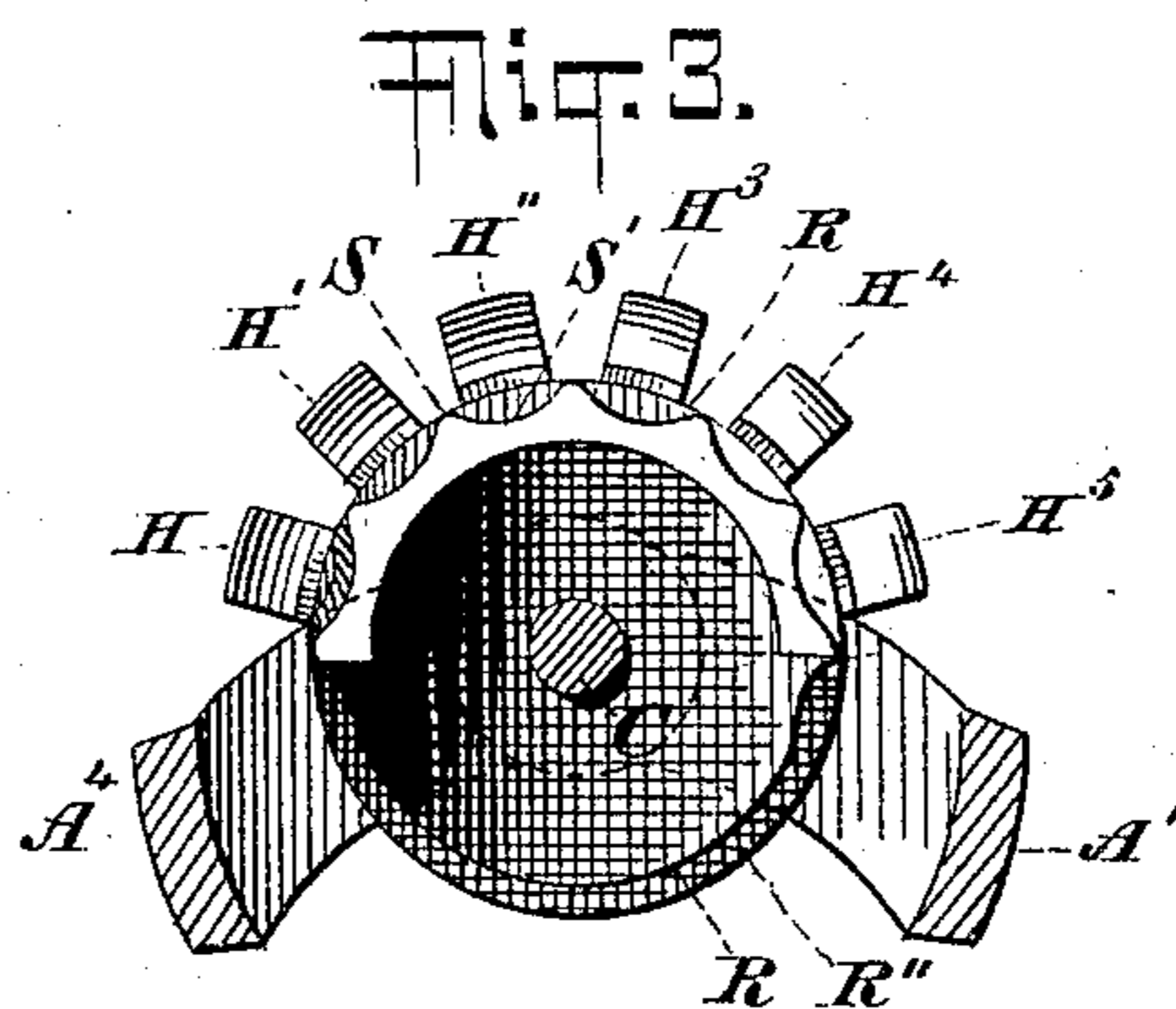
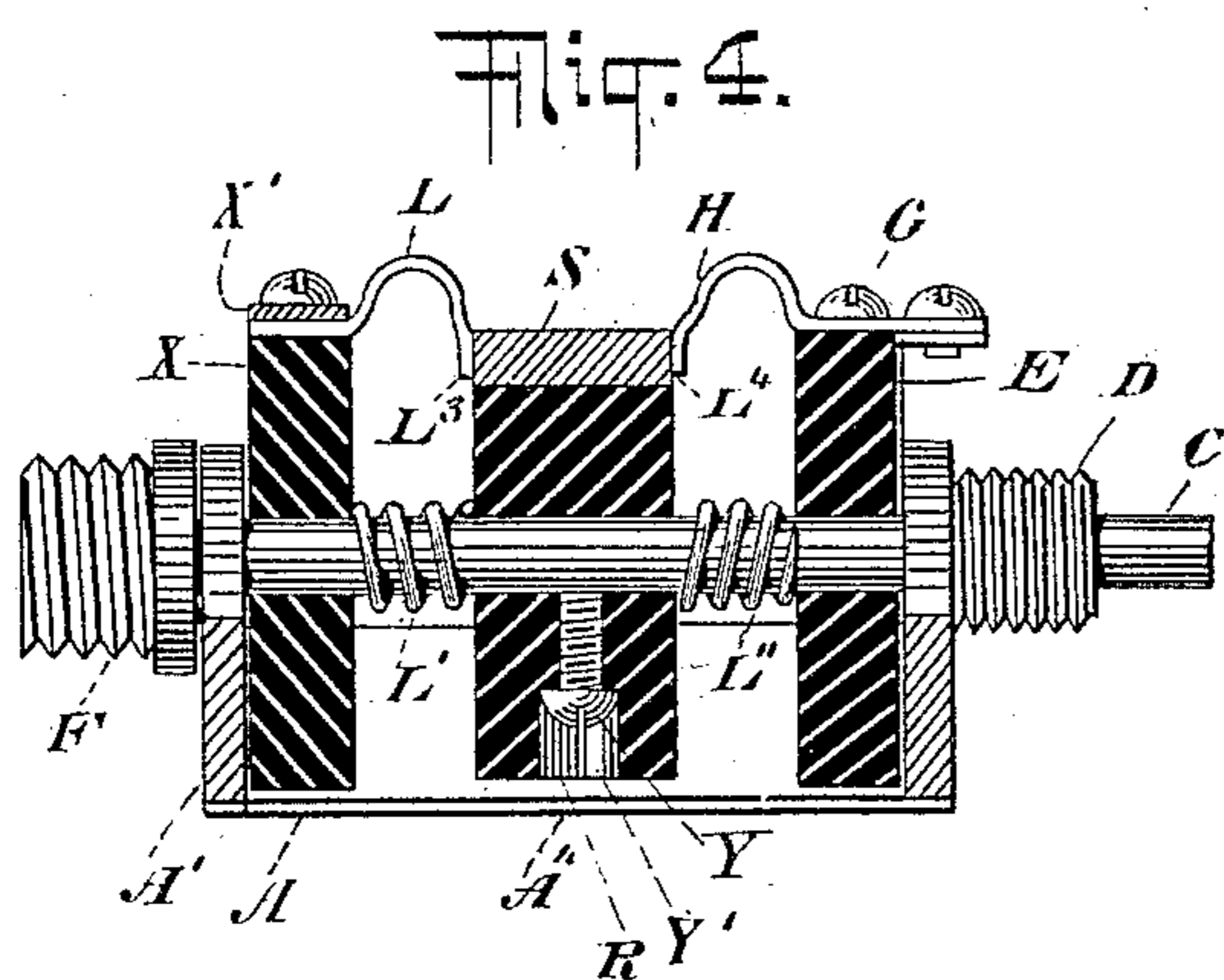
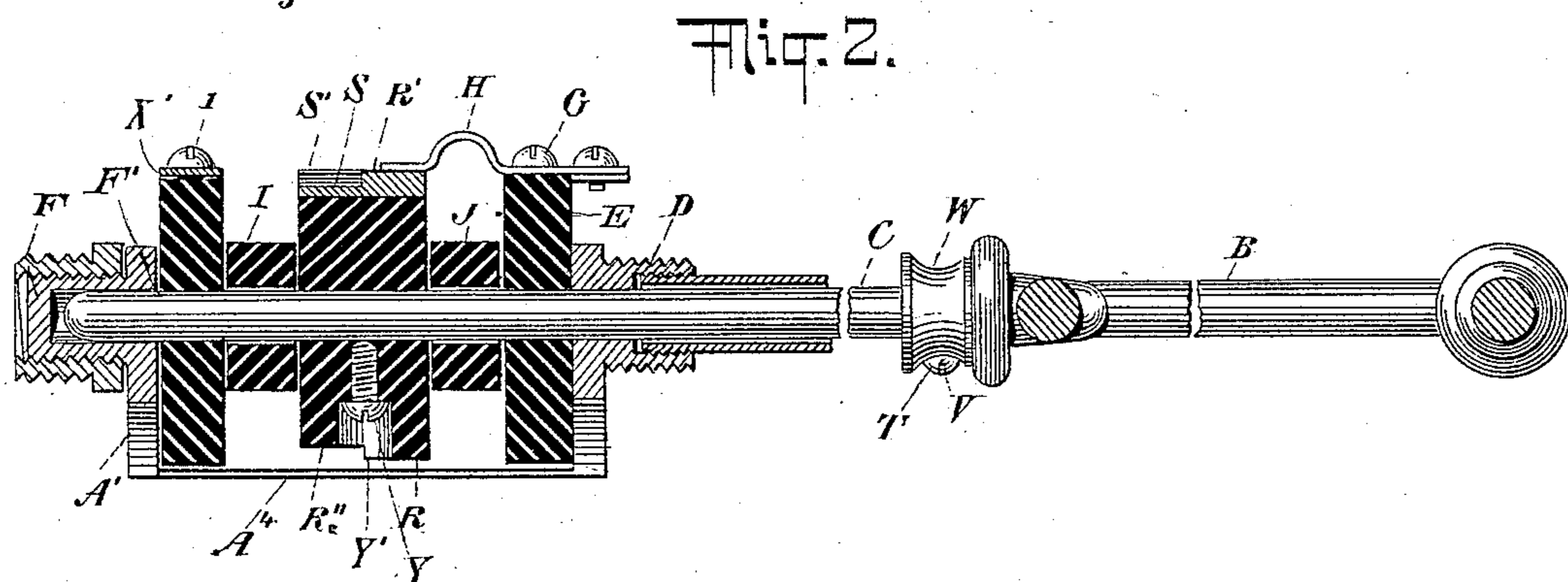
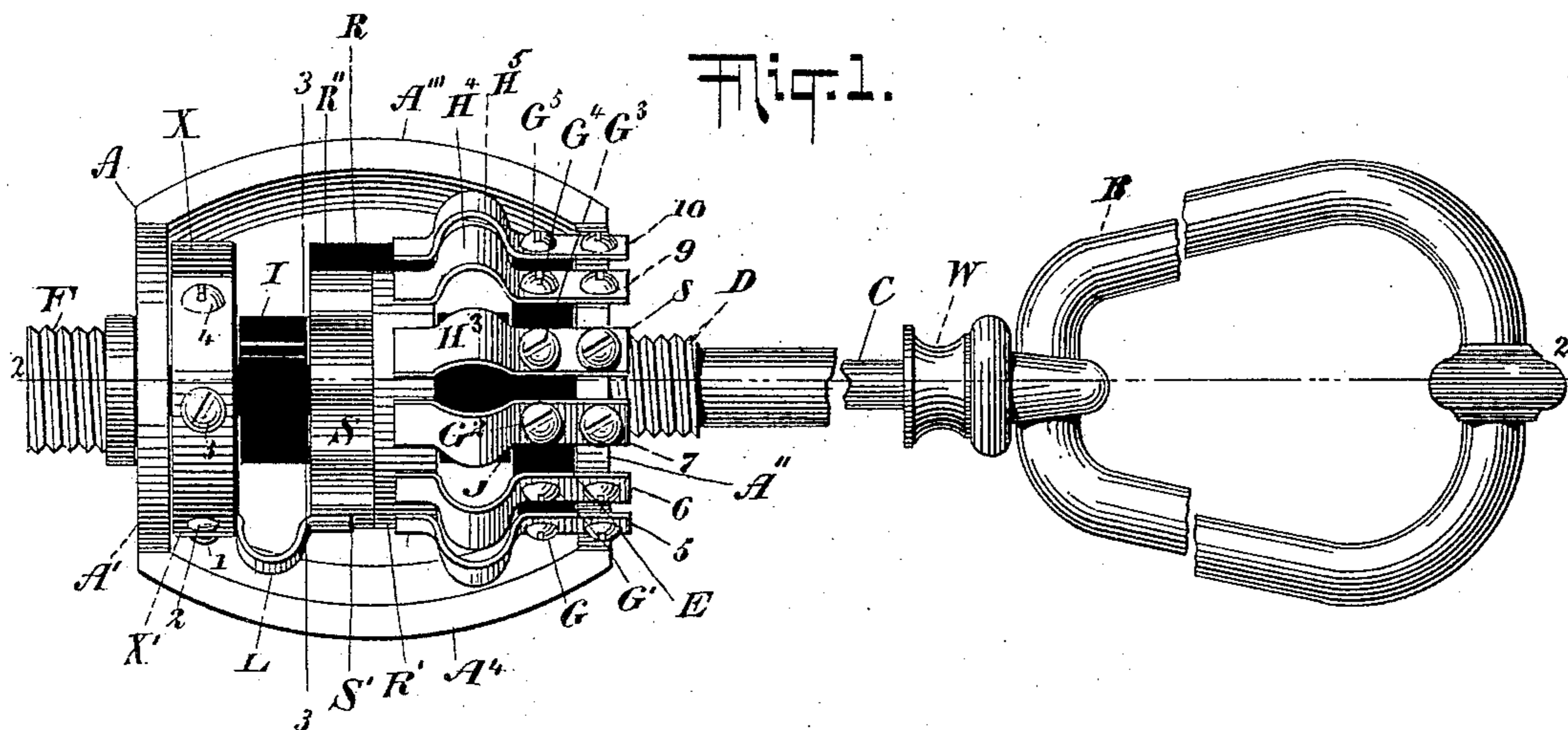


J. C. CASSIDY.
ELECTRIC SWITCH AND CUT-OUT.

Patented Nov. 20, 1894.



WITNESSES:

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JOHN C. CASSIDY, OF EAST ORANGE, NEW JERSEY.

ELECTRIC SWITCH AND CUT-OUT.

SPECIFICATION forming part of Letters Patent No. 529,595, dated November 20, 1894.

Application filed September 24, 1894. Serial No. 523,869. (No model.)

To all whom it may concern.

Be it known that I, JOHN C. CASSIDY, of the town of East Orange, State of New Jersey, have invented a new and useful Improvement in Electric Switches and Cut-Outs, of which the following is a specification and description.

The object of this invention is to show an improvement upon the switch and cut-out described in my application for a patent for an electric switch and cut-out, filed August 11, 1894, Serial No. 520,007. In this specification, I desire to show a simpler device for securing the end attained in application, Serial No. 520,007.

In the accompanying drawings, Figure 1 represents a front view of my improved electric switch and cut-out. Fig. 2 shows a section thereof on the line 2—2. Fig. 3 shows a section of Fig. 1, on the line 3—3 thereof. Fig. 4 shows a section on the line 2—2 of Fig. 1, with some modifications.

Similar letters and numerals refer to corresponding parts in the various figures.

A represents a frame made of any material, to hold the various parts making up my improved electric switch and cut-out. Said frame A carries at one end the screw F, by means of which the switch is attached to the chandelier or electrolier. At its other end is a collar D, threaded on the inside, so as to receive the rotary shaft C; said frame A, screw F and collar D forming one piece. Attached to said rotary shaft C is a finger piece B, having a neck W, which is threaded so as to allow it to be screwed on to the rotary shaft C, and which finger piece B is held in place and fastened to said rotary shaft C, by means of the screw T, which is screwed through the opening V on to the shaft C.

X is a block of insulating material, rigidly attached to the top bar A' of the frame A by screws or other well known devices; said block X carrying on one-half of its periphery, a contact piece X', of conducting material, which contact piece X' is attached to the said block X, by means of the screws 1, 2, 3 and 4. Through the center of said block X and penetrating through block X, is an opening F'. The rotary shaft C has a bearing by means of this opening F' through the block X, its end bearing in the screw F. I is a collar placed between the block X and rotating block R.

R is a rotating block of insulating material, fastened to the rotary shaft C at Y', by means of the screw Y. Said wheel R has on its front, and covering one-half of the circumference of said wheel R, a contact piece S, of which the lower part R' presents a smooth surface of conducting material, and the upper S' presents a corrugated surface of conducting material; it being understood that the said contact piece S presents the corrugated surface S' immediately above the smooth surface R', both on the same side of the periphery of the rotating block R.

J is a block of insulating material, placed between the wheel R and the block E.

E is a block of insulating material, fastened to the arm A'' of the frame A.

H, H', H'', H³, H⁴ and H⁵ are contact springs fixed rigid in any of the ways described in my former application, Serial No. 520,007, to the said insulated block E, by means of the screws G, G', G'', G³, G⁴ and G⁵, said contact springs H, H', H'', H³, H⁴ and H⁵ being made of any well known conducting material.

5, 6, 7, 8, 9 and 10 are contact screws. The said block X carries on one side of it, a contact spring L, which said contact spring is made of any conducting material, and of such length that it will touch the corrugated surface S' of the contact surface S of the wheel R. Said contact spring L is held in position by means of the screws 1 and 2. Electrical connections are made through the screws 3 and 4, the contact piece X', the contact spring L, contact surfaces R' S', springs H, H', H'', H³, H⁴ and H⁵, and screws 5, 6, 7, 8, 9 and 10. The screws 5, 6, 7, 8, 9 and 10 may be dispensed with, and connections made by means of the screws G, G', G'', G³, G⁴ and G⁵. In this construction it will be observed that the circuit is completed, when the screws 5, 6, 7, 8, 9 and 10 or the screws G, G', G'', G³, G⁴ and G⁵, springs H, H', H'', H³, H⁴ and H⁵, are, or any one of them, is in engagement with the contact piece S, and said contact piece is engaged with the spring L, and through the surface X', with the screws 3 and 4. The contact spring L acts not only as a connecting medium, but holds the wheel R in place when said contact spring L engages any of the corrugations S' of the surface S. The contact pieces H, H', H'', H³,

H⁴ and H⁵ can be connected each with a single lamp or can be connected with a series of lamps.

The particular construction shown in Figs. 1, 2 and 3, shows the contact spring L resting on the corrugated part S' of the surface S, and also shows the springs H, H', H'', H³, H⁴ and H⁵ resting on and over the plain surface R' of the surface S of the wheel R.

Another method of making the contact, is shown in Fig. 4, in which the spring L, instead of riding over and on the contact surface S, is bent so that it touches the top L³ of the contact surface S, and the contact spring H is bent so that it touches the bottom L⁴ of the contact surface S of the wheel R, and in that manner makes connection. Of course in this construction, in order to allow for the wear on the springs L and H, and what slight abrasion there may be in the material of the springs L and H, by the constant rubbing, I have deemed it necessary to insert compensating springs, in the form of the springs L' and L'', the spring L' taking the place of the block I, and spring L'', the place of the block J; the said springs L' and L'' being wound around the rotary shaft C, said spring L' being fastened either to the wheel R or the block X, and the spring L'' being fastened either to the wheel R or the block E.

The operation of my improved electric switch and cut-out, is as follows: The rotary shaft C being firmly connected at its one end to the finger piece B, and bearing through the neck D, bar A'', blocks E, I, J and wheel R, block X, bar A' and screw F, or when the springs L' and L'' are used, through the springs L' and L'' in place of the blocks I and J, will, when it is turned, cause the wheel R to revolve, while the other parts will remain rigid, so that if the rod C is moved in either direction by means of the finger piece B or other well known means, it will carry with it the wheel R. The result of this will be that when the rod C is turned in any direction sufficiently either to the right or to the left, a circuit will be made or broken, according as the contact surface S or the remaining insulated portion R'' of the wheel R is brought in contact with the springs H, H', H'', H³, H⁴ and H⁵ and the spring L; the said wheel R being covered for one-half of its periphery with the contact surface S. When said wheel R is caused to revolve one-half of its periphery, it will make a complete connection between all of the springs H, H', H'', H³, H⁴ and H⁵ and the spring L, so that all the lamps of the chandelier or electrolier will be lighted. In order to turn out all of the lamps, it will simply be necessary to turn the finger piece B farther in the same direction, carrying the wheel R with it, so that the insulated surface R'' of the wheel R will be between the springs H, H', H³, H'', H⁴ and H⁵ and the spring L. This will break the circuit. Consequently the lamps will be extinguished.

As shown in my previous application, Serial

No. 520,007, the springs H, H', H'', H³, H⁴ and H⁵ and the spring L should be made of such width that when the contact surface S of the wheel R is not turned so as to break contact with all of the springs H, H', H'', H³, H⁴ and H⁵, arcing will be prevented. The manner in which one or a series of these lamps may be lighted, is simple and is as follows: Let us suppose that the wheel R has been so turned, that the full insulated surface R'' is above all of the springs H, H', H'', H³, H⁴ and H⁵, contact will then be broken. Inasmuch as the contact piece S covers one-half of the periphery of the wheel R, it will only be necessary to turn the finger piece B to the right, and it will readily be seen that by turning the finger piece B, so that a portion only of the surface S comes between one spring H and the contact spring L, a circuit will be made, and the lamp or series of lamps connected with the spring H only, will be lighted. If it is desired to extinguish the lamp or series of lamps connected with the spring H, it will only be necessary to reverse the motion. When it is desired to light two lamps or two series of lamps, the finger piece B may be turned, so that the contact piece S of the wheel R will come above the springs H and H', and through L make a circuit, and the lamps or series of lamps connecting with the springs H and H' will be illuminated, and in the manner heretofore described, can be extinguished; and this principle can be carried forward, until four, five or six lamps can be illuminated, and one or a smaller number, or all of them extinguished by reversing the motion; or if all the lamps be lighted, and it be desired to extinguish the lamps connected with H⁵ or with H⁴ and H⁵ only, it will but be necessary to further turn the finger piece B to the left, so that the contact piece S will be removed from above H⁴ and H⁵, and thus contact broken, and the lamps extinguished. All these lamps may be again illuminated by simply reversing the direction. Of course, the collars I and J may be displaced by any other well known means, tending to keep apart the block X, wheel R and block E, and I do not intend to limit myself to the precise methods herein shown, but I desire to cover by my invention, the mechanical equivalents of any of the parts or methods herein described.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. An electric switch and cut-out, consisting of a frame A, having a bar A', to which is rigidly fixed an insulated block X, said block X carrying a contact surface X' fastened thereto by means of screws 1, 2, 3 and 4, said screws 1 and 2 also holding in place a connecting spring L, said connecting spring L being of conducting material, all in combination with an insulated collar I and wheel R, having an insulated surface R'' and a contact surface S, one-half of which contact surface is corrugated and the other half smooth;

said corrugated surface S' and smooth surface R' being of one piece, in combination with a collar J and an insulated block E, carrying contact pieces H, H', H'', H³, H⁴ and H⁵,
 5 said contact pieces H, H', H'', H³, H⁴ and H⁵ being fastened to said block E by means of the screws G, G', G'', G³, G⁴ and G⁵, said block E being fastened to the arm A'' of the frame A, said arm A'' carrying a neck D in combination with a rotary shaft C, and a finger
 10 piece B, so arranged, that said rotary shaft C will cause the wheel R to revolve, so as to present the insulated surface R'' of the wheel R, or the contact surface S of the wheel R to the connecting springs H, H', H'', H³, H⁴ and
 15 H⁵ substantially as hereinbefore described.

2. An electric switch and cut-out, consisting of a frame A, having a bar A' to which is rigidly fixed, an insulated block X, said block
 20 X carrying a contact surface X' fastened thereto, by means of the screws 1, 2, 3, and 4, said screws 1 and 2 also holding in place a connecting spring L, said connecting spring L being of conducting material, all in combination with a wheel R, having an insulated
 25 surface R'', and a contact surface S, one-half

of which contact surface is corrugated and the other half smooth, said corrugated surface S' and smooth surface R' being of one piece, said block X and wheel R having inserted between them, a spring L' in combination with an insulated block E, said wheel R and block E having inserted between them, a spring L'', and said block E carrying contact pieces H, H', H'', H³, H⁴ and H⁵, which
 30 contact pieces are fastened to said block E by means of the screws G, G', G'', G³, G⁴ and G⁵, said block E being fastened to the arm A'' of the frame A, said arm A'' carrying a neck D, in combination with a rotary shaft C
 35 and a finger piece B, so arranged that said rotary shaft C will cause the wheel R to revolve, so as to present the insulated surface R'' of the wheel R, or the contact surface S of the wheel R to the connecting springs L,
 40 H, H', H'', H³, H⁴ and H⁵ substantially as hereinbefore described.
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JOHN C. CASSIDY.

Witnesses:

SOLON BERRICK,
 M. GULDNER.