No. 777,711. PATENTED DEC. 20, 1904.

A. A. ACKERMAN.

SOLDERING IRON.

APPLICATION FILED OCT. 22, 1903.

NO MODEL.

Fig. 1.

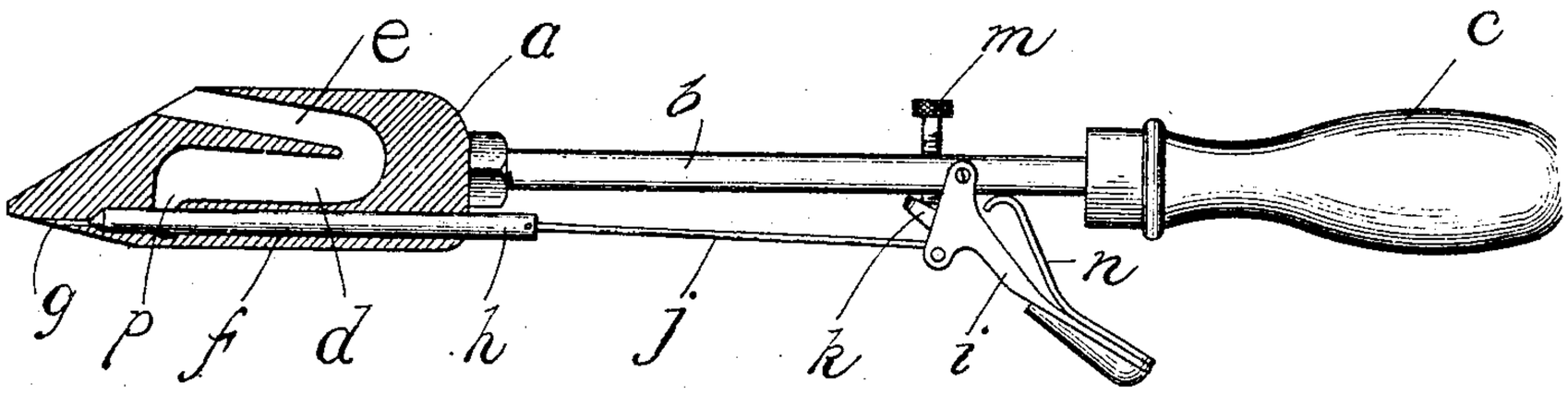


Fig. 2.

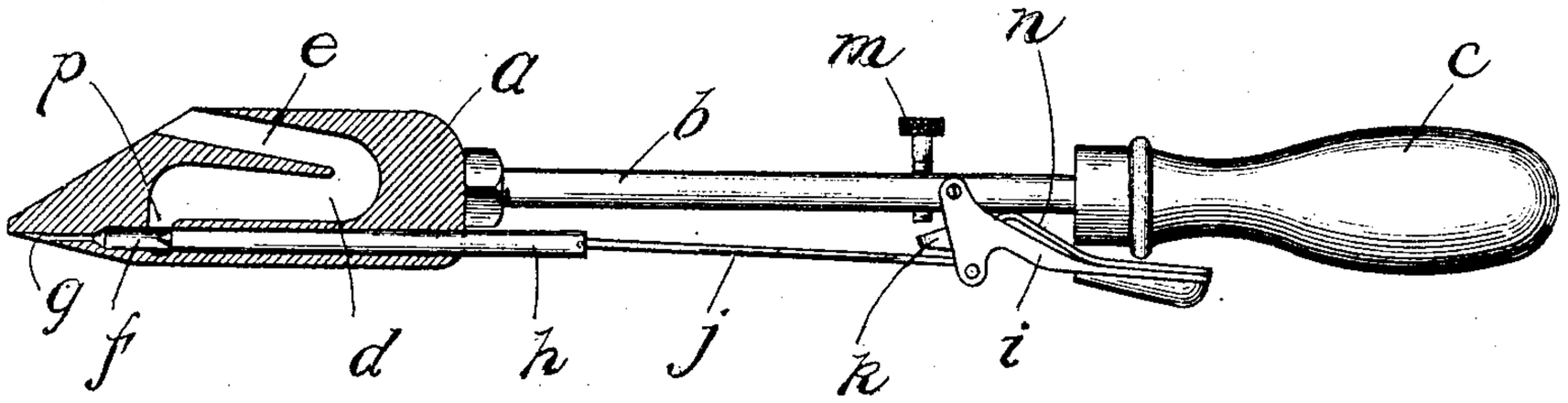
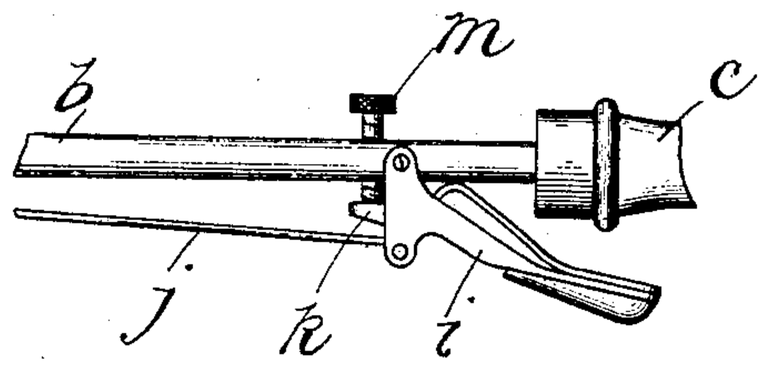


Fig. 3.



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No. 777,711. Patented December 20, 1904.

UNITED STATES PATENT OFFICE.

ALBERT A. ACKERMAN, OF CHICAGO, ILLINOIS.

SOLDERING-IRON.

SPECIFICATION forming part of Letters Patent No. 777,711, dated December 20, 1904.

Application filed October 22, 1903. Serial No. 178,082.

To all whom it may concern:

Be it known that I, ALBERT A. ACKERMAN, a citizen of the United States, residing in the city of Chicago, county of Cook, and State of Illinois, have invented a new and useful Improvement in Soldering-Irons, of which the following is a specification.

My invention relates to soldering-irons of the type provided with a reservoir or pocket of greater or less capacity in the head of the iron for retaining a supply of solder in a molten state for delivery as required by the work in hand.

The objects of this invention are, first, to provide means for controlling the amount of solder ejected at any one operation of the tool; second, to provide means whereby the successive ejections of solder may be uniform in amount, and, third, to provide a reservoir of such construction that the molten solder may be retained therein without liability of becoming spilled when the tool is held at the various edges of inclination commonly required when the tool is in use. I obtain these objects by the construction and arrangement of devices illustrated in the accompanying drawings, in which—

Figures 1 and 2 are longitudinal vertical sectional views of the complete lever released and the valve in a forward position, and Fig. Fig. 2 showing said valve in a retracted position. Fig. 3 is a fragmentary view illustrating the effect of the adjusting-screw upon the operating-lever.

Similar letters refer to similar parts throughout the several views.

The head *a* of the tool is composed of copper or other suitable metal and is mounted on the rod *b*, provided with the handle *c*. Said head *a* is cored or otherwise chambered, so as to have formed therein a reservoir for containing the molten solder. In the present form said reservoir consists of two parts *d* and *e*, which connect with each other at or near the rear portion of said head. At or near its forward extremity the reservoir part *e* connects with the valve-chamber *f* through the port *p*, said valve-chamber extending within said head and terminating in the discharge-duct *g*. The mouth of the reservoir part *e* is above and forward of the connection of said part *e* with the reservoir part *d*, and said reservoir is therefore sinuous, making approximately a return-bend preferably in the manner shown. The purpose in making the reservoir sinuous is to enable the tool to be held in various positions without letting the molten solder spill out. Ordinarily during operation the tool will be held approximately horizontal with the duct *g* downward, and the molten metal will all lie in the part *d* of the reservoir; but on account of the return-bend in the reservoir and the arranging of the mouth of the part *e* near the point of the tool the tool may be held in a great variety of positions with the point downward or upward without permitting any of the molten metal to spill. If the point were held downward, the solder would all collect in the part *d*, and if point upward the solder would collect at the juncture of parts *d* and *e*. This is an important feature, for the accidental spilling of the hot metal would be a disadvantage, if not positively dangerous. With the construction here shown there is no danger that the operator will burn his hand in case he inadvertently holds the tool point upward.

The valve-chamber *f* above mentioned is adapted to receive the valve *h*, which is connected to and operated by the lever *i*, fulcrumed on the rod *b*. The connection between said valve and said lever is preferably through the light and flexible rod *j*, although the form of connection between the valve and operating-lever is a non-essential feature of the device. Said lever *i* is adapted to be operated by the finger of the operator, the swing of the lever in one direction being limited by contact with the handle *c* and in the other direction by the contact of the tongue *k* with the adjustable stop *m*. In the preferred construction said stop consists of a set-screw having a knurled head and screwing through the rod *b*, so that the point of said screw is on the lower side in position to engage said tongue. By having the head of the set-screw upon the upper side of the tool and the lever *i* on the lower side, as in the construction here shown, the tool may be held in one hand of the operator and the lever operated by his forefinger, while

the other hand of the operator is free to operate the conveniently-located set-screw for controlling the amount of solder delivered at any one discharge. A spring *n* is provided for the lever *i* and is constructed in such a manner as to tend to swing said lever in a direction to force the valve *h* forward. The parts are preferably so constructed that when the lever *i* is down in contact with the handle *c* the valve *h* is retracted far enough to completely uncover the port *p*, thus permitting an ample flow of solder from the reservoir part *d* to the forward extremity of the valve-chamber *f*. The distance which said valve may travel in a forward direction to eject is of course dependent upon the position of the set-screw *m*; but it is desirable that said screw may be unscrewed far enough to permit the valve *h* to reach the forward extremity of the valve-chamber to thereby eject all of the solder therefrom, if desired.

In operation when the lever *i* is swung toward the handle *c* the valve *h* is drawn back and uncovers the port *p*, thereby permitting a flow of solder into the valve-chamber *f* in front of said valve. The lever is then released, and the spring *n* swings said lever, which in turn moves the valve forward and ejects solder through the duct *g*. Inasmuch as the movement of the lever *i* is limited in both directions the amount of solder ejected will be the same each time unless the position of the set-screw be changed.

I do not wish to be understood as limiting myself to a reservoir of the exact configuration here shown and as to the construction of the lever *i* and adjustable stop or set *m* and their locations upon the tool. These may be considerably varied without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. A fountain soldering-iron having a valve-chamber through which the solder is ejected, a reciprocating valve working in said chamber for ejecting solder therefrom and means for adjustably controlling the amount of travel of said valve for regulating the amount of discharge.

2. A fountain soldering-iron having a valve-chamber through which the solder is ejected, a reciprocating valve working in said chamber for ejecting solder therefrom, a lever for operating said valve, and means for adjustably controlling the throw of said lever for regulating the amount of solder discharged.

3. A fountain soldering-iron having a valve-chamber through which the solder is ejected, a reciprocating valve working in said chamber for ejecting solder therefrom, a lever for operating said valve, and a set-screw for adjustably controlling the throw of said lever for regulating the amount of solder discharged.

4. A soldering-iron having a reservoir in the head thereof, a valve-chamber, a discharge-passage leading from said valve-chamber, a passage connecting said chamber with said reservoir, a piston-valve working in said valve-chamber across the mouth of said passage; and means for adjustably limiting the movement of said valve to thereby control the amount of solder ejected.

5. In a soldering-iron, the combination with the head thereof, of a valve-chamber therein adapted to receive solder, a reciprocating valve working in said chamber for ejecting the solder therefrom, and adjustable means for limiting the amount of movement of said valve.

6. In a soldering-iron, the combination with the head thereof, of a valve-chamber therein adapted to receive solder, a valve working in said chamber for ejecting the solder therefrom, and an adjustable stop for limiting the movement of said valve.

7. A soldering-tool having in the head thereof a reservoir provided with a receiving-opening near the point of the head and a discharge-opening also near said point, said reservoir making a return-bend for better retaining the molten solder.

8. A soldering-tool having in the head thereof a reservoir, a discharge-opening near the point of said head, and a receiving-opening, said reservoir being sinuous and leading backward in said head from said receiving-opening and then forward toward said discharge-opening to thereby prevent the spilling of the solder.

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