(No Model.)

S. H. EMMENS.

GUN FOR THROWING EXTERNALLY APPLIED PROJECTILES.

No. 410,320. Patented Sept. 3, 1889.

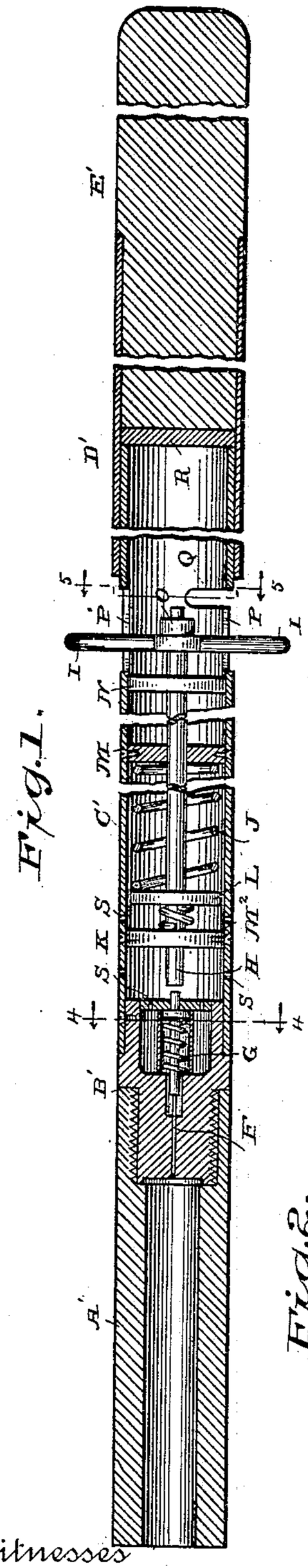

Fig. 1.

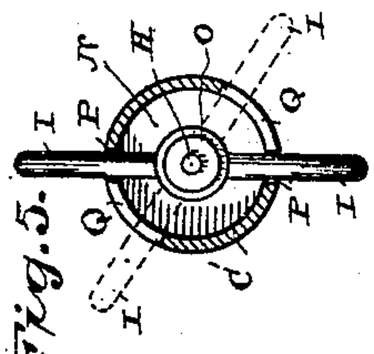

Fig. 5.

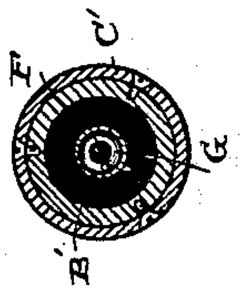

Fig. 4.

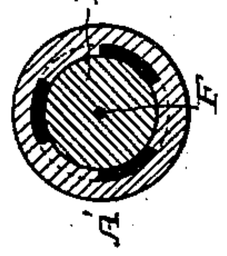

Fig. 3.

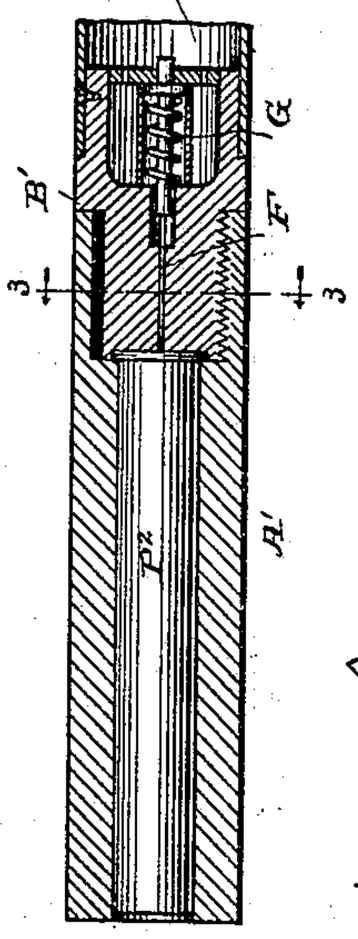

Fig. 2.

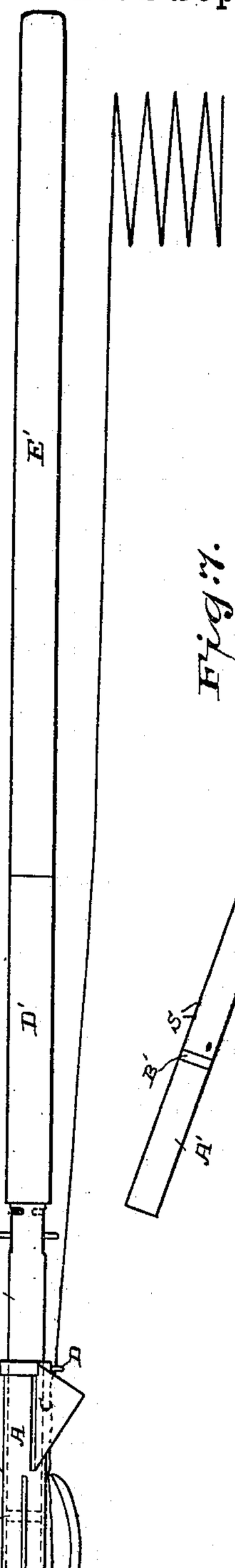

Fig. 6.

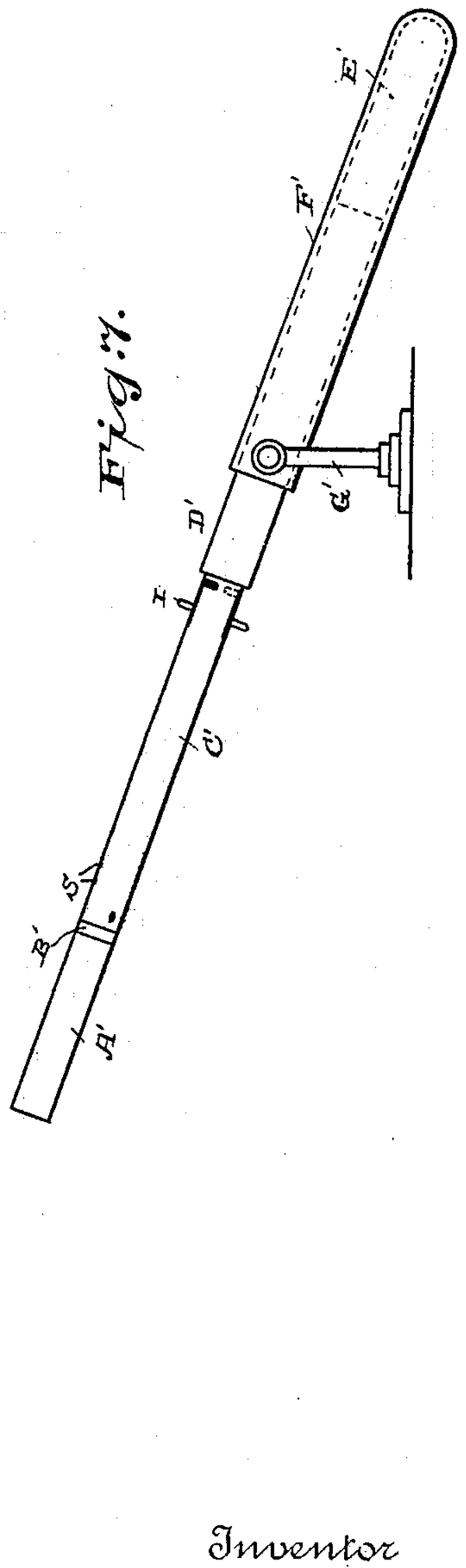

Fig. 7.

Witnesses
H. A. Lamb
Lort. Phillips.

Inventor
STEPHEN HENRY EMMENS
by E. L. Emmens
Attorney.

UNITED STATES PATENT OFFICE.

STEPHEN H. EMMENS, OF LONDON, ENGLAND.

GUN FOR THROWING EXTERNALLY-APPLIED PROJECTILES.

SPECIFICATION forming part of Letters Patent No. 410,320, dated September 3, 1889.

Application filed October 22, 1888. Serial No. 288,767. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN HENRY EMMENS, a subject of the Queen of Great Britain and Ireland, and a resident of London, in England, temporarily residing at Harrison, in the State of New York, have invented a new and useful Improvement in Guns, of which the following is a specification.

My present invention relates, primarily, to guns for throwing externally-applied thimble-shaped projectiles; but the invention is applicable in part to guns in general.

This invention consists in certain novel combinations of parts, hereinafter set forth and claimed, for accomplishing the following objects, viz: First, to utilize a short "powder-tube" for the propelling charge in connection with a relatively long thimble-shaped projectile, so that the latter may be of any required length and guided to the requisite extent without correspondingly lengthening the gun; second, to facilitate ejecting the cartridge-shells from a breech-loading powder-tube coupled endwise to its breech-block; third, to properly support and guide a detached firing-pin within a combined breech-block and coupling-piece, and, fourth, to render the firing devices simple and effective and to adapt them to be controlled by a suitable trigger at any required distance back of the firing-pin.

A sheet of drawings accompanies this specification as part thereof.

Figure 1 of the drawings represents a longitudinal section of a gun shortened by breaks, illustrating this invention. Fig. 2 represents a like view of its barrel end, showing a cartridge in place therein. Figs. 3, 4, and 5 represent cross-sections on the lines correspondingly numbered. Fig. 6 is a small scale side view of the gun loaded with one of my convertible projectiles of light weight, and Fig. 7 is a like view of the gun as modified for throwing heavier thimble-shaped projectiles.

Like letters of reference indicate corresponding parts in the several figures.

This gun comprises a short powder-tube A′, a breech-block B′, a firing-device tube C′, and a stock-tube D′, each of suitable metal, together with a stock E′ of suitable wood or the like, the latter being long or short, as illustrated, respectively, by Figs. 6 and 7, according to the intended use of the gun, its size, &c.

The long-stocked gun, Fig. 6, is employed with light charges for projecting ropes in case of fire and for like uses, and is designed to be held by one or more men with the stock resting against the ground or any convenient support. The short-stocked gun, Fig. 7, is intended for heavier charges and to be fired from a tubular rest F′, Fig. 7, trunnioned near its front end in a swivel-support G′.

The powder-tube A′, breech-block B′, firing-device tube C′, stock-tube D′, and stock E′ are preferably cylindrical, and the three parts first named are externally of one and the same diameter, which adapts the gun to carry an externally-applied thimble-shaped projectile longer than the powder-tube, as aforesaid. Fig. 6 shows such a projectile at P′ in the form of one of my convertible projectiles. The latter constitute the subject-matter of two companion cases, serially numbered 288,765 and 288,766, and form no part of the present invention, except as regards certain fundamental features thereof—namely, a guide-tube A, closed at its front end by a head B, open at the rear to admit the barrel of the gun, to which its bore is fitted, and conveniently provided at or near its rear end with external flight-regulating wings C.

The powder-tube A′ is fixed to the breech-block B′ by means of an interrupted screw-joint, as shown in cross-section in Fig. 3, and the front of the breech-block is recessed to receive the base of a center-fire powder-cartridge P^2, which may fill the powder-tube, as represented in Fig. 2. This construction of the combined breech-block and coupling-piece protects the base of the cartridge-shell against rupture or excessive expansion and at the same time facilitates ejecting the empty shells. Ordinarily they remain in the powder-tube and are ejected by blowing with the mouth into its front end. Should the base of a shell stick in the recess, the powder-tube would be withdrawn from the shell, and the latter could then be quickly detached by striking the shell laterally.

A shouldered axial bore of small diameter opening through the front of the breech-block accommodates a firing-pin F, which is caused

to rebound by a spiral spring G, through which the pin extends and which reacts against a collar fast on the pin, and is preferably inclosed in a tube loosely fitted thereto within the chambered rear end of the breech-block, which is capped to form a central rear guide for the firing-pin, as clearly shown in Figs. 1 and 2. Externally the rear end of the breech-block is of reduced diameter, and the front end of the tube C′ is conveniently attached thereto by screws, as shown in Figs. 1, 2, and 4, for example, and thus coupled to the powder-tube. The firing-pin F is driven forward by an axial hammer-rod H, Figs. 1 and 5, which extends rearward within said tube C′ to a trigger I, and may be of any required length without decreased effectiveness. A pair of spiral springs J K, Fig. 1, are located on the respective sides of a collar L, fast on the hammer-rod H. Said spring J reacts against a rear diaphragm-disk M as the striking-spring, and said spring K, which is relatively light and short, reacts against a front diaphragm-disk M^2 as a recoil-spring to keep the front end of the hammer-rod normally out of contact with the retracted firing-pin, as represented in Fig. 1. Said disks M M^2, and preferably one or more supplemental diaphragm-disks N, Fig. 1, nearer the trigger I, support and guide the hammer-rod H within said tube C′. The trigger I is preferably a rigid cross-bar held upon the rear end of the hammer-rod H by a nut O, with its ends projecting normally through longitudinal slots P in the top and bottom (or opposite sides) of the tube C′.

The gun is "cocked" by drawing back the hammer-rod by means of the trigger and turning the latter so that it occupies slots Q at right angles to said slots P, as indicated by dotted lines in Fig. 5. The gun is fired by striking one end of the trigger, so as to disengage it from said slots Q, whereupon the spring J throws the hammer-rod H forward, causing its front end to strike the firing-pin F and the latter to explode the cap of the cartridge P^2. The firing-pin and hammer-rod are instantly retracted by said recoil-springs G and K. The recoil of the rigidly-connected powder-tube A′, breech-block B′, and firing-device tube C′ is sustained by a steel disk R, interposed between the rear end of said tube C′ and the front end of the stock E′ and by the non-metallic stock. Any smoke or gases which may penetrate backward along the firing-pin are afforded free escape by a sufficient number of perforations S, conveniently arranged.

I have shown and described at length suitable and preferred details of mechanical construction, but do not consider the same essential to my respective claims, except as therein expressly stated.

Having thus described my said improvement in guns, I claim as my invention and desire to patent under this specification—

1. In combination with a thimble-shaped projectile having an axial guide-bore, a gun having a short cylindrical powder-tube, a firing-device tube, and coupling devices uniting said tubes end to end, all of which are externally fitted to said guide-bore, a suitable stock to which said firing-device tube is attached, inclosed axial firing devices, and a suitable cocking and firing trigger, the latter projecting near the stock end of said firing-device tube, whereby the gun is adapted to carry an externally-applied projectile longer than the powder-tube, substantially as hereinbefore specified.

2. In combination with a powder-tube having the socket part of an interrupted screw-joint at its rear end, a breech-block provided with the plug part of such joint and having its front recessed to admit the base of the cartridge-shell, substantially as hereinbefore specified.

3. In combination with a powder-tube, a firing-device tube in line therewith, an axial hammer-rod within the latter, a detached axial firing-pin provided with a recoil-spring, a combined breech-block and coupling-piece having a shouldered axial bore at its front end, and a chambered rear end, the latter capped to form a central rear guide for the firing-pin, substantially as hereinbefore specified.

4. In combination with a breech-loading powder-tube, a breech-block, and a firing-device tube in line with each other, an axial firing-pin and a recoil-spring therefor within the breech-block, an axial hammer-rod in rear thereof having a collar fast thereon, a suitable trigger connected with its rear end, spiral striking and recoil springs behind and in front of said collar, respectively, and diaphragm-disks fast within the firing-device tube to coact with the springs last named, substantially as hereinbefore specified.

STEPHEN H. EMMENS.

Witnesses:
SAMUEL B. HAMBURG,
NEWTON W. EMMENS.