

May 9, 1961

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2,983,142

UNIVERSAL RECEIVER FOR TEST GUNS

Filed Nov. 25, 1958

2 Sheets-Sheet 1

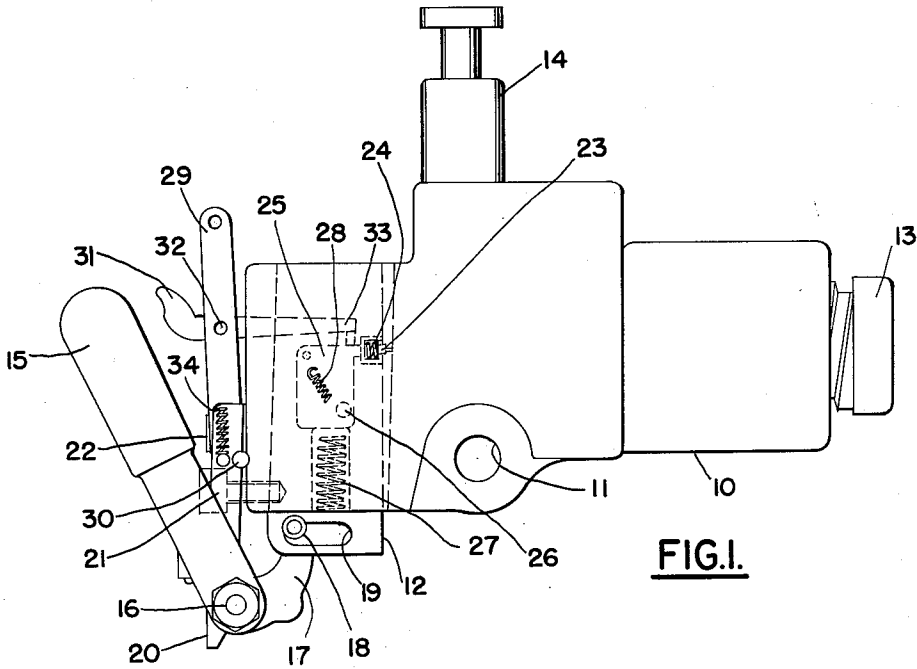


FIG. 1.

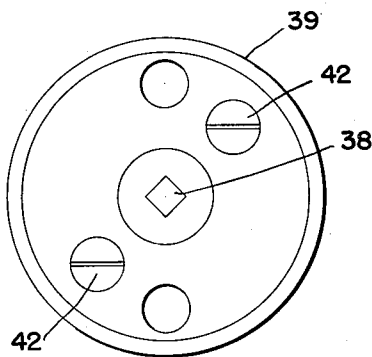


FIG. 6.

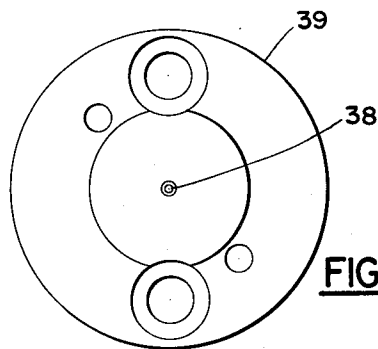


FIG. 7.

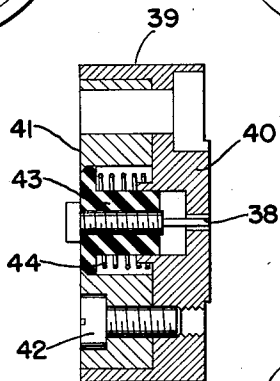


FIG. 5.

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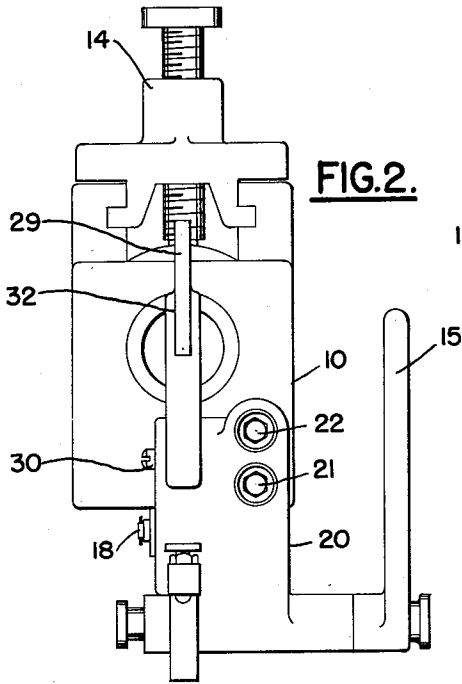


FIG. 2.

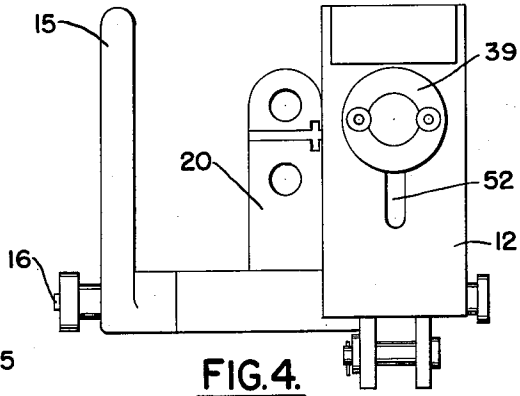


FIG. 4.

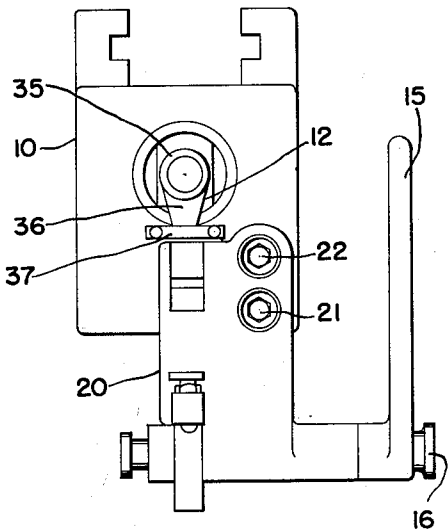


FIG. 3.

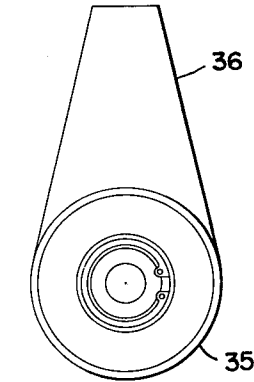


FIG. 9.

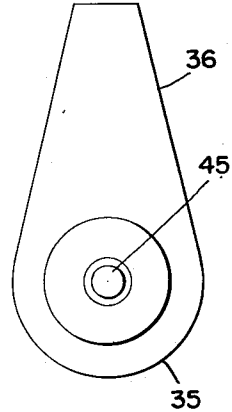


FIG. 10.

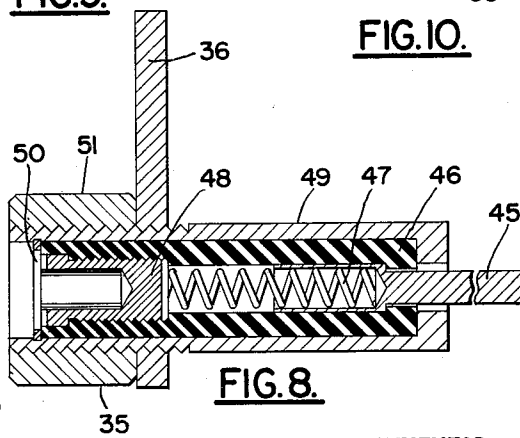


FIG. 8.

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UNIVERSAL RECEIVER FOR TEST GUNS

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Filed Nov. 25, 1958, Ser. No. 776,393

1 Claim. (Cl. 73-167)

(Granted under Title 35, U.S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government for governmental without the payment to me of any royalty thereon.

This invention relates to universal receivers or mounts which are designed for the test firing of differently calibered guns, and has for its principal object the provision of an improved universal receiver whereby ammunition of the electrical primer type may be utilized in such test firing.

A universal receiver is available for testing differently calibrated guns by the firing of percussion type cartridges. It is desirable, however, that such a receiver also be capable of testing such guns by firing cartridges of the electrical primer type, and that the parts of the receiver be readily interchangeable so as to adapt it for use with either type of ammunition. The present invention achieves this result by the provision of a firing mechanism which is adapted for use with electrical primers and is easily interchanged with the percussion type firing mechanism heretofore available.

The invention will be better understood from the following description when considered in connection with the accompanying drawings and its scope is indicated by the appended claim.

Referring to the drawings:

Fig. 1 is a side view of the universal receiver as heretofore utilized for firing a percussion type primer.

Fig. 2 shows the receiver of Fig. 1 as viewed from its breech end.

Fig. 3 is a similar view with the breech mechanism adapted for use with ammunition of the electrical primer type.

Fig. 4 illustrates the breech block of the mechanism of Fig. 3.

Figs. 5 to 7 illustrate the electrical firing pin assembly, Figs. 8 to 10 illustrate an insert plunger which cooperates with the firing pin assembly of Figs. 5 to 7.

The receiver of Fig. 1 includes a member 10 which is adapted to be fixed to a support by a bolt extending through an opening 11, encloses a circular breech member 12 at one end, and has at its other end a locknut 13 for clamping it to a gun barrel which is to be tested. Mounted on top of the member 10 is a device 14 for registering the pressure developed within the barrel.

Extending through the member or body 10 is an opening having at its inner end a shoulder which has its exterior curved to fit the circular breech member 12 and provides an abutment for the breech end of the barrel. Prior to the clamping of the barrel in the body 10, the locknut 13 is removed, a cartridge is loaded into the barrel, and the barrel is shoved into the body 10 until it engages the inner shoulder of the body. Thereupon, the locknut 13 is slid over the barrel and tightened against an external shoulder of the barrel. This brings the primer of the cartridge within the reach of the firing pins hereinafter described.

The breech closure member 12 has a diameter which is slightly shorter at its upper end than at its lower end.

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It is movable in an opening in the member 10 by means of a lever 15 which is pivoted at 16 and carries an arm 17 bearing a shaft 18 extending through slots 19 in the bifurcated end of the member 12. The lever 15 is supported on a bracket 20 which is fixed to the member 10 by means of bolts 21 and 22. In its illustrated position, the lever 15 maintains the breech member 12 in its closed position. The breech is opened by moving the lever toward the muzzle of the gun.

The breech closure member 12 bears a firing pin 23 which is biased out of contact with a primer (not shown) by a spring 24. It also supports a hammer 25 which is pivoted at 26 and is biased to its illustrated position by springs 27 and 28.

The hammer 25 is operated by a trigger mechanism including a lever 29 pivoted on a shaft 30 and a lever 31 pivoted on a pin 32 in a slot intermediate the ends of the lever 29. The lever 31 has at its breech end an extension 33 arranged to engage the hammer 25 and is biased into engagement with the hammer by a spring 34. The firing pin 23 is operated by moving the lever 29 rearwardly. This successively compresses the spring 27 and releases the hammer so that it impacts the firing pin.

In adapting the receiver for firing cartridges of the electrical primer type, the hammer and trigger mechanism are removed, the firing pin 23 is replaced by a firing pin assembly such as that illustrated by Figs. 5 to 7, and this firing pin assembly is operated by means of the insert illustrated by Figs. 8 to 10.

Fig. 3 is a view similar to that of Fig. 2 with the receiver adapted to fire ammunition of the electrical primer type. In this case, the trigger mechanism is replaced by an insert 35 and an arm 36 which cooperates with a bracket 37 to lock the breech closure member 12 in its closed position and to maintain the firing pin 38 (Figs. 5 to 7) in contact with the electrical primer of the cartridge to be fired.

The firing pin assembly 39 is mounted on the breech closure member 12 as indicated by Fig. 4. It includes a cup-shaped member 40 (Figs. 5 to 7) into which is fitted a member 41, these members being held together by screws 42. Held between the members 40 and 41 is an insulation collar 43 which is arranged for limited travel and is biased to its illustrated position by a spring 44. The firing pin 38 is threaded into the collar 43 and does not extend beyond the member 40 in its retracted position. It is forced out beyond the member 40 by the insert 35 so as to engage the electrical primer to be fired.

As shown more particularly in Figs. 8 to 10, the insert 35 includes a plunger 45 which is mounted within an insulation sleeve 46 and is biased to its illustrated position by a spring 47. The spring 47 is maintained within the sleeve 46 by a plug 48 threaded into the sleeve. The sleeve 46 is surrounded by a casing 49 to which it is fixed by means of a tru-arc 50 fitting into an inner circumferential groove of the casing. Threaded onto the casing 49 are the arm 36 and a knurled knob 51 by which the arm is wedged in the back of the bracket 37 (Fig. 3) thus locking the firing pin 38 (Fig. 5) in an extended position and establishing between the plug 48 and the firing pin a conductive path which is insulated from the remainder of the receiver by the collar 46 (Fig. 8) and the collar 43 (Fig. 5).

At the same time, the casing 49 of the insert is positioned in a circular enlargement of a groove 52 (Fig. 4) in the breech closure member 12 thereby locking this member against movement while the firing pin is extended outside the member 40. Obviously removal of the insert releases the spring 44 so that the firing pin is

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retracted and the breech closure member may be moved to its open position without injury to the pin.

What the invention provides is an electrical primer firing mechanism which is readily substituted for a percussion firing mechanism in a receiver utilized to test fire differently calibrated guns.

I claim:

In a device for test firing differently calibrated gun barrels, the combination of a body having a pair of openings communicating with and substantially normal to one another, means for clamping a gun barrel in the first of said openings with its breech end adjacent the second of said openings, a breech closure member movable in the second of said openings, an electrically insulated firing

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pin mounted in said breech closure member and biased to its retracted position, means coupled to said breech closure member for moving said firing pin into and out of registry with said first opening, and means including an electrically insulated and spring biased plunger extendible into said body for moving said firing pin from its retracted to its extended position.

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