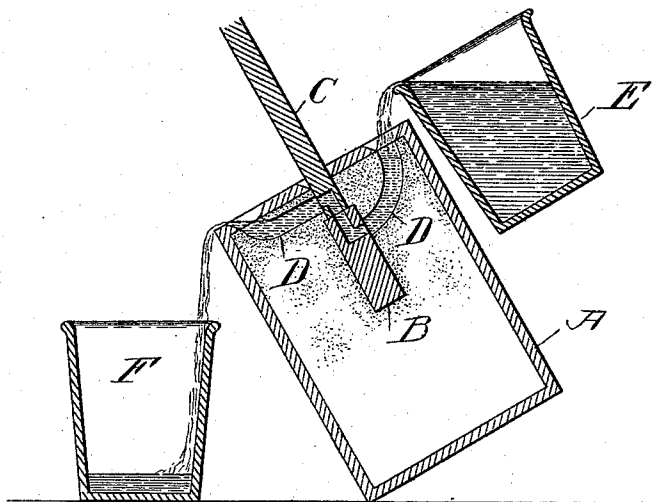


(No Model.)

F. G. STARK.
METHOD OF JOINING METALS.

No. 534,979.

Patented Feb. 26, 1895.



Witnesses:

J. H. Cornwall
Hugh K. Wagner

Inventor,
Frank G. Stark

By *Paul Bakewell*
his atty

UNITED STATES PATENT OFFICE.

FRANK G. STARK, OF ST. LOUIS, MISSOURI.

METHOD OF JOINING METALS.

SPECIFICATION forming part of Letters Patent No. 534,979, dated February 26, 1895.

Application filed October 10, 1893. Serial No. 487,734. (No specimens.)

To all whom it may concern:

Be it known that I, FRANK G. STARK, a citizen of the United States, residing in the city of St. Louis, State of Missouri, have invented a certain new and useful Method of Joining Metals, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming a part of this specification, wherein the figure represents a sectional view illustrating my improved method.

My invention relates to a new and useful method of joining metals, and consists, essentially, in so forming the contiguous ends of the metals to be joined in such manner that molten metal of similar nature may circulate therethrough until fusion of the contiguous ends of the metals to be joined takes place, at which time the same will form a homogeneous mass, making a joint at the ends without a break and perfectly solid. To accomplish this, I preferably take the ends to be joined and form therein suitable channels, preferably in the shape shown in the drawing, and lead to and from the entrances and exits of the two channels in the two ends, suitable gates formed in the sand of the flask. This forms a continuous channel through the ends of the two pieces through which the metal may circulate.

In the drawing, A, indicates the flask in the sand of which is embedded one of the pieces to be fused and the end of the other, or both, may be buried as may be desired. These pieces I have lettered, B, and, C. In the contiguous ends of these pieces, I form connecting channels arranged in longitudinal alignment and having lateral terminals and lead to said terminal gates, D. The flask is then preferably tilted or canted to one side, so that the metal may easily run off, and into the upper channel, D, I pour from a suitable ladle or crucible, E, molten metal which passes through the channel formed in the pieces to be joined, whence it passes through the exit end of the channel over the flask into a suitable receiving

ladle or crucible, F. When the ladle or crucible, E, has been emptied of its contents and the same have passed through the contiguous ends of the two metals to be joined, as above described, and are received into the crucible, F, the metal from the crucible, F, is then run through the same course again, the crucible, E, in this latter instance acting as the receiving crucible. This circulation is kept up until the heat and contact of the molten metal with the ends of the two metals to be joined completely fuses the same, at which time the circulation may cease, and the parts be allowed to cool, when the resultant joint will be found to be a solid unbroken homogeneous mass.

By arranging the channels in longitudinal alignment the molten metal passes the joint at right angles and thereby heats the same uniformly throughout, and by forming the lateral terminals for the channels, the joint is further strengthened, the metal remaining in the channel acting as a key to prevent either lateral or longitudinal movement of the parts.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The herein described method of joining contiguous faces of metal bodies which consists in forming aligning channels with lateral terminals in the bodies, placing the faces of the bodies in contact with each other, introducing the same into a suitable flask, and causing an undivided stream of molten metal to pass through the channel in one of the bodies across the joint at right angles and into and from the channel in the other body, substantially as described.

In testimony whereof I hereunto affix my signature, in presence of two witnesses, this 7th day of October, 1893.

FRANK G. STARK.

Witnesses:

F. R. CORNWALL,
HUGH K. WAGNER.