

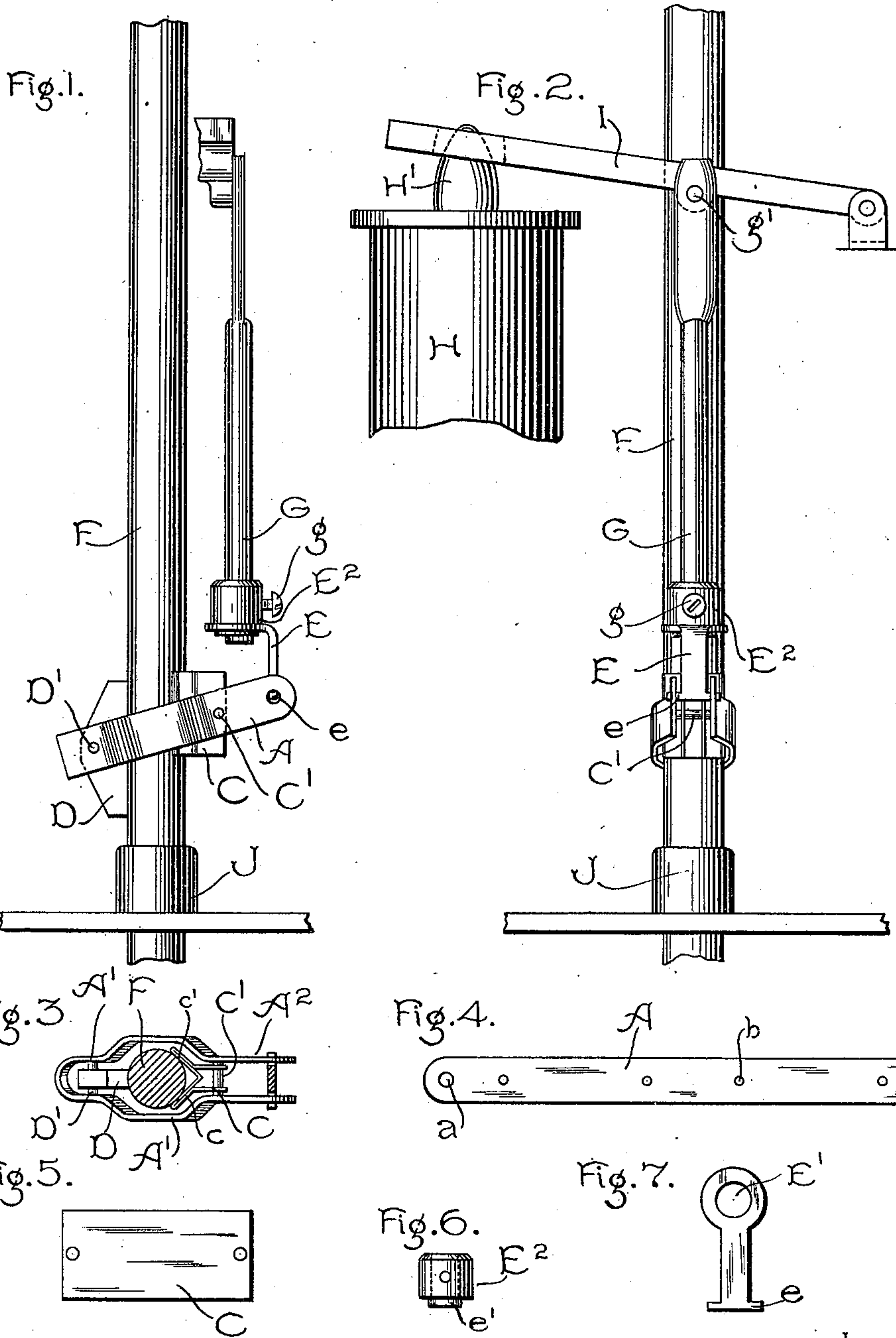
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Patented Dec. 18, 1900.

C. E. HARTHAN.  
CLUTCH FOR ELECTRIC ARC LAMPS.

(Application filed Mar. 10, 1899.)

(No Model.)



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## CLUTCH FOR ELECTRIC-ARC LAMPS.

SPECIFICATION forming part of Letters Patent No. 664,083, dated December 18, 1900.

Application filed March 10, 1899. Serial No. 708,475. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES E. HARTHAN, a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have  
5 invented certain new and useful Improvements in Clutches for Arc-Lamps, (Case No. 954,) of which the following is a specification.

The present invention has for its object to produce a cheap and reliable clutch for arc-  
10 lamps.

In the accompanying drawings, which illustrate an embodiment of my invention, Figure 1 is a front elevation of a clutch in operative position with respect to the carbon-carrier.  
15 Fig. 2 is an end elevation of the same. Fig. 3 is a plan view of the clutch, and Figs. 4, 5, 6, and 7 are detail views.

The clutch-frame A is made out of sheet metal and preferably cut by a die on account  
20 of cheapness and when first made corresponds to Fig. 4. The holes *a* and *b* for the reception of the various pins may or may not be punched at the same time. After the piece A has been blanked out it is bent in the middle, so that it forms a substantially U-shaped  
25 parallel-sided frame, as shown in Fig. 3. The frame is provided with a straight portion A', in which the rear shoe D is pivotally mounted, two offset portions A', arranged to surround  
30 the carbon or carbon rod F, and a second straight portion A<sup>2</sup> in line with the first, in which is mounted the pivoted shoe C. The portions A<sup>2</sup> are extended somewhat beyond the shoe C, and to these open-ended extensions is secured the holder E. The clutch-  
35 shoes are mounted on pivots or pins D' and C', respectively. These pins also serve to hold the sides of the clutch-frame in their proper relation.

40 Since carbons or carbon rods are not always perfectly straight, it is desirable to provide a clutch which is self-centering. This feature is obtained by making the shoe C engage with the rod F at two points, while the shoe D engages at one point only. With this arrange-  
45 ment the clutch and rod will always be in proper alinement. I further compensate for irregularities by making all of the connections between parts so that they have a cer-  
50 tain freedom of movement.

The rear or tripping shoe D is considerably

longer than the front shoe and consists of a substantially rectangular block of metal pivotally secured to the frame A. The front shoe is made from a punching of the form  
55 best shown in Fig. 5, and I have found that phosphor-bronze makes a most satisfactory shoe. As shown in Fig. 3, the front shoe is formed by bending the plate of which it is composed in such a manner that two angular  
60 contact or friction surfaces *c'* are provided, the surfaces being reinforced by the portions *c*, formed by bending the plate back on itself, and the said portions extend outward to form  
65 a support for the pin C'. The surfaces of the shoes where they rest on the carbon rod are finished, but the rest of the shoe is left as it comes from the die.

I have found that where three points of engagement are provided between the rod and  
70 the clutch the pitting of the carbon rod, due to arcing, is reduced by a marked degree over that caused by other clutches and that carbon rods varying by a considerable amount in diameter can be used. In connection with  
75 this matter I have discovered that it is advantageous to make the shoes and the rod F of dissimilar metals, since the lamps can then be made to feed much closer.

The holder E is made from a punching of  
80 the form shown in Fig. 7. This punching is provided with an enlarged head having a central opening E' for the reception of the collar E<sup>2</sup>. The lower end of the holder is provided with outwardly-extending tips or projections  
85 *e*, which enter holes *a* in the clutch-frame and serve to support it. The holes are made somewhat larger than the projections, so that there will be considerable freedom of movement. The holder and the collar E<sup>2</sup> are se-  
90 cured by riveting the projection *e'* on the collar over the enlarged head, as shown in Fig. 1. Mounted in the collar is a rod G, having a flattened end to receive a pin *g'* or other means for attaching it to the feed mechanism,  
95 and a screw *g* is employed to adjust the rod with respect to the sleeve.

In the drawings only such parts of a lamp are shown as are deemed necessary to understand the operation of the invention. The  
100 actuating-magnet H is provided with a pole-piece H', and movable with respect thereto is



an armature I, which is pivoted at any suitable point. As this armature moves up and down it raises or lowers the carbon rod F, as the case may be, until the conditions are such that the rear shoe strikes the bushing or other stop J. As soon as the shoe touches this stop the weight of the rod tends to open the clutch and permit the rod to feed.

Clutches built in accordance with my invention have been made which are so sensitive that they will permit the rod to feed with only a change of two or three volts at the arc.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a clutch, the combination of a frame-piece composed of a single piece of metal bent in the middle so that two substantially parallel sides are formed with one open and with one closed end, a shoe pivotally mounted in the frame and having a single friction-face, a second shoe also mounted in the frame and formed of a single piece of metal having two faces for engaging with the carbon rod or pencil.

2. In a clutch, the combination of a piece of sheet metal bent in such a manner that it forms a substantially U-shaped frame, a shoe pivotally supported in the frame and provided with a single friction-face, a second pivoted shoe also mounted in the frame and consisting of a single piece of metal formed with two friction-faces, the said faces being reinforced by bending the metal of which the shoe is composed back against the stock forming the base, and means for operating the clutch.

3. As an article of manufacture, a shoe for an arc-lamp clutch consisting of a single piece of metal, bent so that it has two contact or friction surfaces which make an angle with each other, reinforced portions made by bending the stock of which the shoe is composed back against the friction-faces for a short distance, and extensions from the reinforcing portions which support the shoe.

4. As an article of manufacture, a clutch consisting of a U-shaped frame formed in a single piece, clutch-shoes mounted in the frame, one of said shoes having a single friction-face the other having two faces, pins for holding the sides of the frame together and also forming supports upon which the shoes are free to adjust themselves, and a holder having projections which enter the holes in the frame.

5. As an article of manufacture, an arc-lamp clutch comprising a frame, a shoe with a single friction-face pivotally mounted in one portion of the frame, and a sheet-metal shoe also pivotally mounted in the frame and provided with two friction-faces, which faces are reinforced by bending the stock of which the shoe is composed back against them, the two shoes being capable of slightly adjusting themselves with respect to each other and to their supports.

In witness whereof I have hereunto set my hand this 7th day of March, 1899.

CHARLES E. HARTMAN.

Witnesses:

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HENRY O. WESTENDARP.