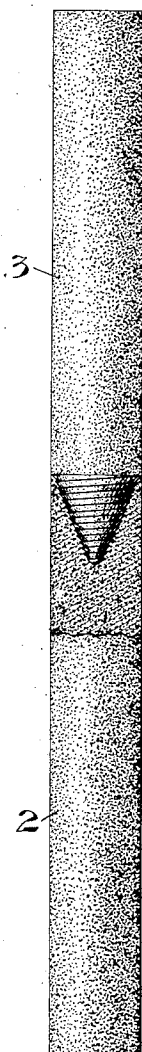


No. 863,674

PATENTED AUG. 20, 1907.

F. J. TONE.  
JOINT FOR CARBON ELECTRODES.  
APPLICATION FILED SEPT. 25, 1906.



WITNESSES

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# UNITED STATES PATENT OFFICE.

FRANK J. TONE, OF NIAGARA FALLS, NEW YORK.

## JOINT FOR CARBON ELECTRODES.

No. 863,674.

Specification of Letters Patent.

Patented Aug. 20, 1907.

Application filed September 25, 1906. Serial No. 336,119.

*To all whom it may concern:*

Be it known that I, FRANK J. TONE, of Niagara Falls, Niagara county, New York, have invented a new and useful Joint for Carbon Electrodes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, which shows a carbon electrode jointed according to my invention.

This invention relates to carbon electrodes such as are used in electric furnaces, and has for its object to provide a joint whereby two electrodes can be joined together end to end with high conductivity and good mechanical strength. Before graphitized carbons came into use it was difficult to join two carbons on account of the difficulty of machining them and of making a close fitting joint. In the use of graphitized carbons it has become customary, when it is desired to assemble two or more pieces, to thread one piece into another. In this way a new electrode can be joined to the end of one in use, and thus electrodes can be fed into the furnace one after another without interruption and without producing butts or waste ends to be thrown away.

Several modes of making threaded joints for electrodes are in use, but so far as I am aware they have been defective in that the joints produced are weak mechanically or are of impaired electrical conductivity or of inconvenient form, and all of them have the great objection that the contact surface is not equally distributed, and in case of heating at the surface of contact, such as may be expected to a greater or less degree in all joints, such heating will be unequal

and will tend to break the rod. I have discovered that by connecting the parts of the electrode with a tapered threaded joint, such as shown in the accompanying drawing, the defects herein before described are entirely overcome for I not only obtain mechanically the strongest possible joint without increasing the cross-section of the electrode at the joint, but I also secure the maximum amount of contact surface and the most uniform distribution of contact surface normal to the line of current flow; that is to say, every unit of section has an equal amount of contact surface, and the joint being equal in resistance in all its parts reduces the effects of overheating.

In the drawing which shows the joint in its preferred form, 2, 3 are the carbon electrode pieces to be joined. These pieces are formed at the ends with a tapered threaded portion and a threaded tapered socket respectively, and are united by securing them together.

I claim:—

1. A joint for carbon electrodes consisting of two carbon electrode pieces having respectively a tapered threaded end and a tapered threaded socket, the tapered treaded portions constituting substantially the entire contact surface of the joint.

2. A joint for carbon electrodes consisting of two carbon electrode pieces having respectively a tapered threaded end and a tapered threaded socket, said parts being screwed together and the tapered threaded portions constituting substantially the entire contact surface of the joint.

In testimony whereof, I have hereunto set my hand.

FRANK J. TONE.

Witnesses:

ASHMEAD G. RODGERS,  
ARTHUR BATTS.