

(No Model.)

C. L. COFFIN  
HOOP WELDING APPARATUS.

No. 475,667.

Patented May 24, 1892.

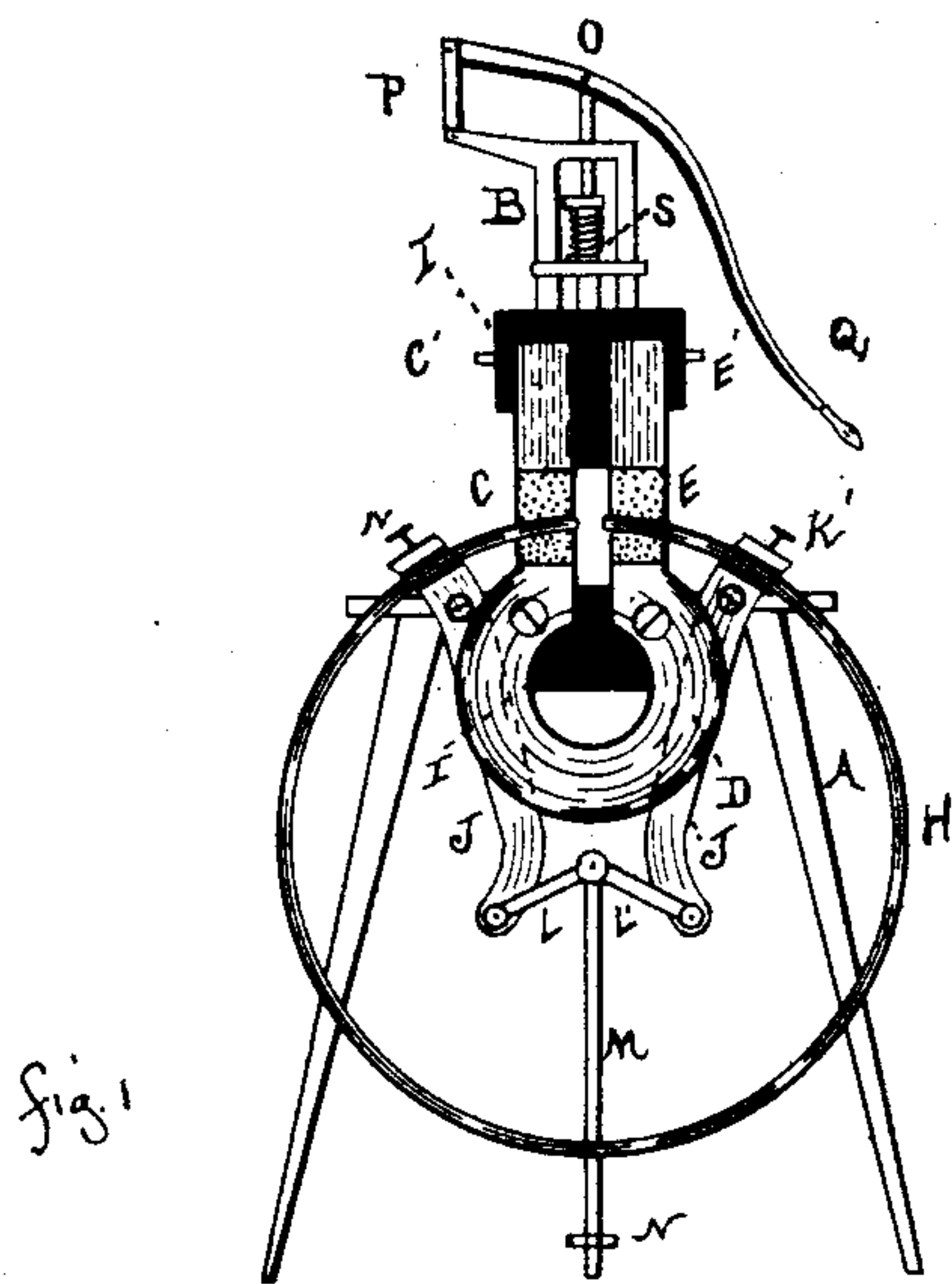


Fig. 1

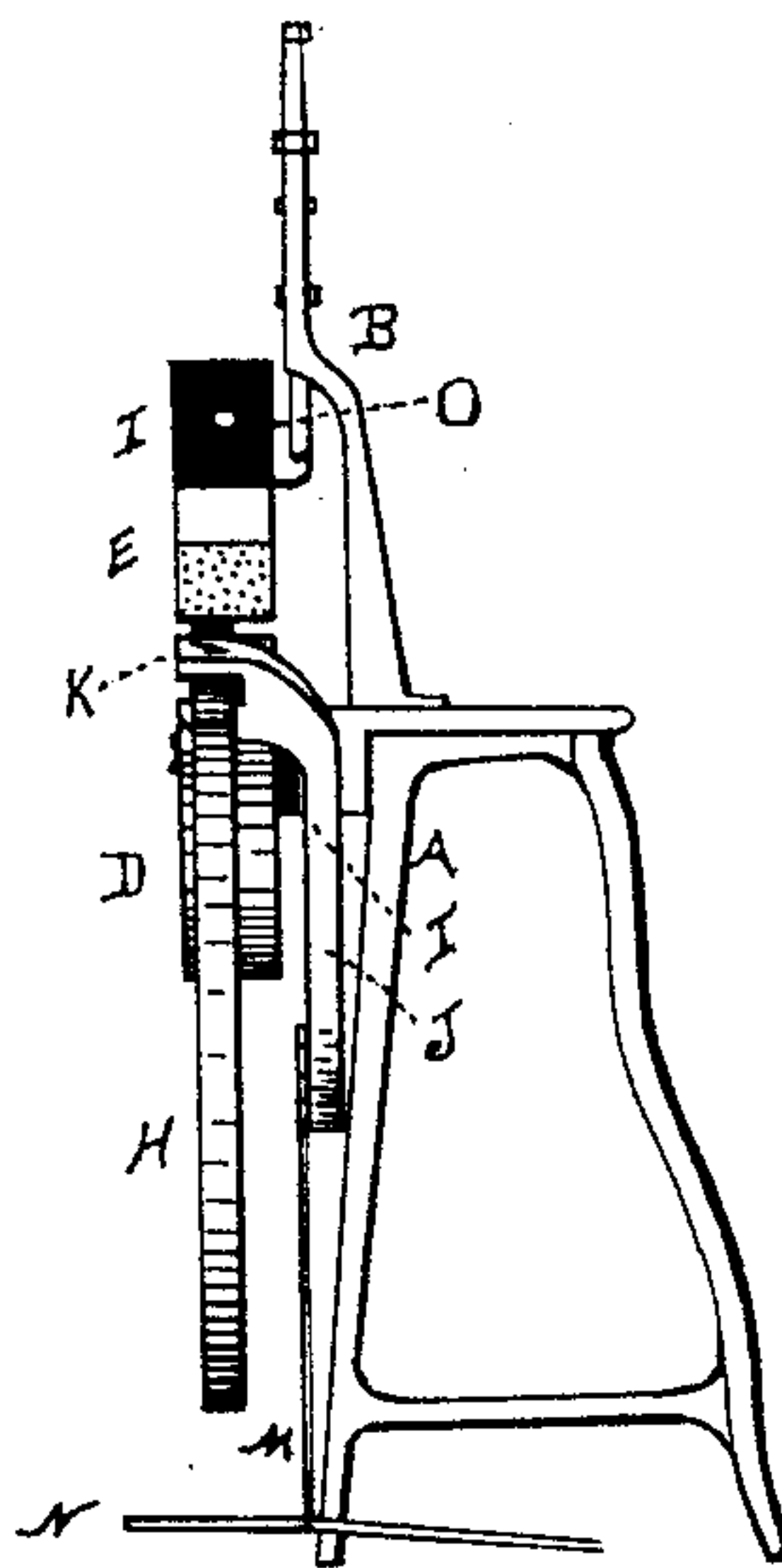


Fig. 2.

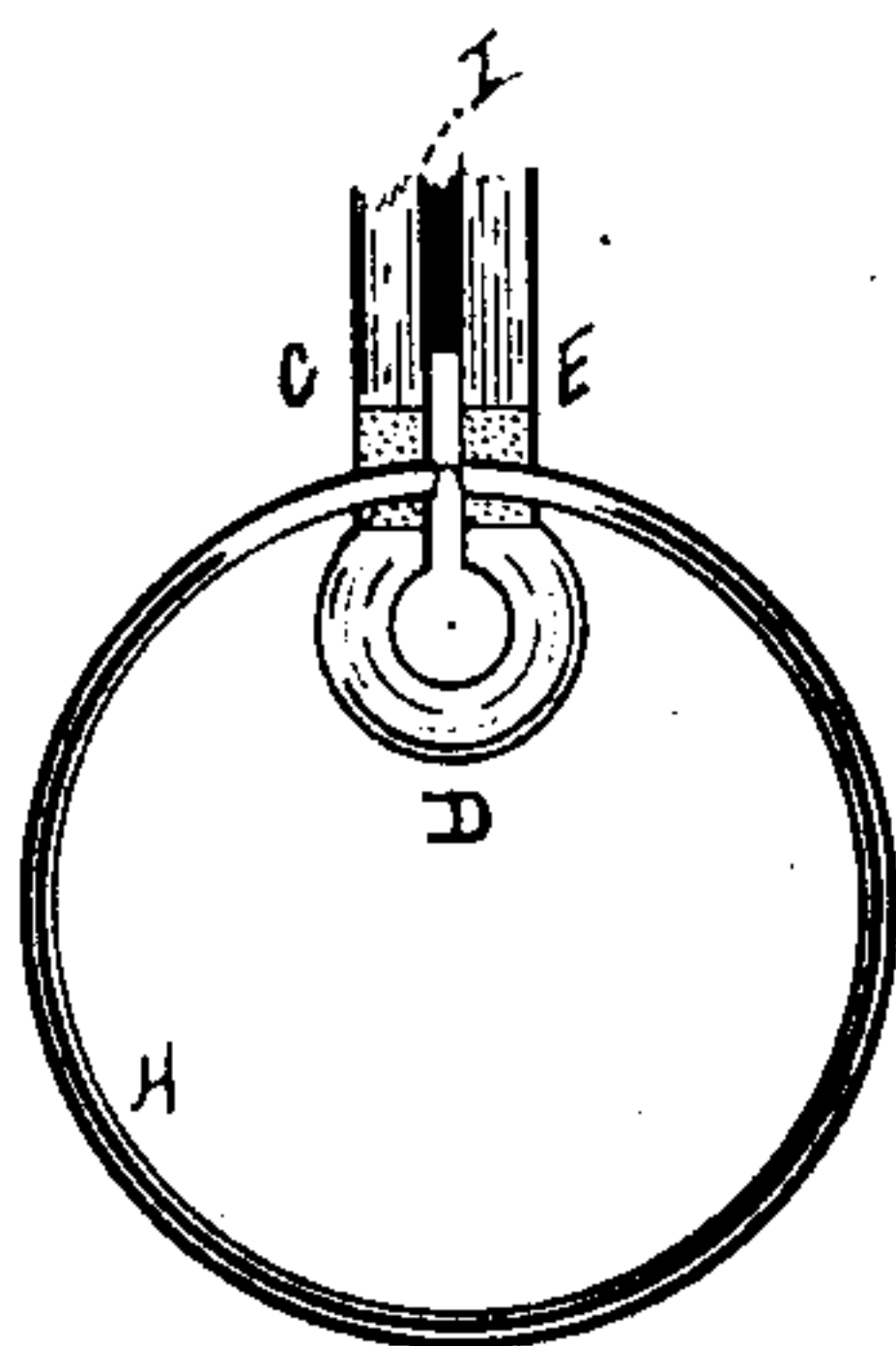


Fig. 3.

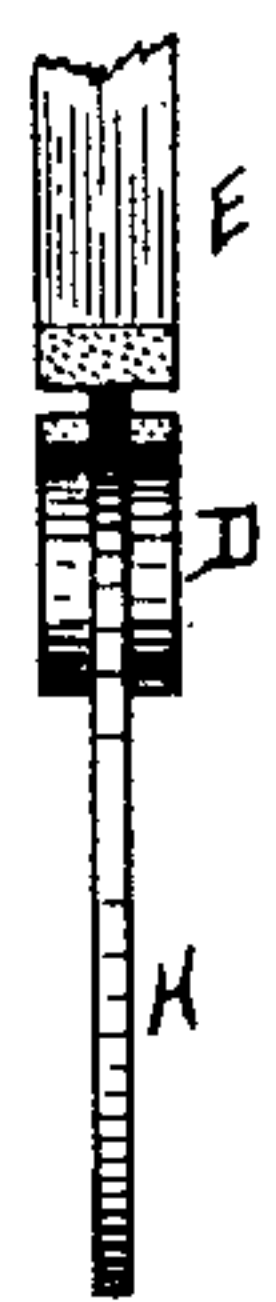


Fig. 4.

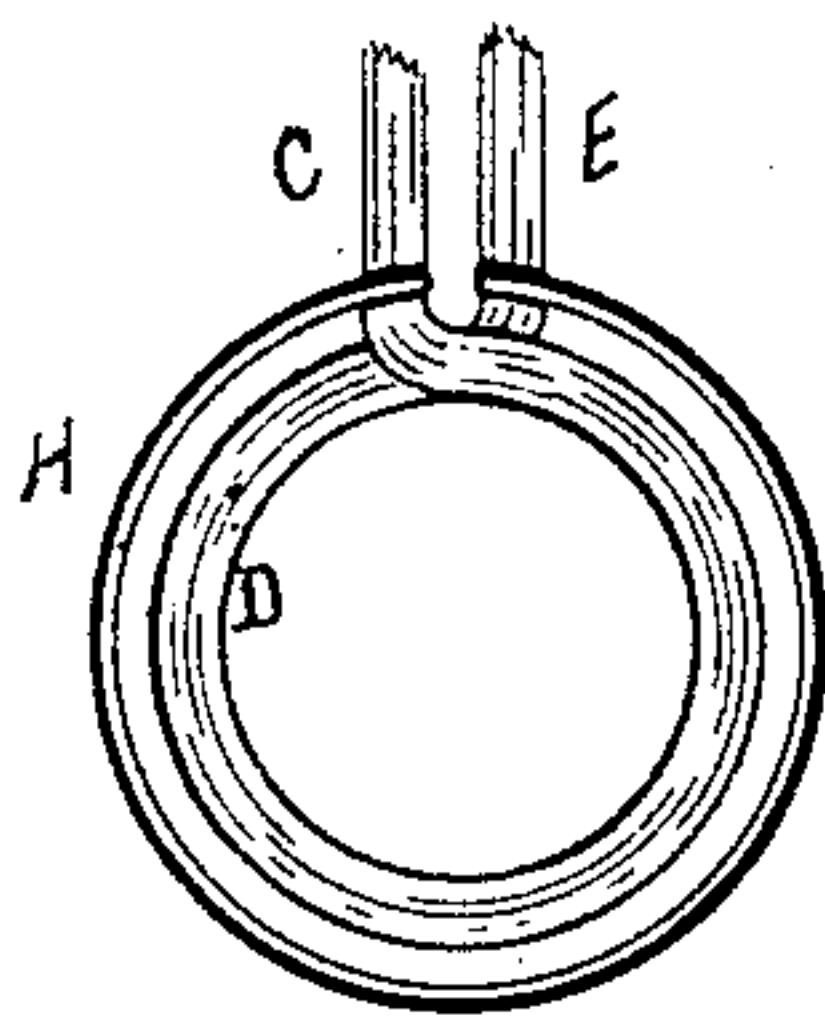


Fig. 5

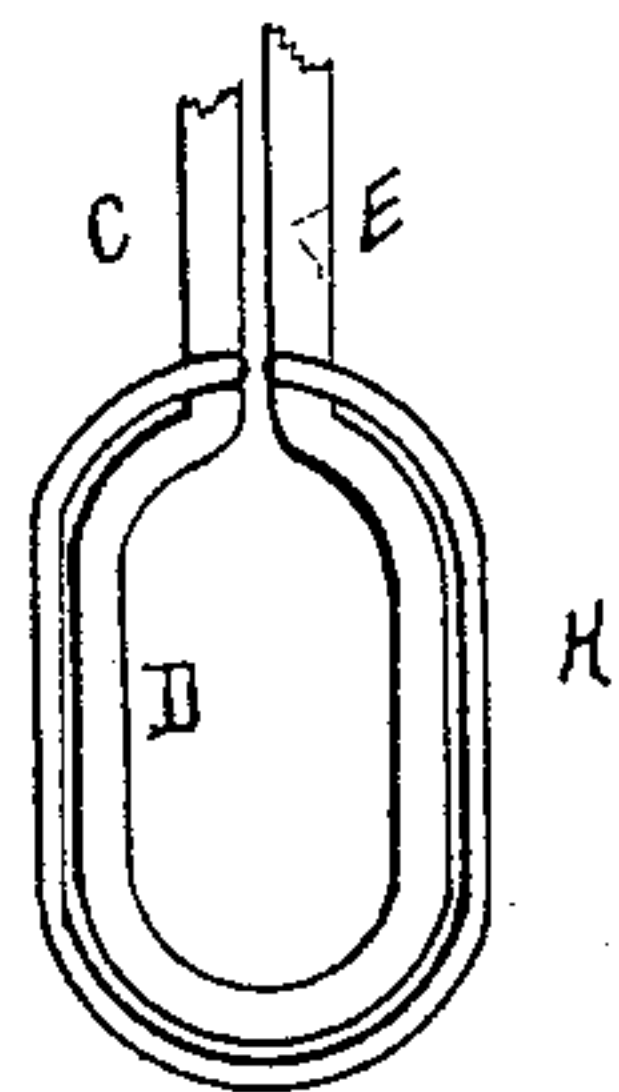


Fig. 6.

Witnesses  
Gertrude H. Anderson  
Geo. H. Lothrop

Inventor.  
Charles L. Coffin.

# UNITED STATES PATENT OFFICE.

CHARLES L. COFFIN, OF DETROIT, MICHIGAN.

## HOOP-WELDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 475,667, dated May 24, 1892.

Application filed April 25, 1891. Serial No. 390,447. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES L. COFFIN, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Apparatus for Forging, Welding, or Working Hoops, Rings, Tires, Links, Pipe, and Continuous Forms, of which the following is a specification.

My invention consists in a process and apparatus for forging, welding, and working hoops, rings, tires, links, pipe, and continuous forms hereinafter fully described and claimed.

Figure 1 is a side elevation of the complete machine with a hoop in position for welding. Fig. 2 is a side elevation of Fig. 1. Figs. 3 and 4 are views similar to Figs. 1 and 2, showing simply the hoop and conductors. Figs. 5 and 6 are side elevations similar to Fig. 3, showing a slight variation in the arrangement of the conductors.

A represents a table upon which the various parts of the machine are supported.

B represents an arm above the table, in which is carried a plunger O, which is provided with a lever Q for forcing the plunger down against the action of a spiral spring S, which constantly tends to raise the plunger.

P represents a link by which the lever Q is pivoted to the frame B to permit the plunger O to travel in a straight line. To the bottom of the plunger O is attached a block I of insulating material, and to this block are attached two conductors C and E, insulated from each other and preferably tipped with a non-welding material, such as carbon, this tip being indicated in the drawings.

C' E' represent conductors by which the conductors C and E are connected with the poles of a generator of electricity.

D represents a conductor whose resistance is preferably as little as or less than that of conductors C and E and is fastened to the table A, but insulated therefrom by insulating material I. The ends of conductor D lie opposite the ends of conductors C and E, so that when said conductors C and E are depressed they will make contact with conductor D, and the ends of conductor D are preferably tipped with a non-welding material like the ends of conductors C and E.

J J represent two arms, each of which is pivoted to the table A, and each of these arms is provided at its upper end with any suitable form of clamp, (represented at K and K',) which clamps should be insulated (indicated by a black line in the drawings) from the arms on which they are carried.

L L' represent the two links of a toggle-joint which connects the lower ends of arms J J, and M represents a connecting-rod, by which the toggle-joint is connected with a treadle N.

H represents a hoop or tire.

The operation of my invention is as follows: The conductors C and E being raised, and the treadle N being also at the upper end of its stroke, a hoop H is inserted in the clamps K K', so that its ends rest over the ends of conductor D, as shown in Fig. 1. By means of lever Q conductors C and E are now depressed until they clamp the ends of hoop H between themselves and the ends of conductor D. A current is now turned on, passing through conductor C, hoop H, conductor D, hoop H, and conductor E, thereby heating the ends of the hoop to a welding temperature. As soon as this is accomplished the conductors C and E are raised by releasing the lever Q and the treadle N is depressed, thus forcing the ends of hoop H together to form the weld, which may be completed by rolling or hammering or in any desired manner. The low resistance of conductors C, D, and E is intended to prevent diversion of the current from conductors C and E around through the hoop instead of passing directly from conductor C to conductor D, and this may be further avoided by arranging conductor D in one of the modes shown in Figs. 5 and 6, in which the conductor D is approximately parallel with the hoop or other article to be welded, so that the passage of an alternating current through conductor D induces a reverse current in the hoop H, thereby diminishing the tendency of the current to traverse the hoop instead of the conductor D, while a continuous current in the arrangement shown in Fig. 5 tends to repel the current seeking to pass through hoop H.

What I claim as my invention, and desire to secure by Letters Patent, is—



1. In a machine for electrically welding, working, or forging hoops, the combination of pivoted clamps for holding the ends of the hoop, a toggle-joint for moving said clamps, 5 a stationary bridging-conductor, and a movable frame carrying two conductors insulated from each other and respectively connected with the opposite poles of a generator of electricity, substantially as shown and described.
- 10 2. In a machine for electrically working, welding, or forging hoops, the combination, with two conductors connected with the poles of a generator of electricity and adapted to make contact with the ends of the hoop, of a conductor connecting the ends of the hoop and 15 approximately parallel with the hoop, substantially as shown and described.

CHARLES L. COFFIN.

Witnesses:

GERTRUDE H. ANDERSON,  
GEO. H. LOTHROP.