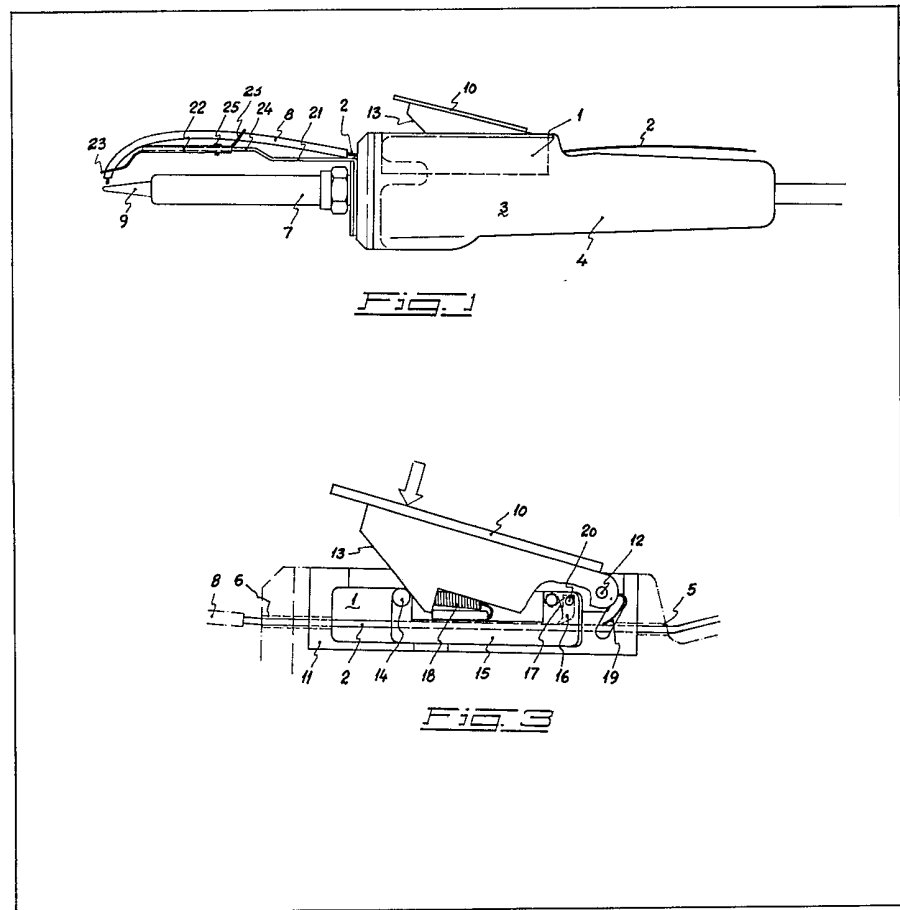


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- (71) Applicants
Kurt Jerker Rosén,
Kyrkhultsvagen 22,
S-280 70 Lonsboda,
Sweden.
- (72) Inventors
Kurt Jerker Rosén
- (74) Agents
Withers & Rogers

(54) Solder feed mechanism in manual soldering tool

(57) The feeder mechanism (1) is arranged as a unit in an attachment piece (11) let into the handle (4), and comprises a manually operated member (10) which can be depressed and a slide (15) which is displaceable against spring (18) bias by depression of the manually operated member (10). The slide has a driving dog (16) for displacement of the soldering metal (2) together with the slide in a direction to advance the soldering metal towards the tip (9) of the heating element (7) through a guide tube (8) which is arranged on a bracket (21, 22) supported by the handle, to be adjustable in relation to the heating element. A latch member (19) is arranged to prevent backward movement of the soldering metal at the return of the slide under the spring bias.



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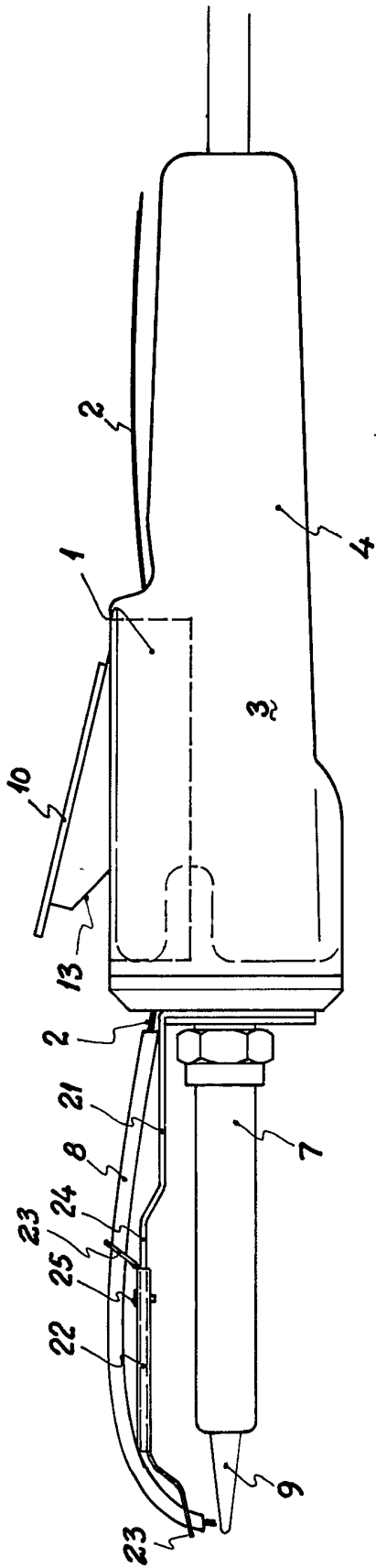


FIG. 1

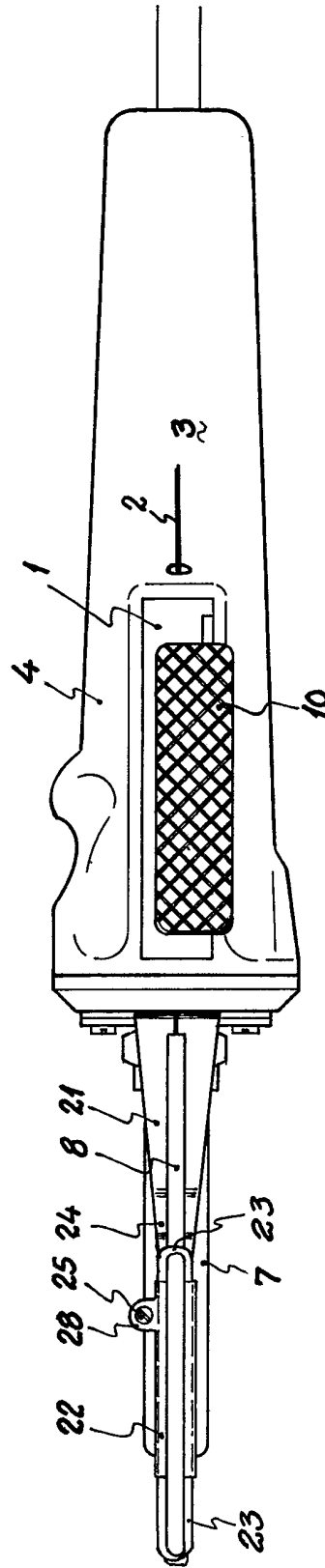


FIG. 2

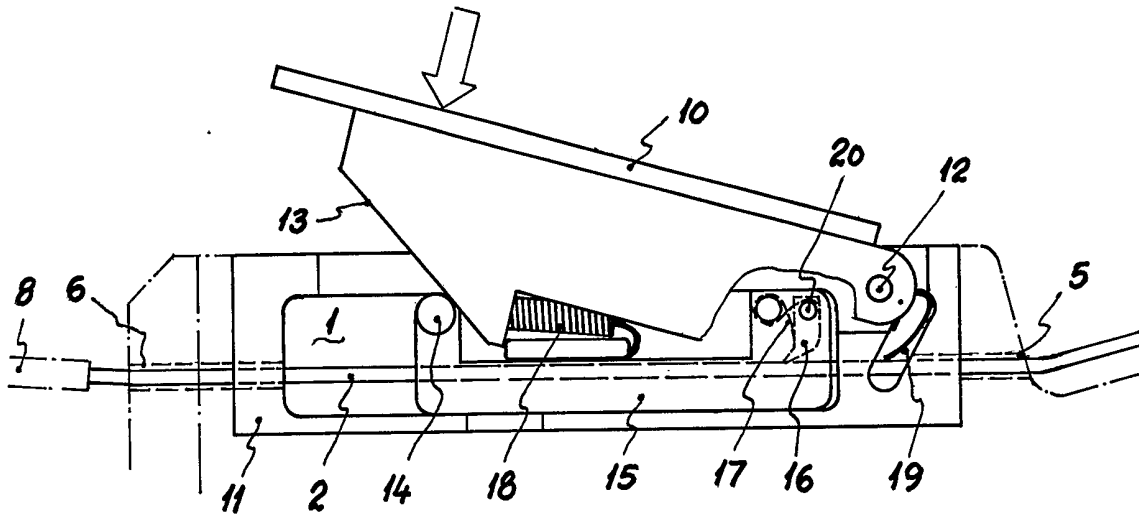


Fig. 3

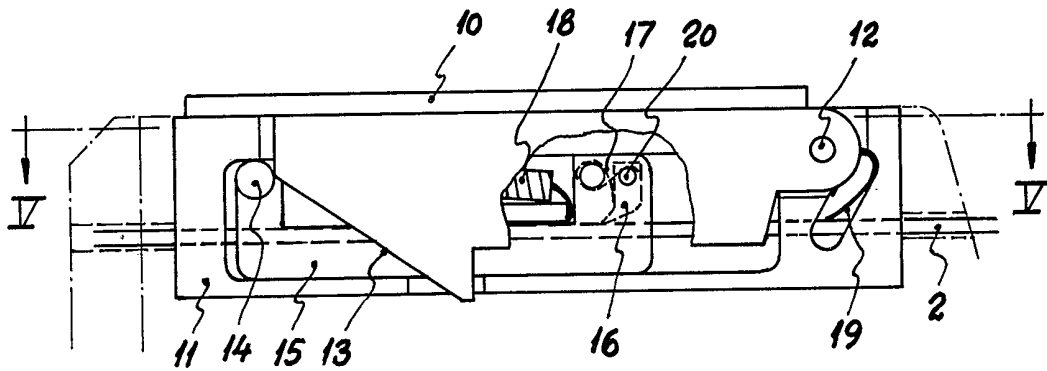


Fig. 4

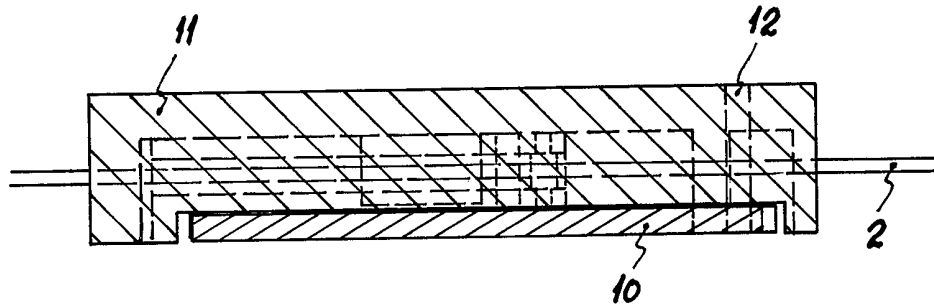


Fig. 5

SPECIFICATION

A soldering tool with feeder mechanism

5 The present invention relates to a soldering tool having a handle, a heating element, and a feeder mechanism for feeding wire or strip soldering metal, usually tin, through a passage in the handle. The feeder mechanism is arranged such that the manual control of the soldering tool towards the junction as well as the feed of the soldering metal can be performed by one hand, while the operator can control and fix the parts involved in the soldering, by the other hand.

15 More particularly the soldering tool of the invention is of the kind comprising a slide arranged in the handle, which is operatively connected with a manually operated member provided on the handle, and is displaceable against spring bias in the feeding direction of the soldering metal by operation of said member, a driving dog on the slide for engagement with the soldering metal and advancement thereof together with the slide, and a stationary latch member for engagement with the soldering latch member for engagement with the soldering metal and prevention of backward movement thereof at the return of the slide under the spring bias.

In soldering operations, particularly such operations wherein the components involved are very small, e.g. in the electronic industry, great difficulties may be encountered in soldering. The components may change their location when contacted by the soldering tool and they may be difficult to fix before the soldering metal has solidified and has bound the components involved. Considering the small space available in constructions having frequent junctions, auxiliaries supporting the components before fixing cannot be used. Stationary fixtures with holders can be used only exceptionally or in limited assembly steps while such fixtures in complicated and compact units will provide an operational obstacle so that the accessibility required will not be afforded to the operator.

For a satisfactory result of the soldering operation the operator therefore has to support the components involved and to fix such components in the positions wherein they should be located after the soldering, by one hand. The problem is that the soldering tool held by the other hand, at each soldering operation must be provided with a suitable portion of soldering metal before the soldering can take place. This is a time-consuming step, and moreover it is necessary for the operator to take his eyes off from the soldering position and to concentrate on the portioning of the soldering metal onto the soldering tool, such portioning being carried out outside the region in which the soldering has to take place. Thus, the person performing a soldering operation by applying the present technique, particularly in compact and concentrated constructions, has to be observant of two different operational steps at one and the same time, which is rather difficult. The position of the components may be inadvertently changed as a consequence thereof.

65 The Swedish patent specification 342,756 dis-

closes a soldering tool of the kind referred to above which eliminates said disadvantages. In this tool the slide is operatively connected to the manually operated member over a rack and pinion mechanism to be reciprocated when said member is operated, the wire being advanced stepwise in a passage which extends through the heating element and opens at the tip thereof, for supplying soldering metal directly to the junction to be soldered.

70 This prior art feeder mechanism is complicated, and the entire tool is of a specific structure in order to have the feeder mechanism embodied therein.

In order to provide a new and improved soldering tool wherein the feeder mechanism is arranged as a unit mounted to the handle of the tool, and has a small volume and wherein the passage through which the soldering metal and wire or strip is guided towards the tip of the heating element can be adjusted to such elements of different sizes, the soldering tool of the invention is characterized in that the feeder mechanism is arranged as a unit in an attachment piece let into the handle, said manually operated member being pivoted to the attachment piece and forming an inclined surface for engagement with the slide at the depression of said member towards the handle, and that on a bracket supported by the handle there is provided a guide tube for guiding the advanced soldering metal up to the tip of the heating element, said tube being adjustable along the heating element.

This soldering tool can have the form and structure usually applied to soldering tools, and the dimensions thereof can be small so that the tool is well suited for use in compact and concentrated constructions.

It is preferred that the bracket comprises a part supporting the guide tube, which is adjustable along the heating element in relation to the rest of the bracket and can be fixed in the adjusted position.

The guide tube preferably comprises a flexible tube extending along the heating element, which is passed through guide lugs on said part, said tube being curved towards the tip of the heating element.

In the accompanying drawings, which illustrate an embodiment of the invention,

Figure 1 is a side view of a soldering iron according to a preferred embodiment of the invention;

Figure 2 is a plan view of the soldering iron in *Figure 1*;

Figure 3 is an enlarged side view of the feeder mechanism with the finger piece in a neutral position;

Figure 4 is a view corresponding to *Figure 3* with the finger piece in a depressed position; and

Figure 5 is a cross-sectional view taken along line V - V in *Figure 4*.

Referring to the drawings, the soldering iron 3 disclosed therein is of conventional structure having a handle 4 and a heating element 7.

A feeder mechanism 1 by means of which a soldering wire 2 can be advanced at the rate required in portioning soldering metal to a soldering position is incorporated into the handle 4 as a separate unit.

The soldering wire is passed through a rear opening

5 provided in the handle, through the feeder mechanism and through an opening 6 provided in the handle adjacent the heating element 7, and is then guided by a guide tube 8 to the tip 9 of the heating element.

The feeder mechanism has in the upper portion thereof a finger piece 10 pivoted to an attachment piece 11 by means of a pin 12. The finger piece can be depressed to the lower position shown in Figure 4 with a finger of the hand holding the soldering iron at the handle 4. Then, an inclined surface 13 of the finger piece is pressed against a roller 14 which is rotatably mounted to a slide 15 guided in the attachment piece 11, which is displaced towards the heating element 7 against the bias of a tension spring 18 engaged between the attachment piece and the slide. At this movement a driving dog 16 pivoted to the slide by a pin 20 and biased against the soldering wire 2 by a spring 17 engages the soldering wire, a feeding step which corresponds to the movement of the slide being obtained. At the return movement of the slide under the bias of the tension spring 18 when the pressure on the finger piece 10 is relieved, the soldering wire is latched by a plate spring 19 which has such profile that it engages the soldering wire if it tends to move back from the heating element, but allows the advance movement of this wire. The driving dog 16 has at the point of engagement with the soldering wire an inclined surface in order to slide on the soldering wire at the return movement of the slide.

In order that the soldering wire shall be guided towards the tip 9 of the heating element 7 a flexible guide tube 8 made of a plastics material extends between the handle 4 and the tip 9. The tube is attached to a composite bracket 21. This comprises an attachment 22 provided with apertured lugs 23 wherein the guide tube is secured in the appropriate position. The attachment 22 is mounted to an angled piece 24 attached to the handle, such that it is slidable on said piece and can be displaced thereon in order to provide the proper bracket length adapted to heating elements of different sizes. The attachment 22 is locked to the angle piece 24 by means of a clamp 28 with a screw 25.

Thus, it will be seen that the supply of soldering metal 2 to the tip 9 of the heating element can be effected by operating the finger piece 10 with a finger of the hand holding the soldering iron 3 at the handle 4. This makes possible to simplify the soldering steps and to optimize the quality of the soldered junction and also to locate and fix the components involved in exact positions most appropriate for the construction by the other hand.

It will be apparent to those skilled in the art that various modifications and variations could be made in the soldering tool described without departing from the scope and spirit of the invention.

60 CLAIMS

1. A soldering tool having a handle (4), a heating element (7), and a feeder mechanism for feeding wire or strip soldering metal (2) through a passage (5, 6) in the handle (4), comprising a slide (15)

arranged in the handle, which is operatively connected with a manually operated member (10) provided on the handle, and is displaceable against spring bias in the feeding direction of the soldering metal by operation of said member, a driving dog (16) on the slide for engagement with the soldering metal and advancement thereof together with the slide, and a stationary latch member (19) for engagement with the soldering metal and prevention of backward movement thereof at the return of the slide under the spring bias, characterized in that the feeder mechanism is arranged as a unit in an attachment piece (11) let into the handle (4), said manually operated member (10) being pivoted to the attachment piece and forming an inclined surface (13) for engagement with the slide (15) at the depression of said member towards the handle, and that on a bracket (21, 22) supported by the handle there is provided a guide tube (8) for guiding the advanced soldering metal (2) up to the tip (9) of the heating element (7), said tube being adjustable along the heating element.

2. A soldering tool according to claim 1, characterized in that the stationary latch member (19) comprises a plate spring having curved profile to slide on the soldering metal (2) at the movement of the slide (15) in the feeding direction and to engage with the soldering metal in order to prevent movement thereof in the opposite direction.

3. A soldering tool according to claim 1 or 2, characterized in that the bracket (21, 22) comprises a part (22) supporting the guide tube (8), which is adjustable along the heating element (7) in relation to the rest (21) of the bracket and can be fixed in the adjusted position.

4. A soldering tool according to claim 3, characterized in that the guide tube (8) comprises a flexible tube extending along the heating element (7), which is passed through guide lugs (23) on said part (22), said tube being curved towards the tip (9) of the heating element (7).