No. 660,887. Patented Oct. 30, 1900.

C. CHEVALLIER & E. CADET.

SCREW ELECTRIC CONTACT DEVICE.

(Application filed Jan. 5, 1900.)

(No Model.) 2 Sheets—Sheet 1.

FIG. 1.

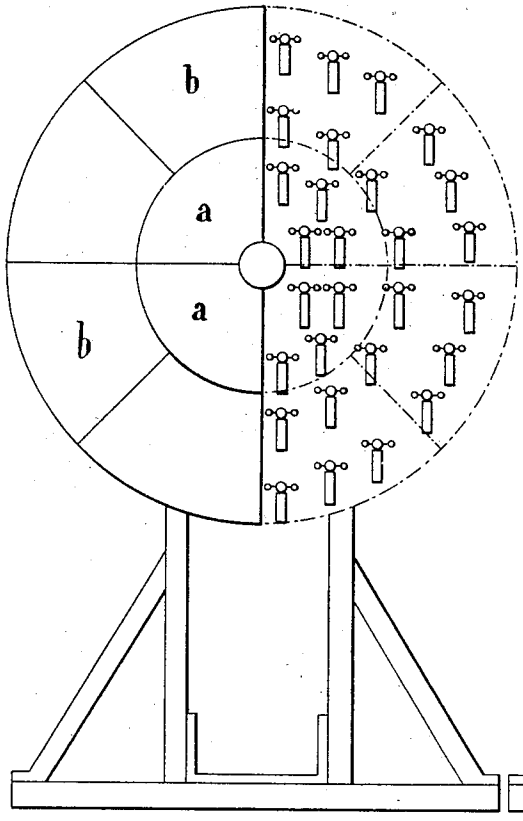
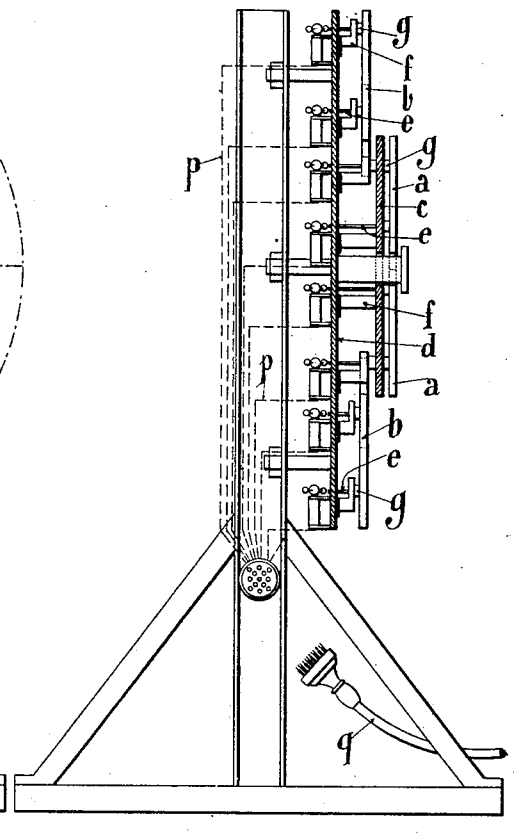


FIG. 2.



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FIG. 3.

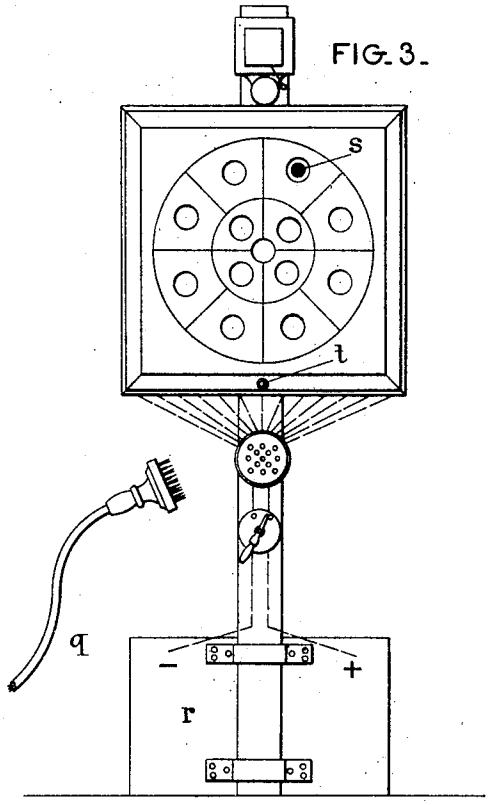


FIG. 4.

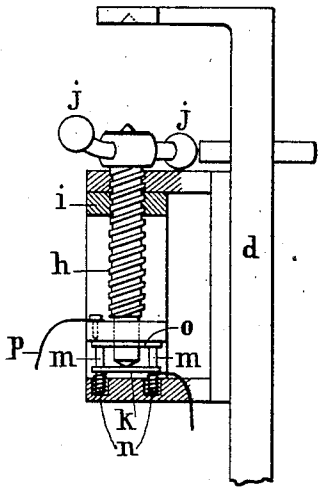


FIG. 5.

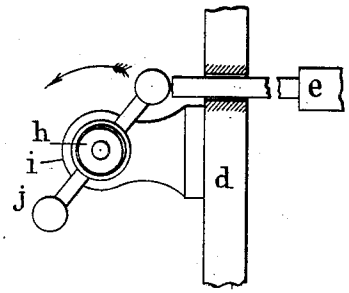
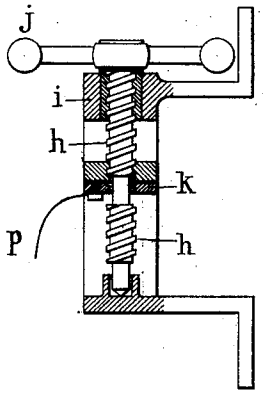


FIG. 6.



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UNITED STATES PATENT OFFICE.

CHARLES CHEVALLIER, OF ST. QUENTIN, AND EUGÈNE CADET, OF PÉRONNE, FRANCE.

SCREW ELECTRIC CONTACT DEVICE.

SPECIFICATION forming part of Letters Patent No. 660,887, dated October 30, 1900.

Application filed January 5, 1900. Serial No. 466. (No model.)

To all whom it may concern:

Be it known that we, CHARLES CHEVALLIER, residing at St. Quentin, department of Aisne, and EUGÈNE CADET, residing at Péronne, department of Somme, France, citizens of the Republic of France, have invented certain new and useful Improvements in Screw Electric Contact Devices, of which the following is a specification.

Our invention relates to a new screw electric contact device based on the employment of a quick-threaded screw connected with the member or members to be used to produce any sort of effect at a distance. The said device is more particularly applicable to military or other shooting-targets, the shots fired at which are automatically marked at a distance.

In the accompanying drawings we have shown our invention as applied to a suitably-constructed military target.

Figure 1 is a front view of the target, one-half of the movable segments and fixed disks being removed. Fig. 2 is a vertical section of the target. Fig. 3 shows diagrammatically the mark-receiving board or device. Figs. 4 and 5 are detail views of a contact device constructed according to our invention. Fig. 6 shows a modified form of the contact device.

The front part of the target is formed by metal panels *a* and *b*, arranged in different vertical planes, the series of circular segments being placed concentrically around the segments *a*, as shown in Figs. 1 and 2. The series of segments *a* overlap to a certain extent the next series of segments *b* in order to present to the shooter an entirely full surface. Behind each series of segments lies a fixed disk *c* or *d*, serving as a guide and support for the said segments by the medium of rods *e*, fixed to the latter, of perforations in the disks *c* and *d*, and of brackets *f*, fixed to the disk *d*. The brackets *f* may be provided with rollers to facilitate the sliding of the rods *e* when a projectile strikes one of the segments *a b*. Between the segments and the disks *c d* are placed rubber washers *g* or springs, serving to bring the segments forward again after being driven back by a shock.

The contact devices to which our invention essentially relates are placed behind the disk *d*, their number being equal to that of the rods *e*, opposite each of which a contact device is placed. Each contact device comprises, as shown in detail in Figs. 4 and 5, a vertical screw *h*, having one or more widely-pitched screw-threads and which turns in a fixed nut or support *i*, screw-threaded internally and fixed to the disk *d*. The upper part of the screw *h* is provided with a balance-piece having at its ends heavy parts *j*, forming a balance-wheel or essential part of the same. At the lower end the point of the screw *h* abuts against a plate *k*, vertically movable on guide-rods *m* and constantly pressed upward by spiral springs *n*, encircling the said guide-rods. Above the plate *k* is arranged on a support, which serves also as a guide for the screw *h*, a metal washer *o*, insulated electrically from the remainder of the mounting. The different washers *o* corresponding to the different segments *a* or *b* are connected together and also with the corresponding wires *p*. The wires *p*, equal in number to that of the segments *a* and *b*, may be assembled together in a cable *q*, leading to the marking device placed near the shooter, by whom they are connected with one of the poles of an electric battery *r*. All the plates *k* are also in communication with the metal frame of the target, and they may be connected with the second pole of the battery *r* either by a return-wire or by the ground.

When a projectile strikes one of the segments *a* or *b*, the shock compresses one or more of the springs *g* and the corresponding rod or rods *e* are driven in through the perforations of the disk *d* and strike the spheres *j* of the contact devices placed opposite. The impulsion thus given to one of the spheres *j* causes the screw *h* to turn on its axis and also to rise in its nut, whereby the plate *k* is allowed to move up to the contact-washer *o*. The electric circuit being thus closed through the wire *p* corresponding to the segment struck, the current of the battery *r* passes and operates the marking device. Immediately afterward the screw *h* moves down by its own weight and carries the plate *k* down to its position of rest, and thus opens the circuit.

The marking device (shown in Fig. 3) is nothing more than an indicator-board, the face of which is divided into as many parts as there are segments in the target. Each division is provided with an opening for the exposure of a notifying device *s*, which may be operated by a polarized bar resting against a field-magnet and which is repelled by the passage of the current. The said indicator-board is provided with a pusher-button *t* to remove the device *s* from sight, as in ordinary indicator boards or tables.

The above-described device avoids the inconveniences of the system of markers now in use for notifying the results of the shots fired, the necessity to establish a safe retreat, the dangers to which the markers are exposed, the possibility of error, the plugging of holes made by projectiles, &c. It can be applied to targets of any shape, whether representing human or other forms.

Fig. 6 shows a contact device more simple and in which the springs, rods, and plates are dispensed with, the circuit being closed by the screw *h* itself. For that purpose the threads of the screw are cut away for about seven-sixteenths ($\frac{7}{16}$) of an inch in length, and when the screw is at rest or in its normal position the insulated plate *k*, having screw-threads of a corresponding pitch to those of the screw, lies opposite the neck thus formed in the threads of the screw, and is therefore out of contact with the screw. If the screw receives an impulsion and rises, the lower screw-threaded part of the screw becomes engaged in the screw-threads of the plate *k* and closes the circuit.

The head of the screw *h* may be provided with a rubber washer to deaden the shock when the said screw comes against the plate at the part against which it abuts.

The above-described contact devices are applicable to other purposes, it being obvious that the operation will be the same as long as the cross-arm of the screw *h*, which carries the ball or fly-weight *j*, is struck by a movable operating member corresponding in function to the rod *e*.

We wish it to be understood that we do not limit our invention to the application hereinbefore described by way of example and that the devices shown in the drawings may be varied as to their dimensions and arrangements as required.

We claim—

1. The combination of a vertical quick-pitched screw, a threaded bearing in which turns said screw, weighted arms carried by the screw, a contact-plate engaging the said screw, a spring for pressing said plate upward, a contact-piece arranged above said plate, a horizontally-movable rod arranged to strike one of the arms carried by the screw, and a telltale-circuit connected with said contact-piece and plate.

2. An electric contact device, comprising contact members, one of which is movable toward and from the other, a screw controlling the movable contact member and provided with a cross-arm having a fly-weight, and a movable operating member arranged to engage said cross-arm to turn the screw.

3. A target provided with a series of independently-movable sections each carrying an operating member or rod, vertically-disposed screws each provided with a weighted cross-arm arranged in the path of one of the operating members, a threaded bearing for each screw, the screws being of such pitch and weight that they will automatically work down in said bearings, and circuit-closers operated by said screws.

In testimony whereof we have hereunto signed our names in presence of two subscribing witnesses.

CHARLES CHEVALLIER.
EUGÈNE CADET.

Witnesses:
CAMILLE BLÉTRY,
EUGÈNE WATTIER.