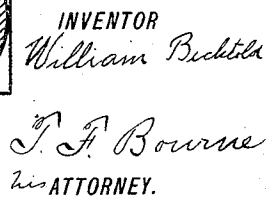


W. BECHTOLD.
SOLDERING IRON.

Patented Sept. 15, 1891.



UNITED STATES PATENT OFFICE.

WILLIAM BECHTOLD, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO JEAN
B. PERRAUD, OF SAME PLACE.

SOLDERING-IRON.

SPECIFICATION forming part of Letters Patent No. 459,718, dated September 15, 1891.

Application filed May 22, 1890. Renewed February 17, 1891. Serial No. 381,756. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BECHTOLD, a resident of New York city, county and State of New York, have invented certain new and useful Improvements in Soldering-Irons, of which the following is a specification.

The object of my invention is to provide a soldering-iron that will be heated by gas without its being blackened by soot or the like, and which shall be simple in construction and effective in use, which can also be easily operated and used in whatever position it may be held.

The invention consists in the novel details of improvement and the combinations of parts that will be more fully hereinafter set forth, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part hereof, wherein Figure 1 is a central longitudinal section of a soldering-iron embodying my invention. Fig. 2 is a cross-section, enlarged, on the plane of the line $x x$, Fig. 1. Fig. 3 is a similar section on the line $y y$, Fig. 1. Fig. 4 is an enlarged detail section of the end of the soldering bolt or iron proper. Fig. 5 is a detail view showing the outside of the barrel or casing of the soldering-iron. Fig. 6 is a detail section showing a modification of the end of the soldering-iron. Fig. 7 is a cross-section on the line $z z$, Fig. 6. Fig. 8 is a perspective view of a modification. Fig. 9 is a sectional detail on the line $y' y'$, Fig. 10, of a modification of bolt or iron proper. Fig. 10 is a cross-section on the line $x' x'$, Fig. 9; and Fig. 11 is a sectional detail of another modification.

The letter A in the drawings indicates a casing or barrel, from one end of which projects a bolt or soldering-iron proper B, which is to be heated by a gas-flame within the casing A. The bolt B is shown held in position by a sleeve or tubular piece D, carried at one end of the casing A. The bolt B may be firmly held in the sleeve D by a set-screw a by friction or otherwise. The sleeve D has a series of passages b , through which the heated products of combustion from the interior of the casing A may pass.

In Figs. 1 and 2 the passages b are shown in the form of grooves on an internal annular flange d , carried by the sleeve D, the bolt B

thereby forming part of the wall of said passages, whereby the heated products pass through said passages in contact with said bolt. I prefer to taper the bolt B at both ends, as in Fig. 1, whereby either end can be used by merely reversing it; but said bolt can be made tapering at one end only, if desired, as in Figs. 6 and 11. For heavy work the end of the bolt B can be made square, as in Figs. 8, 9, and 10, as hereinafter stated. The soldering-bolts B will usually be made of copper, and to keep at least one end from being worn and becoming injured by acid I secure a piece of hard metal E—say steel—Fig. 4, in the end of the bolt, whereby the life of the bolt is increased. It will be seen that the part of the bolt within the casing A is free and unobstructed, and therefore capable of receiving and retaining a high degree of heat.

F is a gas tube or burner that projects into the casing A, so as to direct the flame directly upon the bolt B. Said tube is shown passing through a disk or cover e in the end of the casing A opposite the bolt B and held in position by a screw f . The gas-tube F is shown surrounded by a handle G, by which the device is manipulated without danger of the hand becoming injured. The tube F is to connect by a flexible tube (not shown) with any desired gas-supply source, whereby the device can be handled to advantage and at a distance from the gas-supply source. The tube F enters the disk or cover e eccentrically or at one side of its center, whereby it can project beneath the bolt B while it is in the center. (See Fig. 1.) A mixture of gas and air is to be burned within the casing A, and for this purpose apertures g are placed in the tube F to permit air to become mixed with the gas. In order to regulate the air-supply I may provide a sleeve h , that slides on the tube F, which by covering and uncovering the holes g regulates the admission of air to the gas-tube. The flame is shown issuing from the end of the tube F and directly upon the under side of and passing around the bolt B. By this means a blue flame is used, which gives great heat without causing the bolt B or the interior of the casing to be blackened.

In order to support combustion within the casing A, I provide the under side of the cas-

ing with holes j , which admit air into the casing. To regulate the escape of the products of combustion and heat, I place one or more holes l in the side of the casing A, preferably opposite the holes j , and over the hole l I place a cap m , as shown. The cap m is made adjustable laterally over the hole l , and for this purpose it is shown carried by a screw-stud n , which works in the casing A. I prefer to provide the top of the cap m with holes o , which assist in regulating the flow of the products. By adjusting the cap m up and down the flow of the products of combustion and heated air can be easily regulated, said products and air passing out between the bottom of the cap m and the casing A. p are holes in the disk or cover e , through which fresh air enters the casing to regulate the flame when the point of the soldering-iron is turned down in use.

To confine the flame upon the bolt B, I may place a perforated sleeve B^2 around said bolt and the end of the gas-tube F within the casing A. (See Fig. 1.) This sleeve also assists in preventing the flame from issuing from the casing A.

To regulate the admission of air through the holes j , I may place a sleeve A^2 around the casing A, the sleeve A^2 having holes a^2 to correspond with the holes j , also holes b^2 to correspond with the holes l , the sleeve A^2 having a slot n^2 for the passage of the screw n , whereby the sleeve A^2 is guided on the casing A as it is turned.

The above-described soldering-iron will be found light, simple, and handy. A high degree of heat can be given to the bolt in a very short time, and the bolt will not cool while in use, and the combustion is regulated so that a very efficient device for the purpose is produced.

In Figs. 6 and 7 the sleeve D is shown provided with an inner tube g , the holes b leading into the space between the tube g and the sleeve D. In Fig. 11 the holes b pass out of the side of the sleeve D.

In Figs. 8, 9, and 10 the bolt B is shown square at its end to be used for heavy work, and the sleeve D is secured to it, which latter is adapted to pass into the casing A. The end of the bolt B in said figures has air-passages b passing through it to permit the escape of heated air, gases, &c., and its supporting-sleeve D has holes j^2 , which correspond with the holes j and l , so as not to obstruct said holes.

In the above-described soldering-iron the flame burns wholly within the casing A, and therefore cannot do injury outside. It will be seen that the gas-tube F acts also as the means for manipulating the device.

Having now described my invention, what I claim is—

1. In a soldering-iron, a casing having air inlets and outlets, within which casing a

flame is adapted to burn, combined with the removable sleeve D, carried at one end of said casing, and the soldering-iron bolt passing through and supported by said sleeve and projecting into said casing, substantially as described.

2. The casing A, having air inlets and outlets, combined with the removable sleeve D at one end of the casing, and the soldering-bolt b , passing through and carried by said sleeve and projecting freely within said casing, said sleeve having internal air-passages, substantially as described.

3. The casing, within which a flame is adapted to burn, combined with the sleeve D, having internal flange d , grooves b in said flange, and with the soldering-bolt passing through said sleeve, substantially as described.

4. The combination of the casing A, having air-inlets, an air-outlet l , and a laterally-adjustable regulating-cap over said outlet, with a pipe or tube F entering said casing and a soldering-bolt projecting into said casing, substantially as described.

5. The casing A, having air-inlets, outlet l , cap m over said outlet, and screw n , carrying said cap, whereby it is made adjustable, combined with the pipe F and a soldering-iron bolt, substantially as described.

6. The combination of the casing A, having air inlets and outlets, removable sleeve D, carried by the casing at one end and having internal air-passages b , bolt B, passing into and carried by said sleeve, and pipe F, entering said casing at the end opposite said sleeve to supply a burning medium, substantially as described.

7. The combination of the casing A, sleeve D at one end having passages b , soldering-bolt B, carried by said sleeve, cover e at the opposite end of said casing, air-passage p in said cover, air-inlets, and outlet l in said casing, adjustable cover m over said outlet, and gas-tube F, entering said casing, all arranged substantially as shown and described.

8. The casing A and soldering-bolt B, combined with the gas-supply pipe F, having air-holes, handle G, by which said pipe can be manipulated, and sleeve h to cover and uncover said holes to regulate the admission of air to said pipe, substantially as described.

9. In a soldering-iron, the combination of the casing A, bolt B, and gas-pipe F, with a perforated sleeve B^2 surrounding said bolt and pipe within the casing, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 19th day of May, 1890.

WILLIAM BECHTOLD.

Witnesses:

T. F. BOURNE,
THEODORE BOURNE.