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SUCTION GUN

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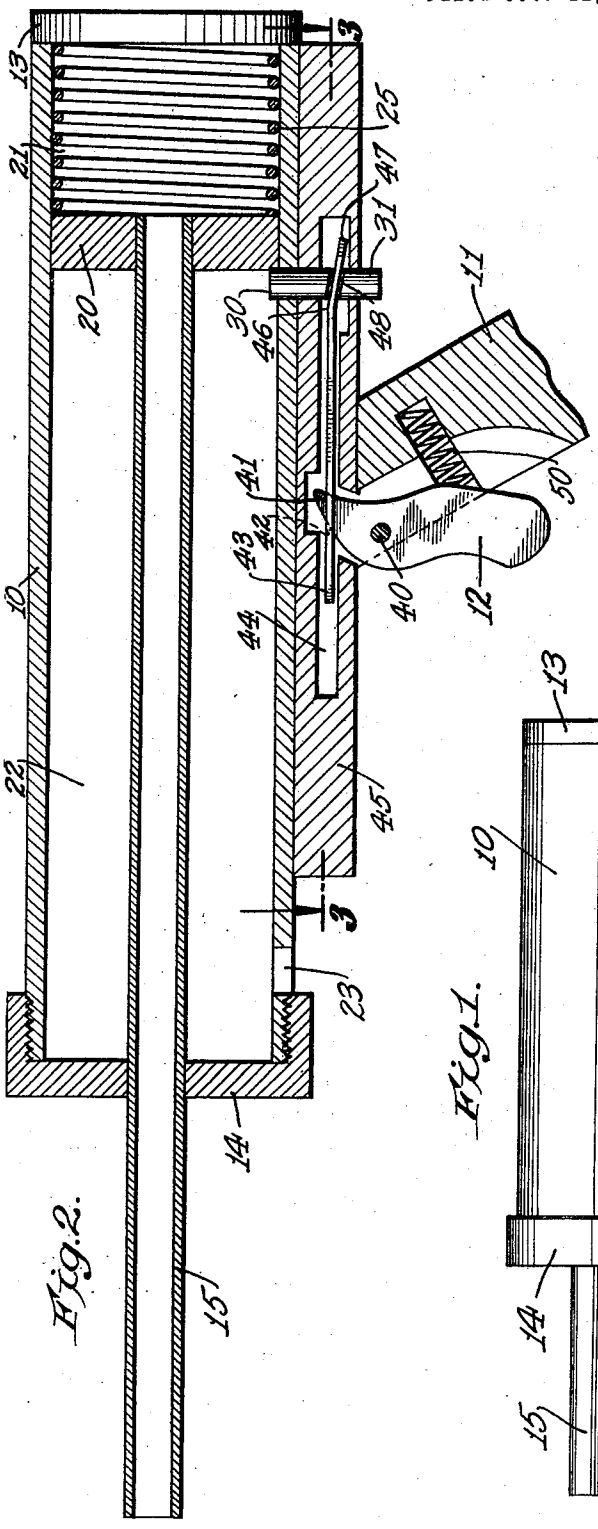


Fig. 2.

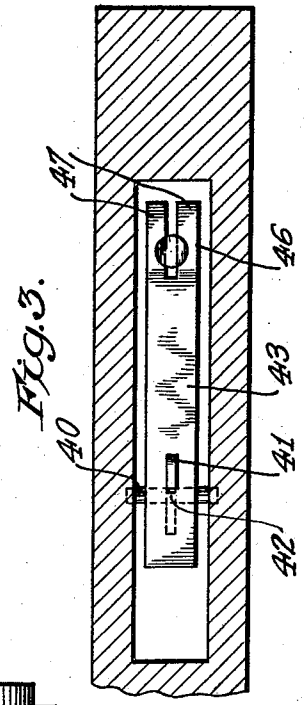


Fig. 3.

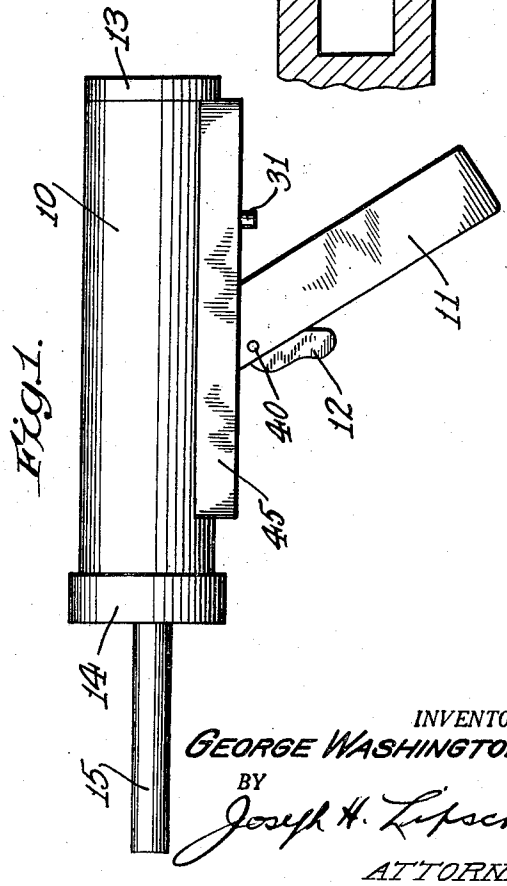


Fig. 1.

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SUCTION GUN

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8 Claims. (Cl. 294—64)

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This invention relates generally to suction guns and more particularly to a suction gun of the trigger type which may serve the purpose of a toy for the amusement of a child, or which may be employed for performing certain desirable operations. An object of the present invention is to provide a novel suction gun which may be employed either as a toy for amusement purposes or as a device for performing useful operations.

Another object of the invention is to provide a suction gun which upon actuation produces a suction in the barrel whereby to draw into the barrel small objects at which the gun is properly aimed.

Still another object is to provide a toy gun having a hollow barrel extension and trigger-actuated mechanism for projecting the barrel extension partially from the barrel to simulate the action of a dart.

Still a further object of the invention is to provide a device of the character described which is simple and inexpensive to manufacture, rugged in construction and certain in operation.

Further objects and advantages of this invention will become apparent in the following detailed description thereof taken in connection with the appended drawings, wherein:

Fig. 1 is a side elevation of a suction gun embodying my invention;

Fig. 2 is a vertical section through the device shown in Fig. 1; and

Fig. 3 is a section taken substantially on the line 3—3 of Fig. 1, showing the cam plate in plan.

Referring to Fig. 1 of the drawings there is shown a gun having certain conventional parts, such as a barrel 10, a handle or hand grip 11, and a trigger 12. The barrel is closed at its ends by a rear wall or closure member 13 and a front wall or closure member 14. The walls 13 and 14 are suitably secured to the body of the barrel and one or both of these walls may have screw threaded engagement with the body portion of the barrel. The gun includes a projectible barrel extension 15 in the form of a hollow tube the forward end of which extends through, and is slidably supported in, the front wall 14 so as to be guided thereby. The rear end of the tube 15 is fixed in a piston 20 snugly slidable in the barrel. The piston divides the barrel into a rear chamber 21 and a front chamber 22. Forward movement of the piston tends to increase the size of the rear chamber 21 and to create a partial vacuum in the chamber while at the same time reducing the size of forward chamber 22 and increasing the pressure within the forward chamber. The forward chamber is provided with a vent 23 to permit the compressed air to escape and thus permit forward movement of the piston.

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The piston and its supported tube are normally urged forwardly by a relatively heavy spring 25 which is positioned between the rear surface of the piston and the rear wall 13. The rearward movement of the piston serves to compress or charge the spring. The piston is normally compressed rearwardly by manually grasping or pressing against the front end of the tube 15 and forcing the piston rearwardly. The piston is normally held in its rearward position by a latch or sear 30 at the upper end of a stem 31 extending radially into the barrel and adapted to engage in front of the piston when the latter is drawn rearwardly to retracted or cocked position.

When the latch is drawn outwardly relatively to the barrel, the charged spring 25 suddenly expands, driving the piston and its tube 15 rapidly forward. The tube 15 gives the appearance of being shot out of the gun, but actually it is held therein by its attachment to the piston whose forward movement is limited by the front wall 14 of the barrel. The vent opening 23 just back of the front wall allows the air to be discharged from the forward chamber 22 as the piston moves forwardly.

The forward movement of the piston creates a vacuum in the chamber 21 which is relieved by air being drawn quickly into tube 15 from front to rear thereof. This suction may be employed for amusement purposes in drawing articles through the tube 15 and thence into the chamber 21, or it may be used for performing the useful operations mentioned, i. e., sucking into chamber 21 insects or small parts, such as watch elements, which would otherwise be inaccessible.

For operating the latch 30 when the trigger 12 is pulled, the trigger may take the form of a lever pivoted in the handle 11 as at 40 and having a projection 41 extending through an opening 42 in a plate 43 slidable in a slot 44 formed in a horizontal extension 45 of the handle 11. The plate 43 is a rigid member and has a cam portion 46 in the form of a fork having prongs 47 slidable in slots 48 the angle of inclination of which is the same as that of the prongs. When the trigger 30 is rocked rearwardly by squeezing the trigger and grip, the plate 43 is moved forwardly to cause the cam portion 46 to depress the latch 30 to a point where it clears the piston and permits the spring 25 to drive the piston forwardly.

To reset or cock the gun, the trigger is pulled

rearwardly to lower the latch 30, and the piston is pushed rearwardly by pressing upon tube 15. until the front face of the piston is disposed rearwardly of the latch position. Release of trigger 12 permits the spring 50 to move the trigger forwardly and hence move the plate 43 rearwardly to cause the cam portion 46 to lift the latch into position in front of the piston.

The foregoing description of the invention is merely illustrative and changes may be made within the scope of the appended claims.

Having described my invention, what I claim and desire to secure by Letters Patent is:

1. A suction gun comprising a hollow barrel closed at one end, a piston slidable in said barrel, a hollow tube carried by the piston and extending forwardly therefrom, means for normally holding said piston in retracted position, means for releasing said holding means, and means for driving said piston and said tube forwardly when said holding means is released, and means providing communication between the interior of said tube and said barrel behind said piston whereby the forward movement of the piston creates suction in the tube from front to rear thereof.

2. A suction gun comprising a hollow barrel, a piston slidable in said barrel and dividing said barrel into front and rear chambers, a hollow tube carried by said piston with at least a portion extending forwardly of said piston and having its interior communicating with the rear chamber, means for normally holding said piston in retracted position, means for releasing said holding means, means for driving said piston and said tube forwardly when said holding means is released thereby to decrease the pressure in the rear chamber and draw air into said rear chamber through said tube.

3. A suction gun comprising a hollow barrel closed at its front and rear ends, a piston slidable in said barrel and dividing the barrel into front and rear chambers, a hollow tube carried by said piston, one end of the tube extending through the piston into communication with the rear chamber and the other end of said tube extending slidably through the front end of said barrel, means for normally holding said piston in retracted position, means for releasing said holding means, means for driving said piston and said tube forwardly when said holding means is released thereby to decrease the pressure in the rear chamber and create suction through said tube from front to rear thereof and means for venting said forward chamber to permit said piston to move forwardly.

4. A toy gun comprising a hollow barrel, a piston slidable in said barrel, a hollow barrel extension fixed to said piston and extending out of the forward end of the barrel, means for normally holding said piston in retracted position, means for releasing said holding means, means for driving said piston and said barrel extension forwardly when the holding means is released, and means for limiting the forward movement of said piston and said barrel extension.

5. A toy gun comprising a hollow barrel, a hollow barrel extension slidable in said barrel and adapted to be projected therefrom, a piston slidably mounted in said barrel for driving said barrel extension, means resiliently urging said piston forwardly in said barrel, means releasably holding said piston in retracted position, trigger-actuated means for releasing said holding means, and means for limiting the forward movement of said barrel extension to retain the latter at least partially in said barrel when driven forwardly by said piston.

6. A suction gun comprising a hollow barrel providing a chamber, a hollow barrel extension projecting from said barrel and defining an air inlet into said chamber, a piston slidable in said chamber, spring means resiliently urging said piston in a direction in said chamber to draw air into said chamber through said barrel extension, means for latching said piston in position compressing said spring means, and trigger-actuated means for releasing said latch means.

7. A suction gun comprising a hollow barrel closed at its rear end, a hollow barrel extension projecting from the forward end of said barrel and communicating with the interior of said barrel, means for drawing air into said barrel through said barrel extension in a direction from front to rear thereof, said last means including a piston slidable in said barrel and means for resiliently urging said piston forwardly in said barrel, means for latching said piston in retracted position, and trigger-actuated means for releasing said latching means.

8. A toy suction gun comprising a hollow barrel, having front and rear end walls at least one of which is removable, a hand grip extending from said barrel, a hollow barrel extension slidable in said barrel and extending through said front end wall, a piston slidable in said barrel and receiving the inner end portion of said barrel extension with the latter communicating with the interior of said barrel behind said piston, spring means for urging said piston and barrel extension forwardly, latch means for releasably holding said piston and barrel extension retracted, a trigger associated with said handle, means actuated by said trigger for releasing said latch, and means venting the interior of said barrel forwardly of said piston.

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