2 Sheets—Sheet 1.

J. PEDDER.

Machine for Rolling Hoes, Picks, &c.

No. 207,367. Patented Aug. 27, 1878.

Fig. 1.

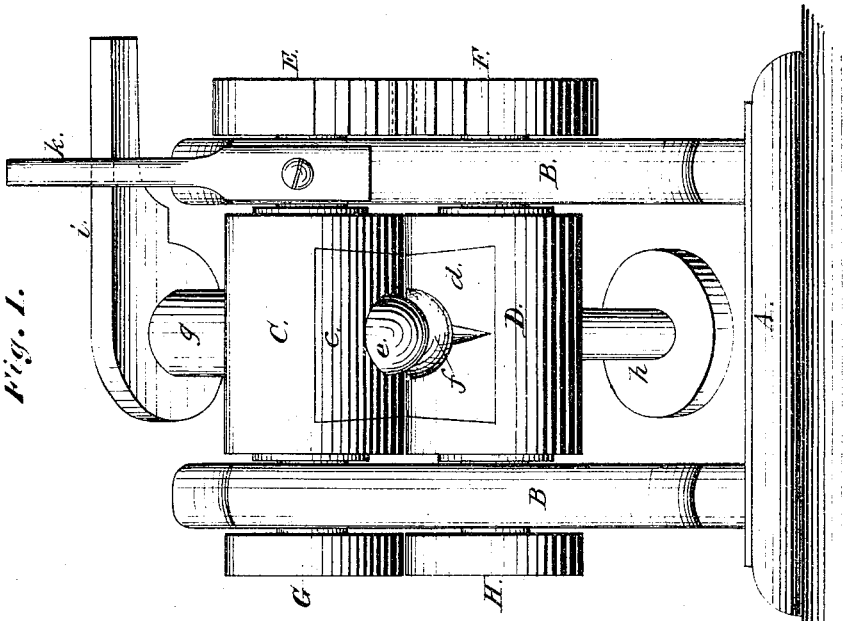
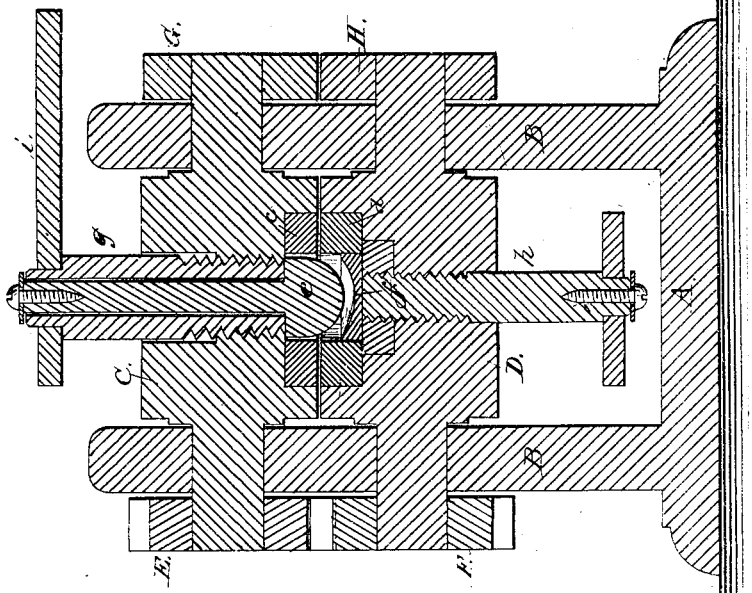


Fig. 2.



Witnesses:
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Inventor:
John Pedder
by Bakewell & Kerr
Attys

J. PEDDER.

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Fig. 3.

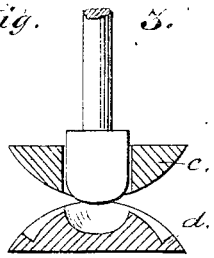


Fig. 4.

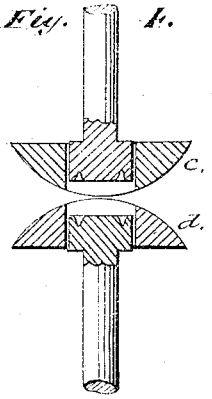


Fig. 5.

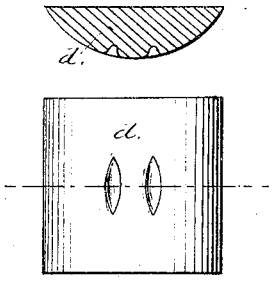


Fig. 6.

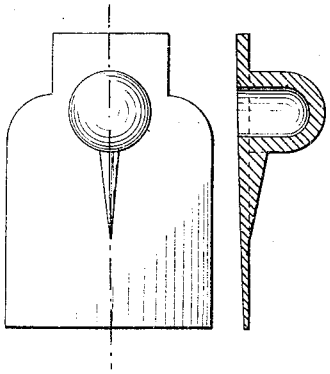


Fig. 7.

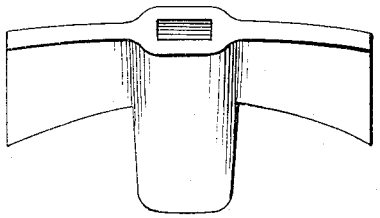
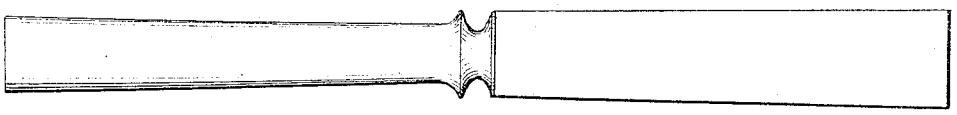


Fig. 8.



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Attys

UNITED STATES PATENT OFFICE.

JOHN PEDDER, OF BEAVER FALLS, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR ROLLING HOES, PICKS, &c.

Specification forming part of Letters Patent No. **207,367**, dated August 27, 1878; application filed August 7, 1878.

To all whom it may concern:

Be it known that I, JOHN PEDDER, of Beaver Falls, in the county of Beaver and State of Pennsylvania, have invented a new and useful Improvement in Machines for Rolling Hoes, Picks, and other Articles; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is an elevation of devices embodying my invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a sectional view of dies adapted to the formation of picks. Figs. 4 and 5 are similar views of dies for forming bolsters on knife or fork blanks. Figs. 6, 7, and 8 are views of a few of the many articles capable of being produced with suitable dies.

Like letters refer to like parts wherever they occur.

My invention relates to the construction and operation of rolls for producing various shapes—such as "solid-eye" hoes, "high-eye" picks, knife and fork blanks with bolsters and solid handles, and many other forms well known to the metal-worker, and now usually forged or formed in drop-dies.

To this end my invention consists, first, in combining with a pair of rolls a movable or piston die or dies capable of being operated through the roll or rolls and during the operation of the rolls, whereby specific and irregular forms having projections or cavities may be readily rolled without hinderance or limitation from the draft of the rolls.

Heretofore in the manufacture of solid-eye hoes—such as planters' hoes—high-eye picks, knife and fork blanks with bolsters, and numerous other articles of irregular form where thick projections or deep cavities were desired, either forging or the use of drop-dies has been commonly resorted to, because the article could be formed either in its finished shape or so near thereto as to require the minimum of subsequent labor to complete it. Rolls have been but little used, because the draft of the rolls limited the depth of cavity or height of projection that could be formed in or on the metal rolled, and the blank produced by the rolls required more labor to finish it than one produced by forging or drop dies, so that what was gained in power and speed by use of rolls was frequently offset by the finishing process.

Thus far inventors have mainly confined their attention to devising forms and shapes capable of being produced by rolling, and which could be subsequently finished by the minimum of labor; but my present invention is directed to such modification of the rolls as will give the combined advantages of both rolls and drop-dies.

I will now proceed to describe my invention, so that others skilled in the art to which it appertains may apply the same.

In the drawing, A indicates a bed, upon which are erected suitable housings B B for the rolls C D. The rolls C D should be geared to move together either by segments E F or equivalent devices; and the opposite journals of the rolls may be provided, if desired, with disk-rolls G H for any appropriate use. Where necessary, the usual housing-screws (not shown) for adjusting the rolls will be employed.

The faces of rolls C D may be constructed to receive fixed dies *c d*, keyed thereto in the usual manner; or the face of the roll may be itself shaped to the desired form, which, in every instance, will be such part of the entire shape as can readily be produced by rolling.

In the rolls C D are arranged movable piston-dies *e f*, whose faces will correspond to such portions of the article to be formed as cannot be rolled to advantage. These piston-dies *e* and *f* may be, and preferably are, operated by screws *g* and *h*, which pass through the rolls; and in order to avoid the turning of the die or other movement which might have a tendency to distort the metal, the screw is made separate from and independent of the die, though in case of the upper die (and sometimes in case of the lower die also) it will be necessary to arrange a swivel-connection, so that the screw shall be capable of retracting the die.

i indicates a lever secured to the screw of the upper roll, and projecting therefrom so as to strike a post or projection, *k*, on the housing, whereby the screw is partly rotated and the piston-die retracted. The same or equiva-

lent means can, when desired, be applied to the screw controlling the piston-die of the lower roll.

In Figs. 1 and 2 of the drawing are shown dies for rolling solid-eye or planters' hoes, the dies *c d* having the necessary shape to taper the blade (in one or both directions) and form a bead thereon, while the piston-dies *e f* are adapted to set up the solid eye. I will therefore describe the operation of the machine in the formation of a hoe-blank.

Power having been applied to the rolls, and a bar of suitable size having been properly heated, the lever *i* is pulled forward, so as to turn the screw and project the piston-die *e* the desired distance. The heated bar is then inserted between the rolls, and as the rolls move the piston-die *e* forces the metal into the cavity of *f*. The lever *i*, coming in contact with post *k* as the rolls continue to turn, reverses the screw and retracts the piston-die, permitting the blank to clear the rolls without distortion. The dies *c d* taper the blade of the hoe and form a bead thereon, and as the housing-screws are operated to set down the rolls said dies rapidly form and finish the blank.

In order to square up the shoulder or eye of the hoe, the piston-die *f* may be raised somewhat at the instant (or after) the piston-die *e* has been retracted. This will lift the cup slightly out of the cavity of *f*, and the further action of the rolls will upset the stock and insure a full and perfect eye.

The operation of the machine will be the same as above specified in case either of the other sets of dies shown or any others adapted to special work be substituted for the hoe-dies shown in Figs. 1 and 2.

I am aware that a piston punch or swage has been combined with a hollow roll, and actuated by cam mechanism within the roll, and used in conjunction with a counter-die, and do not herein claim the same; but,

Having thus set forth the nature, object, and advantage of my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a pair of rolls, of a piston or swaging die and a fixed die located in the same roll, and whose combined faces constitute the form to be produced, the piston or swaging die working transversely through the roll, and having part or parts of the form substantially as specified, said piston die also adapted to be partially or entirely retracted during the operation of the rolls, substantially as and for the purpose specified.

2. The combination, with a pair of rolls, of a piston or swaging die or dies working transversely through the roll, and adapted by mechanism, substantially as described, to be entirely or partially projected and retracted, substantially as and for the purpose specified.

In testimony whereof I, the said JOHN PEDDER, have hereunto set my hand.

JOHN PEDDER.

Witnesses:
JAMES H. PORTE,
H. A. LEON TRAMSET.