No. 863,578. PATENTED AUG. 20, 1907.

W. A. BARNES.

PORTABLE FURNACE AND ANVIL.

APPLICATION FILED APR. 26, 1906.

2 SHEETS—SHEET 1.

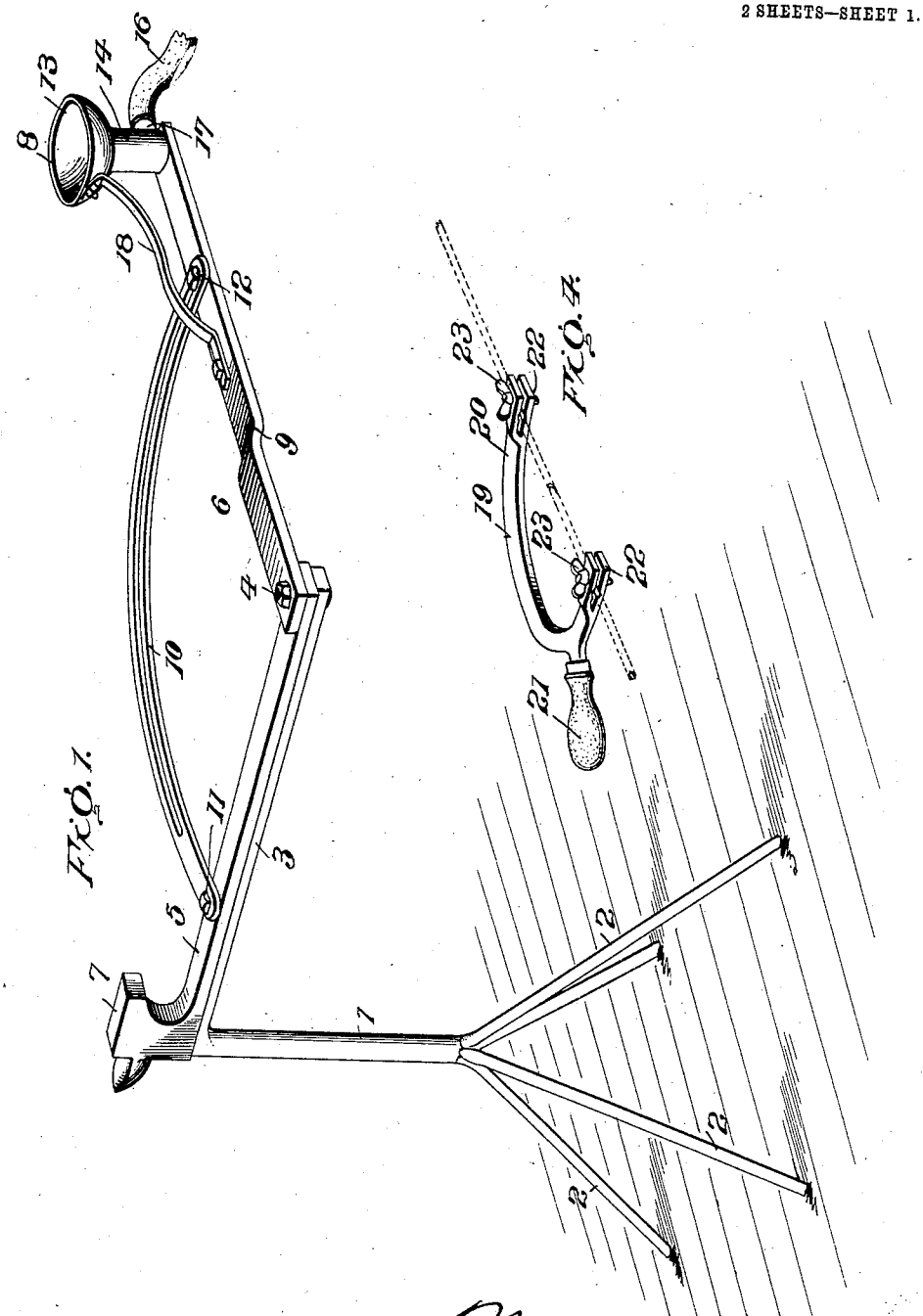


FIG. 1.

FIG. 4.

Witnesses
John E. Burch
L. R. Langworthy.

Inventor
William A. Barnes
By Watson E. Coleman
Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

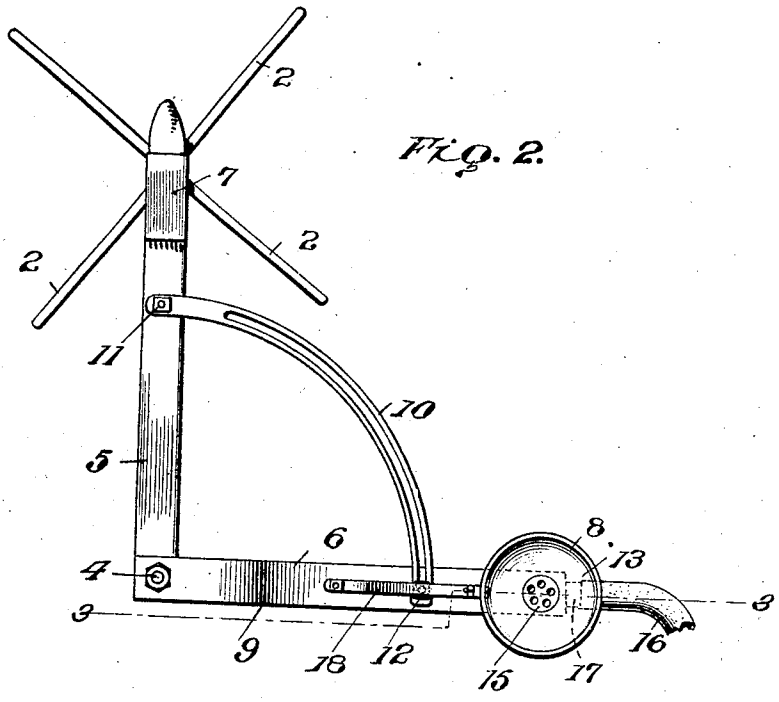


FIG. 2.

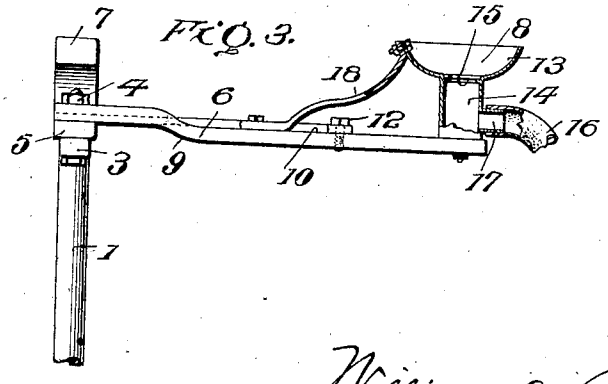


FIG. 3.

Witnesses

John E. Burch.

C. O. Langworthy.

Inventor

William A. Barnes

By Watson E. Coleman

Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM A. BARNES, OF WESTFIELD, MASSACHUSETTS.

PORTABLE FURNACE AND ANVIL.

No. 863,578. Specification of Letters Patent. Patented Aug. 20, 1907.

Application filed April 26, 1906. Serial No. 313,835.

To all whom it may concern:

Be it known that I, WILLIAM A. BARNES, a citizen of the United States, residing at Westfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in a Portable Furnace and Anvil, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention is a portable furnace and anvil especially designed for use in welding copper.

One of the objects of the invention is to provide a welding apparatus of the character described which will be simple and comparatively inexpensive in construction, durable and convenient in use, and well adapted for the purpose intended.

A further object of my invention is to provide an apparatus of the character described particularly adapted for use in repairing broken trolley wires, electric light wires and the like, where it is necessary to carry the furnace and anvil to the point of breakage, my said apparatus being so designed and constructed as to be readily adapted for use on the platform of repair cars and the like.

Still further objects and advantages of the invention, as well as the structural features by means of which they are attained, will be made clear upon an examination of the following specification, taken in connection with the accompanying drawing, in which similar reference characters denote corresponding parts throughout the several views, and in which,

Figure 1 is a perspective view of my improved welding apparatus, the anvil being shown disposed above the standard; Fig. 2 is a top plan view of the same, showing the anvil swung over the standard; Fig. 3 is a detail vertical sectional view taken on the plane indicated by the line 3—3 in Fig. 2; and Fig. 4 is a perspective view of a clamp for holding two copper wires or rods while welding their ends together.

The embodiment of my invention shown in the accompanying drawing comprises a support 1 in the form of a vertical standard having at its lower end legs 2 and at its upper end a right angularly projecting, horizontal arm 3. Upon the outer end of this stationary arm 3 are pivotally mounted, by means of a bolt or the like 4, two swinging arms 5 and 6, the former of which has upon its free end an anvil 7 and the latter of which has upon its free end a furnace or heating device 8. The swinging arms 5 and 6 correspond in length to that of the stationary arm 3, so that either the furnace or the anvil may be swung over the top of the standard into position for use. The arm or bracket 6 which carries the furnace or heater is disposed, at its pivoted end, on top of the arm 5, and its intermediate portion is bent or offset, as at 9, so that its outer or free end may engage and rest upon the top of the standard. The arms 5 and 6 may swing independent of each other, but I preferably adjustably connect them by means of a slotted segmental or arc-shaped brace 10 which has one of its ends pivoted at 11 upon the arm 5 and its other end adjustably clamped upon the arm 6 by a screw or the like 12 which passes through the slot in said brace. This construction enables the arms to be adjustably secured together at any desired angle, so that they will swing together.

While the anvil 7 may be of any desired form and construction, I preferably make it integral with the arm 5 and of the shape illustrated. The furnace or heater may also be of any desired form and construction, but as shown, it is in the form of a dished body or fire pot 13 provided upon a tubular portion 14 and having in its bottom a grate 15. A flexible pipe or hose 16 is attached to a connection 17 on said portion 14, for the purpose of supplying either air, gas, or oil to the fire pot or bowl 13, in which latter may be burned gas, oil, coal, or any other fuel. The furnace is preferably strengthened by a curved brace 18 provided between its top and the arm 6, as shown.

When the apparatus is to be used for welding together the ends of two copper wires or electrical conductors, especially live wires, I employ in connection with it, the clamp or holder 19 shown in Fig. 4 of the drawings. This device 19 comprises a substantially semi-circular bar 20 having an insulated handle 21 and wire or rod engaging clamps 22. The latter are formed by bifurcating the ends of said bar to provide spaced jaws between which the wires or rods to be welded together, may be clamped by thumb screws 23, corrugated grooves 24 being formed in said jaws for the reception of said wires, as shown.

In using the apparatus for welding copper, the anvil is first swung over the standard and the pieces to be welded are properly shaped. The furnace is then swung over the standard to the position shown in Fig. 1, so that the metal may be brought to the required degree of heat. In heating the copper, I cover it with an improved flux which will form the subject matter of another application for patent. When white flakes begin to appear on the copper, it is of the proper heat for welding; and the furnace is then swung aside to bring the anvil over the standard. The heated metal is then hammered upon the anvil, the blows being very quick and light at first, and then gradually increasing in force.

By pivotally mounting the anvil and furnace upon the portable standard or support so that either one may be moved over said standard it will be seen that the device is especially useful for welding wires or other small parts of large electrical machines or other objects which are of such size that they cannot be conveniently moved back and forth between a fixed furnace and a fixed anvil.

It will be understood that after the standard or support has been placed in a convenient position adjacent to the parts of the machine or other object, the furnace

may be quickly swung over the standard to receive the parts to be welded and that when said parts have been heated to a welding heat the furnace may be quickly swung to one side and replaced by the anvil to permit the welding operation to be done in a quick and effective manner. This mounting of the furnace and anvil to permit them to be separately placed over the support or standard, also obviates the necessity of the user moving back and forth between a fixed furnace and a fixed anvil.

It will be noted that when the nut or bolt 12 is loosened the arm 6 may be swung toward and from the arm 5 so that the furnace or heater may be shifted toward and from the anvil. This shifting of the furnace may be quickly and easily done and is exceedingly advantageous in some cases.

From the foregoing description, taken in connection with the accompanying drawing, it is thought that the construction, use, and advantages of the invention will be readily understood without a more extended explanation.

Various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention as defined by the appended claims.

Having thus described my said invention, what I claim as new and desire to secure by Letters Patent of the United States, is:—

1. A welding apparatus comprising a support, an anvil and a heater, said anvil and heater being pivotally mounted for swinging movement whereby they may be separately placed over said support.

2. A welding apparatus comprising a support, an anvil having an arm pivoted upon said support for movement in a horizontal plane, and a heater having an arm pivoted upon said support for movement in a horizontal plane, said anvil and heater being adapted to be separately placed over said support.

3. A welding apparatus comprising a support, an anvil having an arm pivoted upon said support for movement in a horizontal plane, a heater having an arm pivoted upon said support for movement in a horizontal plane, said anvil and heater being adapted to be separately placed over said support, and a connecting means for causing said anvil and heater to move simultaneously.

4. A welding apparatus comprising a support, an anvil having an arm pivoted upon said support for movement in a horizontal plane, a heater having an arm pivoted upon said support for movement in a horizontal plane, said anvil and heater being adapted to be separately placed over said support, and an adjustable bar connecting the arms of said anvil and heater to cause them to swing together.

5. A welding apparatus comprising a support, an anvil and a heater, said anvil and heater being concentrically pivoted upon said support whereby they may be separately placed over said support, and a brace bar adjustably connecting said anvil and heater for simultaneous swinging movement.

6. A welding apparatus comprising a standard having a stationary arm thereon, an anvil carried by said arm, and a heater carried by said arm, said anvil and heater being pivotally mounted whereby they may be separately placed over said standard.

7. A welding apparatus comprising a standard having a stationary arm thereon, and an anvil and a heater concentrically pivoted upon said arm whereby they may be separately placed over said standard.

8. A portable welding apparatus comprising a standard having an arm at its top, an anvil and a heater or furnace concentrically pivoted upon the outer end of said arm and adapted to be moved over said standard, and a slotted arm or brace adjustably connecting said anvil and heater or furnace, substantially as described.

9. A portable welding apparatus comprising a standard having an arm at its top, an anvil and a heater concentrically pivoted upon the outer end of said arm and adapted to be moved over said standard, and means connecting said anvil and heater to cause them to swing together.

10. A portable welding apparatus comprising a support having a flat, horizontally disposed top, two super-posed arms concentrically pivoted upon the top of said support adjacent to one of its ends, one of said arms carrying an anvil and the other a heater, and the uppermost arm having an offset outer end whereby either of said arms may be swung over and in contact with the flat top of said support, substantially as shown and described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

WILLIAM A. BARNES.

Witnesses:
HENRY FULLER,
BURTON S. CLARK.