

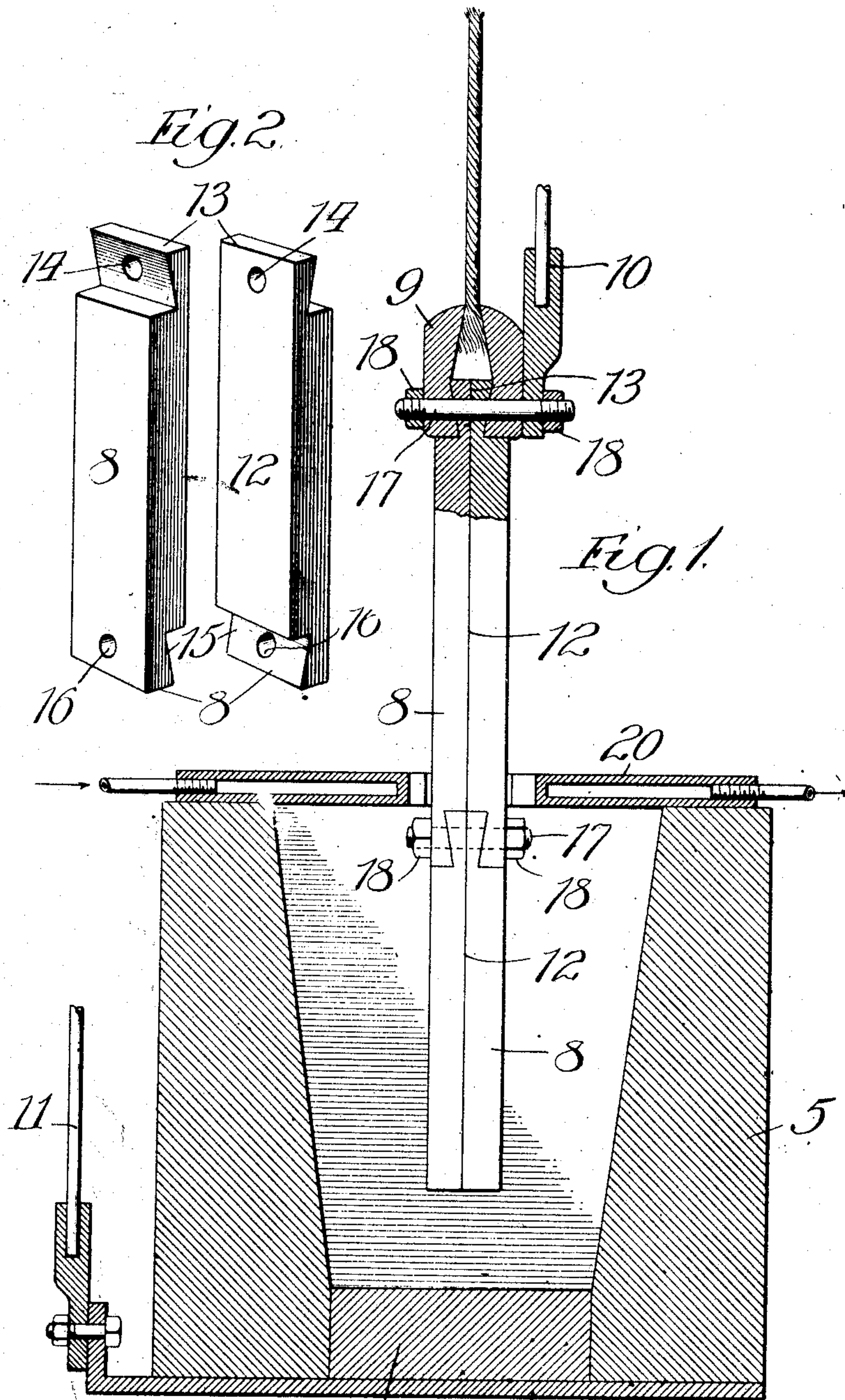
No. 881,520.

C. E. WILSON.

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SECTIONAL ELECTRODE FOR ELECTRIC FURNACES.

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UNITED STATES PATENT OFFICE.

CHARLES E. WILSON, OF FERRIS, WEST VIRGINIA.

SECTIONAL ELECTRODE FOR ELECTRIC FURNACES.

No. 881,520.

Specification of Letters Patent.

Patented March 10, 1908

Application filed September 15, 1906. Serial No. 334,752.

To all whom it may concern:

Be it known that I, CHARLES E. WILSON, a citizen of the United States, residing at Ferris, in the county of Fayette and State of West Virginia, have invented a new and useful Improvement in Sectional Electrodes for Electric Furnaces, of which the following is a specification.

Electric-furnace electrodes are as a rule either "graphite" or "carbon", the former being, what the name literally implies, a compact and tough material which, even when formed into large and heavy pieces, may be freely shipped and handled with comparatively little danger of injury thereto, while the latter is an impure amorphous carbon, comparatively brittle and requiring great care in the handling to prevent fracture. Graphite electrodes are quite commonly provided in blocks of large dimensions having threaded projections and sockets for their attachment one to another. Carbon electrodes, on the contrary, cannot be safely handled, if in large blocks, and threading thereof is considered impractical. Graphite is much more expensive to produce than the impure amorphous carbon, and though graphite electrodes are the more durable in a furnace, this fact alone would not, in the majority of cases, compensate for the difference in price were it not for the danger of breakage in the handling of large carbon electrodes.

My object is to lessen the danger of injury in the shipment and handling of carbon electrodes for electric furnaces, by providing the electrodes in comparatively short interlocking sections of improved construction, each section being formed of longitudinally extending members which may be readily fitted and secured thereto.

In carrying out my invention each section consisting of a plurality of longitudinally extending members, is provided, in opposite ends respectively, with a preferably dove-tail projection and a preferably dove-tail groove or socket, whereby one section may be readily spliced to another; and I further provide bolt openings at the said splices, or joints, for the insertion of bolts of graphite, or other suitable carbonaceous material, which hold the sections firmly together.

Referring to the drawing—Figure 1 shows my improved sectional electrode applied to a crucible furnace of common construction;

and Fig. 2, two halves of an electrode-section showing its construction.

In the illustration, a crucible, 5, having a stationary carbonaceous electrode, 6, in its base, rests upon a conductor-plate, 7, and is provided at its upper end with a heat-retaining water-jacketed cover, 20, which has a central opening through it for the passage of the suspended, adjustable electrode, or carbon pencil, 8, and for feeding the material to be smelted. The said pencil is connected at its upper end to a suspended, raising and lowering head, 9. The head is connected by a lead-wire, 10, and the plate, 7, by a lead-wire, 11, with the electric-current supply. The electrode-sections, 8, are each formed of two companion lengths of impure amorphous carbon, having smooth inner meeting faces, 12. Each member is provided at its upper end with half of a dove-tail tongue, 13, containing a perforation, 14, and the lower end of each member is formed with half of a dove-tail socket, 15, and perforation, 16. When the two members are placed together at their meeting surfaces, 12, they form a complete electrode-section with an upper dove-tail tongue and a lower dove-tail socket. In splicing two sections together, or to the head, 9, the dove-tail tongue, 13, is slipped into the dove-tail socket, 15, and the parts secured together by passing a graphite bolt or pin, 17, threaded at opposite ends, through the registering openings, 16, 14, and then clamping the parts by means of graphite nuts, 18, applied to the bolt.

In practice when the lower section has become so worn away as to unduly shorten the electrode, the current is shut off and the upper section freed from the head 9. A new section is then placed in the head and spliced to the upper end of the former upper section, in the manner described. The operation may be performed very quickly and conveniently.

The tongue and grooved connection with the clamping-bolt forms a close joint with intimate electrical contact between the meeting surfaces, thereby avoiding any danger of sparking between the connections. It is necessary that the bolts and their nuts shall be of carbonaceous material, preferably graphite. They may be formed as shown or in any other way to suit my purpose of clamping the sections securely and in intimate electrical contact at the joints. It is

usual, for many purposes, to provided pencil electrodes 12 inches or more in cross-section, rendering them heavy and unwieldy and necessitating great care in handling. By forming the sections of a plurality of separate longitudinal members arranged to fit closely together, the cost of manufacture is reduced, and they may be handled and transported with greater ease and less danger of injury.

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

1. A pencil-electrode section for electric furnaces, formed of separate longitudinally extending members, fitting closely together at adjacent sides and provided at opposite ends with means for clamping the members together, and for securing the sections end-wise to other sections.

2. A pencil electrode for electric furnaces, formed of a plurality of end-wise engaging sections, each comprising a block of carbonaceous material formed of a plurality of separate longitudinal members fitting closely together, each block being provided in one end with a dove-tail groove and a perforation and at its opposite end with a dove-tail tongue and a perforation, the tongue on one section fitting the groove in the adjacent section in a manner to cause the perforations in their adjacent ends to register with each other, and a graphite bolt passing through the said registering perforations.

CHARLES E. WILSON.

In the presence of—

H. M. GIBBES,

T. R. RAGLAND.