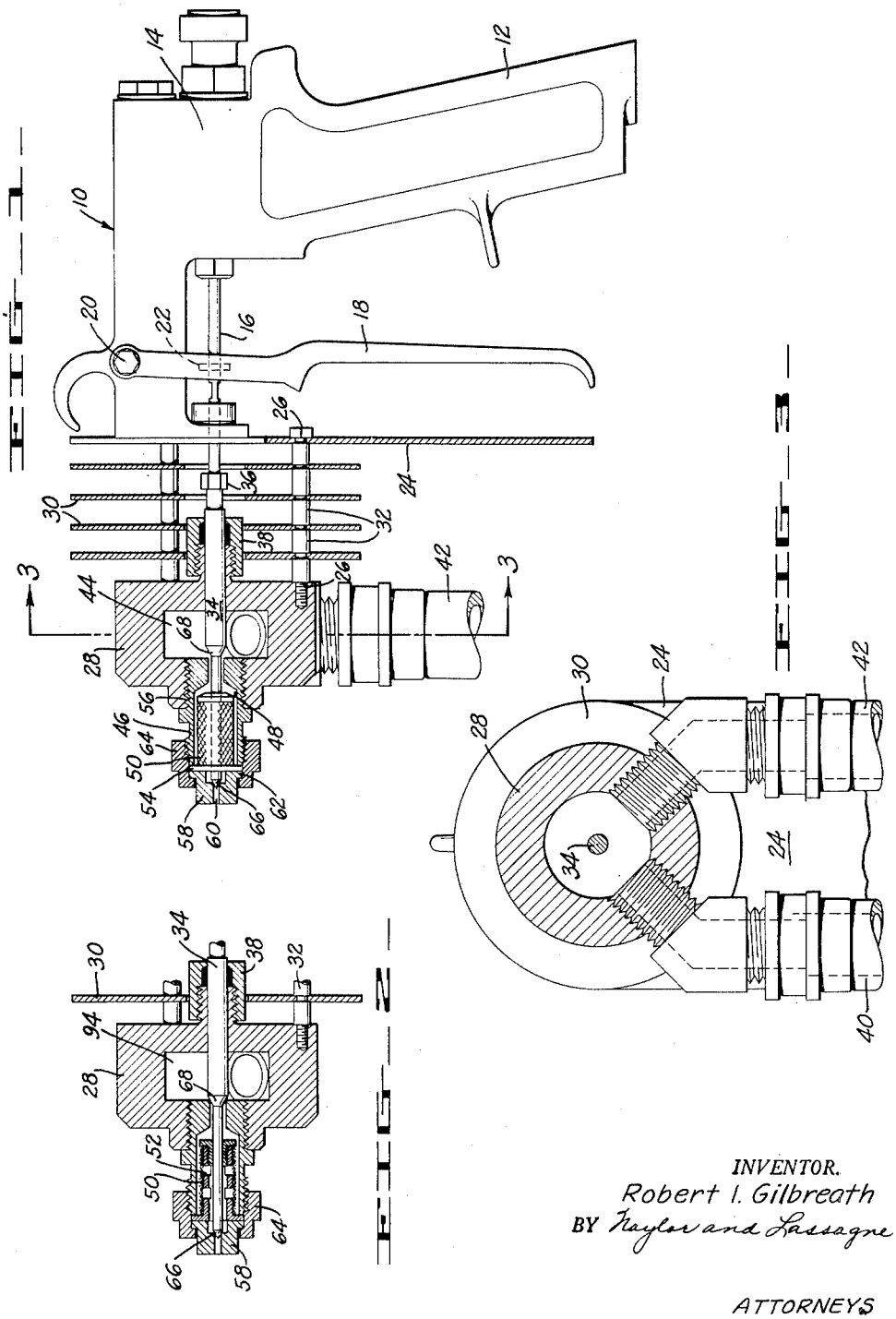
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SPRAY GUN

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SPRAY GUN

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1 Claim. (Cl. 299—150)

This invention relates to dispensing devices, and more particularly to a novel form of spray gun which is especially adapted for the spray type dispensing of fluids which congeal at normal temperatures.

It is an object of this invention to provide a spray gun of the stated type embodying novel means for circulating fluids through the gun so as to prevent the congealing of these fluids during periods when the gun is not in operation as a dispenser.

It is a further object of this invention to provide a spray gun of the stated type embodying, in combination with fluid circulation means adapted to prevent congelation of the fluid to be dispensed, a double valve control system, with one of said valves being disposed at the outlet or nozzle end of the gun and being normally operable to control the dispensing of the fluid from the gun, and with the other valve being disposed at the outlet side of the fluid circulation means and being operable when the nozzle valve is removed or disabled to prevent the discharge of fluid from the gun.

A further object of the invention is to provide a spray gun of the stated type comprising, in combination, a fluid circulation system, a dual valve control system, and cylindrical filter means for the fluid disposed between the two control valves and being adapted to have channeled therethrough the fluid which is dispensed from the gun.

Other objects and advantages of the invention will be apparent from the following description taken in conjunction with the drawing forming part of the specification, and in which:

Figure 1 is a view in side elevation of the spray gun of the invention, with the forward, or discharge, end thereof being shown in vertical diametral section;

Figure 2 is a view in section of the forward, or discharge, end of the spray gun showing the valve control system in a condition of operation which is different from that condition of operation illustrated in Figure 1; and

Figure 3 is a view in section taken along lines 3—3 of Figure 1.

Referring to the drawing, the spray gun indicated generally at **10** comprises: a handle portion **12**; a stock or barrel portion **14**; a trigger rod **16** carried for reciprocal movement by stock **14** and yieldingly uged away from stock **14** by spring means, not shown; a trigger **18** pivotally attached at **20** to the barrel of the gun and having a one-way connection **22** with trigger rod **16**; a hand shield **24** in the form of a plate secured to the forward end of the barrel of the gun and through which trigger rod **16** extends; a plurality of elongated bolts **26** serving to mount a head member **28** on plate **24** and also serving as the carrier members for a plurality of cooling fins **30** maintained in spaced apart relation by spacer sleeves **32** disposed on the bolts **26**; and a valve stem indicated generally at **34** connected at **36** to trigger rod **16** and extending through packing gland **38** carried by head member **28** and through the head member **28**.

Conduits **40** and **42** are secured to the head member **28** in communication with chamber **44** formed in the head member. These conduits, which are connected across a liquid sump and pumping system, not shown, constitute inlet and outlet lines for the circulation through the head member of the liquid to be dispensed from the spray gun.

A union member **46** having a double diametral bore **48** is threadably engaged with the head member **28**. Disposed within the larger diametral portion of bore **48** is a cylindrical strainer screen **50** sleeved over a slotted tubular carrier member **52** and held in place on the carrier member in abutting relation with the end flange **54** thereof by an end plug **56** threadably attached to member **52**. The valve stem **34** has a sliding fit within a centrally disposed aperture formed in end plug **56**. The gun is further provided with a nozzle tip **58** having a centrally disposed fluid discharge passage **60** therethrough. The nozzle tip is provided with a flange **62** at its inner end, and a retainer nut **64** threadably engaged with union **46** secures the flanges **54** and **62** together, with flange **54** being in engagement with the forward end of union member **46**.

The valve stem **34** is provided at its forward end with a needle point **66** adapted to seat, when retainer nut **64** is in full threaded engagement with union member **46**, in the inner end of the nozzle tip passage **60**, thus serving to valve off this passage, while the stem is further provided with a conically shaped portion **68** adapted, when the retainer nut **64** is backed off of union member **46**, as shown in Figure 2, to seat within the smaller diametral portion of bore **48** of the union member, thus shutting off communication between chamber **44** of head member **28** and bore **48** of the union member.

The spray gun described is specifically for use with fluids which have to be maintained at elevated temperatures in order to avoid congelation. For example, the material handled by this gun has been a wax-like substance which is sprayed on metals, concrete, and the like to serve as an anti-corrosion and anti-erosion protective covering. This material must be maintained at temperatures within the range of 300–400° F. during application. The material is thus constantly circulated through the conduits **40** and **42** and chamber **44** from and to a suitable source of the hot material by means, such as a pump. When it is desired to dispense the material through the nozzle tip **58**, the trigger **18** is pulled back to withdraw the needle point **64** of the valve stem from its seated position within passage **60** of the nozzle tip. While the trigger is maintained in its rearward position against the counter action of the spring, not shown, some of the material circulating within and through chamber **44** passes into the bore **48** of the union member **46**, through the screen **50** and the tubular carrier member **52**, and out the nozzle passage **60**. Upon release of the trigger **18** of the valve element **66** seals the passage **60**.

During normal operation of the spray gun with material of the type described, it frequently becomes necessary to remove and clean the strainer screen. The subject gun embodies means for simple and quick removal of the screen without requiring a cessation of circulation of the hot material through the conduits **40** and **42** and chamber **44**. As the retainer nut **64** is backed off the union member **46** at the outset of the operation of removing the nut and the nozzle tip **58** in order to remove the screen for cleaning, the valve stem, due to the action of its compression spring, forces and follows the nozzle tip outwardly to the point where valve element **68** of the stem seats within bore **48**. The circulation chamber **44** is thus sealed off from the discharge end of the gun. After the screen has been removed and cleaned, it is reinserted within the bore **48**; the nozzle **58** is placed in following relation to the screen; and the retainer nut is turned all the way down on the union member **46**, thus causing valve element **66** to seat within the nozzle tip and causing the valve stem **34** to be moved yieldingly rearwardly to unseat valve element **68**.

While a specific embodiment of the invention has been shown and described, it is to be understood that all substantial equivalents of this embodiment are within the spirit and scope of the invention.

What I claim is:

A spray gun comprising a head member having a chamber defined therein, a union member connected to said head member and having an axial passageway therethrough communicating with said chamber, a valve seat defined in said union member at the chamber end of said passageway, a nozzle disposed at the other end of said union member having a discharge passageway therethrough in axial alignment with said union member passageway, a valve seat defined in said nozzle at the inlet end of its discharge passageway, a valve stem slidably disposed in said head member extending through said chamber and said union member passageway in axial

alignment with said passageways, spring means yieldingly urging said stem in the direction of said nozzle, said stem having terminal and intermediately disposed valving elements adapted to engage, respectively, said nozzle valve seat and said union member valve seat, adjustable coupling means connecting said nozzle to said union member operable when moved outwardly with respect to said union member to cause said spring means to move said stem and engage said intermediately disposed valving element with said union member valve seat and operable when moved inwardly with respect to said union member to disengage said intermediately disposed element from said seat while maintaining said terminal valving element in engagement with said nozzle seat, means for moving said valve stem away from said nozzle, and inlet and outlet conduits connected to said head member and operable to deliver fluid to and receive fluid from said chamber.

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