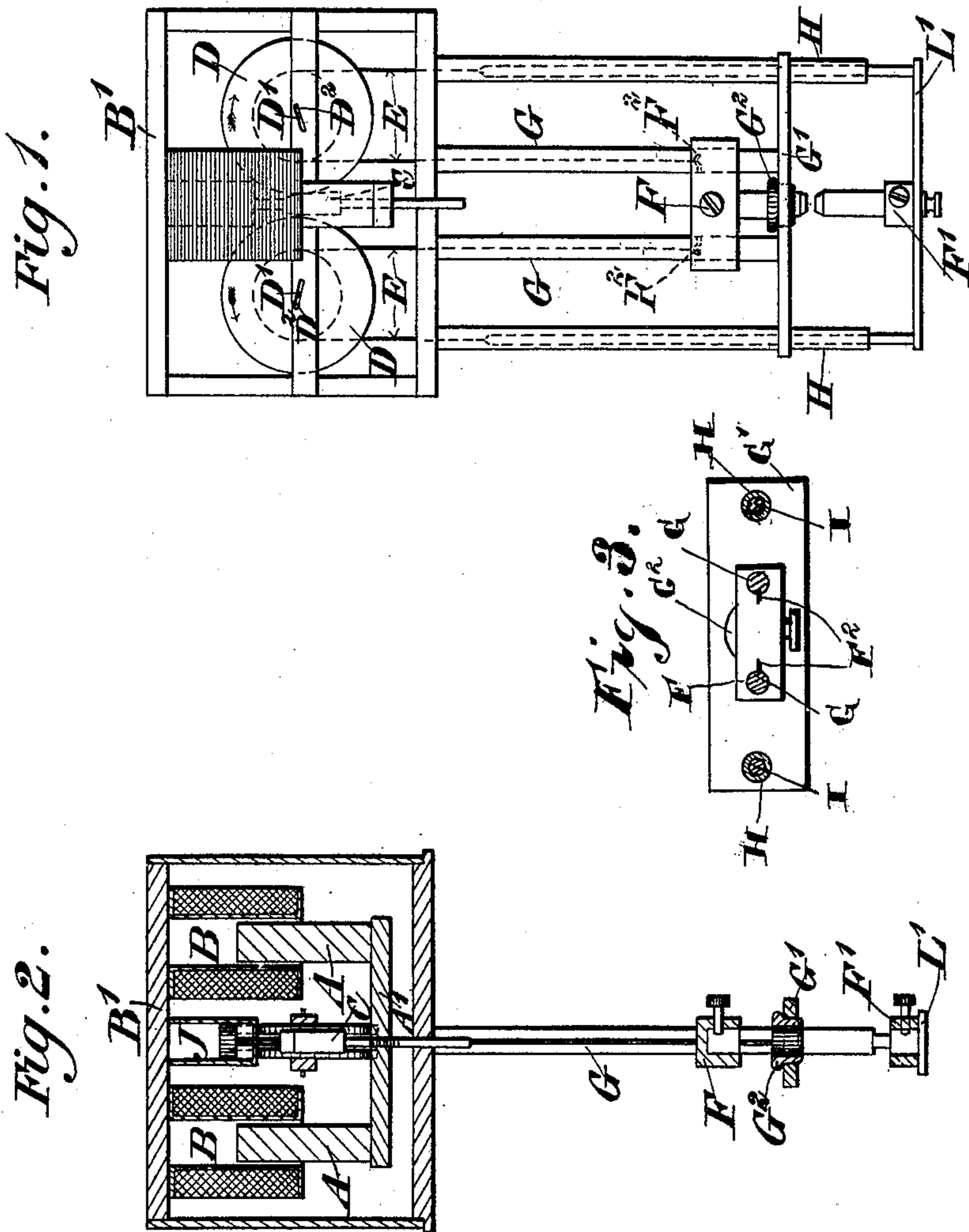


(No Model.)

H. T. HARRISON.  
ELECTRIC ARC LAMP.

No. 545,359.

Patented Aug. 27, 1895.



Witnesses  
Percy W. Attocks  
Edmund S. Shewin

Inventor  
H. T. Harrison



# UNITED STATES PATENT OFFICE.

HAYDN THIES HARRISON, OF LONDON, ENGLAND.

## ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 545,359, dated August 27, 1895.

Application filed November 19, 1892. Serial No. 452,566. (No model.)

*To all whom it may concern:*

Be it known that I, HAYDN THIES HARRISON, a subject of the Queen of Great Britain and Ireland, residing at 29 Dorchester Place, London, England, have invented Improvements in Electric-Arc Lamps, of which the following is a specification.

This invention has reference to a simple and compact construction of electric-arc lamp in which a nearly-closed magnetic field and a friction-block connected to the cores of suitable coils are employed, the said block being caused to act at the required times upon pulleys over which pass cords that carry the carbon-holders and which are so mounted as to be capable of assuming different distances apart. The lower-carbon holder is supported by rods suspended from the before-mentioned cords and arranged telescopically within tubes attached to the lamp-frame, and those ends of the cords that carry the upper-carbon holder are arranged within other tubes which are slotted.

In the accompanying drawings, Figure 1 is a front elevation with the cover removed, and Fig. 2 a transverse section showing an arrangement of lamp according to this invention.

A A are two magnetic cores connected by a cross-piece A' to form a horseshoe-core.

B B are two coils or solenoids fixed to a wrought-iron plate B', which causes attraction upward of the horseshoe-core to close the magnetic circuit or field and adding greatly to the pull on the closing of the lamp-circuit of which the solenoids form part.

Mounted on the cross-piece A, between the cores A A and parallel to them, is a friction-block C, that is slightly tapered at its upper part and is arranged between the peripheries of two deeply-grooved pulleys D. This block may with advantage be roughened on those surfaces that bear against the peripheries of the two pulleys. These pulleys are caused to bear against the block C. For this purpose they are carried by axles D', pivotally mounted in slots D<sup>2</sup>, that incline downward toward the block C. The top of the block is normally in the same horizontal plane as the axles of the two pulleys, so that directly the horseshoe-core lowers, owing to weakening of the current in the coils A A, the block will

fall below that level and the pulleys will be free to partly rotate and allow the lamp to feed. In the grooves of the two pulleys D are cords E, suspending the carbon-holders F F'. The top-carbon holder F slides over two inside tubes G G, which are connected by a metal bar G', in which is fixed a porcelain bush G<sup>2</sup> that serves as an insulating-guide for the upper carbon. In the same plane as the tubes G G are two outside tubes H H, in which move telescopically two rods I I, the bottom ends of which are joined together by a connecting-piece of metal I', on which the lower-carbon holder F' is fixed. The top ends of the rods I are attached to the two cords E, which pass over the two pulleys D and down the two inside tubes G to hooks F<sup>2</sup>, that are fastened to the top-carbon holder F and are arranged to move freely up and down in corresponding slots C', cut in the inner sides of the two inner tubes. To steady the movements of the friction-block C, the same is provided with a stem C', by which it is connected to the plunger of a dash-pot or cataract J.

When the attraction of the coils B draws up the cores A, the friction-block C turns the wheels in the direction indicated by the arrows in Fig. 1, and thereby moves the carbons apart. When, however, the coils become weaker, the block C, descending, allows the pulleys to turn in the opposite direction and the carbons to approach each other, the parts being suitably weighted to allow this action to take place.

What I claim is—

1. In an electric arc lamp, the combination of a frame having telescopic side bars, a lower cross-bar carrying a carbon holder, pulleys, cords passing over said pulleys and connected with said carbon holders, a magnet core, and a friction block carried by said core between and adapted to engage said pulleys, the parts operating as described.

2. In an electric arc lamp the combination of a pair of pulleys, cords passing over said pulleys upper and lower carbon holders connected to said cords, a friction block arranged between said pulleys and against opposite sides of which the peripheries of said pulleys are caused to bear by gravity, solenoids arranged in the lamp circuit, magnetic cores for said solenoids connected to said friction-

block, and a magnetic plate to which said solenoids are fixed substantially as herein described for the purpose specified.

3. In an electric arc lamp the combination  
5 of a pair of pulleys D, a support formed with inclined slots D' in which the journals of said pulleys are mounted, a friction block C arranged between and in contact with the peripheries of said pulleys, solenoids B arranged  
10 in the lamp circuit, magnetic cores A A carried by a magnetic cross bar A' connected with said friction block, a magnetic plate B'

to which said solenoids are connected, a dash-pot J connected to said cross bars, cords passing over said pulleys and carbon holders F 15 F' connected to the ends of said cords substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HAYDN THIES HARRISON.

Witnesses:

PERCY EVA HOCKS,  
EDMUND S. SNEWIN.