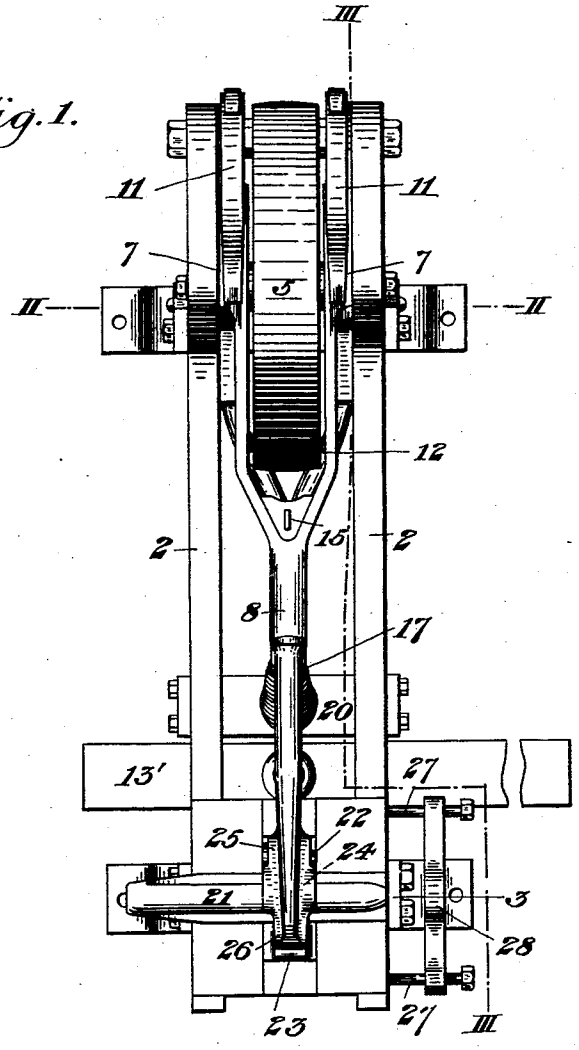
(No Model.) 2 Sheets—Sheet 1.

W. C. KROEGHER.

WELDING MACHINE.

No. 568,911. Patented Oct. 6, 1896.

Fig. 1.



WITNESSES:

INVENTOR

BY Bakewell & Bakewell

his ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

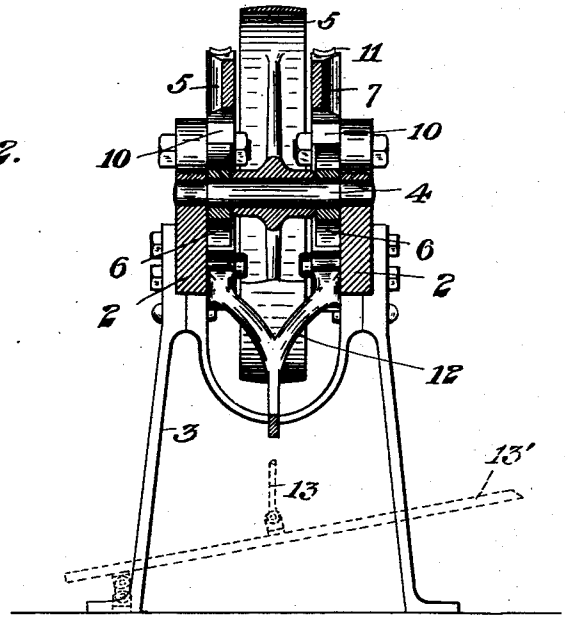
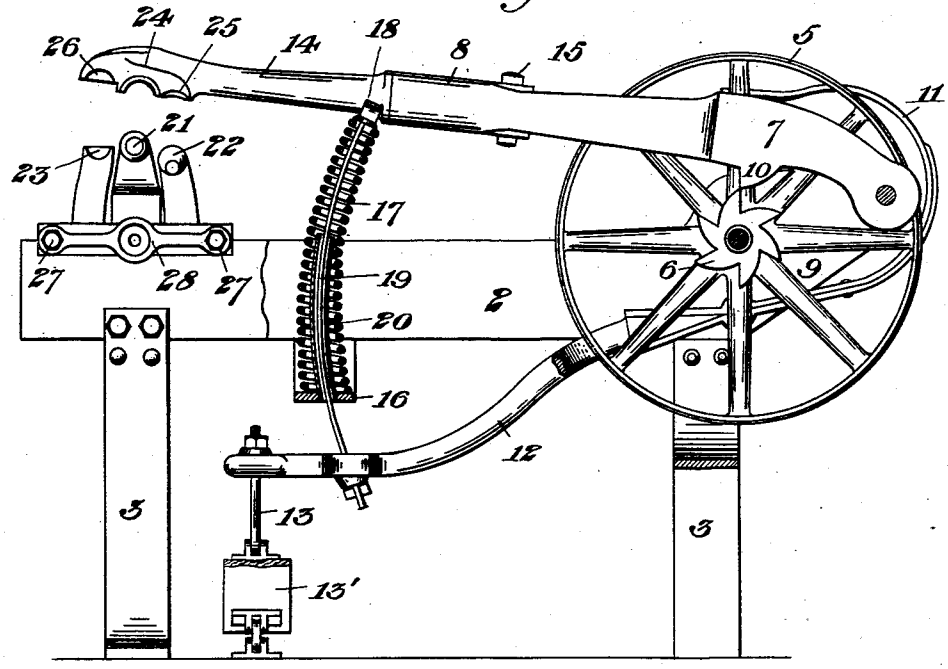


Fig. 3.



Witnesses.
H. D. Holdship
L. A. Connell

Inventor
W. C. Kroegher
By his Attorneys
Bakewell & Bakewell

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILHELM C. KROEGHER, OF ALLEGHENY, PENNSYLVANIA.

WELDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 568,911, dated October 6, 1896.

Application filed April 20, 1896. Serial No. 588,268. (No model.)

To all whom it may concern:

Be it known that I, WILHELM C. KROEGHER, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Welding-Machines, of which the following is a full, clear, and exact description.

Figure 1 is a top plan view of my improved machine. Fig. 2 is a cross-section on the line II II of Fig. 1, and Fig. 3 is a longitudinal section on the line III III of Fig. 1.

My invention relates to machines employed for welding wherein a hammer is used; and it consists in an improved machine of this character in which the strength of the blow is entirely under the control of the operator, and in which the hammer is held and guided in its true motions without any possibility of side motion or wabbling.

It also consists more specifically in a machine of the above character for welding pipe wherein the machine is provided with means for scarfing one end of the tube, for welding the tube end thereon, and for swaging down the end portion.

In the drawings, in which similar numerals indicate corresponding parts, 2 2 represent side beams or bars supported upon suitable legs 3 and constituting the framework of the machine, the driving-shaft 4 being supported in bearings at one end of this frame. Centrally secured to the driving-shaft 4 is a belt-wheel 5, by which the shaft is driven, and secured to the shaft on each side of this pulley or belt-wheel are two cam-wheels 6 6, these cam-wheels having any suitable number of projections as desired. Near the rear portion of the pulley 5, and on either side thereof, are the two arms or helves 7, forming the shank of the hammer-stock 8, each one of these arms being pivoted to an upwardly-projecting rear portion 9 of the side bars. Each arm is provided with a downwardly-projecting lug 10, which, when the hammer is depressed, will be engaged by one of the cam-wheels 6, thus giving an oscillatory motion to the hammer. The outer face of each arm fits snugly against the inner face of the projection 9, which thus forms a guide for the wide base of the hammer-stock, preventing any side motion or wabbling of the hammer in its motions, and this feature of the forking or double-helve arrangement is an important feature of my invention. Pivoted beneath the actuated shaft 4, and on each side of the pulley, are two curved springs 11 11, the upper portion of each spring bearing upon the corresponding arm of the hammer-stock and tending to press the same downwardly. In front of their pivotal point these springs are secured to a common lever 12, having a link connection 13 to a foot-lever 13′, pivoted to the base of the machine. The removable hammer 14 is provided with a reduced stem which projects through a longitudinal hole in the hammer-stock 8 and is secured in place by a suitable key 15, so that tools of different shape and character may be used with a single machine. Beneath the hammer and connecting the side bars 2 is a cross-bar 16, upon which is supported a curved spiral spring 17, upon the upper end of which is carried a rest 18 for the hammer, a curved rod 19 connecting this rest with the lever 12, a suitable guide 20 being employed within the spring for the rod 19. Upon one end of the frame beneath the end of the hammer are carried a central welding-horn 21, a scarfing-horn 22, and a swaging-block 23. The hammer is likewise provided upon its lower face with a hollow central welding portion 24, a scarfing portion 25, and a swaging recess 26. Beneath the horns, upon horizontal bolts 27 at one side of the frame, is carried a loosely-sliding gage 28, consisting of a cross-bar having end holes, through which the bolts pass, and a central cavity, within which the swaged end of the pipe fits when of proper size.

By using a loosely-sliding head with the gaging-aperture the operator is enabled to reciprocate the tube and thus drive it into the hole by a positive blow, the head remaining and moving with the end of the tube, thus smoothing and sizing the swaged end.

The operation of welding a tube end upon the body of an old tube with this machine is as follows: The heated end of the tube being slid over the conical horn 22, the operator depresses the foot-lever 13′, thus pulling down the yielding rest 17 and forcing down the arms 7 into contact with the cam-wheels by means of the curved springs 11, the force of the blow being regulated by the amount that the foot-lever is depressed. The scarfing portion 25

of the hammer then acts to thin out and taper the heated end of the pipe, into which the beveled end of the tube-section is thrust, after which the two parts are heated, and, being thrust over the welding-horn 21, are welded together by the hammer, which is actuated as before. The heated end of the welded section is then swaged down in the registering recesses 23 and 26 and is driven into the central gaging-hole in the gage 28, thus forming ends of uniform external diameter.

The advantages of my invention will be apparent to those skilled in the art, since, on account of the double-helve shank of the hammer, a perfectly-vertical oscillatory motion is given, no side or rocking motions being possible. The force of the blow is easily regulated by the operator, who depresses the foot-lever more or less, according as he wishes a stronger or lighter blow. The steps of scarfing, welding, and swaging are all carried out by the same machine, and it is evident that the work of the hammer can be easily varied by changing the hammer and the anvil-horns or other tools with which the hammer coacts.

Many changes may be made in the form and arrangement of the parts of the device without departing from my invention, since

What I claim is—

1. In a welding-machine, a driven shaft having two cam-wheels thereon, a hammer having a bifurcated stock, each arm of the stock being pivoted to the frame in the rear of the cam-wheels, and the frame having, above the cam-wheels, guides arranged to contact with the two arms and prevent side motion of the hammer; substantially as described.

2. In a welding-machine, the combination with a swinging hammer, of a pivoted lever having a curved spring arranged to bear upon the hammer-stock, and a yielding rest upon which the hammer bears, substantially as described.

3. In a welding-machine, a swinging hammer, a cam-wheel arranged to oscillate the same, a lever having a curved spring arranged to bear upon the hammer-stock, a spring upon which the hammer-stock rests, and a connection between said spring and the pivoted lever, substantially as described.

4. In a welding-machine, a hammer having a bifurcated stock, each arm of the stock being pivoted to a side frame, a driven shaft having cam-wheels arranged to contact with the stock-arms, and provided between said arms with a pulley; and a pivoted lever having curved springs arranged to bear upon the arms of the hammer-stock, substantially as described.

5. In a machine for scarfing tubes, the combination with a scarfing-horn and a welding-horn, of a swinging hammer having recesses arranged to coöperate with both of said horns; substantially as described.

6. A scarfing-machine, having a scarfing-horn, a welding-horn, and a swaging-block, and provided with a swinging hammer, having portions arranged to coöperate with each of the horns and the swaging-block, substantially as described.

7. A machine for swaging pipe, said machine having attached thereto at one side a loosely-sliding head arranged to contact with the side of the machine and having a gaging-aperture for the end of the pipe; substantially as described.

In testimony whereof I have hereunto set my hand.

WILHELM C. KROEGHER.

Witnesses:
H. M. CORWIN,
JAMES C. BOYCE.