Jan. 1, 1929. 1,696,902

D. CLERICO

ELECTRIC SWITCH FOR AUTOMOBILE SIGNALS

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Fig. 1.

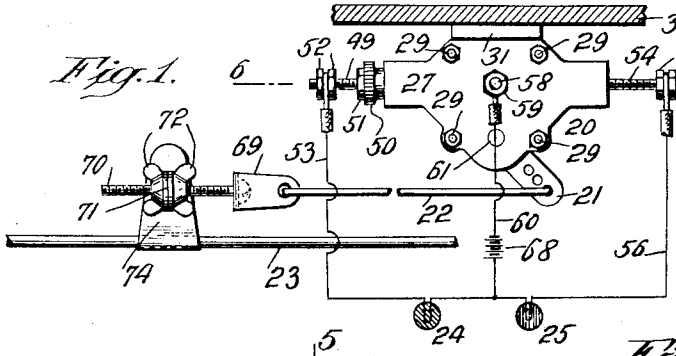


Fig. 9.

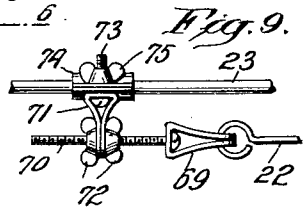


Fig. 2.

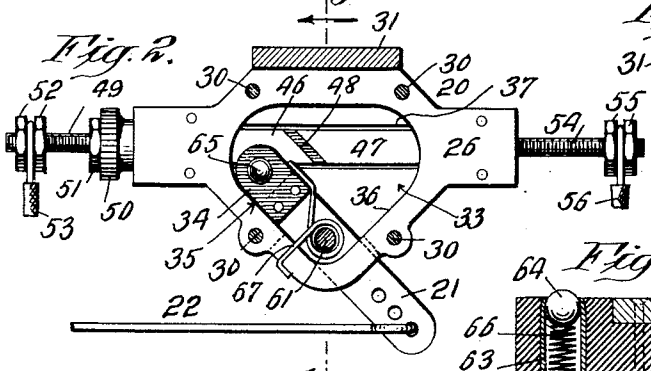


Fig. 5.

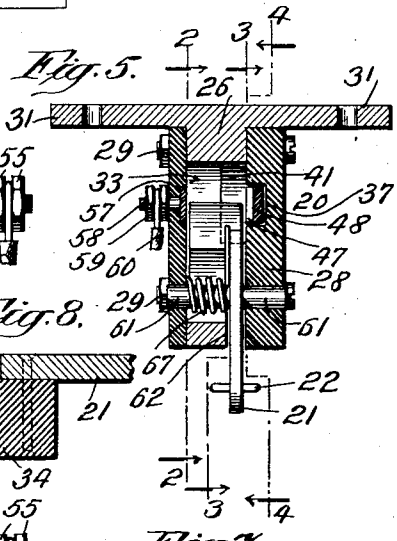


Fig. 8.

Fig. 3.

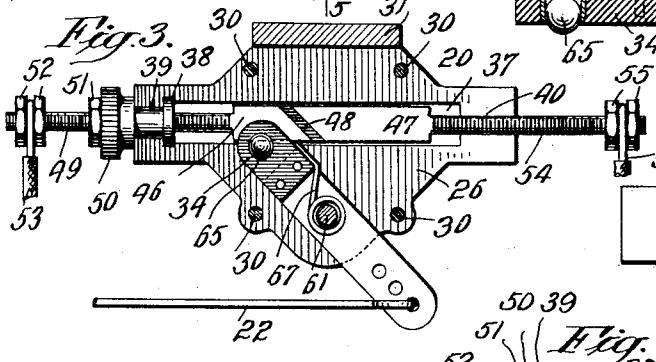


Fig. 7.

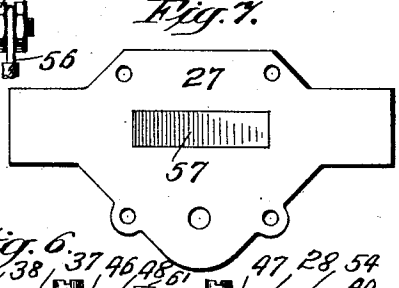


Fig. 6.

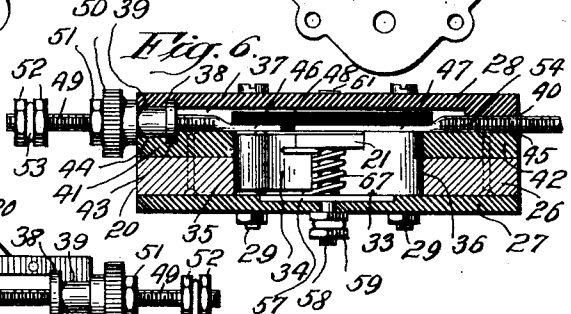
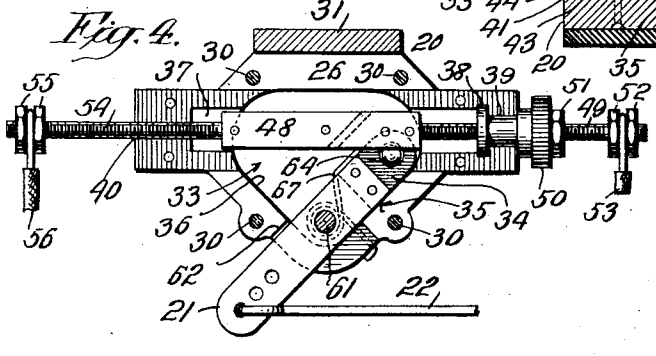


Fig. 4.



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Fig. 10.

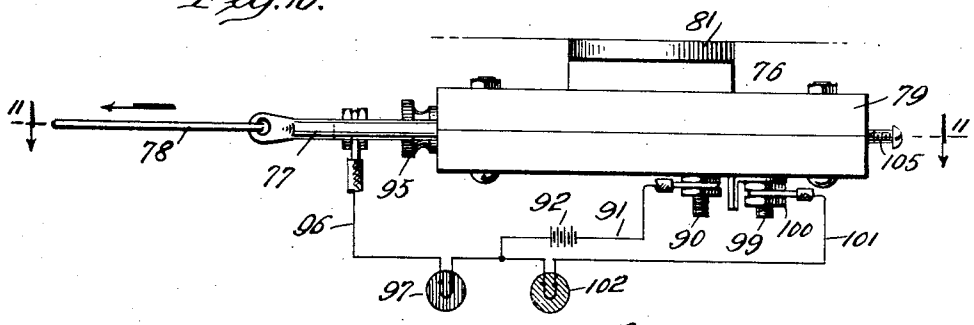


Fig. 11.

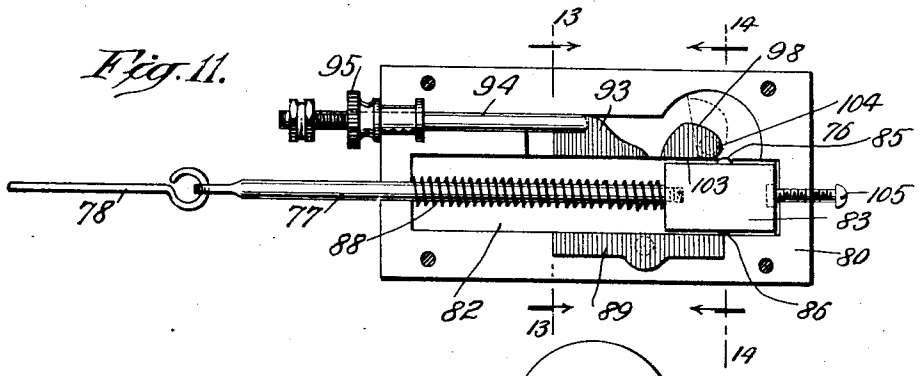


Fig. 12.

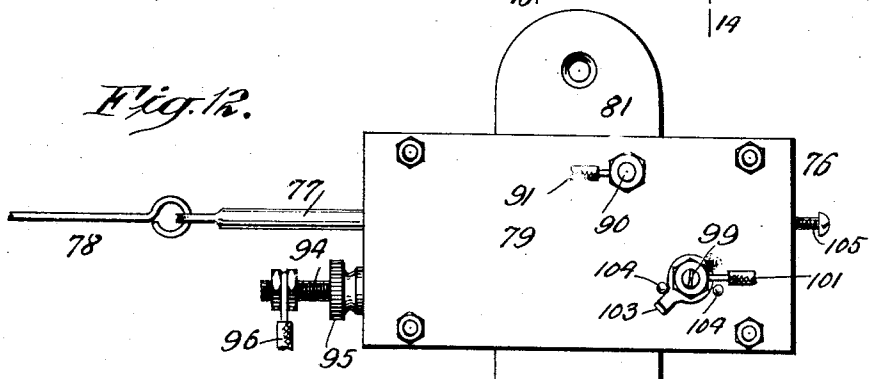


Fig. 13.

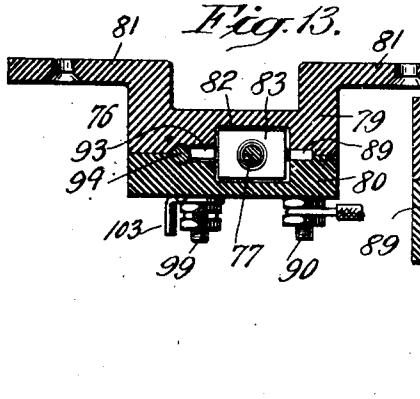
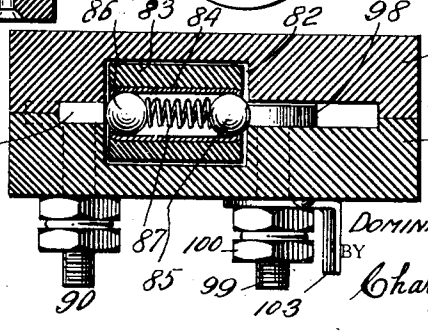


Fig. 14.



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UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH FOR AUTOMOBILE SIGNALS.

Application filed December 6, 1923. Serial No. 678,851.

The invention pertains to electric signalling systems employed on automobiles for indicating whether a car is to slow down or stop, a green light being displayed when the car is to slow down and a red light when the car is to stop or has stopped and said lights being intended as warnings to the driver of a car behind.

The invention consists in novel electric switch mechanism hereinafter described, whereby the driver of a car may efficiently effect the display of the aforesaid signals in a convenient manner, as by a connection with the usual brake-rod, whose movement may be utilized to effect the successive display of the green signal and the red signal or of the green signal alone, as the occasion may require.

One object of the invention is to provide very durable lasting and efficient switch mechanism lacking complexity and not liable to damage by the movements or jolting of an automobile, and a further object of the invention is to provide a switch mechanism of the character indicated which is capable of adjustment so as to vary, for illustration, the period of time the green signal light shall be displayed before the red signal light shall appear and the period of time the green signal light shall be displayed after the red signal light has disappeared on the starting of the car.

The invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which:

Fig. 1 is a side elevation, partly broken away, of an electric switch signalling system constructed in accordance with and embodying my invention, the switch operating rod or wire being shown as connected with the brake rod of an automobile;

Fig. 2 is a corresponding view of the switch mechanism with the face-plate present in Fig. 1, removed, for the purpose of disclosing the interior of the switch casing, Fig. 2 being partly in section on the dotted line 2—2 of Fig. 5;

Fig. 3 is a vertical longitudinal section through the same taken on the dotted line 3—3 of Fig. 5;

Fig. 4 is a vertical longitudinal section through the same taken on the dotted line 4—4 of Fig. 5;

Fig. 5 is a vertical transverse section through the same, taken on the dotted line 5—5 of Fig. 2;

Fig. 6 is a horizontal section through the same, taken on the dotted line 6—6 of Fig. 1;

Fig. 7 is a detached inner face view of one side plate of the switch casing;

Fig. 8 is a section through the upper end of the switch lever and illustrates the two contact balls carried thereby and shown as being under an outward spring tension in a direction from each other, one of said balls being for engagement with the adjustable conducting member of the switch and the other to engage a conducting plate shown in Fig. 7 on one face-plate of the casing for establishing electrical connection between said member and said plate;

Fig. 9 is a top view of the left hand portion of Fig. 1 and illustrates the connection between the operating rod connected with the switch lever and the brake-rod of an automobile;

Fig. 10 is a side view of a modified construction embodying my invention;

Fig. 11 is a longitudinal section through the same, taken on the dotted line 11—11 of Fig. 10;

Fig. 12 is a top elevation of the same;

Fig. 13 is a vertical section through the same, taken on the dotted line 13—13 of Fig. 11, and

Fig. 14 is a corresponding section, taken on the dotted line 14—14 of Fig. 11.

Referring to Figs. 1 to 9 inclusive, 20 indicates the switch casing as a whole, 21 the switch lever, 22 the switch operating rod or pull-wire, 23 a portion of the usual brake-rod of an automobile and to which the wire 22 is connected, 24 a green electric lamp signal bulb and 25 a red electric lamp signal bulb.

The switch casing comprises three main parts, one being a body portion 26 and the other parts being the face plates 27, 28 secured to opposite sides of said body portion by means of screws or bolts 29, which are insulated from said body portion by bushings 30 through which the bolts 29 pass. The body portion 26 is preferably formed of metal and the face plates 27, 28 are of insulating material, and said body portion is integral with laterally extending wings 31 adapted to be secured to the lower surface of the car-floor 32.

Within the body portion 26 is formed a

commodious chamber 33 to contain and permit the oscillatory movement therein of the head 34 secured on the upper end of the pivoted lever 21. The chamber 33 has lower oppositely disposed downwardly converging walls 35, 36 which serve as stops for the switch 21 in the two positions of the latter, said walls affording a long surface engagement for the edges of that portion of the switch disposed within the chamber 33, as shown.

In the face-plate 28, at its inner side, is formed an elongated recess 37 having at one end a transverse semi-circular pocket 38, said recess being continued outwardly at one end by a semi-circular groove 39 and at the other end by a semi-circular groove 40. At opposite ends of the switch casing are filler pieces 41, 42 of insulating material which match against the inner side portions of the ends of the face plate 28, as shown in Fig. 6, the piece 41 having a semi-circular pocket 43 and a semi-circular groove 44 to match the pocket 38 and groove 39 in the inner side of the face-plate 28, and the piece 42 having a semi-circular groove 45 to match the groove 40 in said plate 28. Mounted within the recess 37 and the matching grooves formed in the meeting surfaces of the plate 28 and filler pieces 41, 42, is a slidable contact rod composed of two main members 46, 47 connected together by a bar of insulating material 48 which extends between the adjacent ends of said members and insulates one member from the other member, as may be understood on reference to Figs. 2 and 6.

The contact member 46 has an outwardly extending threaded stem 49 on which is a rotary internally threaded sleeve 50 whose inner portion is mounted in the matching pockets 38, 43 and matching grooves 39, 44, said sleeve being provided for adjusting the contact rod longitudinally in either direction and the portion of said sleeve within the pockets 38, 43 serving as an annular shoulder to prevent the sleeve from sliding. A jam-nut 51 is provided on the stem 49 to engage the sleeve 50 and lock the same stationary after the contact rod has received its adjustment. On the outer end of the stem 49 are nuts 52 to engage the adjacent end of a circuit conductor 53.

The contact member 47 has an outwardly extending threaded stem 54 which receives binding nuts 55 for the adjacent end of a circuit conductor 56.

On the inner side of the face-plate 27 is a stationary contact plate 57 (Fig. 7) which faces the aforesaid contact rod and is sunken within the face-plate 27 so as to leave a flush surface. The plate 57 is in electrical connection with a threaded stem 58 which extends out through the plate 27 and has on its outer end ordinary binding nuts 59 to engage the adjacent end of a circuit conductor 60.

The switch lever 21 is in the form of a metal bar having on its upper end, within the chamber 33, the head 34 of insulating material and being pivotally mounted on a transverse pin 61 which extends through the face-plates 27, 28 and is supported thereby. The central body member 26 of the casing 20 is formed in its lower portion with a segmental recess 62 within which the switch lever may have oscillatory motion and down through which the lower portion of said lever projects, as shown in Figs. 4 and 5. The head 34 contains a transverse metal sleeve 63 which is open at both ends but at said ends being partly closed to retain within the sleeve the ball contacts 64, 65 which are pressed outwardly to project slightly beyond the ends of the sleeve by means of a coiled spring 66 interposed between said contacts. When the switch 21 is in its initial position the ball-contacts 64, 65 engage the inner faces of the plates 28, 27, respectively, and perform no duty, but when the switch 21 is turned to carry its head 34 over toward the right, looking at Fig. 2, the contact-ball 64 is first caused to ride on and against the conductor-member 46 and then against the conductor-member 47, while at the same time the contact-ball 65 rides against the conducting plate 57 secured to the face-plate 27, thus first forming an electrical connection between the member 46 and plate 57 and then between the member 47 and plate 57. On the return movement toward the left of the head 34, the contact 64 rides along the conductor 47 and then along and finally off from the conductor 46, the contact 65 at the same time riding along and finally off from the plate 57. A spring 67 is provided to normally retain the switch 21 in its initial position. When the switch 21 is turned to carry the contact balls against the conductor 46 and plate 57, a circuit is completed from the plate 57 through the conductor 60, battery 68, green lamp 24, conductor 53, stem 49 and conductor 46 and through the ball 64, spring 66 and ball 65 to the said plate 57, whereby the display of a green signal is effected, and this signal will remain displayed until on the further movement of the switch 21, the contact ball 64 passes from the conductor 46 and engages the conductor 47, at which time a circuit through the red lamp 25 will be completed from the plate 57, conductor 60, battery 68, lamp 25, conductor 56, stem 54 and conductor 47 and through the ball 64, spring 66 and ball 65 to the plate 57. The red light will remain on display just as long as the ball contact 64 remains in engagement with the conductor 47. On the reverse movement of the switch 21, the red light will become extinguished by the breaking of the circuit, when the ball contact 64 leaves the conductor 47, and thereupon the green light will become displayed by the making of the circuit

through the lamp 24, and finally the green light will become extinguished by the breaking of the circuit when the switch 21 reaches its initial or first position, shown in Fig. 2. The conductor comprising the members 46, 47 is adjustable longitudinally, and hence the duration of the green and red signals may be conveniently regulated at will, and I regard this as one of the important purposes accomplished by my invention.

The switch 21 may be operated from the brake-pedal of an automobile, and hence I connect the switch with the brake-rod 23 in an adjustable manner by the means shown in Figs. 1 and 9. The switch-pull wire 22 is connected at one end to the switch and at its other end to a sheet metal loop 69 carrying a threaded rod or screw 70, and this rod passes freely through the outer end of a sheet metal loop 71 and carries adjusting nuts 72 by means of which the rod 70 may be adjusted with relation to the loop 71 and firmly secured to said loop 71, said nuts being at opposite sides of the outer end of the loop 71 and adapted to clamp said end. The loop 71 carries a screw 73 which passes freely through the outer portions of a folded sheet metal clamp 74 and has a wing-nut 75 to engage said clamp. The clamp 74 engages the brake-rod 23 and is adjustable on said rod and said clamp becomes bound to said rod when the nut 75 is tightened against the free ends of the clamp and binds said ends against the loop 71, as shown in Fig. 9. The clamp 74 is adjustable on the brake-rod 23, and the sheet metal loop 71 is adjustable along the rod or screw 70, and hence I am enabled to secure a very accurate operation of the switch 21 under the varying conditions that may be met in applying the invention to automobiles.

The operation of the invention will be largely understood from the foregoing description. When slowing down the car, the brake-rod 23 will be moved toward braking position, and this will act through the connections described, to draw the lower end of the switch 21 toward the left, looking at Figs. 1 and 2, and cause the head 34 on said switch to turn toward the right and complete a circuit through the green lamp 24, thereby warning the driver of a car behind that the car carrying the signal is slowing down and may stop. The brake-rod 23 may be allowed to return to initial position and thus permit the switch to return to initial position, extinguishing the green light, or the brake-rod may be continued to its full position for applying the brakes, in which event the switch 21 would be moved to complete a circuit through the red lamp as a stop signal. When the brakes are released, the switch head 34 has a reverse movement and first the circuit through the red lamp is broken, then the circuit through the green lamp is made and then the circuit through the green lamp becomes broken by the return of the switch to its initial position.

In Figs. 10 to 14 inclusive, I illustrate a modification of my invention, and therein 76 denotes the switch-casing as a whole, 77 a reciprocatory switch rod and 78 a pull wire connected with said rod and corresponding with the wire 22 of Fig. 1.

The casing 76 comprises upper and lower members 79, 80 of insulating material adapted to be secured together by bolts, the member 79 having laterally extending wings 81 by means of which the casing may be secured in position on a car.

The casing 76 contains a chamber 82 within which the inner end of the switch rod 77 carries a head 83 of insulating material having a transverse sleeve 84, ball-contacts 85, 86 and interposed spring 87, these features corresponding exactly with the sleeve 63, ball-contacts 64, 65 and spring 66 shown in Fig. 8. On the switch rod 77 is arranged a coiled spring 88 which normally acts to retain the head 83 in its initial position, shown in Fig. 11, and performing no function. Along one edge of the chamber 82 is secured a conducting plate 89, which performs the duty of the plate 57 shown in Fig. 7. The plate 89 is held by a screw 90 from which a conductor 91 leads to the battery 92. At the opposite edge of the chamber 82 is a conductor-plate 93 carried by a threaded stem 94 having an adjusting sleeve 95 corresponding with the sleeve 50 of Fig. 3. From the stem 94, a conductor 96 leads to a red electric lamp 97. Adjacent to the inner end of the plate 93 is a conducting plate 98 which is secured on the inner end of a pivot rod 99 projecting downwardly through the casing section 80 and having on its exposed end the binding nuts 100 to engage the adjacent end of the conductor 101 leading to the green lamp 102. The plate 98 has a reasonable long edge 103 to lie along the edge of the chamber 82 when desired and a rounded end 104 which, by means of the rod 99 may be turned to lie at said edge of the chamber, in accordance with whether a longer or a shorter display of the green signal is desired. The plate 98 is adjustable independently of the plate 93, whereas in Fig. 2, the conductors 46, 47 must be adjusted together. The plate 98 performs the duty of the conductor 46 in Fig. 2 with respect to rendering it possible to regulate the duration of display of the green signal. The rod 99 may be manually turned to adjust the plate 98 by means of a finger-piece 103 thereon, said piece having engagement with a flat portion of the outer end of the rod 99. Stop pins 104 may be provided on the switch casing to limit the throw of the finger piece 103, as shown in Fig. 12.

The conductor-plate 93 may be adjusted toward and from the plate 98 in accordance with the gap it may be desired to have be-

tween the display of the green signal and that of the red signal and also in accordance with such position of adjustment as may be given to the plate 98.

The casing 76 is provided at one end with a set screw 105 which may be utilized as means for adjusting the initial position of the head 83 with relation to the conductor-plates 89, 98 should there be any irregularities in the casing or its parts as to require such adjustment.

When the brake-rod is moved toward braking position, the switch rod 77 is moved accordingly, in opposition to the force of the spring 88, and carries the head 83 with it. The movement of the head 83 results in the ball contacts 85, 86 being first carried along the facing edges of the conducting plates 89, 98 and in thereby completing a circuit through the green lamp and thereafter on the continued movement of the head 83, being carried along the plates 89, 93 and establishing a circuit through the red lamp. The plate 93 performs the duty of the conductor 47 of Fig. 2. An extended explanation of the operation of the switch mechanism shown in Figs. 10 to 14 inclusive is not required, since the operation of the switch head 103 is the same as that of the head 34 shown in Fig. 8.

In both forms of my invention hereinbefore described, I provide means for giving a green or slow signal and also a red or stop signal, means for adjusting the duration of the green signal and a switch having a head carrying opposite spring-pressed contacts to engage opposite conductors for completing the circuits through said head and conductors to produce respectively the green signal and the red signal.

What I claim as my invention and desire to secure by Letters-Patent, is—

1. Electric switch mechanism of the character described comprising an enclosing casing, an operating switch connected with means for moving the same and having a head within the casing provided with a transverse conductor, a fixed contact-conductor within the casing in the path of one end of said switch-conductor and to be engaged thereby, and two contact-conductors within said casing in the path of the other end of said switch-conductor and to be respectively engaged thereby and one of said two contact-conductors being in one circuit, while the other of said two contact-conductors is in another circuit, said switch on its movements being adapted to carry its conductor into electric engagement with said fixed contact-conductor and at the same time successively with said two contact-conductors, one contact-conductor being adjustably mounted and the switch casing having exposed means for manually moving said contact-conductor to expose more or less of its edge to said switch-conductor.

2. Electric switch mechanism of the character described comprising an enclosing casing, an operating switch connected with means for moving the same and having a head within the casing provided with a transverse conductor, a fixed contact-conductor within the casing in the path of one end of said switch-conductor and to be engaged thereby, and two contact-conductors within said casing in the path of the other end of said switch-conductor and to be respectively engaged thereby and one of said two contact-conductors being in one circuit, while the other of said two contact-conductors is in another circuit, said switch on its movements being adapted to carry its conductor into electric engagement with said fixed contact-conductor and at the same time successively with said two contact-conductors, the said two contact-conductors being insulated from each other at adjacent ends and mounted to have sliding movement in the switch casing and having means for adjusting said conductors longitudinally.

3. Electric switch mechanism of the character described comprising an enclosing casing, an operating switch connected with means for moving the same and having a head within the casing provided with a transverse conductor, a fixed contact-conductor within the casing in the path of one end of said switch-conductor and to be engaged thereby, and two contact-conductors within said casing in the path of the other end of said switch-conductor and to be respectively engaged thereby and one of said two contact-conductors being in one circuit, while the other of said two contact-conductors is in another circuit, said switch on its movements being adapted to carry its conductor into electric engagement with said fixed contact-conductor and at the same time successively with said two contact-conductors, the two contact-conductors being in line with each other and connected together by insulating material which extends between the adjacent ends of said conductors and insulates one from the other, said conductors having stems extending outwardly from the switch-casing, and the said contact-conductors constituting a slidable body and the casing having means whereby said body may be manually adjusted longitudinally for varying the extent of exposure of said conductors to said switch conductor.

4. Electric switch mechanism of the charter described comprising an enclosing casing, an operating switch connected with means for moving the same and having a head within the casing provided with a transverse conductor, a fixed contact-conductor within the casing in the path of one end of said switch-conductor and to be engaged thereby, and two contact-conductors within said casing in the path of the other end of said

switch-conductor and to be respectively engaged thereby and one of said two contact-conductors being in one circuit, while the other of said two contact-conductors is in another circuit, said switch on its movements being adapted to carry its conductor into electric engagement with said fixed contact-conductor and at the same time successively with said two contact-conductors, the switch-casing comprising a chambered body-portion and two face-plates of insulating material, the switch being pivotally mounted with its head within the chamber of said casing and its shank exposed without the same, said fixed contact-conductor being secured to one of said face plates and disposed at one side of said chamber and said two contact-conductors being disposed at the other side of said chamber and insulated except from the switch-conductor and their respective circuit conductors, said two contact-conductors being in line with each other and connected together and mounted to have sliding movement in the switch casing and having means for adjusting said conductors longitudinally whereby to vary the extent of exposure of said conductors to said switch conductor.

5. Electric switch mechanism of the character described comprising an enclosing casing, an operating switch connected with means for moving the same and having a head within the casing provided with a transverse conductor, a fixed contact-conductor within the casing in the path of one end of said switch conductor and to be engaged thereby, and two contact-conductors within said casing in the path of the other end of said switch-conductor and to be respectively engaged thereby and one of said two contact-conductors being in one circuit, while the other of said two contact-conductors is in another circuit, said switch on its movements being adapted to carry its conductor into electric engagement with said fixed contact-conductor and at the same time successively with said two contact-conductors, and adjustable means for connecting the switch to the brake-rod of an automobile, said adjustable means comprising a pull-wire connected at one end to the switch and at the other end having a loop carrying a screw, a clip adjustable on the brake-rod, a member carried by said clip and through which said screw freely passes and clamping nuts on said screw at opposite sides of said member.

Signed at New York city, in the county of New York and State of New York, this 4th day of December, A. D. 1923.

DOMINICK CLERICO.