March 20, 1928. 1,663,077

W. I. HALLOCK

GLUE GUN

Filed Dec. 13, 1926

Fig. 1.

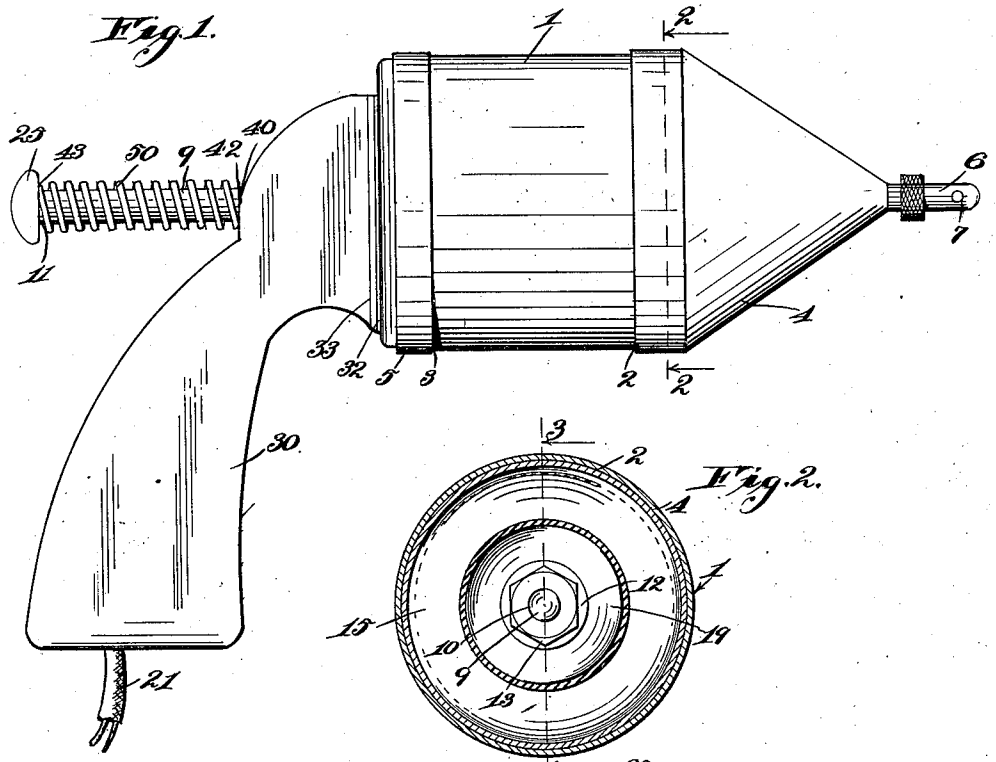



Fig. 2.




Fig. 3.

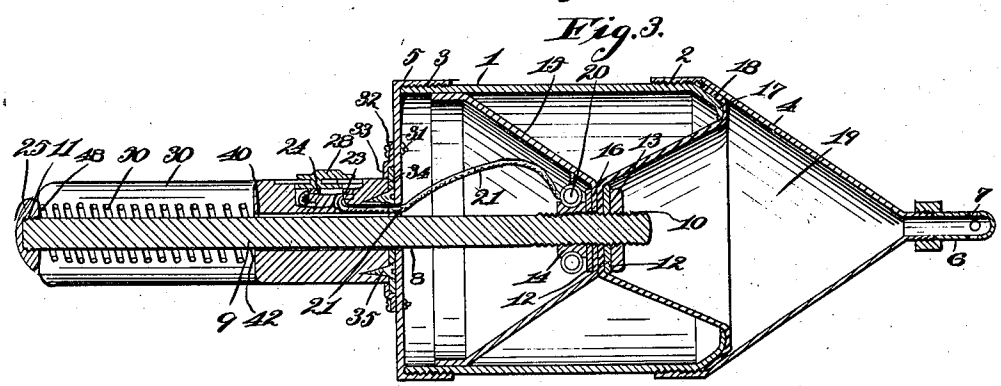
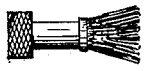



Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## GLUE GUN.

Application filed December 13, 1926. Serial No. 154,493.

This invention relates to glue guns and has for an object to provide a gun which is adapted for use by cabinet makers, carpenters and wood workers of all classes in and around their respective shops.

An object of this invention is to provide a gun which will place glue in crevices, corners or slots, where the same is desired in the assemblage of pieces of furniture. For example, in assembling a partition or the like in a piece of woodwork, my glue gun is admirably suited for filling the slot in which the partition is to be inserted with glue.

Another object of this invention is to provide a gun which will not only place glue on the desired article, but which will remove surplus glue therefrom.

A further object of this invention is to provide a gun and container for glue having suitable heating means for warming the glue and softening the same before its application.

A still further object of this invention is to provide a gun which is durable, yet inexpensive to manufacture and which is well adapted to perform the class of duty to which it may be put.

With the foregoing and other objects in view which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawings for an illustrative embodiment of the invention, wherein

Figure 1 is a side view of my gun in assembled relation,

Fig. 2 is a sectional view taken along the line 2—2 of Fig. 1,

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 2, and

Fig. 4 is a side elevation in detail of a modified form of nozzle used in connection with my glue gun.

Referring to the accompanying drawings wherein similar reference characters designate similar parts throughout, 1 designates a cylindrical shell forming the side of the chamber wherein glue is stored in my glue gun. This shell is exterially threaded at its ends as at 2 and 3 to receive a conical nozzle member 4 and a cap 5 respectively. This conical nozzle member is provided at 6 with an elongated spout having a plurality of apertures 7 formed on the side walls thereof adjacent the end. The cap 5 is provided with an aperture 8 therethrough through which extends a plunger 9 which is threaded as at 10 and 11 to receive on one end a pair washers 12. Suitable nuts 13 and 14 hold the washers in place. A conical piston 15 which is truncated as at 16 to provide an end wall extends between the washers 12, and a suitable impermeable fabric similarly extends between the washers and is held against the end wall 16 by the same. The cylindrical shell 1 is provided with an inturned marginal flange 17, which flange serves to firmly clamp the fabric against the conical nozzle member as shown at 18. The space 19 between the impermeable fabric and the end of the spout forms a chamber for the reception of liquid glue.

The chamber between the conical piston and the cap 5 forms a heating chamber and towards this end I have provided a resistance coil 20 adjacent the truncated portion of the piston, which heating coil is supplied with electric energy by means of the wires 21 extending through the aperture 8 in the cap. These wires extend to a pair of contacts 23 and 24 and the action of the resistance coil is controlled by means of a suitable wedge 28. As stated hereinbefore, the outer end of the plunger 9 is threaded and this threaded portion receives a threaded button 25. A handle member 30 is secured to the cap 5 in the following manner. An annular plate is fastened to the outer face of the cap by means of suitable bolts 31. This annular plate is designated at 32 and provides an annular flange 33 for the reception of a flat plate 34 which plate is secured by means of suitable screws 35 or the like to the handle member 30. The handle member is provided with an aperture 40 through which the plunger 9 extends. A second aperture extends longitudinally through the handle member and is adapted to receive the electric wires 21. A coil spring 50 is disposed around the outer end of the plunger and bears against the handle member as at 42 and against the button 25, as at 43. This coil spring keeps the piston 15 in its retracted position, giving a maximum volume to the glue chamber 19.

The operation of my device is as follows: Liquid glue or the like is placed in the space 19. This may be done by removing the conical nozzle member 4 and pouring the same into the cavity formed by the fabric. The conical nozzle member is then replaced and the gun is then ready for operation.

By pressing the button 25 on the plunger the volume of the space 19 is decreased and liquid glue is forced out through the aperture 7. Should too much glue be applied to the object being glued, release of pressure on the button 25 will withdraw the glue back into the chamber. In this regard it may be mentioned that it is not necessary to remove the conical nozzle member to fill the glue compartment as the same may be done by merely pressing the button 25 and releasing the same while the nozzle is held under the level of a liquid. This, however, where the glue is thick requires a considerable length of time.

In cold weather it is well known that the co-efficient of viscosity of glue is greatly increased, and in some cases the glue completely solidifies. The application of heat in this case will again liquefy the glue so that the same may be poured. Toward this end the chamber between the piston and the cap serves as a heat retaining chamber and heat is imparted through the walls of the piston to the glue. This action is very quick and requires little electrical energy as the surface of the side walls of the conical shaped piston is considerably great.

I do not desire to limit myself to the use of my gun for spreading glue. I contemplate using the same as an ordinary grease gun and modifying my construction within the scope of the appended claims to adapt itself to such use. I further contemplate modifying my device so that the same may be used with paste, liquid cement, liquid solder, oil, grease and other liquids. Various styles of nozzles may be employed in connection with my device, and the construction of my container for these liquids may be changed accordingly so long as they fall within the scope of the appended claims.

It will be understood that various changes may be made in the detail of construction without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. A syringe-like device for dispensing liquids, comprising in combination a cylindrical chamber, a conical piston in said chamber, said conical piston having its concave side disposed rearwardly, a flexible diaphragm in said chamber, said diaphragm having its marginal edge secured to the walls of said chamber at the forward end thereof, and its center portion attached to said piston, thereby forming a liquid-retaining space forwardly of said diaphragm, an air-retaining chamber between said diaphragm and said piston, whereby motion of said piston will compress the air in said air chamber and force the flexible diaphragm forwardly to expel liquid from said liquid-retaining space.

2. A syringe-like device for dispensing and applying liquids, comprising in combination a cylindrical chamber having a rear closure and a front closure in the form of a nozzle, a conical piston disposed in said cylinder, said piston having its concave surface disposed rearwardly, a conical diaphragm in said chamber, said diaphragm having its apex attached to the apex of said piston, and having its concave surface disposed forwardly, thereby forming an air chamber between said piston and diaphragm, and a liquid-retaining space forwardly of said diaphragm, whereby when said piston is moved forwardly, said flexible diaphragm will be forced in the same direction by the pressure of air in the air chamber, to completely expel liquid from the liquid-retaining chamber.

3. A glue gun comprising in combination a chamber, a rearwardly diverging, conical piston in said chamber, a plunger extending from said chamber, attached to said piston to operate the same, a flexible diaphragm in said chamber having its center portion attached to said piston, and having its marginal edge attached to the walls of said chamber, there being an air compartment, a constant volume between said piston and diaphragm, a glue compartment forwardly of said flexible diaphragm, and a nozzle associated with said glue compartment.

4. A glue gun comprising in combination a chamber, a piston disposed within said chamber having rearwardly diverging conical walls, a plunger extending from said chamber associated with said piston, whereby the same may be operated, a flexible diaphragm in said chamber having its central portion attached to said piston, a glue compartment forwardly of said flexible diaphragm, and an air chamber of substantially constant volume between said piston and said diaphragm, a nozzle for said chamber, said diaphragm being removably clamped between said nozzle and the walls of said chamber.

5. A device as claimed in claim 3, there being heating means behind said piston.

6. A device as claimed in claim 4, there being heating means behind said piston.

In testimony whereof I have signed my name to this specification.

WILLIAM I. HALLOCK.