Apr. 10, 1923. 1,451,339

A. KOTTAS

MAGAZINE FIREARM

Filed July 8, 1921 2 sheets-sheet 1

Fig. 1.

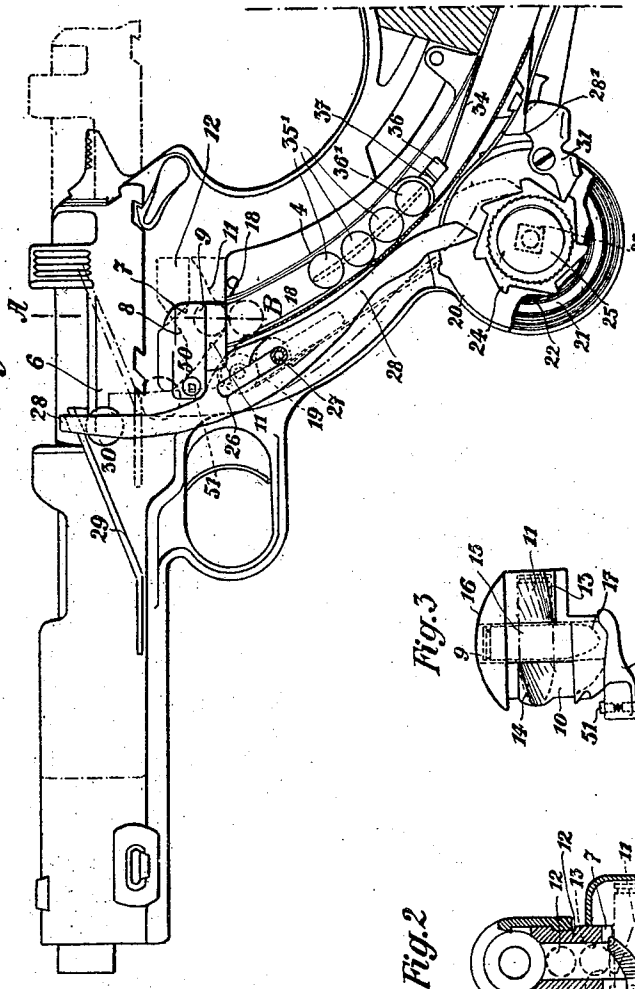


Fig. 3

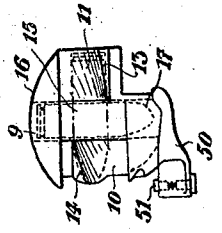
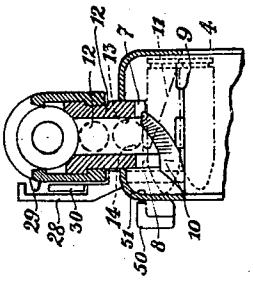


Fig. 2



INVENTOR

A. Kottas

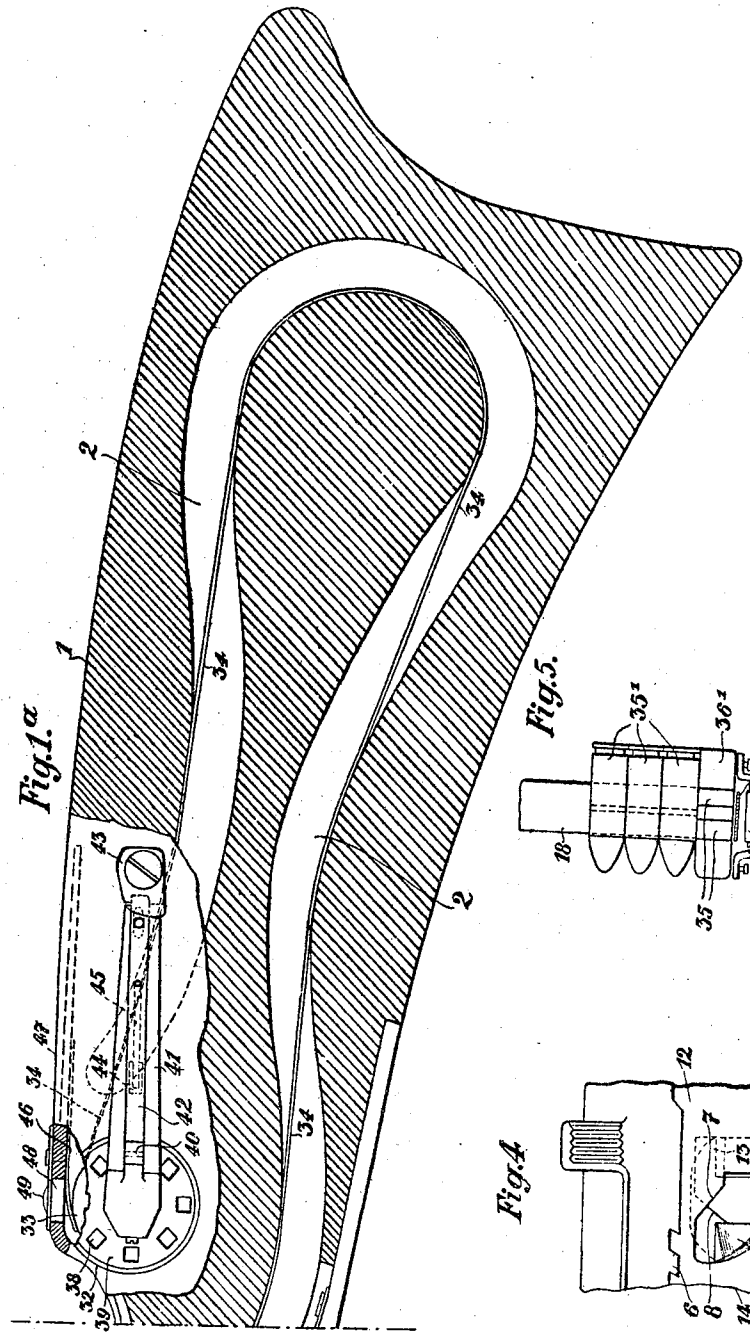
Atty.

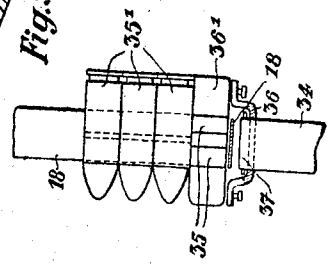
Apr. 10, 1923. 1,451,339

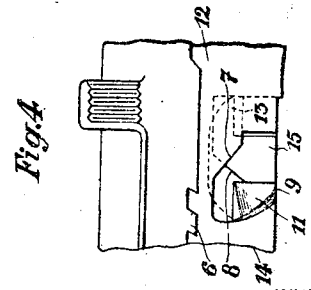
A. KOTTAS

MAGAZINE FIREARM

Filed July 8, 1921 2 sheets-sheet 2







INVENTOR
A. Kottas.

Atty.

Patented Apr. 10, 1923. 1,451,339

UNITED STATES PATENT OFFICE.

ARTHUR KOTTAS, OF VIENNA, AUSTRIA.

MAGAZINE FIREARM.

Application filed July 8, 1921. Serial No. 483,283.

To all whom it may concern:

Be it known that I, ARTHUR KOTTAS, retired officer of the Austrian Army, citizen of the Republic of Austria, residing at Vienna, in the Republic of Austria, have invented certain new and useful Improvements in a Magazine Firearm (for which I have filed application in Austria August 16, 1918), of which the following is a specification.

The present invention relates to magazine fire-arms, which can be loaded through the chamber of the weapon from above downwards, the cartridges being inserted either singly or in sets.

The drawing illustrates, by way of example, a Steyr pistol, 1915 model, fitted with a magazine according to this invention, Figs. 1 and 1ª are side elevations of the weapon with the cover-plate removed, and in partial section. Fig. 2 is a section on the line A—B of Fig. 1.

Fig. 3 is a view of the reversing member seen from above. Fig. 4 shows the breech block end of the weapon in side elevation, and Fig. 5 is a detail of the feed band.

A groove 2 is formed in the stock 1 of the weapon, and in order to accommodate as many cartridges as possible, this groove takes the form of a loop.

The cartridges ascend out of this groove 2, through a quadrangular or flattened tube into the cartridge chamber, where the cartridges, which lie in the stock at right angles of the axis of the barrel, are turned into the proper position by means of two oblique edges 7, 8 provided on the lower edge of the cartridge chamber 12.

To enable the magazine to be loaded from the top through the cartridge chamber, a turning member 9 is provided which turns the cartridges into the transverse position as they are pressed in from above.

This turning member 9 (Figs. 1, 2, and 3) is introduced from below against the oblique edges 7, 8 and is provided internally with two spiral surfaces 10, 11, directed downwardly and inwardly towards opposite sides and at right angles to the oblique edges 7, 8 and from the upper part of the surfaces 10, 11 project two wedge-shaped ribs 13, 14 (Figs. 2, 3) which lie within the oblique edges 7, 8 that is to say, in the cartridge chamber 12. The effect of the wedge shaped inner edges of these ribs 13, 14 is to cause the cartridge resting thereon to tend, under the influence of the laws of gravitation, to lie with its cylindrical surface parallel to these edges and thereby drop down on the spiral surfaces 10, 11 and in rolling thereon turn through an angle of 90 deg., to pass through an opening 15 in the magazine passage or tube 4. The opening 15 is closed on both sides by hollow or dished caps 16, 17 (Fig. 3) which bear laterally against the cartridge chamber.

The movement of the cartridges in and out of the magazine in the stock is effected and controlled by means of a conveyor band, preferably of steel. The steel band 18 (Figs. 1 and 5) is attached at one end to the underside of the turning member 9. This band is folded into a loop the length of which depends on the number of cartridges present in the magazine, which lies in the tube 4 and groove 2 engaging the cartridges from the rear or at its band, the other end of the looped band pasing over a roller 19 and thence to a casing 20. In consequence of its position underneath the stock, this casing affords a firm grip from the hand. in firing, and thus greatly facilitates holding the weapon steady. In this casing the end of the band 18 is secured to a winder ring 21 surrounding a coiled spring 22 secured to the square shaft 23. The arrangement of this winder ring 21 causes the conveyor band to wind up smoothly and uniformly. On the outer end of the shaft 23 is a locking wheel 24 provided with a number of teeth, the spacing of which depends on the calibre of the cartridges and in addition to this, a band wheel 25 is provided.

On the outside of the neck of the stock is a packer pawl 28 guided by a screw or pin 27 engaging a slot in the pawl 28 the lower end of which, under the influence of a spring 28′, engages the teeth of the locking wheel 24, whilst the upper end is guided on the breech piece 6 in such a way that the movement of the breech piece 6 operates the pawl, and thus turns the wheel 24 through a distance equal to one tooth every time, the conveyor band 18 being thereby wound up to an extent corresponding to one cartridge whereby a cartridge is brought into the chamber and into the path of the breech. With this object the breech slide 6 is provided with an oblique guide

rib 29 (Fig. 1) which engages the pawl 28 by both its upper and under surfaces, an antifriction roller 30 being provided under the rib 29 to prevent undue friction with the pawl 28. If then the breech slide be moved out of the position shown in Fig. 1, after a shot has been fired, and into the open position represented by the dotted lines, the pawl 28 will be depressed by the action of the rib 29, and the locking wheel 24 will be turned for the purpose of winding up the band 18 and so forth, to bring the new cartridge into position. The coiled spring 22, housed in the casing 20, serves merely to keep the conveyor band at the proper tension. The band is prevented from slipping back by a locking pawl 31, which is controlled by a spring, and can be thrown out of action in order to release the locking wheel 24.

Adjoining the end of the groove 2 is a drum 33 housed in a casing 32 and serving to wind up a traction band 34 the end of which is attached to the loop formed by the conveyor band. This traction band is designed on the one hand, to draw the loop into the groove 2, i. e. lengthen it, for loading the magazine, and on the other hand to enable the number of cartridges in the magazine to be read off, from outside, on a dial provided for that purpose. Moreover, the cartridges lying in the loop of the conveyor band cannot be inserted therein right up to the band, since the lowermost (in the present instance, four, corresponding to the calibre) cartridges could no longer be forced up through the chamber, the tension and range of action of the conveyer band extending only as far as the lower edge of the turning member 9. On this account a series of four cartridges, or dummies 35′ is placed in the loop (Fig. 5) and the cartridges serving as ammunition are inserted over them.

These dummy cartridges 35′, 36′ are connected together at their centres, in the form of a chain, and in such a manner as to be capable of being rotated, in order to enable them to be turned in the turning member and thus enable all the cartridges to be conveyed into the path of the breech. The lowest member 36′ of this chain of cartridges is provided, in its central portion, with rollers 35 (Fig. 5) over which the conveyer band 18 runs, in order that no disturbing friction may be set up by the movement. On this member 36′ is secured a bow or loop 36 forming a slot, to receive the end 37 of the tension and counting band 34.

This arrangement of the four cartridges 35′, 36′ serves the additional purpose of furnishing an automatic indication of the firing of the last four cartridges. The uppermost of these four cartridges comes, of course, into the breech after the last cartridge has been fired; but since it is rigidly connected to the three cartridges following it, it cannot be pushed into the barrel by the returning breech block, but lies as a bolt in the path of the breech block, and holds the breech open, thus showing that the magazine is empty.

As already mentioned, the band 34 serves to draw the loop into the groove 2, for the purpose of loading the magazine. To enable this to be done, the shaft of the drum 33 is provided with a ratchet device by means of which the drum can be turned and the band 34 wound up. This ratchet device consists of a disc 39 provided with a circular series of recesses 38, in which a tooth 40 on a spring pawl 42 displaceably mounted in a crank arm 41 is adapted to engage.

When this pawl is out of action, so that the band 34 can unroll freely when the weapon is being fired, it is pushed behind a stop 43, the pawl 42 being displaced radially and its tooth lifted out of the path of recesses, in order not to restrict the movement of the drum 33. When, however, the loop is to be drawn in, for the purpose of loading the magazine, the lifting of the crank arm 41 from the stop 43, releases the pawl 42, and its oblique tooth 40 under the pressure of a spring 45, acting upon its nose 44 is moved to engage successively in the recesses 38.

A braking spring 46, bearing against the drum 33, retards the unrolling of the band 34, in order to keep it in tension. The spring 46 is cut away over the middle of the drum and underneath an opening 48, provided in the cover plate 47 and adapted to be closed by a cover 49, in order that the figures marked on the band 34, and therefore the number of cartridges in the magazine at the time being, can be read off through said opening.

In loading the magazine, the breech bolt is drawn back and locked, the locking pawl 31 (Fig. 1) having previously been released.

Although this operation causes the pawl 28 to be also released, it would still project into the path of the ratchet wheel 24 and restrict its necessary freedom of movement for loading. In order to swing said pawl clear, an arm 50 is provided on the turning member, having a spring stop 51, which projects into the path of the pawl 28 and as soon as the breech bolt has been drawn back and locked, slides against and swings the pawl so that its lower extremity is turned clear of the ratchet wheel 24. The conveyer band can then be unrolled freely.

What I claim is—

1. A magazine firearm, a cartridge channel therein, in which the cartridges lie transversely of the stock, means for conveying the cartridges along said channel, and means for turning the cartridges through an angle of

ninety degrees in passing from said channel, said means comprising two members having oblique edges crossing at right angles.

2. A magazine firearm, a cartridge channel therein, in which the cartridges lie transversely of the stock, means for conveying the cartridges along said channel, means for turning the cartridges through an angle of ninety degrees in passing from said channel, a spring tensioned winder to control the the movement of the conveying means, and means operable in the movement of the breech block to feed said winder a predetermined distance.

3. A magazine firearm, a cartridge channel therein, in which the cartridges lie transversely of the stock, means for conveying the cartridges along said channel, means for turning the cartridges through an angle of ninety degres in passing from said channel, a spring tensioned winder to control the movement of the conveying means, means operable in the movement of the breech block to feed said winder a predetermined distance, said means including a pawl for checking the winder, and an oblique rib on the breech block for operating the pawl to feed the winder.

4. A magazine firearm, a cartridge channel therein, in which the cartridges lie transversely of the stock, means for conveying the cartridges along said channel, means for turning the cartridges through an angle of ninety degrees in passing from said channel, and a series of dummy cartridges connected to the operating means, said dummy cartridges being connected together to permit said cartridges to bodily rotate on a transverse axis, whereby the first dummy cartridge may be positioned to hold the breech open following the exhaustion of the effective cartridges.

5. A magazine firearm, a cartridge channel therein, in which the cartridges lie transversely of the stock, means for conveying the cartridges along said channel, means for turning the cartridges through an angle of ninety degrees in passing from said channel, and means to permit the conveying means to be drawn into the magazine when loading, said means being marked to indicate the number of cartridges present in the magazine.

6. A magazine firearm, including a cartridge channel, in which the cartridges lie transversely to the breech block of the firearm, a loop in which said cartridges are held, means for feeding the loop to force the cartridges longitudinally of the channel, and a band connected to the loop whereby said loop may be drawn into the channel in re-loading, said band being numbered to permit a knowledge of the number of cartridges remaining in the channel at any time.

In testimony whereof I have hereunto set my hand.

ARTHUR KOTTAS.