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SWITCH FOR CHARGING AND DISCHARGING STORAGE BATTERIES.

APPLICATION FILED FEB. 28, 1908.

901,509. Patented Oct. 20, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

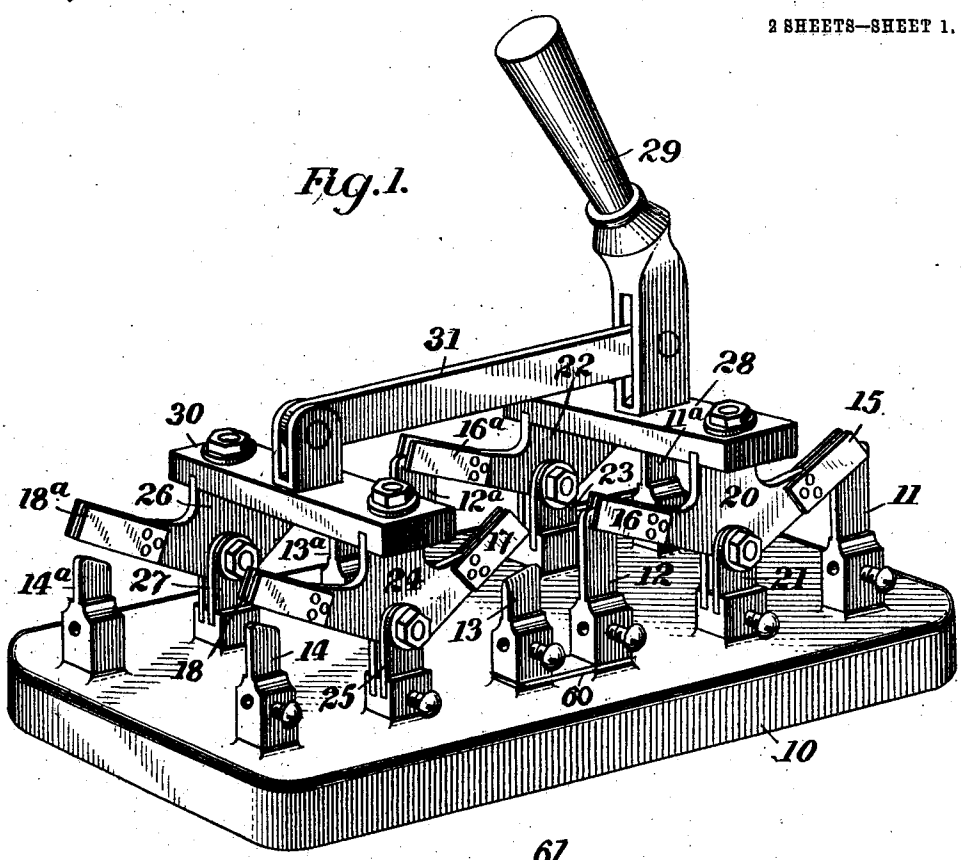


Fig. 4.

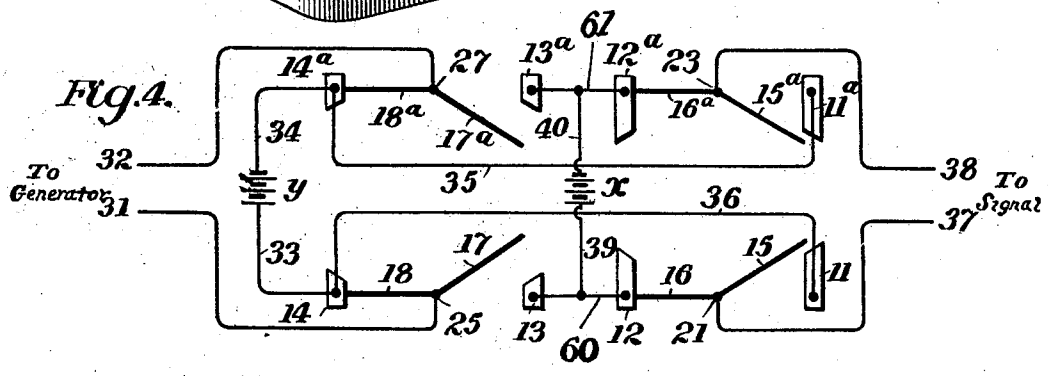
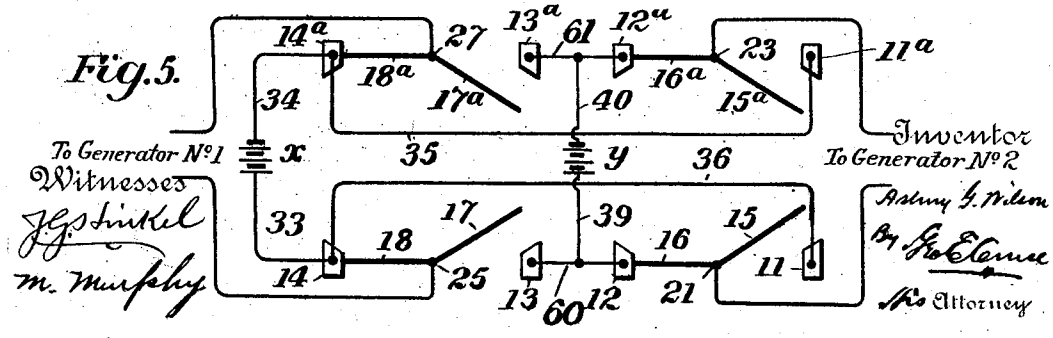


Fig. 5.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

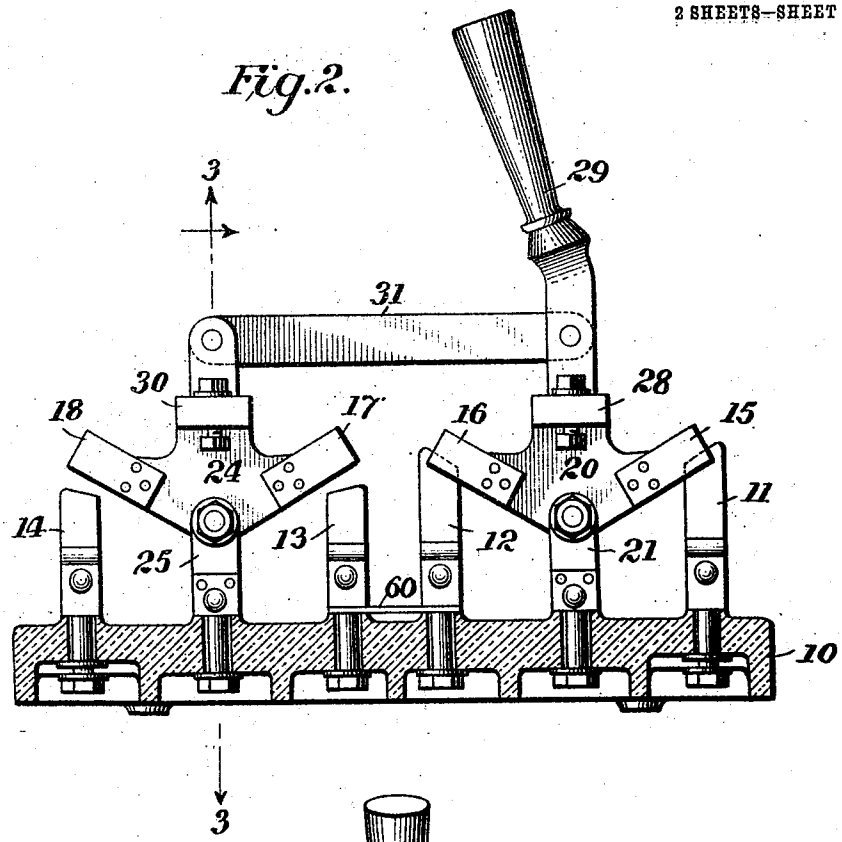
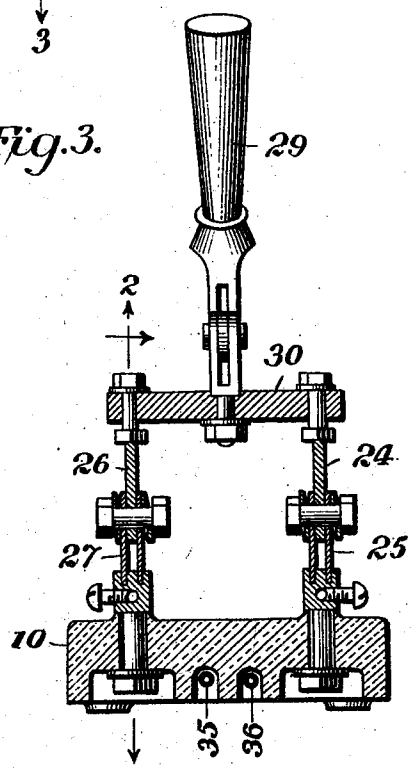


Fig. 3.



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UNITED STATES PATENT OFFICE.

ASBURY G. WILSON, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO THE UNION SWITCH AND SIGNAL COMPANY, OF SWISSVALE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

SWITCH FOR CHARGING AND DISCHARGING STORAGE BATTERIES.

No. 901,509. Specification of Letters Patent. Patented Oct. 20, 1908.

Application filed February 28, 1908. Serial No. 418,213.

To all whom it may concern:

Be it known that I, ASBURY G. WILSON, a citizen of the United States, and a resident of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Switches for Charging and Discharging Storage Batteries, of which the following is a specification.

This invention relates to switches for charging and discharging storage batteries and for other purposes.

The invention is particularly well adapted for use in the operation of railway switches or signals.

I will describe a switch embodying my invention, together with modifications thereof, and then point out the novel features in claims.

In the accompanying drawings Figure 1 is a perspective view of a switch embodying my invention. Fig. 2 is a side elevation thereof partly in section. Fig. 3 is a vertical transverse section on the line 3—3 of Fig. 2. Fig. 4 is a diagrammatical view of the switch contacts and conductors and illustrating batteries to be charged and discharged and the conductors connecting them to the switch. Fig. 5 is a view similar to Fig. 4, but illustrating batteries to be charged from two generators and a somewhat modified form of switch by which either generator may be connected to either battery.

Similar letters of reference designate corresponding parts in all of the figures.

Referring to the drawings, 10 designates a base of porcelain or other suitable insulating material upon which are supported a series of knives arranged in pairs and designated respectively 11, 11ª; 12, 12ª; 13, 13ª; 14 and 14ª. With these various knives a series of pairs of contact clips are adapted to coöperate. Those which coöperate with the knives 11, 11ª are designated respectively 15 and 15ª; those which coöperate with the knives 12, 12ª, are designated respectively 16 and 16ª; those which coöperate with the knives 13, 13ª, are designated respectively 17 and 17ª; and those which cooperate with the knives 14, 14ª, are designated respectively 18 and 18ª. The clip contacts 15 and 16 are connected to a plate 20 which is pivoted to a conductor support 21 on the base. The clip contacts 15ª and 16ª are similarly connected to a plate 22 which is pivoted in like manner to a conductor support 23. The clip contacts 17 and 18 and the clip contacts 17ª and 18ª are also similarly connected to plates 24 and 26 pivoted respectively on conductor supports 25 and 27. The plates 20 and 22 are connected by a cross bar 28 of some suitable insulating material, and this bar is provided with a handle 29. The plates 24 and 26 are connected by a cross bar 30 of some suitable insulating material, and this bar is connected to the handle 29 by a link 31. By moving the handle 29 in either direction all of the pairs of clip contacts will be moved simultaneously and brought into or out of engagement with their respective knives.

The knives 11, 11ª, 12 and 12ª are of such length that when the clip contacts are in their middle position, such as is illustrated in Fig. 1 or Fig. 2, each knife will be in engagement with its coöperating clip contact. The knives 13, 13ª, 14 and 14ª are much shorter and when the clip contacts are in their middle position as illustrated in Figs. 1 and 2 none of these knives will be in engagement with its coöperating clip contact. 35 and 36 designate conductors arranged in channels or grooves on the under side of the base and connecting respectively the knives 14 and 11 and 14ª and 11ª. The other knives are provided with openings and binding screws in order to fasten the several conductors to them. The several knives 11, 11ª, 12, 12ª, etc., are detachably secured to the base 10 in any desired way—of course all grooves, channels, etc. on the under side of the base after assemblage of parts are filled with wax or other similar and suitable insulating material to insulate the parts against discharge between adjacent conducting parts or between the conductors and channels to which the switch may be applied.

Referring now to the diagram Fig. 4, two batteries X and Y are illustrated. 31 and 32 designate conductors leading from a dynamo or other generator, and said conductors are connected with the pivot supports 25 and 27 respectively on the under side of the base 10. A conductor 33 connects the knife 14 with one side of the battery Y, and a conductor 34 connects the knife 14ª with the other side of the battery. The knives 11ª and 14ª are connected by a conductor 35 and

the knives 11 and 14 are connected by a conductor 36. The discharging conductors are indicated by 37 and 38 and lead from the pivot supports 21 and 23 respectively. The knives 12 and 13 are connected to each other by a conductor plate 60 and to one end of the battery X by a conductor 39, and the knives 12^a and 13^a are also connected to each other by a conductor plate 61 (shown only in diagram but arranged in the same manner as the conductor plate 60), and to the other side of the battery X by a conductor 40. From the foregoing it will be seen that the knives 11, 11^a, 12 and 12^a in connection with their coöperating clip contacts control the discharge from either battery over the conductors 37 and 38 and that the discharging circuit can never be open at the switch.

If it be desired to charge the battery Y and discharge from the battery X the handle 29 will be pushed forward, which will result in moving the clip contacts 18 and 18^a into engagement with the knives 14 and 14^a as indicated in the diagram Fig. 4. The same movement of the handle will force the clip contacts 16 and 16^a down to the lower ends of the knives 12 and 12^a and simultaneously disengage the clip contacts 15 and 15^a from the knives 11 and 11^a. With the parts in the position just described a circuit will be established through the conductor 31 to the support 25, clip contact 18, knife 14, conductor 33 through the battery Y, conductor 34, knife 14^a, clip contact 18^a, support 27 and conductor 32 and the battery Y will be charged. Another circuit will also be established through the conductor 37, support 21, clip contact 16, knife 12, conductor 39, battery X, conductor 40, knife 12^a, clip contact 16^a, support 23 and conductor 38 and the battery X can thus discharge.

When the switch is in the position shown in Fig. 1 both batteries will be connected to the discharging line. The battery X discharging over the circuit just described while the battery Y would be connected to the conductors 38 and 37 as follows: battery Y, conductor 33, knife 14, conductor 36, knife 11, clip contact 15, support 21, conductor 37, conductor 38, support 23, clip contact 15^a, knife 11^a, conductor 35, knife 14^a and conductor 34. At the same time both batteries would be cut off from the charging circuit.

In order to charge the battery X the handle 29 must be pulled back to its extreme limit to move the clip contacts 17 and 17^a into engagement with the knives 13 and 13^a and to move the clip contacts 15 and 15^a down to the lower ends of the knives 11 and 11^a and disengage clip contacts 16 and 16^a from the knives 12 and 12^a. This will make a circuit as follows: conductor 31, support 25, clip contact 17, knife 13, conductor 39, battery X, conductor 40, knife 13^a, clip contact 17^a, support 27 and the conductor 32.

While my switch so far described is particularly adapted for charging and discharging storage batteries it may with slight modifications be used for other purposes. Thus in Fig. 5 I have shown diagrammatically a switch in which all the knives are of substantially the same height and with such a construction when the clips are in their middle position as shown in Fig. 1 all of them will be out of engagement with the knives.

The construction shown in Fig. 5 may be used to select a generator for charging either of the batteries X and Y. As illustrated in the diagram generator No. 1 is charging battery X and generator No. 2 is charging battery Y. With the parts in this position the handle 29 would be pushed forward to its extreme limit. By bringing the handle to the position shown in Fig. 1 the batteries would both be disconnected from the generators, and by pulling it to its extreme rearward position generator No. 1 would charge battery Y and generator No. 2 would charge battery X.

In some of the following claims I shall, for the sake of brevity and clearness, call the knives 11, 11^a, 12 and 12^a, discharging knives, and the others charging knives. Also the clip contacts coöperating with the knives 11, 11^a, 12 and 12^a will be called discharging clip contacts and the others charging clip contacts. The arrangement of the clip contacts being movable instead of the knives, as heretofore, has the advantage of obtaining all the contact pressure at the beginning of the contact with the knives, which after once made remain constant during the remainder of the stroke of the switch.

Having described the invention, I claim:

1. In a switch for charging and discharging storage batteries, the combination with a base, of two pairs of discharging knives supported upon the base, two pairs of clip contacts to coöperate respectively with the knives, one clip contact of each pair being connected to a clip contact of the other pair and pivoted on a support mounted on the base, discharging conductors connected to the pivot supports, two batteries connected respectively to the respective pairs of knives, means for rocking the clip contacts and said clip contacts and knives being normally all engaged when the clip contacts are in their middle position.

2. In a switch for charging and discharging storage batteries, the combination with a base, of two pairs of discharging knives supported upon the base, two pairs of charging knives of less height than the discharging knives also supported upon the base, four pairs of clip contacts to coöperate re-

spectively with the respective pairs of knives, one clip contact of each pair being connected to a clip contact of an adjacent pair and pivoted on a support mounted on the base, charging conductors connected to the pivot supports for the charging clip contacts, discharging conductors connected to the pivot supports of the discharging clip contacts, two batteries each having connections with one pair of charging knives and one pair of discharging knives, means for rocking all of the clip contacts simultaneously, and the charging clip contacts being all out of engagement with their respective knives, and the discharging clip contacts being all in engagement with their respective knives when the clip contacts are in their middle position.

In testimony whereof I have signed my name to this specification in the presence of two subscribed witnesses.

ASBURY G. WILSON.

Witnesses:
C. C. WHITE,
JAMES CHALMERS, Jr.