

Jan. 12, 1937

A. WAESCHLE

2,067,363

WELDER

Filed Oct. 7, 1935

2 Sheets-Sheet 1

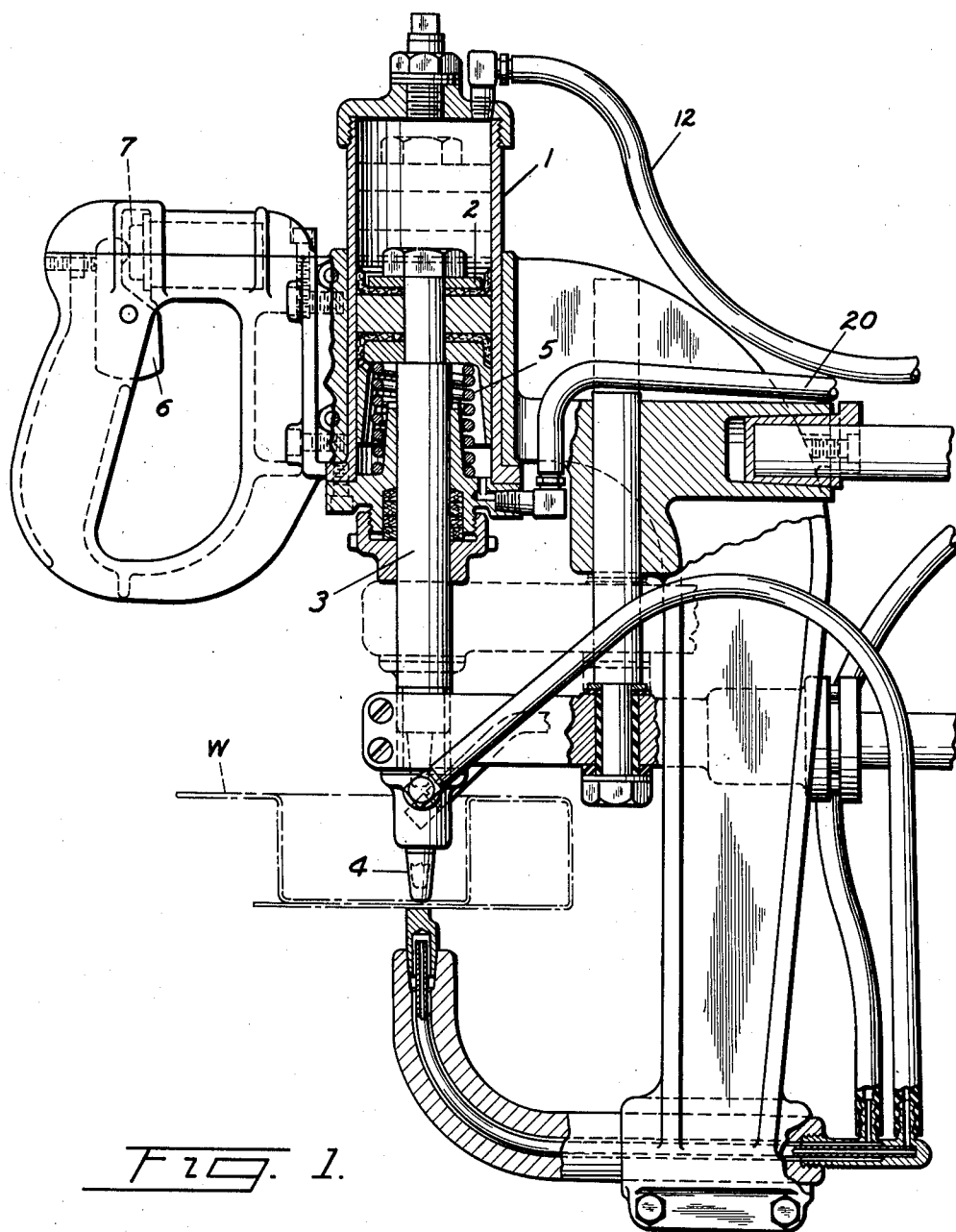


FIG. 1.

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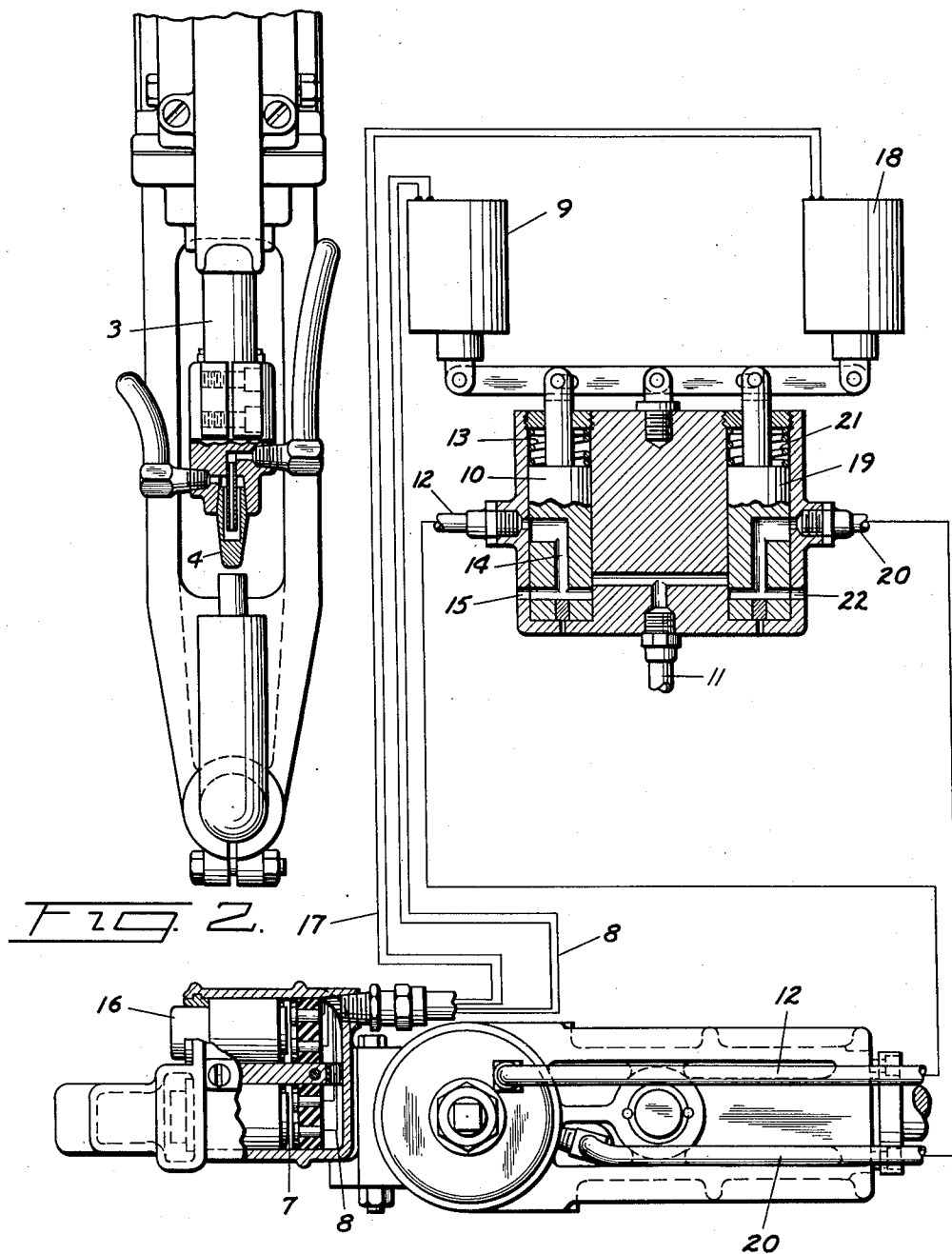


FIG. 3.

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UNITED STATES PATENT OFFICE

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WELDER

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3 Claims. (Cl. 219—4)

This invention relates to welders and particularly a portable welder that is pneumatically controlled. It is the object of the invention to provide a welder in which the electrodes can be easily opened to two different widths. In most spot welders which are pneumatically controlled, the electrodes have a full stroke in opening and closing which is of one given length. This stroke has to be of sufficient length to permit the opening of the electrodes sufficiently to allow the work to clear the electrodes when being placed or taken out. Often with irregular work this requires such spacing that the stroke of the movable electrodes is so long that it results in unnecessary pounding of the electrode upon the work. Such pounding results in unnecessary injury to the work and almost inevitably results in wear and mushrooming of the electrode point.

It is the object of the present invention to provide an alternative stroke electrode with the alternative strokes separately controlled, preferably directly from the handle of the portable electrode. Hence, as the workman fits the electrode over the work, he may open the electrodes for the large stroke. Then after the electrodes are placed on the work, he may use the shorter stroke as long as the electrodes are run along the work for successive welds. Then as he finishes he may again use the longer stroke for opening the electrodes to their full width for clearing the work. This is done by suitable electrode and spring controls which will be described in detail hereafter.

In the drawings:

Fig. 1 is a side elevation and partly sectional view of the tool.

Fig. 2 is a fragmentary front elevation partly in section.

Fig. 3 is a top elevation partly in section showing a diagrammatic connection with the air controls.

Take the work shown at W in Figure 1. It will be seen that this requires the electrodes to be opened to clear the walls on the sides of the work. This is only a simple example of the problem to simplify the illustration. This tool is particularly adapted for reaching around behind a body pillar in an automobile body to get one electrode in behind the pillar. In order to do this, the electrodes have to open wide enough to clear the face of the pillar, that is, the pillar wall which forms the door jamb. This may be more than two inches in width. It is very undesirable to have the electrodes open and close two inches every time a weld is made as obvi-

ously the points of the electrodes could not last very long with such unnecessary pounding of the electrodes upon the work. I, accordingly, have designed a portable welder in which a large and air controlled spread of the electrodes may be had to get this maximum opening for clearing the work, or alternatively, when the electrodes are upon the work, a very short opening is secured which permits the ready shifting of the electrodes from one location to another with successive welds.

To this end, I provide the usual set-up which comprises a cylinder 1, a piston 2, connected by rod 3 with electrode 4. The spring 5 affords the return of the piston and the opening of the electrodes when air pressure is relieved. This air pressure is controlled by the usual trigger 6. This trigger operates a button switch 7 which controls the circuit 8 that in turn connects with the solenoid 9 that operates the air valve 10. When the solenoid is energized, it lifts this valve, connecting the source of compressed air 11 with the air line 12. This connects with the top of the cylinder as shown in Figure 1 and forces the piston down. When the trigger 6 is released, the solenoid is de-energized. The spring 13 returns the valve, the passage 14 through the valve registering with the exhaust 15 thereby exhausting the air and allowing the spring 5 to return the valve.

When the operator desires a full opening of the electrodes in place of using the trigger 6 he uses his thumb to press the switch button 16. This bridges the terminals of the circuit 17 which leads to the solenoid 18 and this raises the valve 19 and connects the source of compressed air 11 with the air line 20 that leads to the chamber under the piston 2 containing the spring 5. This spring 5 is calibrated so that it will return the piston only a short distance whereas with the air pressure below the piston, the piston may return the full stroke shown by the dotted line position of the moving parts. This will permit the electrodes when held in that position by keeping the pressure on the thumb switch to clear the enlarged portions of the work at the sides. As soon as the pressure on the thumb switch is released, the spring 21 returns the valve 19 and connects the air line 20 to the exhaust port 22. The piston is then free to be moved downwardly until it strikes the spring, and will be moved downwardly the next time the air is shot through the air line 12 to the top of the piston.

The switches for controlling the electric cur-

rent are not shown as these may be any desirable switch for this purpose, preferably the type of switch which is now in common use, that is, one using backed up air pressure after the electrodes are on the work to throw the switch into primary circuit.

What I claim is:

1. In a fluid controlled electric welder, the combination of an air cylinder and piston for forcing the electrodes together, means for returning the piston only through a short stroke and independent means for returning the piston optionally through a long stroke.

2. In a fluid controlled electric welder, the combination of an air cylinder and piston for forcing the electrodes together, a spring for returning the piston only through a short stroke and means for supplying fluid pressure behind the piston for returning the piston a long stroke return to give maximum opening for the electrodes.

3. In a fluid controlled electric welder, the combination of an air cylinder, a piston for making a relatively large traverse in said air cylinder, a conduit for supplying air to make this traverse to bring the spot welding electrodes together, a spring engaging the piston on the opposite side from the air from said conduit for returning the piston only a part of the distance of said traverse to simply release the electrodes from contact with the work to permit relative movement of the electrodes and the work, and means for supplying fluid on the side of the piston engaged by the spring but only at the option of the operator of the tool, said fluid being utilized to cause the piston to make a full return stroke for the purpose of opening up the electrodes to completely withdraw them from the work.

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