June 30, 1931. F. B. DREYER 1,812,142

WELDER'S TONGS

Filed Aug. 7, 1929

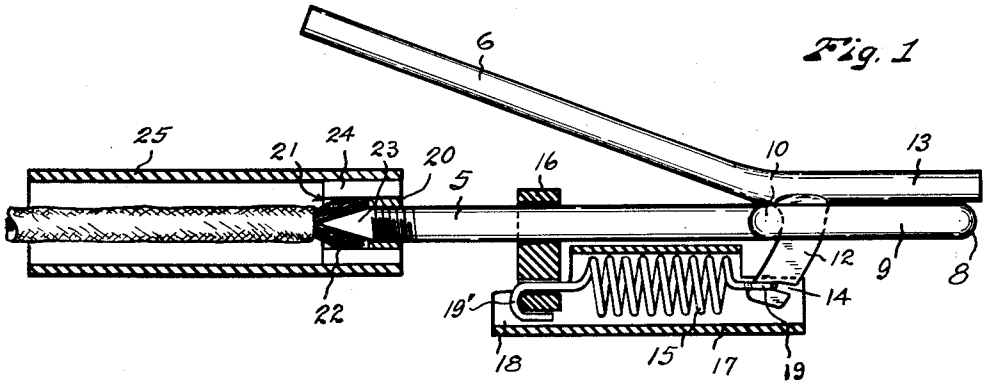


Fig. 1

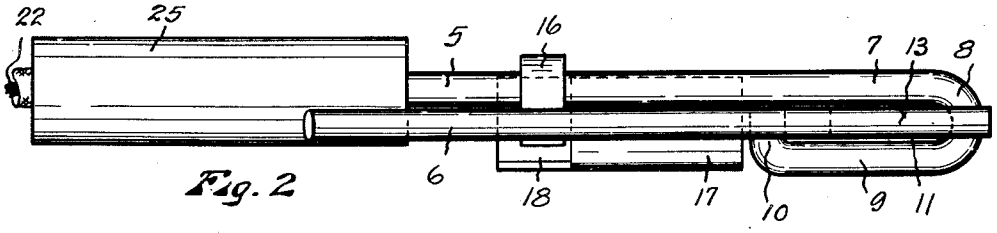


Fig. 2

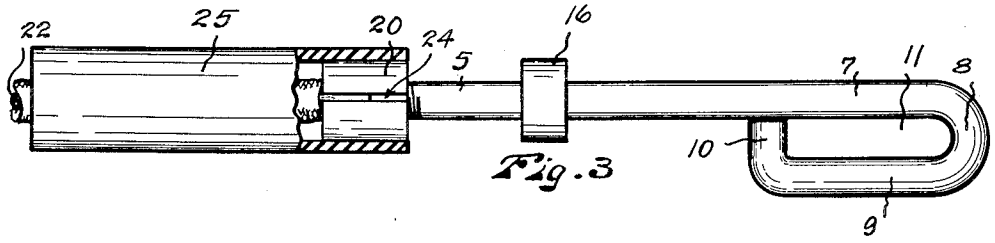


Fig. 3

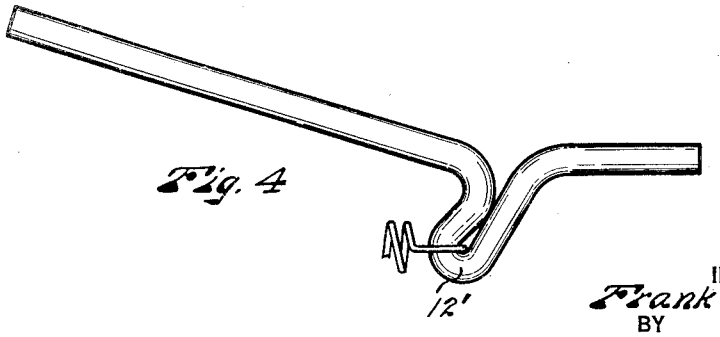


Fig. 4

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Patented June 30, 1931 1,812,142

UNITED STATES PATENT OFFICE

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WELDER'S TONGS

Application filed August 7, 1929. Serial No. 384,099.

My invention relates to improvements in welder's tongs of the form commonly used by electric welders and the general object of my invention is to improve the construction, increase the efficiency and cheapen the cost of tongs of this nature.

More specific objects are to provide a pair of welder's tongs formed of ordinary steel rods, one of the tong members having a slot near its forward end and the other tong member having a hook like finger extending sidewise therefrom and projecting through the slot in said first named tong member, said finger having one end of a tension spring secured thereto, the other end of said tension spring being anchored to a hanger member of insulating material which is slidable and adjustable on the shank of the first named tong member, which hanger is arranged to be held in any adjusted position on said first named tong member by friction due to the off center pull of the spring.

Other and more specific objects will be apparent from the following description taken in connection with the accompanying drawings.

In the accompanying drawings Figure 1 is a side elevation of a pair of welder's tongs constructed in accordance with my invention parts being shown in section.

Fig. 2 is a plan view of the same substantially on broken line 2—2 of Fig. 1.

Fig. 3 is a detached plan view of one of the tong members.

Fig. 4 is a detached elevation of a modified form of tong member.

Referring to the drawings, throughout which like reference numerals designate like parts, 5 and 6 designate the shank portions of two cooperating tong members, preferably formed of ordinary round rods. The tong member 5 is provided at its forward end with a gripping portion 7—8—9—10 formed by bending the end of said rod rearwardly through an angle of substantially one hundred eighty degrees and bending the tip of the rearwardly extending portion inwardly at substantially right angles so that it abuts against the main shank of the rod and leaves an opening or slot 11 between the two substantially parallel gripping portions 7 and 9. The tong member 6 has a rearwardly curved finger 12 which passes through the inner end of the slot 11 and hooks over the inwardly bent tip portion 10 whereby a cheap and efficient pivot joint is formed between the two parts of the tong. The shank 6 is bent slightly near its point of connection with the finger 12 and has an integral gripping portion 13 extending forwardly from the finger 12 and arranged to overlie the slot 11 and project beyond the outer end of said slot and rest upon the curved end portion 8 of the opposing tong member when the tongs are closed. The single gripping portion 13 of one tong member being positioned between the two spaced apart gripping portions 7 and 9 of the other tong member affords a three point gripping means of high efficiency for gripping an object as a wire or rod which may extend, crosswise, or in any direction except substantially lengthwise of the tong.

The lower end of the finger 12 has a notch 14 for the reception of a loop or hook 19 on one end of a tension spring 15. The other end of the spring 15 is secured to a hanger 16 of insulating material which is adjustable on the shank 5. The tension exerted by the spring 15 on the lower end of the hanger 16 produces a prying action and causes said hanger to bind on the shank 5 and remain in any adjusted position thereon, but said hanger may be moved along the shank 5 to adjust the tension of the spring 15 by grasping the hanger with the hand and exerting sufficient force to overcome the binding effect produced by the off center pull of the spring. A tube 17 of insulating material is provided on the spring 15 to prevent contact of the spring with metal objects which might complete the circuit through the same. This tube preferably has an extension 18 at its rear end designed to extend under and beyond the insulating block 16 so as to protect the hook 19′ on the rear end of the spring 15 from contact with metallic objects. A similar extension at the front end protects the finger 12.

The rear end of the shank 5 is threaded for the reception of a socket nut 20 which has an

axial receptacle 21 in its outer end arranged to receive the end of a wire cable 22 through which current is supplied to the tongs. The rear end of the shank 5 is pointed as at 23, for the purpose of expanding the parted wires of the end of the cable 22 within the receptacle 21 when the socket nut 20 is secured onto the shank 5 to thereby bind the wires securely to the tong and insure perfect electrical contact. The wall of the socket nut 20 in which the receptacle 21 is formed is split radially as at 24 so that when the pointed end 23 expands the cable 22 within the receptacle 21 it will also expand the socket nut 20, within a tubular handle 25 and thus secure the handle to the tong. The handle 25 is preferably a tubular piece of insulating material. This makes a very substantial, cheap, efficient and readily assembled structure for connecting the electrical wires and securing the handle on the tong. The shank 6 is longer than the shank 5 so that the operator can conveniently grasp both the handle 25 and shank 6 with one hand at the same time.

The curved finger 12 of one tong member in cooperation with the inwardly bent portion 10 of the other tong member form a very efficient, cheap and easily assembled pivot means and spring connection. The finger 12 forms a long enough lever arm so that a spring of medium weight will hold the tongs firmly clamped on any object within the gripping portion of said tongs.

All of the parts are very cheap to manufacture and the assembling is very quickly and easily done. Either one or both of the tong members may be quickly and easily replaced in case of deterioration by wear or burning. The spring is completely insulated at one end and throughout the greater portion of its length so there is very little danger of damaging the spring due to short circuiting. The parts 7, 9 and 13 form a very efficient means for gripping and holding an object as a welding rod or bar.

In Fig. 4 I show a tong member in which the finger hook 12′ is formed by bending. In other respects this tong member is similar to the tong member 6.

The foregoing description and accompanying drawings clearly disclose a preferred embodiment of my invention but it will be understood that this disclosure is merely illustrative and that such changes in the invention may be made as are fairly within the scope and spirit of the following claims.

I claim:

1. A welder's tong, embodying a tong member having a slot near its outer end, another tong member lying alongside said first named tong member having a substantially perpendicular finger extending through said slot and cooperating in pivotally connecting said two tong members, and a spring connected with the outer end of said finger and with said first named tong member to the rear of said slot for holding said tongs in a closed position.

2. A welder's tong, embodying a tong member having an elongated slot near its outer end, another tong member lying alongside said first named tong member having a gripping portion extending lengthwise of said slot and projecting beyond the end of the same, a rearwardly curved finger extending sidewise from said last named tong member through the inner end of said slot and cooperating in forming a pivot between said two tong members, and a tension spring connected with the outer end of said finger and with said first named tong member to the rear of said slot for holding said two tong members in closed position.

3. A welder's tong, embodying a tong member having a shank and having an elongated slot near its outer end, another tong member lying alongside said first named tong member having a gripping portion extending lengthwise of said slot and projecting beyond the end of the same, a rearwardly curved finger extending sidewise from said last named tong member through the inner end of said slot and cooperating in forming a pivot between said two tong members, an adjustable hanger of insulating material movable longitudinally along the shank of said first named tong member, and a tension spring connecting said hanger and the outer end of said finger for urging said tong members into a closed position.

4. A welder's tong, embodying a tong member having a shank and having an elongated slot near its outer end, another tong member lying alongside said first named tong member having a gripping portion extending lengthwise of said slot and projecting beyond the end of the same, a rearwardly curved finger extending sidewise from said last named tong member through the inner end of said slot and cooperating in forming a pivot between said two tong members, a tension spring connected with the outer end of said finger, a hanger of insulating material having a hole in one end slidable on the shank of said first named tong member the other end of said hanger having the rear end of said spring connected therewith whereby said spring is adjustably held under tension, the prying action of said spring on said hanger causing said hanger to bind on said first named tong member and a tube of insulating material covering said spring.

5. The apparatus as claimed in claim 4 in which the tube of insulating material which covers said spring has a portion on its rear end which extends rearwardly beyond said hanger to protect the loop on the rear end of the spring.

6. A welder's tong, embodying a tong mem-

ber formed of a round rod bent double at its forward end to leave two spaced apart parallel gripping portions with a slot therebetween the tip of the rearwardly bent portion being bent inwardly against the other portion of said rod to afford a fulcrum, another tong member lying alongside said first named tong member and also formed of a round rod and having a single gripping portion positioned over said slot and arranged to rest on the end of said first named tong member beyond the outer end of the slot when the tong members are in a closed position, finger means rigid with said last named tong member and projecting through said slot and hooking over said inwardly bent tip and cooperating to pivotally connect said two tong members, a tension spring connected with the outer end of said finger means and with the first named tong member to the rear of said slot to urge the two tong members into closed position and a handle on one of said tong members.

7. A welder's tong embodying two tong members pivotally connected together and arranged to grasp and hold an object, one of said tong members having an externally threaded rear end terminating in substantially pointed portion, a nut arranged to screw onto said threaded end said nut having a recess in one side for the reception of an electrically conductive cable and said nut being radially slotted to permit expansion of the same, and a tubular handle arranged to fit over said nut, said pointed end being adapted to expand said cable within said recess and to expand said nut within said handle when said nut is screwed onto said tong member thereby securing said cable within said recess and securing said handle on said nut.

8. A welder's tong embodying a tong member having a gripping portion and a shank, said gripping portion having an opening therethrough, another tong member having a gripping portion and a shank lying alongside the corresponding parts of said first named tong member, a finger extending sidewise from said last named tong member through the opening in the gripping portion of said first named tong member, said finger and a portion of the shank of said last named tong member adjacent the rear of said finger cooperating with that part of said first named tong member directly to the rear of said opening to form a pivotal bearing for said two tong members, and a tension spring connected with said finger and with the shank of said first named tong member to the rear of said opening.

The foregoing specification signed at Seattle, Wash., this 2nd day of Aug. 1929.

FRANK B. DREYER.