(No Model.) 3 Sheets—Sheet 1.

J. G. ACCLES.

FEEDER FOR MACHINE GUNS.

No. 290,622. Patented Dec. 18, 1883.

Fig. 1.

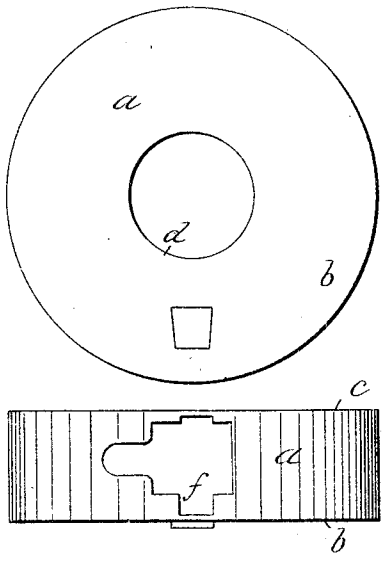


Fig. 2.

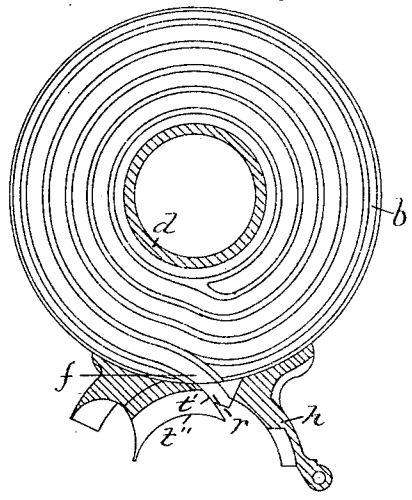
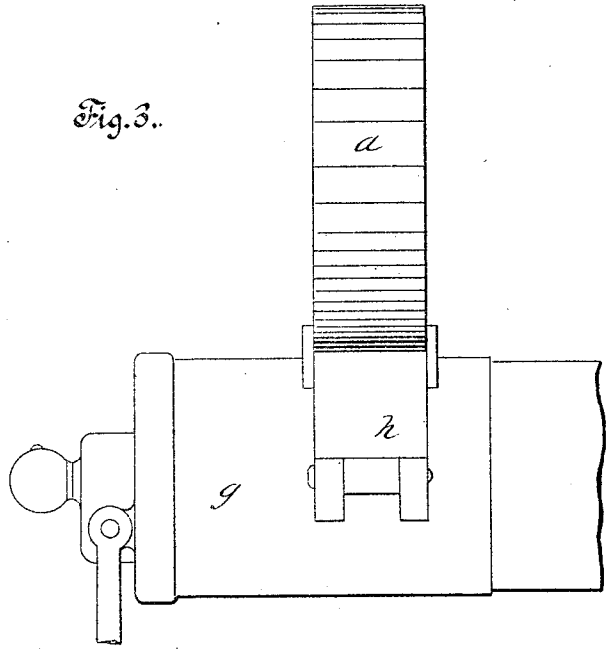


Fig. 3.



Witnesses.
Chas. H. Bruce
C. L. Burdett.

Inventor.
James G. Accles
By W. E. Simonds,
Atty.

(No Model.) 3 Sheets—Sheet 2.

J. G. ACCLES.

FEEDER FOR MACHINE GUNS.

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Fig. 5.

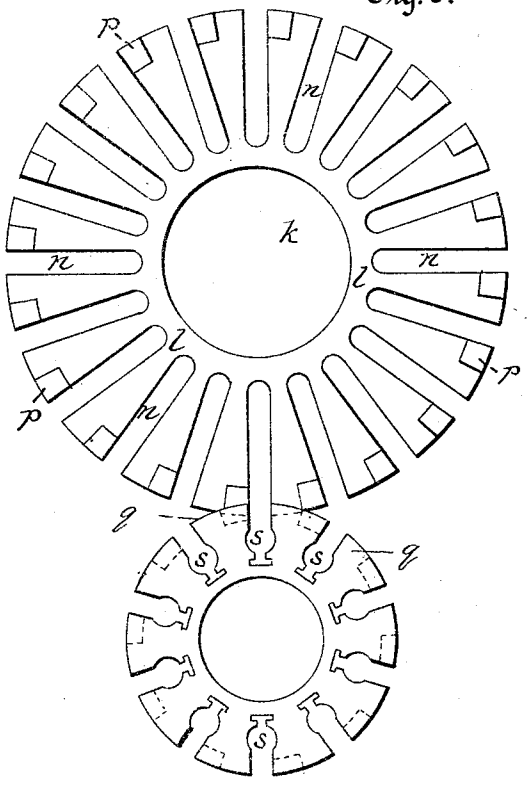
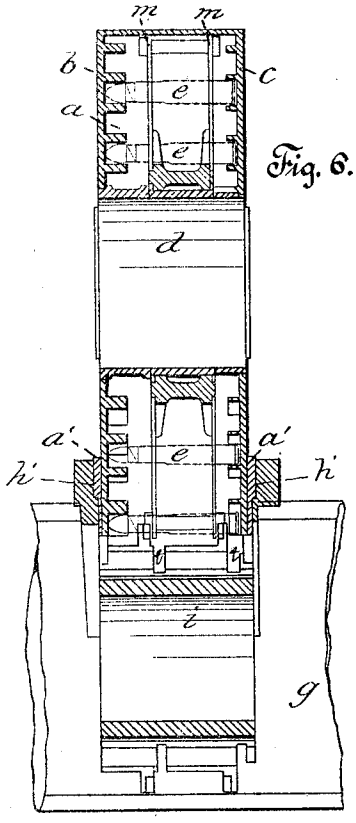


Fig. 6.



Witnesses:
C. L. Burdett.
Walter H. Bruce.

Inventor.
James G. Accles
By W. E. Simonds,
Atty.

(No Model.) 3 Sheets—Sheet 3.

J. G. ACCLES.

FEEDER FOR MACHINE GUNS.

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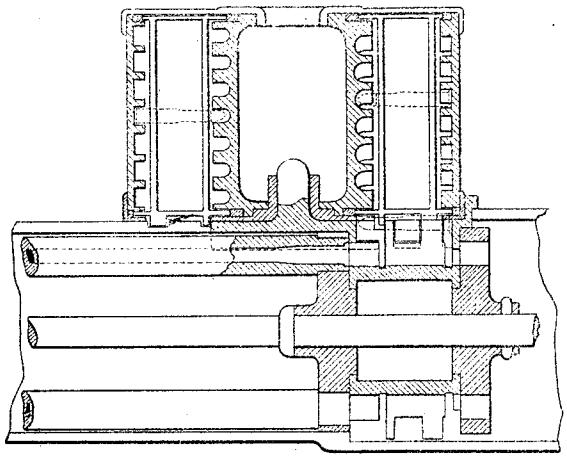


Fig 7.

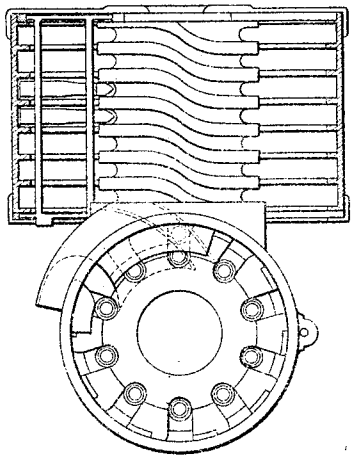


Fig 8

Witnesses
Wm. Goepelman
Chas. L. Burdett

Inventor
James G. Accles
By W. E. Simonds.
atty

UNITED STATES PATENT OFFICE.

JAMES GEORGE ACCLES, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE GATLING GUN COMPANY, OF SAME PLACE.

FEEDER FOR MACHINE-GUNS.

SPECIFICATION forming part of Letters Patent No. 290,622, dated December 18, 1883.

Application filed July 26, 1882. (No model.) Patented in England December 13, 1881, No. 5,436; in France February 6, 1882, No. 147,224, and in Belgium February 6, 1882, No. 56,986.

To all whom it may concern:

Be it known that I, JAMES G. ACCLES, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Feeders for Machine-Guns, of which the following is a description, reference being had to the accompanying drawings, where—

Figure 1 is a side view of my device. Fig. 2 is a view of the lower edge of the same, showing the outlet of the case. Fig. 3 is a side view of a part of the breech of a Gatling gun, with my improved feed-case in position for use. Fig. 4 is a view of the inner side of one of the side plates, showing the spiral grooves. Fig. 5 is a detail view of the propeller and of the carrier, the latter in section. Fig. 6 is a view in longitudinal vertical section of a part of the gun and the feed-case, the plane of section being on the axis of the gun. Figs. 7 and 8 are detail longitudinal and transverse sectional views, respectively, showing a modification of the feed mechanism arranged at right angles to the barrel.

My invention relates to the class of devices used for supplying or feeding cartridges to machine-guns; and its object is to supply cartridges by positive action, not dependent on gravitation, to the machine-guns of the Gatling type, in which the cartridges are fed in succession into compartments in a revolving carrier or receiver, and are thrust forward from these compartments into the barrels of the gun with which they communicate.

In the accompanying drawings, the letter *a* denotes the feeder as a whole, consisting of circular plates *b c*, preferably of metal, connected centrally by a hollow cylinder, *d*, and at such a distance apart that the cartridges *e* can lie and move laterally between the two side plates. The plates are inclosed around their periphery, except at the under side, where there is left an opening, *f*, for the delivery of cartridges. The feeder *a* is placed with its axis parallel to the barrels of the gun *g*, the projections *a' a'* being arranged to enter corresponding recesses, *h' h'*, in the hopper *h*, which is mounted upon the gun immediately over the carrier *i*. The side plates, *b c*, are provided on the inside with inwardly-projecting guide-ribs, similarly arranged opposite to each other, so as to form spiral paths or guides for the cartridges, the nose of which lies between the spiral ribs on one plate, and the base-flange between the spiral ribs on the opposite plate. It is not necessary that the ribs should be formed in a true spiral curve, and it is, indeed, preferred that the guide-ribs should be arranged in a series of concentric and nearly complete circles, connected by short inclines, so as to form a continuous guide-track, beginning near the central cylinder, *d*, and terminating at the circumference of the feeder at the opening *f*. The cartridges lying in these spiral guides are controlled by a propeller, *k*, which forms the cartridge-moving part of the feeder. The propeller consists of a hub, *l*, surrounding the central cylinder and arranged to revolve freely upon it, and of any desirable number (generally two) of parallel disks, *m*, fixed to the hub at such distance apart as to allow the whole to revolve freely between the edges of the guide-flanges within the feeder. The disks are of a diameter a little less than that of the side plates of the feeder-frame. Radial slots *n* are cut in the propeller-disks, and the main portion of the cartridges in the feeder are contained in these slots, the nose and base being in the guides between the spiral flanges. When the propeller is rotated to feed the cartridges out, it carries them along the spiral guides and brings them in succession to the opening *f* in the periphery, where the guides terminate, and delivers them into the hopper *h*. The propeller is rotated by means of lateral projections or teeth *p*, which are in mesh with corresponding teeth, *q*, on the receiver. When delivered into the hopper, the cartridges pass along inclined guides *r*, which are in continuation of the feeder-guides, and are carried into the compartments *s* of the receiver as each compartment in succession comes uppermost. The guides in the hopper are formed by flanges, which project downward into peripheral grooves cut in the receiver to about the depth of the cartridge-compartments therein. These flanges *t* are convex on the upper edge, *t'*, and concave on the

lower, t'', where, at a suitable point, they form a plow or ejector for the empty cartridge-shells, which are thrown out successively as the receiver is revolved, as by the ordinary mechanism. In order to get the cartridges into the feeder, they are each one placed in the opening f, (the bullets, of course, pointing all in one direction with the axis of the feeder,) and the propeller turned so as to carry the cartridges along the guides toward the central cylinder and the inner terminus of the spiral groove.

To use the device on a gun, the loaded feeder is placed upon the hopper, the projections fitting into the mortises, and the teeth of the receiver and propeller intermeshed. Then, upon revolving the receiver, the cartridges are forced out along the guides and into the receiver-compartments by the revolving propeller. This feeding motion is positive and continuous as long as the gun is worked, and forms the main feature of my improvement.

In place of arranging the feeder with its axis parallel with the barrels, as above described, it may be placed with its axis at right angles thereto, and its construction is then somewhat modified, although identical in its method of operation.

The frame or stationary part of the feeder consists of two concentric cylinders, with a space between in which the cartridges lie radially between guide-ribs on the cylinders. These ribs form a helical course, along which the cartridges are carried by a propeller, substantially like that already described. The helical course in which the cartridges are thus made to move, so that they may be brought forward in succession and delivered into the compartments of the receiver, commences at the upper end of the cylinders and terminates at the lower end, where the cartridges pass from the feeder to the hopper, and from the hopper to the receiver, as already described.

It is obvious that my feeder is equally applicable to other machines in the arts, as where blanks (as screw-blanks) are to be fed to a thread-cutter, and for many like purposes, and for these all I desire to claim it.

I claim as my invention—

1. In combination, a cylindrical feeder having spiral or helical guides and a rotating propeller, adapted to be temporarily secured to the hopper of a machine-gun, with teeth on the propeller in mesh with others on the receiver, whereby rotary motion of the latter causes contained cartridges to be fed forcibly from the case into the gun, all substantially as described, and for the purpose set forth.

2. In a cartridge-feeding device, the combination, substantially as described, of a cylindrical feeder formed with spiral guides, and a cylindrical revolving propeller formed with radial slots, for the purpose stated.

3. The combination, substantially as described, of a cylindrical feeder formed with spiral guides, a cylindrical revolving propeller formed with radial slots and lateral projections, and a receiver formed with registering radial compartments and lateral projections, said members being organized for joint co-operation, substantially as described.

JAMES GEORGE ACCLES.

Witnesses:
CHAS. L. BURDETT,
WALTER HAYES BUNCE.