

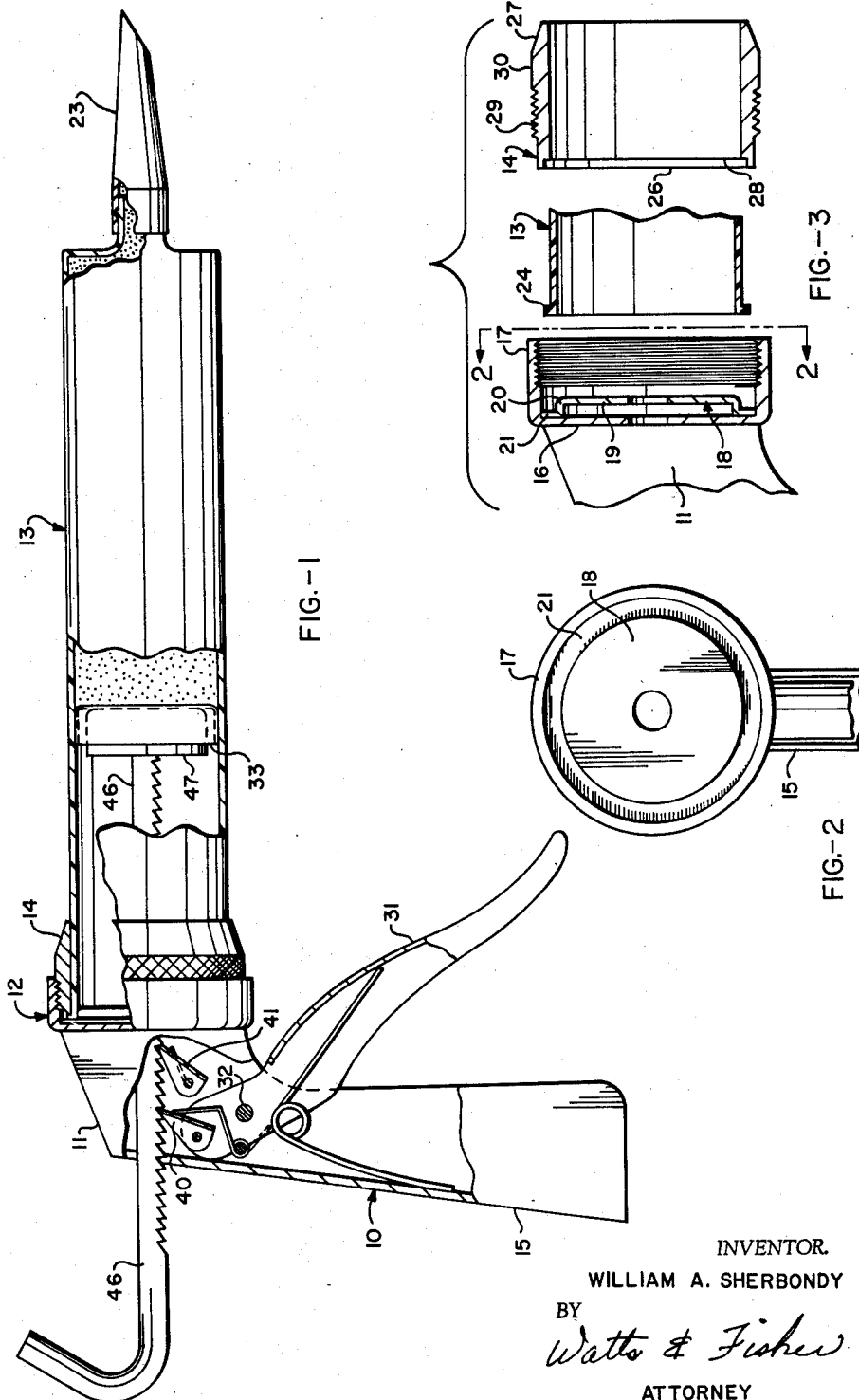
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CALKING GUN

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CALKING GUN

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This invention relates to calking guns and more particularly to a simplified cartridge type of calking gun.

Calking material to be dispensed is commonly packaged in throw-away tubes or cartridges. These cartridges each include a spout or nozzle which protrudes axially from one end of the cartridge to form the calk into a smooth stream as it is expelled from the cartridge. In the past these cartridges have been most commonly attached to a dispensing gun by one of two structures. The first structure is a wire bail which hinges on the gun housing and swings over the outlet end of the cartridge and around the spout to clip the cartridge to the gun housing.

The second and perhaps more common structure is an elongated semi-cylindrical barrel having one end permanently secured to the gun housing. The semi-cylindrical barrel is open along its top longitudinal surface to permit insertion of the cartridge. Thus, the semi-cylindrical barrel is effectively a cradle or trough into which the tube of calk is laid for support and to secure it to the dispensing gun. A U-shaped opening in the end of the barrel receives the dispensing nozzle as the cartridge is laid into the trough-like barrel.

The problem which must be solved in a calking gun for a coacting disposable cartridge is a provision for resistance to axial force of a gun plunger as it is advanced to expel calk from the cartridge. In the past, as in the two described examples above, this has been accomplished by extending some structural member from the gun handle forward to the nozzle end of the cartridge to coact with the nozzle end and provide resistance to such axial movement.

In the dispensing gun of this invention substantially all structure forward of the gun handle and particularly that structure which coacts with the nozzle end of the cartridge is eliminated. The gun is especially suitable for use with a self-supporting tube containing an extrudable material. As suggested above, the gun does not require the wire bail, the trough-like barrel or equivalent structure previously used to support and secure the tube of calk to the calking gun.

The calking gun of this invention has a handle and an abbreviated barrel secured to it. This abbreviated barrel provides a socket which receives the rearward end of an inserted disposable cartridge. A locking ring is telescoped over the cartridge and threaded into the barrel socket to lock the cartridge and barrel together. This locking is accomplished by locking a flange on the rearward end of the cartridge between the ring and the barrel.

Accordingly, an object of this invention is to provide a new and improved calking gun which may be used with a cartridge which is self-supporting.

A further object of this invention is to provide a dispensing gun and cartridge locking mechanism engaging only the rearward end of the cartridge and preventing axial movement of the cartridge and radial deformation or collapse of the cartridge.

Another object of this invention is to provide a calking gun and a clamping mechanism to prevent axial movement of the elongated dispensing cartridge by engaging only the rearward end of the cartridge rather than by some structural member extending from the handle forward to the nozzle end of the cartridge.

Other objects and a fuller understanding of the inven-

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tion may be had by referring to the following description and claims taken in conjunction with the accompanying drawing in which:

FIGURE 1 is a side, elevational view of the new and improved dispensing gun of the invention;

FIGURE 2 is a front view, with the cartridge removed, of that portion of the clamping mechanism on the handle of the dispensing gun of the invention; and,

FIGURE 3 is an exploded view, in section, of a portion of the cartridge and the clamping mechanism of the dispensing gun of the invention.

Referring now to the drawing which shows the preferred embodiment of the invention a manually actuatable calking gun is indicated generally by the reference character 10. The calking gun 10 includes a handle 15. The handle 15 includes a lower grip portion and an upper housing portion 11. A forwardly extending abbreviated barrel 12 is secured to the handle portion 11 to provide an annular cartridge receiving socket. A disposable cartridge 13 of plastic or other suitable material is provided. The cartridge has one end seated within the cartridge socket 12. A locking ring 14 is threadably received within the cartridge socket 12 to secure the cartridge 13 to the socket 12 in a manner which will be described in greater detail below.

As shown in FIGURES 2 and 3, the cartridge socket 12 is composed of an annular base portion 16 which is permanently secured to the housing portion 11 and a forwardly extending cylindrical flange portion 17. This flange circumscribes the base portion 16 and projects axially forward. The inside of the flange 17 is threaded to receive a complementary threaded portion 29 of the locking ring 14.

A cartridge seat 18 is fixed to the forward face of the base portion 16. The cartridge seat 18 is shaped and dimensioned to seat properly the rearward end of the cartridge 13 and to reinforce the cartridge against any tendency to deform or collapse radially inward. The seat includes a disc portion 19, an annular outer seating rim portion 21 and a connecting cylindrically contoured portion 20. The seating rim 21 is secured, as by spot welding to the base portion 16 of the cartridge socket.

The disposable cartridge 13 includes an elongated, disposable, cylindrically contoured tube of plastic or other suitable material. A small circular spout is provided at the outlet or forward end of the tube. A removable nozzle 23 is secured to the spout to form an emitted stream of calk into a desired shape and size.

A flange-like anchor 24 is around the rearward end of the cartridge 13. The anchor may be segmental but in the preferred and disclosed arrangement is an annular ring. The anchor 24 is sized to readily seat into the circular recess formed between the cylindrical portion 20 of the seat 18 and the concentric cylindrical flange 17 of the cartridge socket 12. When the end of the cartridge 13 is securely fastened within the cartridge socket 12 by the locking ring 14 the anchor 24 is clamped between the locking ring and the seating portion 21 to prevent any axial movement of the cartridge when the gun is in use.

The locking ring 14 has a cylindrically contoured inner wall of a diameter sized to telescope snugly over the cartridge 13. The locking ring includes a back seating and clamping surface 26 and a forward chamfered surface 27. The seating and clamping surface 26 has an annular recess 28 which is sized to receive the annular anchor 24 of the cartridge 13. The portion of the outer peripheral surface of the locking ring between the threaded portion 29 and the chamfered surface 27 is knurled or checked to provide a gripping surface.

In order to secure the cartridge to the calking gun

the rearward end of the cartridge 13 is inserted into the cartridge socket 12. The locking ring 14 is slipped around the cartridge and slid rearwardly along it until the threaded portion 29 on the clamping ring engages the threaded portion on the inside of the flange portion. When the locking ring is threaded into the flange portion 17 to a tightened position, the anchor 24 is partially received by the annular recess 28 and is securely clamped against the seating portion 21.

When the cartridge is securely clamped against the seating portion pressure from the locking ring and the movement of the plunger may tend to cause the anchor end of the cartridge to deform or collapse radially inward. However, collapse or deformation of the cartridge is prevented by the cylindrical portion 20 of the cartridge seat 18. The cylindrical portion 20 is snugly received within the anchor end of the cartridge when the cartridge is properly seated and assures that the anchor end maintains its cylindrical contour.

In order to expel the extrudable material contained by the cartridge a plunger is provided. The plunger includes a ratchet rod 46 and a head 47. The ratchet rod 46 projects through the housing portion 11 for reciprocation and rotation and an aperture along the axis of the socket 12. As shown by the drawing the ratchet rod 46 has a plurality of teeth along its bottom surface. An actuating ratchet assembly is disposed within the housing portion 11 and includes a pawl 40 to motively engage the teeth and a detent 41 to maintain the rod 46 in an advanced position. The ratchet assembly is operatively secured to a trigger 31. The trigger 31 is pivotally mounted to the handle 15 by means of the pivot pin 32. Sequential actuation of the trigger 31 will incrementally advance the rod 46 and its attached head 47 to advance a cartridge piston 33 in the usual manner and expel calk from the nozzle 23.

The invention thus provides a simple but very effective clamping mechanism for securing a calk dispensing cartridge to the expelling gun housing. The clamping mechanism is rugged and dependable. It assures a positive and secure mounting of the cartridge to the gun housing.

Although the specification describes the invention in detail it is believed to comprise essentially a dispensing gun having a clamping mechanism for rigidly securing a self-supporting cartridge to the dispensing gun; the clamping mechanism comprising a cartridge socket on the dispensing gun and a locking ring surrounding and engaging the cartridge adjacent the rearward end of the cartridge socket to rigidly clamp the cartridge to the dispensing gun.

Although the invention has been described in its preferred form with a certain degree of particularity, it is understood that the present disclosure of the preferred form has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and the scope of the invention is hereinafter claimed.

What is claimed is:

1. A calking gun comprising:

- (a) a handle;
- (b) a receiving and supporting socket secured to said handle and projecting forwardly from the handle;
- (c) an elongated cartridge for extrudable material, said cartridge including an outlet near one end and

laterally projecting anchor means near the other end; (d) said socket including a cartridge seat disposed transversely therein;

(e) clamping means removably secured to said socket and clamping said anchor means between said clamping means and said seat;

(f) expelling means connected to the handle and selectively projectable forwardly into the cartridge to expel material from the cartridge; and,

(g) the socket including a forwardly extending projection telescoped into the rearward end of the cartridge and abutable with the cartridge to inhibit inward deformation of the cartridge.

2. The device of claim 1 wherein the expelling means includes a plunger having a round head as its forward end and the forward outer edges of both the plunger and the projection are rounded for guiding and centering of the cartridge when telescoped over them.

3. The device of claim 1 wherein the clamping member is a ring, and wherein the ring has a through bore including a peripheral flange-receiving groove adjacent its rearward end and said anchor means is disposed in said groove.

4. The device of claim 1 wherein the projection is circular and the forward, outer edge of the projection is rounded for guiding and centering the cartridge when telescoped over the projection.

5. A calking gun comprising:

(a) a handle;

(b) a cartridge receiving and supporting socket secured to said handle and including a forwardly projecting barrel portion, said barrel portion including an internally releasable lock means;

(c) said socket including a cartridge seat extending transversely across the rearward end thereof and forming an endless recess;

(d) a cartridge having an outlet nozzle near one end and a laterally projecting endless flange-like anchor portion near the other end, the other end of said cartridge being removably positioned within the recess;

(e) a plunger and actuating mechanism carried by and extending into the cartridge to expel the extrudable material from said cartridge when actuated;

(f) a clamping ring surrounding the anchor end of said cartridge and being axially movable between a cartridge released and a cartridge-locked position;

(g) said ring including an inside endless recess at near rearward end and a releasable lock means in releasable engagement with the releasable lock means;

(h) said endless portion being reposed within said ring endless recess and clamped between said ring means and said seat; and,

(i) the socket including a forwardly extending projection telescoped into the rearward end of the cartridge and abutable therewith to inhibit inward deformation of the cartridge.

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