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MECHANISM FOR WELDING PIPE BY ELECTRICITY.
APPLICATION FILED SEPT. 11, 1914.
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2 SHEETS—SHEET 2.
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To all whom it may concern:

Be it known that we, CLARENCE MARK and CARL OTTO BERGMAN, citizens of the United States, residing at Evanston, Cook county, Illinois, have invented new and useful improvements in Mechanism for Welding Pipe by Electricity, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a partial plan of my improved mechanism; Fig. 2 is an elevation thereof; Fig. 3 is a plan of one of the heads; Fig. 4 is a section thereof, on lines IV—IV of Fig. 3; Fig. 5 is a section on lines V—V of Fig. 4; Fig. 6 is a section on lines VI—VI of Fig. 4; Fig. 7 is a section similar to Fig. 4, showing another form of head, and Fig. 8 is an elevation of the finishing rolls.

Our invention relates to the making of pipes or tubes from skelp by a continuous operation, and consists in mechanism for electrically heating the edges of the blank so that when these edges have been raised to a sufficiently high temperature the blank is passed through forming and finishing rolls, in which the heated edges are pressed against each other and are thereby welded together. Our invention also consists in the construction and cooperation of the various parts which we shall hereinafter describe and claim.

Referring to the drawings, the heads A and B have opposite-disposed beveled contact faces intended, respectively, to engage and heat edges of the pipe blank C alternately and successively.

Each head A is revoluately mounted and has mounted thereon a pair of contact rings 2 and 4, which have beveled faces 3 and 5 respectively. The contacting face 3 of the outer ring 2 engages the edge 6 of the blank C, and the face 5 of the ring 4 engages the exterior surface 7 of the blank adjacent the edge 6, so that heat will be generated in that portion of the pipe lying between these two points of contact. The ring 2 is mounted upon the disk 8, which is positioned upon the shaft 9, to the opposite end of which is secured the commutator 10. Seated in the commutator 10, which revolves with the shaft 9, are the stationary brushes 11. Electric current is supplied to the brushes 11 through the contacts 12, which are intended to be connected to a suitable source of power.

The contact ring 4 is mounted upon the sleeve 13 carried by the shaft 9 and suitably separated therefrom by insulating material 14, which is also interposed between the ring 2 and the ring 4. Secured to the sleeve 13 and rotating with it are the brushes 15, which operate in a stationary commutator 16. Electric current is intended to be supplied through the contacts 17 to the commutator 16, and thence to the brushes 15. Power for driving the heads A and B is supplied through the gears 18, which are mounted upon the exterior of the sleeve 13. Each one of the heads is supported in the casing 19. The blank C is supported in contact with the beveled faces of the heads A and B by the idlers 20.

The head B, which is best shown in Fig. 7, has a contact ring 22 and a contact ring 44, the beveled faces 3 and 5 of which are oppositely disposed to the contact faces 3 and 5 of a head A, and bear upon the edges 6 and adjacent surface 7 of the blank C. The structure of the head B is similar in other respects to the head A. The shaft 9 comprises the conductor connected with the contact ring 22, and is concentrically arranged within the sleeve or conductor 13 by which current is supplied to the ring 4. This arrangement of conductors has the advantage of neutralizing the self-inductive effect of the current passing through each conductor.

In Fig. 8 are the welding and finishing rolls 21, which press the edges 6, 6' of the blank C together as it is advanced from the heads A and B.

Our improved mechanism may be operated as follows:

We take a blank from the rolling mills, preferably while still hot, and shape it into the blank C in the form shown in Fig. 1 or 4. We then advance the blank on to the idlers 20, with its edges 6, 6' of the blank C together as it is advanced from the heads A and B.

The temperature of each edge will increase with each successive contact and is so regulated that, as any part of the blank reaches the delivery end of the series of the heads A and B, that part will have reached the welding temperature, and when passed 110
through rolls 21 the edges will be welded together and the pipe or tube will be formed. 
It is obvious that the number of heads desirable for use in raising the edges of the 
blank to a welding heat depends upon the kind or character of the tubing being formed.
Various other modifications may be made in the mechanism which we have shown and 
described herein without departing from our invention.
What we claim is:
1. In apparatus for electrically welding pipe, a plurality of rotatable heads, each of 
said heads having two beveled contact faces 
insulated from each other and each of said heads being adapted to engage and transmit 
heat to one of the separated edges of the pipe blank through said contact faces, one of 
the contact faces on each head engaging 
one of the separated edges of the pipe blank 
and the other of said contact faces engaging 
the periphery of the pipe blank, in combination with means for forcing together 
and welding the edges of the pipe blank 
after they have been heated to the welding temperature.
2. In apparatus for electrically welding pipe, two sets of heads, one set of heads being 
closed by the interposition of one of two longitudinal and separated edges of the pipe 
blank, and the other set of heads being also a part of another electric circuit adapted to 
be closed by the interposition of the other longitudinal and separated edge of the pipe blank, each head having a pair of contact faces thereon insulated from each other, one of said contact faces engaging one of said longitudinal edges, and the other engaging the periphery of the blank, and means for supporting the pipe blank in contact with said heads.
3. In apparatus for electrically welding pipe, the combination of two sets of rotatable heads, the heads of one set having a plurality of contact faces oppositely disposed to the contact faces of the heads of the other set, the contact faces on each set being insulated from each other and forming with the pipe blank a path for electric current.
4. In apparatus for electrically welding pipe, rotating heads, conductors leading to the rotating heads, one conductor being concentrically arranged within the other, the said arrangement being adapted to neutralize the self-inductive effect of the current passing through each conductor.

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