M. E. MESKILL.

PERMUTATION ELECTRIC SWITCH.

APPLICATION FILED APR. 25, 1918.

1,286,705. Patented Dec. 3, 1918.

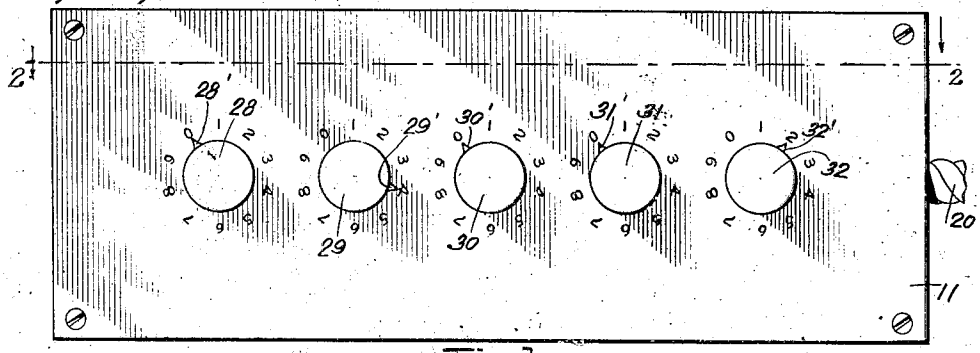


Fig. 1.

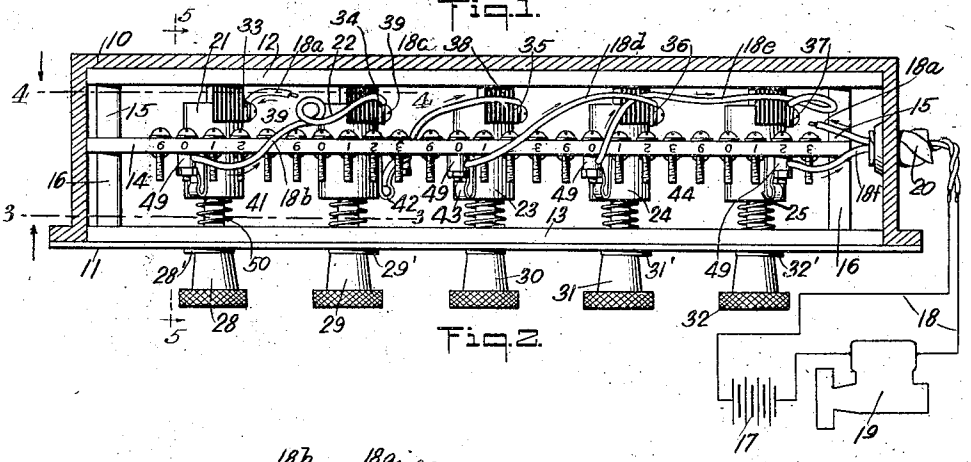


Fig. 2.

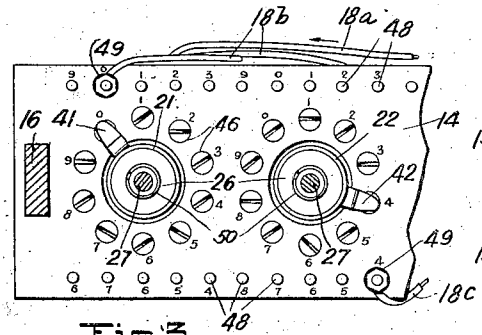


Fig. 3.

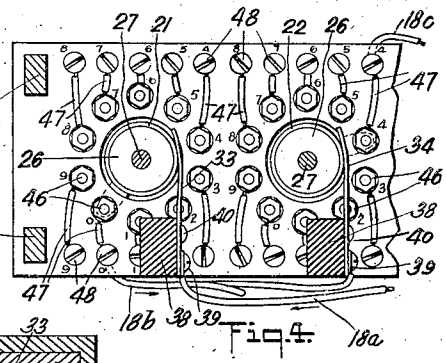


Fig. 4.

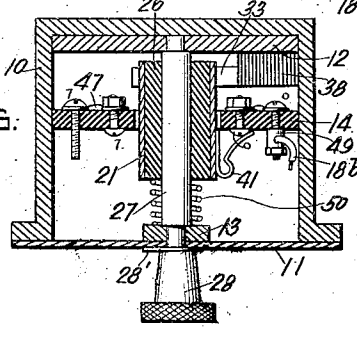


Fig. 5.

WITNESSES

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PERMUTATION ELECTRIC SWITCH.

1,286,705. Specification of Letters Patent. Patented Dec. 3, 1918.

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To all whom it may concern:

Be it known that I, MATTHEW E. MESKILL, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and Improved Permutation Electric Switch, of which the following is a full, clear, and exact description.

This invention relates to electric switches or circuit breakers and has particular reference to devices of this character that are intended to provide a convenient and reliable means whereby an authorized person only may close the circuit and so derive the advantage from the strength of the electric current passing through the circuit.

More definitely stated the invention relates to a means whereby an electric circuit, such for example as an automobile electric circuit for operating or controlling the magneto or other ignition means, the self starter, the lamps, or the like may be controlled or broken through any one or more of a series or plurality of movable switch units each of a permutation or changeable nature so that should the combination be acquired by an authorized person the combination may easily changed from time to time or whenever desired, and in a practically unlimited number of possible changes.

With the foregoing and other objects in view the invention consists in the arrangement and combination of parts hereinafter described and claimed, and while the invention is not restricted to the exact details of construction disclosed or suggested herein, still for the purpose of illustrating a practical embodiment thereof reference is had to the accompanying drawings, in which like reference characters designate the same parts in the several views, and in which—

Figure 1 is a front elevation of the device indicating the dial plate and a series of five rotary members indicating the several permutation switch units.

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1, and indicating a diagram of the entire circuit.

Fig. 3 is a detail sectional view on the line 3—3 of Fig. 2.

Fig. 4 is a similar view on the line 4—4; and

Fig. 5 is a vertical transverse sectional detail about on the line 5—5 of Fig. 2.

While the means for carrying out my improvement may be exemplified in various mechanical devices or designs of mechanism I illustrate what I regard at this time to be a preferred embodiment of construction, the same including a substantially metallic casing 10 adapted to be counter sunk within the dashboard of an automobile and there secured with a face plate 11 thereover constituting a closure for the principal parts of the switch mechanism within the casing.

The internal construction comprises a heavy base plate 12 of any suitable rigid material such as metal; a front bar 13 which likewise may be of metal; an intermediate plate 14 of fiber or similar insulating material arranged between the plate 12 and bar 13 and parallel thereto, and any suitable spacing members such as struts 15 and 16 arranged between the plate 14 and the first mentioned members respectively. The arrangement is such as to provide a strong and rigid skeleton including the members 12 and 13 but between which there is no direct electrical communication.

17 indicates a battery or other source of electrical energy from which a circuit 18 leads through a magneto, motor, or other power device indicated diagrammatically at 19 and which is adapted to be operated for any suitable purpose when the circuit 18 is unbroken. The circuit wires 18 are adapted to lead over any desired distance in any suitable direction and adjacent to the casing 10 are preferably inclosed in a flexible tube 20. For the sake of clearness of description the parts of the circuit within the casing will be indicated by distinguishing reference characters.

21 to 25 inclusive represent a series of contact cylinders of any suitable conducting metal, each cylinder being hollow and fitted upon a hub or cord 26 of insulation fixed upon a spindle 27 journaled in the plate 12 and bar 13. The several spindles 27 being provided on their front ends with a series of knobs or finger pieces 28 to 32 respectively whereby the contact cylinders may readily be rotated by the operator. The several knobs 28 to 32 are provided with pointers 28′ to 32′. Associated with each knob and its pointer are a circular series of index characters shown as ten in number and indicated by the digit numerals 1 to 0. A series of contact springs 33 to 37 inclusive have constant bearing upon the rear ends of the several contact cylinders 21 to 25 respectively. Each of these springs is anchored in a block

of insulation 38 fixed to the rear base plate 12, the anchorage being effected preferably by a pair of screws 39 and 40. Secured to the inner end of the several contact cylinders are spring contacts 41 to 45 inclusive, each of which is adapted to make selective contact with a circular series of fixed metallic contact studs corresponding in number and relative arrangement with the numerical digits 1 to 0 indicated on the face plate 11. Each of these groups as a whole is indicated at 46, but for convenience to the reader in understanding the relation between the several fixed studs of each series, the pairs or groups of contacts directly related to each other and to the index digits above referred to are all similarly identified in Figs. 2, 3, 4 and 5. The studs 46 are fixed in and extend through the insulation plate 14 and upon the rear end of each of which there is fixed a connector conductor 47 leading to another stud of the same pair, the latter studs, however, being arranged in rows along and close to the upper and lower edges of the plate 14. These studs are indicated generally by the numeral 48 but severally identified by the same index digits as the other studs with which they are associated in pairs through the connector conductors 47. The margins of the plate 14 are likewise provided with index digits in practice to correspond to the digits on the face plate, the digits on the margins of the plate 14 being then arranged in such position as to identify the connections with those digits of the face plate that will produce the combination desired. In other words the upper margin of the plate 14 carries those digits that correspond to the numbers of the digits corresponding to the studs 46 and 48 on the upper half of the plate, while the lower margin of the plate 14 carries the remaining digits and all arranged in the order in which the digits are arranged in the upper and lower half of the series on the face plate. The conne tor conductors 47 are permanent as likewise is the connection of the spring contacts 33 to 37, and also the spring contacts 41 to 45 are permanently connected in fixed position to the several cylinders. The several pointers also have a fixed relation to the cylinders pertaining to the same units and the spring contacts carried thereby.

Within the casing the circuit wire 18^a leads to and has a permanent electrical contact with the spring 33 at the screw 39. The direction of flow of the current for the sake of this description may be presumed to be inward into and through the casing beginning with this wire 18^a thence it flows through the spring 33, contact cylinder 21, spring contact 41, one of the studs of the circular series 46 corresponding to the cylinder according to the adjustment of the several indicators. In the drawings the indicators of the first two units are shown set for 0 4. Therefore a wire connector 18^b having a head 49 is secured upon the front end of the stud of the series 48 corresponding to the 0 index whence it leads to and is anchored by the screw 39 at the next contact spring 34. See Fig. 4. Thence the current flows through the spring 34, cylinder 22, contact spring 42 and stud 4 of the second circular series of contacts 46, through the connector conductor 47 to the contact stud 4 of the series 48 of the second unit and thence by a third conductor wire 18^c to the third contact spring 35 and so on, the next circuit connections being indicated respectively at 18^d, 18^e and finally 18^f from the casing into the main circuit 18. From what has been stated it will be noted that in order to change or determine the combination desired the operator has but to attach the several hubs 49 to those studs of the series 48 that correspond to the index plate digits of the desired combination. Each wire connector 18^b to 18^e is long enough to reach across to either edge portion of the plate 14 for connection with the studs of the series 48 on or along either edge thereof.

Between the front end of each core 26 and the front bar 13 is located a tension spring 50 which has a dual function of preventing undesired rotation of such hub or contact cylinder and to maintain the spring contact 41 in position to engage the series of studs 46.

With the adaptation of this improvement as a safety appliance for an automobile for example, it being borne in mind that it may be used in any electric circuit for various purposes, the owner or driver of the machine having selected a distinct combination such for example as indicated in Fig. 1, 0 4 0 0 2, when he leaves his car therefore he has simply to turn any one or more of the knobs from the normal running position corresponding to the combination indicated thereby breaking the circuit at as many of the contact springs 41 to 45 as have been so rotated. When the owner or driver returns, in order to start his car, he has but to turn the knobs so as to indicate the combination known to him. No special order or direction for the turning of the several knobs is necessary since each has its own circuit point and each is freely rotatable independently of all of the other of the series.

I claim:

1. In a permutation electric switch, a casing having a face plate, a base plate fitted to the bottom of the casing, a bar adjacent to the face plate, a series of spindles journaled in the face plate, bar and base plate, a contact cylinder surrounding each of the several spindles and insulated therefrom but rotatable with the spindles, a fixed spring contact having constant engagement with each cylinder, a spring contact carried by and ro-

tatable with each cylinder, a circuit wire leading to each fixed spring contact, each of the circuit connections except the first being selectively and variably adjustable, and a series of selective fixed contacts associated with each cylinder and the spring contact carried thereby and to which the connections aforesaid are adapted to be connected.

2. In an electric switch, the combination of two spaced parallel members, a series of spindles journaled in and spanning the space between said members, a contact cylinder fixed to and insulated from each of the several spindles, an insulated support embracing the several cylinders between the first mentioned members, a circular series of contact studs surrounding each cylinder and supported by the insulated support, a like number of other fixed contact studs fixed to said support, permanent connections between the studs connecting them in pairs, means to carry a current to each cylinder and thence to a selected stud of the circular series associated therewith, and means to convey the current thence from the other fixed stud of the same pair to the next cylinder, the cylinders being severally and independently rotated.

MATTHEW EDWARD MESKILL.