June 12, 1928. 1,673,500

E. F. DWYER

SPOT WELDING MACHINE

Filed April 1, 1926

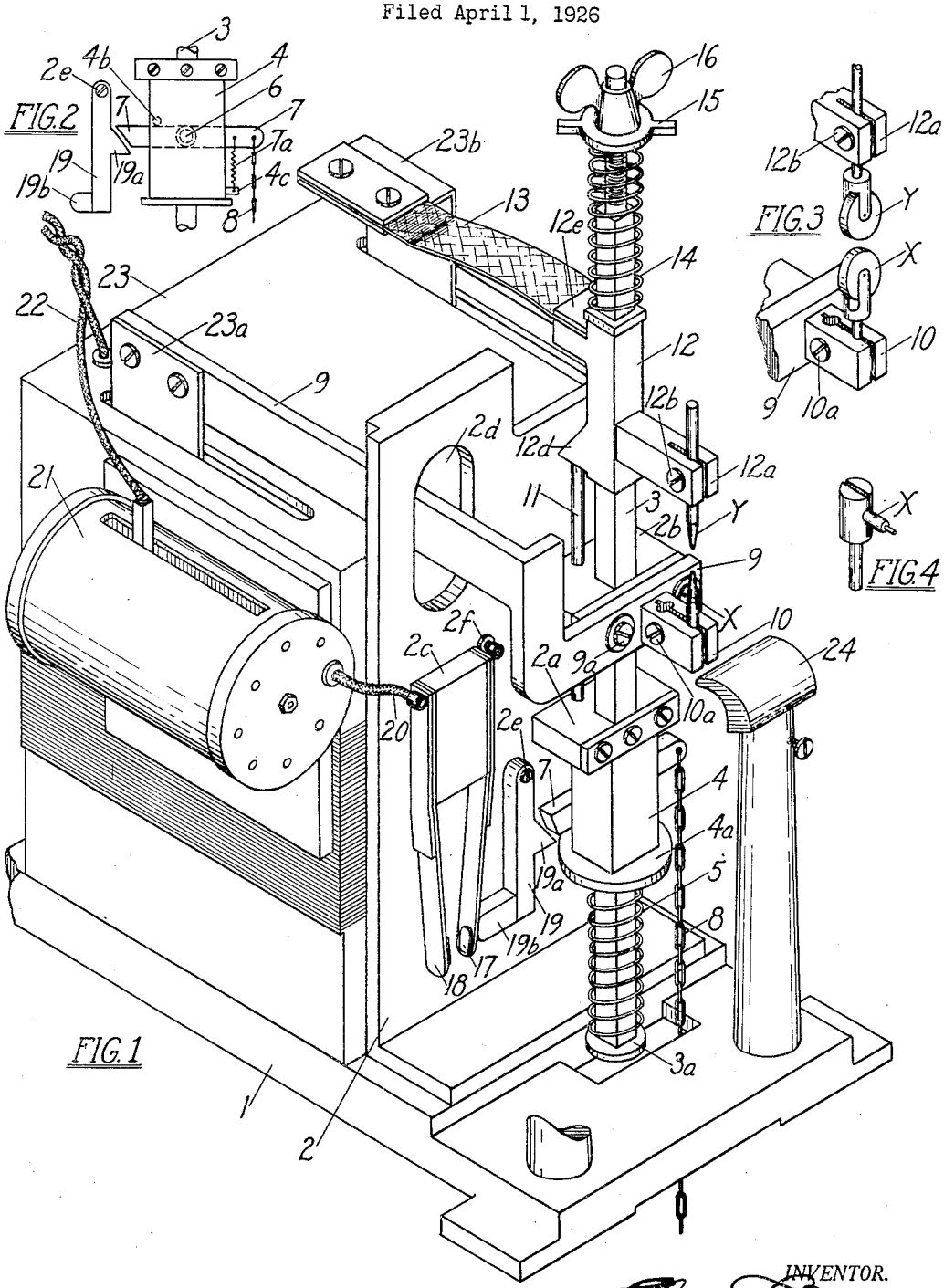


FIG. 1

FIG. 2

FIG. 3

FIG. 4

INVENTOR.
Elmer F. Dwyer
BY
Francis V. McCarthy
ATTORNEY.

Patented June 12, 1928. 1,673,500

UNITED STATES PATENT OFFICE.

ELMER F. DWYER, OF LYNN, MASSACHUSETTS.

SPOT-WELDING MACHINE.

Application filed April 1, 1926. Serial No. 99,024.

My invention relates to improvements in spot welding machines and has for its object to provide a machine that is especially adapted to the welding of grids of radio lamps and other fine work of a like nature.

My machine is illustrated in the accompanying drawing, in which Figure 1 is a perspective view, Figure 2 a detail showing the relative positions of the pawls by means of which the circuit is closed and opened, Figures 3 and 4 details illustrating variations of the contact points X and Y. In Figure 3 is shown a modification of the contact points by the substitution of wheels by the use of which the weld may be extended by running the work between the wheels. Figure 4 is a variation of contact point X and comprises a cylindrical horizontal piece on which the work may be moved laterally between welds.

I provide a frame comprising a base 1 and a vertical wall 2. Upon the wall 2 are lateral parts 2^a, 2^b, and 2^c, a hole 2^d, a stud 2^e and a contact post 2^f. A vertical post 3 passes through the parts 2^a and 2^b and is immovably affixed thereto. On the lower end of the post 3 is a boss 3^a. On the post 3 is movably mounted a block 4. At the lower end of the block 4 is a boss 4^a. Mounted on post 3 between the bosses 3^a and 4^a is a helical spring 5. By means of a stud 6, a pawl 7 is movably mounted on the block 4 and is held normally horizontal by a stop pin 4^b and a helical spring 7^a, which is connected with the pawl 7, and with the block 4 at 4^c. A chain 8 leads from the pawl 7 to a foot treadle which is not shown. On the part 2^b is mounted a bracket 9, as at 9^a. This bracket passes through the opening 2^d in the vertical wall 2. Upon the bracket 9 is a clamp 10 adapted to hold a contact point X and to be compressed thereon by means of the screw 10^a. Passing through vertical holes in the parts 2^a and 2^b of the frame 2 is a movable rod 11. Upon the post 3 is movably mounted a block 12 on which is a clamp 12^a adapted to hold the contact point Y, as by means of the screw 12^b. The contact points X and Y are in the same vertical plane. Also on the block 12 is a lip 12^d; and affixed to block 12, as at 12^e, is a flexible conductor 13. Above the block 12 is a helical spring 14 and above this spring are a check nut 15 and a thumb nut 16 operative on the upper end of the post 3, which is threaded to receive them. Affixed to the part 2^c are the contact springs 17 and 18. Movably mounted on the stud 2^e is a pawl 19 having a lip 19^a and an arm 19^b. Copper wire 20 connects the contact spring 18 with one pole of the rheostat 21. A copper wire 22 connects the other pole of the rheostat with a pole of the transformer 23. The flexible conductor 13 is connected with the pole 23^b of the transformer 23. An adjustable guide 24 is placed before the contacts X and Y for the convenience of the operator. To provide a primary circuit the contact point X is connected with a pole of the transformer 23 through the parts 10 and 9 at 23^a; and the contact point Y is connected with the other pole of the transformer at 23^b through the parts 12^a, 12 and 13. I provide a secondary circuit by connecting the contact spring 17 with a pole of the transformer 23 through the contact post 2^f, and by connecting the contact spring 18 with a pole of the rheostat 21 through the wire 20.

When my welder is at rest the block 4 is held against the under surface of the part 2^a by the spring 5; and the block 12, which rests on the rod 11, is held in such position by the rod 11, which rests on the upper side of block 4, that the points X and Y are not in contact with each other. The spring 14 is contracted by means of the check nut 15 and thumb nut 16.

The material to be welded having been placed in position, pressure is applied to the foot treadle so as to pull down the block 4 and contact spring 5. The pulling down of the block 4 causes the rod 11 to drop, releasing the block 12 so that the contact point Y drops upon the work. The pressure of contact point Y upon the work is regulated by means of the spring 14 and the check nut 15 and thumb nut 16. The pawl 7 and the lip 19^a of the pawl 19 are so placed in relation to each other that the points X and Y and the work come into operative contact with each other before pawl 7 in its downward movement reaches the lip 19^a of pawl 19. In other words, the first pressure of the foot upon the treadle brings the points X and Y and the material together, further pressure bringing the pawl 7 down against the pawl 19. Thereupon the pawl 7 causes pawl 19 to move on its axis 2^e, and pawl 19, through its arm 19^b forces the contact spring 17

against contact spring 18, thus closing the circuit and completing the weld at X—Y. When pawl 7 passes beyond the lip 19ª of pawl 19 the contact spring 17 assumes its normal position, thus breaking the circuit. The closing and opening of the circuit are controlled by the passing of pawl 7 by the lip 19ª on pawl 19, is practically instantaneous. In this way uniformity and accuracy of welds is obtained. Upon releasing the foot treadle the spring 5 forces the movable parts 4, 11 and 12 upward to their original positions, thus releasing the work. The pawl 7 is movably mounted on the stud 6 so that upon moving upward it is pressed downward by lip 19ª of pawl 19 until pawl 7 can pass by pawl 19, when pawl 17 again is drawn back to its original horizontal position by spring 7ª.

Having described my invention what I claim is:

1. In an electric welding machine a vertical frame bearing a vertical post which carries at its lower end a helical spring, above the spring a movable block carrying a pawl connected with a source of manual operating power, above the block a movable vertical rod, above the rod a second movable block bearing a welding electrode, above the second block a spring and nuts for controlling the downward pressure of the spring, between the two movable blocks a stationary bracket bearing a second welding electrode in operative relation with the movable electrode, on the vertical frame a pawl and set of contact springs, the electrodes being connected in series with a transformer and rheostat, the circuit being opened and closed by the operation of the electrodes, pawls and contact springs, as described.

2. In an electric welding machine a vertical frame bearing a vertical post which carries at its lower end a helical spring, above the spring a movable block carrying a pawl connected with a source of manual operating power, above the block a movable vertical rod, above the rod a second movable block bearing a welding electrode, above the second block a spring and nuts for controlling the downward pressure of the spring, between the two movable blocks a stationary bracket bearing a second welding electrode in operative relation with the movable electrode, on the vertical frame a pawl and set of contact springs, the electrodes being connected in series with a transformer and rheostat by means of which the amount of electricity in each operation is predetermined, the circuit being opened and closed by the operation of the electrodes, pawls and contact springs, as described.

ELMER F. DWYER