April 20, 1943. A. G. PETERS 2,317,299

CAULKING GUN

Filed Nov. 16, 1940

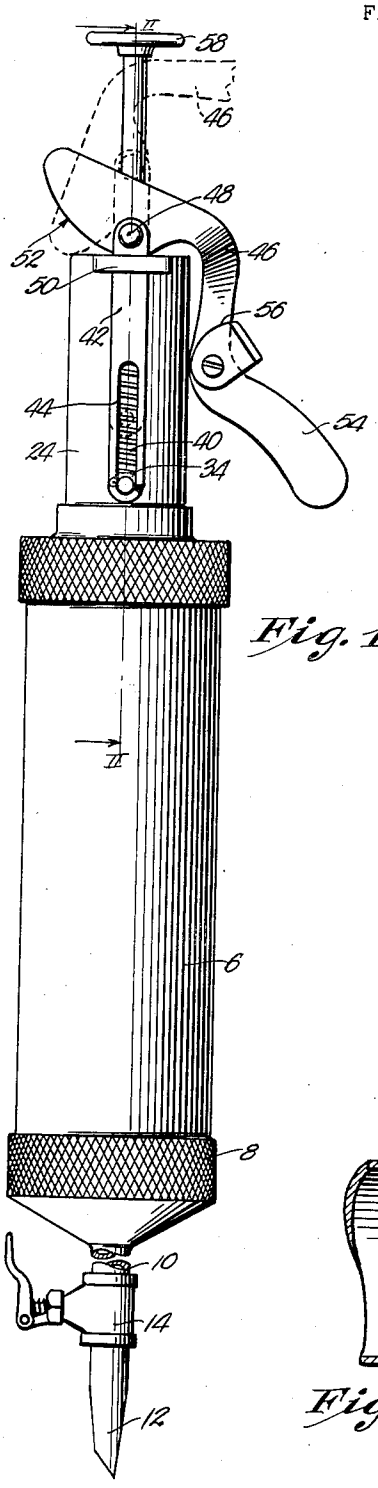
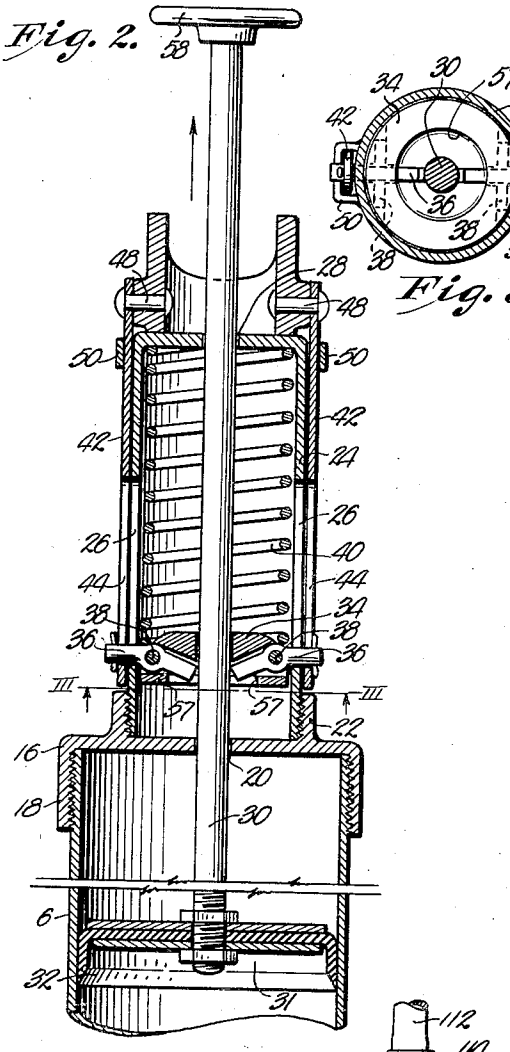


Fig. 1.

Fig. 2.



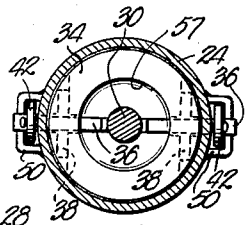


Fig. 3.

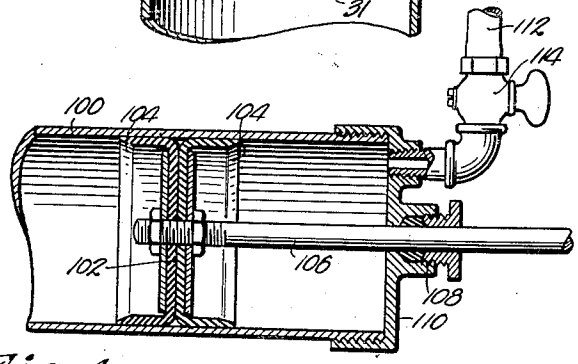


Fig. 4.

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CALKING GUN

Albert G. Peters, Kansas City, Mo.

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4 Claims. (Cl. 74—169)

This invention relates to material applying equipment in the nature of pressure guns employed in emplacing such substance as calking compound, glazing putty, waterproofing cementitious substances and the like.

The primary object of this invention is the provision of a gun of the aforementioned character, that has as a part thereof, unique means for applying pressure to a reciprocable piston, which means establishes a constant force whereby the substance in the cylinder of the gun may be fed through a manually controlled valve at the nozzle.

This invention has for one of its important aims the provision of a material applying gun comprising manually operable parts associated with a spring in such fashion as to compress the same and cause the force thereof to be constantly applied to the piston, which force is transmitted through a head of unique nature on which is mounted a number of dogs held in the normal position by the spring, adjustable to an unlatched position through a part that is easily set when it is desired to fill the cylinder of the gun by manually withdrawing the piston and its rod.

A still further aim of the instant invention is the provision of a material applying gun having a specially disposed spring that is separately housed and therefore, protected against mal-adjustment by contact with the substance being handled.

Other objects of the invention are to provide strong, durable, inexpensive and efficient equipment that is portable and easy to operate.

In the accompanying drawing:

Figure 1 is a side elevational view of a material applying gun made to embody the present invention.

Fig. 2 is an enlarged fragmentary detailed longitudinal sectional view through a portion of the gun, taken on line II—II of Fig. 1.

Fig. 3 is a cross sectional view through the device taken on line III—III of Fig. 2 and looking in the direction of the arrows; and

Fig. 4 is a fragmentary detailed sectional view through a portion of a material applying gun made to embody a modified form of the invention.

Heretofore, conventional and commonly employed guns of the character covered by this invention, have been extremely difficult to operate and hard to maintain because the force applying parts thereof have come into contact with the substance, and further because the mechanism has been intermittently operated when it was desired to extrude from the nozzle of the gun, a quantity of the material therein.

A constant force which need be built up only at comparatively great intervals is desired. In the preferred embodiment, shown in the accompanying drawing, the numeral 6 designates a hollow cylinder wherein the material is stored for application. One end of this hollow tubular cylinder 6 is closed by a cap 8 in communication with a tube 10 which leads to an applying nozzle 12.

A valve 14 of conventional type is interposed in tube 10 and is manually operable when nozzle 12 is in position. Tube 10 may be of any length and where the force used to apply the substance from within cylinder 6 is established to last a relatively long period of time, the cylinder and all its related parts may be carried on the belt of the operator, for example, and tube 10 manipulated to bring nozzle 12 into close proximity with the work. Obviously, cylinders of different sizes may be utilized and the length of tube 10 varied to suit conditions.

The end of cylinder 6 opposite from the cap 8 is equipped with another cap 16 having a peripherial internally threaded flange 18 and an opening 20 forming a part thereof. An annular flange 22 which is internally threaded to receive the open end of thimble 24 closes the other end of cylinder 6 and supports the force applying elements, as shown in Figs. 1 and 2.

Thimble 24 is provided with diametrically opposed slots 26 that extend longitudinally thereof. The open end of thimble 24 is externally screw-threaded to be received by annular flange 22.

The closed end of thimble 24 has a central hole 28 formed therein to receive piston rod 30 on the inner end of which is mounted a piston generally designated by the numeral 31. This piston has a flexible skirt 32 thereon to insure a perfect seal.

A specially formed head 34 slidably mounted upon rod 30 is equipped with a plurality of dogs 36 pivotally mounted by pins 38 and having the outer ends thereof projecting through slots 26 of thimble 24. The inner ends of dogs 36 bear against the face of rod 30 and when head 34 is moved upwardly as viewed in Fig. 2, these dogs are free to slide without performing a locking function.

A coil spring 40 housed within thimble 24 has one end thereof bearing against head 34 and dogs 36 while the opposite end is in engagement with the wall of thimble 24. This spring 40 circumscribes rod 30.

A pair of links 42 longitudinally slotted as at 44 receive respectively the outer ends of dogs 36. One end of links 42 are pivotally secured to a U-shaped lever 46 through the medium of pintles 48. Guide yokes 50 on thimble 24 embrace links 42.

Lever 46 has a pair of cam faces 52 formed thereon that ride upon the outer face of the end wall of thimble 24. A handle 54 forming a part of lever 46 presents convenient means for the operator to move cam faces 52 over the face just mentioned, to perform the function of compressing spring 40, as will hereinafter be set down.

A small cam 56 on lever 46 bears against the annular periphery of thimble 24 to hold the lever a predetermined distance from thimble 24 and to slightly compress spring 40 and maintain the inner ends of dogs 36 out of engagement with rod 30 to permit movement of the piston rod 30 in the direction of the arrows, shown in Fig. 2, when the substance being applied is drawn into cylinder 6 through nozzle 12. Obviously, when the gun is loaded in this fashion, valve 14 must be held open or if desired, the valve may be entirely removed and the open end of tube 10 placed directly in the supply of material that is to be drawn into cylinder 6. Such filling action may be accomplished by removing cap 8 and if desired, when the cap is not in place, the substance may be packed into cylinder 6 through the employment of a paddle or the like.

In work, the gun is first filled as just set down and valve 14 set so that it is closed. Spring 40 is placed under tension by lifting handle 54 of lever 46 to rock cam faces 52 over the end of thimble 24.

In lifting lever 46 to the position shown in dotted lines of Fig. 1, links 42 draw dogs 36 away from rod 30, and compress spring 40. When lever 46 is released, links 42 will return to the normal position shown in full lines of Fig. 1 and in Fig. 2, and thereby release the manually exerted force. Spring 40 thereupon exerts pressure against head 34 and likewise against dog 36 at a point outwardly from the axis of pins 38 to insure a gripping action between rod 30 and dogs 36. Spring 40 will constantly apply force to piston 31 through rod 30 until it is completely expanded, whereupon the movement of handle 54, as above mentioned, will again reset the parts for a repetition of the steps just mentioned.

As spring 40 moves head 34 and dogs 36 downwardly, piston rod 30 will likewise be moved and slots 26 and 44 of thimble an links 24 and 42 respectively, will afford ample clearance for dogs 36.

Spring 40 is of such size and character as to allow the operator to apply an appreciable amount of material through valve 14 and nozzle 12 before a second tensioning is necessary.

When cylinder 6 is to be filled, as above mentioned, cam 56 is rotated to lift lever 46 away from the side of thimble 24, whereupon links 42 will raise the outer ends of dogs 36 against the tension of spring 40 and withdraw the inner ends of dogs 36 from engagement with rod 30 and against stops 57. In this position, the parts are arranged to permit piston rod 30 to be freely drawn in the direction of the arrow shown in Fig. 2.

The modified form of the invention embodies substantially the same principles as those set down above, but the specific character of structure is different to accommodate the use of compressed air.

Cylinder 100 has a piston 102 therein that is equipped with double skirts 104 to seal against the escape of both material and compressed air. Rod 106 extends outwardly through a stuffing box 108 mounted on cap 110, and in lieu of the aforementioned spring 40, pressure is exerted upon piston 102 through the use of compressed air that is introduced into cylinder 100 through tube 112 and valve 114.

When either piston 31 or 102, as the case may be, is withdrawn to fill the cylinders, the handle, such as 58, is provided on the piston rod.

Guns of the character described and contemplated by this invention are capable of assuming physical appearances other than those shown in the accompanying drawing and therefore, it is desired to be limited only by the spirit of the invention and scope of the appended claims.

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

1. In a rod gripping device, a thimble having a closed end, a head in said thimble, said head and closed end having aligned openings for slidably receiving a rod, dogs pivoted on said head, yielding means for normally urging the dogs to gripping engagement with said rod and for moving said head and rod in one direction, and means attached to said dogs for releasing the dogs from engagement with the rod and for moving said head in the opposite direction against the action of said yielding means.

2. In a rod gripping device, a thimble having a closed end, a head in said thimble, said head and closed end having aligned openings for slidably receiving a rod, dogs pivoted on said head, a spring bearing against the closed end and said dogs for normally urging the dogs to gripping engagement with said rod and for moving said head and rod in one direction, and means comprising a cam riding on said closed end of the thimble, and links connecting the dogs with said cam for releasing the dogs from engagement with the rod and for moving said head in the opposite direction to load said spring.

3. In a device of the character described including a rod, a thimble having slots extending longitudinally thereof, said thimble having a closed end, a head in said thimble, said head and closed end having openings for slidably receiving the rod, dogs pivoted on the head having ends extended through said slots, yielding means for moving said head in one direction and for normally urging the dogs to gripping engagement with the rod to cause movement of the rod with the head, and means attached to said extended ends of the dogs for releasing the dogs from engagement with the rod and for moving said head in the opposite direction against the action of said yielding means.

4. In a device of the character described including a rod, a thimble having slots extending longitudinally thereof, said thimble having a closed end, a head in said thimble, said head and thimble having openings for slidably receiving the rod, dogs pivoted on said head having ends extended through said slots, a spring bearing against said closed end and said dogs for normally urging the dogs to gripping engagement with said rod for moving said head and rod in one direction, and means for releasing the dogs from engagement with the rod and for moving said head in the opposite direction to load said spring comprising a lever having cam faces riding on said closed end, and links connecting said lever with the extended ends of the dogs, said links having slots coextensive with the slots of the thimble for receiving said extended ends of the dogs.

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