

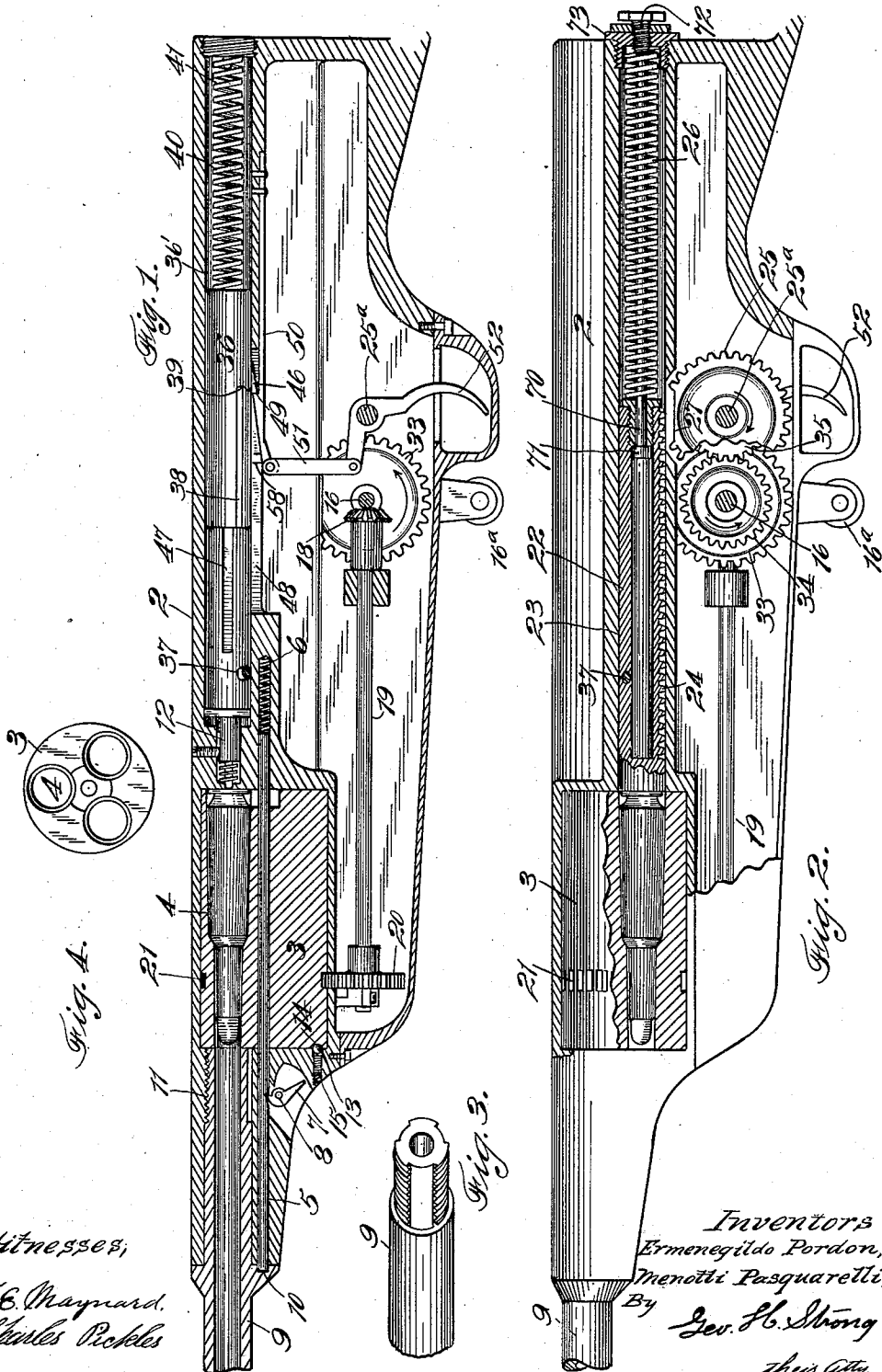
E. PORDON & M. PASQUARELLI.
GUN.

APPLICATION FILED OCT. 24, 1910.

Patented Sept. 19, 1911.

3 SHEETS—SHEET 1.

1,003,790.



Witnesses,
J. E. Maynard,
Charles Pickles

Inventors
Ermenegildo Pordon,
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their Atty.

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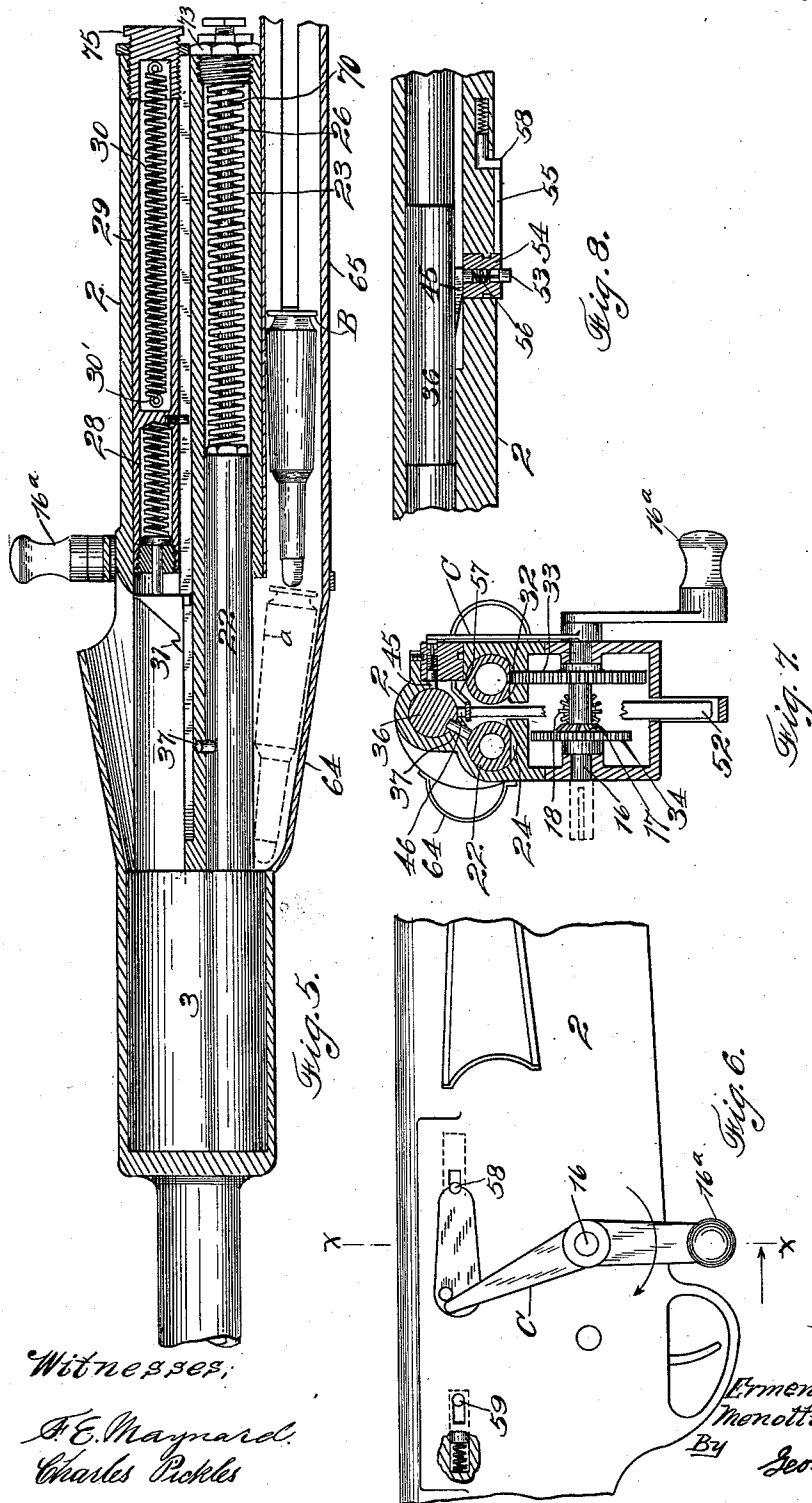
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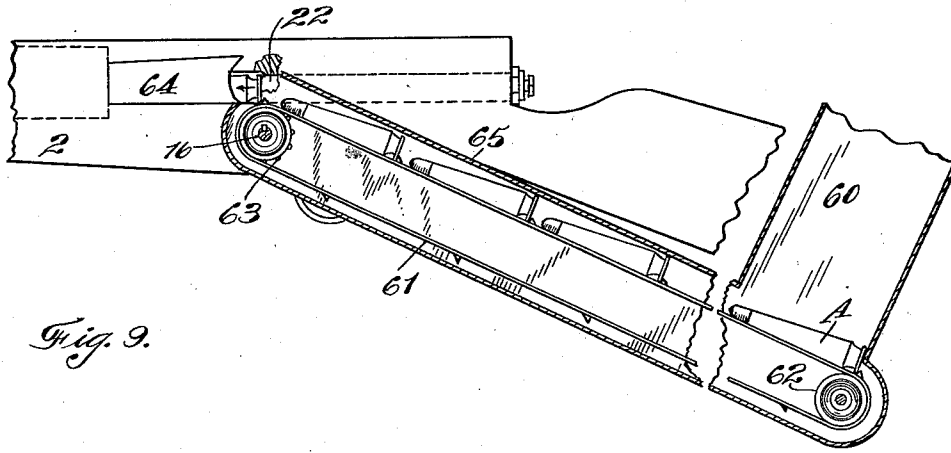


Fig. 9.

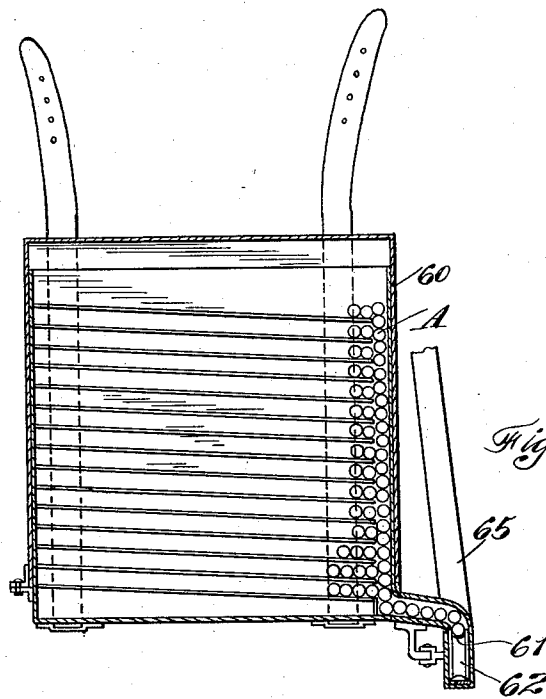


Fig. 10.

Witnesses

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UNITED STATES PATENT OFFICE.

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GUN.

1,003,790.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, ERMENEGILDO PORDON, citizen of the United States, and MENOTTI PASQUARELLI, subject of Italy, residing at Alameda, in the county of Alameda and State of California, have invented new and useful Improvements in Guns, of which the following is a specification.

This invention relates to fire arms, and more particularly to automatically loading, firing and ejecting actions for guns.

The object of this invention is to provide a gun combining means whereby cartridges may be simultaneously loaded, fired and extracted from the gun; to provide means whereby the loading, firing and extracting operations may be simultaneously performed by a manually operated device, and to provide in combination with a cylinder gun having automatic loading, firing and extracting mechanism an automatic continuous feeding magazine, and also to provide a gun action whereby cartridges may be loaded, fired and extracted simultaneously in combination with a device whereby the firing of the gun may be independently controlled as regards the loading and extracting operations.

The invention consists of the parts and construction and combination of parts as hereinafter more fully described and claimed having reference to the accompanying drawings, in which—

Figure 1 is a vertical, longitudinal central section through the gun. Fig. 2 is a vertical section in the plane of the loader mechanism. Fig. 3 is a detail perspective view of the end of the rifle barrel. Fig. 4 is an end view of the cylinder. Fig. 5 is a horizontal, longitudinal sectional view in the plane of the center of the loading and ejecting mechanism. Fig. 6 is a right-hand elevation of a portion of the gun. Fig. 7 is a transverse vertical section on the line X—X, Fig. 6. Fig. 8 is a detail of a portion of the gun showing the hammer in plan, and the firing controlling device in section. Fig. 9 is a left-hand side elevation of a portion of the gun, showing the magazine and cartridge conveyer as attached to the gun. Fig. 10 is a sectional view through the magazine box.

It is a desideratum to provide a rifle embodying means whereby a cartridge may be loaded into position; another cartridge fired, and an empty shell of a cartridge extracted

simultaneously thereby greatly increasing the speed with which a gun can be discharged.

In the present embodiment of our invention, 2 represents the body or action case of a gun in which is revolvably mounted a suitable cylinder 3, here shown as provided with three cartridge receiving chambers 4, and supported in the casing 2 upon a removable spindle 5. This spindle 5 passes through the body or casing of the gun and is normally under the pressure of an expansible spring 6, and is adapted to be pressed rearwardly into the gun by a small lever 7, pivoted at 8 in the fore part of the body of the gun allowing the rifle barrel 9 to be disengaged from the forward end 10 of the locking spindle 5, so that the barrel may be turned a one-third revolution thereby disengaging it from its retaining threads 11 in the gun. When the spindle 5 has been thus retracted from locking engagement with the barrel 9, the latter on being turned a one-third revolution can be withdrawn through the interrupted threads 11 of the gun casing.

The bore of the rifle barrel 9 is axially in line with a firing pin 12, reciprocally mounted in a suitable bearing or chamber formed in the gun body 2, and when the cylinder 3 is revolved upon its spindle 5 each of the cartridge chambers 4 are successively brought into registration with the firing pin and bore of the barrel 9.

In order to insure the accurate registration of the cylinder 3 with the bore of the barrel 9, any suitable precisionizing device may be employed being here represented as a ball 13 pressed into engagement with recesses 14 made at regular intervals in the forward end of the cylinder 3, so that when the ball 13 is thrust into a recess 14 by the action of an expansible spring 15, at this instant the cartridge chamber 4 is in line with the bore of the barrel 9.

Transversely mounted for rotation through the body of the gun 2 is a shaft 16 on which is secured a bevel gear 17 adapted to constantly mesh with a complementary gear 18 of the same diameter, which is secured upon a longitudinally mounted shaft 19, carrying at its forward end a suitably proportioned transmission gear 20, meshing with the teeth 21 cut in the cylinder 3. The relative proportion of the transmission device or gear 20 is such that upon one complete revolution of the shaft 16 the cylinder

will be turned a one-third revolution. This allows time for the loading, firing and extracting of the chambers 4 of the cylinder 3. Upon the right-hand end of the shaft 16 is mounted an operating crank 16^a, whereby the shaft 16 may be revolved. In order to accomplish this action we have provided, as shown in Fig. 5, a suitable loading device as represented by a plunger 22 reciprocable in a suitable chamber 23 formed in the left-hand side of the gun, and which plunger or loader has cut upon its lower surface a series of gear teeth 24 adapted to mesh with a gear 25, which is securely mounted upon a second transverse shaft 25^a. This gear 25 is of such diameter that a complete revolution of it will cause the loader 22 to be retracted a suitable distance and compress a resilient device, as spring 26, when it will be released at a suitable instant from mesh with the gear 25, by reason of the clearance of the teeth 24 from the gear teeth 25, which are shown as interrupted at one point, as at 27.

At the instant of the disengagement of the teeth 24 from the gear 25, the plunger 22 is rapidly thrust forward by the expansion of its reactive spring 26 and will pick up a cartridge as indicated at *a* in Fig. 5, thus driving the cartridge before it into the chamber 4 of the gun, as shown in Fig. 2, which is at that time in alinement with the axis of the loader 22.

Simultaneously with the loading action of the loader 22, an extractor 28 automatically recedes in its respective slide-way 29 formed in the right-hand side of the gun, under a retractile tension of its connected spring 30. The extractor 28 is comprised of a forward hook portion 31 which is adapted to enter for a slight distance the rear end of the cylinder 3 to such an extent that as the cylinder is revolved the flange B of the cartridge will be carried over the hook or nib 31, and when this is retracted by the spring 30 the shell will be withdrawn from the chamber of the cylinder. The lower edge of the extractor 28 is provided with gear teeth 32 which are engageable with a respective gear 33 securely mounted upon the shaft 16, the teeth of which gear are interrupted at a suitable point similarly as are the teeth of the gear 25 interrupted, thus allowing the extractor 28 to be advanced manually by the rotation of the shaft 16 by its handle 16^a.

The shaft 16 is provided with a fixed transmission gear 34 of equal diameter, to a complementary meshing gear 35, secured upon the adjacent parallel loader actuating shaft 25^a. Thus when the shaft 16 is revolved by its crank 16^a, motion is transmitted to the shaft 25^a, by reason of the engagement of the two gears 34 and 35. One revolution of the crank 16^a causes the gears 25 and 33 to pick up their respective

members 22 and 28, one of which as the loader 22 is withdrawn, while the ejector is advanced relative the cylinder 3 and at the instant the interrupted gear teeth reach the end of their respective and coöperative teeth formed upon the loader 22 and the extractor 28 these elements are released from control of the operating gears 25 and 33, and each is allowed to move under the action of its respective spring; spring 26 thrusting the loader 22 forwardly so as to load the cylinder 3 and spring 30 which is secured to the extractor 28 by pin 30' is effective to instantly withdraw the cartridge engaging hook 31 from the cylinder, thereby extracting an empty shell.

The firing of the central uppermost chamber 4 of the cylinder which is in alinement with the bore of the barrel 9 is accomplished by means of a suitable hammer 36 reciprocable in its bearing or slide-way 36' synchronously and in the same direction with the loader 22. Any suitable device may be employed whereby the firing hammer is drawn back in operative position, simultaneously with the retraction of the loader 22 and a simple means for accomplishing this simultaneous withdrawal of the hammer 35 is by securing at a suitable point in the loader 22, a projection or pin 37 projecting upwardly so as to work in a slot 38 formed in one side of the hammer 36.

The relative position of the pin 37 on the loader 22 is such that as the loader 22 is retracted the pin 37 will engage one end wall, as 39 of the slot 38, and be effective to carry back the hammer 35 as the loader 22 is retracted. During this manual retraction of the loader 22 and the hammer 35 an expansible spring 40 mounted in a suitable chamber 41 is compressed by the hammer 36 and when the loader 22 is released from engagement with its gear 25 the hammer 36 is thrust forwardly by the expansion spring 40, when it will engage the firing pin 12, hereinbefore mentioned, and discharge the cartridge which is in the uppermost chamber 4.

The foregoing portion of the specification describes the gun as operative when the action is to be used as a continuous rapid firing mechanism, the operation being that upon turning the crank 16^a the two shafts 16 and 25^a will be given each a complete rotation in opposite directions. The shaft 16 when rotated in the direction of the arrow in Fig. 6 will cause the gear 33 to intermesh with the rack 32 formed on the lower part of the extractor cylinder 28 and manually advance the extractor. Simultaneous with this advance of the extractor, the gear 25 will intermesh with its respective teeth 24 on a loader 22, and this will be withdrawn compressing its coöperative spring 26, and at the instant the interrupted portion of the

gears 25 and 33 coincide with the racks on the loader and extractor these will be released and the loader will be thrust forward loading the gun, and the extractor 28 will be released and withdrawn by its spring 30, extracting an empty shell. Also as the loader 22 advances under the expansion of spring 26 the hammer 35 will likewise be advanced under the reaction of its spring 40 and encountering the resiliently supported firing pin 12 will discharge that cartridge which is in line with the bore of the barrel 9.

For the purpose of enabling the operator of the gun to control the firing plunger irrespective of the action of the loader and extractor mechanism, there is secured on one side of the hammer 35 an inclined radial projection or cam 45 and upon the lower edge or surface of the hammer 36 is a sear receiving lug 46; the lugs 45 and 46 being retained in their respective guide ways 47 and 48.

One of the lugs as 46 is adapted when the hammer 35 is withdrawn to its maximum rearward position to encounter a shoulder 49 formed on a spring bar or sear 50 which is secured within the casing 2 of the gun. The forward end of the sear 50 is connected by a link 51 to a trigger 52 which is loosely pivoted upon the transverse shaft 25^a. Thus when the crank 16^a has been given a complete revolution the several associated elements including the loader 22 and the extractor 28 will be reciprocated in their respective slides and the hammer 35 drawn backwardly until it is engaged by the sear shoulder 49. When the interrupted portions of the teeth on the actuating gears 25 and 33 release the loader and extractor, these members will be automatically actuated by their respective springs but the hammer 35 will be restrained in its rearward position by the sear 50. Since the gun has now been loaded and the action set in position for firing the operator may at his leisure pull the trigger 52 to release the hammer 35 and discharge the gun.

For the purpose of changing the gun from the automatic firing position into such position that the firing hammer may be controlled independently of the loading mechanism there is provided and effective upon the hammer cam 45 a small detent 53 slidable and eccentrically mounted in a bushing 54, which is provided with a radially extending lever 55. When the lever 55 of the bushing 54 is turned to that position as shown in Figs. 6 and 8, the eccentrically mounted pin or detent 53 is projected outwardly through its bearing 54 and into the path of a finger or lever C mounted upon the outer end of the crank shaft 16.

When the operator wishes to set the gun action into such position that the hammer

35 can be controlled by the trigger 52 he turns the lever 55 to the position shown in Figs. 6 and 8 and this will cause the cam 45 to be effective when retracted to project the detent or pin 53. The automatic firing position of the gun is obtained by swinging the lever 55 rearwardly to the position opposite that shown in Fig. 8, and since the pin 53 is eccentrically mounted, as shown in Fig. 7, in the bushing 54, the turning of the lever 55 will carry the pin 53, which is under the expansive action of a spring 56, downwardly and out of the path of action of the cam 45, but in so carrying the pin 53 downwardly, it will engage and depress an upwardly projecting arm 57 formed upon the forward end of the sear 50, as shown in Figs. 1 and 7. When the pin 53 encounters the projection 57 of the sear 50 the latter will be depressed and carried out of the path in which the hammer lug 46 reciprocates.

When in its disengaged position, the sear will be unable to retain the hammer 36 and this will be automatically projected with each complete turn of the operating handle 16^a. By simply throwing the lever 55 upwardly and forwardly to a horizontal position it will be locked by a small spring keeper 58 in the forward position, or a similar keeper 59 when it is in the backward position, the pin 53 will be carried upwardly above the center of the bushing 54, and again positioned in the path of the cam 45. Thus when the hammer 36 is reciprocated by turning the crank 16^a, the rear inclined wall of the cam 45 will encounter the inner end of the detent 53 and this will then be pressed outwardly into the path of the stop engaging finger C, secured on the shaft 16. The trigger 52 may then be pulled at any time the operator so desires, releasing the hammer and thus discharging the gun. Upon the next loading action by the turning of the crank 16^a, the loader and extractor will be manually actuated, the hammer 36 withdrawn and automatically engaged by the sear 50, simultaneously projecting the pin 53 so that the hammer 36 will be retained when the interrupted portions of the gears 25 and 33 release their respective loader and extractor members.

In Figs. 9 and 10 is illustrated a magazine box 60 of suitable design and adapted to contain a large number of cartridges, A. One side of the box is formed with a vertical uninterrupted channel through which the cartridges may gravitate, and eventually roll on to a belt 61, passing over a lower transversely disposed pulley 62 and upwardly over a driving pulley 63 which is removably keyed upon the shaft 16.

When the shaft 16 is given a revolution, the belt 61 will be advanced a sufficient length to carry a cartridge A into a guide 64

secured upon the outer left-hand side of the casing 2, so that the cartridge will be in such position as to be engaged by the loader 22.

5 The belt 61 may be incased in a suitable box 65 connected to the lower end of the magazine box 60, so as to guide and support the cartridges A, as they are carried upwardly by the belt 61, into the guide 64.

10 For the purpose of causing the rack teeth 24 of the plunger 22 to properly intermesh with its respective gear 25, an appropriate adjusting device, as an axial rod 70 is provided, having an enlarged cylindrical head 71 at its front end and threaded at its rear end 72, and the axial rod 70 may be advanced or withdrawn through a complementary bushing 73, which is screwed into the end of the gun case 2, and by means of this headed rod 70 the lengthwise movement of the plunger 22 may be nicely determined so that the rack teeth 24 will always properly engage the teeth of the gear 25. The extractor 28 is similarly adjustable in its lengthwise movement by a bushing 75 mounted in the rear end of the gun case 2.

Having thus described our invention, what we claim and desire to secure by Letters Patent is—

30 1. A fire arm comprising a casing, a cylinder therein, means for revolving said cylinder, a loader, a magazine, a firing device, an extractor, and an instrumentality whereby the loader and extractor are actuated simultaneously directly thereby and the firing device released to discharge a cartridge.

35 2. A fire arm comprising a casing, a cylinder, means for revolving said cylinder, means including a loader and an extractor operable simultaneously and oppositely, a firing device, and an instrumentality for actuating said elements and releasing the firing device.

45 3. A fire arm comprising a casing, a barrel, a cylinder, a magazine, gears for intermittently moving the cylinder, a shaft connected to said gears, plungers for loading and unloading the cylinder, springs re-active against said plungers, and gears on said shaft to move the plungers against the springs, said gears being designed to release the plungers at a certain instant.

50 4. A fire arm comprising a casing, a barrel, a cylinder, gears for intermittently moving the cylinder, a shaft connected to said gears, plungers for loading and unloading the cylinder, springs re-active against said plungers, gears on said shaft to move the plungers against the springs, said gears being designed to release the plungers at a certain instant, and a firing hammer set and released with one of the plungers.

55 5. A fire arm comprising a casing, a barrel, a cylinder, gears for intermittently moving the cylinder, a shaft connected to

said gears, plungers for loading and unloading the cylinder, springs re-active against said plungers, gears on said shaft to move the plungers against the springs, said gears being designed to release the plungers at a certain instant, a firing hammer set and released with one of the plungers, and means to retain the firing hammer in set position. 70

6. A fire arm comprising a casing, a barrel, a cylinder, gears for intermittently moving the cylinder, a shaft connected to said gears, plungers for loading and unloading the cylinder, springs re-active against said plungers, gears on said shaft to move the plungers against the springs, said gears being designed to release the plungers at a certain instant, a firing hammer set and released with one of the plungers, and means to retain the firing hammer in set position, said means including a sear and a detent adapted to render said sear operative or inoperative. 75

7. A fire arm comprising a barrel and casing, a cylinder, a gear thereon, a pinion meshing therewith, a power shaft, means connecting said pinion and shaft, a loading and extracting mechanism, actuators connecting said shaft and mechanism, and a firing device set and released by one of said actuators when said shaft is revolved. 80

8. A fire arm comprising a barrel and casing, a cylinder, a gear thereon, a pinion meshing therewith, a power shaft, means connecting said pinion and shaft, a loading and an extracting mechanism, actuators connecting said shaft and mechanism, a firing device set and released by one of said actuators when said shaft is revolved, and a sear engageable with said device and adapted to be rendered operative or inoperative. 85

9. A fire arm comprising a barrel and casing, a cylinder, a gear thereon, a pinion meshing therewith, a power shaft, means connecting said pinion and shaft, a loading and extracting mechanism, actuators connecting said shaft and mechanism, a firing device set and released by one of said actuators when said shaft is revolved, a sear engageable with said device and adapted to be rendered operative or inoperative, and a trigger whereby said sear may be released when the sear is operative. 90

10. A fire arm comprising a casing and barrel, a cylinder, means for revolving said cylinder, said means including a gear thereon, a manually operated shaft, connections between said shaft and gear, a loader and a re-active spring therefor, an extractor and a re-active spring therefor, gears whereby said loader and extractor may be actuated simultaneously by said shaft, said gears being designed to set and release the loader and the extractor to allow 95

their respective springs to automatically load and extract cartridges, and a firing device set by said loader and automatically actuated when the latter is released.

- 5 11. A fire arm comprising a casing and barrel, a cylinder, means for revolving said cylinder, said means including a gear thereon, a manually operated shaft, connections between said shaft and gear, a loader
10 and a re-active spring therefor, an extractor and a re-active spring therefor, gears whereby said loader and extractor may be actuated simultaneously by said shaft, said
15 gears being designed to set and release the loader and the extractor to allow their respective springs to automatically load and

extract cartridges, a firing device set by said loader and automatically actuated when the latter is released, a magazine, means connecting said magazine and casing, 20 and a conveyer actuated by said shaft whereby cartridges may be deposited in the path of the loader.

In testimony whereof we have hereunto set our hands in the presence of two sub- 25 scribing witnesses.

ERMENEGILDO PORDON.
MENOTTI PASQUARELLI.

Witnesses:

HERMAN C. KOEMPEL,
N. MERRICK FARRAR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."