

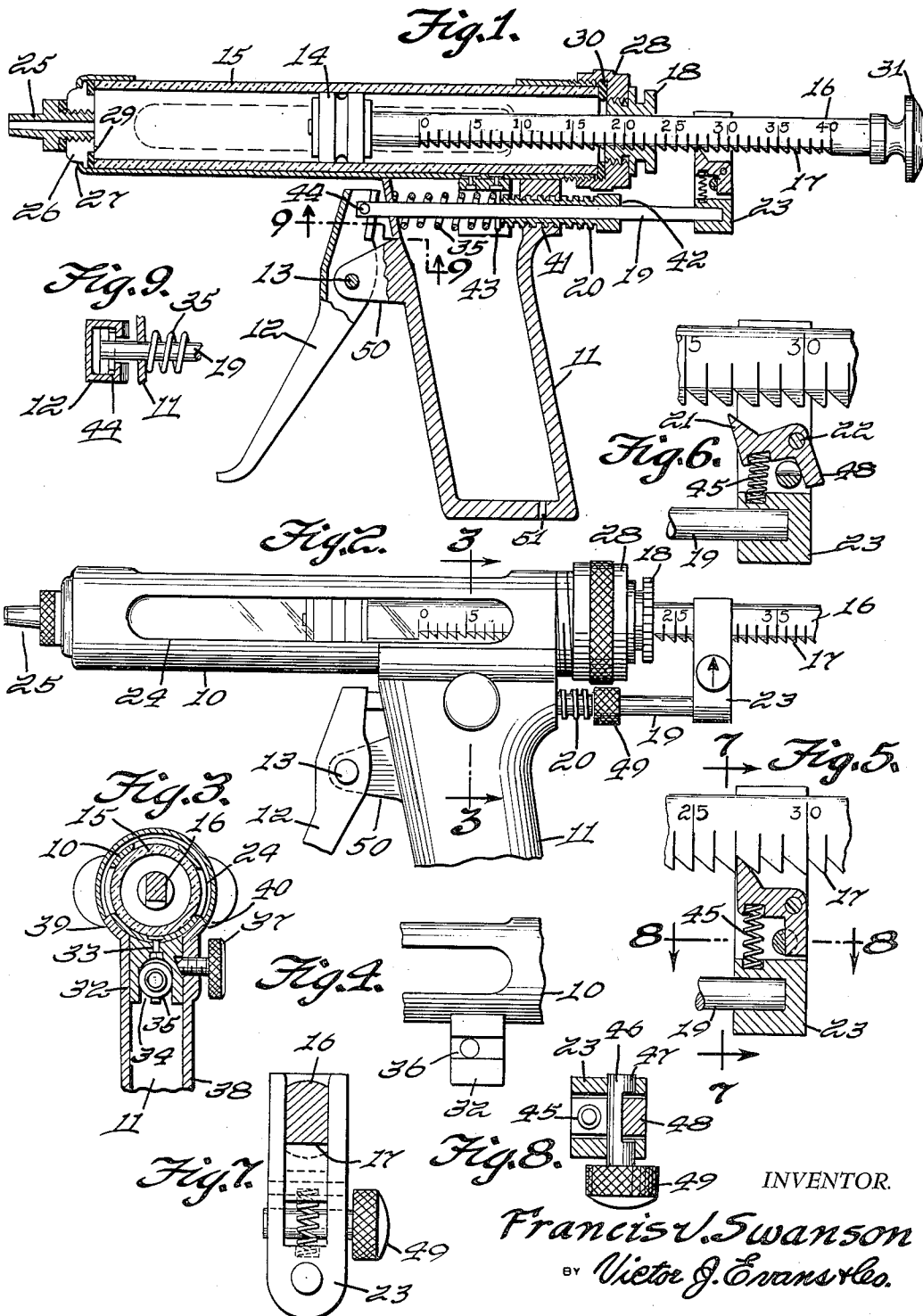
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F. J. SWANSON

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VACCINATING GUN

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INVENTOR.

Francis J. Swanson
BY Victor J. Enns & Co.

ATTORNEYS

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2,735,431

VACCINATING GUN

Francis J. Swanson, Saratoga, Wyo.

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4 Claims. (Cl. 128—224)

This invention relates to a syringe in the form of a gun used primarily for injecting vaccine or other serum into human beings or other animals, and in particular a gun having a needle or nozzle at the discharge end of a cylinder with a piston having a ratchet-like stem in which the piston is actuated by a trigger on a handle or grip extended from one side of the cylinder and in which means is provided in the connection from the trigger to the piston whereby the travel of the piston is adjustable.

The purpose of this invention is to provide an injector that is adapted to be held and operated with one hand and in which the amount of fluid injected by said injector may be varied.

The gun is an improvement over the vaccinating gun of my prior Patent No. 2,417,140 of March 11, 1947, in that the connection of the trigger to the piston rod or stem is provided with an adjusting screw through which a rod connecting the trigger to a pawl that engages ratchet teeth of the piston stem extends and wherein the pawl is pivotally mounted and provided with a latch that prevents operation thereof except as desired.

With injectors of the type disclosed in my prior patent it is difficult to regulate the length of the stroke and the means for making the connection between the trigger and piston is dependent upon a spring pin that coacts with a button actuated lever and with these parts connected in this manner it is difficult to regulate the length of travel of the sear or dog. The structure of the injecting gun of this invention is changed so that a rod for actuating the piston by the trigger extends directly through an elongated thumb screw whereby the thumb screw may be turned to adjust the travel of the rod, and also the mounting of a sear or pawl on the end of the rod is provided with a key for retaining the pawl in an inoperative position.

The object of this invention is, therefore, to provide an improved connection between a trigger and a piston of a vaccinating gun or the like wherein the piston is actuated with a positive movement and wherein the length of travel of the piston is controlled by a thumb screw through which the essential elements of the connection extend.

Another object of the invention is to provide improvements in vaccine and serum injecting devices whereby sufficient leverage is provided on an operating trigger to make the injection with a quick movement.

A further object of the invention is to provide a vaccine and serum injector that is in the form of a trigger actuated gun and that is of a simple and economical construction.

With these and other objects and advantages in view the invention embodies a casing in the form of a gun having a handle or grip extended from a barrel, with a sleeve in the barrel and having a trigger pivotally mounted on the grip and positioned to actuate a piston in the cylinder or sleeve by a rod extended through an elongated adjusting screw and having a pivotally mounted pawl carried by an extended end.

Other features and advantages of the invention will ap-

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pear from the following description taken in connection with the drawing, wherein:

Figure 1 is a longitudinal section through the gun type vaccine and serum injector.

Figure 2 is a side elevational view of the injector with parts of the trigger, grip and stem of the piston broken away.

Figure 3 is a cross section through the gun taken on line 3—3 of Fig. 2 also with parts of the grip broken away.

Figure 4 is an elevational view showing a portion of the barrel of the gun and showing a lug with a slot in one side extended downwardly from the barrel into the grip.

Figure 5 is a detail showing a longitudinal section through the pawl mounting on the end of the trigger actuated rod with parts shown on an enlarged scale and with the pawl shown in engagement with ratchet teeth of the stem of the piston.

Figure 6 is a detail showing a view similar to that shown in Fig. 5 with a pawl withdrawn from the teeth of the stem of the piston.

Figure 7 is a section taken on line 7—7 of Fig. 5 showing an end elevational view of the pawl mounting.

Figure 8 is a sectional plan taken on line 8—8 of Fig. 5 showing the key for retaining the pawl in engagement with or disengaged from the stem of the piston.

Figure 9 is a detail showing a section taken on line 9—9 of Fig. 1 illustrating the connection of the trigger to the piston operating rod.

Referring now to the drawing wherein like reference characters denote corresponding parts the improved gun type injector of this invention includes a barrel 10, a handle or grip 11 extended from one side of the barrel, a trigger 12 pivotally mounted by a pin 13 on one side of the grip, a piston 14 positioned in a cylinder 15 in the barrel and having a stem 16 with ratchet teeth 17 in one side extended through a bushing 18 in one end of the barrel, a rod 19 slidably mounted in a thumb screw 20 in the rear portion of the grip 11 and a pawl 21 pivotally mounted by a pin 22 in a yoke 23 on the end of the rod 19.

The upper and side surfaces of the barrel 10 are provided with elongated openings 24, providing windows and, as shown in Figs. 1 and 2 a needle or nozzle 25 is threaded into a bushing 26 that is secured in the end of the barrel by crimping the edge of the wall of the barrel over a flange of the bushing as shown at the point 27.

A collar 28 in which the bushing 18 is threaded is threaded on the opposite end or head of the barrel and gaskets 29 and 30 are provided in the ends of the barrel and positioned against the ends of the cylinder 15.

The stem 16 extends through the bushing 18 and the end of the stem is provided with a button 31.

A mounting block 32 is secured to the under surface of the barrel 10 with screws 33 and, as shown in Fig. 3 the lower part of the block is provided with elongated slots 34 through which the rod 19 and a spring 35 thereon extend. The block is also provided with a slot 36 into which the end of a thumb screw 37, which is threaded through the upper part of the grip 11, extends. The upper edges of side walls 38 of the grip are provided with flanges 39 and 40, respectively that engage the surface of the barrel 10 providing a seat for the barrel whereby with the barrel positioned in engagement with the flanges and with the thumb screw 37 extended into the slot 36 the barrel is rigidly mounted on the grip.

The rear portion of the grip 11 is provided with a threaded opening 41 in which the thumb screw 20 is threaded and the thumb screw is provided with an opening 42 through which the rod 19 extends. The rod 19 is provided with a pin 43 against which the end of the spring 35 bears and with the opposite end of the spring positioned against the inner surface of the forward portion of

the grip 11 the rod 19 is urged, by the spring, toward the rear and to the position shown in Fig. 1 wherein the trigger 12 is retained in an outwardly extended position. The forward end of the rod 19 is pivotally mounted in the upper end of the trigger with a pin 44 and the opposite end of the rod is secured in the base of the yoke 23 by welding or other suitable means.

The pawl 21 is urged upwardly with the end thereof in engagement with the ratchet teeth 17 of the stem 16 by a spring 45 and the pawl is retained in operative and inoperative positions with a key 46, which is formed with a slot 47, that is positioned to receive an arm 48 of the pawl. The key is provided with a knurled head 49 by which it may be rotated from the position shown in Figs. 1 and 8, to the position shown in Fig. 6. With the arm 48 of the pawl positioned in the notch 47 of the key, as shown in Figs. 1 and 8 the pawl is in engagement with the ratchet teeth 17 whereas with the key turned through an angle of 90 degrees, or to the position shown in Fig. 6, the pawl is retained in a position spaced below the ratchet teeth whereby the trigger may be actuated without moving the plunger or piston.

The grip 11 is provided with an ear 50 over which the trigger 12 is positioned and the pin 13 extends through the side walls of the trigger and ear for pivotally mounting the trigger on the grip. The lower end of the grip is provided with a drain opening 51 through which fluid dropping in the grip or handle may escape.

With the parts arranged in this manner, vaccine, or a serum, may be placed in the cylinder 15, and with the parts in the positions as illustrated in Fig. 1 the needle or nozzle 25 may be positioned to inject serum or the like and as the trigger 12 is actuated the plunger or piston forces the fluid from the cylinder. The amount of the fluid ejected from the gun may be adjusted by turning the screw 20 whereby the position of the pawl 21 in relation to the stem 16 may be adjusted.

In refilling the gun the piston 14 may be withdrawn by the button 31 with the pawl 21 spaced from the stem, as shown in Fig. 6.

It will be understood that modifications, within the scope of the appended claims, may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

1. An injector comprising a cylinder, a piston having an extended stem with ratchet teeth in one side positioned in the cylinder with the stem extended from one end thereof, a grip extended from one side of the cylinder, a trigger pivotally mounted on the forward portion of the grip, a rod extended through the grip, means pivotally connecting one end of the rod to the trigger, a pawl carried by the opposite end of the rod which extends from the rear portion of the grip, said pawl positioned to engage the ratchet teeth of the stem of the piston, a thumb screw having a longitudinally disposed opening extended through threaded in the grip, said rod extended through the thumb screw, and resilient means in the grip posi-

tioned to coact with the thumb screw for retaining the rod and pawl carried thereby in adjusted positions.

2. An injector comprising a cylinder, a piston having an extended stem with ratchet teeth in one side positioned in the cylinder with the stem extended from one end thereof, a grip extended from one side of the cylinder, a trigger pivotally mounted on the forward portion of the grip, a rod extended through the grip, means pivotally connecting one end of the rod to the trigger, a pawl carried by the opposite end of the rod which extends from the rear portion of the grip, said pawl positioned to engage the ratchet teeth of the stem of the piston, a thumb screw having a longitudinally disposed opening extended through threaded in the grip, said rod extended through the thumb screw, resilient means in the grip positioned to coact with the thumb screw for retaining the rod and pawl carried thereby in adjusted positions, and means retaining the pawl selectively, in engagement with the ratchet teeth of the stem of the piston, or disengaged from said teeth.

3. In a vaccine and serum injector, the combination which comprises a barrel having windows therethrough, a grip removably mounted on the barrel and extended from one side thereof, a cylinder mounted in the barrel, a needle extended from one end of the barrel, a piston slidably mounted in the cylinder and having a stem with ratchet teeth in one side extended from one end of the cylinder and barrel, an elongated thumb screw threaded in the grip and positioned with the axis thereof substantially parallel to the axis of the cylinder and barrel, a rod slidably mounted in the thumb screw and extended through the grip, a trigger pivotally mounted on the forward side of the grip and pivotally connected to said rod, a pawl pivotally mounted on the end of the rod extended from said thumb screw and positioned to engage the ratchet teeth of the stem of the piston, and a spring in the grip and positioned to coact with the thumb screw for retaining the rod and pawl carried thereby in adjusted positions.

4. In an ejector, the combination which comprises a barrel, closures removably mounted on ends of the barrel, a nozzle removably mounted in the closure on one end of the barrel, a piston rod extended through the closure on the opposite end of the barrel, a piston positioned in the barrel and secured to the end of the piston rod therein, a gripping element slidably mounted on the end of the piston rod extended from the barrel, a grip extended from one side of the barrel, a trigger pivotally mounted on the grip, a rod extended through the grip and mounted to slide longitudinally of the injector, means for actuating the rod by the trigger, means connecting one end of the rod to the gripping element, whereby the gripping element is adapted to be actuated by the trigger to drive the piston toward the end of the barrel in which the nozzle is positioned, resilient means for withdrawing the piston and returning the trigger to a cocked position, and means for adjusting the travel of the piston and rod.

No references cited.