

(No Model.)

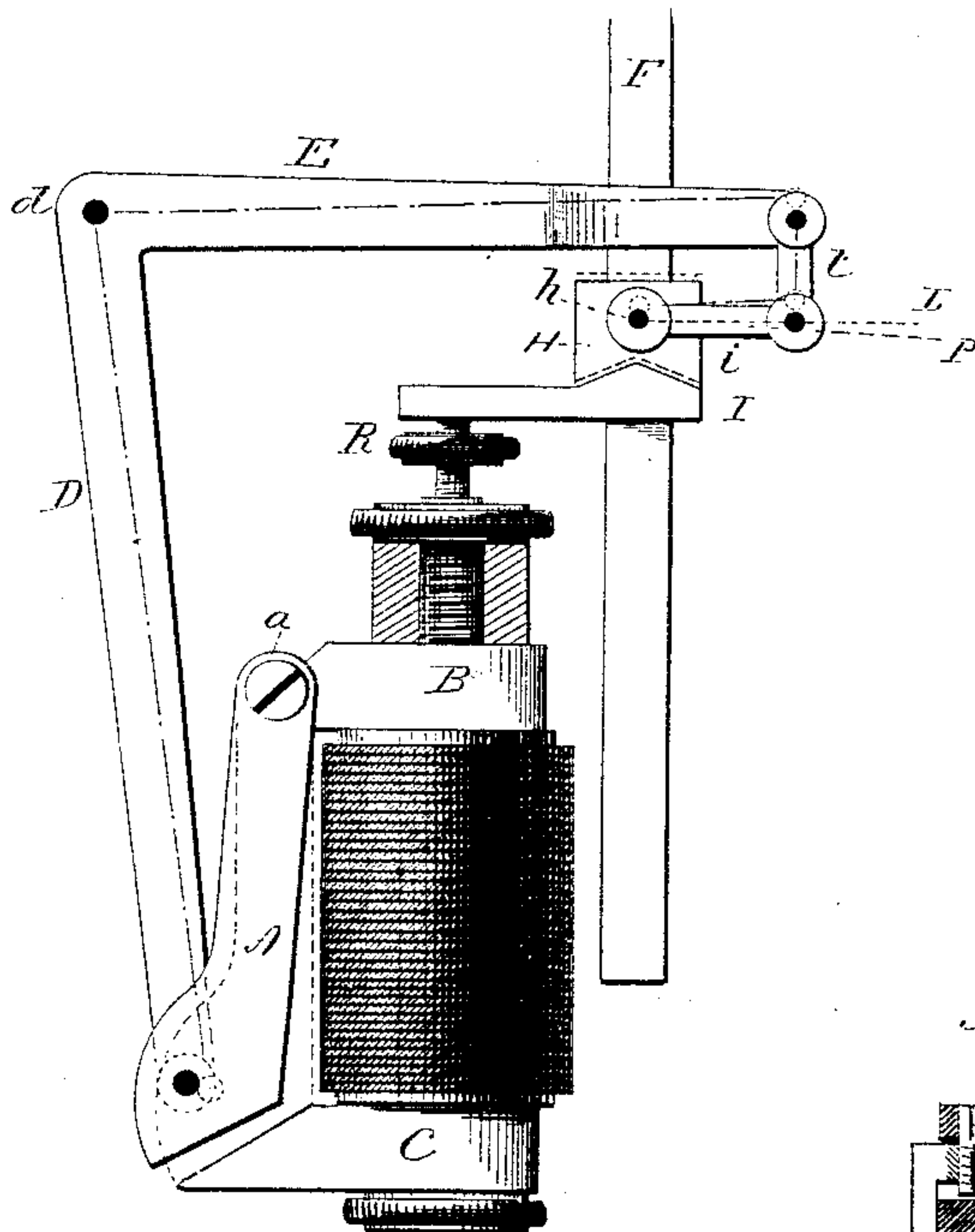
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CLUTCH FOR ELECTRIC ARC LAMPS.

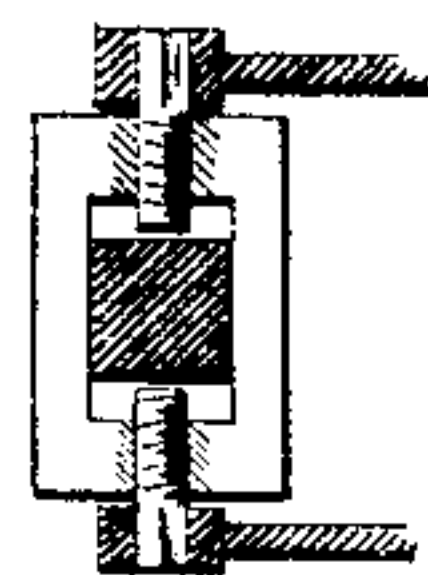
No. 263,192.

Patented Aug. 22, 1882.

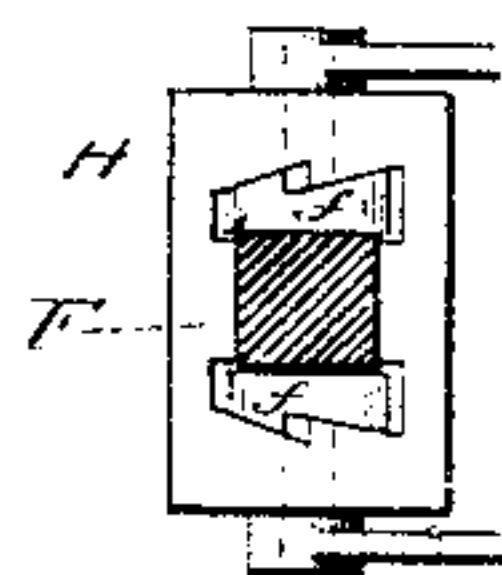
*fig 1*



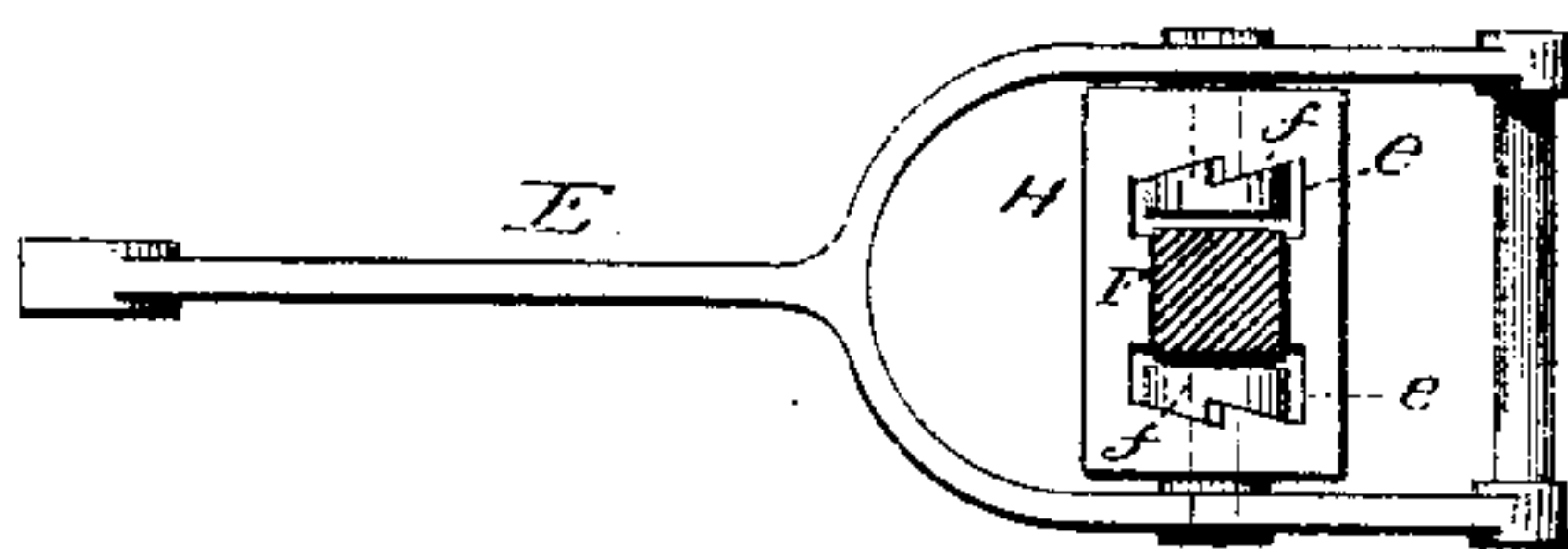
*fig. 4*



*fig. 3*



*fig. 2*



*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. 263,192, dated August 22, 1882.

Application filed July 12, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, NORMAN McCARTY, of Brooklyn, in the county of Kings and State of New York, have invented new Improvements in Clutches for Electric-Arc Lamps; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view; Figs. 2 and 3, plan views, illustrating the operation of the clamps; Fig. 4, modification.

This invention relates to an improvement in the clutch for adjusting the upper or movable carbon in electric lights with special reference to the lamp for which I have made application for Letters Patent of even date herewith, applicable, however, to any lamp in which the upper or adjustable carbon is attached to a rod which extends through a clutch arranged to hold the rod and carbon in proper relative position to the fixed carbon, and so that when the circuit is broken the clutch will release the rod and permit the rod, with the carbon it carries, to fall to close the circuit, and when the circuit is so closed the clutch operates to grasp and raise the rod and carbon to form the arc; and the invention consists in a vertically-movable block, constructed for the carbon-holder to pass freely through it, combined with a pair of clamps arranged in the said block adjacent to the opposite sides of the rod, one or both movable toward and from its side of the rod by a rotative movement imparted to it from the armature with which it is in connection, and so that by such rotation in one direction the clamps are forced to grasp the rod, and when turned in the opposite direction to release the rod, as more fully hereinafter described.

As illustrated and described in my application hereinbefore referred to, A represents the armature, hinged to the one pole, B, as at *a*, and arranged to vibrate upon its hinge toward and from the opposite pole, C, according as the circuit is closed or broken.

D E are the two arms of a bell-crank lever, hung as at *d*, the one arm, D, extending down

into connection with the armature A, so that the movement of the armature imparts a corresponding vibratory movement to the arm D, and through that arm D to the other arm, E, of the same lever.

F is the vertical rod, which carries the movable or adjustable carbon. Preferably the arm E is forked, as seen in Fig. 2, so as to pass the one part each side of the rod F.

H is the clamp-block, which has an opening through its center, so that the rod F will play freely up and down therethrough, bearing upon opposite sides of the rod. Upon the other two sides of the rod a recess, *e*, is made to receive each one of the clamps *f*. These clamps are arranged upon an axis, *h*, at right angles to the axis of the rod, each having its own independent shaft or pivot, and to each of those pivots a lever, *i*, is attached and connected by a link, *l*, to the rod E, as seen in Fig. 1, so that a portion of the vibration of the rod E will be imparted to the clamps *f*. The back of the two clamps *f* is made cam-shape, and the adjacent surfaces of the block made of corresponding shape, as seen in Fig. 2, so that a rotation of the clamps in one direction forces the clamps inward against the rod, as seen in Fig. 3, but turned in the opposite direction permits them to fall back and release the rod, as seen in Fig. 2.

When the circuit is closed and the armature upon its pole, as indicated in broken lines, Fig. 1, the arm E is raised, and the block stands in the position also seen in broken lines, Fig. 1, holding the rod, with the carbon it carries, in the proper relative position to the other carbon. When the circuit is broken the armature escapes from its pole and correspondingly turns the arm E downward, permitting the block H, with the rod, to fall until the block H is arrested by a stop, I. This arresting of the block occurs before the armature is fully opened, and when so arrested—say at the position L, Fig. 1—the further movement of the armature causes the continued movement of the arm E, which turns the lever *i* downward upon the pivot of the clamps as a center of motion to the position seen in broken lines, Fig. 1, correspondingly turning those clamps, as seen in Fig. 2, so as to release the rod F



and permit it to fall. When the circuit is closed, and in the movement of the armature in so closing, the first part of the movement raises the lever *i*, as from the position P to L, which closes the clamps upon the rod, as seen in Fig. 3. Then the block, with the clamps, will be lifted, together with the rod, to the position indicated in broken lines, Fig. 1, there to stand until the circuit is broken as before. The incline or cam shape of the back of the clamps causes them to act quickly in closing and be easily and positively released, so that there is no possible danger of the rod sticking in the clamp.

To prevent the possibility of the block H turning so as to cramp the rod and prevent its free action, the stop I is made inverted-V shape upon its upper surface, the apex of the V in the central line of the rod and the under side of the block H correspondingly V-shaped, so that when it drops it will come upon the V shape, thereby insuring the proper relative position of the block and clamp to the rod, which position will not be changed by the movement of the clamps after the block has been seated.

The time for the arrest of the block H may be adjusted by a set-screw, R, beneath the stop I, or otherwise, it being desirable that there shall be some adjustment for this purpose.

While I have illustrated this clutch as operated by an armature of peculiar construction or relation to its magnet, it will be understood that it may be employed with magnets or mechanism of other construction, the essential feature of my present invention being the rotating cam-shaped clamps arranged in the block through which the rod which carries the carbon passes.

While I have described two clamps, *f f*, upon opposite sides of the rod, and so as to grasp the rod between them, it will be understood that one clamp only may be employed, the opposite side of the rod bearing against a stationary cheek in the block.

Instead of constructing the clamps with the cam-shaped back, they may be screw-threaded through the bearing in the block in which they rotate, as seen in Fig. 4, so that turning in one direction they may be forced inward and in the opposite direction outward, receiving substantially the same movement as from the cam-shape. I do not wish, therefore, to be understood as limiting my invention to the particular method described for imparting the axial movement to the clamps, the gist of the invention being that one or both of the clamps shall be moved toward and from the rod by a rotative movement imparted from the armature, and while the block which carries them is substantially at rest.

I claim—

1. A clutch for electric lamps, consisting of a block arranged for the free longitudinal passage of the carbon-carrying rod through it, with clamps arranged to grasp the said rod from opposite sides, one or both of said clamps arranged to rotate upon its axis, and also for axial movement toward and from the said rod, with mechanism, substantially such as described, in connection with the armature to impart rotation to said clamp or clamps, whereby a combined rotative and axial movement will be imparted to one or both of said clamps to grasp or release the rod, substantially as described.

2. A clutch for electric lamps, consisting of a block arranged for the free longitudinal passage of the carbon-carrying rod through it, with clamps arranged to grasp the said rod from opposite sides, one or both of said clamps arranged to rotate upon its axis, and also for axial movement toward and from the said rod, with mechanism, substantially such as described, in connection with the armature to impart rotation to said clamp or clamps, whereby a combined rotative and axial movement will be imparted to one or both of said clamps to grasp or release the rod, the under side of said block V-shaped, with a stop correspondingly V-shaped to arrest the stop in its descent, substantially as described.

3. The herein-described clutch for electric lamps, consisting of the block H, arranged for the free longitudinal passage of the carbon-carrying rod through it, with a clamp or clamps, *f*, arranged to rotate upon an axis at right angles to the axis of the rod, the back of the clamps cam-shaped and the adjacent surfaces of the block correspondingly cam-shaped, so that the rotation of the clamp or clamps will force it or them against the surface of and so as to grasp the rod, substantially as described.

4. The herein-described clutch for electric lamps, consisting of the block H, arranged for the free longitudinal passage of the carbon-carrying rod through it, with a clamp or clamps, *f*, arranged to rotate upon an axis at right angles to the axis of the rod, the back of the clamps cam-shaped and the adjacent surfaces of the block correspondingly cam-shaped, so that the rotation of the clamp or clamps will force it or them against the surface of and so as to grasp the rod, the under side of the said block V-shaped, with a stop correspondingly V-shaped to arrest the block in its descent, substantially as described.

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Witnesses:

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