

(No Model.)

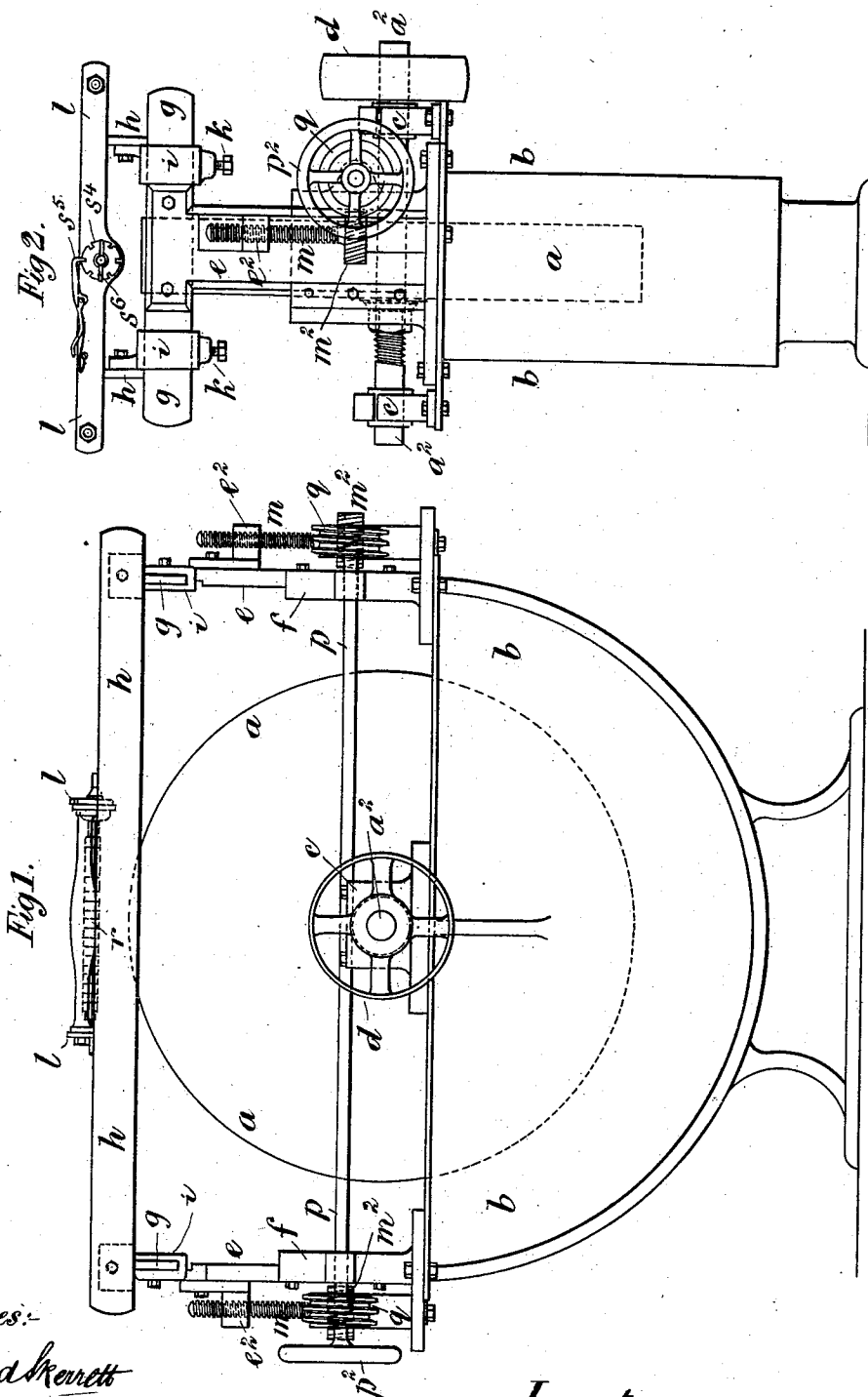
3 Sheets—Sheet 1.

J. HAMPTON.

MACHINERY FOR GRINDING AND POLISHING METAL, &c.

No. 375,625.

Patented Dec. 27, 1887.



Witnesses:-

Richard Kennett

Arthur J. Powell,

Inventor:-

Joseph Hampton

(No Model.)

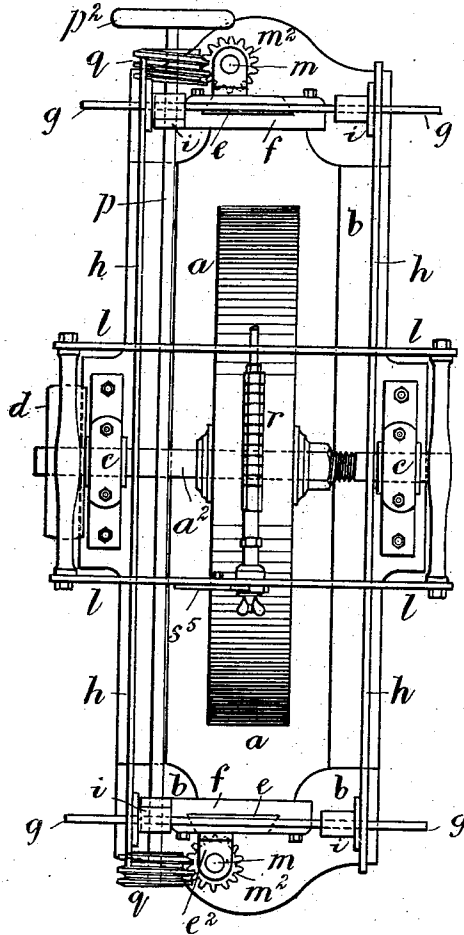
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No. 375,625.

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Fig 3.



Witnesses:-

Richard Skerrett.

Arthur J. Powell.

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(No Model.)

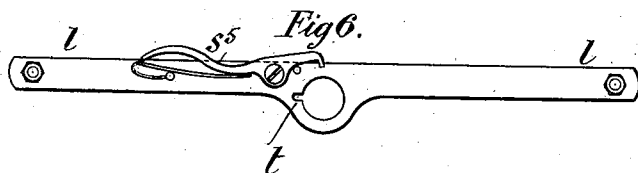
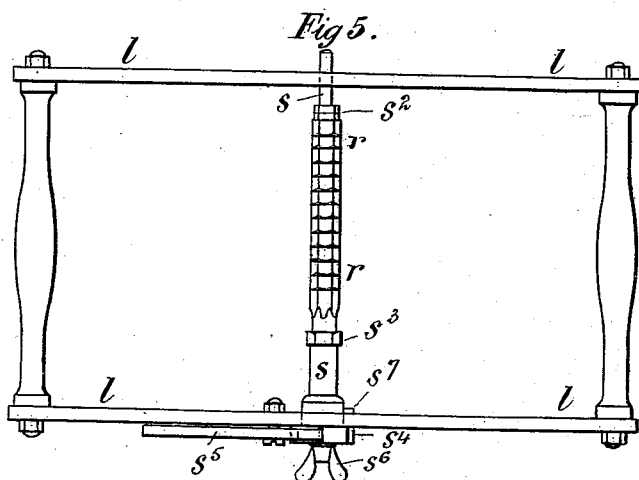
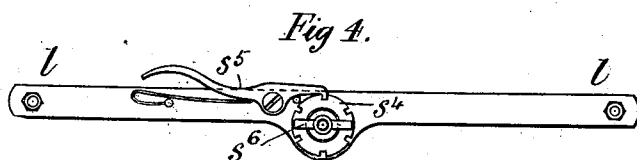
3 Sheets—Sheet 3.

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No. 375,625.

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Witnesses:—

Richard Merritt

Arthur J. Powell

Inventor:—

Joseph Hampton

UNITED STATES PATENT OFFICE.

JOSEPH HAMPTON, OF WEDNESBURY, COUNTY OF STAFFORD, ASSIGNOR
OF ONE-HALF TO SAMUEL PARTRIDGE, OF DARLASTON, ENGLAND.

MACHINERY FOR GRINDING AND POLISHING METAL, &c.

SPECIFICATION forming part of Letters Patent No. 375,625, dated December 27, 1887.

Application filed May 3, 1887. Serial No. 236,987. (No model.) Patented in England February 2, 1886, No. 1,558; in France October 12, 1886, No. 172,998, and in Belgium October 12, 1886, No. 74,818.

To all whom it may concern:

Be it known that I, JOSEPH HAMPTON, of Wednesbury, in the county of Stafford, England, a subject of the Queen of Great Britain, have invented new or Improved Machinery and Apparatus for Grinding and Polishing Metals and other Substances, (for which I have obtained a patent in Great Britain, No. 1,558, bearing date February 2, 1886, and in France, No. 178,998, bearing date October 12, 1886, and in Belgium, No. 74,818, bearing date October 12, 1886,) of which the following is a specification.

This invention has for its object to provide novel means for grinding screw-nuts and other articles; and it consists in the features of construction and combination of devices hereinafter described and claimed.

In the accompanying drawings, Figure 1 represents in side elevation, Fig. 2 in end elevation, and Fig. 3 in plan of upper side, machinery constructed according to my invention for grinding screw-nuts and other articles. Figs. 4, 5, and 6 represent the clamp or holder and appliances for holding the set of nuts to be ground detached from the machinery, the said Figs. 4, 5, and 6 being drawn to a larger scale than Figs. 1, 2, and 3.

The same letters of reference indicate the same parts in Figs. 1 to 6.

a is the grindstone, and *b* the water-trough of the same, the said grindstone being carried by the shaft *a'*, working in the bearings *c c* fixed on the water-trough *b*. The shaft *a'* of the grindstone is driven by a band working over the fixed pulley *d*. Combined with the grindstone *a* is a framing for supporting and guiding the holder in which the article to be ground is fixed, the said framing having a vertical motion to and from the grindstone. The said framing consists of the two uprights or slides *e e*, working in dovetail guides in the fixed uprights *f f* on the trough *b*. At the tops of the uprights or slides *e e* are cross-pieces *g g*, which support the guides or longitudinal flat bars *h h*, the said bars or guides *h h* being connected to the clips *i i*, sliding upon and being capable of adjustment on the cross-pieces *g g* of the framing. The clips *i i*

are fixed on the cross-pieces *g g*, after the adjustment of the guides *h h*, by the set-screws *k k*. Upon the upper edges of the guides or longitudinal flat bars *h h* the clamp or holder *l l*, carrying the screw-nuts to be operated upon, is supported. By lowering and raising the slides or uprights *e e*, the framing consisting of the cross-pieces *g g* and guides *h h* is lowered toward and raised from the grindstone *a*, and the screw-nuts can thus be brought under the operation of the said grindstone or removed therefrom, as hereinafter particularly described.

The framing *g g h h* is raised and lowered in the following manner: On each of the uprights or dovetail slides *e e* is a screw-box, *e'*, with which a vertical screw, *m*, engages, the bottom of the said screw being furnished with a worm-wheel, *m'*. The screws *m m* are only capable of a rotary motion. On the ends of the horizontal rod or axis *p* are worms *q q*, which engage with the worm-wheels *m' m'* on the bottoms of the screws *m m*. By turning the worm-axis *p* by means of the hand-wheel *p'*, rotary motion is given to the worms *q q* and worm-wheels *m' m'*, and the slides or uprights *e e* are simultaneously raised or lowered, and with them the framing *g g* and *h h* and parts carried by it.

I will now describe the clamp or holder represented in side elevation in Fig. 4 and plan in Fig. 5 and a portion of the same in Fig. 6. The said clamp or holder consists of a rectangular frame *l l*, having cross-handles at its ends for carrying it about and for moving it upon the guides *h h* of the machine. The screw-nuts, *r*, to be ground are strung upon the rod or mandrel *s*, the said nuts being clamped between the two clamping-nuts *s' s'*. On one end of the rod or mandrel *s* is a disk, *s'*, notched on its periphery, for the spring locking lever *s''*, situated on the side of the clamp-frame *l*, to engage with. At the disk end of the rod or mandrel *s* is a handle, *s'*, for turning it. The nuts having been strung upon the rod or mandrel, they are laid on an angular gage for adjusting or setting the several screw-nuts at the same angle. They are then bound on the mandrel. The mandrel carry-

ing the screw-nuts is then introduced into the clamp-frame *l*, a pin or stud, *s*⁷, at the disk end *s*⁴ of the mandrel passing through a slot, *t*, in the clamp-frame *l*. After the pin or stud *s*⁷ has passed to the inner side of the clamp-frame *l* the mandrel *s* is turned so as to remove the said pin from opposite the slot *t*. The mandrel *s* is thus secured in its place in the clamp *l*, and by now engaging the locking-lever *s*⁵ with one of the notches in the disk *s*⁴, as represented in Figs. 4 and 5, the rotation of the said mandrel is prevented. The clamp carrying the series of screw-nuts is next placed crosswise on the guides or bars *h h* of the rising and falling frame of the machine in the position represented in Figs. 1 and 3, and the said frame is lowered so as to bring the nuts in the clamp in contact with the grindstone *a*, and by giving the said clamp a longitudinal backward and forward motion upon the guides *h h* the undermost faces of the series of nuts are brought under the operation of the grindstone. By lifting the locking-lever *s*⁵ and turning the mandrel *s* by its handle *s*⁶ until the said lever drops into the next notch in the disk *s*⁴, the series of nuts is turned through the required angle to bring another face of them undermost, and they are again operated upon by the grindstone. In this way the whole of the faces of the nuts are in turn brought under the operation of the grindstone and ground. The upper edges of the guides *h h* of the rising and falling frame *h g* are flat when a flat or plane surface is to be ground, as shown in Figs. 1 and 2.

A series of emery-wheels may be used in

place of a grindstone. The cutting-surfaces of the emery-wheels are of different degrees of coarseness to suit the character of the work to be effected.

When the machine is to be used for polishing, bobs are substituted for the grindstone or emery-wheels.

Having now particularly described and ascertained the nature of my invention and the manner in which the same is to be performed, I declare that what I claim as my invention is—

1. The work-holder consisting of the rectangular frame *l*, the rotating mandrel *s*, on which the articles to be ground are strung, and means for clamping the articles on the mandrel, substantially as described.

2. The work-holder consisting of the rectangular frame *l*, the rotating mandrel *s*, on which the articles to be ground are strung, the notched disk *s*⁴ on one end of the mandrel, and the locking-lever *s*⁵ for engaging said disk, substantially as described.

3. The combination of the grindstone, the rising and falling frame having guiding upper edges, and the work-holder movable on the said guiding-edges, and consisting of the rectangular frame *l*, the rotating mandrel *s*, on which the articles to be ground are strung, and means for holding the mandrel stationary, substantially as described.

JOSEPH HAMPTON. [L. S.]

Witnesses:

RICHARD SKERRETT,
ARTHUR J. POWELL.