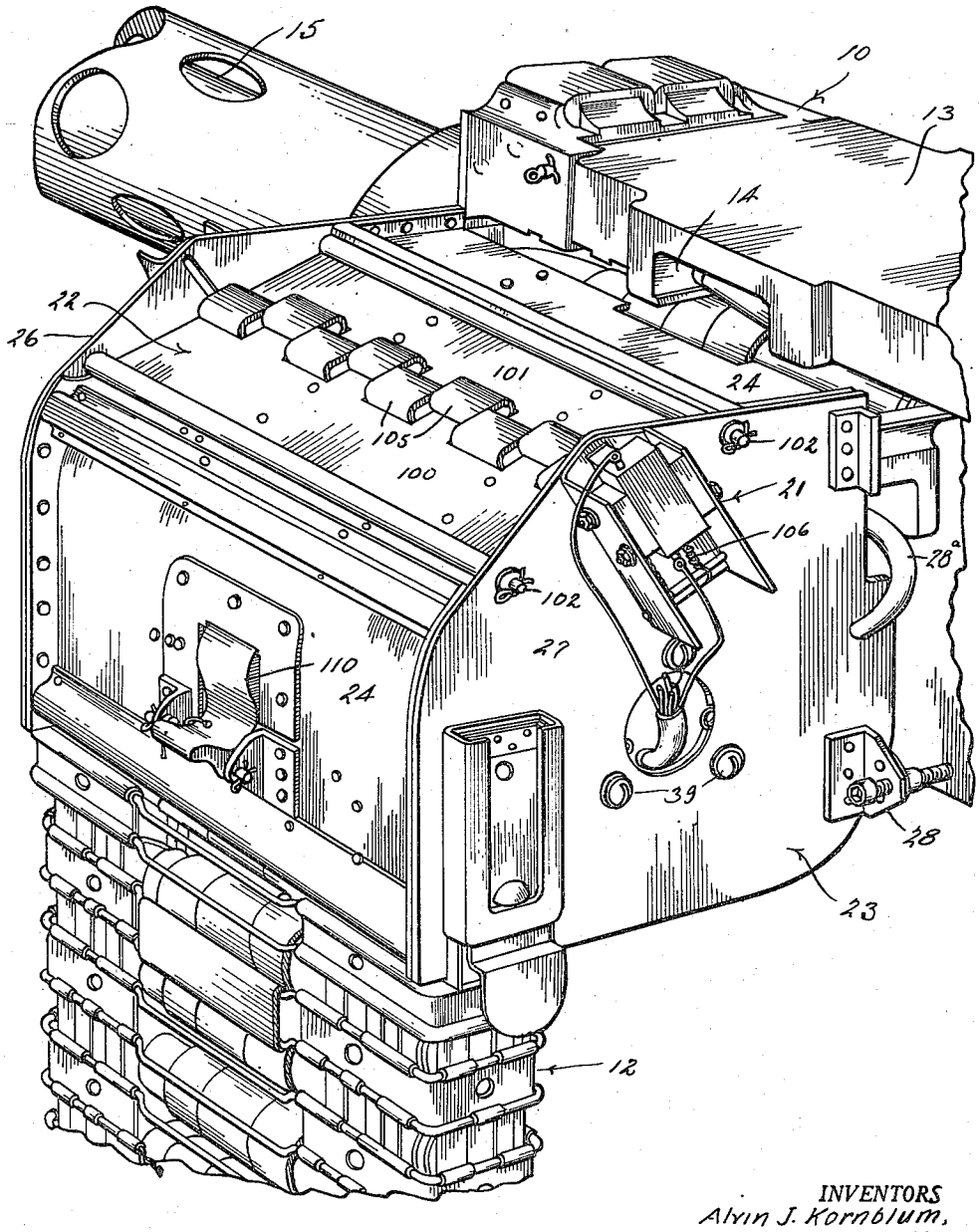
June 19, 1951 A. J. KORNBLUM ET AL 2,557,441

FEED FOR GUNS OR THE LIKE

Filed May 1, 1944 5 Sheets-Sheet 1

Fig. 1.



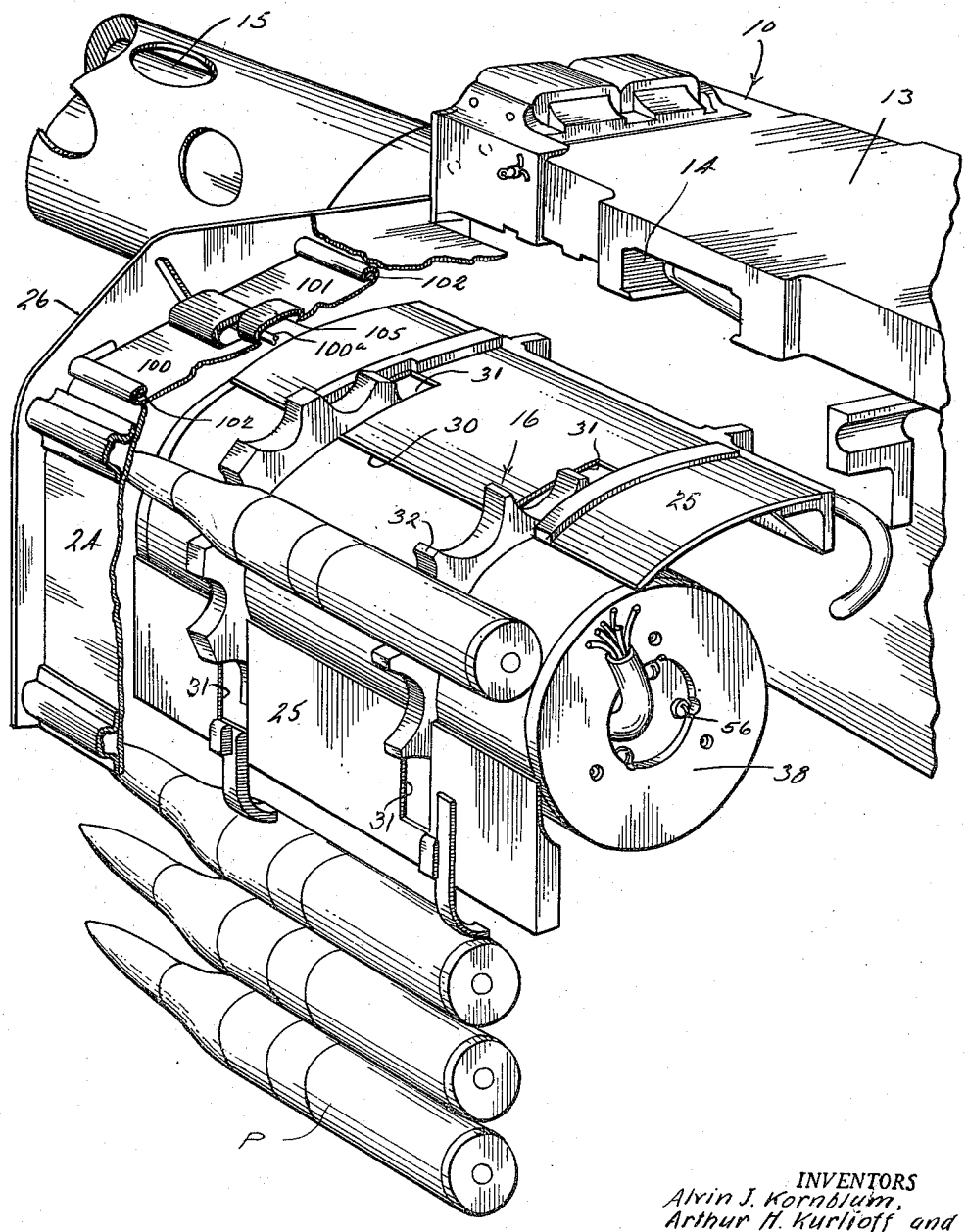
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Fig. 2.



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Fig. 3.

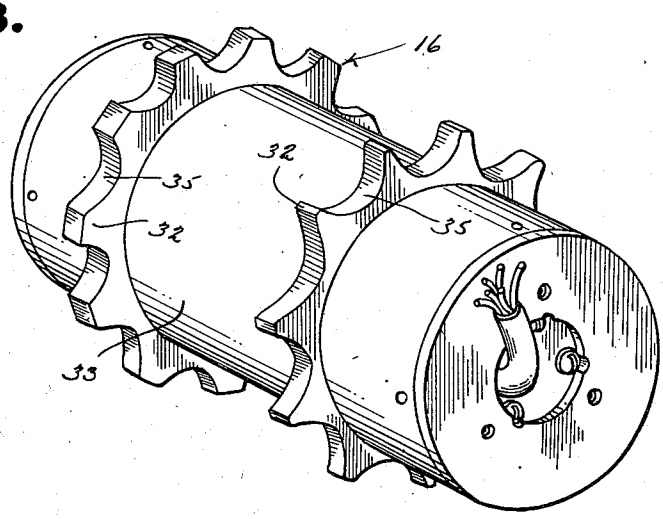


Fig. 4.

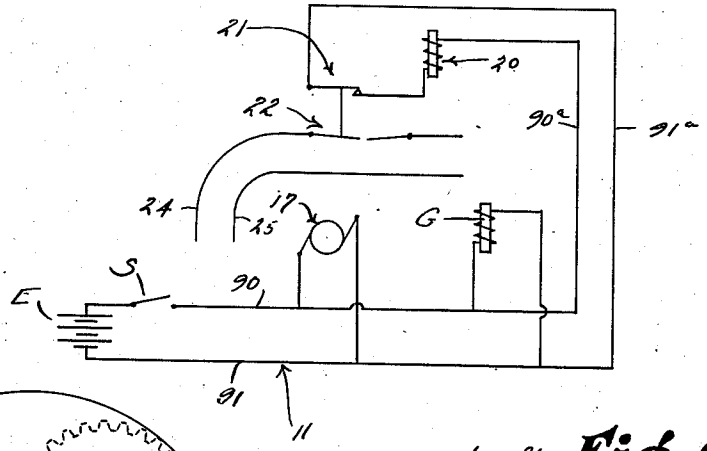


Fig. 5.

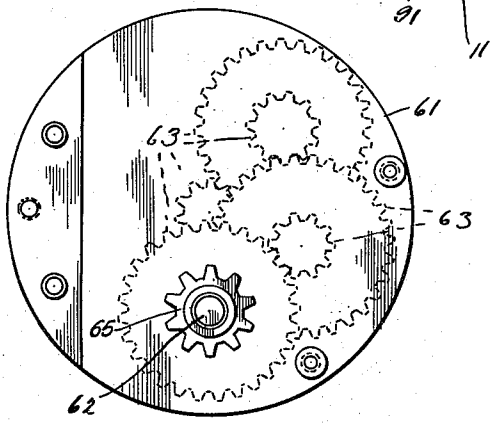
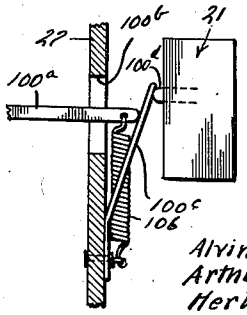


Fig. 6.



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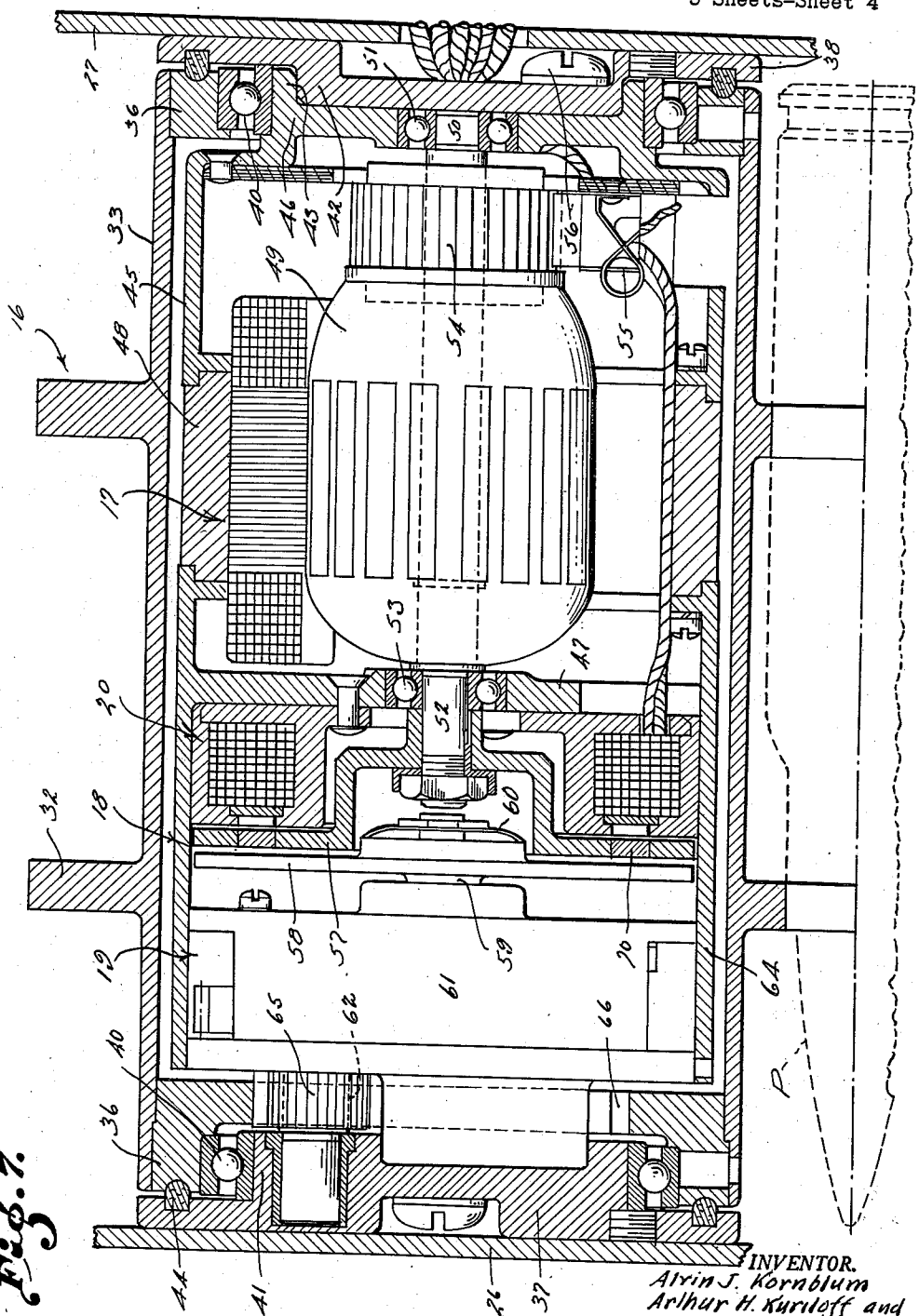


Fig. 7.

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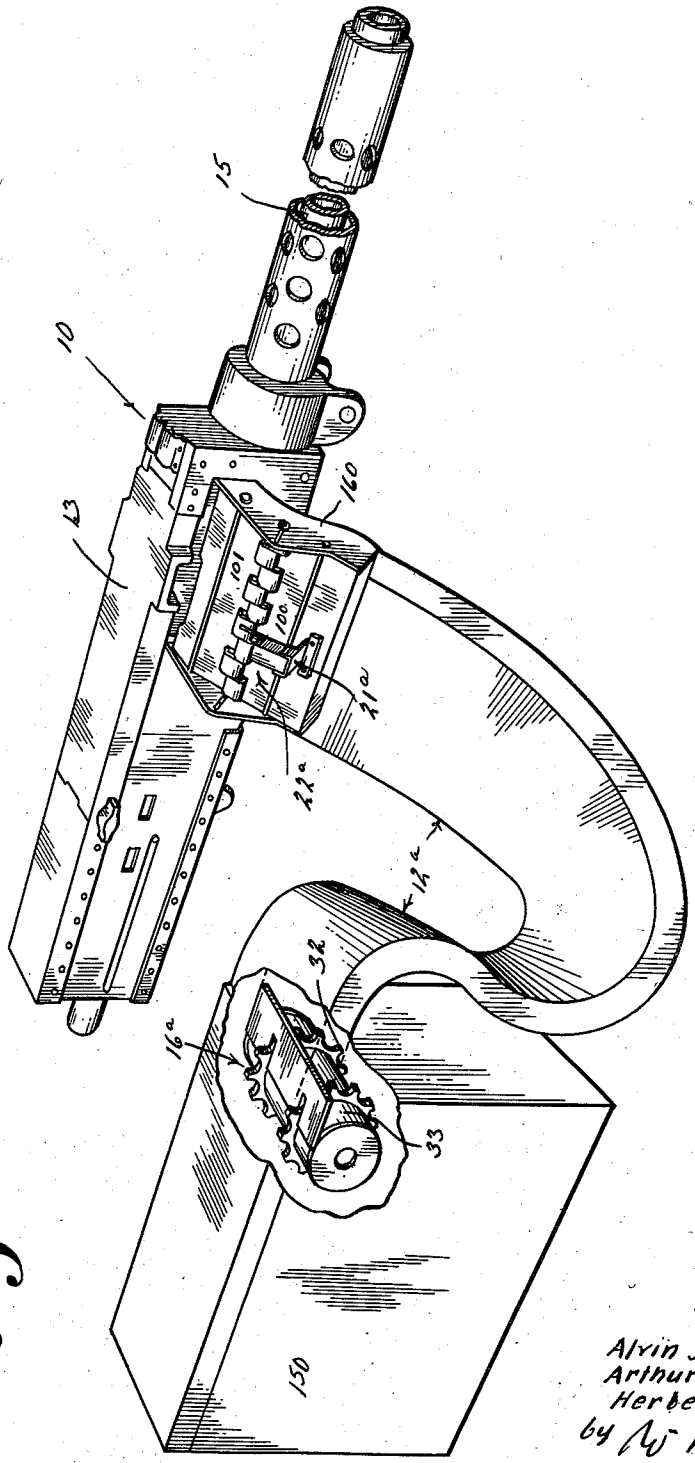


Fig. 8.

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2,557,441

FEED FOR GUNS OR THE LIKE

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Application May 1, 1944, Serial No. 533,516

11 Claims. (Cl. 89—33)

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This invention has to do with a feed for guns, or the like, and it is a general object of the present invention to provide a feed mechanism for handling ammunition, or the like, so that it is delivered at a point such as a gun, or at a feed chute for a gun, in such a manner as to keep the gun adequately supplied.

Guns known as "automatic" or "machine guns" usually include an ammunition feed means which operates to feed the ammunition from a box or point of supply to the gun as it operates. Such feed means are commonly energized by the action of the gun itself and, in practice, are often inadequate. This is particularly true in the case of large guns where the ammunition is heavy and it is also true where the ammunition has to be moved a long distance or along a tortuous course. The last named conditions often prevail when guns are mounted in aircraft where space is limited and where other mechanisms often create limiting factors.

It is a general object of our present invention to provide a feed for guns, or the like, which operates as the gun is operated to feed ammunition so that the load or burden of such feed is taken from the gun with the result that a greater ammunition supply is provided. By our present invention we effectively relieve the gun of the load incident to feeding the ammunition and, as a result, the speed of operation of the gun is materially increased. It is, of course, recognized that speed of operation is highly important in the case of automatic or machine guns and it will be apparent that when the gun mechanism has imposed upon it the load or drag incidental to feeding the ammunition its speed is materially impaired. By our present invention we feed the ammunition to the gun by a power unit energized independently of the gun action so that the gun is entirely free to operate at maximum speed free of the feed of the ammunition.

Another object of our invention is to provide a mechanism of the general character hereinabove referred to which is applicable to standard guns and gun equipment. The device of the present invention may be applied to a gun feed as an attachment or insert so that the usual units of equipment operate in the usual manner, except that the burden of feeding the ammunition is taken from the gun. In the preferred application of the present invention it is applied between the ammunition box and the gun proper and, in effect, serves as a means of connecting the ammunition box to the gun. In most cases the usual ammunition chute will serve with the

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device of the invention in connecting the ammunition box and gun.

Another object of our invention is to provide a mechanism of the general character referred to which is simple and dependable in construction and operation, making it practical equipment for guns and particularly for guns used on aircraft and the like.

A further object of our invention is to provide a mechanism of the character referred to which is light and compact. The mechanism of the present invention is applicable to a gun and ammunition chute without interfering with other parts and without appreciably increasing the bulk of the installation. The structure of the present invention is such that it can be made largely of light metal, or the like, so that it does not add materially to the weight of the gun unit.

The various objects and features of our invention will be fully understood from the following detailed description of typical preferred forms and applications of our invention, throughout which description reference is made to the accompanying drawings, in which:

Fig. 1 is a perspective view of the exterior of the mechanism of our invention showing it in operating position connecting an ammunition chute and an automatic gun. Fig. 2 is a view taken in the general direction of Fig. 1 with parts broken away to show the general arrangement and construction of the interior of the mechanism and showing some ammunition in place to illustrate the manner in which it is handled by the mechanism. Fig. 3 is a perspective view of the feed sprocket provided by the present invention showing it removed from the other parts of the mechanism and showing it viewed from substantially the same angle as it appears in Fig. 2. Fig. 4 is a diagrammatic view illustrating the manner in which the mechanism of the present invention is coordinated with the control system of the gun. Fig. 5 is a view of the speed reduction mechanism included in the device. Fig. 6 is a detailed view showing the manner in which the switch of the feed unit is operated. Fig. 7 is a longitudinal detailed sectional view of the feed sprocket and the parts contained therein. Fig. 8 is a perspective view of a gun and ammunition box combination in which the booster or feed of the present invention is indicated at the box rather than at the gun.

The mechanism of the present invention, and particularly certain features thereof, are applicable, generally, to feed devices and may be used in widely different applications. The par-

ticular form in which we have embodied the invention is most suitable for the feeding of ammunition in connection with a machine gun, and therefore, we will describe the invention as though it were specifically concerned with such use, it being understood, however, that we do not wish to limit ourselves by such reference. Further, the device of the invention may be related to the gun and its ammunition supply box and feed chute in various manners. It can be advantageously arranged between the chute and gun as shown in Fig. 1; however, it will be apparent that it will also operate at any point between the box and gun. In Fig. 8 we show the mechanism located at the ammunition box.

The general arrangement or combination of parts to which the invention is applicable involves a gun 10, a control circuit 11 for the gun and an ammunition handling unit such as an ammunition box or feed chute 12 for supplying ammunition to the gun 10.

In the drawings we have shown a typical machine gun such as is used in aircraft and we have shown a simple typical control circuit such as is used in connection with such guns and we have shown but two typical applications of the invention, one to the ammunition box, the other to the ammunition chute of the gun. It is to be understood that the elements shown and referred to may vary widely and that as variations occur our invention may be varied accordingly to accommodate them.

Referring to the form and application of the invention shown in Figs. 1 and 2 of the drawings we have shown but a portion or fragment of a gun, being that portion to which the mechanism of our invention is applied. The structure of the present invention is applicable, generally to the side of the body of the gun that can be generally designated as the gun casing 13. This portion of the gun is provided with an opening 14 through which the ammunition is fed into the gun mechanism proper. In the drawings we have shown the barrel 15 of the gun projecting forward from the gun casing.

The mechanism of the present invention, which may be termed, generally, an automatic ammunition feed, involves, generally, a feed sprocket 16, a motor 17 for driving the sprocket, and arranged under control of a circuit 11, a drive between the motor and the sprocket which involves, generally, a clutch 18 and a speed reducing mechanism 19, a control for the clutch involving an electromagnet 20, in a circuit under control of a switch 21, and means 22 for actuating the switch 21 by the ammunition, and a frame or housing 23 which carries the several elements hereinabove referred to and serves as a mounting or means of attachment for the mechanism as a whole.

The housing 23 is a frame-like structure preferably fabricated from sheet metal to serve as a frame for carrying the various parts of the mechanism. In the form under consideration the housing serves as a connector between the ammunition chute 12 and the gun 10.

The housing involves, generally, an outer wall 24 and an inner wall 25 shaped and spaced relative to each other to, in effect, form a continuation of the ammunition chute to conduct ammunition from the chute 12 to the gun 10. The general arrangement and configuration of the inner and outer walls of the housing will be apparent from Fig. 2 of the drawings, from which it will be seen that in the case illustrated these parts are formed so that they form a chute the receiving end of which opens downwardly and receives ammunition delivered from the vertically disposed portion of the chute 12 shown in Fig. 1. The passage or chute formed by the walls 24 and 25 continues upwardly and then curves inwardly so that its outer or delivery end faces horizontally and delivers the ammunition into the opening 14 of the gun.

The housing includes end walls which support the outer and inner walls 24 and 25. There is a forward end wall 26 and a rear end wall 27 which may be substantially alike except as they vary to facilitate mounting on the gun or to support particular parts of the mechanism as will be hereinafter described. The end plates 26 and 27 close the sides of the chute formed by the inner and outer walls. In the particular arrangement illustrated the several parts of the housing are formed separately and of sheet metal and are secured together in any convenient manner. In the case illustrated the ends of the housing are provided with mounting brackets 28 and a reliable mounting hook pin 28a by which the mechanism is secured to the side of the gun casing 13.

The feed sprocket 16 is an important element of the mechanism and is arranged between the ends 26 and 27 of the housing at the under side of the inner wall 25 of the housing, preferably at the point of curvature of that wall. The feed sprocket is made accessible at the chute or passage formed by the inner and outer walls of the housing, by providing an opening 30 in the inner wall of the housing wide enough to allow a portion of the sprocket to enter the ammunition passage and by providing suitable notches 31 in the wall 25 to accommodate the teeth 32 of the sprocket. This general arrangement and relationship of parts will be apparent from an examination of Fig. 2 of the drawings.

The feed sprocket 16 has a tubular hub 33 which extends between end walls of the housing and which is made large enough in diameter to accommodate the motor 17 and the elements 18, 19 and 20, as will be hereinafter described. The teeth 32 are provided on the exterior of the hub to engage and feed the ammunition. In practice the formation and arrangement of teeth on the hub will vary depending upon the character of ammunition being handled. Where ordinary projectiles P are to be fed it is practical to provide two rows of teeth 32 on the hub 33. In the case illustrated the two rows of teeth are located to engage the projectiles at points where they are of different diameters and, therefore, the projectile receiving openings 35 between the teeth of the two rows of teeth vary in size, as will be seen in Fig. 2.

The invention provides mounting means for the sprocket at each end thereof, the mounting means serving to support the sprocket in the housing between the ends thereof. In the particular construction illustrated rings which form internal flanges 36 are provided in the hub at its ends and mounting plates 37 and 38 are secured to the end plates 26 and 27, respectively, of the housing. The plates 37 and 38 are fixed to the inner sides of the ends of the housing as by screws 39, or the like. This construction is desirable as it makes it possible to readily detach the sprocket with the end mounting plates 37 and 38 assembled therewith when repair or replacement is necessary. The ends of the sprocket hub are rotatably supported on the mounting plates through bearings 40. The plate 37 has a boss 41 which supports the inner race of a

bearing 40 while the outer race of that bearing fits into the flange 36 at that end of the hub. The mounting plate 38 has a boss 42 which supports the inner race of a bearing 40 through an intermediate member in the form of a flange 43 on the end of the motor case. The outer race of the bearing 40 is carried in the flange 36 at the other end of the hub.

Through the construction just described the hub is effectively supported on ball bearings located at each end of the hub and the bearings are large in diameter and form a very efficient and effective support. It is preferred, in practice, to seal the ends of the hub against the entrance of foreign matter. This may be accomplished by providing packing rings 44 between the mounting plates 37 and 38 and the flanges 36.

The motor 17 for driving the sprocket 16 is located entirely within the sprocket. In the construction that we have provided the motor involves a mounting shell or case 45 which fits within the hub 33 of the sprocket with suitable clearance and has an outer end plate 46 at one end and an inner end plate 47 at the other end. A field structure 48 is supported in the shell intermediate the end plates and an armature 49 is supported between the end plates to operate within the field. In the particular case illustrated a spindle 50 is provided on one end of the armature to be rotatably mounted in the outer end plate 46 through a suitable bearing 51 while a spindle 52 projects from the other end of the armature through the inner end plate 47 and is supported in the end plate 47 by a bearing 53. The spindle 52 is the drive spindle of the motor. The armature 49 includes a commutator 54 which, in the arrangement illustrated, is located adjacent the end plate 46, and a suitable brush mechanism 55 is carried by the motor case 45 to cooperate with the commutator.

The end plate 46 which we have referred to as the outer end plate serves as the mounting or support for the end of the motor. The end plate 46 is attached to the inner side of the mounting plate 38. The flange 43 of the end plate is guided and supported on the boss 42 of the mounting plate and screws 56, or the like, are provided for securing the plates 38 and 46 together.

The drive from the motor to the hub involves, generally, the clutch 18 and the speed reducing mechanism 19. In accordance with our invention the clutch, which is normally disengaged, is located between the motor and the speed reducing mechanism, and the speed reducing mechanism is such as to effect a very high speed reduction with the result that the motor 17, which is necessarily small, can operate at a very high speed and yet drive the sprocket in the desired manner.

The clutch is preferably a simple plate-type clutch involving, generally, a drive plate 57 and a driven plate 58. In the arrangement illustrated the drive plate 57 is fixed on the projecting end of the spindle 52 to be located beyond the end plate 47 from the motor and to operate with the armature of the motor. The driven plate 58 is arranged opposite or to face the drive plate and is fixed on the drive shaft 59 of the speed reducing mechanism 19. The plate 58 is mounted on the shaft 59 against rotation relative thereto, but is freely shiftable axially. A spring 60 may, if desired, serve to normally yieldingly urge the plate 58 away from the plate 57 so that the clutch is normally released or disengaged.

The speed reducing mechanism 19 may be any suitable device operable to gain the desired speed reduction between the motor armature and the feed sprocket. In the case illustrated we have shown a simple gear mechanism including a gear box 61 carrying the drive shaft 59 and a driven shaft 62 and a train of gears 63 which serve to effect the desired speed reduction between the shaft 59 and the shaft 62.

The gear box 61 is carried by an extension 64 of the motor case 45 and the driven shaft 62 projects from the gear box at a point adjacent the mounting plate 37. In practice any suitable drive may be provided between the shaft 62 and the sprocket. In the arrangement illustrated we show a drive between these parts which effects a desired speed reduction. This drive involves a pinion 65 suitably mounted on the shaft 62 to mesh with a ring gear 66 on the inner side of the flange 36 at the mounting plate 37.

The control for the mechanism of the present invention involves primarily the electromagnet for actuating the clutch 18, the switch 21 and the means 22.

The electromagnet 20 is located within the extension 64 of the motor case and the inner end plate 47 of the motor case and is such as to establish a field effective to draw the plate 58 into gripping engagement with the plate 57. The electromagnet is an annular structure fixed to the inner end 47 of the motor case, as will be seen from Fig. 7 of the drawings. When electromagnetic means such as we have just described is employed for operating the clutch it is desirable to provide the plate 57 of the clutch with a nonmagnetic section 70 opposite the coil of the electromagnet so that the magnetic field will reach the plate 58 and not short circuit through plate 57.

The switch 21 for controlling the feed mechanism is connected in series with the electromagnet 20 in a circuit which may be controlled by the gun control switch S in the circuit 11. In the arrangement illustrated the gun control circuit 11 involves a suitable source of electrical energy E energizing lines 90 and 91. The gun firing solenoid G is connected between the lines 90 and 91 while the gun control switch S is connected in series in one of the lines, as for instance in the line 90.

The motor 17 of our feed mechanism is preferably connected in the gun control circuit so that it is connected across the lines 90 and 91 in parallel with the solenoid G, so that it is put in operation when the gun is put in operation by operation of the control switch S. The electromagnet 20 and the switch 21 are preferably connected in the same circuit beyond the solenoid G and feed motor 17. The electromagnet and switch 21 are preferably connected in series in the circuit as shown in the diagram, Fig. 4, and are connected in extensions 90^a and 91^a of the lines 90 and 91 so that they are not energized when the switch S is closed but the magnet is operated only when the switch 21 is closed at a time when the switch S also is closed. In the preferred form of the invention the switch 21 is a "micro-switch" or any suitable quick acting delicate switch, and it may be mounted on the end plate 27 of the housing 23.

The means 22 for actuating the switch 21 includes one or more shiftable sections or elements in the chute formed by the housing operable to move and actuate the switch 21 when ammunition is crowded between the feed sprocket

and the gun. In the form of the invention illustrated the outer wall 24 of the housing has a part removed at a point where the ammunition starts to leave the sprocket to enter the gun and the opening thus formed is closed by two hinged sections 100 and 101.

The sections 100 and 101 are carried on pivot pins 102 at the edges of the opening in the wall 24 and project toward each other to close the opening formed in the wall 24. Where the sections 100 and 101 meet they have inter-engaged or overlapped parts 105 which serve to maintain a continuous chute wall in the housing for the ammunition to work on as the sections 100 and 101 are pressed outwardly by ammunition being crowded by the feed sprocket. A rod 100^a is carried by the overlapping ends of sections 100 and 101 and has a projecting end which passees through a slot 100^b in end 27 to operate a lever 100^c which in turn moves the control part 100^d of switch 21 (see Fig. 6).

One or more springs 106 connect with rod 100^a and normally yieldingly urge the sections 100 and 101 inwardly to maintain them in a position where they define the upper wall of the normal ammunition chute through the housing.

In operation, as the feed sprocket supplies ammunition faster than the gun can handle it, the ammunition piles up or tends to lift away from the sprocket engaging the sections 100 and 101 moving them upwardly. When the sections are thus moved upwardly the actuating rod 100^a moves up relative to lever 100^c so the lever moves in and the control part 100^d of the switch 21 moves causing the switch to open with the result that the electromagnet is de-energized and the drive of the sprocket released.

From the foregoing description it is believed that the operation of the entire mechanism will be fully understood. The housing 23 provided by the present invention is mounted on the side of the gun casing 13 of the gun and the ammunition chute 12 is attached to the housing 23 by a suitable fastening device or catch 110. The ammunition passes upwardly through the chute 12 and into the housing 23 where it enters the passage defined by the walls 24 and 25.

The individual projectiles P are engaged by the sprocket teeth and carried around or through the housing to be delivered into the opening 14 of the gun and if the sprocket feeds the ammunition faster than the gun handles it, that is if there is overfeed of ammunition, then the ammunition is crowded by the sprocket so that it moves the sections 100 and 101 upwardly actuating the switch 21.

In the preferred control circuit the switch 21 is normally closed and the gun firing or gun control switch S is normally open. When the operator closes the switch S the gun firing solenoid G is energized causing the gun to start operation. The feed motor 17 is likewise energized causing the armature thereof to be rotated. The switch 21 of the feed control being closed the electromagnet 20 is energized and the clutch 18 is closed with the result that the feed sprocket operates feeding the ammunition to the gun.

It will be understood, of course, that the individual projectiles P being clipped together by suitable fastening means are drawn up from the chute 12 by the feed sprocket and since the ammunition is confined in the housing it is effectively fed into the gun. The mechanism is proportioned and designed so that the feed sprocket will normally tend to feed the ammunition to the gun at a rate equal to or slightly faster than the gun can handle it. As a result of this circumstance the ammunition will be crowded between the feed sprocket and the gun with the result that it will move the sections 100 and 101 of the housing upwardly, thus causing the switch 21 to be opened. When the switch 21 opens the electromagnet 20 is de-energized and the clutch 18 allowed to open. The instant that the overfeed is corrected by the reception of ammunition into the gun the sections 100 and 101 are allowed to be moved in by springs 106 so that the switch 21 is closed and the electromagnet 20 energized and the clutch 18 closed so that the feed mechanism again moves into operation feeding ammunition to the gun.

A feature of the construction that we have provided is that the armature of the motor is completely disconnected from the clutch when the drive is disengaged so that the mechanism stops immediately.

In the form of the invention shown in Fig. 8 the mechanism of the present invention is related to a typical machine gun, ammunition box therefor, and feed chute connecting the box and gun so that the feed sprocket of the present invention is located at the box while the means 22^a for actuating the control switch 21^a is located at the gun, or at least at the point of connection between the chute and the gun. In this form of the invention we have separated the feed sprocket 16^a and the switch 21^a and its actuating means 22^a, so that the feed sprocket is at the ammunition box and serves to push ammunition through the ammunition chute 12^a. The drive for the sprocket 16^a may be the same as that hereinabove described, that is, the sprocket may be equipped with a motor, clutch reduction gear, etc. such as we have shown in Fig. 7.

The ammunition box 150 can be of any suitable construction and can be located at any suitable point. The feed chute 12^a can be of any suitable construction and can be disposed to suitably handle ammunition between the box and the gun. As indicated in Fig. 8 the feed sprocket 16^a is located at or in the box 150 so that it serves to push ammunition into and feed it through the chute 12^a.

The switch 21^a which controls the clutch that drives the feed sprocket 16^a is located adjacent the gun and the operating means 22^a for the switch is at the gun so that when ammunition overfeeds at the gun the switch is opened and the feed sprocket ceases operation. In this form of the invention the means 22^a for operating the switch 21^a may include a box-like structure 160 which serves as a continuation of the ammunition chute and which has pivoted sections 100 and 101 corresponding to the pivoted sections 100 and 101 above described. The switch 21^a may be mounted on the box 160 so that when the sections 100 and 101 are pushed out by overfeed of ammunition the switch is actuated.

We have disclosed this particular embodiment of the invention primarily to make it clear that the invention is capable of considerable modification and that it can be adapted to various situations, as circumstances require.

It will be apparent from the foregoing description that we have provided an ammunition feed for machine guns which will serve to feed ammunition to the gun as fast as the gun can handle it, and yet does not require delicate synchronism between the feed mechanism and the gun. By providing the control means 22 the switch 21 and

the electromagnet for controlling the clutch we provide a safety mechanism which enables the gun to be fully fed without being overfed and which acts to immediately go into operation and effectively feed the gun the instant that the gun can handle the feed supplied by the mechanism.

Having described only typical preferred forms and applications of our invention, we do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to ourselves any variations or modifications that may appear to those skilled in the art or fall within the scope of the following claims.

Having described our invention, we claim:

1. In combination, an automatic gun, a control for the gun, an ammunition feed for the gun, power means continuously operating with the gun to drive the feed, a magnetic clutch control connecting the power means and the feed normally engaged so that the feed goes into operation simultaneously with the gun, and a cut-out for disengaging the clutch independently of the operation of the power means actuated by overfeed of ammunition.

2. In combination, an automatic gun, a control for the gun, an ammunition feed for the gun including a motor and a feed sprocket for moving ammunition, a control connecting the control of the gun and the motor, a normally engaged magnetic clutch driving the feed sprocket so the feed sprocket goes into operation simultaneously with the gun, and a control for the clutch independent of the motor actuated by overfeed of ammunition including a shiftable element operated by ammunition crowded by the sprocket.

3. In combination, a gun, a feed chute, and a device to receive ammunition from the chute and deliver it to the gun including, a housing having spaced walls forming a passage which is a continuation of the chute, each wall having an opening, a feed sprocket entered into the passage through the opening in one wall, a hinged member closing the opening in the other wall and adapted to be swung out by ammunition crowded against it by the action of the sprocket, a continuously operating motor, a releasable drive between the motor and the sprocket, and a control switch for releasing said drive operated by the hinged member.

4. In combination, an ammunition feed chute, a housing having spaced walls forming a passage which is a continuation of the chute, one wall having an opening, a feed sprocket projecting into the passage, a pair of overlapping hinged members closing the said opening and adapted to be swung out by ammunition crowded against it by the action of the sprocket, a continuously operating electric motor, a releasable drive between the motor and the sprocket, and a control switch for said drive operated by the hinged members.

5. In combination, an ammunition feed chute, a housing having spaced walls forming a curved passage which is a continuation of the chute, each wall having an opening, a feed sprocket at the inner side of the curved passage and entered into the passage through the opening in one wall, a hinged member closing the opening in the other wall and adapted to be swung out by ammunition crowded against it by the action of the sprocket, a continuously operating drive motor, a releasable drive between the motor and the sprocket, and a control means for said drive operated by the hinged member.

6. In combination, an ammunition feed chute, a housing having spaced walls forming a passage which is a continuation of the chute, each wall having an opening, a feed sprocket entered into the passage through the opening in one wall, a hinged member closing the opening in the other wall and adapted to be swung out by ammunition crowded against it by the action of the sprocket, a continuously operating drive motor, a releasable drive between the motor and the sprocket, and a control switch for said drive operated by the hinged member, the motor being located within the sprocket.

7. In combination, an ammunition feed chute, a housing having spaced walls forming a passage which is a continuation of the chute, each wall having an opening, a feed sprocket entered into the passage through the opening in one wall, a hinged member closing the opening in the other wall and adapted to be swung out by ammunition crowded against it by the action of the sprocket, a continuously operating drive motor, a releasable drive between the motor and the sprocket, and a control switch for said drive operated by the hinged member, the motor and the releasable drive being located within the sprocket.

8. In combination, an ammunition feed chute, a housing having spaced walls forming a passage which is a continuation of the chute, each wall having an opening, a feed sprocket entered into the passage through the opening in one wall, a hinged member closing the opening in the other wall and adapted to be swung out by ammunition crowded against it by the action of the sprocket, a continuously operating drive motor, a releasable drive between the motor and the sprocket, and a control switch for said drive operated by the hinged member, the motor and releasable drive being located within the sprocket, the releasable drive including a clutch and a speed reducing mechanism.

9. In combination, an ammunition feed chute, a housing having spaced walls forming a passage which is a continuation of the chute, each wall having an opening, a feed sprocket entered into the passage through the opening in one wall, a hinged member closing the opening in the other wall and adapted to be swung out by ammunition crowded against it by the action of the sprocket, a continuously operating drive motor, a releasable drive from the motor to the sprocket, and a control switch for said drive operated by the hinged member, the motor and releasable drive being located within the sprocket, the releasable drive including a magnetic clutch and a speed reducing mechanism.

10. In combination, an ammunition feed chute, a housing having spaced walls forming a passage which is a continuation of the chute, each wall having an opening, a feed sprocket entered into the passage through the opening in one wall, a hinged member closing the opening in the other wall and adapted to be swung out by ammunition crowded against it by the action of the sprocket, a continuously operating drive motor, a magnetic clutch drive between the motor and the sprocket, and a control switch for said drive operated by the hinged member, the motor and the drive being located within the sprocket.

11. In combination, a gun, firing means for the gun, an ammunition feed mechanism including a sprocket and a driving motor for the sprocket located entirely within the sprocket, said mechanism being constructed and arranged to normally feed ammunition to the gun upon energization of said motor, and a control connecting the said firing means and said motor whereby

said motor goes into operation simultaneously with the gun firing means, and a cutout for the feed mechanism connected and arranged to be actuated by overfeed of ammunition to the gun to disengage said motor from the feed mechanism, the cutout including a chute for passing ammunition and having a shiftable section arranged to be moved by ammunition crowded in the chute, the sprocket being arranged at the chute to engage and feed ammunition through the chute and the said section being opposite the sprocket.

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