

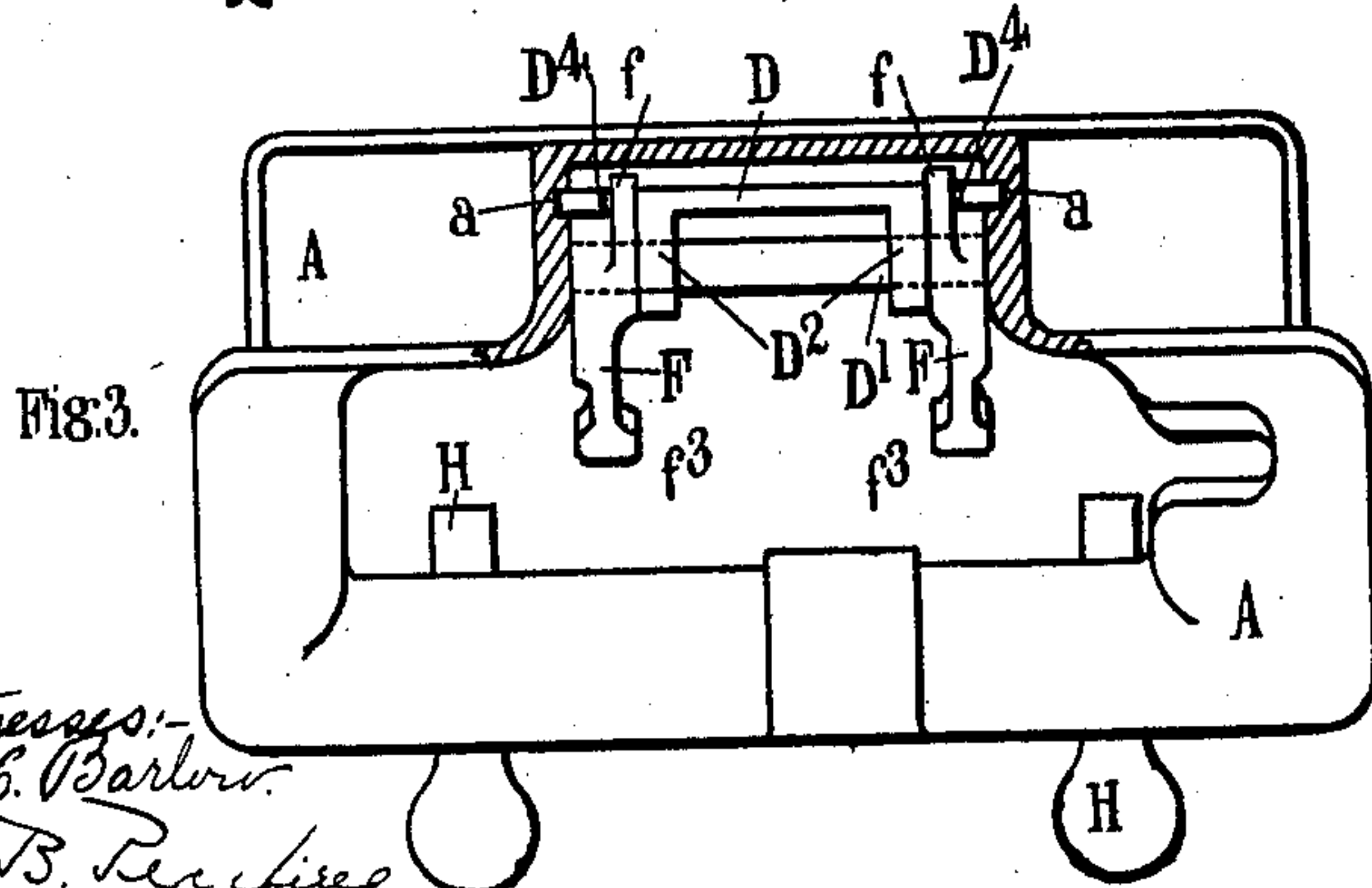
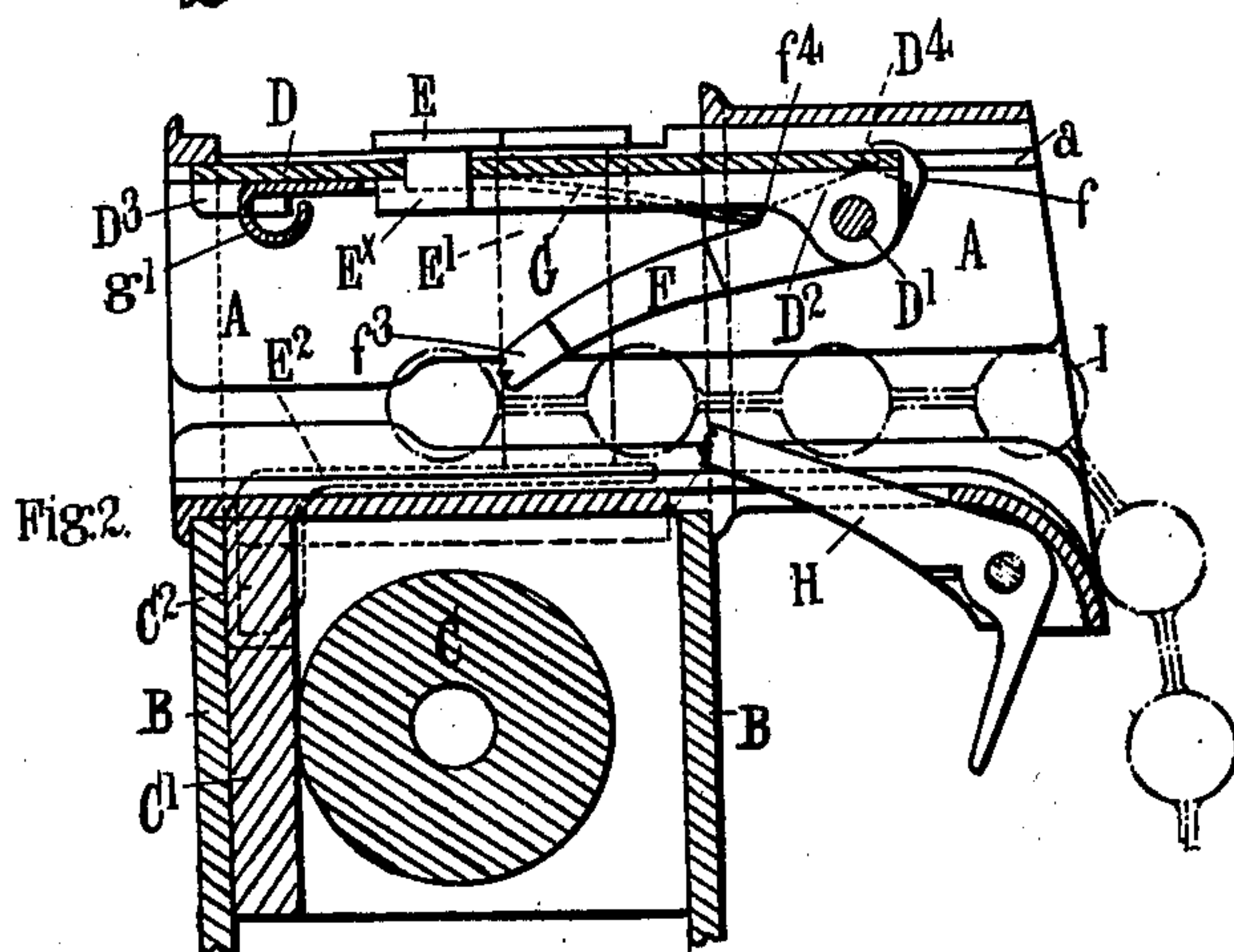
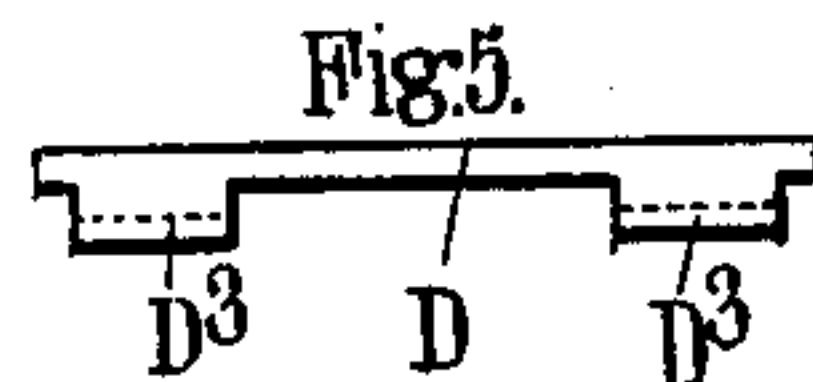
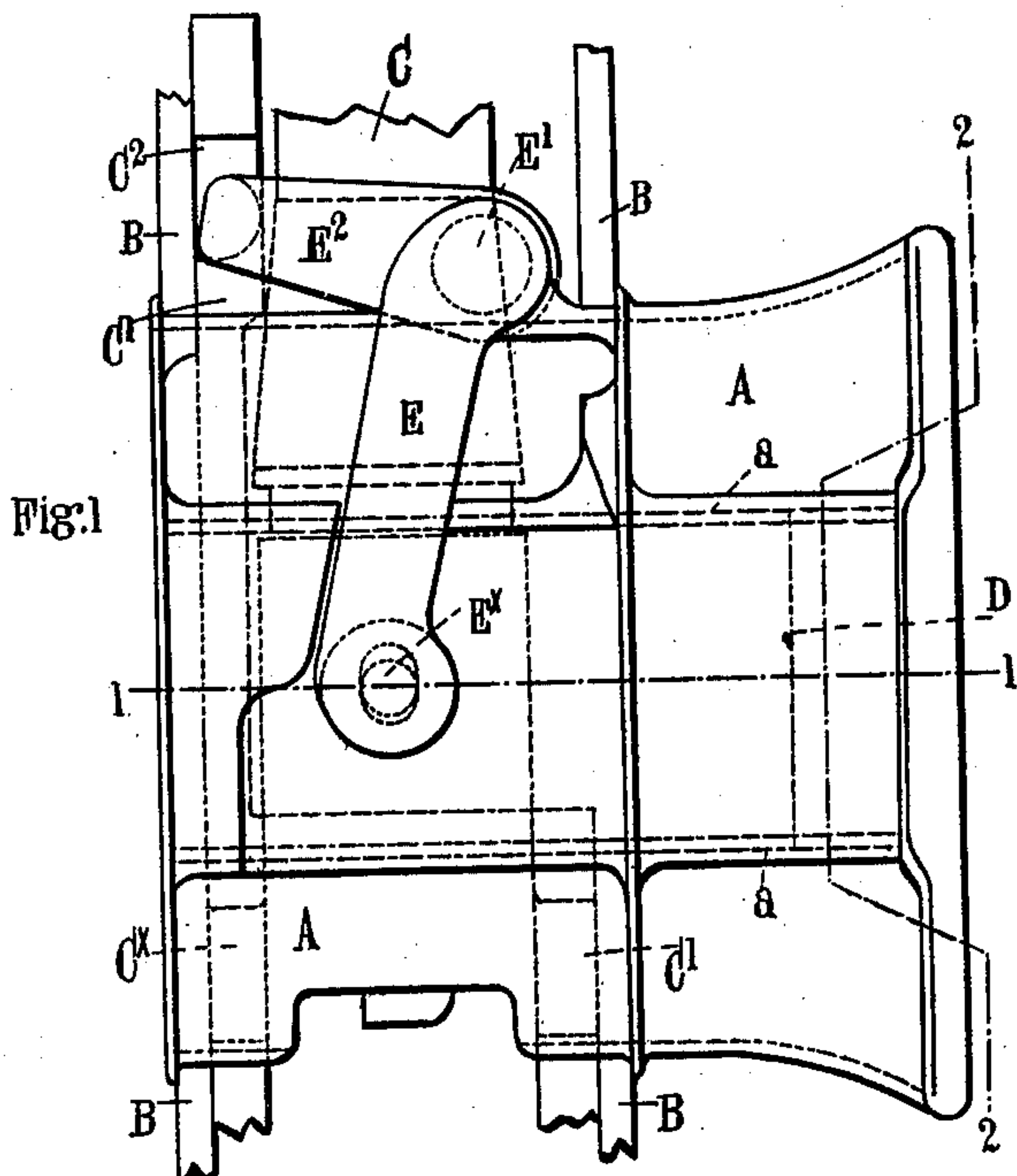
G. T. BUCKHAM.
CARTRIDGE FEED MECHANISM OF MAXIM GUNS.

APPLICATION FILED OCT. 5, 1908.

Patented Mar. 15, 1910.

2 SHEETS—SHEET 1.

951,999.



Witnesses:
L. B. Barlow.
L. B. Perrier

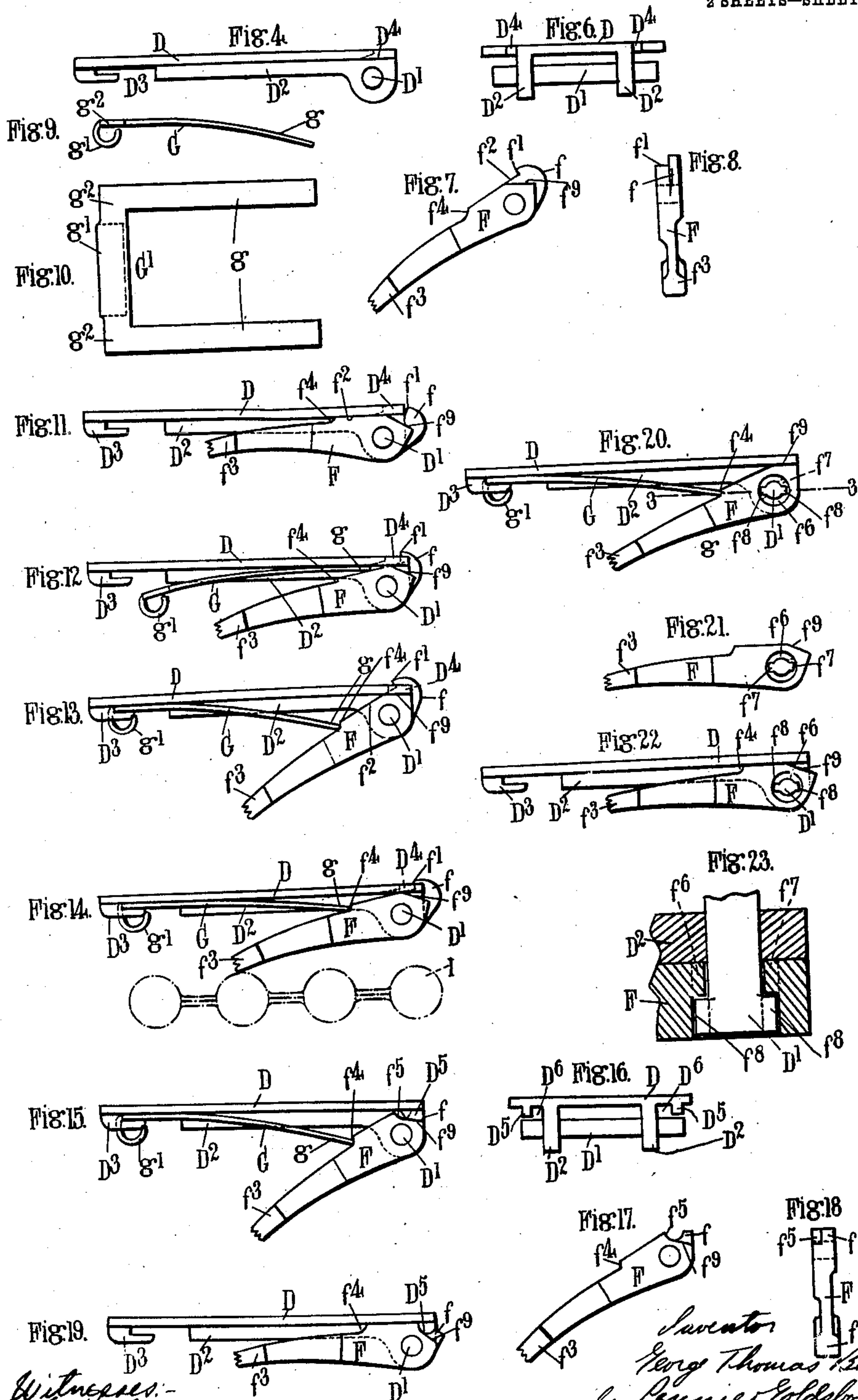
Inventor:
George Thomas Buckham.
By Pennier Goldsborough
his Attorneys

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Witnesses:
A. B. Barlow
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UNITED STATES PATENT OFFICE.

GEORGE THOMAS BUCKHAM, OF WESTMINSTER, LONDON, ENGLAND, ASSIGNOR TO
VICKERS SONS & MAXIM LIMITED, OF WESTMINSTER, ENGLAND.

CARTRIDGE-FEED MECHANISM OF MAXIM GUNS.

951,999.

Specification of Letters Patent.

Patented Mar. 15, 1910.

Application filed October 5, 1908. Serial No. 456,324.

To all whom it may concern:

Be it known that I, GEORGE THOMAS BUCKHAM, a subject of the King of Great Britain, residing at 32 Victoria street, Westminster, in the county of London, England, have invented certain new and useful Improvements in the Cartridge-Feed Mechanism of Maxim Guns, of which the following is a specification.

This invention relates to the cartridge feed mechanism of Maxim guns.

The cartridge feed mechanism as at present used in the Maxim gun, comprises a feed box which is furnished at its upper part with a reciprocating plate or slide that works transversely with respect to the longitudinal axis of the gun. This plate or slide has hinged thereto a pair of spring-controlled feed or driving pawls that operate to push the cartridge belt step by step through the said feed box, so that the cartridges in the belt are brought one by one into position to be withdrawn therefrom by the cartridge carrier on the lock and subsequently introduced into the barrel for firing, the said slide being reciprocated in the feed box by the action of a lever or arm that receives its motion from the reciprocating barrel during the working of the gun. The said feed box is also furnished at its lower part with retaining pawls for preventing the belt from moving while the aforesaid plate is retracted preparatory to performing its feed movement.

The present invention has particular reference to the aforesaid slide and its spring-controlled feed-pawls. These pawls have hitherto been loosely mounted on their pivot-pin on the slide and held in place in their working position solely by the side walls of the portion of the feed box in which the slide works, so that if the slide be removed from the feed box the pawls are liable to become unintentionally detached; and even when the slide is in place, the said pawls are liable to change their working position laterally on their pivot-pin and by bearing against the side walls of the feed box, cause undue friction which tends to interfere with the proper working of the mechanism. According to this invention the mounting of the pawls on their pivot-pin is effected in such manner that although they will be capable of ready detachment by the fingers of

the user without the assistance of any tools, they will remain held in place in their working position on the pivot-pin without becoming unintentionally detached therefrom or laterally shifted thereon. Similarly the attachment of the pawl-spring to the slide is effected in such manner that it is capable of ready detachment by the fingers of the user without the assistance of any tools, for enabling a broken or faulty spring to be replaced by a new one.

In order that the said invention may be clearly understood and readily carried into effect the same will be described more fully with reference to the accompanying drawings, in which:—

Figure 1 is a plan, and Fig. 2 a cross section on the line 1.1. showing the feed box provided with my improvements. Fig. 3 is a sectional side elevation on the line 2.2. of Fig. 1 as seen from the right of that figure. Fig. 4 is a side elevation of the slide shown detached from the feed box and the parts it carries removed therefrom. Figs. 5 and 6 are end views of the same. Figs. 7 and 8 are a side elevation and an end view of one of the feed pawls. Figs. 9 and 10 are a side elevation and a plan of the feed-pawl spring. Figs. 11, 12 and 13 are side elevations showing the manner in which the various parts of the slide are assembled. Fig. 14 is a side elevation showing the extent of angular movement the feed pawls receive during the retraction of the slide and the passage of the free end of the pawls over the cartridges in the feed belt. Figs. 15 to 19 illustrate a modification of the slide and its feed pawls; Fig. 15 being a side elevation; Fig. 16 an end view of the slide with the pawls removed; Figs. 17 and 18 a side elevation and an end view of one of the pawls detached; and Fig. 19 a side elevation showing the pawl in process of being attached to the slide. Figs. 20 to 23 illustrate a further modification of the said slide and its feed pawls; Fig. 20 being a side elevation; Fig. 21 a side elevation of one of the pawls detached; Fig. 22 a side elevation showing the pawl in process of being attached to the slide; and Fig. 23 a detail section on the line 3.3. of Fig. 20 drawn on a larger scale.

In all these figures like letters of reference indicate similar parts.

A is the feed box which fits into suitable openings in the side plates B B of the breech casing of the gun.

C is the barrel having the usual recoil plates C' C' which slide to and fro with the barrel in the breech casing during the working of the gun, as is well understood.

D is the reciprocating plate or slide that moves in guides *a a* (Figs. 1 to 3) in the feed-box transversely with respect to the axis of the barrel during the working of the gun. This movement is imparted to the said slide from the reciprocating barrel by the usual means, which comprise the lever or arm E (Figs. 1 and 2) furnished with a stud E^x engaging with a slot in the slide and carried at the upper end of a pivot pin E' vertically mounted in the feed box; at its lower end it has a second lever or arm E² which engages at its free end with a notch C² in a prolonged portion of one of the recoil plates.

F F are the feed pawls that are connected to the under side of the slide D by the pivot-pin D' and G is their spring.

H, H are the usual retaining pawls and I is the cartridge belt.

Referring first more particularly to the arrangement illustrated by Figs. 4 to 14; the said slide D consists of a flat rectangular plate of the usual shape having on its under side longitudinal lugs or webs D² D². Near one end these webs are formed with transverse holes for the reception of the pivot-pin D' which is firmly fixed in said holes as heretofore. The opposite end of the said slide is also formed on its under side with two ledges D³ D³ for the spring G as will be hereinafter described. The end of the said slide adjacent to the pivot D' is formed with two recesses or notches D⁴ D⁴ as best seen in Fig. 6. The feed pawls F have near their pivots, lugs or projections *f* which are adapted to fit into the said recesses or notches D⁴ in the slide when the pawls occupy their working position on their pivot-pin D' (Figs. 2 and 14). In order to enable the pawls to be pushed laterally on to their pivot-pin D', the lugs *f* are cut away or notched at *f'* (see Figs. 7 and 8) to form flattened surfaces *f*² which, when the pawls are placed in the horizontal position shown in Fig. 11, bear against the under side of the slide D. When the pawls are in this position, it will be seen that the lugs *f* are free from engagement with the recesses or notches D⁴ in the slide D (see Fig. 11) and that said pawls are therefore able to freely move laterally along their pivot-pin either inward in order to assemble them in place or outward to detach them. When the pawls have been pushed along their pivot pin inwardly as far as they will go, that is until they meet the adjacent parts of the webs D² on the under surface of the slide, their lugs *f*

lie opposite the recesses or notches D⁴ in the slide and will engage therewith when their inner or free ends *f*³ are turned downwardly under the influence of their spring G as shown in Fig. 13, and then the said pawls will remain held in place on their pivot-pin, in their working position. The said spring G is made of one piece of metal having two curved resilient members *g g* (Figs. 9 and 10) and its flat end is so cut that it can be bent down to form a finger-piece *g'* with lateral wings or flanges *g*² *g*² for engaging with the aforesaid ledges D³ on the under side of the slide, the said finger piece being adapted to lie between the said ledges and thus prevent the spring from lateral displacement. The free ends of the resilient members are adapted to bear against notches or shoulders *f*⁴ on the upper sides of the pawls (Fig. 14) in order to exert their spring pressure thereon, this engagement of the free ends of the resilient members with the notches or shoulders of the pawls, also serving to prevent longitudinal displacement of the spring. In assembling the spring plate G, the free ends of its resilient members *g* are placed above the pawls at points beyond the aforesaid notches or shoulders *f*⁴, as shown at Fig. 12, and the opposite end of the said spring plate is pressed inwardly toward the slide until its upper surface thereof, this position being rendered feasible by the resilient nature of the spring plate. The spring plate is then pulled by its finger piece *g'* in a longitudinal direction away from the pawls, whereby its lateral wings or flanges *g*² are caused to engage with the ledges D³ of the slide, and as soon as the free ends of the resilient members move far enough to the left, they snap into engagement with the aforesaid notches or shoulders *f*⁴ of the pawls. The said spring plate then occupies its operative position on the slide and can only be removed therefrom by first raising the free ends of the resilient members from their engagement with the aforesaid notches of the pawls and then longitudinally pushing the spring plate by means of its finger piece *g'* in a direction to disengage its wings *g*² from the ledges D³. When the parts are in their assembled position as shown by Fig. 14, the lugs *f* of the pawls can move freely in the recesses or notches D⁴ of the slide when the said pawls turn about their pivot pin during the working of the gun, the extent of such movement not being sufficient to bring the lugs out of engagement with the said recesses or notches. The pawls are thus held in place so that they cannot shift laterally on their pivot-pin, although they are capable of freely performing their angular movement during the working of the gun.

In the arrangement illustrated by Figs. 130

15 to 19, instead of forming in the end of the slide the aforesaid notches D^4 , it is provided with depending projections D^5 of semi-circular shape which are of such a thickness as to leave between them and the contiguous part of the webs D^2 , spaces or recesses D^6 (Fig. 16) in which the lugs f of the pawls lie during the working of the pawls. The said lugs f are formed with corresponding semi-circular notches f^5 (Fig. 17) which only come into lateral coincidence with the semi-circular projections D^5 when the pawls are turned into their horizontal position shown in Fig. 19, in which position the pawls are capable of being slid freely along their pivot-pin for detaching them from or attaching them to the slide.

In the arrangement illustrated by Figs. 20 to 23, the connection is effected with the pivot-pin D' instead of with the slide. For this purpose the pivot-holes in the pawls that fit on to the pivot-pin, are formed of two diameters so as to obtain internal flanges f^6 . These flanges are radially slotted at f^7 to pass over corresponding radial projections f^8 on the pivot-pin, when the pawls are moved into the horizontal position (Fig. 22). At other times the said flanges f^6 lie behind the radial projections f^8 , thus retaining the pawls in their assembled position on the pivot-pin, with freedom of angular movement thereon during the working of the gun. In this case the connection constitutes a species of bayonet joint and may obviously be of other form than that above described. The said pawls may also be formed with the usual flattened portions or shoulders f^9 for bearing against the slide and limiting the extent to which the said pawls can turn about their pivot-pin under the influence of their spring.

It should be here stated that it is not intended to limit the invention to the above described specific forms of the feed pawls and the parts on the slide with which they engage. These parts may be of any suitable form so long as the slide and the feed pawls are so constructed that when the latter are pressed inwardly toward the underside of the slide, against the resistance of their spring, until they assume a position beyond that which they assume during working, they will become disengaged and can then be immediately detached laterally by withdrawing them from their pivot-pin.

What I claim and desire to secure by Letters Patent of the United States is:—

1. In a cartridge-belt feed box, the combination with the reciprocating slide, the pivot pin fixed thereto, feed pawls angularly displaceable on said pivot pin and freely removable laterally therefrom when turned into a position beyond that which they assume during working, and the spring for said pawls; of restraining means engag-

ing said pawls to prevent their lateral displacement when they are in working position.

2. In a cartridge-belt feed box, the combination with the reciprocating slide, the pivot pin fixed thereto, the feed pawls angularly displaceable on said pivot pin and freely removable laterally therefrom when turned into a position beyond that which they assume during working, and the spring for said pawls; of projections formed on the pawls near their pivotal axis, and restraining means engaging said projections to prevent the lateral displacement of the pawls when they are in working position.

3. In a cartridge-belt feed box, the combination with the reciprocating slide, the pivot pin fixed thereto, feed pawls angularly displaceable on said pivot pin and freely removable laterally therefrom when turned into a position beyond that which they assume during working, and the spring for said pawls; of notched lugs formed on said pawls near their pivotal axis for engagement with recesses in the slide while the pawls are in their working position, and means whereby the said spring operates to keep the lugs engaged with their recesses while the pawls are in their working position.

4. In a cartridge-belt feed box, the combination with the reciprocating slide, the pivot pin fixed thereto, feed pawls angularly displaceable on said pivot pin and freely removable laterally therefrom when turned into a position beyond that which they assume during working, and the spring for said pawls; of restraining means engaging said pawls to prevent their lateral displacement when they are in working position, and means whereby the said spring is held in place on the slide in a manner to permit of its detachment and attachment without the use of tools.

5. In a cartridge-belt feed box, the combination with the reciprocating slide, the pivot pin fixed thereto, feed pawls angularly displaceable on said pivot pin and freely removable laterally therefrom when turned into a position beyond that which they assume during working, and the spring for said pawls; of restraining means engaging said pawls to prevent their lateral displacement when they are in working position, lateral flanges on said spring, and ledges on the under side of said slide for the flanges on said spring to engage with by a lengthwise movement thereof.

6. In a cartridge-belt feed box, the combination with the reciprocating slide, the pivot pin fixed thereto, feed pawls angularly displaceable on said pivot pin and freely removable laterally therefrom when turned into a position beyond that which they assume during working, and the spring

for said pawls; of restraining means engaging said pawls to prevent their lateral displacement when they are in working position, lateral flanges on said spring, ledges on the under side of said slide for the flanges on said spring to engage with by a lengthwise movement thereof, and a finger-piece on said spring for facilitating its movement.

- 10 7. In a cartridge-belt feed box, the combination with the reciprocating slide, the pivot pin fixed thereto, feed pawls angularly displaceable on said pivot pin and freely removable laterally therefrom when
15 turned into a position beyond that which they assume during working, and the spring for said pawls; of restraining means engag-

ing said pawls to prevent their lateral displacement when they are in working position, shoulders on said pawls for the free ends of the spring to engage with, lateral flanges on said spring, ledges on the under side of said slide for the flanges on said spring to engage with by a lengthwise movement thereof, and a finger-piece on said spring adapted to fit between the said ledges on the slide. 20 25

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE THOMAS BUCKHAM.

Witnesses:

HENRY KING,
ERNEST E. LARKINS.