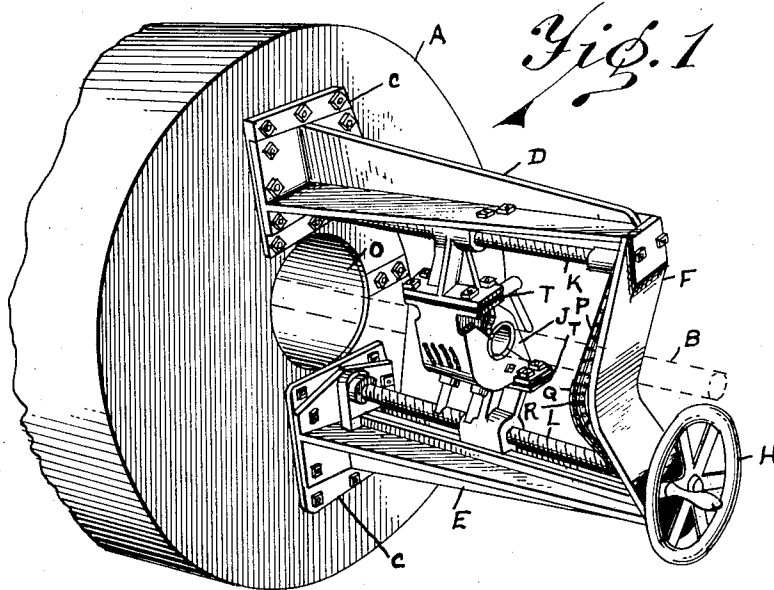
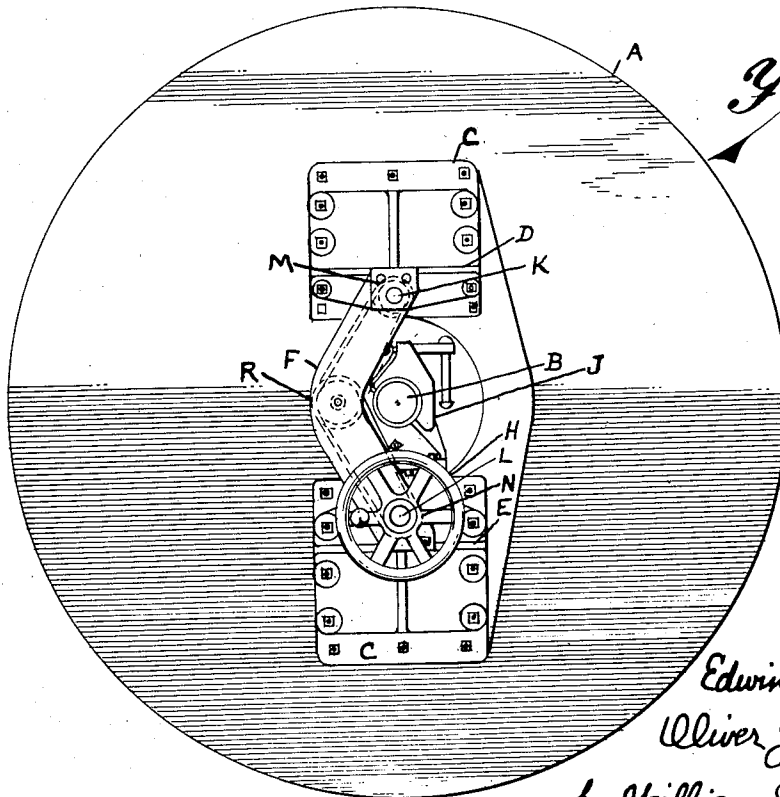


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ELECTRODE ADJUSTING MECHANISM.
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ELECTRODE-ADJUSTING MECHANISM.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, EDWIN L. CROSBY and OLIVER J. MARSHICK, citizens of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Electrode-Adjusting Mechanism, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to apparatus for regulating the projection and retraction of a heating electrode relatively to the refractory drum of a metal treating furnace, and has for its object an improved arrangement of parts whereby the easy and accurate movement of the electrode lengthwise of itself and generally coaxially with the rotative drum may be accomplished without interference with the metal-treating turning of the drum about its axis.

In the drawings:

Figure 1 is a perspective of our improved construction in position on an end of a refractory furnace drum.

Fig. 2 is an end elevational view, designed to bring out particularly the entire clearance of the electrode relatively to the projecting and retracting mechanism.

A represents the end of a rotatable furnace drum, through which, generally coaxially therewith, engages a heating electrode B, designed to cooperate with a similar electrode at the other end of the refractory drum in causing a heating arc over the top of the mass of metal within the drum. This arc is required to be of varying intensity at different stages of each heating operation, and in accordance with the particular metal components being worked upon, and to effect this the inward or outward movement of one or both electrodes lengthwise of itself, is necessary, to vary the distance between their opposing points. It is inadvisable, as well as wasteful of time and effort, to stop the rotation or rocking of the furnace drum in the midst of a heating operation, so we have devised the improved mechanism forming the subject-matter of this application, to enable the adjustment of the carbon electrodes to be made at any time that it seems advisable.

This mechanism consists of brackets C secured in the end wall of the refractory drum, from which project horizontal struts D and E, whose ends are united by the bent crosspiece F, the central or angular portion of which is so much out of line with the points of attachment of its ends with the ends of the struts D and E that the end of the electrode B, coaxially disposed with respect to the furnace drum, can, when drawn far out from the drum, pass clearly by the concave or bowed side of the cross-piece F.

Rotatably journaled adjacent one or the other of the horizontal struts D and E are a pair of screw shafts K and L, one of which, as L, passes through the cross-piece F, and is provided with a hand wheel H. The outer end of the companion screw, as K, which is also journaled in the cross-piece F, is provided with a sprocket wheel M, which lies in the same vertical plane as its companion sprocket wheel N on the end of the screw shaft L, so that the endless chain P passes thereover and operatively connects them, being guided about the crook or angled portion of the cross-piece F by passing over the idler rollers or adjustable tension pieces Q and R.

The electrode B, mounted in the carriage J, and suitably insulated from the frame and screw shafts, as by pads T, is thus free to project with its outer end beyond the cross-piece F when extremely retracted from the furnace drum. Each end of the carriage J is provided with a screw-threaded horizontal bore, through which one or the other of the screw shafts K and L engage, so that as they are rotated by the turning of the hand wheel H, and the action of the endless chain P, the carriage and with it the electrode is moved toward or away from the furnace drum, according to the direction in which the screw shafts are rotated. The electrode can thus be moved easily and accurately in or out of the electrode aperture O in the end of the furnace, thus, in co-operation with the companion electrode at the other end of the furnace drum, enabling the operator to get the desired length of arc for the work in hand; and the position of the screw shafts K and L on either side of the electrode enables its actuation in either direction to be effected in an even and truly axial position, thus avoiding any tendency

to bind, as would often be the case if the actuating power were applied on only one side of the electrode. All handling of the electrode, after it has once been put in place, is obviated, and the operator can rest assured that its projection or retraction is along a truly longitudinal path.

What we claim is:

1. In combination with a terminally apertured furnace drum, a bracket frame projecting from the end face thereof adjacent the aperture therein, a pair of screw shafts rotatably journaled on opposite sides of said bracket frame, means for operatively connecting said screw shafts, means for diverting said connecting means to one side of the axial line of the aperture in the furnace end, and an electrode carriage adapted to be moved toward and away from the furnace drum by the movement of said screw shafts.

2. In combination with a furnace drum, an electrode carriage adapted to be moved toward and away from the apertured end of said drum, a pair of screw shafts operatively engaging said electrode carriage, their axis being parallel with that of the electrode, means for rotatably supporting said screw shafts, and means for operatively connecting said screw shafts to effect their uniform movement, said means being located to one side of the path of possible longitudinal movement of said electrode.

3. The combination, with a terminally apertured furnace drum, of a frame member projecting laterally from the apertured end wall, a pair of screw shafts rotatably journaled in said frame, an electrode carriage member adapted to be moved toward and away from said drum by the action of said screw shafts, and means for operatively connecting said screw shafts while avoiding interference with the free movement of the electrode lengthwise of its axis.

4. In combination with an apertured furnace wall, a frame member positioned about the aperture therein in a way to permit free movement of an electrode through the aperture in either direction lengthwise of its central axis, a carriage member for an electrode, adapted to move in said frame toward and away from said apertured furnace wall, and means for actuating said carriage member, portions of said actuating means being located on each side of the possible path of travel of the electrode and all portions thereof being out of axial alignment therewith.

5. In combination with a frame, a pair of screw shafts rotatably journaled in parallel relation to one another, an electrode car-

riage member adapted to be moved forward or backward by the rotative movement of said screw shafts, means for correlating said screw shafts while avoiding interference with the electrode mounted in said carriage member.

6. The combination of a frame, a pair of screw shafts journaled in the frame, a carriage member adapted to be projected and retracted by the rotative movement of said shafts, and means for operatively connecting said shafts while avoiding interference by said means or by the frame with the free retractile movement lengthwise of its axis of an electrode supported in the carriage member.

7. In combination with a frame projecting laterally from the apertured end wall of a furnace drum, the outer portion of said frame being located to one side of the extended axial line of the aperture in the furnace wall, an electrode carriage member coaxially disposed with respect to the aperture in the furnace wall, supporting shafts for said carriage member adapted to effect its movement in either direction in said frame, and means for correlating the action of said shafts while avoiding interference with the free outward movement of the electrode in said carriage member.

8. In combination with a laterally projecting electrode frame mounted on the apertured end of a refractory furnace drum, the end portion of said frame being so formed as to lie to one side of the extended axial line of the aperture in the furnace wall, a pair of screw shafts rotatably journaled in said frame on opposite sides of the aperture, means for operatively connecting the screw shafts, and an electrode carriage mounted on said screw shafts in coaxial position with respect to the aperture in the furnace wall.

9. The combination, with a frame, of a pair of screw shafts journaled therein in parallel relation, means for operatively connecting said shafts, and an electrode carriage mounted between said screw shafts and adapted to be actuated thereby along such a path relatively to the end of the frame that the electrode in the carriage when retracted passes to one side of said frame end.

In testimony whereof, we sign this specification in the presence of two witnesses.

EDWIN L. CROSBY.
OLIVER J. MARSHICK.

Witnesses:

WILLIAM M. SWAN,
JEFFERSON G. THURBER.