W. M. SCOTT.

SHUNT CONTACT FOR ELECTRIC SWITCHES.

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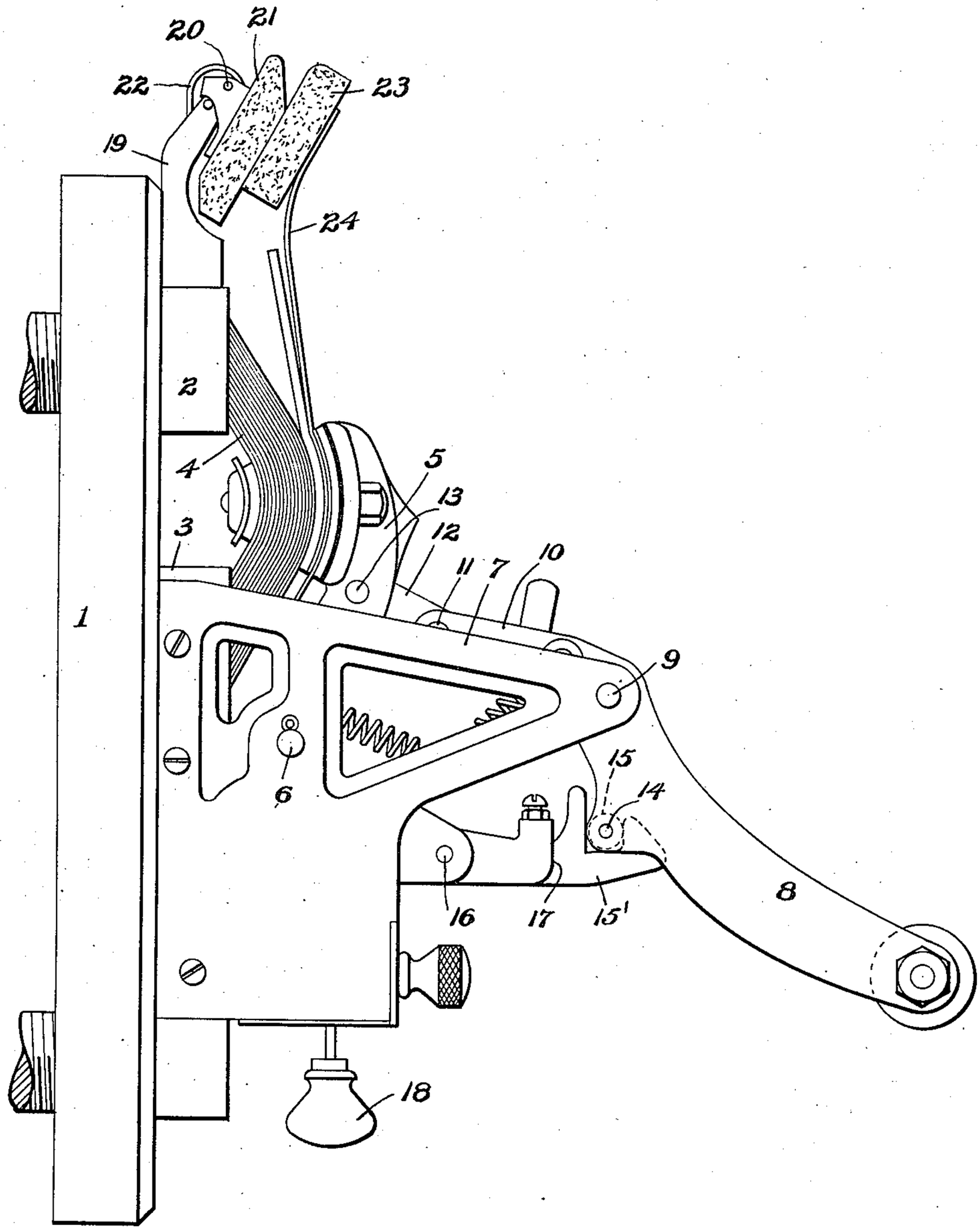

Witnesses

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SHUNT-CONTACT FOR ELECTRIC SWITCHES.

No. 914,677. Specification of Letters Patent. Patented March 9, 1909.

Application filed March 26, 1907. Serial No. 364,720.

To all whom it may concern:

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

My invention relates to electric switches or circuit breakers and more particularly to the means for preventing arcing at the switch or circuit breaker contacts.

It has heretofore been the practice to supplement the main switch with a shunt switch or shunt path which opens after the main switch contacts so that the arcing is confined to the shunt contacts, the shunt contacts being generally of carbon. It has also been the practice to have a second shunt path, intermediate between the main switch and the carbon switch to cause a more perfect graduation in the introduction of resistance into the circuit during the circuit breaking operation. Those intermediate shunt contacts were of metal, the operation being the rupture of the circuit at the main contacts, later at the metallic shunt contacts, and finally, at the carbon contacts.

It is the object of my invention to simplify switch construction in this regard and to entirely eliminate the intermediate metallic or other shunt contacts, and to employ only one shunt path. To this end I employ as shunt contacts pieces or blocks of material consisting of a mixture of refractory material with comminuted or suitably finely divided non-refractory conducting material.

For the refractory material carbon, or other conductor or non-conductor, may be employed and for the non-refractory conducting material may be employed finely divided metal as copper, aluminum, or any other suitable metal or material, of either high or low specific resistance. The material is prepared by thoroughly mixing finely divided carbon, either in the amorphous or graphitic state, (or other refractory material) and finely divided metal such as aluminum, copper, etc., (or other suitable conducting non-refractory material) with a suitable binding material and then subjecting the mixture to pressure in suitable molds, and baking to a greater or less extent, though baking may probably, in some instances, be dispensed with. By using blocks of such mixtures for the shunt contacts the intermediate metallic shunt contact may be entirely dispensed with and the circuit successfully ruptured without damage to the main contacts.

Referring to the accompanying drawing, which is a side elevation of an automatic circuit breaker, 1 represents a base of any suitable insulating material, such as slate or marble, upon which are secured terminal blocks 2 and 3, preferably of copper, which are adapted to be engaged and bridged by the laminated bridging member 4, which is mechanically supported upon but insulated from the arm 5 pivoted at 6 in the bracket or housing 7. The arm 5 is controlled and operated by the operator's lever 8 pivoted at 9 in the bracket 7. The lever 8 has an inwardly extending portion 10 which is pivoted at 11 to the link 12, which latter is, in turn, pivoted at 13 to the arm 5. The member 10 and the link 12 constitute a toggle which serves to cramp the bridging member 4 into firm engagement with the terminal blocks 2 and 3, as well understood in this art. The operator's lever 8 has pivoted upon it at 14 a small roller 15 adapted to be engaged and held by the latch 15′ pivoted to the bracket 7 at 16. A latch actuating member 17 is also pivoted at 16 and is controlled either automatically by any suitable electro-responsive means, or manually by the handle 18, to press the latch 15′ downwardly and thereby release the lever 8.

A metallic bracket 19 is supported on and in electrical communication with the upper terminal block 2 and supports at a pivot 20 the shunt contact piece 21 controlled by the spring 22. Coöperating with the shunt contact piece 21 is another shunt contact piece 23 supported upon the upper end of the resilient member 24 supported by and insulated from the arm 5, and in electrical communication with the lower terminal block 3. The shunt contact pieces 21 and 23 consist of any of the mixtures hereinbefore described.

When the operator's lever 8 is released from the latch 15′, the toggle 10, 12 collapses and the arm 5 rotates upon its pivot 6 carrying the laminated bridging member 4 away from and out of contact with the terminal blocks 2 and 3. The shunt contact pieces 21 and 23 remain in contact, however, an interval of time after the laminated bridging member has separated from the contact blocks 2 and 3 and the circuit remains com-

pleted through these pieces 21 and 23, for that interval of time. Since these shunt contact pieces consist of the mixtures heretofore described, the current finds a path through them which is not so highly resistant as if simply refractory conducting material, as carbon, were employed. It follows, therefore, that the intermediate metallic shunt contact heretofore commonly employed may be entirely dispensed with for the resistance of the path through the pieces 23 and 21 is low enough to absolutely prevent any arcing or sparking between the bridge 4 and the terminals 2 and 3. And yet the properties of the shunt contact pieces 21 and 23 are such, that upon further opening movement of the parts, they separate and the final arcing takes place between them without damaging said shunt contact pieces even though there is non-refractory conducting metal present.

By employing the mixtures herein described for the shunt contact pieces, the intermediate shunt contact pieces may be dispensed with, as stated, and yet all the properties of a simple refractory metallic shunt contact piece retained for the final breaking action.

While I have herein shown the shunt contact pieces applied to a switch or circuit breaker involving a laminated bridging member, it is to be understood that the same may be employed also with switches or circuit breakers employing other types of contacts for the main switch, as, for example, the knife-blade forms.

What I claim is:

1. In an electrical switch, a shunt contact consisting of a mixture of conducting material and finely divided material of higher conductivity.

2. In an electrical switch, a shunt contact consisting of a mixture of carbon and finely divided metal.

In testimony whereof I have hereunto affixed my signature in the presence of the two subscribing witnesses.

WILLIAM M. SCOTT.

Witnesses:

DANL. WEBSTER, Jr.,

ANNA E. STEINBOCK.