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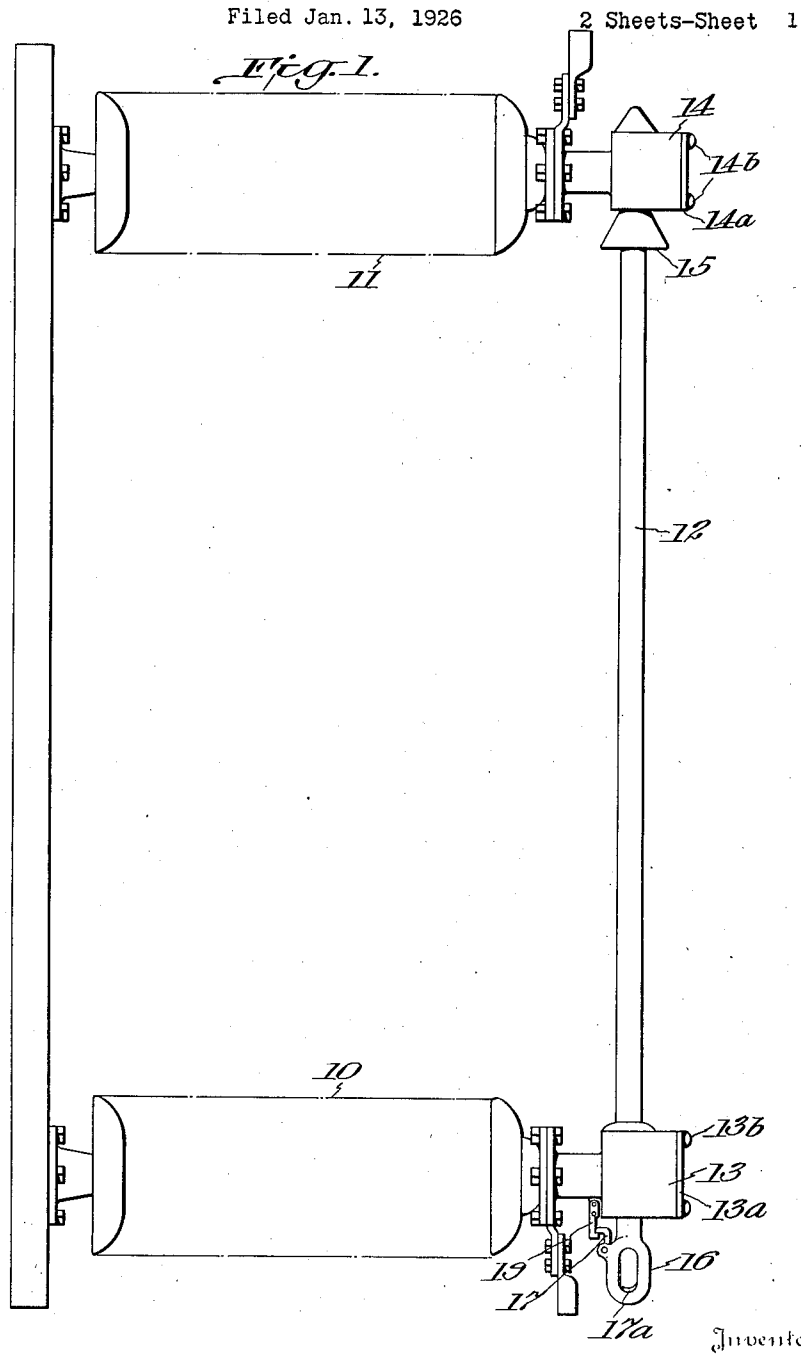
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C. G. KOPPITZ

PLUNGER TYPE DISCONNECTING SWITCH

Filed Jan. 13, 1926

2 Sheets-Sheet 1



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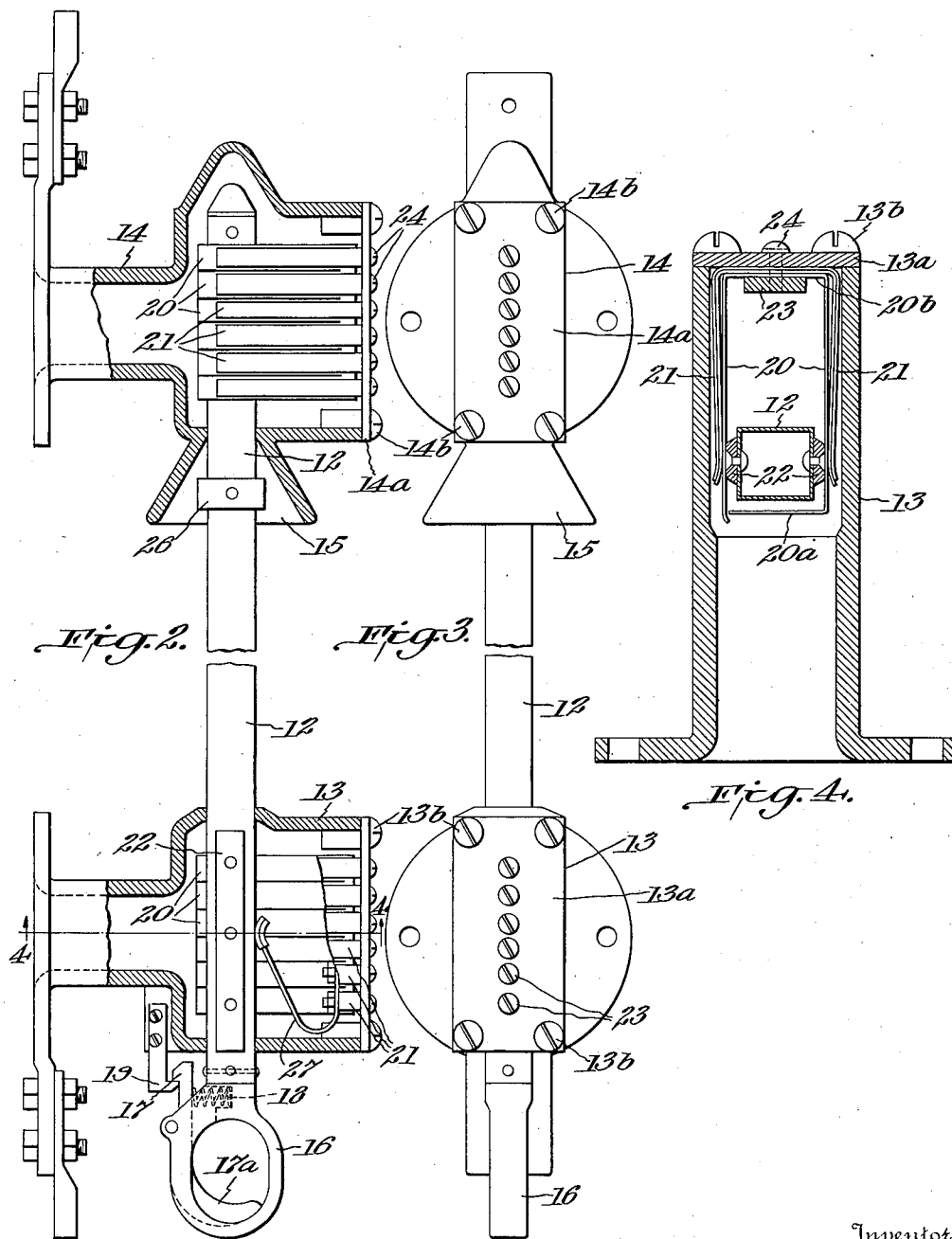
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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PLUNGER-TYPE DISCONNECTING SWITCH.

Application filed January 13, 1926. Serial No. 81,116.

This invention relates to high-tension disconnecting switches of the plunger type and has for its object an improvement upon switches of this character.

It is the general object of the invention to provide disconnecting switch mechanism of the plunger type which is of simple and compact construction and reliable in operation.

To more fully describe the invention, the points of novelty in the construction and advantages in the operation, reference is made to the accompanying drawings in which

Fig. 1 is a side elevation of a construction embodying the invention;

Fig. 2 is a vertical section of the switch mechanism proper;

Fig. 3 is an end view thereof; and

Fig. 4 is a transverse section on line 4—4, Fig. 2.

As indicated in Fig. 1, the switch mechanism is mounted on insulators 10 and 11, the blade 12 extending in vertical direction so that it may be operated, as is customary, by means of an insulating hook stick. The lower insulator 10 carries a contact box 13 which contains movable contact members and at the same time constitutes a guide frame for up and down motion of the blade. The upper insulator 11 carries a box 14 containing movable contact members and a guide opening 15 at the bottom while the box is otherwise closed. The blade 12 has at its lower end the usual hook eye 16 for engagement with the customary hook stick. A latch bolt 17 acted upon by a spring 18 and co-operating with a latch hook 19 represents a usual arrangement for maintaining the blade in closed position. The latch bolt 17 has a trigger portion 17^a in the eye 16.

To this extent the description applies to constructions known in the art.

The contact members are composed of a plurality of spring fingers 20 bearing upon opposite sides of the blade 12 pressed into contact by strong springs 21. The fingers 20 extend beyond the springs 21 and the set of fingers on one side are bent substantially at right angle defining stop portions 20^a co-operating with the fingers of the set on the opposite side to limit movement toward each other. The blade is provided with special contact strips 22 which, as indicated in Fig. 2, extend only along a limited part of the lower portion of the blade. The stop portions 20^a are so di-

mentioned that while the blade is in closed position the fingers 20 are in firm contact with the contact strips 22. However, when the blade has been pulled downwardly a short distance until the strips 22 are out of contact with the fingers, it can slide freely since the spring fingers 20 are limited in their inward movement by the stop portions 20^a. The stop elements also prevent the closing of the springs upon each other and thus facilitate the entering of the blade.

The spring fingers 20 are preferably formed as a unitary construction by making incisions in a sheet of copper or other suitable metal leaving an uncut center portion 20^b. The springs 21 are formed as individual members of phosphor bronze or the like. The springs 21 and the center portion of the sheet defining contact fingers 20 are perforated and may be clamped to the boxes by means of a clamping block 23 and screws 24. To afford easy access to the springs for inspection and repair I make that portion of the box to which they are attached removable. Thus the portions 13^a and 14^a of the boxes 13 and 14 may be removed together with the springs secured thereto by removing screws 13^b and 14^b, respectively, and withdrawing the blade 12. The blade 12 may be withdrawn from the lower box 13 by first removing the stop collar 26 which normally prevents the blade 12 from slipping out of the box 13.

To eliminate chattering of the blade particularly during upward movement thereof, I apply in box 13 a spring 27 preferably provided with a contact facing of fibre. This spring may be secured to the portion 13^a together with the spring fingers 20 and springs 21, as indicated in Fig. 2.

In order to insure the locking action of the latch mechanism I hold the blade 12 against rotary movement. To this end I preferably form the blade as a tubular member of angular cross-section. While any non-circular cross-section would accomplish the purpose, I prefer a rectangular shape which affords the best contact relations in connection with the contact springs.

I claim:

1. In high-tension disconnecting switch mechanism of the plunger type, the combination with the switch blade, of a box having openings defining a passage way for the blade, contact springs disposed in the box

to engage the blade, the contact springs being secured to a detachable portion of the box and removable therewith and terminal lugs secured to a stationary portion of said box.

2. In high-tension disconnecting switch mechanism of the plunger type, the combination with the switch blade, of a box having openings defining a passage way for the blade, contact springs disposed in the box to press upon opposite sides of the blade, contact strips near the operating end of the blade for engagement with the contact springs and means within the box for limiting the movement of the springs toward each other to reduce pressure contact between the latter and the blade when the contact strips are out of engagement with the springs.

3. In high-tension disconnecting switch mechanism of the plunger type, the combination with the switch blade, of a box having openings defining a passage way for the blade and a spring in the box exerting pressure upon one side of the blade to eliminate chattering thereof during operation.

4. In high-tension disconnecting switch mechanism of the plunger type, the combination of a box having openings defining a passage way for the switch blade and having a portion removable at right angle to the blade, and substantially U-shaped contact springs the center portions of which are attached to the said removable portion and the legs of which press upon opposite sides of the blade.

5. Switch mechanism according to claim 4 in which the set of springs on one side of the blade are bent at right angle adapted to engage the set of springs on the opposite side of the blade thereby limiting motion of the springs toward each other.

6. Switch mechanism according to claim 4 including separate pressure springs bearing upon the contact springs, said pressure springs being likewise attached to the removable portion.

7. Switch mechanism according to claim 4 including a spring bearing upon the blade in a direction at right angle to the contact surfaces thereof to eliminate chattering of the blade, said last mentioned spring being likewise attached to the removable portion.

8. In a high tension disconnecting switch mechanism of the plunger type, a tubular blade of polygonal cross-section, a box having openings to define a passageway for the blade, a plurality of parallel spring-pressed contacts in said box, a contact strip mounted on one angular face of said blade for engagement with said contacts, and a spring in said box for engagement with another angular face of said blade.

9. A high tension disconnecting switch of the plunger type comprising an elongated blade, conducting strips mounted thereon and projecting from the face of said blade, spring-pressed contacts for engagement with said conducting strips in the closed position of said switch, and stop means preventing the engagement of said contacts with the blade.

10. In a high tension disconnecting switch of the plunger type, two longitudinally spaced contacts, and a metallic plunger for bridging said contacts, said plunger comprising a rectangular blade having strips of conducting material mounted thereon and projecting beyond the face of the plunger and spaced longitudinally of the same for engagement with the spaced contacts.

In testimony whereof, I affix my signature.

CARL G. KOPPITZ.