J. F. DANA.

ELECTRICAL SWITCH.

APPLICATION FILED MAR. 10, 1913.

1,101,064. Patented June 23, 1914.

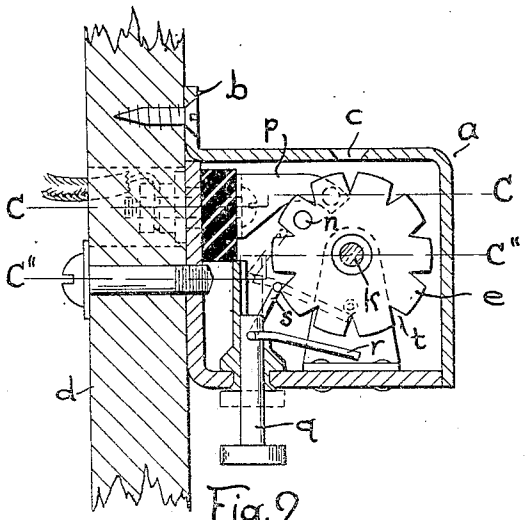
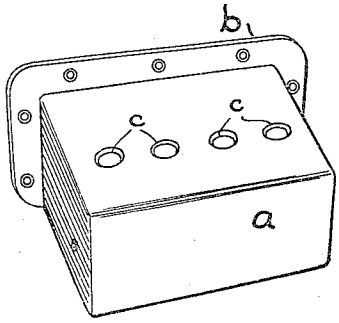


Fig. 2

Fig. 1



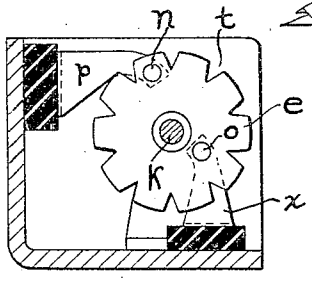
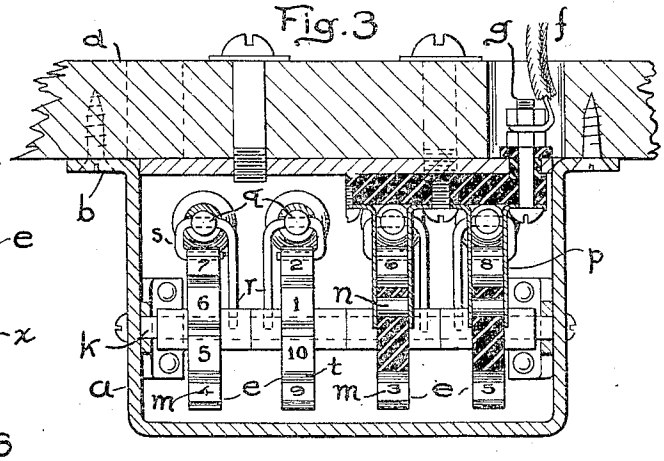


Fig. 6

Fig. 3



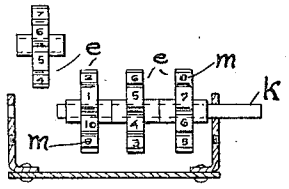


Fig. 4

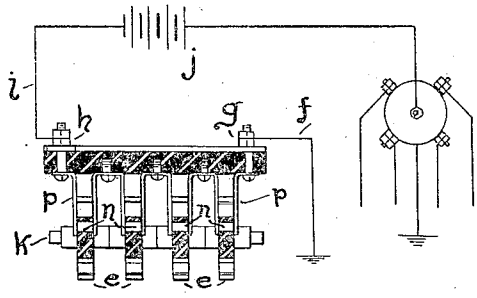


Fig. 5

WITNESSES

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ELECTRICAL SWITCH.

1,101,064. Specification of Letters Patent. Patented June 23, 1914.

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To all whom it may concern:

Be it known that I, J FRANK DANA, a citizen of the United States, residing at Jackson, county of Jackson, State of Michigan, have invented a certain new and useful Improvement in Electrical Switches, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to electrical switches and an object of my improvements is to provide an improved switch to be interposed in the electric circuit of the ignition system of an explosion engine to prevent unauthorized operation of the engine. I secure this object in the device illustrated in the accompanying drawings in which,

Figure 1, is a perspective view of a switch embodying my invention, detached from its support. Fig. 2, is a cross section showing the switch attached to the dashboard of an automobile. Fig. 3, is a section in two planes, the right hand half on the plane C—C Fig. 2 and the left hand half on the plane C″—C″ Fig. 2. Fig. 4, is a detail view illustrating the method of adjusting and assembling the device. Fig. 5, is a diagrammatic view showing the circuit. Fig. 6, is an elevation partly in section showing the modified construction.

a a is an inclosed casing provided with an attaching flange *b*.

c c are sight-holes formed through the casing *a*.

d indicates the dashboard of an automobile to which the casing *a* may be secured by screws passing through the screw holes in the flange *b*.

e e are disks of insulating material sleeved upon a shaft *k* on which they may rotate. Each of said disks is provided with a series of numbers or letters *m m*, which may serve to indicate its angular position upon the shaft *k*.

n indicates a rod of conducting material, such as brass, which extends through each of the disks *e* toward its periphery and parallel to the shaft *k*.

In the alternative construction shown in Fig. 6, there is a second rod similar to the rod *m* and similarly located designated by the letter *o*. The rod *o* is located nearer the center of the disk than the rod *n*.

p, *p* are contact springs, a pair of which press against opposite sides of each of the disks *e* near its periphery. The contact springs *p* are so located that at one position of the disk between each pair the rod *n* in said disk will form a connection between the springs *p* on the opposite sides thereof. A second set of contact springs may be used as shown at *x* in Fig. 6.

t indicates notches formed in the periphery of the disks *e*. *q*, indicates rods, one of which passes through the casing adjacent to each of the disks *e* and is adapted to reciprocate through said casing in a plane parallel to the plane of said disk.

s is a pawl pivoted to the inner end of each of the rods *q* and adapted to engage in a notch *t* to turn the disk *e* upon the shaft *k*.

r is a weighted arm, which acts to hold the pawl *s* in contact with the disk *e*.

The spring contacts *p* press against the sides of the disks *e* so as to create friction and prevent the disks moving because of their inertia.

A disk *e* rotates directly beneath an aperture, or sight-hole, and is so proportioned and constructed, and the rods *q* are so proportioned and constructed that a disk *e* shall stop its rotation when a portion of the periphery of said disk between two of the indicating characters *m* is beneath an aperture *c* so that such indicating character can not be seen from the outside of the casing.

j, indicates a battery, and *f* and *i* are the terminals of the circuit in which the battery *j* is located. These terminals are attached to binding posts *g* and *h* which are connected to the outside contact springs *p*. When the disks *e* are all in such a position that each of the rods *n* forms an electrical connection between the adjacent contacts *p*, then the ignition circuit is complete, but if any of said disks is out of this one position, the circuit will be broken and the ignition apparatus cannot be used.

The proper angular position of the disks is indicated by the characters *m* on their periphery and is known to the person authorized to use the device. He arranges each of the disks *e* to its proper position by reciprocating a rod *q* and observing through a

sight-hole *c* the characters *m* passing beneath said sight-holes.

When the disks are in their proper position, the combination cannot be read by an observer because the indicating characters are not visible through the sight-holes *c*.

It is obvious that if desired the intermediate contact springs *p* may form adjustable connection, that is to say, they may be separated by removing a part such as a plug or inserting such plug so that one or more of the disks can be used.

If it is desired to change the combination, the disks may be removed from the shaft *k*, as indicated in Fig. 4 and at relative positions changed.

If desired a greater number of contacts may be secured as indicated in Fig. 6 by a duplication of the contact system above described.

What I claim is:—

1. In a switch, the combination of a plurality of disks of insulating material mounted to rotate separately, a separate metallic rod passing eccentrically across each disk from side to side, and contacting springs held in a fixed and stationary position, the said contact springs straddling the disks and wiping the sides of the disks thereby electrically connecting all the disks only when all the disks are in a given relative position to bring the rods into engagement with all the contact springs, substantially as described.

2. In a switch, the combination of a casing, a shaft supported therein, a plurality of wheels constructed of insulating material removably sleeved upon the one said shaft, contacting springs held to the side of the casing and yieldingly wiping the sides of the wheels, and separate metallic rods, one passing eccentrically through each wheel, substantially as described.

3. In an electrical switch, the combination of a casing, a shaft held therein, a plurality of disks of insulating material having their peripheries notched and sleeved upon the said shaft to rotate independently, contact springs fixed to a side of said casing and wiping the sides of said disks, separate metallic rods passing through each disk, plungers reciprocable in said casing, one for each disk, a pawl pivoted to the end of each plunger and provided with a weighted arm which keeps the pawl in engagement with the periphery of the disk, substantially as described.

In testimony whereof, I sign this specification in the presence of two witnesses.

J FRANK DANA.

Witnesses:
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AGNES M. HIPKINS.