

(No Model.)

F. F. LOOMIS.  
ELECTRIC SWITCH.

No. 479,949.

Patented Aug. 2, 1892.

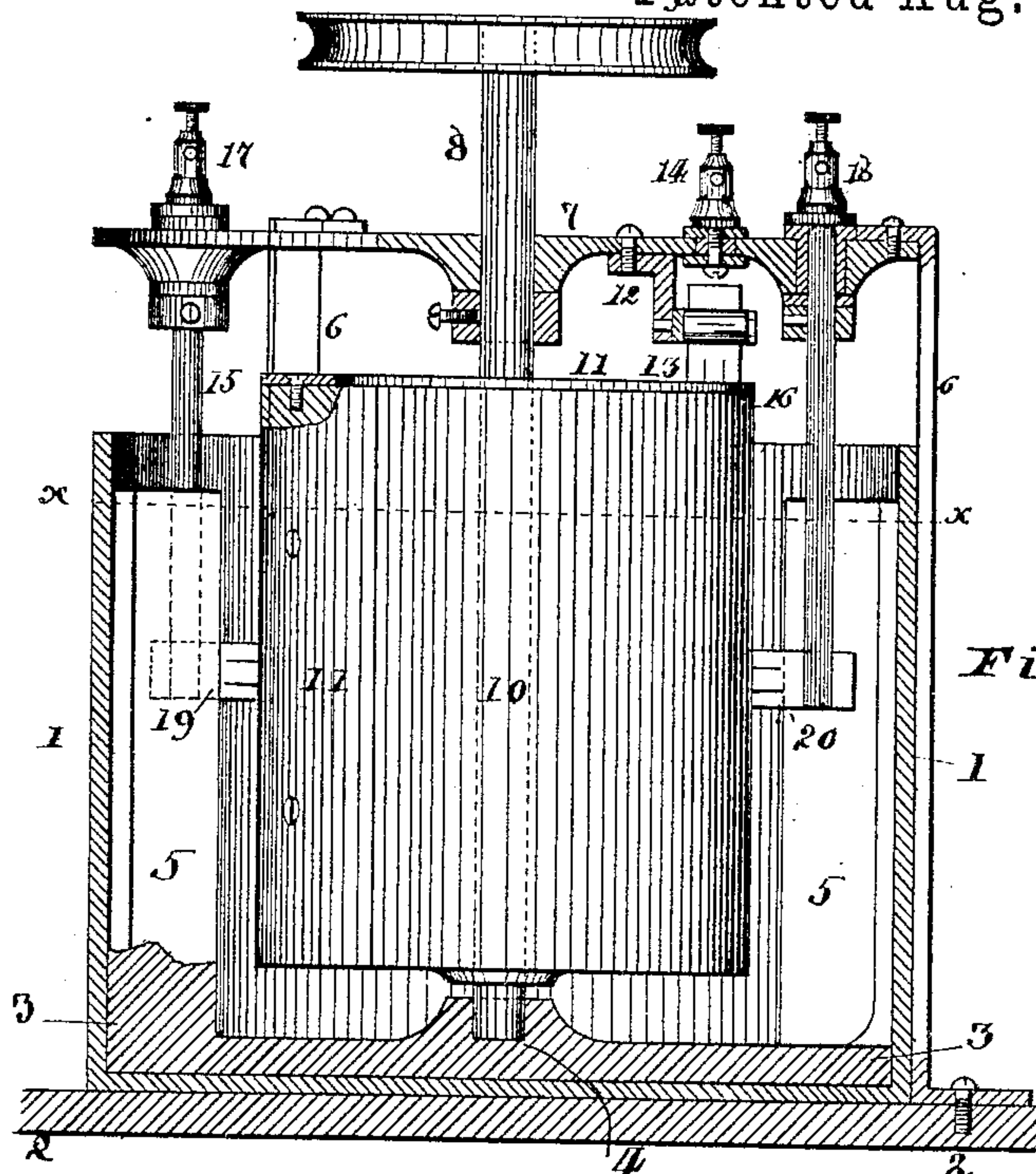


Fig. 1.

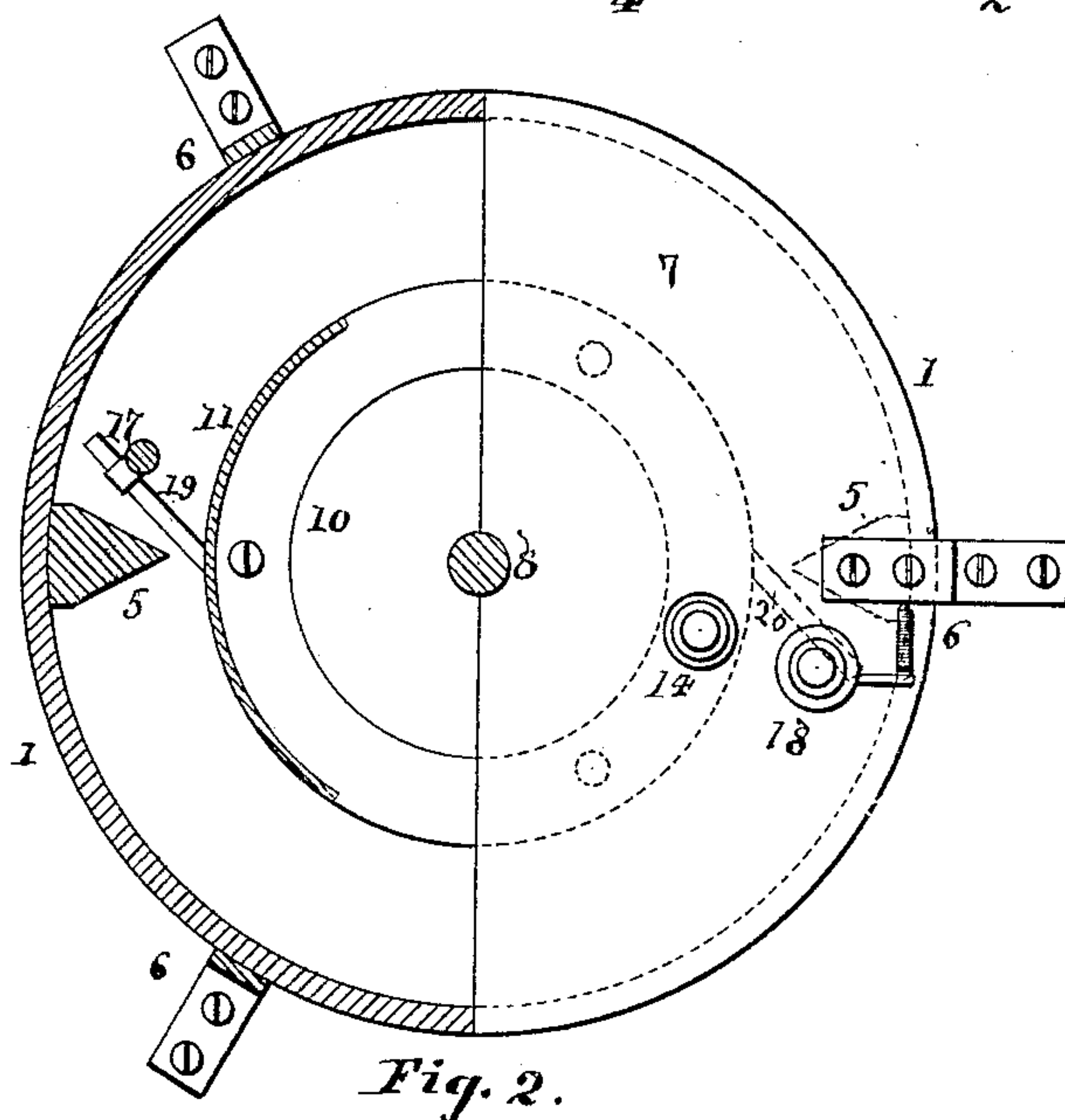


Fig. 2.

Witnesses  
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# UNITED STATES PATENT OFFICE.

FRANK F. LOOMIS, OF AKRON, OHIO.

## ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 479,949, dated August 2, 1892.

Application filed July 31, 1891. Serial No. 401,336. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK F. LOOMIS, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Revolving Alternating Electric Switches, of which the following is a specification:

My invention has relation to improvements in that class of electric switches by which an electric current from any source is alternately diverted to different mechanisms to be affected thereby, as oppositely-disposed solenoids arranged to operate a reciprocating drill-shaft or other analogous mechanisms.

The objects of my invention are to provide a new and improved revolving switch of the class specified and by a combination with an acid and metallic solution, to prevent loss of electric force from "sparking" between the contact-plates of the revolving portion and the brushes that convey the current thence.

My invention consists in the peculiar and novel construction, arrangement, and combination of parts hereinafter described, and then specifically pointed out in the claims, reference being had to the accompanying drawings, which constitute a part of this specification.

In the accompanying drawings, in which similar reference-numerals indicate like parts in the different figures—

Figure 1 is a central vertical section of my improved rotating switch, the rotating cylinder shown in elevation; and Fig. 2 a plan of the same, the operating-pulley being omitted and the left half in section at the line  $xx$  of Fig. 1.

Referring to the drawings, 1 is a cylindrical tank of glass, porcelain, or some other analogous material, mounted on a base 2, and in which tank is fitted and placed a bottom 3, of any non-conducting material, but preferably hard vulcanized rubber, having a central bearing or step 4 for the end of the shaft of the revolving cylinder, hereinafter referred to, to rest in, and uprights 5 5, consisting of bars extending nearly to the top of the tank 1, preferably triangular in cross-section, with

their inner angles extending radially inward, for a purpose to be stated.

Above the tank 1 and supported by posts 6 6, preferably three in number, and placed about and against it at regular intervals is a top plate 7, which constitutes a support for the operative mechanism. Journaled in the center of the plate 7, with its lower end resting in the step 4, is a shaft 8, bearing at the top a driving-pulley 9, and within and extending above the tank 1 a cylinder 10, of non-conducting material, as hard rubber. The top and between one-third and one-half of one side of this cylinder has a metallic coating 11, as copper.

Attached to the under side of the plate 7 is a bracket 12, bearing a brush 13, that rests in the metallic cover of the cylinder 10 and in electrical connection through the plate 7 with a binding-post 14.

Mounted in insulated bearings in the plate 7, on opposite sides of the cylinder 10, are depending rods 15 16, terminating above said plate in binding-posts 17 18, which rods extend about midway of the depth of the tank 1 and bear at their lower ends brushes 19 20, arranged to rest against the outer periphery of said cylinder.

In operation the binding-post 14 is connected directly with one wire from the dynamo or other source of electric energy and the posts 17 18, respectively, with the oppositely-disposed solenoids or other mechanism to be alternately actuated by the electric current. The tank is then filled to the line  $xx$  with an acid and metallic solution, which preferably consists of one part of sulphuric acid and twenty parts water, in which iron filings or chips have been immersed until the action of the acid on the iron ceases. Motion being communicated to the pulley 9, the cylinder 10 is revolved and the current is alternately diverted to the posts 17 and 18 and to their respective solenoids, from which return-wires run to the dynamo or other source of electric energy. The inward angle of the posts 5 prevents the solution from revolving with the cylinder, and the character of the solution offers less resistance to the passage of the cur-

rent through it than if water alone was used, and thereby prevents sparking, and consequently loss of energy in the current at the points of contact between the brushes 19 20  
5 and the cylinder 10.

I claim as my invention—

1. In a revolving electric switch, a tank and a revolving non-conducting cylinder mounted therein and partially covered with a conducting-plate, and brushes arranged to rest on  
10 said cylinder, combined with an acid-metallic solution, substantially as shown and described, and for the purpose specified.

2. In a revolving electric switch, a tank and  
15 a non-conducting cylinder partially covered

with conducting material, combined with oppositely-disposed brushes arranged to alternately engage said conducting material, and a brush arranged to be in constant connection with said conducting material, and an  
20 acid-metallic solution in said tank, substantially as shown and described, and for the purpose specified.

In testimony that I claim the above I hereunto set my hand.

FRANK F. LOOMIS.

In presence of—

C. P. HUMPHREY,  
JOHN J. WAGONER.