

J. S. HULL.  
Soldering-Iron Heater.

No. 162,657.

Patented April 27, 1875.

Fig. 2

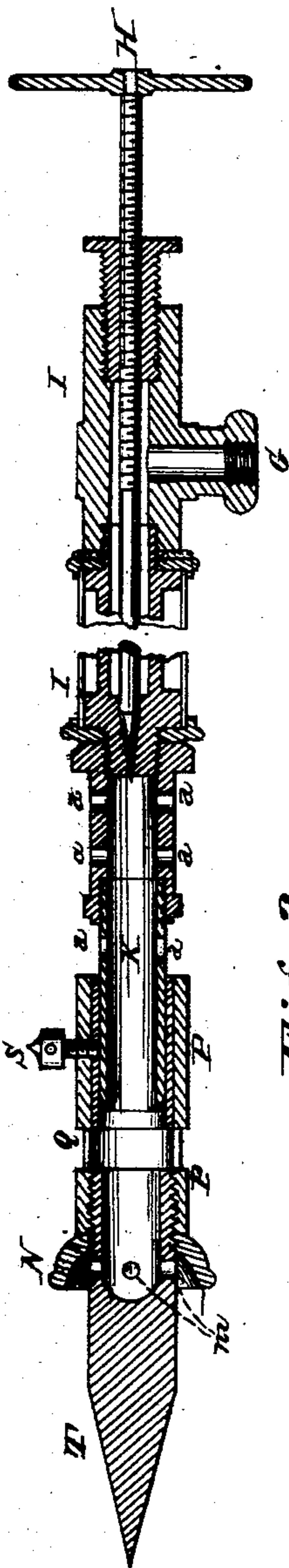


Fig. 3

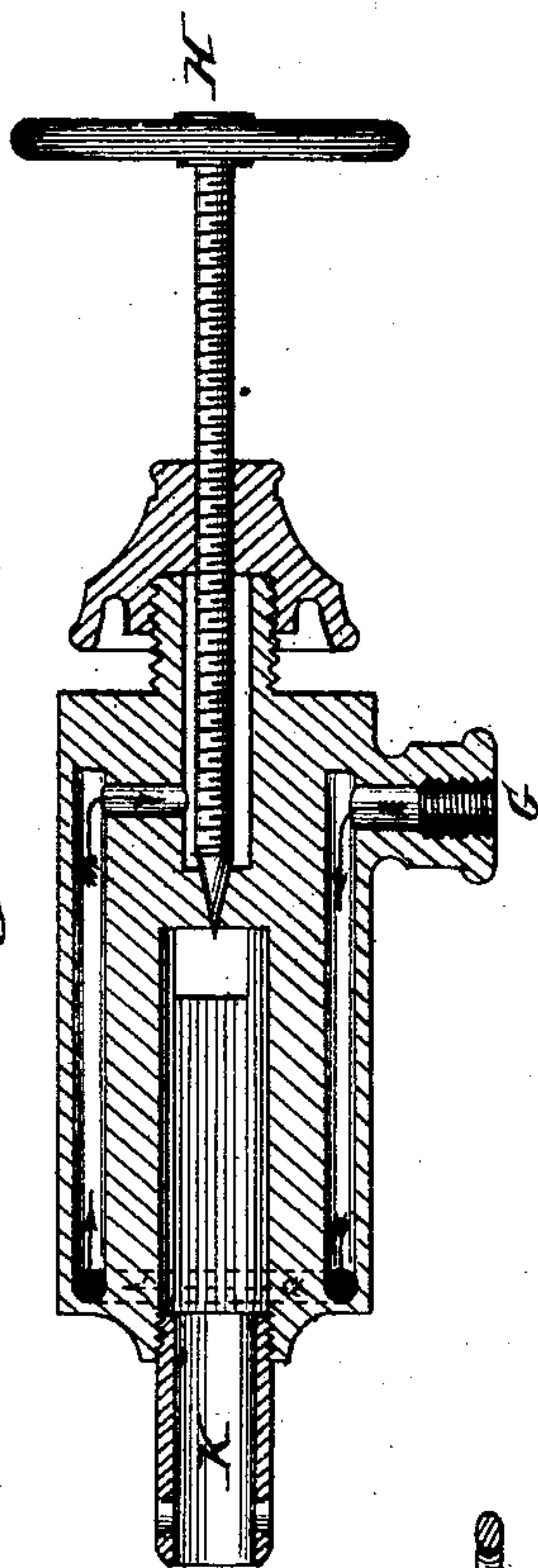
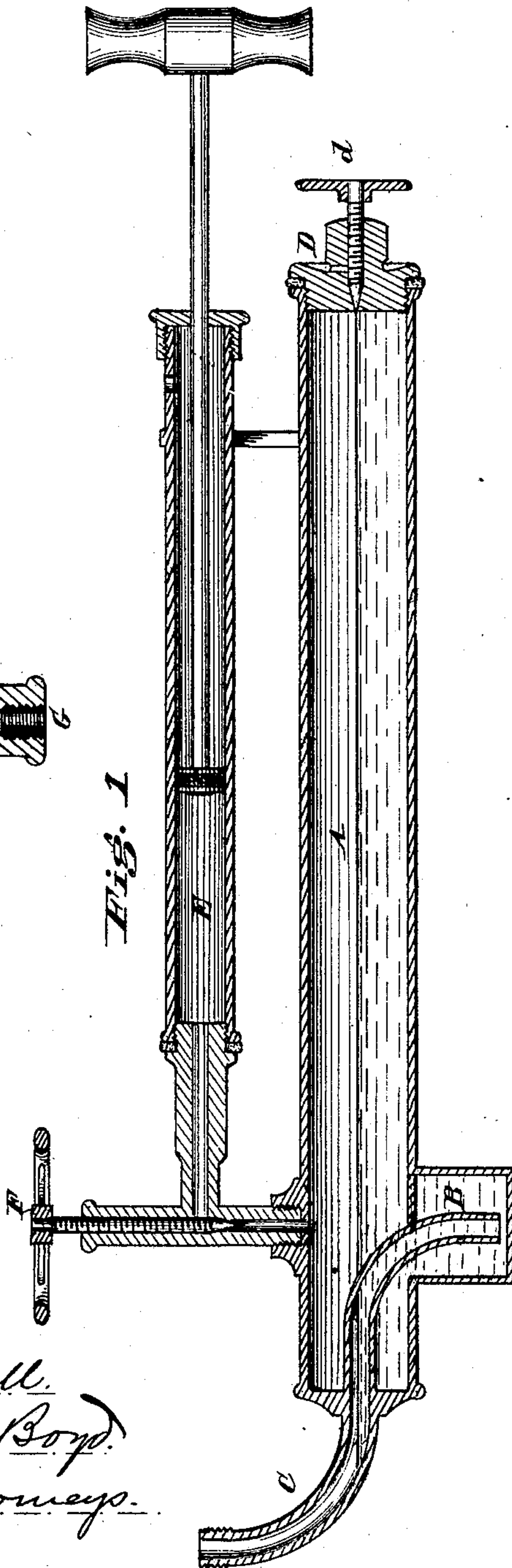


Fig. 1



Attest  
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# UNITED STATES PATENT OFFICE.

JOHN S. HULL, OF CINCINNATI, OHIO.

## IMPROVEMENT IN SOLDERING-IRON HEATERS.

Specification forming part of Letters Patent No. 162,657, dated April 27, 1875; application filed July 3, 1874.

*To all whom it may concern:*

Be it known that I, JOHN S. HULL, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Soldering-Iron Heaters, of which the following is a specification:

The object of my invention is to provide means for keeping an ordinary soldering-iron constantly at an even temperature during use, and thereby to avoid the necessity and danger of a foreign fire, and more than one iron for each operator. To accomplish this I employ the principle of the inventions secured to me by Letters Patent, dated July 3, 1866, Nos. 56,051 and 56,052.

The improvements are hereinafter described and claimed, and will be easily understood by reference to the following specification and the accompanying drawings, making a part thereof, in which—

Figure 1 is a horizontal section through the center of the air-pump and fluid-reservoir; Fig. 2, a horizontal section through the center of the gas generator and burner and soldering-iron attached; and Fig. 3, a horizontal section of another form of generator.

A represents the reservoir for holding the burning-fluid, any kind of which may be used, but hydrocarbon is preferred. The reservoir is preferably made cylindrical and small, so as to be conveniently used by the operator as a handle, though it is obvious that it may be made any shape or size, and a handle attached. B is a well on the under side of the reservoir, of sufficient capacity to feed the burner for a short time when using the machine in an inverted position, and, should the supply become exhausted, it is only necessary to lower the well end, when the well will instantly fill again. C is a conduit for the passage of the fluid from the bottom of the well to the gas-generator, and is preferably made to pass out of the end of the reservoir. D is an air-tight stopper, which can be easily removed when it is necessary to introduce fluid into the reservoir. In this stopper is provided an outlet-passage, closed by the conical valve *d*, which can be opened for the escape of compressed air when the iron is not in use. E is an air-pump, and F a cut-off, similar to those heretofore described by me. G represents the coup-

ling by which the heater is attached to the conduit C, and this may be done in any way which will secure an air-tight joint. The flow of fluid from the reservoir to the heater is caused by the pressure of air on the surface of the fluid, and is regulated at pleasure by the conical or needle-pointed valve H, which is provided with a screw to work closely in a female screw in the end of the heater. From the point of the regulating-screw H in section I of the heater the rarefied gases are emitted and pass through the passage K, which is numerously pierced with air-holes *a a*, and in their passage become charged with the oxygen necessary to combustion. T is the soldering-iron, made of the metals usual in such instruments. It is made hollow at the butt-end, and is provided with a number of holes, M, or flame-passages leading from the bore to the periphery. P is an adjustable sleeve, preferably made of iron, with a copper lining on its inner end. It is provided with an opening, Q, and is held in position by the set-screw S. The soldering-iron may be attached to this sleeve by any suitable means; but I prefer to make both the sleeve and the butt of the soldering-iron cylindrical, and with male and female screws, so that they may be united, as shown. N is a shield for directing the jets of flame emitted from the holes M.

The mode of operation of the device is substantially as follows: After the fluid in the reservoir has been subjected to a suitable degree of pneumatic pressure, screw H is turned so as to allow the escape of fluid at its point, where it is lighted and allowed to burn slowly until the heating parts are sufficiently warmed to generate gas, after which the screw H is regulated so as to provide for the escape of the proper quantity of gas to support combustion within the hollow end of the soldering-iron, where it is lighted through Q or *a*, and by means of which the soldering-iron will be very quickly heated, and kept hot as long as desired, the flame being kept burning while the instrument is in use. The intensity of the heat may be regulated by the flow of gas under control of screw H, and by moving the sleeve P, as well as by the independent shield N, which controls the direction of the jets of flame at M.



In Fig. 3 I show a more powerful gas-generator than that shown in Fig. 2, and which, in some exceptional cases, such as doing heavy outdoor work in intensely cold weather, it may be desirable to substitute for section I. In this heater, Fig. 3, the fluid, which is forced through C, entering at G, passes through the passages indicated by arrows in the section shown, and, finally, after having been converted into gas highly rarefied, is allowed to escape at the needle-point of H.

My invention has many obvious advantages over any of the instruments or methods heretofore known for the accomplishment of similar purposes: First, in the economy of fuel, the expense of the fluid being very much less than that of charcoal, as now commonly used; second, in that one iron takes the place and does the work of several; third, in the saving of time necessary in changing irons, and especially in its convenience in doing roof or other elevated work, where it is inconvenient

or dangerous to have the ordinary fire pot or furnace.

Another feature of my invention consists in its adaptability to be used as a torch by simply removing the soldering-iron and allowing the flame to escape from the end of the telescopic extension-tube K.

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

The combination, in a portable soldering-iron heater, of the reservoir A, air-pump E, generator I, and soldering-iron T, constructed to operate in the manner and for the purpose specified.

In testimony whereof I have hereunto set my hand this 1st day of July, 1874.

JOHN S. HULL.

Witnesses:

JOHN O'GARA,  
EDWARD BOYD.