No. 648,056.

Patented Apr. 24, 1900.

W. D. REYNOLDS.

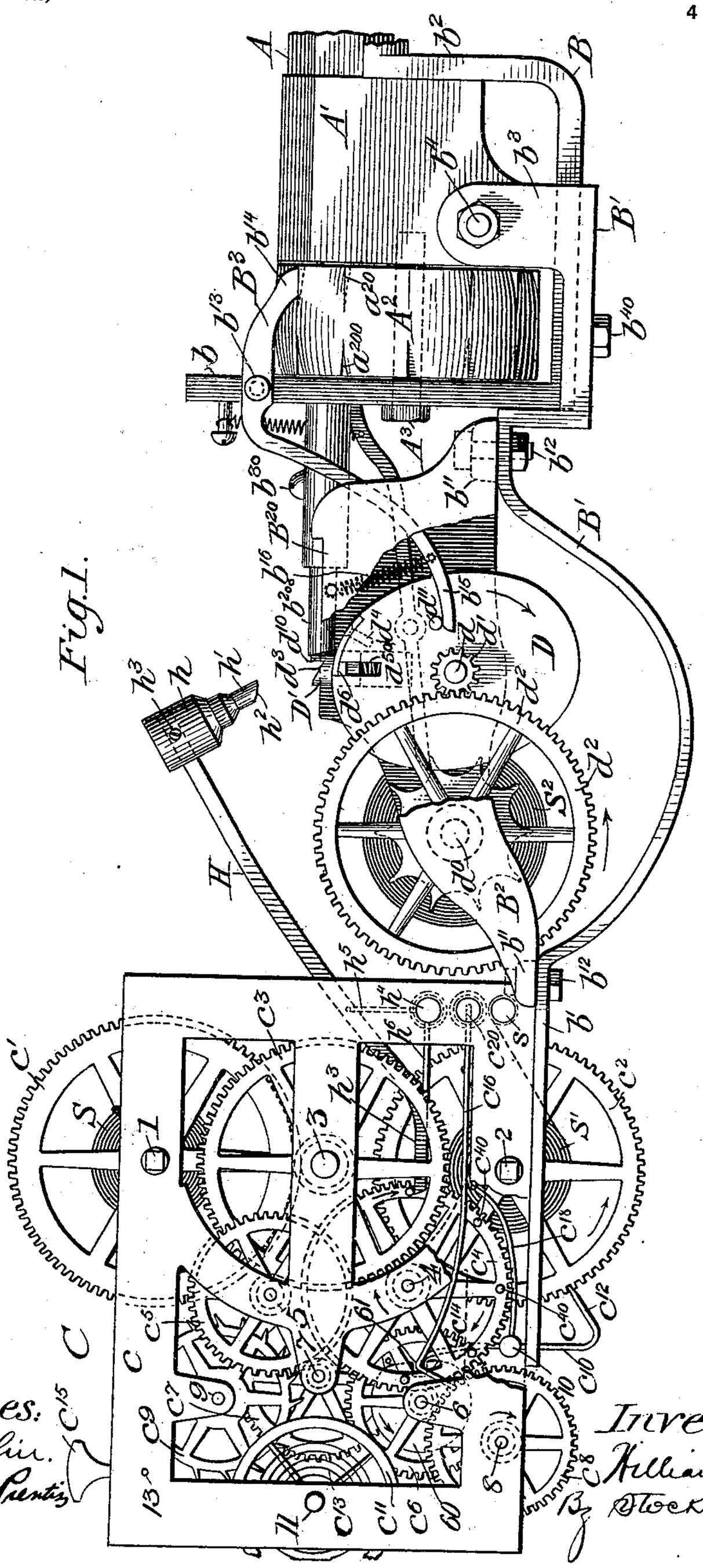
ALARM DEVICE FOR SHEEPFOLDS.

(Application filed July 14, 1899.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1.



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(No Model.) 4 Sheets—Sheet 2.

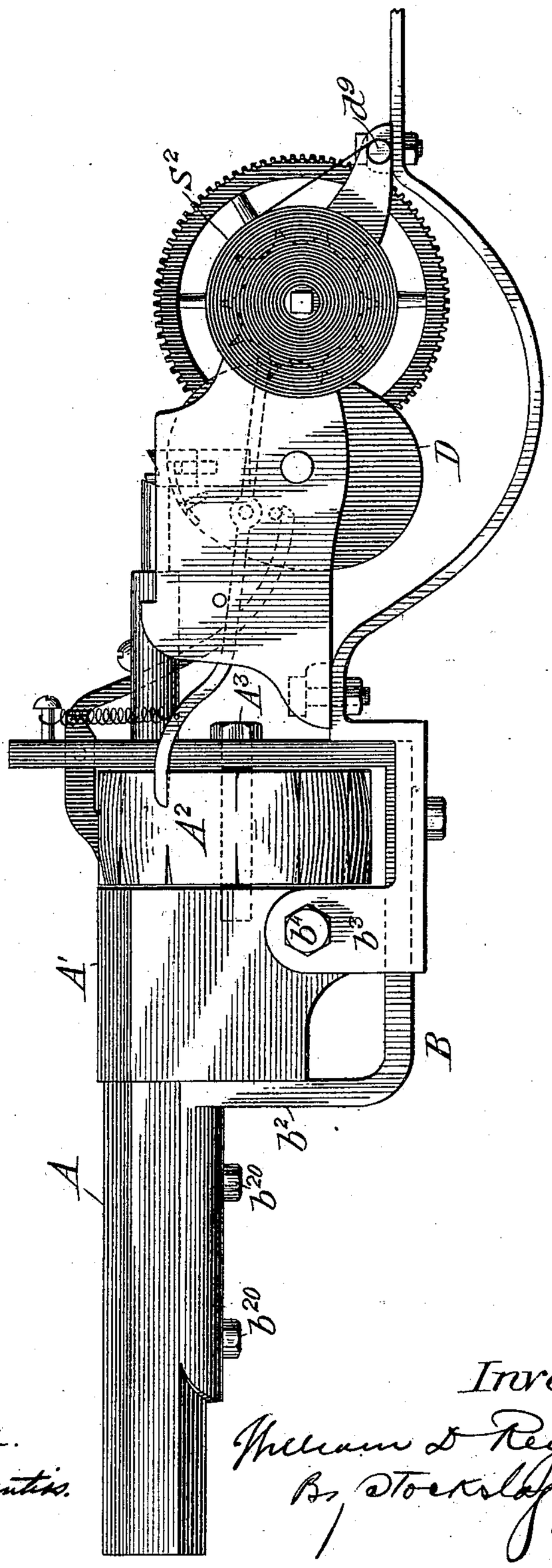

Fig. 2.

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(No Model.) 4 Sheets—Sheet 3.

Fig. 3.

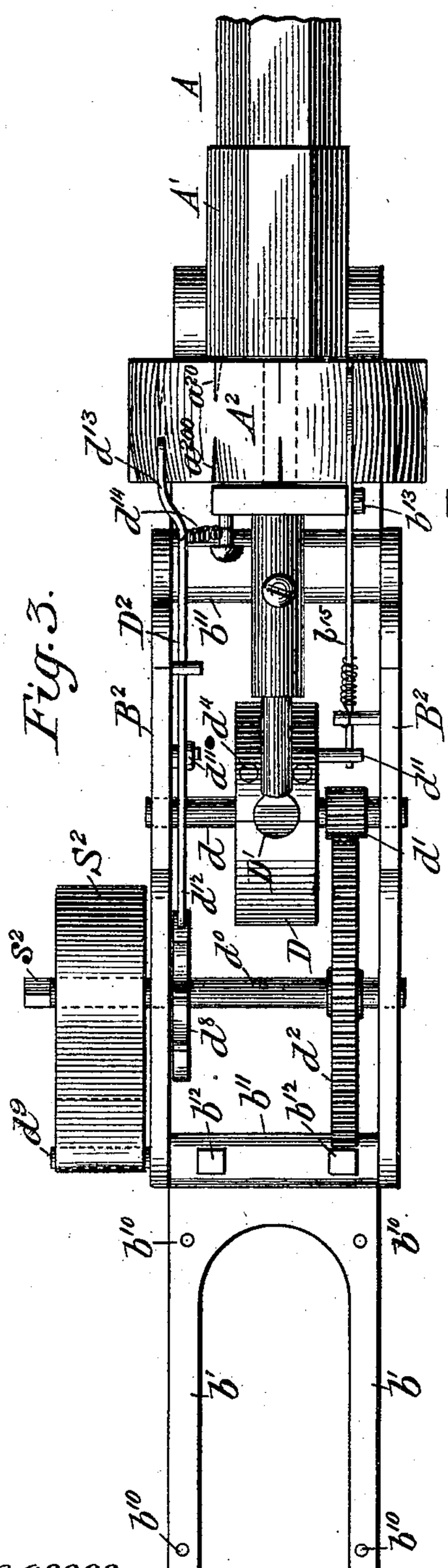
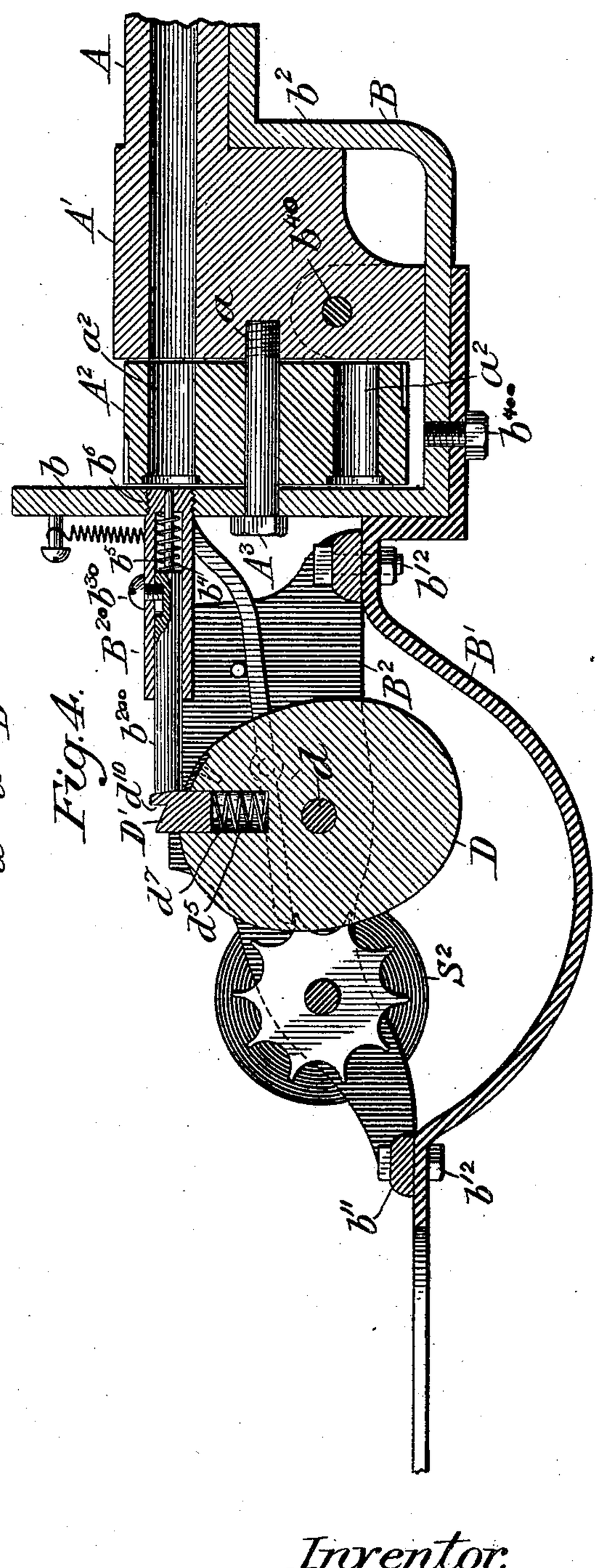


Fig. 4.



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ALARM DEVICE FOR SHEEPFOLDS.

(Application filed July 14, 1899.)

(No Model.) 4 Sheets—Sheet 4.

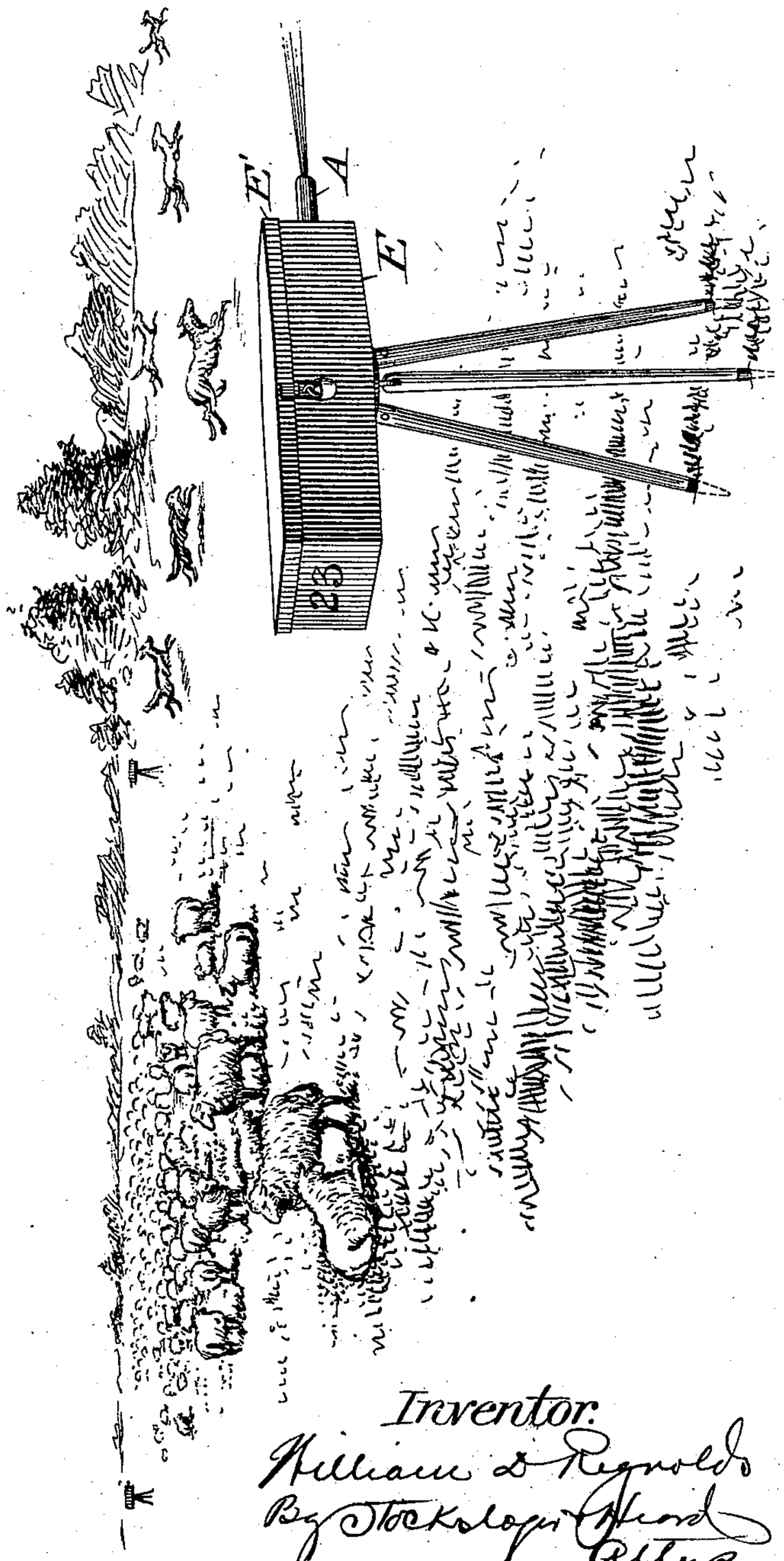

Fig. 5.

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UNITED STATES PATENT OFFICE.

WILLIAM D. REYNOLDS, OF MOUNTAIN HOME, IDAHO, ASSIGNOR OF ONE-THIRD TO WILLIAM F. SMITH, OF SAME PLACE.

ALARM DEVICE FOR SHEEPFOLDS.

SPECIFICATION forming part of Letters Patent No. 648,056, dated April 24, 1900.

Application filed July 14, 1899. Serial No. 723,804. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. REYNOLDS, a citizen of the United States, residing at Mountain Home, in the county of Elmore and State of Idaho, have invented a new and useful Alarm Device for Sheepfolds, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof, wherein the same letters and numerals of reference point out the same parts in all the figures.

My invention relates to means for protecting flocks and herds from the depredations of wild animals, especially where of necessity the flocks or herds are scattered over a considerable expanse of territory away from the immediate vicinity of human dwellings. Such conditions prevail on many of our Western ranches, and the protection of sheep and lambs, for instance, particularly during lambing season, has become a serious problem. At such a time unless rigid preventive measures are adopted wolves and coyotes are very apt to harass the flocks, worrying the sheep and devouring the lambs, causing in many instances a considerable loss. It has been customary to have men armed with shotguns or with other weapons that would produce a loud noise make the rounds of certain portions of the ranches at regular intervals, discharging their weapons as they went. This has proved fairly satisfactory in many cases as a means of frightening off the wild animals; but like every other scheme which depends for its success upon purely human agency it is apt to fail at critical times by reason of that agency going astray. The men selected for this duty may be trustworthy and proper persons, and in such case the flocks are fairly safe; but it frequently happens that drowsiness or a more potent and insidious influence overcomes the watchmen, and the absence of the flashes and reports of the alarm-guns gives the wolves and coyotes an opportunity of which they are not slow to avail themselves.

My invention has for its object to provide mechanisms that when properly set will take the place of the watchmen above described. I distribute these mechanisms, which are, in effect, automatic periodically-operating firearms, through the ranges or folds to be protected and arrange them so that if properly loaded and set they will each produce an explosion at intervals which may be definitely predetermined, ranging in duration from a few minutes to a half-hour or an hour.

My invention consists, essentially, of four parts, as follows: first, the mount, consisting of a suitable case, necessarily made weatherproof, and a support upon which it is carried; second, a gun barrel or barrels with a magazine attachment; third, the firing mechanism, and, fourth, the controlling or time mechanism. The operation of these parts is broadly apparent from the simple statement of their functions. The firing mechanism causes the discharge and works the magazine-feed. The controlling time mechanism at fixed and predetermined intervals releases the firing mechanism. The time mechanism of course requires to be rewound, and the magazine requires recharging at intervals; but by having the work done systematically and making regular rounds at stated intervals the trouble and inconvenience thus involved are reduced to a minimum. Instead of having men riding over beats in the vicinity of the flocks to be protected I have a patrol make the rounds of all the alarm mechanisms once a day or once in two days to inspect them and at the same time rewind and reload them. The mounts are so constructed that the casing may be taken from the support and easily carried by a man on horseback if it is found necessary to repair the mechanism, and a patrol should never go out without carrying one or more extra cases with him.

My invention is fully illustrated in the accompanying drawings, wherein—

Figure 1 is a side view of the mechanism of my alarm device, one of the cheek-plates and the gun-barrel being partly broken away. Fig. 2 is a view of the magazine and firing mechanism from the opposite side of that in Fig. 1. Fig. 3 is a plan view of the magazine and firing mechanism, and Fig. 4 is a longitudinal section through the same and the barrel looking in the same direction as in Fig. 1. Fig. 5 is a perspective view showing the mounting of the entire device and also indicating the manner in which the devices are located in a sheep-field.

Referring to Fig. 1, which shows all the operative parts assembled, the controlling time mechanism will be observed at the left. It is lettered C in its entirety. The firing mechanism is shown in the center of the figure, and the breech of the gun, with the cylinder or magazine, is shown at the right. The time mechanism C, which I have chosen to use with the present form of alarm, consists, essentially, of a double train of gears, each having its own driving-spring, one train being the time-train proper and the other what I shall hereinafter denominate the "firing-train." The time-train consists of arbors 1, 3, 5, 7, 9, 11, and 13, mounted in a framework *c*, similar to the framework of a striking-clock. The arbor 1 carries the main driving-gear c' and the mainspring S. It has a squared end for the reception of a suitable key for winding and is supposed to be connected with the gear c' by means of the usual ratchet-wheel and pawl. This is not shown, because it is of the pattern used in all clock mechanisms and would only complicate the drawings. The main driving-gear c' meshes with a pinion on the arbor 3, the gear c^3 of which meshes with a corresponding pinion on the arbor 5, whose gear c^5, through the pinion on arbor 7 and its gear c^7, drives the scape-wheel c^9 on the arbor 9. The movements of the scape-wheel, and thereby the running of the clock-train, are regulated by an anchor-escapement, which does not show in the drawings, but which is controlled through the balance-wheel c^{11}, mounted on arbor 11, and actuated by the hair-spring c^{13}. The escapement-lever is mounted upon the arbor 13 and carries the verge or tailpiece c^{15}.

The firing-train consists of the main gear c^2, carried on the arbor 2, which also carries the mainspring S′ and has a squared shoulder for the reception of a key, together with the ratchet-and-pawl winding connection hereinbefore referred to in connection with the other train, together with the gears c^4, c^6, and c^8 and their pinions mounted upon arbors 4, 6, and 8, respectively. The arbor 6 in addition to the gear c^6 and its pinion carries a cam-disk 60, having one edge slightly flattened and provided with a notch 61. Pivoted upon a post 10 to freely turn thereon is a three-armed detent c^{10}, one arm being a spring extension c^{18}. A second one c^{14} rides upon the periphery of the cam-disk 60, while the third arm is bent upwardly almost on a radial line intersecting the arbor 2 and constitutes a detent or stop for the main gear c^2. A spring-arm c^{16} is secured to a post c^{20} and overlies the upturned end of the arm c^{18}.

It will be readily understood from the above description that the construction of the time-trains does not differ greatly from that of a good striking-clock. The operation is very simple. A pin or pins carried upon one of the wheels of the time-train and not shown, because on the other side of the train, serves or serve to release the detent c^{12} and to permit the gear c^2 to revolve, turning the gears c^4, c^6, and c^8 with it. The gear c^6 is adapted to make one complete revolution while the gear c^4 is revolving through an angular distance shown in the drawings as the distance between centers of the pins c^{40}, set into its periphery. These pins c^{40} constitute the direct firing means of the firing-train. A lever H is pivotally supported, by means of struts h^5 and h^6, upon a post h^4 and has its end h^7 extending into position to be engaged, as shown, by the successive pins c^{40} as the gear c^4 revolves in the direction indicated by the arrows. The outer end of the lever H carries a heavy-weighted head *h*, secured to the lever in any suitable way, as by a set-screw h^3, and having a reduced portion h' rearwardly beveled, as at h^2. This hammer-head may be constructed of any heavy metal, and, in fact, may be a lead casting around an iron core; but the striking part h' must be of hardened metal in order to stand the wear of repeated blows. The lever H has a certain amount of resilience, by virtue of which it may be stopped after a certain length of stroke without stopping the hammer-head, a quick rebound of the latter being thereby assured.

I shall now describe the gun proper, with its magazine, and then turn to the firing mechanism, which forms the connecting-link between the firing-train and the gun. The firing-train and time-train are not shown elsewhere than in Fig. 1; but the rest of the mechanism is clearly displayed in Figs. 2, 3, and 4. In all of these figures, A is a gun-barrel terminating in a breech-piece A′. This breech-piece is preferably made quite bulky and heavy in order by its inertia to absorb the greater part of the energy of recoil, thereby preventing the transmission of sudden and violent strains to the rest of the mechanism. The barrel and breech-piece are fitted in a frame B, which has an upwardly and forwardly extending member b^2 secured to the gun-barrel by bolts b^{20}, tapped therein. A certain distance to the rear of the breech-piece A′ the frame B has a second uprising member *b*, which forms a false breech for the gun. Between this false breech and the breech-piece the cylinder A^2 is revolubly mounted by means of the cylinder-bolt A^3, which, as shown in Fig. 4, passes through the false breech *b* and is tapped or screwed directly into the body of the breech-piece. One object attained by this construction is the transmission of all strains from discharges through the cylinder-bolt to the breech-piece.

B^{20} is a firing-pin case or tube suitably connected to the false breech *b*, as by screw-threads b^6, and having its axis coincident with the axis of the gun-barrel and of any chamber in the cylinder which may be turned into position for firing. Within the tube B^2 the firing-pin b^{200} is fitted, so as to reciprocate within certain limits, these limits being determined by a suitable slot in the pin and a

limiting-screw b^{30} in the tube. The firing-pin is kept normally in retracted position by a spiral spring b^5, which encircles the inner reduced end thereof, resting at one end against the shoulder formed on the pin by this reduction and at the other end against the solid end wall of the tube B^2.

The gun-barrel, cylinder, frame B, and firing-pin mechanism, as thus described, constitute a separate organized piece of apparatus capable of separation from the rest of the mechanism for packing or for repairs in a manner that will presently appear. It will be observed that I have heretofore referred to the cylinder A^2 under the generic title of a "magazine." I have chosen to do this for two reasons—first, because the cylinder is in practice of a greater relative diameter than that shown in the drawings, having chambers for a great many cartridges, and, second, because I consider my invention to be generic in its nature, and while an ordinary revolving cylinder is shown it would not require many changes to add a feed-hopper or a slide-magazine to the mechanism here illustrated, and, as will sufficiently appear from the claims hereto appended, I consider such addition, broadly speaking, to be within the scope of my invention.

I shall now proceed to describe the firing mechanism proper. This, like the other portions of the apparatus, is complete in itself to the extent of forming when detached an organized piece of apparatus. It consists, essentially, of a framework supporting a spring-motor and firing-cam, together with means operated thereby to turn the cylinder step by step, one step for each operation, so as to bring fresh cartridges successively into line with the gun-barrel and the firing-pin. A curved frame-piece B′ is secured at its forward end to the gun by means of a pair of uprising ears b^3, which embrace the breech-piece A′ and are secured thereto and to each other by a through-bolt. This forms a solid connection, it will be observed, with the gun-barrel and its attached part, and the attachment is made more secure by a short screw-bolt b^{400}, which passes up through the frame-piece B′ into the frame B.

At its rear end the frame-piece B′, which, it will be understood, may be a single curved piece or may consist of a pair of connected straps, is provided with a rectangular extension b', drilled at b^{10}, as shown best in Fig. 3, for the reception of bolts which serve to secure the timing mechanism in position.

Extending from front to rear of the frame-piece B′ on both sides thereof are cheek-plates B^2, connected together by cross-bars b^{11}, through which pass bolts b^{12} to secure the cheek-plates to the frame-piece. Journaled between these cheek-plates are two arbors d and d^0. The first carries the firing cam or block D and the pinion d', rigidly fixed thereto, while the second carries the gear-wheel d^2, which intermeshes with the pinion d' and a star-wheel d^8. Also secured to the arbor d^0, outside of the cheek-plate, is a heavy driving-spring S^2, whose outer end is fast upon a pin or post d^9, attached to the cheek-plate. The arbor is provided with the usual shoulder s^2 for the reception of a winding-key.

The firing cam or block D is made very heavy, so that with a single revolution when released it will gather sufficient momentum to strike a considerable blow upon the firing-pin. The means by which such blow is struck are as follows: Extending inwardly from the periphery of the block D, I form a substantially-radial chamber d^5, within which a block D′ is fitted to reciprocate. This block is kept normally pressed outward by a helical spring d^7; but it is prevented from being forced entirely out of the chamber by side pins or trunnions d^6, (best shown in Fig. 1,) which work in slots d^{50} and are overlaid by a retaining-plate d^3, secured to the block D by screws d^4 and having its surface flush with the surface of the block D. The sliding block D′ is notched at d^{10} in a peculiar manner for the reception of the beveled face h^2 of the hammer h, and normally the block rests against the rear end of the firing-pin, serving as a detent to prevent the rotation of the firing-cam D. Pivoted at b^{13} on the false breech b is a retaining-pawl B^3, one end of which, b^{14}, engages with notches a^{20} in the cylinder A^2 to normally hold the same against retrogression. A longer arm b^{15} entends rearwardly inside of one of the cheek-plates into position to be engaged by a pin d^{11} on the firing-cam D, being normally held up against said pin by a spring b^{16}. On the opposite side from the retaining-pawl B^3 and pivoted at d^{110} to the cheek-plate B^2 is a pawl-lever D^2, having a pawl end d^{13} extending over and engaging with the notches a^{200} in the periphery of the cylinder A^2. The pawl-lever is normally kept with its end pressed against the cylinder by means of a spring d^{14} and has its opposite end d^{12} extending into position to engage the teeth of the star-wheel d^8 as the latter revolves. It should be observed that the notches a^{20}, engaged by the retaining-pawl B^3, and the other notches a^{200}, engaged by the pawl d^{13}, are formed in reverse relation to each other—that is to say, the retaining-pawl rests on the upper side of a tooth in its notch a^{20}, while the pawl d^{13} rests on the upper side in the notch of a tooth of the opposite series—the cylinder being thus held from displacement in either direction when it has been moved so as to bring a chamber into firing position.

Before closing this description of the operative parts and in advance of the explanation of their operation I wish to direct attention to Fig. 5, in which alone the casing and mounting of my apparatus are shown. E in Fig. 5 is a metallic box or casing having a water-tight lid E′, preferably secured to it by attachments which permit of locking, as by means of the padlocks shown. The bar-

rel A of the gun mechanism protrudes from one end of the box, and upon the other end I usually paint a serial number in order that each box may be kept track of. The entire box or casing is mounted with its substantial center of gravity in the vertical line through the center of a tripod-plate, the legs of the tripod being firmly secured to the plate and shod with iron or steel points, so that they can be driven well into the ground. The size of the casing is somewhat exaggerated in the drawings, the actual dimensions being only those necessary to allow the casing to receive the apparatus shown in Fig. 1, which in the drawings is full size.

It might reasonably be asked why a gun mechanism and not some flashing detonator is employed for these alarm purposes. There are two reasons. One is that the appearance of the apparatus when mounted on a tripod renders it different from what the wild animals are accustomed to see, and to their instincts it appears the work of human hands. The second reason is that it is not the noise alone which frightens the wild animals, but the belief inspired in their minds that the noise is caused by a firearm in the hands of a human being. It has been found that the nearer the alarm approaches in its sound to the sound of a watchman's gun, which they are accustomed to see inflict damage, the more effective it is.

The complete apparatus (shown in Fig. 5) is placed in position, the clockwork and the firing-spring are wound up, the chambers of the magazine are fully charged, and the box can be locked and left during a period sufficient to permit the discharging of all the cartridges, with the full assurance that there will be no loss due to failure of the alarm. It should here be explained that the duration of the time involved between shots is regulated by changing the number of pins in the tripping-wheel of the time mechanism C. It has been stated that a pin (not shown) first lifts the detent c^{10} and that the cam 60 then retains the detent in its lifted position during a stated interval. In order to regulate the time interval between these operations, it is obviously only necessary to alter the number of pins on the tripping-wheel, and this being a common expedient in striking clock mechanisms is not illustrated. I have found it expedient to cause the hammer h to fall and fire a shot once in fifteen minutes. This requires four cartridges per hour, and for a period of twenty-four hours this requires ninety-six cartridges. It is possible, without exceeding reasonable limits, to make the cylinder A′ of sufficient size to chamber one hundred cartridges. These may well be specially-prepared small-caliber cartridges having a long shell, so that the diameter of the cylinder should be kept as low as possible. If any greater length of time be contemplated, it is necessary to introduce a different form of magazine, retaining the cylinder principle, but adding a feed which will eject the empty shells from the lowermost chamber and insert a fresh cartridge at each step in the revolution. I do not consider it necessary to show such a magazine, as it is to form the subject-matter of a later application.

Having thus described the mechanical construction of my invention, its operation will be understood. Supposing that the springs S, S′, and S^2 have been wound and the parts are all in the position shown in Fig. 1, which is normal, the timing-movement C will operate in the ordinary way, being regulated in its running down by the scape-wheel c^9. At a predetermined moment the tripping-pin on the proper gear of the time-train will turn the detent c^{10} upon its center 10 and release the firing-train. Spring S′, through the medium of gear c^2, will immediately communicate motion to the gear c^4, which, it will be remembered, carries the pin c^{40}. The particular pin which at the time overlies the tripping-end h^3 of the lever H will depress that end until the lever has swung on its post h^4 sufficiently to permit the pin to ride over and escape from the end thereof, the hammer-head being by this operation lifted higher than shown in Fig. 1. The gearing c^2, c^4, and c^6 is so proportioned that the gear c^4 will turn through a distance equal to that between two of the pins while the cam 60 is making one revolution. Thus the firing-train will continue to operate until another pin has taken the place of the one which actuates the lever H. When the pin rides off the end of the lever, the weight of the hammer h causes it to drop with considerable force upon the sliding block D′, driving that block down into the chamber d^5 against the stress of its spring. The part h' of the hammer falls into the notch d^{10}, also of the block, with its beveled face resting upon the oppositely-beveled face of the notch. The spring S^2, through the medium of gear d^2 and pinion d', strongly tends to produce rotation of the firing-cam D in the direction of the arrow shown in Fig. 1; but such rotation is normally prevented by the sliding block D′ resting against the rear end of the firing-pin. When the sliding block is depressed, however, by the blow of the hammer, the cam D is free to revolve, and immediately does so, the inclined face h^2 on the hammer riding up on the correspondingly-inclined face of the block, and tending by its inertia to keep the block depressed until it is past the firing-pin. As soon as the block D′ has been carried past the firing-pin its spring d^7 forces it out once more into the positions shown in Figs. 1 and 4, and consequently at the end of one revolution of the cam D the block D′ will spring up against the end of the firing-pin with all the energy that has been accumulated by the cam D during its revolution, the firing pin being thus driven in forcibly against the primer of the cartridge to explode it. After the explosion the parts remain in the position shown, the firing-pin resting upon

the exploded shell and continuing to serve as a stop for the sliding block D′ until the next operation. In order that a fresh cartridge may be brought into position at the next operation, it is necessary that the cylinder be rotated just prior to the actuation of the firing-pin, and this is accomplished by the pawl-lever D^2 and the star-wheel d^8. The proportion of the driving-gear d^2 to the pinion d' and the number of teeth on the star-wheel are such that one tooth will push up to pass the end d^{12} of the pawl-lever for each complete revolution of the firing-cam D. Therefore as the hammer releases the cam D and permits it to revolve pin d^{11} will first depress the lever-arm b^{15} of the cylinder-locking pawl, and then as the revolution proceeds the star-wheel will in turning actuate the pawl-lever D^2 to rotate the cylinder the distance between centers of two chambers. The instant the proper chamber comes into line it will stop, for that is the instant at which the rotation of the cam D ceases, by reason of the block D′ springing up against the end of the firing-pin. Thus at the end of every time interval previously determined the tripping-pin on the timing-train will trip the detent of the firing-train, which will drop the hammer to permit the firing-cam to revolve, in its revolution working the cylinder to bring a fresh cartridge into position and finally to explode the same, this explosion forming an abrupt termination of the whole operation.

By removing the through-bolt b^{40} and the other bolts b^{12} and b^{400} the mechanism will be separated into three distinct and uniform parts, when it may be readily packed or any one part exchanged for a new one.

Having described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In an automatic alarm device, a gun-barrel, a magazine containing cartridges and movable to bring its contained cartridges successively into firing relation with the gun-barrel, a firing mechanism adapted to fire the cartridges and also to effect the movement of the magazine, and a time-train adapted to act at predetermined intervals upon the firing-train to release the same and permit it to move the magazine and fire the cartridges therein, substantially as described.

2. In an automatic alarm device, a frame, a gun-barrel, magazine, and firing-pin, mounted together and carried as a unit on said frame, a firing-train with a moving part adapted to act upon the firing-pin, also mounted upon the frame as a unit; and a timing-train mounted upon the same frame and detachable therefrom as a complete unit, and having a moving part adapted to be actuated at predetermined intervals to release the firing-train, substantially as described.

3. In an automatic alarm device, a longitudinal frame having at one end a gun-barrel, its revolving cylinder, and a firing-pin therefor; at the other end a clock-train having a forcibly-moving part adapted to be released at predetermined intervals; and having between the gun and the clock-train a power-actuated firing mechanism adapted to be acted upon by the moving part of the clock-train and in turn to act upon the firing-pin of the gun, substantially as described.

4. In an automatic alarm device, a gun-barrel, and a revolving cylinder therefor carrying cartridges, a detent and an actuating-pawl for said cylinder, and a firing-pin; a spring-actuated firing cam or hammer normally restrained but adapted when released to move the detent and the actuating-pawl of the cylinder, and by striking the firing-pin to explode a cartridge, together with a time-train having a movable part arranged to release the firing-cam at predetermined intervals, substantially as described.

5. In an automatic firearm a combination with the gun-barrel and firing-pin supported upon a frame in operative relation to each other, of a firing mechanism consisting of a rotary cam or hammer having a projecting part normally resting against said firing-pin, but adapted to be moved to pass the pin, and to return forcibly thereto at the end of a revolution, together with a motor constantly tending to rotate the cam or hammer, substantially as described.

6. In an automatic firearm, a frame, a gun-barrel and a revoluble cylinder supported upon said frame, a pair of cheek-plates on opposite sides of said frame, a firing-pin in line with the gun-barrel and projecting over the cheek-plates, a detent and an actuating-pawl engaging with the cylinder and projecting between the cheek-plates, and a spring-actuated train mounted between the cheek-plates, one member of which is adapted to strike the firing-pin, and means whereby the train may control the cylinder-pawls, substantially as described.

7. In an automatic firearm the barrel, the frame supporting the barrel and a tubular casing in line therewith, a firing-pin fitted to reciprocate within said casing, a revolving firing cam or hammer having a radius such that its periphery will not touch the firing-pin during its revolution, and a spring-actuated block adapted to be projected from the periphery during the revolution and at the end thereof to be brought forcibly into contact with the firing-pin, substantially as described.

8. A firing mechanism for automatic firearms consisting of the following instrumentalities: a firing-pin, a main driving-gear and spring-motor therefor, a pinion revolved by said gear and a heavy rotary cam or hammer rigidly secured to said pinion, the radius of said hammer and the location of its center being such that its periphery will approach but will not actually touch the firing-pin; a chamber formed in said cam or hammer, a reciprocating block fitted to said chamber and a spring within the chamber to force the

same outwardly together with means to prevent the total expulsion of the block; the whole being so arranged that the cam or hammer may be restrained from rotation by means of this block resting against the firing-pin, but that upon the momentary depression of the block, it will slip under the firing-pin, to again rise and impinge thereon at the end of the revolution, substantially as described.

9. In firing mechanism for automatic firearms the combination of the following instrumentalities: a frame supporting a barrel and revolving cylinder, together with a firing-pin casing and firing-pin in proper relation thereto, a firing cam or hammer fitted to rotate upon a suitable shaft and having a projecting part adapted to impinge against the firing-pin at the end of a revolution; a main driving-shaft having a motor-spring, and carrying a star-wheel and a driving-gear adapted to mesh with a suitable pinion upon the cam or hammer shaft; a detent-lever and an actuating-pawl for the cylinder, the latter engaging with the star-wheel upon the main driving-shaft, and a pin upon the side of the cam or hammer adapted to lift the former at each revolution, substantially as described.

10. In firing mechanism for an automatic firearm, a firing-pin, and a firing cam or hammer therefor pivoted upon a shaft as d so that its periphery does not touch the firing-pin, said cam or hammer having a chamber as d^5, a block as D′ sliding therein, a spring d^7 to force said block outwardly into position to engage the firing-pin, a retaining-plate d^3, and pins or trunnions d^6 upon the sliding block, substantially as described.

11. In an automatic firearm a frame, a barrel and a firing-pin suitably supported in said frame, a motor-driven firing cam or hammer as D adapted to revolve with its periphery clear of the firing-pin but having a normally-projecting block as D′ held in its projecting position by a suitable spring and having its top beveled upwardly away from the firing-pin, together with a weighted hammer having a beveled face, and a time mechanism adapted in running to drop said hammer upon the block D′ at predetermined intervals, so as to depress it momentarily beneath the firing-pin to permit the rotation of the firing cam or hammer, substantially as described.

12. In an automatic firearm a barrel and a firing-pin, a firing-cam having a spring-pressed projecting part normally resting against the firing-pin, a pivoted hammer-lever having a hammer-head adapted when released to swing down and momentarily depress the spring-pressed projecting part of the firing-cam, a firing-train of clockwork normally restrained but adapted when released to lift and drop said hammer, and a time-train of clockwork running continuously and adapted at predetermined intervals to trip and release the other or firing train, substantially as described.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, this 5th day of June, A. D. 1899.

WILLIAM D. REYNOLDS.

Witnesses:
E. M. WOLFE,
F. P. AKE.