G. COLLEONI.

AUTOMATIC GUN.

APPLICATION FILED JULY 30, 1908.

960,825.

Patented June 7, 1910.

5 SHEETS—SHEET 1.

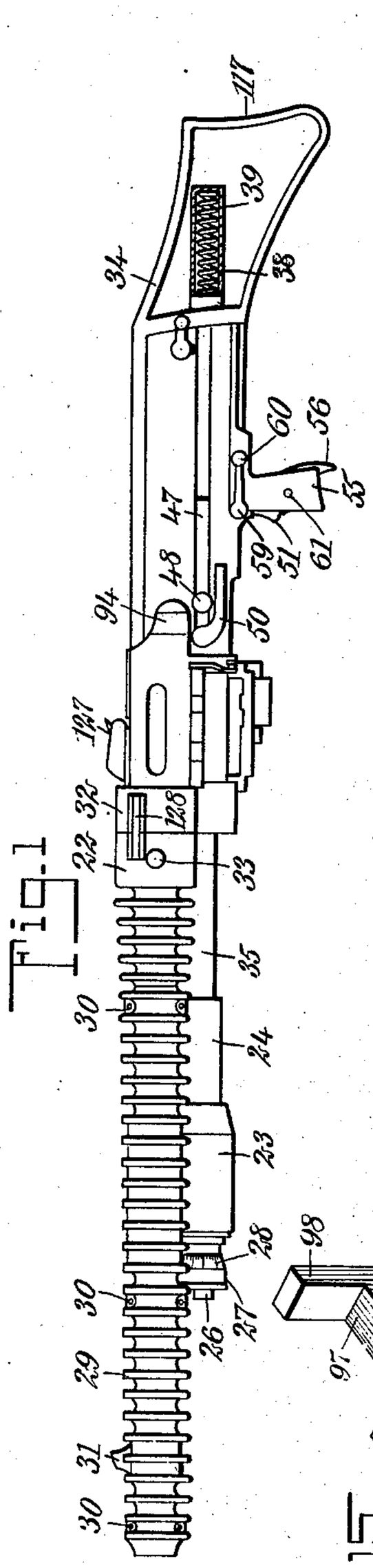

Fig. 1

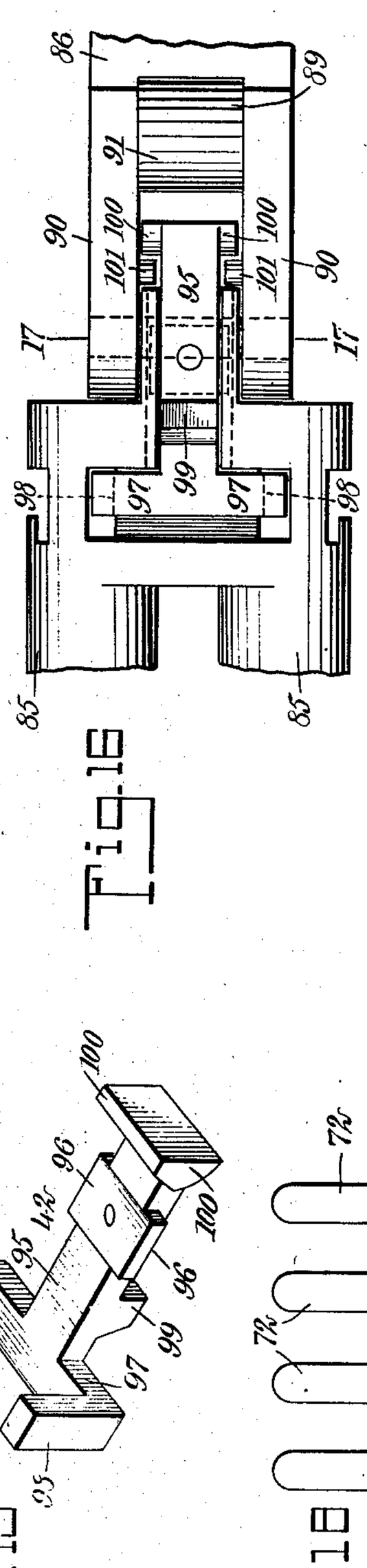

Fig. 16

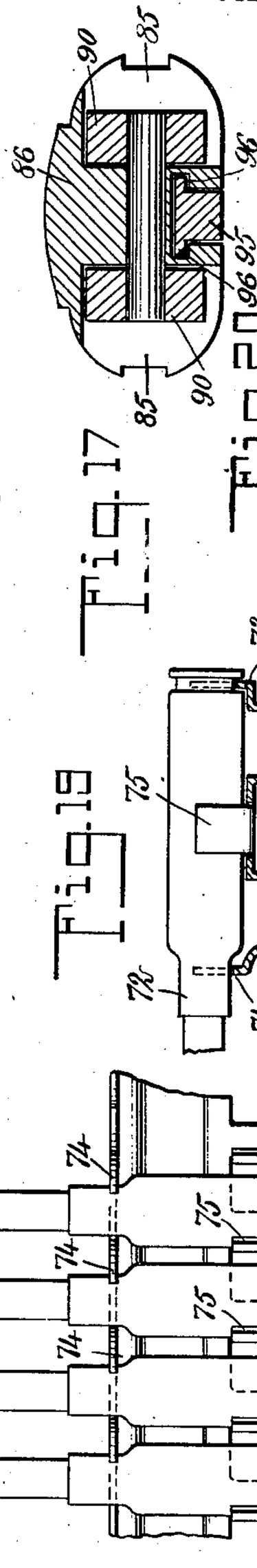

Fig. 17

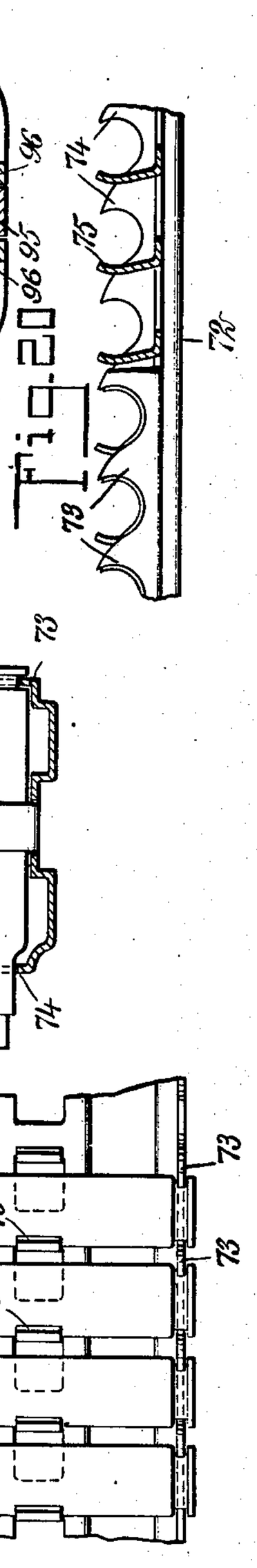

Fig. 20

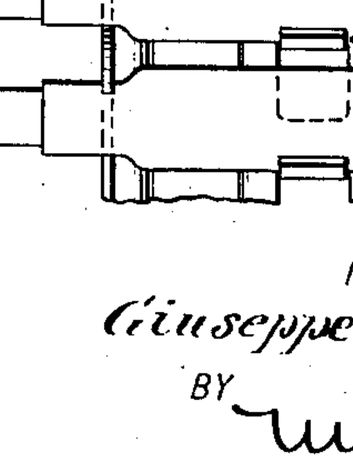

Fig. 19

Fig. 15

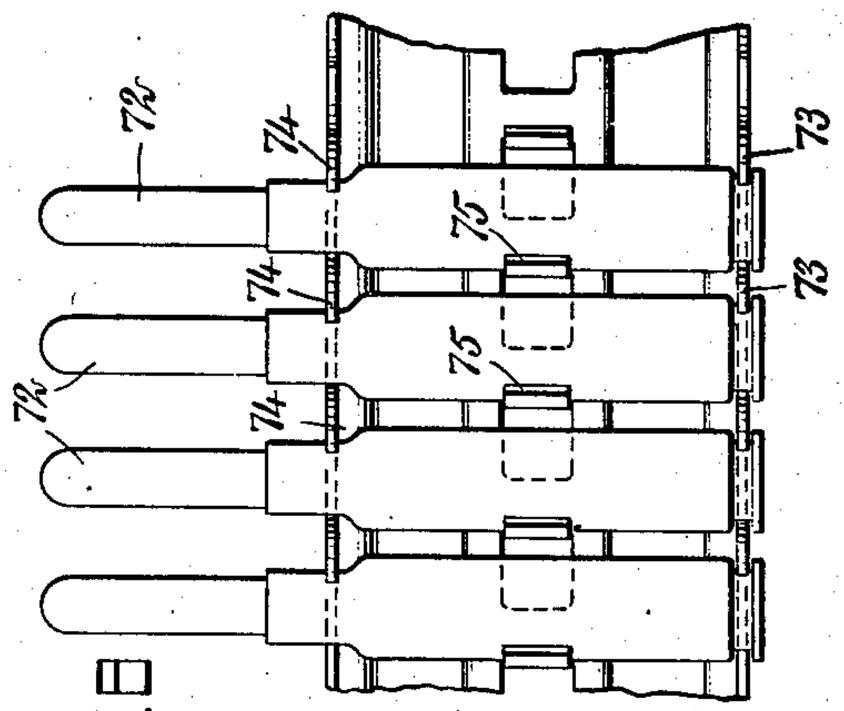

Fig. 18

WITNESSES

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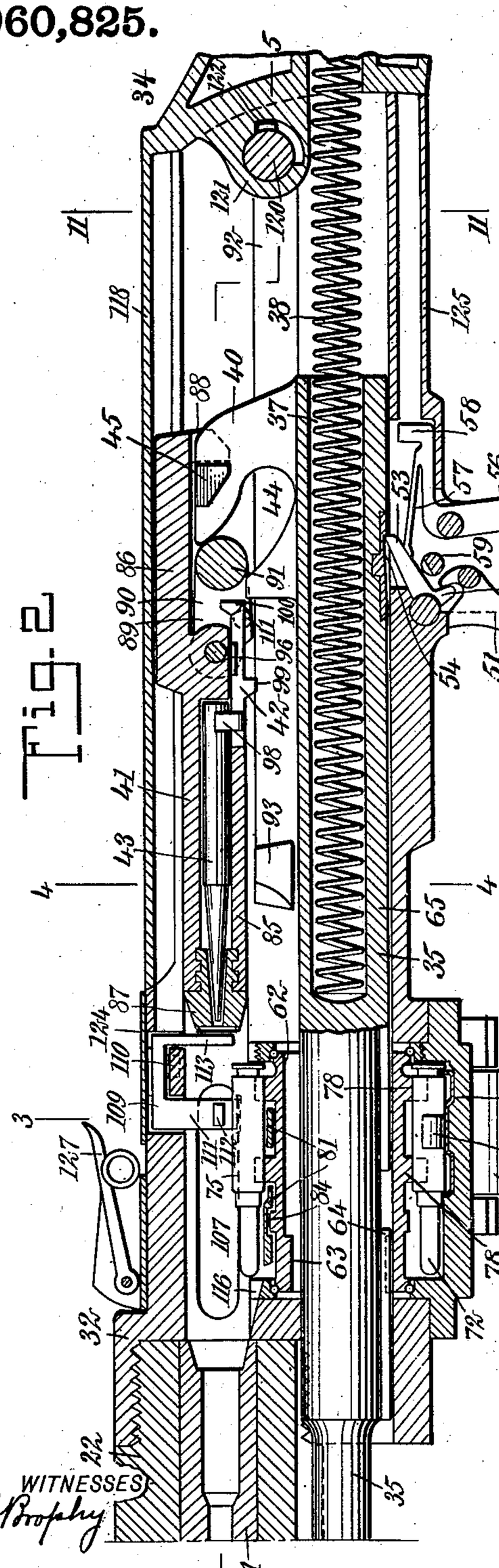

Fig. 2.

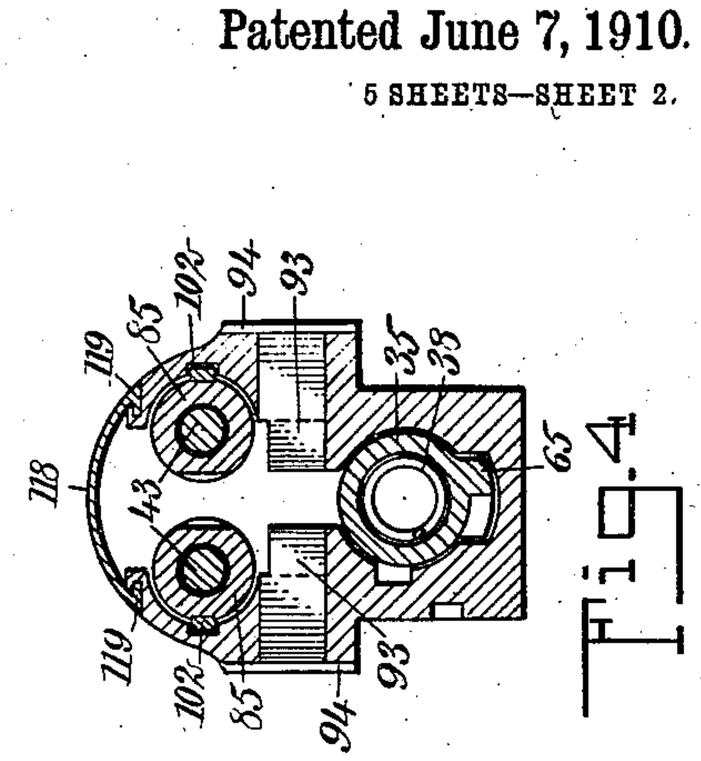

Fig. 4.

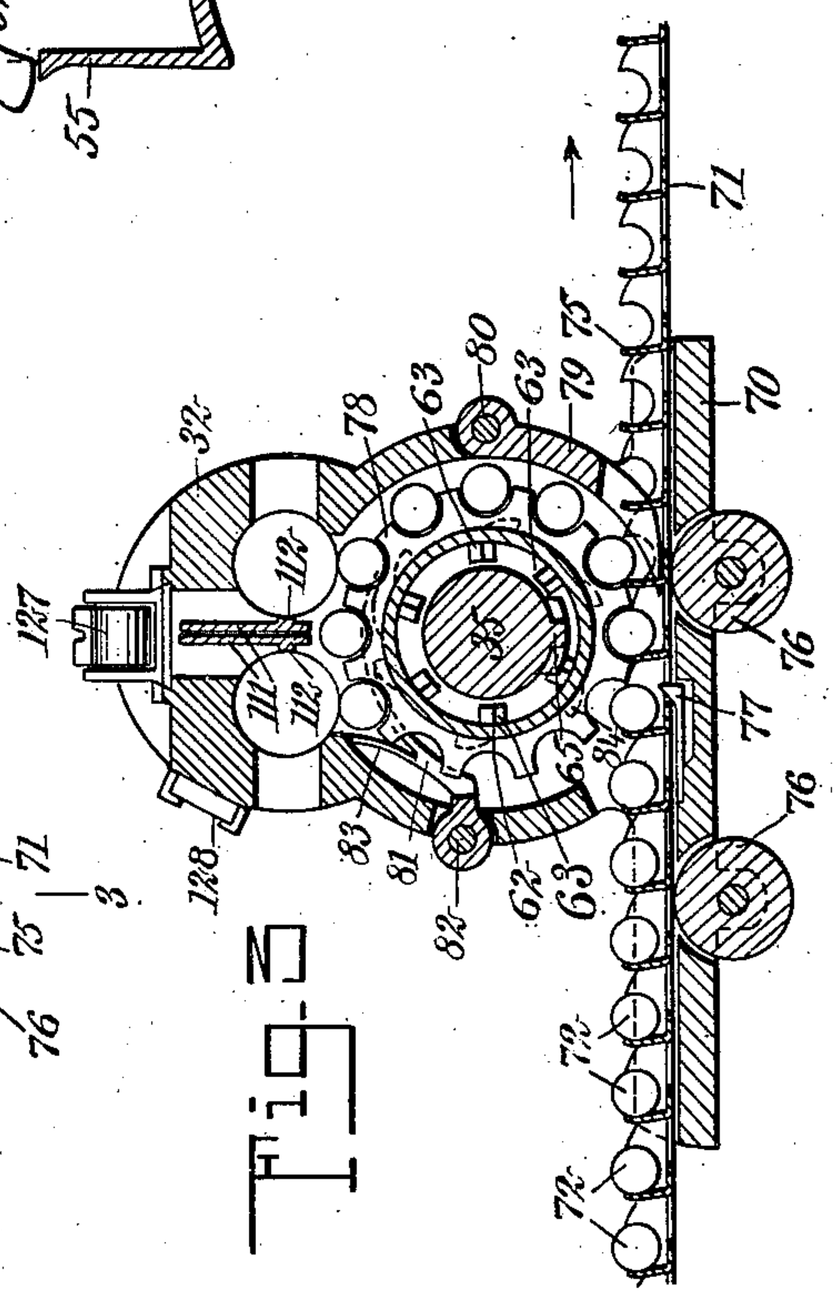

Fig. 5.

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5 SHEETS—SHEET 3.

Fig. 2A

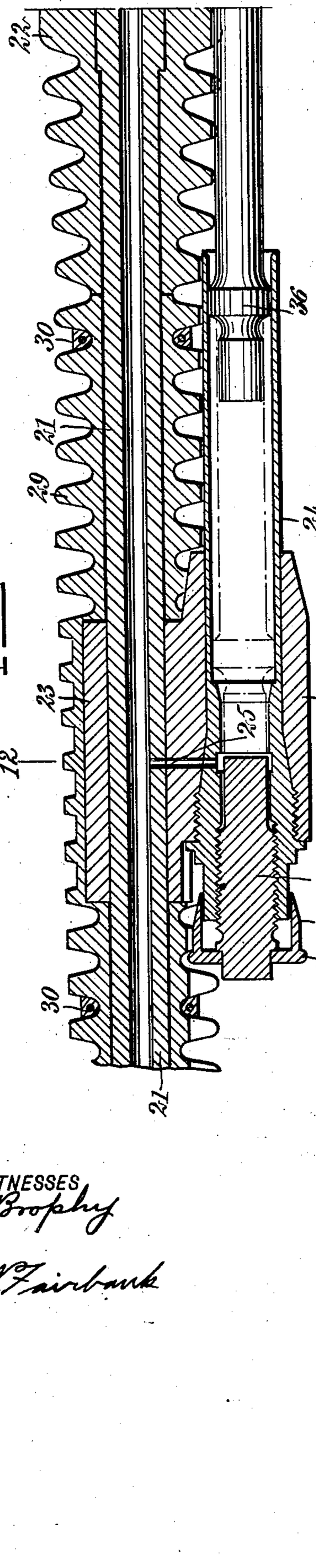


Fig. 12

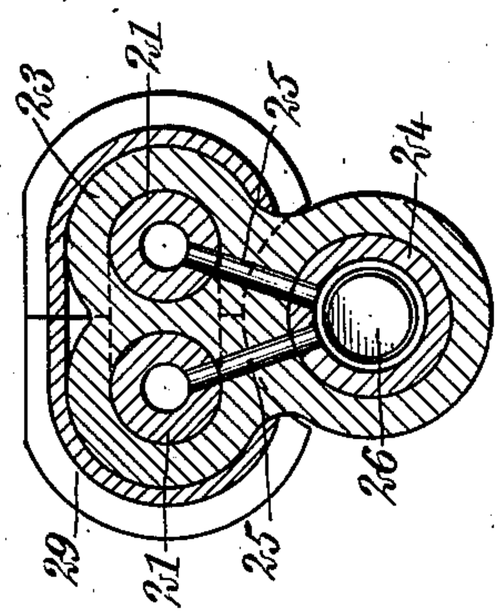


Fig. 14

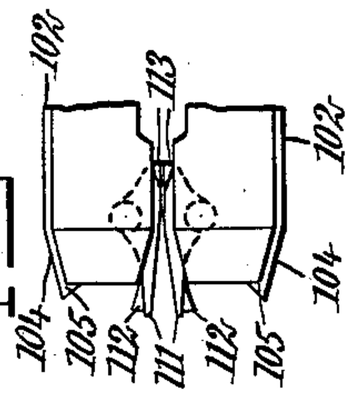


Fig. 13

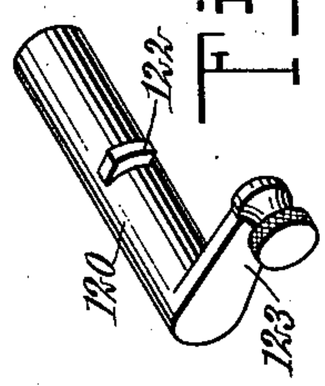
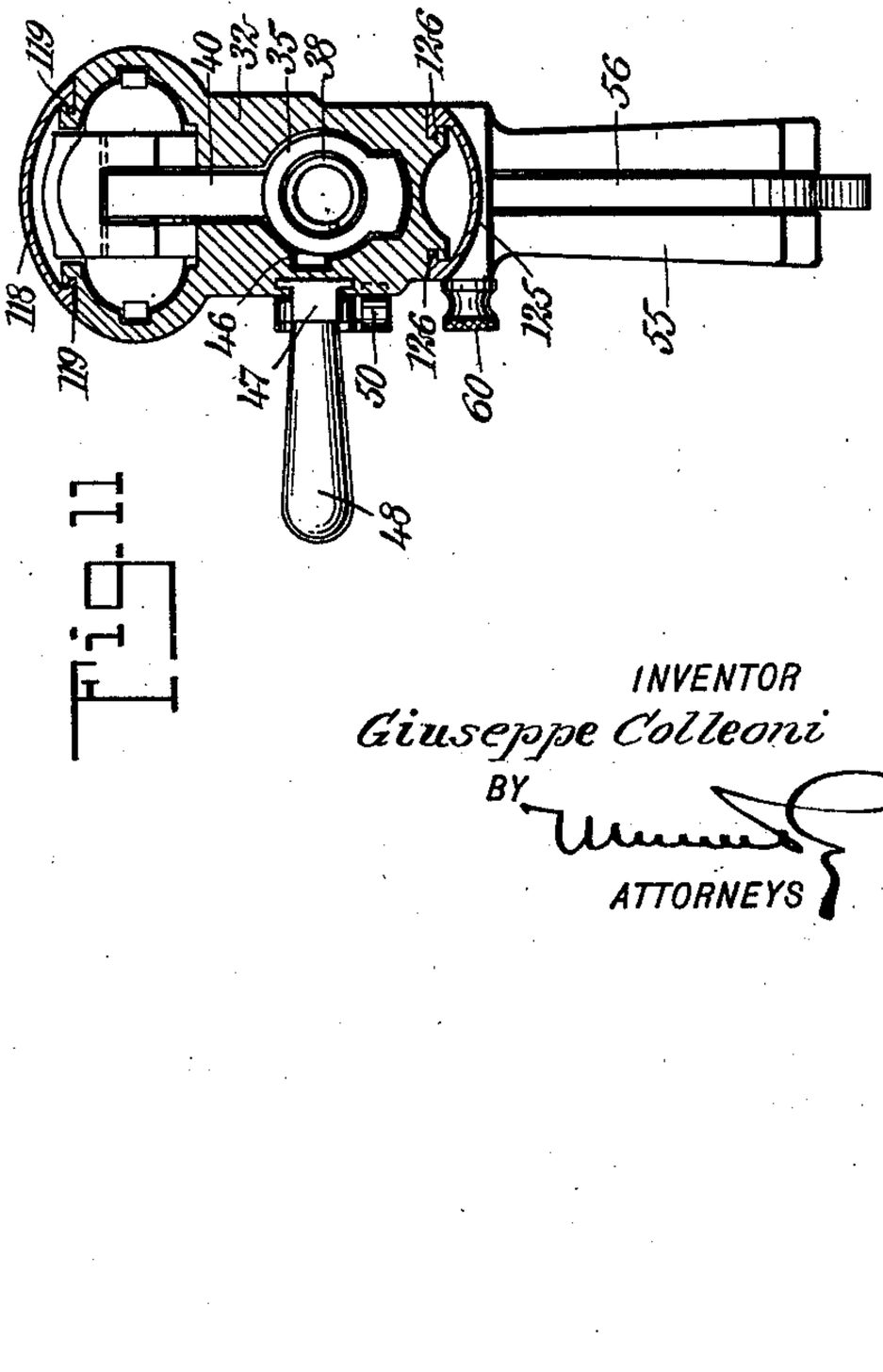


Fig. 11



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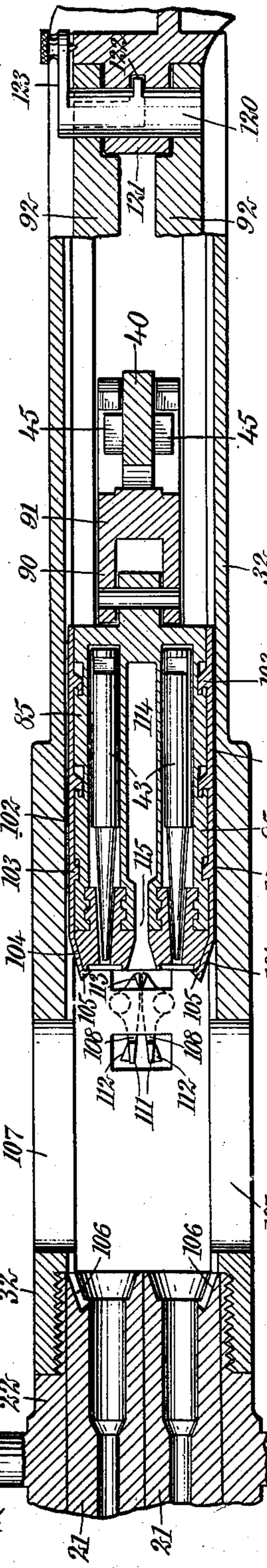

Fig. 5

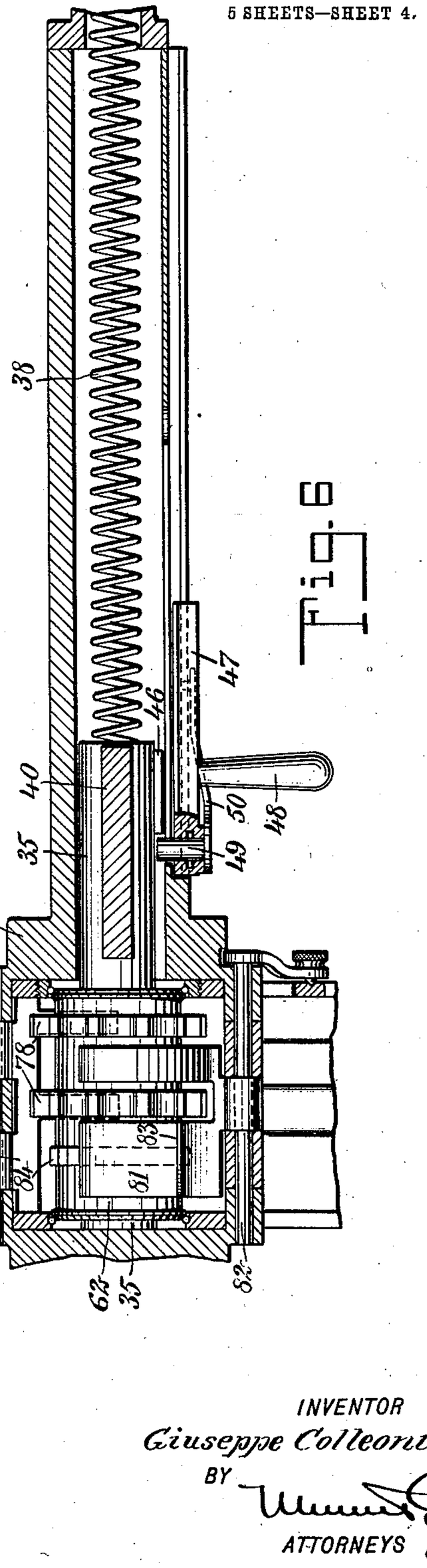

Fig. 6

WITNESSES

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5 SHEETS—SHEET 5.

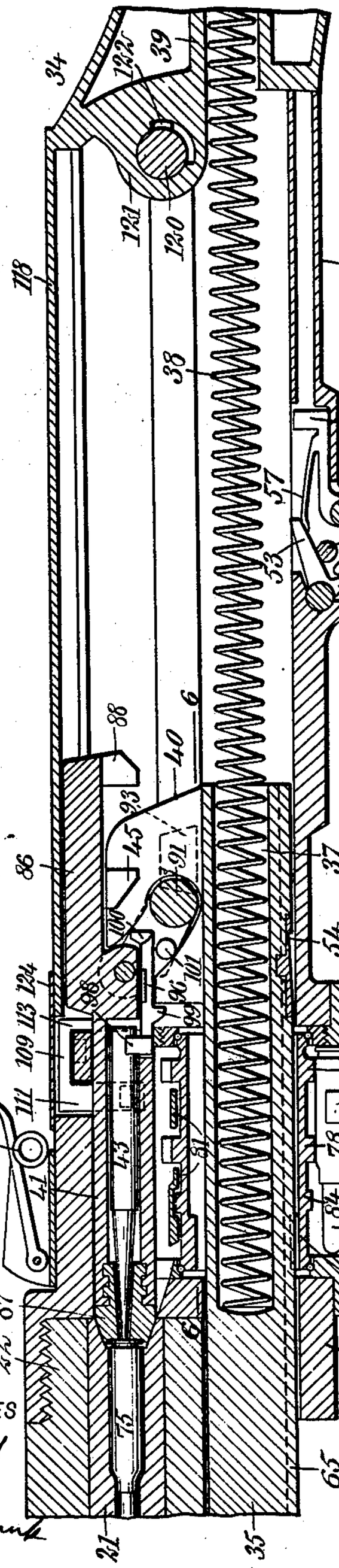

Fig. 7

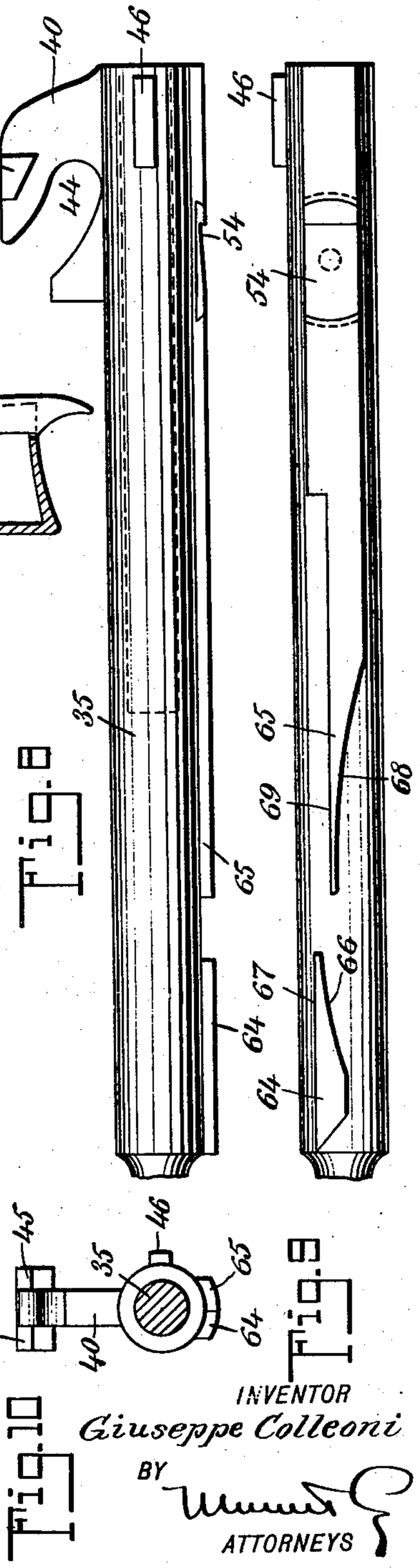

Fig. 8

Fig. 9

Fig. 10

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UNITED STATES PATENT OFFICE.

GIUSEPPE COLLEONI, OF NEW YORK, N. Y.

AUTOMATIC GUN.

960,825. Specification of Letters Patent. Patented June 7, 1910.

Application filed July 30, 1908. Serial No. 446,076.

To all whom it may concern:

Be it known that I, GIUSEPPE COLLEONI, a subject of the King of Italy, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Automatic Gun, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in automatic rapid fire guns, and more particularly to that type of gun in which a portion of the gas resulting from the explosion is utilized in operating breech mechanisms which extract the empty shells, re-load the gun and fire the same. In certain guns of this type, a cylinder is provided extending substantially parallel to the barrel of the gun and connected thereto by a passage or port entering the latter intermediate its ends. Mounted within the cylinder is a piston adapted to be operated by gas escaping from the barrel after the bullet or projectile passes said passage or port, and connected to the rear end of the piston is mechanism which withdraws the shells from the gun, detaches fresh cartridges from a flexible feed strip, forces them into the breech, closes the breech block, and fires the cartridges. The rearward movement of the piston and its connected mechanism is effected by the pressure of the gas, while the forward or return movement is effected by the action of a coil spring.

The main objects of my invention are to provide improved means for maintaining the barrel at a comparatively low temperature; improved means for regulating the quantity and pressure of the gas delivered to the piston; improved means for more effectively transferring the cartridges from the feed strip to the breech piece; improved means for bracing the breech block against return movement at the instant of the explosion, and improved means for operating the firing pins.

My invention also involves certain details of construction whereby the parts of the gun may be readily assembled or disassembled without the use of special tools, whereby the gun may be fired continuously or intermittently, and whereby the rectilinear movement of the breech block ejects the withdrawn shells.

It is evident that various of these details of construction may be employed in whole or in part, in guns of other types than that above referred to, and in combination with other mechanisms well-known in the art.

Other new and useful details of construction will be more fully set forth hereinafter and particularly pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which—

Figure 1 is a side elevation of a double-barrel gun constructed in accordance with my invention; Fig. 2 is an enlarged longitudinal section through the breech mechanism; Fig. 2ª is a section similar to Fig. 2, but showing the piston-operating mechanism; Fig. 3 is a transverse section on the line 3—3 of Fig. 2; Fig. 4 is a transverse section on the line 4—4 of Fig. 2; Fig. 5 is a longitudinal section on the line 5—5 of Fig. 2, looking in the direction indicated by the arrow; Fig. 6 is a longitudinal section substantially on the line 6—6 of Fig. 7, the breech block being removed; Fig. 7 is a view similar to Fig. 2, but showing the breech block in its firing position; Fig. 8 is a side elevation of the rear end of the piston; Fig. 9 is an inverted plan view thereof; Fig. 10 is an end view of the parts shown in Fig. 8, a part being in section; Fig. 11 is a transverse section on the line 11—11 of Fig. 2; Fig. 12 is a transverse section on the line 12—12 of Fig. 2ª; Fig. 13 is a perspective view of the locking key for holding the stock in engagement with the breech piece. Fig. 14 is a top plan view of the breech block and showing it in operative engagement with the ejector mechanism; Fig. 15 is a perspective view of the firing-pin operating mechanism or hammer; Fig. 16 is an inverted plan view of the rear portion of the breech block showing the hammer and breech block bracing link; Fig. 17 is a transverse section on the line 17—17 of Fig. 16; Fig. 18 is a top plan view of a portion of the flexible feed strip employed and the cartridges carried thereby; Fig. 19 is a transverse section through the feed strip and cartridges shown in Fig. 18; and Fig. 20 is an edge view of the feed strip.

In the specific form of rifle illustrated in the accompanying drawings, I provide two barrels 21, 21, arranged substantially parallel and both extending at their rear end into a single breech housing 22 which is shrunk on or otherwise rigidly secured to the bar-

rels, and which serves to reinforce them at the rear portion where the pressure of the exploding gas is the greatest. Intermediate the ends of the barrels, both extend through a collar 23, as shown particularly in Figs. 2ª and 12. The collar incloses each barrel separately, and beneath the two barrels and intermediate the same, the collar supports a cylinder 24 extending substantially parallel to the two barrels. Extending through each barrel and through the collar into the cylinder 24, is a port 25, through which the gas may flow from the barrel to the cylinder after the bullet or projectile has passed the end of the port. The rear end of the cylinder is preferably unsupported, while its front end is provided with a tapered portion and a threaded portion, whereby it is rigidly secured to the collar. The forward end of the cylinder is closed by a plug 26 threaded into the cylinder. This plug constitutes a regulator for controlling the size of the chamber within the cylinder 24, and thereby controlling the amount of gas which will enter said cylinder for operating the mechanism hereinafter described. The end of the plug 26 is preferably non-cylindrical in form and carries a gage 27, having a flange 28 encircling the end of the barrel and tapering to a thin edge. Adjacent the edge of the gage, it is marked off into a plurality of subdivisions for indicating the extent to which the plug constituting the regulator is rotated. The subdivisions may be marked to indicate the various capacities of the cylinder, dependent upon the position of the regulator.

Encircling the two barrels and also encircling a portion of the collar 23, I provide a cooling jacket 29 made up of two separate sections meeting along the medial line of the gun and so secured as to be readily detached. Preferably, a plurality of clamps 30 are employed, as indicated in Figs. 1 and 2ª. The jacket is preferably provided with a plurality of circumferential corrugations, ridges, or flanges upon its exterior surface, and its interior surface closely fits the gun barrels so as to materially reduce the temperature of the latter and prevent them from becoming overheated when the gun is used continually for a considerable length of time. Adjacent the muzzle of the gun, the barrels carry a sight 31, extending up through a suitable aperture in the jacket. If desired, the jacket may be entirely removed if the gun is to be used only for intermittent firing. As previously stated, the barrels are secured within the breech housing at their rear ends, and this breech housing is detachably secured to a breech piece 32. Adjacent the rear end of the breech housing, the latter is provided with outwardly-extending trunnions 33, by means of which the gun may be suitably supported while in operation. The breech piece serves as a support for the double breech block, the extractor, the ejector, the feeding mechanism, the firing mechanism, and the rear end of the piston, which serves for operating the above-mentioned parts, the piston being controlled by the trigger mechanism which is also carried by the breech piece. The breech piece also serves to connect the barrels to the stock 34.

Extending longitudinally of the breech piece and below the level of the barrels, is mounted the main operating member or plunger 35. The front end of this plunger extends out through the front end of the breech piece and its forward end forms a piston 36 within the cylinder 24. The rear end of the plunger is provided with an opening or chamber 37 extending longitudinally thereof, and into this chamber extends a coil spring 38 which serves to force the plunger forward after it has been forced rearwardly by the pressure of gas in the cylinder 24. The rear end of the spring may be held in any suitable manner, but as shown, it extends into a pocket or receiver 39 within the stock 34 of the gun and integral therewith.

The rear end of the plunger 35 is provided with a head 40, extending upwardly therefrom and adapted for operating the breech block 41 and the impact piece 42, which latter operates the firing pin 43 carried by the breech block. The head 40 is provided with a recess 44 extending down into the same rearwardly from the upper front corner of the head, said recess having substantially parallel walls and slightly curved for a purpose hereinafter set forth. On the portion of the head in the rear of the recess, are two outwardly-extending lugs 45, which engage with the breech block for withdrawing the same. Upon one side of the plunger 35 and adjacent the head 40, is a lug 46 constituting a cocking lug. Movable longitudinally of the breech piece, upon one side thereof, is mounted a cocking mechanism, including a slide 47, a cocking handle 48 rigid therewith, and a pin 49 extending into the path of the lug 46. In cocking the gun, the handle 48 is pulled rearwardly, and by the engagement of the pin 49 with the lug 46, the plunger is withdrawn against the action of the spring. When the gun is fired, the cocking mechanism comes forwardly to the position indicated in Fig. 6 and remains stationary during the automatic and continuous firing of the gun. The pin 49 preferably carries a spring lever 50 at its outer end, said lever being provided with a lug shown in dotted lines in Fig. 6, which extends into the side of the breech piece and normally prevents the cocking mechanism from sliding during the firing.

For holding the plunger in its cocked position and permitting it to be released for firing, I provide trigger mechanism, which includes a pivoted finger piece 51, constituting the trigger proper and a bell crank lever 52 having a toe 53 adapted to engage in a recess 54 in the under side of the plunger adjacent its rear end. The trigger and lever are so arranged that by pulling rearwardly upon the lower end of the finger piece, the toe 53 is lowered out of the recess and the plunger is permitted to freely reciprocate. The finger piece 51 is mounted in a downwardly-extending grip 55, and this grip carries a second finger piece 56. The finger piece 56 is provided with a spring 57, engaging with the under side of the firing toe 53, to normally hold the latter upwardly into engagement with the under side of the plunger, and adjacent the base of the spring is an upwardly-extending lug or catch 58, adapted for engagement with the rear end of the plunger 35 when the latter is pulled rearwardly during loading. The finger piece 56 is used only in loading the gun for the first time. When the plunger is pulled backward and held against the lug 58, the feeding cylinder may be freely rotated, as hereinafter described.

For locking the gun so that it cannot be accidentally discharged, I provide a pin 59 extending transversely of the gun and adjacent the under side of the lever 52. The pin is flattened or recessed at one side, so that when said pin is in the position indicated in Fig. 2, the trigger may be pulled to liberate the plunger and fire the gun. In the firing of the gun, the under side of the firing toe 53 enters the recessed or flattened portion, as indicated in Fig. 7. By rotating the pin through one-quarter of a revolution, it is brought into engagement with the under side of the firing toe, and the latter is positively prevented from being drawn downwardly from out of the recess 54. For rotating the pin 59 and for normally holding it against rotation, I provide a lever arm 60 upon the outer end thereof, as shown in Fig. 1. The lever 60 is very similar to the spring lever 50, above described, and is provided with a lug or projection adapted to extend into either one of two recesses 61 in the grip 55.

Within the breech piece and adjacent the rear end of the barrels, and encircling the plunger, I provide my improved feed wheel or feed cylinder 62. This wheel is so constructed that it, in rotating, separates the cartridges from the feed strip which travels through the gun transversely thereof below the cylinder and moves said cartridges to a position adjacent the rear end of the gun barrels, so that the breech block may force them into position within the barrels ready for firing. The feed cylinder or feed wheel is rotated by the reciprocation of the plunger 35. The feed cylinder is mounted in any suitable manner, so as to rotate with the minimum resistance. Preferably, there are provided ball bearings adjacent each end of the cylinder, the balls of said bearings being held intermediate the cylinder and race-rings carried by the breech piece. The interior of the feed cylinder or wheel, adjacent the forward end thereof, is provided with a plurality of lugs 63, in the present instance, six in number, as the gun is double-barreled and the feed wheel has chambers for carrying twelve cartridges. Upon the under surface of the plunger, I provide two cam lugs 64 and 65, shown most clearly in Figs. 8 and 9. The forward lug 64 is provided with a cam edge 66 and a straight edge 67, and the rear end of the lug 64 is spaced a short distance from the front end of the lug 65, which latter extends to the extreme rear end of the plunger. The lug 65 is provided with a cam edge 68 and a straight edge 69. The straight edge 67 of the lug 64, if projected, would not intercept any operative portion of the lug 65, while the straight edge 69 of the lug 65, if projected lengthwise of the plunger, would intercept the cam edge 66 of the forward lug. These lugs coöperate with the inwardly-extending lugs 63 of the cylinder to limit and control the rotation of the feed wheel during the reciprocation of the plunger. With the plunger in its forward position, one of the lugs 63 is in engagement with the straight edge 69 of the lug 65. As the plunger is forced backwardly by the pressure of the gas, the lug 63 travels along the straight edge 69 to the end of the lug 65, and thence comes into engagement with the cam edge 66 of the lug 64. This rotates the feed wheel or feed cylinder one-twelfth of a revolution. Upon the return movement of the plunger, the lug 63 of the feed cylinder comes into engagement with the cam edge 68 of the lug 65 and the feed cylinder is rotated another one-twelfth of a revolution. The inclination of the cam edges may be varied dependent upon the speed at which it is desired to rotate the feed cylinder in respect to the plunger. When the finger piece 56 is pulled to bring the lug 58 into the path of movement of the plunger, and the latter is pulled back by the handle 48 into engagement with the lug, the lugs 63 of the feed cylinder come intermediate the lugs 64 and 65 of the plunger, and the feed cylinder may be freely rotated to bring cartridges to such a position that they may be forced into the cylinder by the breech block as hereinafter described.

Directly beneath the feed wheel 62 and extending transversely of the gun, I provide a feed table 70, along which the feed strip 71 passes. The feed strip may be of any suitable character, but is so constructed as to

hold the series of cartridges 72 forwardly and in engagement with the strip. As shown particularly in Figs. 18, 19 and 20, the strip is provided with upwardly-extending lugs 73 along one end thereof for receiving the cartridges adjacent their heads, a second series of lugs 74 for receiving the cartridges adjacent their smaller ends, and a series of lugs 75 intermediate the edges of the strip and engaging with the cartridges intermediate their ends. The lugs 73 and 74 are curved rearwardly in respect to the direction of movement of the strip, while the intermediate lugs 75 are curved forwardly, so that each cartridge is gripped at three points and securely held. It is evident that other forms of feed strips may be used in the specific gun illustrated, without necessitating any changes in the latter, although the specific strip shown is extremely simple in construction and efficient in operation. The feed table is preferably provided with rollers 76 extending up through openings to a slight distance above the upper surface of the table, so as to facilitate the free movement of the feed strip, and said table is also preferably provided with a locking lug 77 for preventing movement of the strip in the reverse direction.

The feed wheel or cylinder is provided with a plurality of annular rows of teeth or projections 78, between which the cartridges enter as the strip moves transversely of the gun and the feed wheel is rotated. One row of teeth preferably engages with the cartridges adjacent their heads and comes just inside the series of lugs 73 of the feed strip, while a second row of teeth 78 engages with the cartridges just inside the series of lugs 74 of the feed strip. As the cylinder rotates and the feed strip advances in the direction indicated by the arrow in Fig. 3, the cartridges are automatically transferred from the feed strip to the feed cylinder by the action of a finger 79 carried by the breech piece and suspended from a pivot pin 80 extending substantially parallel to the axis of the feed wheel and having a recess in its lower end through which pass the lugs 75 of the feed strip. The lower end of the finger is preferably pointed and lies closely adjacent or rests upon the upper surface of the feed strip.

Pivoted to the breech piece directly opposite to the finger 79, I provide a lifting member 81, mounted on a pivot pin 82 diametrically opposite to the pivot pin 80. The lifting member extends upwardly from the pivot pin and is curved to rest upon the upper surface of the feed wheel. The lifter is held in engagement with the feed wheel by a spring 83 and the end of the lifter is disposed intermediate the surface of the feed wheel and the cartridges. Adjacent one end of the feed wheel and upon the outer surface thereof, I provide a plurality of lifting lugs 84, six in number in the present instance, and so disposed that as the feed wheel rotates, the lifting member 81 is intermittently raised to engage with the under surface of the cartridges upon the upper surface of the feed wheel and lift the same upward, so that they may be forced upwardly into the gun barrels by the action of the breech block.

Slidably mounted within the breech piece and movable longitudinally thereof in alinement with the gun barrels, is mounted the breech block 41 previously referred to. This breech block is formed of two separate tube sections 85, rigidly mounted upon or integral with a connecting piece 86 at the rear end thereof. The breech block slides in semi-cylindrical grooves in opposite sides of the breech piece, and each of the tubular sections of the breech block is provided with a detachable conical head 87 for fitting into conical seats in the rear ends of the barrels. Within the tubular sections of the breech block are mounted the two firing pins 43, each tapered at its forward end and extending through an opening in the corresponding head 87. The rear extension or connecting piece 86 of the breech block extends over the head 40 of the plunger 35, and is provided with downwardly-extending lugs 88 lying adjacent opposite sides of the head 40 and behind the lugs 45 of the latter in their path of movement. The lugs 45 and 88 serve for the withdrawal of the breech block, as the plunger is forced rearwardly. Pivoted to the breech block adjacent the rear end of the intersection of the two tubular members and beneath the rear extension 86, is a breech locking member 89. This breech lock is formed of two oppositely-disposed links 90, pivoted to the breech block at their front ends and having their rear ends integral with a transverse rod or bar 91. The diameter of the rod 91 is substantially equal to the width of the slot 44 in the head 40 of the plunger, and said rod normally lies adjacent the upper forward end of this slot, as indicated in Fig. 2. The locking member is supported at its rear end by inwardly-directed flanges 92, so that as it slides along the breech piece, it is prevented from movement down into the slot until it reaches the forward end of said flanges. Adjacent the front end of the flanges are abutments 93, each having a curved front surface, and each preferably comprising a separate piece inserted through openings in the sides of the gun. These separate abutments may be held in place in any suitable manner, but are made removable, so that when worn they may be replaced by new ones. As indicated, each abutment is provided with an outer

face plate 94 which engages with the outer surface of the breech piece and limits the inner movement of the abutment.

The breech block at its under side and below the mounting of the locking member 89, serves to support the impact piece 42 shown in perspective in Fig. 15. The hammer comprises a longitudinally-disposed body portion 95, having a plurality of flanges or lugs. Two of these flanges 96, 96, extend outwardly from opposite sides of the body and are mounted in grooves in the under side of the breech block, as indicated in Fig. 17. At the forward end of the body are outwardly-extending flanges 97, terminating in upwardly-extending lugs or flanges 98 which enter into recesses in the under surface of the firing pins and serve to move the pins longitudinally upon a longitudinal movement of the body 95. Extending downwardly from the under side of the body is a flange 99 lying in the path of movement of the head 40 of the plunger 35 and adapted to be engaged by the front corner of said head to drive the firing pins forwardly after the breech block has been locked in position. At the rear end of the body 95, are outwardly-extending lugs 100, each having the forward surface thereof beveled downwardly and rearwardly. These lugs are adapted for engagement with inwardly-directed pins 101 carried by the links 90 of the locking member.

In the operation of the breech block, hammer and head 40, the parts are in the position indicated in Fig. 2 at the time the trigger is pulled. The spring forces the plunger and head 40 forward and the engagement of the head with the transverse rod 91 of the locking member causes the breech block to move forward simultaneously. The rod is prevented from dropping into the groove 44 by the side flanges 92. When the rod 91 passes the abutments 93, the breech block has reached the limit of its movement and the inclined upper surface of the slot 44 forces the locking member downwardly to bring the rod 91 in front of the abutments and positively lock the breech block against return movement. During this locking action the pins 101 are moved downwardly from in front of the lugs 100 of the impact piece. The head 40 continues its forward movement during the locking action until the forward end of the head strikes the lug 99 of the impact piece and forces the impact piece and firing pins forwardly to explode the cartridges. The parts are now in the position indicated in Fig. 7. The pressure of the gas in the chamber 24 forces the piston 36 and plunger 35 rearwardly. The rearward movement of the head 40 lifts the locking member by reason of the inclination of the under surface of the slot 44 and the pins 101 pull back the impact piece 42 by their engagement with the inclined surface of the lugs 100 of the latter. At this time, the lugs 45 of the head come into engagement with the lugs 88 of the breech block and the breech block then moves rearwardly with the plunger and head until the parts assume the position indicated in Fig. 2, whereupon the operation is repeated if the gunner continues to hold the trigger in firing position.

For extracting the empty cartridges from the breech, the two tubular members 85 of the breech block are each provided with an extractor member which engages with the flange of the cartridge. As shown particularly in Figs. 4 and 5, each extractor is in the form of a spring 102 of a length substantially equal to the length of the tubular member of the breech block, and fitting in a groove in the side of the breech block and in a groove in the side of the breech piece. The spring is provided with inwardly-extending lugs 103, which engage in recesses in the sides of the breech block, and each lug at its front end is provided with an inclined portion 104 following the taper of the conical front end of the breech block. Each inclined portion 104 terminates in a hook 105 extending inwardly in engagement with the flange of the cartridge. The inclined portions of the extractors fit into recesses 106 in the gun barrels adjacent the conical sides of the breech block, and these recesses are of such size that the extractors may spring outwardly as they engage with the cartridges, and the hooked end may spring back into the groove beneath the head of the latter.

For ejecting the cartridges after they are extracted from the gun barrels, I provide the breech piece with oppositely-disposed slots or openings 107 in the sides thereof above the feed wheel 62, and adjacent the rear end of the slots are mounted ejector members 108, adapted to be operated by the breech block. These ejectors, as shown particularly in Figs. 2, 5, 7 and 14, are each provided with a horizontally-disposed body portion 109, having a downwardly-extending pin 110, whereby the body may swing in a horizontal plane. At the forward end of each extractor is a downwardly-extending finger 111 provided with an outwardly-extending lug 112. At the rear end of each body portion is a downwardly-extending finger 113, substantially triangular in cross section and presenting outwardly-extending inclined surfaces. The fingers 111 and lugs 112 are disposed intermediate the two cartridges being extracted from the barrels, when the cartridges are drawn back by the extractors, and these fingers when spread apart throw the cartridges out laterally in each direction through the openings 107. The fingers 113 are disposed intermediate

the two tubular members of the breech block and serve for operating the fingers 111. The two fingers 111 are closely adjacent each other, and the two fingers 113 are spread apart when the breech block is in its forward position. The two fingers 113 extend into a chamber or recess 114 between the two tubular members of the breech block, but this chamber or recess is narrowed at its front end to form a passage 115, the walls of which are connected to the walls of the chamber 114 by inclined surfaces. As the breech block is withdrawn from its forward position, the ejector remains stationary with the fingers 111 together, until the fingers 113 reach the rear end of the passage 115. The fingers 113 are suddenly forced closely together and the corresponding spreading of the fingers 111 and lugs 112, throws the cartridges outwardly from the gun. As the breech block moves forwardly again, the fingers 113 pass into the chamber 114, and the fingers 111 are permitted to come together again. At this time, the feed wheel or feed cylinder is given its final turn, and one of the lugs 84 engages with the lifter 81 to raise two of the cartridges out of engagement with the feed wheel, so that the breech block may engage with the rear ends thereof and force them forwardly into the barrel. From the front end of the feed cylinder to the gun barrel, there are preferably provided grooves or channels 116 for directing the cartridges during their forward movement.

At the rear end of the breech piece, I provide the stock 34, which is preferably in skeleton form and having a curved portion 117 for engagement with the shoulder. The stock is provided with a forwardly-extending section 118, serving as a cover for the breech portion and held in engagement therewith by inwardly-directed flanges 119 engaging in grooves in the breech piece, as indicated in Figs. 4 and 11. The stock is held in engagement with the breech piece by a transverse pin 120, extending through a lug 121 carried by the stock and fitting in a recess in the breech piece. The pin is provided with a locking lug 122 fitting in a groove in the lug 121, and at the end of the pin is an arm 123 terminating in a projection adapted to enter a recess in the stock to prevent the rotation of the pin. By turning the pin a quarter revolution by means of the arm 123, the pin may be removed longitudinally and the stock slid rearwardly out of engagement with the breech piece, thus leaving the breech block and its operating mechanism uncovered so that they may be readily inspected or adjusted. The front end of the cover section 118 preferably slides beneath a curved connecting portion 124 of the breech piece, which serves to prevent the admission of dust to the working parts. The rearwardly-extending portion 86 of the breech block is preferably so formed as to engage with the under portion of the cover 118, which latter tends to resist the upward movement of the rear of the breech block at the time the gun is fired.

If desired, the grip 55 may be made separate from the breech piece and also separate from the stock. As shown, the grip 55 is provided with a rearwardly-extending plate cover 125, having inwardly-directed flanges 126 engaging in grooves adjacent the lower surface of the breech piece and held in position by the pin 59. After removing the stock as above described and removing the pin 59, the grip and all of the finger pieces, levers, and pivot pins carried thereby, may be removed from the breech piece.

In connection with the gun above described, I may employ any suitable form of sight 127, adjustable to various heights dependent upon the range. For preventing the breech housing from rotating in respect to the breech piece to loosen and thus varying their relative positions, any suitable locking means may be employed; for instance, a locking key 128, slidable longitudinally in guideways at one side of the gun and adjacent the intersection of the breech piece and housing, as indicated in Figs. 1 and 3.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a breech-loading gun, the combination with two parallel barrels, a collar inclosing both of said barrels intermediate the ends thereof, a cylinder carried by said collar below said barrels, separate passages connecting said cylinder and barrels and extending through said collar, a piston within said cylinder, and breech mechanism for both of said barrels operated by said piston.

2. In a breech-loading gun, the combination with a barrel, of a feed cylinder mounted adjacent the breech thereof, means for transferring cartridges to said cylinder adjacent the lower portion thereof, means for transferring cartridges from the upper portion of said cylinder to said barrel, and a plunger extending through said feed cylinder and adapted to rotate said cylinder and operate said last-mentioned transferring means.

3. In a breech loading gun, the combination of a barrel, a feed cylinder adjacent the breech thereof, means for rotating said cylinder, a lifter extending transversely of the cylinder and adjacent the upper surface thereof and adapted for engagement beneath a cartridge and above said cylinder, a cam lug on said cylinder for intermittently raising said lifter during the rotation of the cyl-

inder, and means for engaging with the cartridge when lifted, for forcing said cartridge into the barrel.

4. In a breech-loading gun, the combination of a barrel, a feed cylinder adjacent the breech thereof and below said barrel, means for supporting a feed strip adjacent the under surface of said cylinder, a pivoted finger for transferring cartridges from said feed strip to said feed cylinder, a lifter adjacent the upp surface of said cylinder for raising the cartridges from said cylinder, and means for engaging with the cartridges for forcing them from said lifter to said barrel.

5. In a breech-loading gun, the combination of a barrel, a feed cylinder adjacent the breech thereof and below said barrel and having a plurality of lugs extending outwardly therefrom to form receivers for cartridges, means for rotating said cylinder, a lifter pivoted adjacent said cylinder and in engagement with the upper surface thereof beneath said cartridges, and a plurality of lugs on said cylinder for engagement with said lifter to automatically raise the same intermittently during the rotation of the cylinder.

6. In a breech-loading gun, the combination of a breech block movable longitudinally, a firing pin carried thereby and movable longitudinally in respect to the breech block, an impact piece carried by said breech block and in engagement with said firing pin, a locking member pivoted to said breech block and having its rear end movable transversely to effect the locking action, and a pin carried by said locking member and movable out of engagement with said impact piece during the locking movement.

7. In a breech-loading gun, the combination of a longitudinally-movable breech block, a firing pin carried thereby, an impact piece carried by said breech block and having its front end in engagement with said firing pin, a downwardly-extending lug on said impact piece, means for engaging with said lug to drive the impact piece and firing pin forwardly, a cam lug adjacent the rear end of said impact piece, and means movable transversely of the impact piece and adapted to engage with said cam lug for withdrawing the impact piece prior to the withdrawal of the breech block.

8. In a breech-loading gun, the combination of a longitudinally-movable breech block, a firing pin carried thereby, an impact piece longitudinally movable in respect to said breech block and having its front end in engagement with said firing pin, a locking member pivoted to said breech block and having its free end movable transversely to effect the locking action, a cam lug carried by said impact piece, and inwardly-directed pins carried by said locking member and adapted to engage with said cam lug to withdraw the impact piece during the unlocking action.

9. In a breech-loading gun, the combination of two substantially parallel barrels, a breech block including two substantially tubular members, means carried by said breech block for extracting shells from said barrels upon the withdrawal of the breech block, and means intermediate said breech block members and movable transversely to eject the shells from the gun outwardly simultaneously and in opposite directions.

10. In a breech-loading gun, the combination of two substantially parallel barrels, a breech block comprising two substantially tubular members movable longitudinally, a breech piece for supporting said breech block and having oppositely-disposed openings therein, means for extracting cartridges from said barrels upon the withdrawal of said breech block, and an ejector carried by said breech piece and having portions extending between said tubular members and adapted to move transversely to engage with the extracted shells and eject them through said openings.

11. In a breech-loading gun, the combination of two substantially parallel barrels, a breech piece having oppositely-disposed openings therein, a breech block having two substantially parallel members movable longitudinally within said breech piece, means carried by said tubular members for withdrawing shells from said barrels simultaneously, and means adapted to be operated upon the reciprocation of said breech block for ejecting the withdrawn shells through said openings.

12. In a breech-loading gun, the combination of two substantially parallel barrels, a breech piece for supporting the same, a breech block including two substantially parallel members, extractors carried by said breech block members, and an ejector including two members pivotally secured to said breech piece and having fingers adapted to be operated upon the reciprocation of said breech block, and fingers adapted for engagement with cartridges for ejecting them from said breech piece.

13. In a breech-loading gun, the combination of two substantially parallel barrels, a breech piece for supporting the same, a breech block movable longitudinally within said breech piece and including two substantially parallel members, and an ejector including two members, each pivoted intermediate its ends to said breech piece and each having a downwardly-extending finger for engagement with the corresponding breech block member, to move said ejector member upon its pivot, and also having a downwardly-extending portion adapted to

be moved transversely into engagement with a shell to eject the same.

14. In a double-barrel, breech-loading gun, the combination of a breech block having two substantially parallel members and a rearwardly-extending connecting member, firing pins within said first-mentioned members, and an impact piece carried by said breech block and movable longitudinally in respect thereto and having outwardly extending terminal flanges in engagement with both of said firing pins.

15. In a breech-loading gun, the combination of a barrel, a feed cylinder, a longitudinally-movable plunger extending through said cylinder, means whereby the reciprocation of said plunger causes the rotation of said cylinder, a stop movable into the path of said plunger to limit the rearward movement thereof, and means whereby said cylinder may freely rotate independently of the plunger, when said plunger is in engagement with said stop.

16. In a gas operated breech loading gun, the combination of a barrel, a gas-receiving chamber, a piston therein, a feed cylinder mounted adjacent the breech, a plunger connected to said piston and extending through said cylinder and adapted to rotate the same by its reciprocation, means for supporting a feed strip adjacent said feed cylinder, and means for transferring cartridges from the feed strip to the feed cylinder upon the rotation of the latter.

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

GIUSEPPE COLLEONI.

Witnesses:
CLAIR W. FAIRBANK,
JOHN P. DAVIS.