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S. CREWE

2,788,159

CAULK GUN

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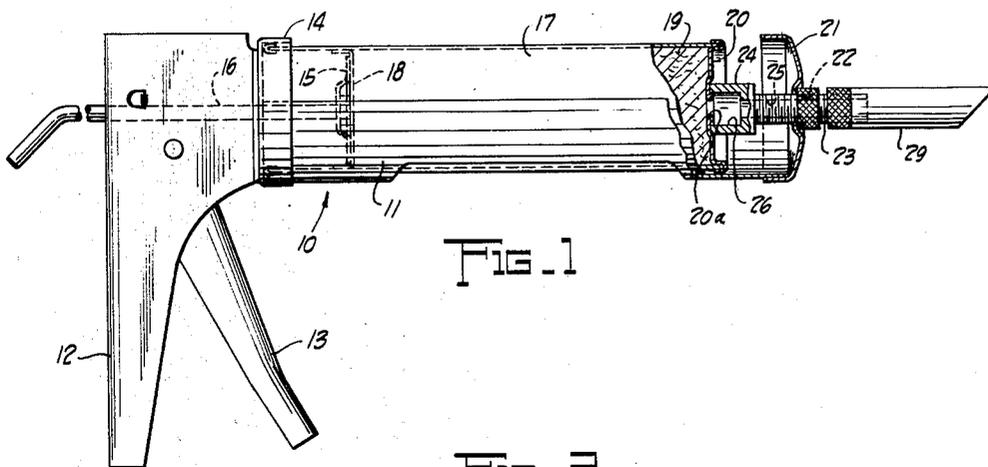


FIG. 1

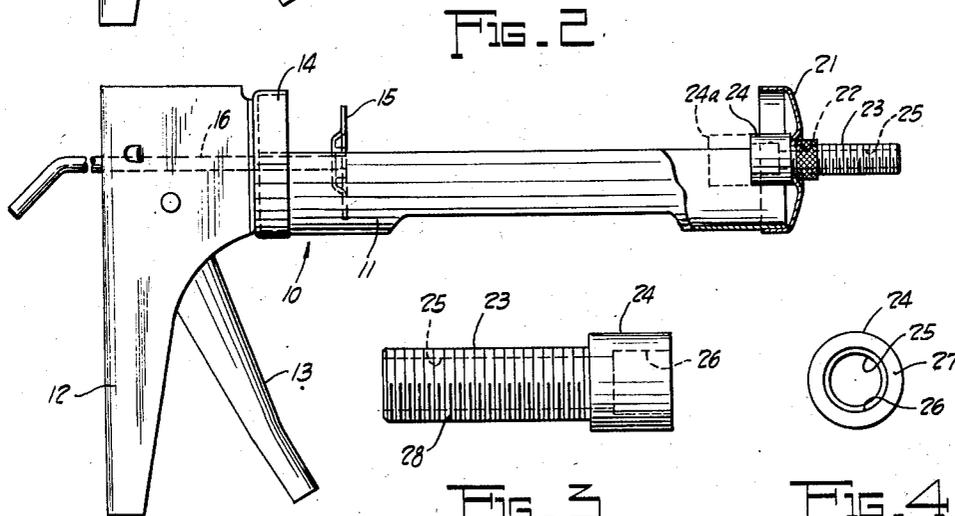


FIG. 2

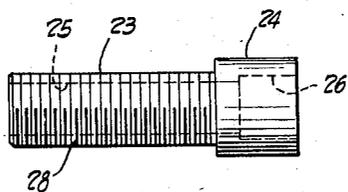


FIG. 3

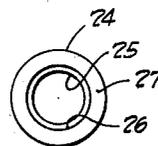


FIG. 4

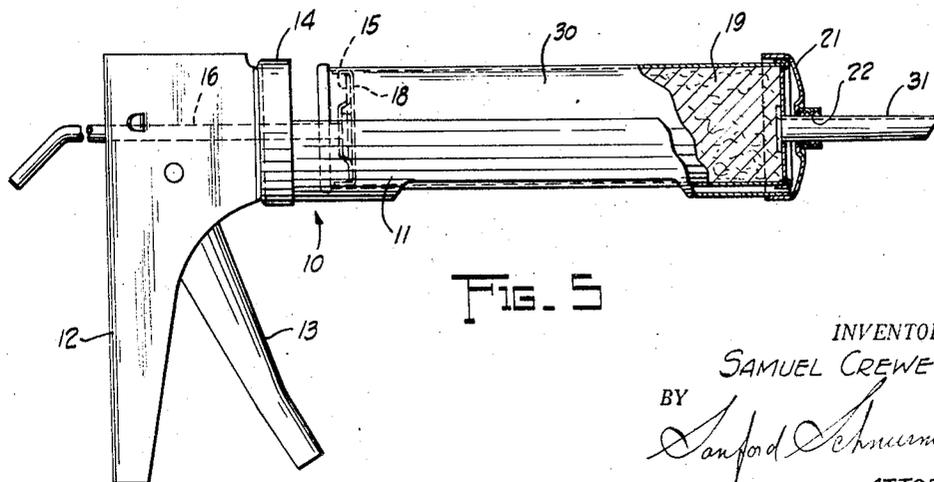


FIG. 5

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2,788,159

**CAULK GUN**

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1 Claim. (Cl. 222-326)

The invention relates to caulking guns and particularly to a cradle type gun for use with caulking compound cartridges, either the tipped or tipless type.

Conducive to a better understanding of this invention, it may be well to point out that plastic materials such as caulking compounds, putty, heavy greases, or the like, are commonly packaged in disposable cartridges. These cartridges are cylindrical in shape with a stationary or fixed forward end and a movable rear wall. The forward wall has an orifice or perforation through which the contained material is ejected when a compressive force is exerted against the movable rear wall.

The filled cartridges are fitted into the barrel or otherwise attached to the so-called caulk gun and do away with the time consuming and wasteful method of hand filling the gun barrel from a bulk container with a spoon, spatula or similar implement.

A common type of gun is the so-called skeleton or cradle type which comprises a frame for supporting the cartridge with a forward cap having a dispensing tip attached thereto and a rear cap or socket including a plunger and handle means for holding the gun and a trigger mechanism for urging the plunger against the movable wall of the cartridge so held between the two caps. The pushing action of the plunger causes the cartridge to press against the forward cap with the cartridge opening or perforation sealed against the tip opening in the forward cap. As long as the forward pressure is maintained, a fairly tight seal is created between the cartridge and the dispensing tip with little or no loss of material. However, if the pressure is released or the plunger withdrawn for any reason, the cartridge moves away from the forward cap and leakage occurs. This end play is due to the fact that the distance between the two end caps must be greater than the overall length of the cartridge to permit its insertion and removal from the cradle. Such leakage not only causes loss of material, but also creates an unsightly and disagreeable condition in the gun which reduces its efficiency.

This has been somewhat overcome in the past by providing the cartridges with an integral dispensing tip, in which case a tipless type gun must be used. Inasmuch as both tipped and tipless cartridges are on the market, two guns are required to accommodate both types of cartridges. The tipless type cartridge is often used because of the desirability of using specially shaped replaceable tips which are only available for the guns themselves and cannot be attached directly to the cartridge.

The primary object of this invention, therefore, is to provide a cradle type caulk gun for tipless caulk cartridges that assures a perfect mechanical seal between the cartridge and gun tip, with absolutely no end play, whether or not pressure is being constantly applied to the cartridge by the operating plunger.

Another object is to provide a single gun that will

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accommodate both tipless and tipped type caulk cartridges with equal facility.

A further object is to provide a caulk gun of the type stated that will permit the interchange of half-filled cartridges without the loss of any material.

Still another object is to provide a gun that is inexpensive to manufacture, easy to use and reliable in operation.

These and other objects of the invention will become apparent from a reading of the following specification and claim, together with the accompanying drawing wherein:

Figure 1 is a side elevational view of the caulk gun that is the subject of this invention, showing a tipless type cartridge carried in the gun cradle, with portions broken away and in section to show the construction of the forward end of the gun in detail;

Figure 2 is a side elevational view of the gun with the cartridge removed;

Figure 3 is an enlarged side elevational view of the jack-screw;

Figure 4 is a right end view of the same; and

Figure 5 is a side elevational view, partly in section, of the gun as it appears when used with a tipped cartridge.

Referring more particularly to the drawing, there is seen in the Figure 2 the caulk gun that is the subject of this invention broadly indicated by the reference numeral 10. The gun is fabricated from sheet metal and comprises a handle means 12, including a semi-cylindrical cradle 11 upon which the caulk cartridge is supported.

A socket 14 is located at the rear end of the cradle. The socket 14 is circular in shape and slightly larger in diameter than the cartridge 17 with which it is to be used, as seen in Figure 1.

A cap 21 is located at the extreme forward end of the cradle 11. The distance between the socket 14 and the cap 21 is greater than the overall length of the cartridge 17.

A plunger 15 is positioned on the forward end of the plunger rod 16 which passes through a central hole in the socket 14 and through the handle 12. Ratchet means, operable by trigger 13, is located in the handle 12 and acts to advance the plunger rod 16 and plunger 15 toward the cap 21. The ratchet mechanism may be any one of a number of well-known types, but, as shown, comprises the structure described in my Patent No. 2,534,857 granted to me on December 19, 1950. The ratchet mechanism therein described includes means for advancing the plunger and holding it in each position to which it is advanced.

The cap 21 has a central threaded bore 22 therethrough which is centered on the long axis of the cradle 11. An externally threaded nipple or jack-screw 23, seen in enlarged detail in Figures 3 and 4, is threadedly mounted in the bore 22, as seen in Figures 1 and 2. The jack-screw 23 has external threads 28 and an internal central bore 25 extending therethrough.

Reference numeral 24 indicates a head formed integral with the jack-screw, having an internal counterbore 26 which forms a continuation of the bore 25. The end face of the head 24 is flat and forms a circular seat 27. The jack-screw is mounted in the cap bore 22 with the seat 27 faced toward the rear socket 14. The jack-screw is rotatable in the threaded bore 22 and is movable therein toward the socket 14, as indicated by reference numeral 24a in Figure 2.

The cartridge 17 illustrated in Figure 1 is of the tipless type and comprises a cylindrical body closed at one end by a fixed wall 20 and at the other end by a movable wall 18. The space in the cartridge between these walls is filled with plastic material of whatever type desired, indicated by reference numeral 19. The fixed wall 20 has a perforation 20a therethrough which is circular in shape and located at the center point of the wall 20.

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This perforation is closed by means of a paper or metal disc which is removed when the cartridge is to be used.

In loading the gun 10, the plunger 15 is withdrawn into the socket 14 after releasing the ratchet mechanism. The jack-screw is rotated off the cap bore 22 until the head 24 is touching the cap 21, as shown in Figure 2. This leaves the cradle clear of all obstructions and the cartridge 17 is placed therein with the perforation 20a faced toward the jack-screw head 24. The cartridge is then moved hard against the socket 14 and the jack-screw 23 is rotated toward the fixed wall 20 of the cartridge until the head seat 27 bears against the fixed wall at the perforation 20a in a sealed fit. Under such condition, the cartridge 17 is held firmly against the rear wall of the socket 14 by pressure exerted by the jack-screw 23 against the fixed wall 20. At the same time, the circular seat 27 of the jack-screw creates a sealed lock between the perforation 20a and the bores 26 and 25 of the jack-screw.

Reference numeral 29 indicates a replaceable tip or nozzle which is threadedly mountable on the forward end of the jack-screw, as seen in Figure 1. The shape of the tip is calculated to give the extruded caulk ribbon the configuration desired. This tip may be interchanged for others as required.

The cartridge 17, so locked in place between the socket 14 and the jack-screw 23, cannot move in any direction and in fact becomes an integral part of the gun. Upon operation of the ratchet trigger 13, the plunger 15 is caused to pass the moveable wall toward the fixed wall 20. As a result, the caulk compound 19 is extruded through the aligned perforation 20a, bores 26 and 25 and out the nozzle 29. Release of pressure or withdrawal of the plunger 15 does not affect the relation of the cartridge and jack-screw 23 which remains tightly pressed against the cartridge wall 20 at the perforation 20a. Thus no leakage of the contained material can occur. To release the cartridge intentionally, it is only necessary to withdraw the plunger fully and back off the jack-screw 23.

In the event it is desirable to use a caulk cartridge 30 having a self attached tip 31, such as shown in Figure 5, the same gun can be used by merely removing the replaceable tip 29 from the jack-screw 23 and then removing the jack-screw from the cap bore 22. This leaves the cap bore 22 clear. The cap bore is sufficiently large to permit passage of the average tip supplied with tipped cartridges. The tip 31 is inserted through the cap bore 22 and the cartridge 30 dropped onto the cradle

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11, as shown in Figure 5. When the plunger is pushed against the movable rear wall 18 of the cartridge 30, the forward end will enter the forward cap and hold the cartridge in place. Of course, in this case, the cartridge will move back with the plunger 15 upon release of same, but inasmuch as the tip 31 is an integral part of the cartridge 30, it does not matter.

It will now be clear that there is provided a device which accomplishes the objectives heretofore set forth. While the invention has been disclosed in its preferred form, it is to be understood that the specific embodiment thereof as described and illustrated herein is not to be considered in a limited sense as there may be other forms or modifications of the invention which should also be construed to come within the scope of the appended claim.

I claim:

In a cradle type caulk gun for use with pre-packed caulk cartridges, a dispensing element adapted for use with cartridges of either the tipped or tipless type, comprising, a cap mounted at the forward end of the cradle having a threaded bore therethrough centered on the longitudinal axis of the cradle, the diameter of the bore being such that it will receive therethrough the dispensing tip of a cartridge of the type having an integral tip, a jack-screw mounted in the threaded bore having a head end faced toward the perforate end of a tipless cartridge nested in the cradle, the jack-screw being externally threaded from its head to its opposite end, the jack-screw also having a central bore therethrough for the passage of caulk, and a circular seat at its head end of a diameter greater than that of the perforation in the perforate end of the cartridge, said jack-screw being movable of the cap bore, upon rotation, to bear against the perforate end of the cartridge to seat and seal against said end at the perforation, the jack-screw being disengageable from the cap element when the gun is used with a cartridge having an integral tip, leaving the cap bore free to receive the integral tip therethrough.

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