

W. B. CLEVELAND & W. E. HUBER.
ELECTRODE FOR WELDING.
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1,045,948.

Patented Dec. 3, 1912.

Fig. 1

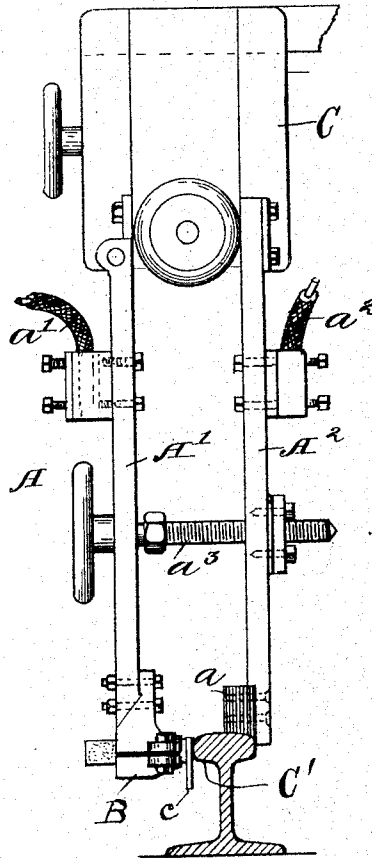


Fig. 2

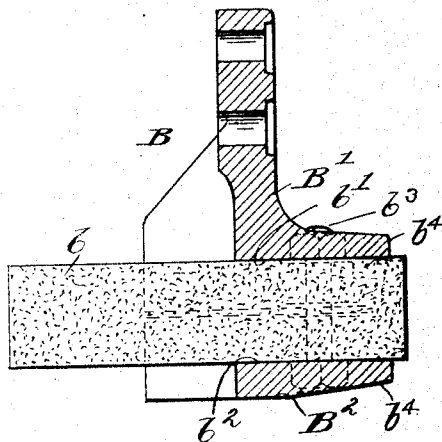
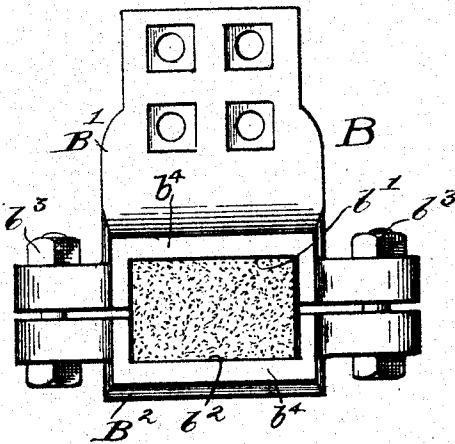


Fig. 3



Witnesses:

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UNITED STATES PATENT OFFICE.

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ELECTRODE FOR WELDING.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, WILLIAM B. CLEVELAND and WILLIAM E. HUBER, citizens of the United States, and residents of Cleveland, county of Cuyahoga, and State of Ohio, have jointly invented a new and useful Improvement in Electrodes for Welding, of which the following is a specification, the principle of the invention being herein explained and the best mode in which we have contemplated applying that principle, so as to distinguish it from other inventions.

The present invention, while relating in general to electrodes for welding has regard more particularly to the construction of electrodes for use in connection with clamping and heating devices for thus welding or brazing bonds onto rails, such "bonding" being now most satisfactorily accomplished thus, with the aid of the electric current. As is well understood the most suitable material for use in connection with electrodes of this kind, in order to develop the proper degree of heat for the purpose named, is carbon. In the use of such material, however, several difficulties have been encountered in securing an effective and satisfactory mounting therefor, namely, the block wears away rapidly, or in other words, its outer exposed face, designed to contact with the rail together with the adjacent lateral portions, burns up; and secondly, owing to the heating of the block, it is difficult to secure an adequate contact between the conductor member carrying the block and the latter. It is with a view then to obviate these several difficulties, that the present invention has been devised, such invention consisting of the means hereinafter fully described and particularly pointed out in claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—Figure 1 is an elevational view of a clamping and heating device adapted particularly for the bonding of rails, wherein is incorporated our improved construction of electrode; Fig. 2 is a transverse sectional view of such

electrode; and Fig. 3 is a front elevational view thereof, both said section and elevation being on a larger scale than Fig. 1.

The apparatus shown in Fig. 1 comprises essentially a rail clamping device A, suitably supported from a block C or the like, of which a detached portion only is shown, so as to bring the lower end of the device in proximity to the rail ends that are to be joined. Such clamping device is composed of two conductor members or arms A' A² respectively adapted, when the device is thus positioned, to rest with their lower ends against the inner and outer sides of the rail. One of the said members, the inner one A² as shown, is provided at its lower end with a laterally projecting foot *a* adapted to rest on the top of the rail and provide electrical connection therewith. The other arm terminates in the electrode B proper, that is adapted to be brought against the side of such rail, when the inner member thus rests on the rail top, by drawing said outer member toward the inner member. To permit of such movement, the outer member A' is pivotally hung from support C, while a handled shaft *a*³ rotatably mounted in such arm A' has a screw threaded engagement with the other arm A² to effect such drawing in movement. Current is supplied to the clamping device through suitable conductors *a'* *a*² attached to the respective arms or members A' A².

It is with the details of construction of the electrode B constituting the lower end of the outer clamping member A' that the present invention is concerned. The electrode *b* proper consists preferably of carbon, since this provides the most efficacious high resistance material for the purpose in hand. Such electrode, furthermore, is preferably in the form of an elongated rectangular block, the length of which is a matter of indifference, and will depend in part upon the locality in which the device is being employed, whether confined or otherwise. For securing said block to the conductor member, a holder is provided that is adapted to be movably clamped or bolted to the lower end of said member, said holder comprising two vertically separable parts B' B² that are themselves adapted to be clamped together to adjustably hold therebetween the block in question. For the reception of such

block, the holder parts have their juxtaposed faces recessed, such recesses b' b^2 being disposed transversely of the member A' , so as to hold the block in alinement with the plane in which said member swings. Said parts furthermore have lips b^4 that more or less completely inclose the lateral portions of the block adjacent to its contact face.

When in use, the forward end of the carbon block b constituting the electrode proper, is designed to project for a fractional part of an inch in front of the holder parts B' B^2 between which such block is clamped. When thus positioned, the clamping device is adapted to press a bond c against the rail face C' , as illustrated in Fig. 1, so that upon the passage of a proper current through the conducting members, the desired welding or brazing operation will be effected. A satisfactory electrical connection between the electrode and its holder may be at all times assured by simply tightening up the nuts of the bolts b^3 that clamp the two parts of the holder together, the recesses in the latter for the reception of the block having a combined depth less than the thickness of said block, as will be readily understood. When, owing to continued use, the forward end of block b has become worn or burnt away, said bolts are slightly loosened and the block advanced an amount sufficient to make up for such wear, and thereupon again clamped securely in place. It will be understood that the carbon block or electrode is a relatively inexpensive part of the apparatus, but that owing to the fact that heretofore in apparatus of the class in hand, said block has been so secured in the holder as to involve the discarding of the latter along with the remnant of the block or else has involved injury of such holder, owing to the same becoming heated necessitating its being thrown away, the wearing away of the carbon has been a serious matter. This difficulty we entirely overcome, for when one block of carbon has been used up as closely as possible, it can be discarded without throwing away the holder, injury to which is prevented, both by securing a firm connection between the block and the holder parts, and by all times keeping the contact face of the block removed a safe distance therefrom. Moreover by reason of the substantial inclosure at all times of the lateral portions of the block as close up to such contact face as is practicable, such portions are prevented from wasting away at the rapid rate experienced where they are wholly unprotected from the effects of the air currents induced by the block's heated condition.

Other modes of applying the principle of our invention may be employed instead of

the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

We therefore particularly point out and distinctly claim as our invention:—

1. In apparatus of the class described, the combination of a support, a conductor member pivoted at one end to said support, means for securing said member in selected positions about its pivotal axis, a two-part holder removably secured to the free end of said member, and a block of high resistance material adjustably held between said parts by friction, said parts being formed with lips adapted to inclose the lateral portions of the block adjacent to its contact face, and the recess in said parts having a combined depth less than the thickness of said block.

2. In apparatus of the class described, the combination of a support, a conductor member pivoted at one end to said support, means for securing said member in selected positions about its pivotal axis, a holder, comprising two vertically separable parts, removably secured to the free end of said member, and a block of high resistance material adjustably held between said parts by friction, the juxtaposed faces of the parts being recessed to receive the block and limit adjustment thereof to the plane of said member's movement, the recess in said parts having a combined depth less than the thickness of said block, and said parts being formed with lips adapted to inclose the lateral portions of said block adjacent to its contact face.

3. In apparatus of the class described the combination of a support, a conductor member pivoted at one end to said support, means for securing said member in selected positions about its pivotal axis, a holder, comprising two vertically separable parts, removably secured to the free end of said member, a block of high resistance material adjustably held between said parts by friction, the juxtaposed faces of the parts being recessed to receive the block and limit adjustment thereof to the plane of said member's movement, the two said recesses being together less in vertical depth than the vertical width of the said block when in position, and said parts being formed with lips adapted to inclose the lateral portion of said block adjacent to its contact face.

Signed by us this 12th day of March, 1908.

WILLIAM B. CLEVELAND.
WILLIAM E. HUBER.

Attested by—

ANNA L. GILL,
JNO. F. OBERLIN.