No. 736,447. PATENTED AUG. 18, 1903.

W. M. SCOTT.

ELECTRIC SWITCH.

APPLICATION FILED JULY 19, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

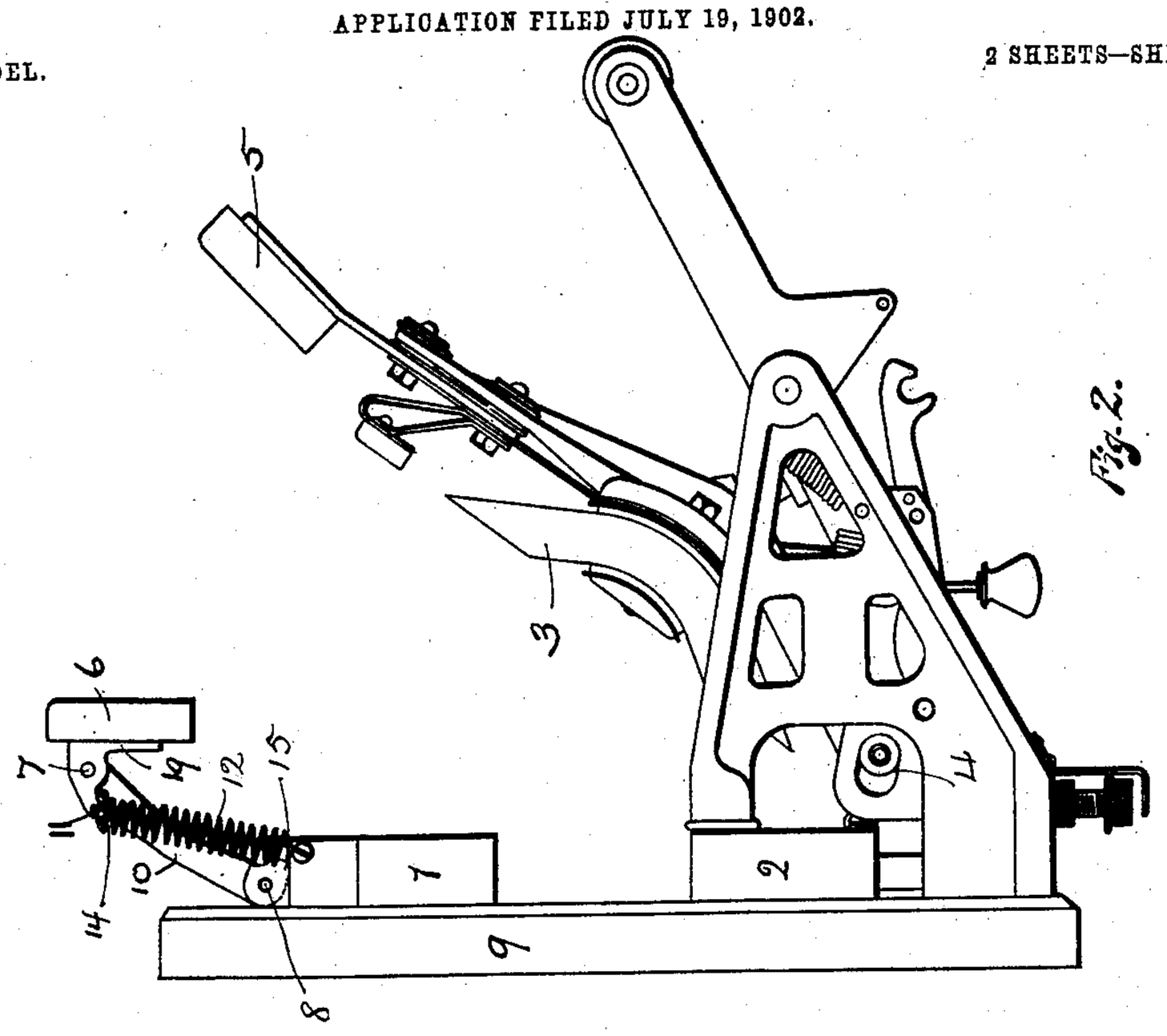

Fig. 2.

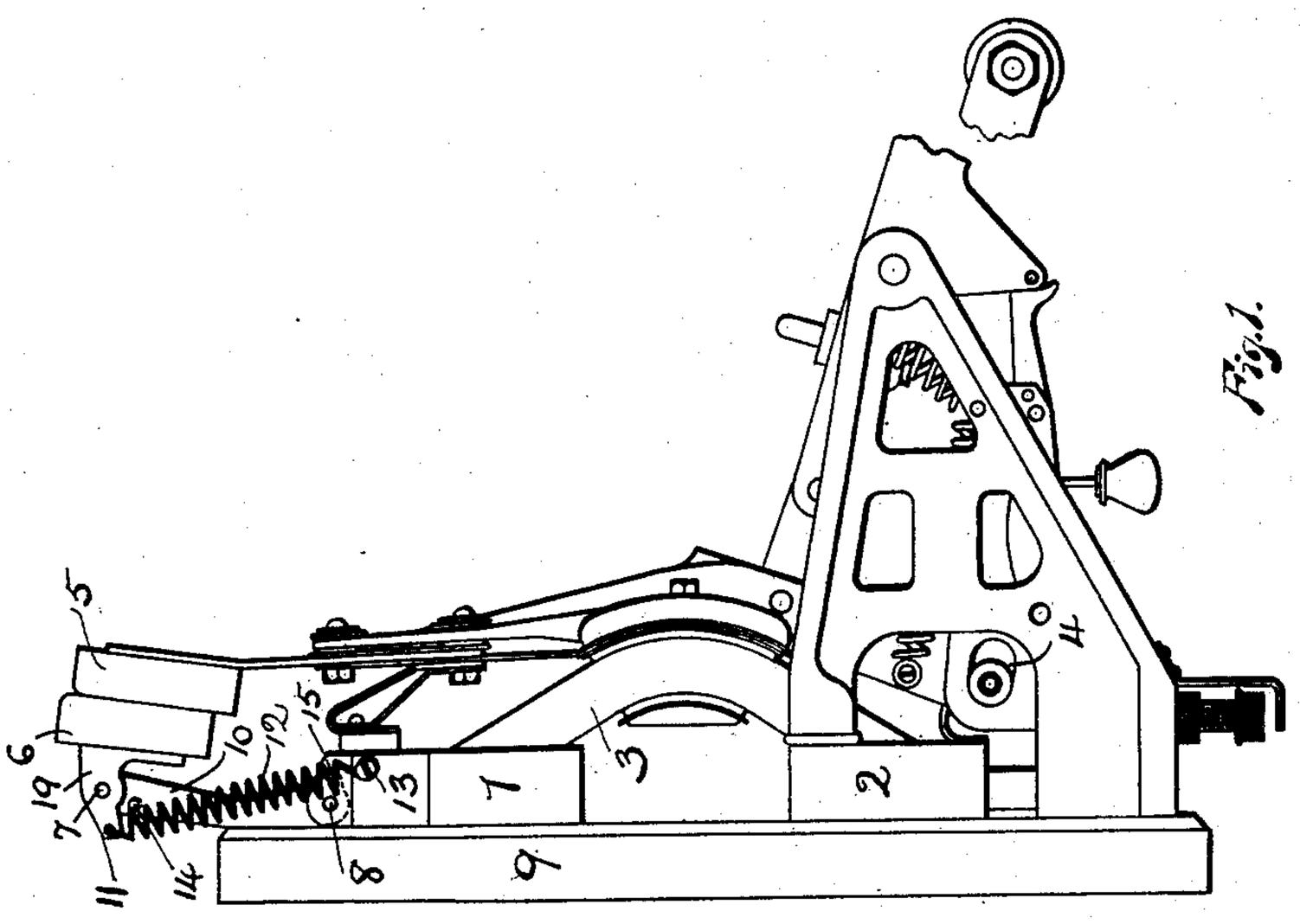

Fig. 1.

WITNESSES:
Mae Hofmann
C. D. Ehret.

INVENTOR.
Wm M. Scott
BY
Thos Ewsdale
ATTORNEY.

No. 736,447. PATENTED AUG. 18, 1903.

W. M. SCOTT.

ELECTRIC SWITCH.

APPLICATION FILED JULY 19, 1902.

NO MODEL. 2 SHEETS—SHEET 2.

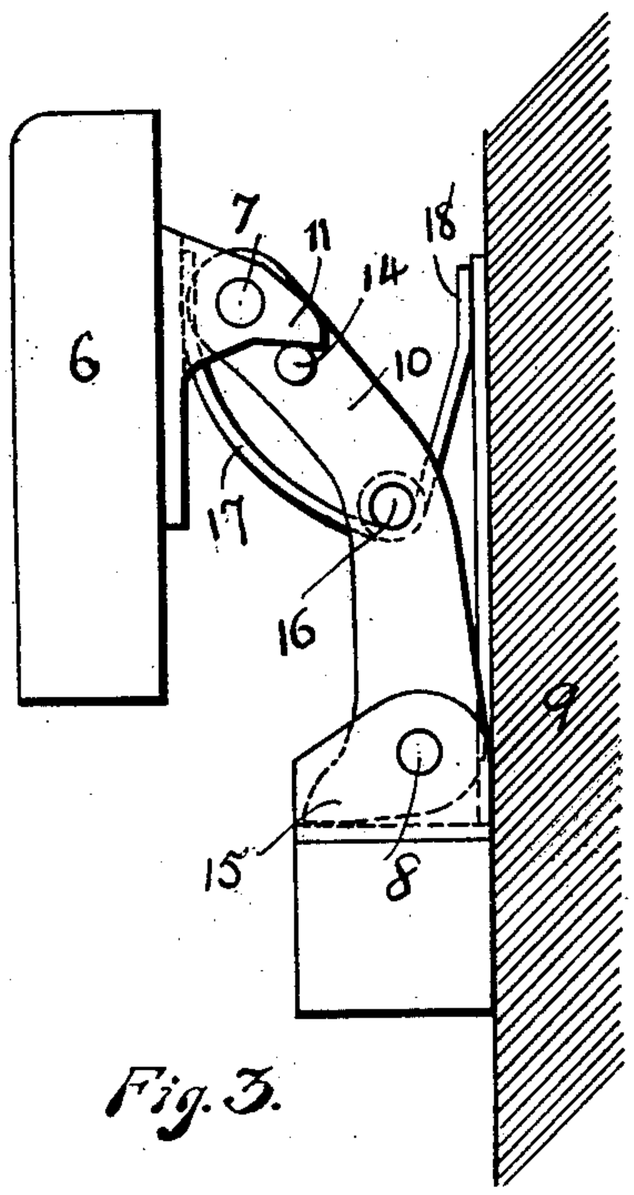

Fig. 3.

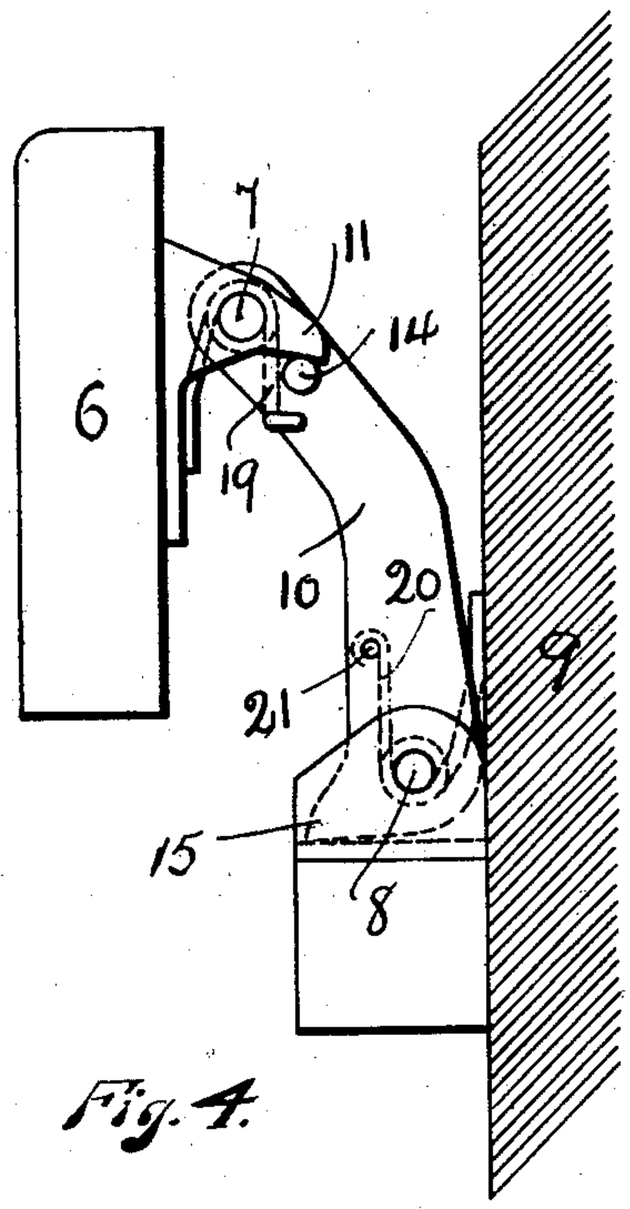

Fig. 4.

WITNESSES:
Mae Hofmann
C. D. Ehret.

BY

INVENTOR.
Wm. M. Scott
Thos. Howard
ATTORNEY.

No. 736,447. Patented August 18, 1903.

UNITED STATES PATENT OFFICE.

WILLIAM M. SCOTT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO CUTTER ELECTRICAL AND MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 736,447, dated August 18, 1903.

Application filed July 19, 1902. Serial No. 116,158. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. SCOTT, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Electric Switch, of which the following is a specification.

My invention relates to improved means for supporting the shunt-contacts of an electric switch, and comprises a double-pivoted spring-controlled mechanism for supporting the fixed shunt-contact, the purpose of which is to enable me to support the movable shunt-contact rigidly with the framework carrying the movable main bridge or contact and still permit of such coöperation between the fixed and movable shunt-contacts as to insure a perfect contact therebetween when the switch is in the closed position and during the preliminary opening movement and the final closing movement of said switch.

In the accompanying drawings, Figure 1 is a side elevation of a switch in the closed position, showing my improved shunt-contact support. Fig. 2 is a similar view in the open position. Fig. 3 is a detail of said double-pivoted shunt-contact support, showing a modification of the spring-controlling means. Fig. 4 is a similar view showing a further modification of the spring controlling means.

Similar numerals refer to similar parts throughout the several views.

Figs. 1 and 2 show a switch or circuit-breaker, the main fixed contacts being 1 and 2, secured to the base 9, of insulating material, and a movable laminated contact or bridge 3, connected with the base by the projection and slot engagement at 4. Rigidly connected with the bridge-supporting framework is the movable shunt-contact 5, which is adapted to coöperate with the oppositely-disposed shunt-contact 6. This oppositely-disposed shunt-contact 6 has a double-pivoted connection at 7 and 8 with the base 9—that is, a member 10 is pivotally secured to the base at one end, at 8, and has pivotally secured at its other end, at 7, the shunt-contact member 6. The frame 19 of the shunt-contact member 6 has a projection 11 at the other side of its pivot 7. To this projection 11 is secured one end of the coil-spring 12, the other end being secured at 13 to the base. It will be noticed that the line of the two points of spring connection crosses the line of the two pivots 7 and 8, so that the force of the spring will tend to draw the member 10 forward toward the movable contact and will tend to pull the projection 11 downwardly to cause the additional forward movement of the lower portion of the shunt-contact 6, the stop 14 limiting the forward movement of the shunt-contact 6, while the projection 15 engages with a portion of the base or the main fixed contact to limit the forward movement of member 10, as shown in Fig. 2. It will thus be noted that as the switch is opened the contact 6 will follow the contact 5, and its surface will continue to conform with the surface of contact 5 during the separation of the bridge 3 from the main contacts 1 and 2, thus insuring an efficient contact between the shunts 5 and 6 during the opening of the main switch.

In the details shown in Fig. 3 the principle of operation is practically the same. Instead of having the spiral spring 12 connected between projection 11 and pin 13 I may locate the stud 16 about midway the extension of member 10 and mount thereon a two-arm spring, one arm 17 engaging against the shunt-contact piece 6, while the other arm 18 engages with the base with practically the same result as described with respect to Figs. 1 and 2, or, as shown in Fig. 4, I may employ two springs, one, 19, being a two-arm spring mounted upon the pivot 7, one arm engaging with the shunt member 6, the other engaging with the member 10, and upon the pivot 8 is mounted another two-arm spring 20, one arm engaging with the base and the other secured to the pin 21.

In the class of switches commonly known as "circuit-breakers," comprising a pivotally-mounted main-switch bridge and carbon contacts in shunt thereto, the practice has been to pivot one carbon to the movable element of the main switch, the coöperating car-

bon being secured to the stationary portion or base. The carbon which is pivoted to the movable element of the switch has a spring connected therewith for causing its adjustment with the coöperating fixed carbon. The movable element of the main switch is normally held in the closed position under considerable spring tension, and upon its release the said movable element is thrown with considerable force into the open position against a buffer or other suitable stop. The result of this operation is that the pivoted carbon, which is secured to the outer or free end of the switch-arm or bridge-supporting member, is liable to be thrown out of adjustment—that is, the momentum of said carbon caused by the outward throw of the movable element brings an undue strain upon the spring controlling said carbon, sometimes resulting even in the breaking of the spring. Where, however, the fixed shunt-carbon has a double-pivoted spring-controlled connection with the base or stationary part of the instrument, the springs controlling the same are entirely relieved from this undue strain or jar, while the carbon carried upon the outer end of the movable element of the main switch may be rigidly secured thereto, thus entirely obviating the objection above referred to. This it is believed is new in the art of circuit-breaker practice and is a distinct improvement therein.

What I claim is—

1. In an electric switch the combination of separable coöperative shunt-contacts, one of which is secured to one of the main contacts and having the same axis of rotation therewith while the other shunt-contact has a double-pivoted spring-controlled supporting connection with the supporting means for the opposing main contact.

2. In an electric switch the combination with a base of stationary and pivotally-movable main contacts, coöperating shunt-contacts, one of which is rigidly secured to the movable main contact while the other is provided with a double-pivoted spring-controlled supporting means connected with the base.

3. In an electric-circuit breaker the combination of a pivotally-mounted main switch and a base for supporting the same, separable coöperative shunt-contacts, one of which is rigidly supported by and movable with the mechanism of the main switch while the other has a double-pivoted spring-controlled connection with the base.

4. In combination with a pivotally-mounted main switch for electric circuits and a base for supporting the same coöperating shunt-contacts, one supported by the moving mechanism of the main switch and a double-pivoted spring-controlled support for the other shunt-contact comprising a member pivoted at one end to the base having the shunt-contact pivoted to its free end and spring means connected therewith for pressing the lower portion of said shunt-contact forward toward its coöperating contact and also for actuating the pivoted supporting member into the forward position.

5. In combination with an electric switch, comprising main fixed contacts, and a pivotally-movable bridge for coöperating therewith, coöperating carbon contacts in shunt to the main switch, one being rigidly secured to said movable bridge member, the other having a double-pivoted spring-controlled connection with the supporting means of the main fixed or stationary contacts so as to maintain efficient engagement of its contacting face with the contacting face of the carbon carried by the movable bridge member during a required period of said movement.

6. In combination with a main switch, comprising fixed terminals and a pivotally-movable bridge coöperating therewith, carbon contacts in shunt thereto, one rigidly secured to and movable with the pivotally-movable bridge element of the main switch, and the other having a double-pivoted spring-controlled connection with the stationary supporting means or base, so as to secure efficient engagement between its contacting face and the contacting face of the other carbon during a required portion of the travel of the movable bridge element.

7. In an automatic magnetic circuit-breaker, the combination of a pivotally-movable main switch, spring means for actuating the same, means for normally restraining said actuation, automatic magnetic means for releasing the restraining means upon abnormal flow of current and carbon contacts in shunt with the main switch, one rigidly secured to the pivotally-movable element of the main switch, and the other having a double-pivoted spring-controlled connection with the stationary supporting means or base, so as to secure efficient engagement between its contacting face and the contacting face of the carbon carried by the movable element during a required portion of the travel of said movable element.

8. In combination, a base, a member pivoted thereto, means for limiting the rotation of said member, a shunt-contact pivoted to said member, means for limiting the rotation of said shunt-contact, a complementary shunt-contact movable to and away from said shunt-contact, and resilient means for causing said shunt-contact to follow its complementary contact.

9. In combination, a base, a member pivoted thereto, a shunt-contact pivoted to said member, means limiting the rotation of said shunt-contact, resilient means attached to said base and said shunt-contact, and a complementary contact secured to a pivoted arm.

10. In an electric switch, a base, main fixed terminals thereon, a bridging member coöperating therewith, an arm pivoted to said base, a shunt-contact pivoted to said arm, means for limiting the motion of said shunt-contact, an electrical connection between a fixed terminal and said shunt-contact, and a complementary shunt-contact movable with said bridging member.

WILLIAM M. SCOTT.

Witnesses:
JOHN THIEL,
MAE HOFMANN.