

April 7, 1942.

W. E. ST. GEORGE

2,278,745

AUTOMOBILE STARTING AND ACCESSORY CIRCUIT

Filed June 3, 1939

2 Sheets-Sheet 1

Fig. 1.

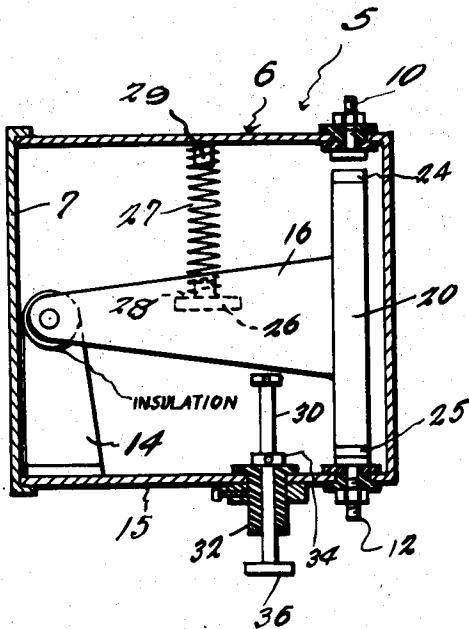


Fig. 2.

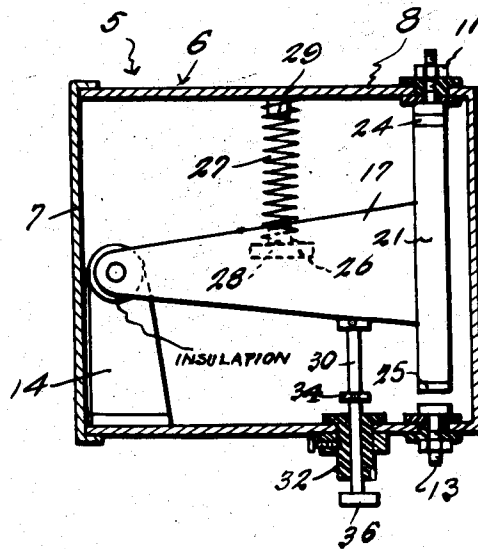
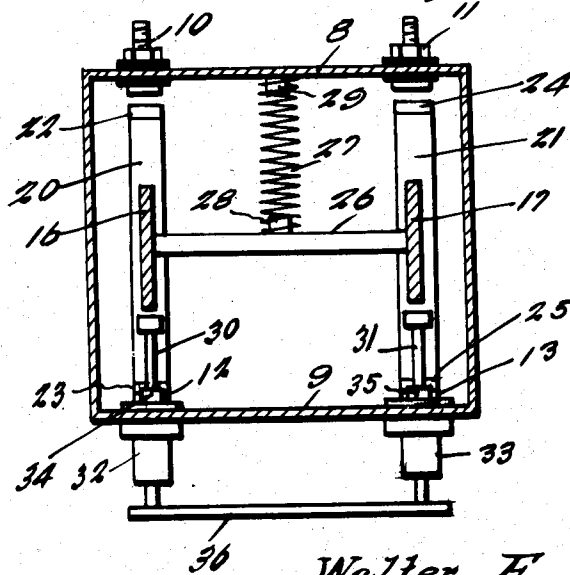


Fig. 3, 5



Inventor

Walter E. St. George

By *Clarence W. O'Brien*
and Hyman Berman
Attorneys

April 7, 1942.

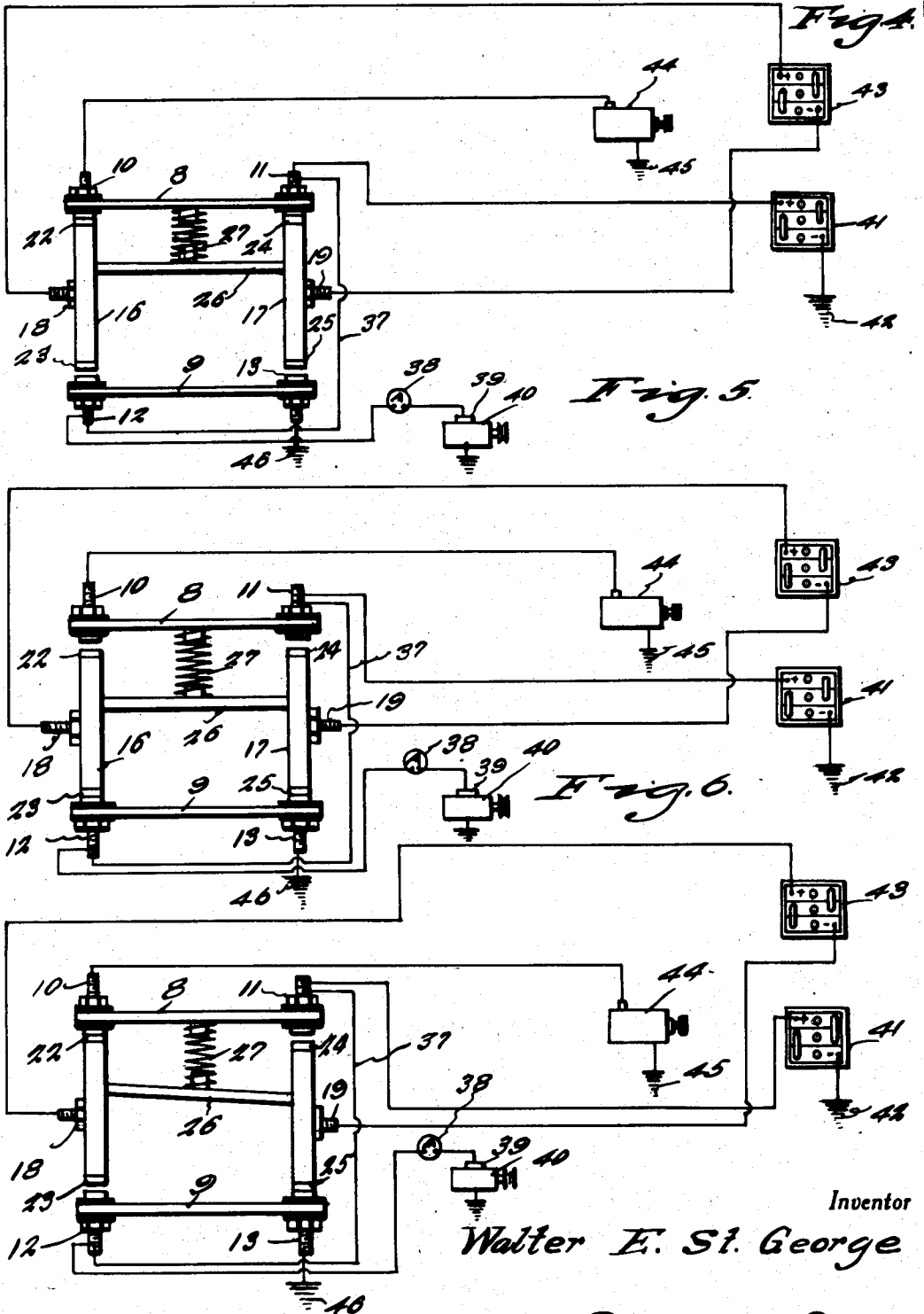
W. E. ST. GEORGE

2,278,745

AUTOMOBILE STARTING AND ACCESSORY CIRCUIT

Filed June 3, 1939

2 Sheets-Sheet 2



Inventor

Walter E. St. George

By

Oliver A. O'Brien
and Hyman Burman
Attorneys

UNITED STATES PATENT OFFICE

2,278,745

AUTOMOBILE STARTING AND ACCESSORY
CIRCUIT

Walter Edmond St. George, Rochester, Minn.

Application June 3, 1939, Serial No. 277,303

5 Claims. (Cl. 290—36)

My invention relates to improvements in electrical systems for automobiles and the like and provides means whereby the operator can selectively utilize the output of the ordinary battery for energizing the starter motor or utilize the combined voltage of the ordinary battery and of a second battery, so as to simultaneously relieve the ordinary battery of all load ordinarily imposed by the starter while augmenting the ordinary battery with the output of the second battery for cranking the engine, and an important object of the present invention is to provide a simple and efficient arrangement of this character.

Other important objects and advantages of the invention will be apparent from the following description in connection with the drawings showing a preferred embodiment of the invention.

In the drawings—

Figure 1 is a transverse vertical sectional view taken through Figure 6 and looking toward the right.

Figure 2 is a similar view looking toward the left.

Figure 3 is a transverse vertical sectional view taken through Figure 1.

Figure 4 is a schematic wiring diagram showing the switch positioned for combined output of the two batteries to operate the starter motor.

Figure 5 is a similar view showing the switch in operated normal position.

Figure 6 is a similar view showing the switch operated to connect the ordinary battery and preparatory to bringing in the auxiliary battery in a step by step operation of the switch.

Referring in detail to the drawings, the numeral 5 generally designates the switch which includes a suitable rectangular casing 6 provided at one end with a removable cover 7. At the opposite end of the casing the opposed side walls 8, 9 have respective pairs of contact posts 10, 11 and 12, 13 which are transversely spaced and insulated from the casing walls. Adjacent the cover equipped end of the casing a standard 14 projects from the wall 15 on which are pivoted the small ends of a pair of tapered arms 16, 17 which are insulated from the standard 14, and from each other, and have individual binding posts 18, 19, respectively. Cross arms 20, 21 are respectively secured to the larger ends of the said arms and these cross arms have on their opposite ends respective contacts 22, 23 and 24, 25. The arms 16, 17 may be swung together or relative to each other so that, for instance, the arm

16 may engage its contact 22 with the casing contact 10, while the arm 17 may at the same time have its contact 24 disengaged from the casing contact 11 but engaged with the casing contact 13. A mechanical connector 26 is flexibly connected at its opposite ends to the arms 16 and 17 and an expanding spring 27 mounted on pegs 28, 29 on the element 26 and on the casing wall 8 urges the arms 16, 17 toward the normal or initial position illustrated in Figures 3 and 5.

Individual operators for the switch arms comprise two similar headed plungers 30, 31 working through insulated bushings 32, 33 in the wall 9 of the casing, each plunger being provided with an adjustable stop collar 34, 35 to engage the corresponding bushing in the fully retracted position of the plunger. The ends of the plungers outside the casing are connected by a relatively flexible bar 36 by means of which either or both of the plungers may be selectively pushed into the casing to move one or both of the switch arms out of engagement with the casing contacts 12, 13 and into engagement with one or both of the casing contacts 10, 11.

In accordance with the present invention the casing contacts 11 and 12 are permanently connected by a strap 37, the contact 12 also being connected to one side of the conventional ammeter 38, it being understood that to this ammeter are also connected the ignition system, lights, horn, etc., and any other electrical accessories such as a heater, radio or the like, all comprised within the term "load" as hereinafter mentioned. The remaining side of the ammeter is connected to the voltage regulator 39 on the conventional generator 40. The casing contact 11 is connected to the positive side of the ordinary battery 41 whose negative side is grounded at 42. The auxiliary battery 43 has its positive side connected to the binding post 18 of the switch arm 16, while the negative side of the auxiliary battery is connected to the binding post 19 of the switch arm 17. The casing contact 10 is connected to one side of the starter motor 44 whose remaining side is grounded at 45. The casing contact 13 is grounded at 46.

With the actuator bar 36 in its normal initial position the switch exhibits engagement of the contacts 23, 12 and 25, 13 as illustrated in Figure 5 whereby the electrical system is conditioned for charging by the generator, the batteries being in parallel.

With the actuator operated to push both of the plungers against the resistance of the spring 27 to position both of the switch arms in the

position shown in Figure 4, the contacts in engagement are 22, 10 and 24, 11, respectively, whereby the auxiliary battery 43 is connected with the ordinary battery 41 in series so that the extra voltage is availed of for application to the starter motor.

With one side of the actuator bar 36 pressed in, for instance, the left side thereof, only the switch arm 16 is moved relative to the arm 17 against the resistance of the spring 27 to a new position exhibiting engagement of the contacts 22, 10 while the engagement of contacts 25, 13 subsists. In this position of the switch the auxiliary battery 43 only is brought into circuit, but rocking the actuator to press also the switch arm 17 into the new position results in bringing into series connection the ordinary battery 41, thereby, in the case of using batteries of 6-volts capacity in each instance, making available 12-volts for operation of the starter motor. The last described operation of the switch is accompanied by cushioning effect on the starter and accessories. It is to be noted that the permanently connected strap prevents deenergization of the accessories when the starter circuit is closed.

Although I have shown and described herein a preferred embodiment of the invention, it is to be understood that I do not limit the application of the invention thereto, except as required by the scope of the subjoined claims.

Having described the invention, what is claimed as new is:

1. A device of the character described comprising a support, a bracket on said support, a pair of switch arms mounted for flexing on the same axis on said bracket and insulated therefrom and from each other, said switch arms being swingable independently of each other, each switch arm comprising a pair of laterally spaced contacts, a first and a second pair of spaced and insulated contacts carried by said support on opposite sides of said switch arms, flexible means operatively connecting said switch arms, expansion spring means expanding between one side of said flexible means and a part of said support whereby the switch arms are normally positioned each with one of the said laterally spaced contacts thereof in engagement with the corresponding ones of the contacts on the support, and manual means on said support having parts engageable selectively with one or both of said switch arms for moving the same out of its or their normal position or positions and into a position or positions in which the corresponding one or ones of said laterally spaced contacts engage the corresponding one or ones of the second pair of contacts on said support.

2. A device according to claim 1 wherein one of the said first pair of contacts is permanently electrically connected to one of the contacts of said second pair of contacts.

3. A device according to claim 1 wherein one of the said first pair of contacts is permanently electrically connected to one of the contacts of said second pair of contacts, combined with a first battery having its negative side grounded and its positive side connected to one of said second pair of contacts, a second battery having its positive side connected to one of said switch arms and its negative side connected to the remaining switch arm, a starter motor having one side grounded and its remaining side connected to the remaining one of said second pair of contacts, a generator having one side grounded and its remaining side connected to one of said first pair of contacts, the remaining one of said first pair of contacts being grounded, an ammeter having connected thereto accessory battery circuit, and means connecting said ammeter in circuit between said generator and the said one of the first pair of contacts.

4. A device of the character described comprising a generator having a grounded terminal and an ungrounded terminal, a main battery having a grounded terminal and an ungrounded terminal connected to the ungrounded terminal of the generator, an electric starter motor having a grounded terminal and an ungrounded terminal, an auxiliary battery having a first ungrounded terminal connectible to the ungrounded terminal of said main battery, said auxiliary battery having a second ungrounded terminal connectible to the ungrounded terminal of said starter motor, and switch means operable to connect said second terminal of the auxiliary battery with the ungrounded terminal of the starter motor, thus placing the starter motor in series with the auxiliary battery alone or in series with the ungrounded terminal of the main battery, said switch means comprising a pair of independently movable conductive rock arms insulated from each other, a first pair of insulated contacts and a second pair of insulated contacts spaced on the opposite side of said rock arms from said first pair of contacts, said pairs having their component contacts opposed whereby said rock arms can be moved independently of each other to engage selected ones of said component contacts on the same or on different sides of said rock arms or moved simultaneously to engage the component contacts at one side only of said rock arms.

5. The combination recited by claim 4 wherein one of the contacts of said first pair is connected to said ungrounded side of the starter motor with the remaining contact of said first pair connected to the ungrounded side of said main battery, said second pair of contacts having one contact connected with the second mentioned contact of the first pair and with the ungrounded side of said generator, the remaining contact of the second pair being grounded.

WALTER EDMOND ST. GEORGE.