

No. 749,341.

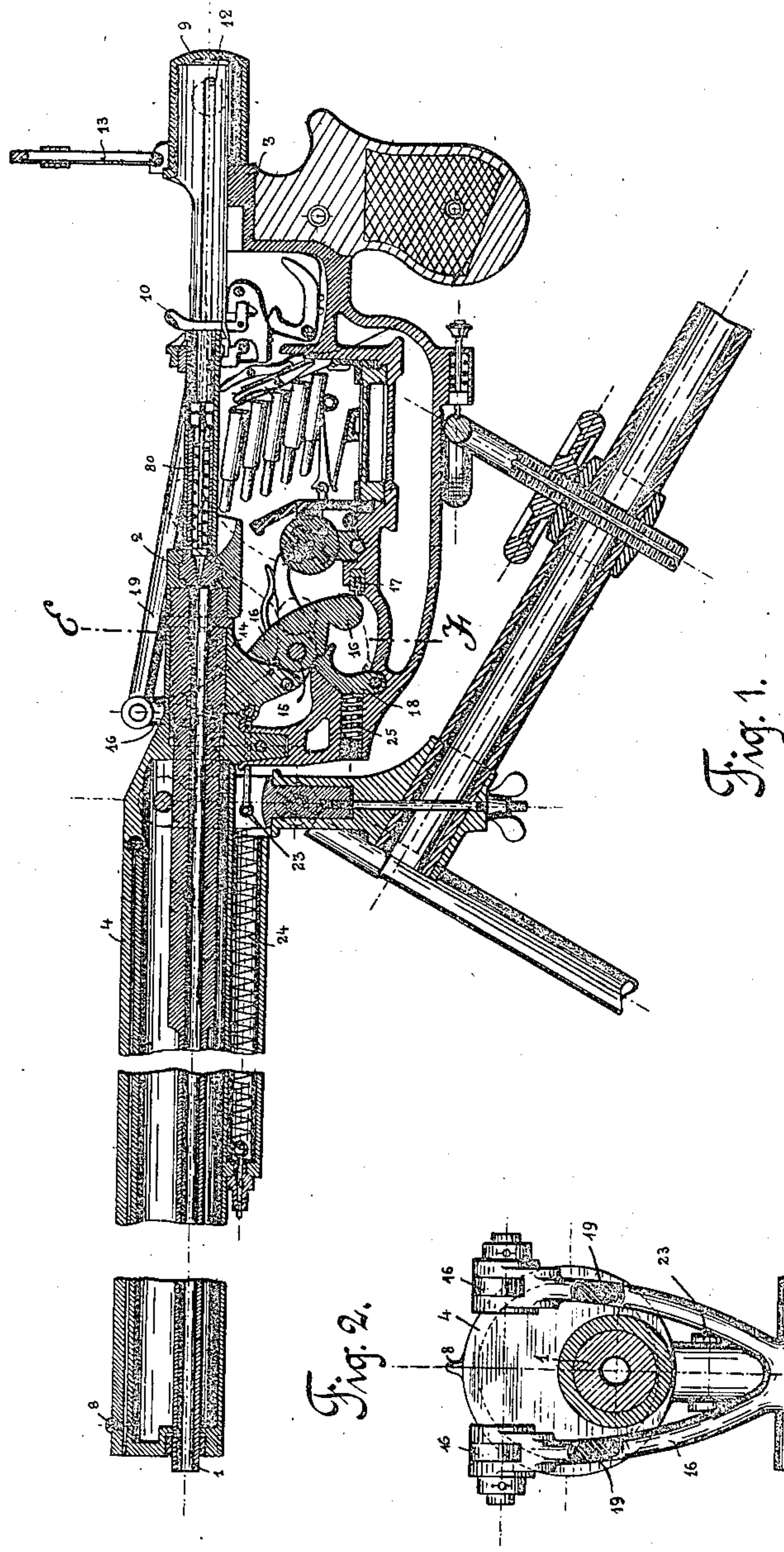
PATENTED JAN. 12, 1904.

F. TOBISCH.
GUN OR FIREARM.

APPLICATION FILED JAN. 30, 1900.

NO MODEL.

6 SHEETS—SHEET 1.



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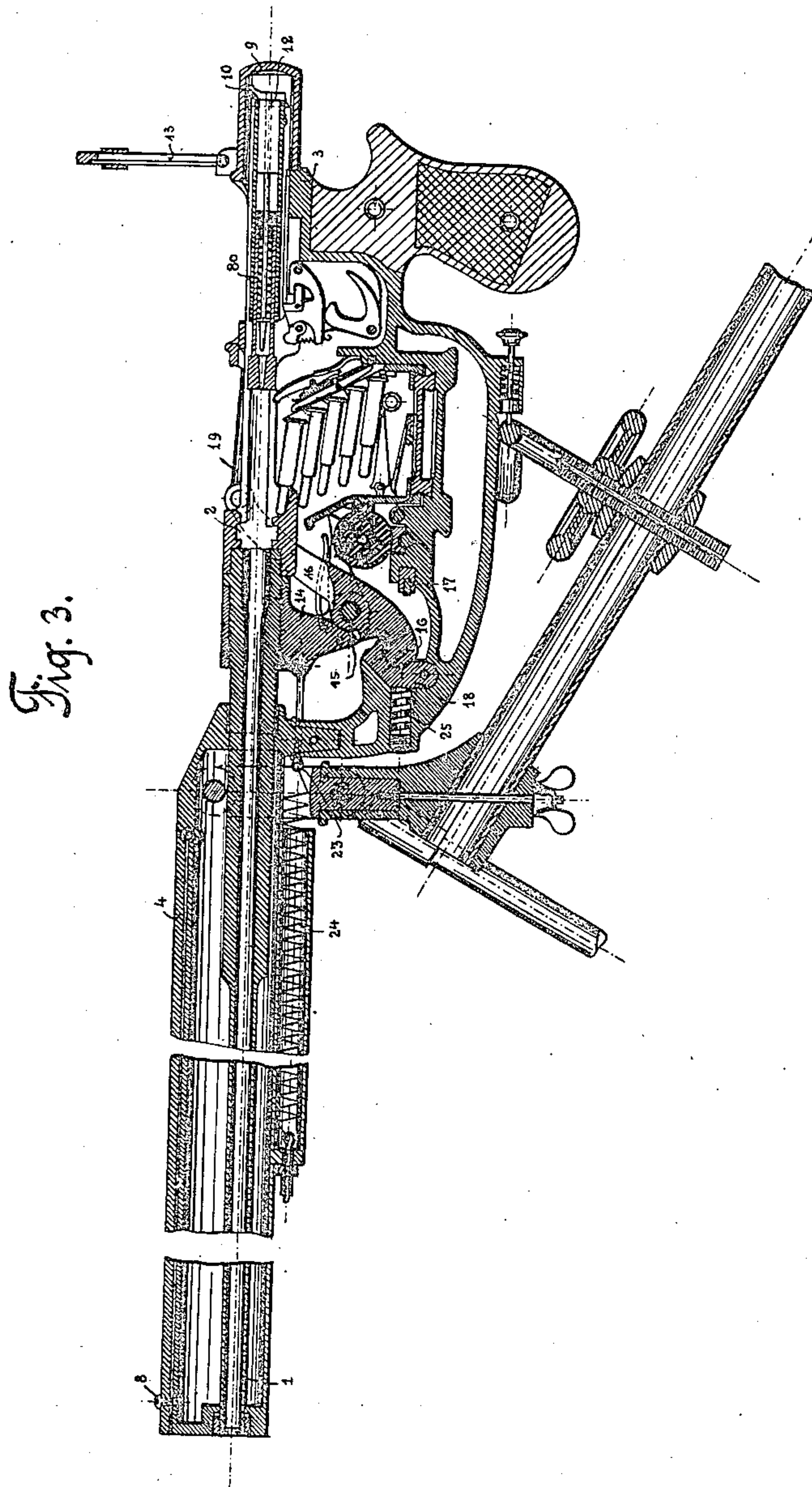
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6 SHEETS—SHEET 2.



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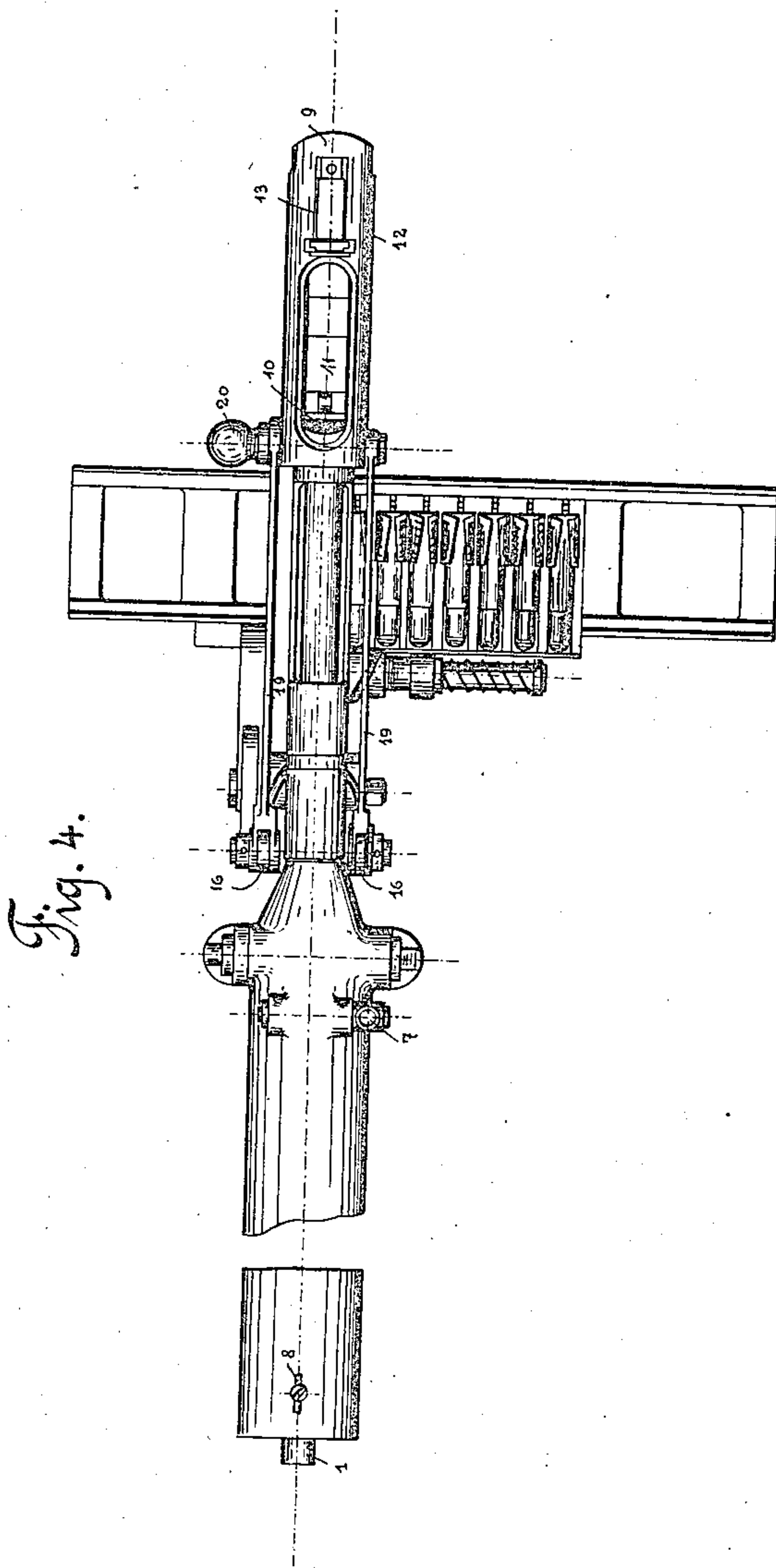
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6 SHEETS—SHEET 3.



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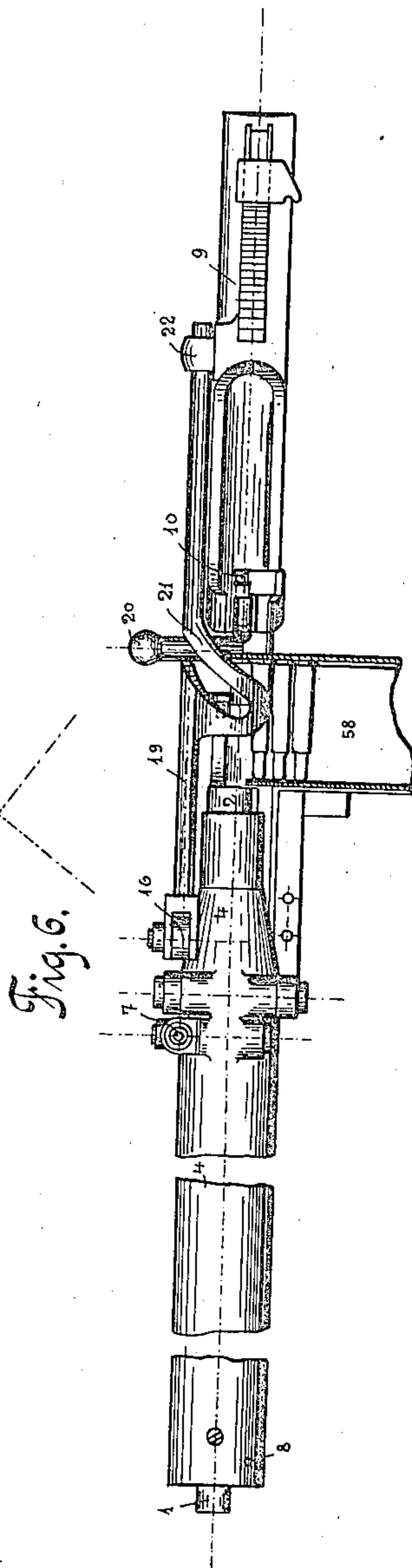
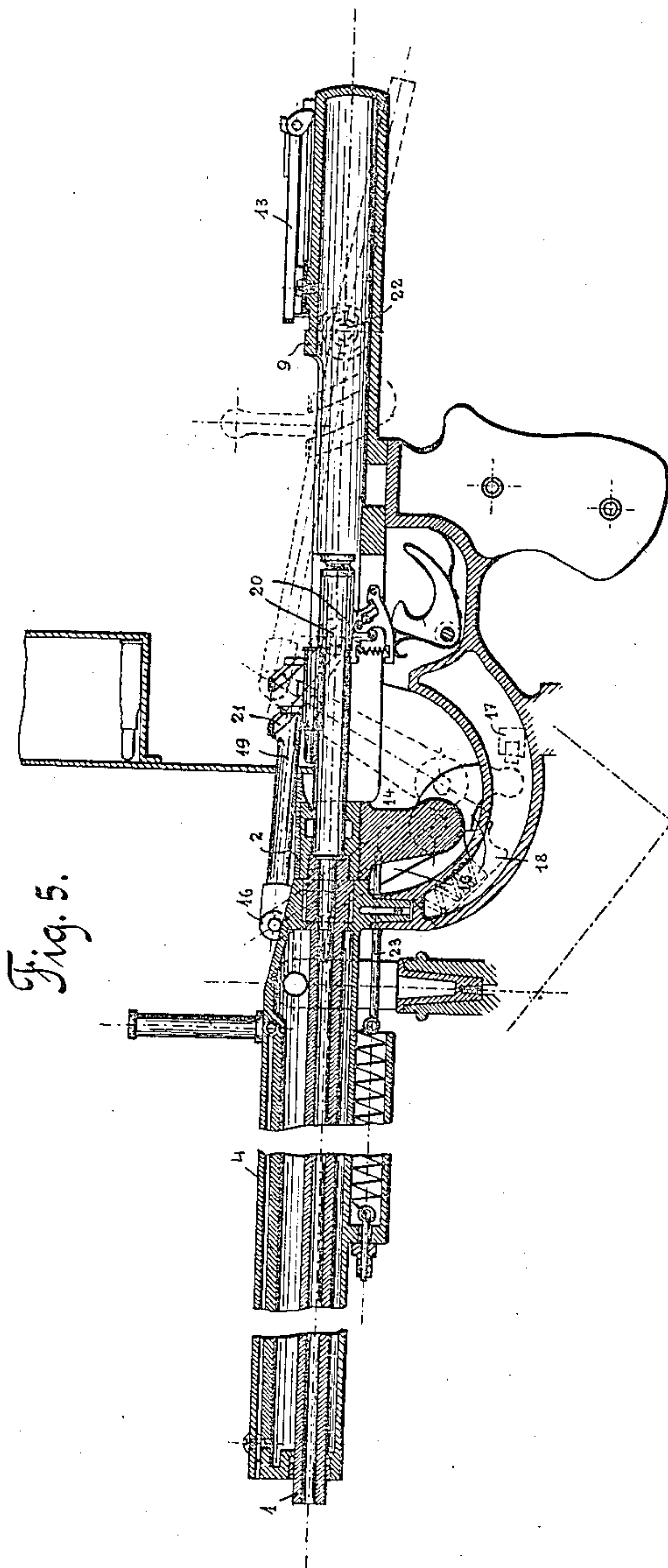
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NO MODEL.

6 SHEETS—SHEET 4.



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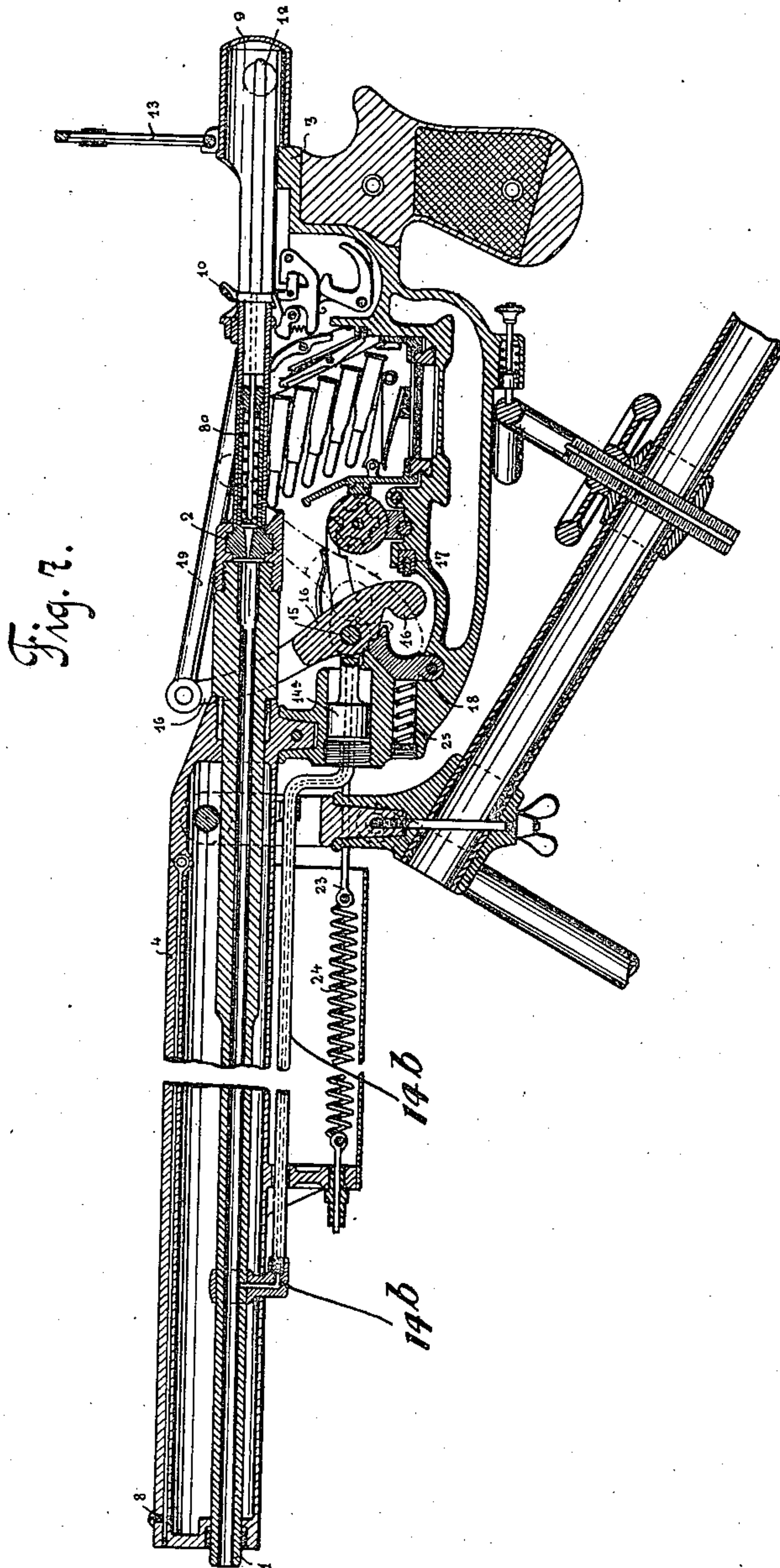
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NO MODEL.

6 SHEETS—SHEET 5.



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6 SHEETS—SHEET 6.

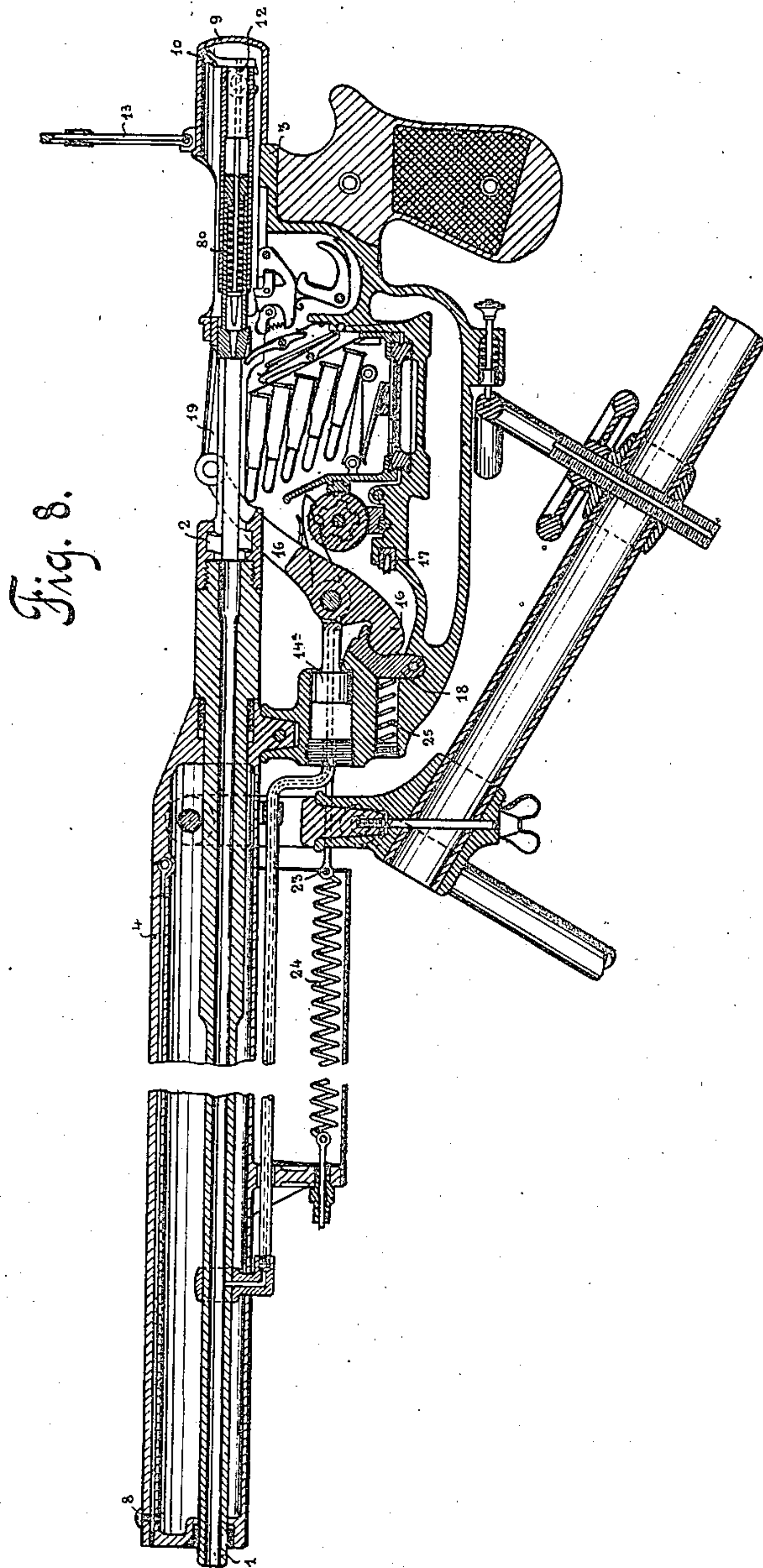


Fig.
8.

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UNITED STATES PATENT OFFICE.

FRANZ TOBISCH, OF BUDAPEST, AUSTRIA-HUNGARY.

GUN OR FIREARM.

SPECIFICATION forming part of Letters Patent No. 749,341, dated January 12, 1904.

Application filed January 30, 1900. Serial No. 3,364. (No model.)

To all whom it may concern:

Be it known that I, FRANZ TOBISCH, a subject of the Emperor of Austria-Hungary, residing at Budapest, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Breech-Operating Mechanisms for Automatic Firearms and Machine-Guns, of which the following is a specification.

The present invention relates to guns and firearms, and especially to means whereby it is possible to adapt the locks and ammunition as used at present in the case of ordinary firearms for the purpose of converting the latter into quick-firing guns.

The invention consists, essentially, in employing the forces generated by the firing of the cartridges (forces of recoil) for operating those parts of the mechanism ordinarily actuated by hand—*i. e.*, the lock device and all mechanism characterizing the particular lock system employed without the need of providing a special lock mechanism.

Without describing particularly the drawbacks of the present special systems of machine-guns according to the various constructions of the locks and loading mechanism it is evident that owing to the individual and different constructions of machine-guns special and separate instruction of the men intended to serve them is necessary, who even in the case of accidents to the mechanism may not be able to effect the necessary repairs or readjustment. Again, a special construction of the lock mechanism requires a special plant and tools for production. Such considerations cause machine-guns to be very expensive articles of manufacture. Since the ordinary system of locks as used in the various hand-firearms are used in combination with the present invention, the latter does not involve any special packing or arrangement of the cartridges, (belts and the like.)

In order to render the description more intelligible, the accompanying drawings are referred to.

Figure 1 is a central longitudinal section through a machine-gun with a rectilinear breech-lock actuated by mechanism according to the present invention and showing the

breech-lock closed. Fig. 2 is an enlarged cross-section upon the line E F, Fig. 1, looking toward the muzzle of the gun. Fig. 3 is a similar view to Fig. 1, but with the breech-lock in its open position. Fig. 4 is a plan showing the breech-lock in the closed position. Figs. 5 and 6 are a central longitudinal section and plan, respectively, of a machine-gun with a combined-movement breech-lock, the latter being shown in its closed position with the open position indicated by dotted lines in Fig. 5. Figs. 7 and 8 are central longitudinal sections of a machine-gun according to this invention provided with a gas-operated piston, the view showing the closed and open positions of the breech-lock, respectively.

With the casing or with the barrel is fixedly connected (or made in one piece with either of them) a pivot-stud 15, around which swings a two-armed lever 16, having its lower arm between two suitably-arranged stops 17 and 18. The upper end of the lever, in the case of a gun-lock system with rectilinear movement—for instance, the Mannlicher system—is united with the crank-lever or lug 20 on the breech-bolt by means of a connecting-rod 19. Instead of a simple lever it is of course possible to employ a double lever or fork device, in which case the connecting-rod is also correspondingly constructed—*i. e.*, provided with two points of attachment to the crank-lever or the lock device of the gun, as shown in Fig. 6.

In the case of guns with a circular movement or combined circular and rectilinear movement of the lock-piston, as shown in Figs. 5 and 6, a loop or yoke 21, arranged to correspond to the circular movement, is provided at the upper end of the lever 16 or at any suitable place on the connecting-rod 19.

The locking device according to the present arrangement is actuated in the following manner: The recoil following each discharge of the gun causes the barrel, together with its barrel extension and lock, to travel backward. In this movement the lever 16, connected with the barrel, (or any part connected with it,) participates. It therefore moves back until it strikes with its lower end against a rear stop 17. In consequence of this the lever is turned on its pivot and its lower end then strikes (while the

whole still continues the backward movement) against a front stop 18. Any excess of force of the recoil is transmitted to and taken up by a buffer-spring 25, against which the stop is pressed. In consequence of the swinging or pivoting movement of the lever 16 the lock is opened by means of the connecting-rod 19 and the crank-lever 20. According to the breech-lock system to which the arrangement is applied, the firing-spring 80 is compressed either during this movement or during the reverse movement of the two-armed lever 16. The cartridge-extractor having withdrawn the cartridge-shell, the latter is thrown out and the next cartridge brought into position in front of the lock, which drives it into the barrel. By properly calculating the length of the free-recoil movement before the two-armed lever 16 is actuated the action may be so regulated that the lock is reopened only after the shot has left the barrel. The return movement—i. e., the forward movement of the barrel—is effected through the buffer-spring 25 reacting upon the two-armed lever 16 and through the spring 24, provided specially for the purpose, and connected with the bracket carrying the pivot 15 of the lever 16. During this forward movement the lower part of the lever 16 moves upon a projection of the front stop 18 and is held in its final position up to the moment of the next discharge by a slight pressure exerted by the buffer-spring 25.

It should be specially observed here that it is of no importance with regard to the principle of the present invention whether the center or fulcrum of the two-armed lever 16 participates in the backward movement or not. The same effect is obtained if the lever 16 is made to swing round a fixed stud or pivot, provided that the two stops or abutments, by means of which the said lever is actuated, are so arranged that they participate in the recoil movement. It will also be evident from Figs. 5 and 6 that the device for actuating the breech-lock of the mechanism need not be modified should the breech-lock be arranged for circular or combined circular and rectilinear movement (as in the Mauser system) instead of the ordinary rectilinear movement.

The manner of transmission of the movement of the two-armed lever 16 to the crank-lever can be accomplished in any suitable manner.

The barrel 1 is arranged, together with its inner extension 2, on a frame 3, the latter being connected with a cooling-tube 4, surrounding the barrel and intended to be filled with water before firing, by which means the movable barrel is satisfactorily cooled.

At the front end of the cooling-tube, in the middle or at one side, is arranged the fore sight 8. The lower part of the cooling-tube is so arranged as to form a lodgment or casing for a spiral spring 24, which becomes extended owing to the effect of the recoil and

gives up the power thus stored in the manner above described. The rear portion of the frame forms a protecting-casing 9 for the movable parts of the breech-locking device. This casing is provided above the thumb-piece of the firing-pin 10 with an opening 11 in order that it may be possible to set by hand the firing mechanism in case the gun fails to fire without necessitating the opening of the lock. The casing is also provided with lateral slots 12 for the purpose of guiding the head of the crank-lever in the case of a rectilinear movement or for the reception of a guiding-pin provided on the connecting-rod in the case of a combined-movement mechanism. The casing carries also a rear sight 13 of any suitable construction. Either on the barrel extension or on the barrel 1, fixedly connected therewith, is provided a projection 14, which carries the stud 15, around which the two-armed lever 16 swings.

The recoil spiral spring 24 is connected with the barrel projection 14 by means of a rod 23 and is so arranged as to be set in tension by the recoil. The feeding of the machine-gun may be effected in a variety of ways, having regard especially to the breech-lock system employed. If the lock system is arranged for magazine-feeding, the cartridges are best employed in the original packing, in which case all that is required is to arrange the cartridge-magazines in suitable feeding-cases.

According to the foregoing description contained in the introduction and referring to the manner in which the invention may be carried out practically, there is no necessity to explain that not only may the force produced by the recoil be used for actuating the breech-lock mechanism by means of a displaceable barrel, but also part of the powder-gases may be employed for the purpose of actuating the special piston, as shown in Figs. 7 and 8. In these figures, 14^a is a piston the rod of which is connected with the pivot 15 to assist in effecting the rearward movement of the lever 16. A conduit 14^b leads the gases from a convenient point in the length of the barrel 1 to the cylinder in which the piston 14^a works. Thus it will be seen that as soon as the projectile has passed the point at which the conduit 14^b opens into the barrel 1 the gases pass through said conduit and drive the piston, and therefore the lever 16, in a rearward direction for the purpose hereinbefore described.

If the measurements are fixed with tolerable accuracy, the length of the recoil of the barrel may be limited to a fraction of the length of the cartridge, (as illustrated in the accompanying drawings.) Hence the drawbacks connected with the much greater length of the recoil in the case of the known mitrail-leuse system are avoided. The necessity of employing smaller moving masses does not arise, which alone would necessitate the employment of a special motive force.

It should be remarked here that the details as described and represented in the drawings, although forming the results of practical experiments of many years, are of secondary importance with regard to the main feature of invention. Their modification or partial substitution by other detail devices will not affect the essential principle of the invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an automatic firearm and in combination, a breech-lock device, a rod connecting said breech-lock with one end of a two-armed lever, a stop for engaging the tail end of said lever, means for producing relative motion between said stop and said lever in order to oscillate the latter and reciprocate the breech-lock, and a spring-stop adapted to cushion said tail end, substantially as set forth.

2. In an automatic firearm and in combination, a breech-lock device, a reciprocating curved yoke engaging a lug on the breech-bolt for imparting to the latter a combined

rectilinear and turning movement and means for reciprocating the yoke comprising an oscillating two-armed lever and a rod connecting said lever with the yoke, substantially as and for the purpose set forth.

3. In an automatic firearm and in combination, a breech-bolt, a lug or crank-lever on the breech-bolt, a curved yoke 21 for actuating the lug or crank-lever 20, a rod 19 for transmitting motion to the curved yoke, an oscillating two-armed lever 16 connected to the rod, a stop 17 in contact with said lever and means for producing relative motion between said stop and the lever whereby the latter is oscillated, and a spring-stop 18 for cushioning the tail of the lever 16, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANZ TOBISCH.

Witnesses:

JOSEF REISS,
LAVO KAISC.