

UNITED STATES PATENT OFFICE.

AUGUST BRAUKMAN AND LATHAM BRIGHTMAN, OF CLEVELAND, OHIO.

IMPROVEMENT IN MACHINES FOR DRAWING AND STRAIGHTENING METAL RODS OR BARS.

Specification forming part of Letters Patent No. 191,100, dated May 22, 1877; application filed April 16, 1877.

To all whom it may concern:

Be it known that we, AUGUST BRAUKMAN and LATHAM BRIGHTMAN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Machine for Drawing and Straightening Metal; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to machines for drawing and straightening metals; and consists in the several parts and combinations as hereinafter specified and claimed.

In the drawing, Figure 1 represents a plan view of a device embodying our invention. Fig. 2 is a side elevation. Fig. 3 is an end view. Fig. 4 is a detached side and top view of the clamping device.

The object of our invention is the construction of a machine whereby shafting and other metal bars may be drawn and straightened at the same time.

A represents the frame or base of the machine, of any suitable form and construction. B represents the die through which the shaft or metal bar is drawn. C is a projection or stop, provided with a suitable slot, *c*. Against said stop abuts the die B, which is thus held in place while the shaft or bar is being drawn through. Said stop C is firmly secured to the frame or base of the machine. D D' represent the straightening device, which consists, essentially, of a series of grooved rollers, arranged to operate on the sides of the shaft or other metal bar to be straightened. Said grooved rollers *d* are carried by arms *d'*, which slide in grooves *d²* formed in a suitable frame, *d³*, which latter is secured to the base of the machine by screws, or in any other manner. Each of these independent frames is preferably so constructed that when one of said screws or rivets is removed the frame *d³* may be turned on the other screw or rivet as a pivot, thus releasing the rollers from contact with the shaft or bar. Said grooved rollers may, however, be carried in any other manner that will serve the same purpose as the arms and

grooves referred to. The frame *d³* is also provided with a number of set-screws, *d⁴*, which abut against the inner ends of the arms *d*, whereby the relative position of the grooved rollers may be regulated. Any number of rollers may be employed, and they are grooved to correspond nearly with the size of the shaft or bar to be straightened.

G represents the grappling device, which consists of the two jaws *g g¹*, roughened at the point of contact with the metal operated upon. *g²* is a screw, by the action of which the two jaws are brought together or separated, and by the tightening of which the metal bar or shaft is held. *g³* is a supplemental screw, the end of which abuts against the inner side of the opposite jaw, said screw *g³*, as well as *g²*, passing through the upper jaw *g¹*. Instead of merely abutting against the lower jaw, it may act in a suitable cavity formed in the same. When said screw *g³* is tightened the rear ends of the jaws are moved away from each other, while the opposite front ends are brought nearer, whereby the firmness of the gripe of the grappling device on the shaft or bar is further increased. The jaws *g* and *g¹* are each further constructed with an opening, *g⁴*, near their forward ends, through which pass the links *g⁵*, which are connected with the piston-rod beyond the rear end of the said jaws. These links, in addition to the function performed by them as a connection, also serve to tighten the hold of the jaws on the shaft or bar, by reason of their attachment to the forward end of the jaws, and the greater distance between the links at said point than at the rear of the jaws where connection is made with the piston-rod. It is evident that the greater the force applied the more firmly will the jaws take hold of the bar or shaft.

H represents a cylinder, in which moves the piston I attached to the piston-rod *i*. K is an inlet-pipe, and L an outlet-pipe. (Shown in the side elevation, Fig. 2.) Said piston is operated by hydraulic pressure, water entering by the pipe K and escaping by the outlet L. The end *h* of the cylinder may be left open, so that the pressure of the atmosphere, (on the exit of the water,) acting on the piston, will force it back to the forward end of the cylinder.

The operation of the machine is as follows: The die to be employed is placed in position against the stop C, and the prepared end of the shaft or metal bar to be drawn and straightened is introduced through the same and between the rollers, and at a sufficient distance beyond the latter to enable the grappling device to be adjusted. When the latter has been firmly secured, the piston I is brought into operation by turning on the water, which forces the piston to the other end of the cylinder, whereby, through the medium of the piston-rod and grappling device, the rod, bar, or shaft is drawn through the die and between the rollers, the former reducing the cross-section, and the latter straightening the shaft or bar. If more than one pass is required, a die of smaller gage is substituted, and the operation described is repeated.

In the construction of our device we prefer making the hydraulic cylinder of a sufficient length for the longest rods to which it may be applied—say, twenty feet, more or less. For shorter rods than these such a cylinder would answer all the purposes, as the supply of water can be stopped at any point.

What we claim is—

1. The combination, in one machine, of appliances for drawing and straightening bars or rods of metal, substantially as described.
2. The combination, with suitable drawing mechanism, of a series of straightening-rods, the latter arranged in alternately-opposite suc-

cession along the line of the drawing action, substantially as described.

3. In a metal drawing and straightening machine, the combination, with a suitable die, of a series of grooved rollers, a part of said series arranged opposite the remaining part in the same plane, the grooved peripheries thereof operating on the metal drawn between the same, substantially as and for the purpose described.

4. The combination of the grooved rollers *d*, arms *d*¹, grooved frame *d*³, and adjusting-screws *d*⁴, substantially as described.

5. In a metal drawing and straightening machine, the grappling device G, consisting of the jaws *g* and *g*¹, screws *g*² and *g*³, openings *g*⁴, and links *g*⁵, substantially as and for the purpose described.

6. The combination, with the drawing mechanism, of straightening-rolls whose opposite series are supported on independent frames, the latter adapted to be, respectively, swung from the line of drawing action, so as to release the rolls from contact with the shaft or bar operated upon, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

AUGUST BRAUKMAN.
LATHAM BRIGHTMAN.

Witnesses:

FRANCIS TOUMEX,
W. E. DONNELLY.