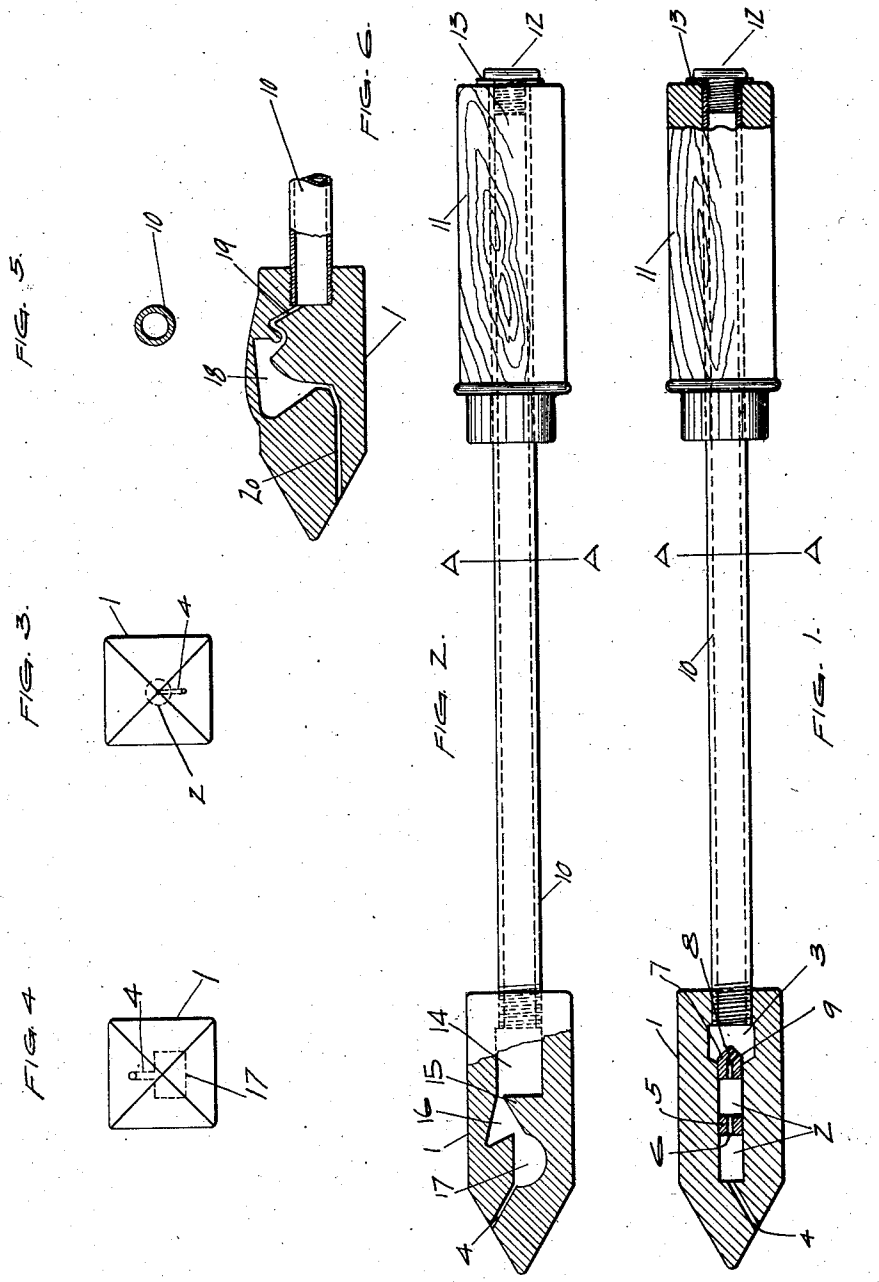
N. I. DRYFOOS.

SOLDERING IRON.

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WITNESSES:

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SOLDERING-IRON.

1,010,742. Specification of Letters Patent. Patented Dec. 5, 1911.

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To all whom it may concern:

Be it known that I, NATHAN I. DRYFOOS, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Soldering-Irons, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present invention relates to soldering irons, and its general object is the provision of a fountain iron, the flow of solder from which may be controlled merely by the positions in which the iron is held by the operator.

To the accomplishment of this and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying my invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—Figure 1 is a side elevation partly in section of an iron embodying my invention; Fig. 2 is a similar view of a modified form of my invention; Fig. 3 is an end elevation of the head of the iron shown in Fig. 1; Fig. 4 is a similar view of the iron shown in Fig. 2; Fig. 5 is a section on the line A—A in Figs. 1 and 2, and Fig. 6 is a sectional view of a head still different in form from those shown in Figs. 1 and 2.

Having regard first to Fig. 1, the improved iron comprises a head 1 having the usual pointed end but formed interiorly with a chamber 2 which may be cored in the head but which will preferably be drilled therein. At the rear end of the head the chamber 2 is enlarged, as at 3, while from the front end of the chamber an open passage 4 extends angularly from the chamber and connects the chamber with the exterior of the pointed end of the head. A wall 5 is provided in the chamber 2 intermediate the ends of the chamber and has an opening 6 through it which in transverse section is of smaller area than the chamber 2. The wall 5 may be formed integrally with the head 1 if the chamber is cored in the head, but if the chamber is drilled the wall will preferably be a separate plug placed in the chamber. In the rear end of the chamber, preferably at the juncture of the normally sized part of the chamber and the enlargement 3, is secured a plug 7 having therethrough an opening 8 smaller in area on a transverse section than the normal portion of said chamber and of substantially the same size as the opening 6 in the wall 5. The plug 7 may be formed with its rear end flush with the surface of the enlargement 3 of the chamber, but it is preferably formed with a conical end 9 extending into said enlargement, and in such case the opening 8 is angled between its ends and opens on the conical face of the plug. A tubular handle 10 is secured to the head 1 and opens into the chamber 2, the outer end of the tubular handle 10 being closed substantially air tight by a screw-threaded plug 12 seating against a gasket 13, while a suitable grip 11 is secured to the handle. The handle 10 constitutes a receiver for the solder to be applied by the iron.

In the operation of the iron described, solder in any convenient form is introduced through the tubular handle, after which the plug is inserted to close the outer end of the handle. The head of the iron being hot, the solder when it reaches the head will flow through the opening 8 into the rear end of the chamber and then through the opening 6 into the front part of the chamber. If the iron be held so that the opening 4 is uppermost, obviously no solder will flow from the chamber, but if the opening 4 be held downward then the solder will flow through the opening 4 for application to the desired material. But as the solder flows through the opening 8 it obviously creates a vacuum behind it, because the outer end of the handle is substantially sealed against the

admittance of air and the flow of solder through the opening 6 heightens the vacuum, consequently when the opening 4 is disposed downward the flow of solder therefrom will be against atmospheric pressure outside of the iron which is higher than the pressure in the chamber and handle behind the solder. Naturally, therefore, the flow of solder will be comparatively slow, and an excessive flow prohibiting use of the iron or causing choking up of the passages will be prevented. It will also be noted that the chamber 2, aided by wall 5 and plug 7 forms a trap which prevents flow of solder at all when the outer end of the passage 4 is higher than the bottom of the chamber.

Figs. 2 and 6 illustrate modified forms of head which, however, operate on exactly the same principle of trap and vacuum as does the iron illustrated in Fig. 1. The head in Fig. 2 is provided with a chamber 14 at the front end of which is a wall 15, and a narrow opening leads from the chamber 14 past the wall 15 and into a cavity 16 from which another narrow passage leads into a cavity 17, from which the passage 4 leads to the outer surface of the head. A flow of molten solder from this iron creates a vacuum behind it in exactly the same way as will a flow in the iron shown in Fig. 1. The molten solder will first flow through the restricted passage from chamber 14 into cavity 16, supposing the iron to be turned so that the cavity 16 is downward; it will then rise within the cavity 17, having passed through the restricted opening from cavity 16, until it rises to the level of the molten solder in chamber 14, and from cavity 17 it will flow through the passage 4 for use. The cavity 16 and the cavity 17 form a trap which only allows solder to flow out through opening 4 when such opening is held downward, and at the same time these three elements aid in creating a vacuum behind the flowing solder.

In the head shown in Fig. 6, the trap is formed by a chamber 18 into which a sinuous passage 19 leads from the tubular handle 10, and the chamber 18 is connected with the outer surface of the head by an open passage 20. In the use of this iron, obviously, solder can flow through opening 20 for use only when held in the position in which it is shown in Fig. 6. The chamber is filled when the iron is turned in the reverse direction, and as the solder flows into the chamber 18 from the handle 10, it produces a vacuum in the handle behind it which later serves to retard the flow of solder through opening 20.

It is finally to be noted that in each form of head the solder is caused at various times in its course to flow through openings which are of such size as to substantially form capillary tubes whose action, as the solder flows through them, aids in preventing an excessive flow of solder.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In a device of the character described, the combination of a head provided with a chamber and with a passage extending angularly from said chamber to the exterior of said head, a wall in said chamber between the ends thereof and provided with an opening smaller in transverse section than said chamber, a tubular handle secured to said head and communicating with said chamber, and means for making an air tight closure of the outer end of said handle.

2. In a device of the character described, the combination of a head open at its rear end, said head being provided with a chamber and with a passage leading from the front of said chamber to the exterior of said head, a wall in said chamber between the ends thereof and provided with an opening smaller in transverse section than said chamber, and a receiver closed at its outer end and opening at its inner end into the rear of said head.

3. In a device of the character described, the combination of a head open at its rear end, said head being provided with a chamber and with a passage leading from the front of said chamber to the exterior of said head, a wall in said chamber between the ends thereof, a plug in the rear end of said chamber, said wall and plug being each provided with an opening smaller in transverse section than said chamber, and a receiver closed at its outer end and opening at its inner end into the rear of said head.

4. In a device of the character described, the combination of a head provided with a chamber and with a passage leading from said chamber to the exterior of said head, a wall in said chamber between the ends thereof, a plug in the rear end of said chamber, said wall and plug being each provided with an opening smaller in transverse section than said chamber, a tubular handle secured to said head and communicating at its inner end with said chamber, and means for making an air-tight closure of the outer end of said handle.

5. In a device of the character described, the combination of a head provided with a

chamber and with a passage leading from said chamber to the exterior of said head, a wall in said chamber between the ends thereof, a plug in the rear end of said chamber, said wall and plug being each provided with an opening smaller in transverse section than said chamber, a tubular handle secured to said head and communicating at its inner end with said chamber, and a screw plug closing the outer end of said handle.

Signed by me this 27th day of December, 1910.

NATHAN I. DRYFOOS.

Attested by—
ANNA L. GILL,
JNO. F. OBERLIN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."