(No Model.) 2 Sheets—Sheet 1.

D. WARNER.

WELDING MACHINE.

No. 391,441. Patented Oct. 23, 1888.

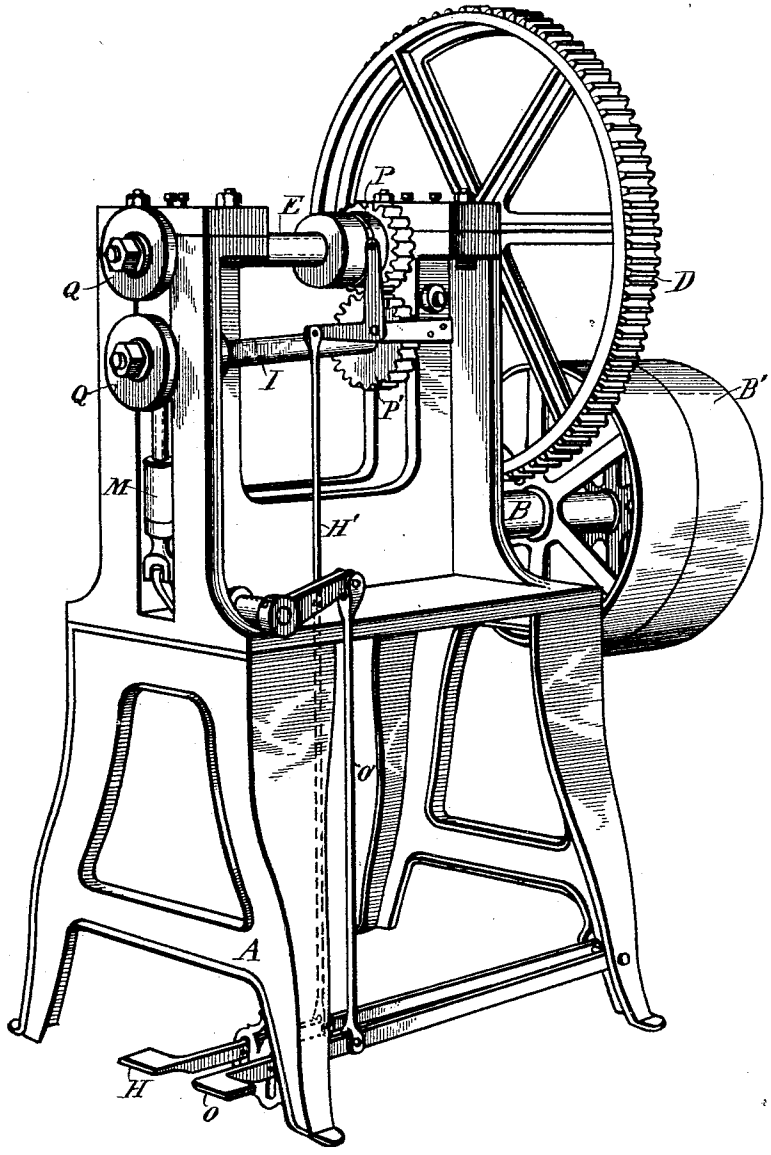


Fig. 1.

Witnesses.

Carroll J. Webster.
Bert A. Bouton.

Inventor.

Daniel Warner.

By William Webster.

Attorney.

N. PETERS. Photo-Lithographer. Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

D. WARNER.

WELDING MACHINE.

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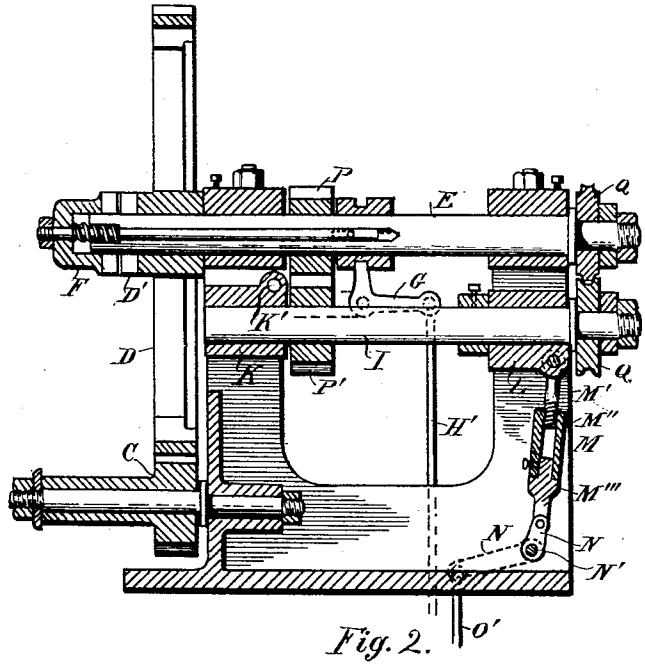


Fig. 2.

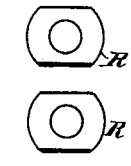


Fig. 5.

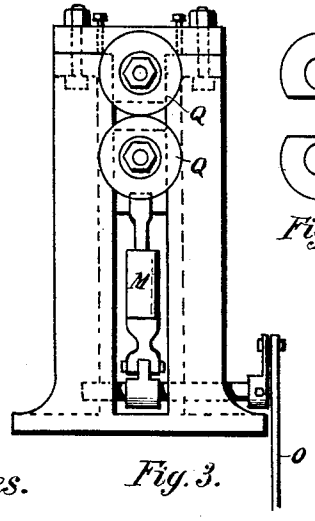


Fig. 3.

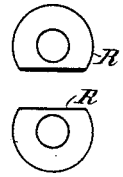


Fig. 6.

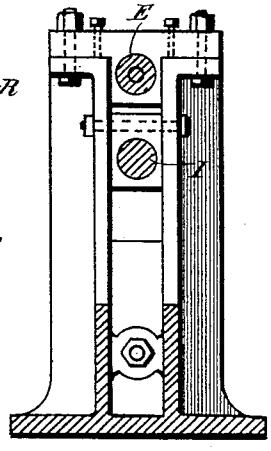


Fig. 4.

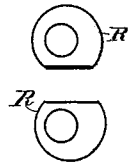


Fig. 7.

Witnesses.

Carroll J. Webster.

Bert. N. Bortree.

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UNITED STATES PATENT OFFICE.

DANIEL WARNER, OF TOLEDO, OHIO, ASSIGNOR TO GEORGE W. HEARTLEY, OF SAME PLACE.

WELDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 391,441, dated October 23, 1888.

Application filed February 16, 1888. Serial No. 264,312. (No model.)

To all whom it may concern:

Be it known that I, DANIEL WARNER, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in a Power Welding-Machine; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to a power welding-machine, having reference to that class of machines wherein the metal to be welded is passed between rolls and united by pressure.

The object of the invention is to provide a power-machine whereby two rolls of a true circle may be employed, there being a movable mandrel to allow a separation of the rolls to permit the insertion of the metal, with a clutch device by which to connect or disconnect the power with the welding-rolls.

Another object is to render it possible to employ rolls of irregular forms whereby metals of irregular shapes may be welded between the rolls.

The invention consists in parts and combinations of parts, which will be more fully described, and pointed out in the claims.

In the drawings, Figure 1 is a perspective view of a complete machine. Fig. 2 is a longitudinal vertical section. Fig. 3 is a front elevation of the machine. Fig. 4 is a cross-sectional elevation of the rear end of the machine with the power-gear removed; Figs. 5, 6, and 7, views in illustration of some of the different forms of rolls that may be employed in welding.

A designates an upright frame of metal.

B is the power-shaft receiving motion from pulley B′, connected by belt-connection with any preferred motive power, and communicating power to a gear, D, through the medium of a pinion, C, upon said shaft. Gear D is loosely journaled upon a counter-shaft, E, journaled in bearings in the main frame, the gear being provided with clutch-faces D′ upon the outer sides, adapted to engage with a clutch-section, F, movable longitudinally upon shaft E, and held from rotation thereon by a key upon the shaft seated within a slot in the clutch-section, the parts being held apart by means of a coiled spring seated within a bore in the counter-shaft and bearing against clutch-section F, the section being moved into engagement against the pressure of the spring by means of a rod extending within the bore of the shaft, and connected to a shipper by means of a pin passing through the collar, rod, and an elongated slot in the shaft, and moved by means of a bell-crank lever, G, fulcrumed upon the frame and having one end resting in a peripheral groove in the collar, the other end being connected to a rod, H′, and treadle H within convenient reach of the foot of the operator.

I is a shaft running parallel with shaft E, being journaled in a swinging bearing, K, pivoted to the main frame by a transverse bolt, K′, the opposite end of the shaft being journaled in a swinging bearing, L, raised and lowered by a treadle, O, connected to a crank, N, upon a rock-shaft, N′, by means of a rod, O′. Upon rock-shaft N′ is keyed a crank, N″, at about sixty degrees angle from crank N.

To crank N″ is attached one end of a turn-buckle, M′, M″, and M‴, the opposite end being attached to the swinging bearing L, whereby the movement of the bearing is controlled by the treadle, and by reason of cranks N and N″ being past the angle of forty-five degrees the weight of the shaft and box tends to normally separate the parallel shafts and the rolls thereon.

P P′ designate pinions upon shafts E and I, respectively, being keyed thereon, and by which means shaft E communicates motion to shaft I. The teeth of the pinions are of a sufficient length to be always in gear, regardless of the swinging of shaft I. Upon shafts E and I are secured metal rolls, either circular, as shown at Q, or of irregular form, as shown at R.

In operation when it is desired to weld metal of a determinate and even character—as, for instance, a metal tire—rolls Q are employed. Treadle H is depressed and secured in position by engaging upon catches upon the guide in which the treadle moves. The metal, after being heated to a proper degree, is placed between the rolls and treadle O is depressed,

thereby forcing the rolls together with sufficient force to form a weld, when the rolls are allowed to separate and the metal to be removed. Should it be desired to form a weld of metal of irregular shape, recourse may be had to either of the forms shown in Figs. 5, 6, and 7, as occasion may demand, in which event treadle O may be secured in a fixed position to separate the rolls the desired distance, and the metal introduced between the rolls at their point of greatest separation, their further revolution welding the same as the rolls approach their point of closest contact. When using the rolls of irregular shape, the clutches F D' are used to connect and disconnect the power-shaft with the rolls.

It will be seen that by the use of rolls of irregular shapes any desired form to the welded metal may be given.

In the rolls shown in Fig. 7 there would be given a wedge shape to the metal passed between the same. I may therefore vary the form of the rolls employed to suit any of the requirements of the trade, the forms shown being to illustrate some of the preferred forms.

It will be seen that by means of a turn-buckle the distance between shafts E and I can be varied at will to accommodate different sizes of rolls.

The machine is compact, composed of few parts, and can be adapted to all of the various uses for which a machine of this character is desired.

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

1. In a power welding-machine, a power-shaft, a counter-shaft having a roll thereon, and a shaft parallel thereto journaled in swinging boxes controllable by the operator, and provided with a welding-roll, as and for the purpose set forth.

2. In a power welding-machine, a power-shaft, a counter-shaft provided with a clutch controllable by a rod and spring within the power-shaft, a shaft parallel thereto journaled in swinging boxes controlled by treadle, and rolls upon the counter and parallel shaft, as and for the purpose set forth.

3. In a power welding-machine, a counter-shaft having a roll thereon, a shaft parallel thereto journaled in a swinging box, a rock-shaft, a treadle connected therewith, and an adjustable connection between the swinging box and rock-shaft, as and for the purpose set forth.

4. In a power welding-machine, a power-shaft, a counter-shaft, clutch mechanism thereon, a shaft parallel with the counter-shaft and receiving motion from a pinion upon the counter-shaft, each shaft being provided with a welding-roll, as and for the purpose set forth.

5. In a power welding-machine, in combination with parallel shafts, welding-rolls of irregular shapes, as and for the purpose set forth.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

DANIEL WARNER.

Witnesses:
WILLIAM WEBSTER,
CARROLL J. WEBSTER.