J. P. CURTISS.

MACHINE FOR GRINDING METAL ARTICLES.

No. 81,608. Patented Sept. 1, 1868.

Fig: 1

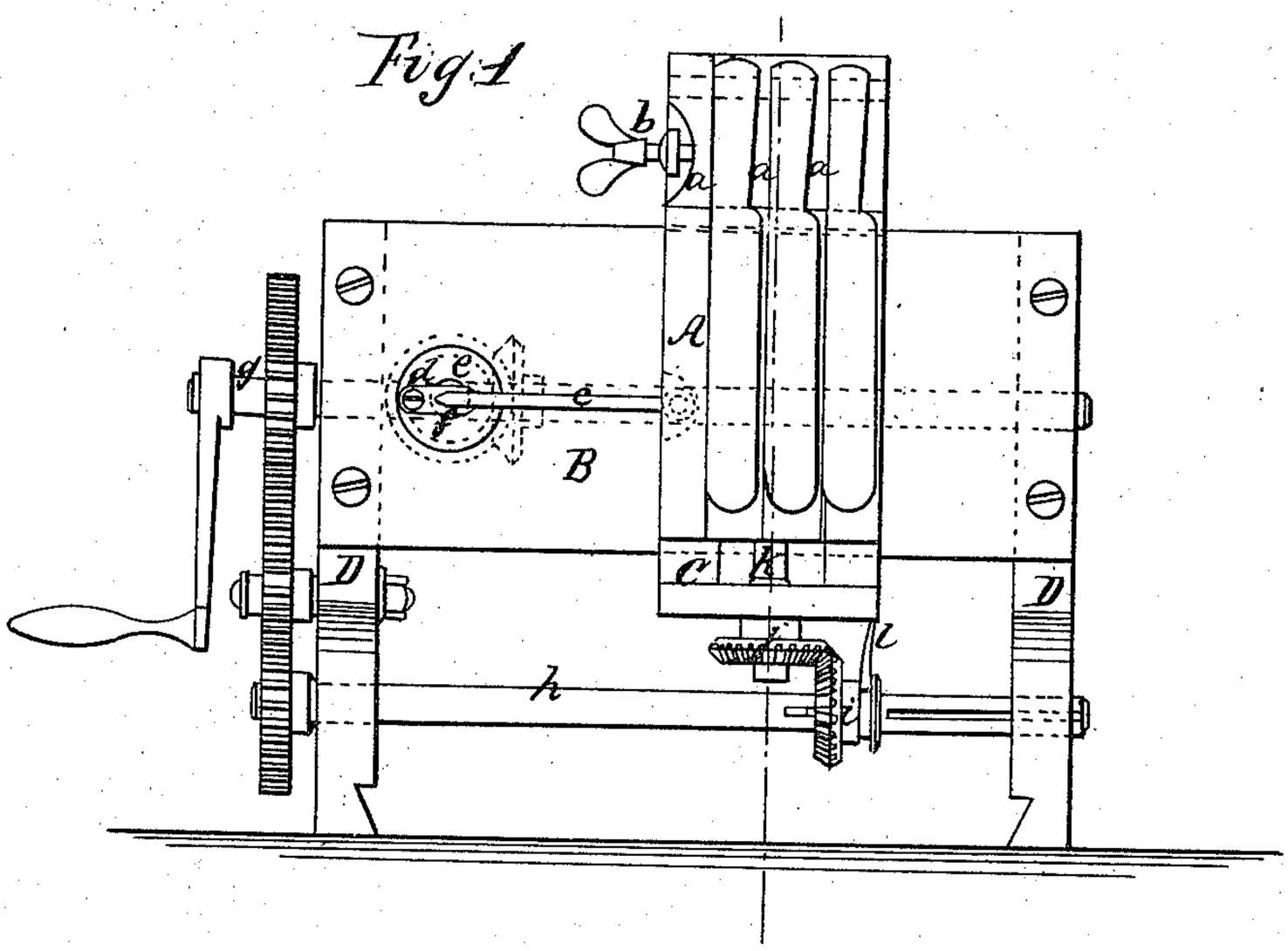


Fig: 2

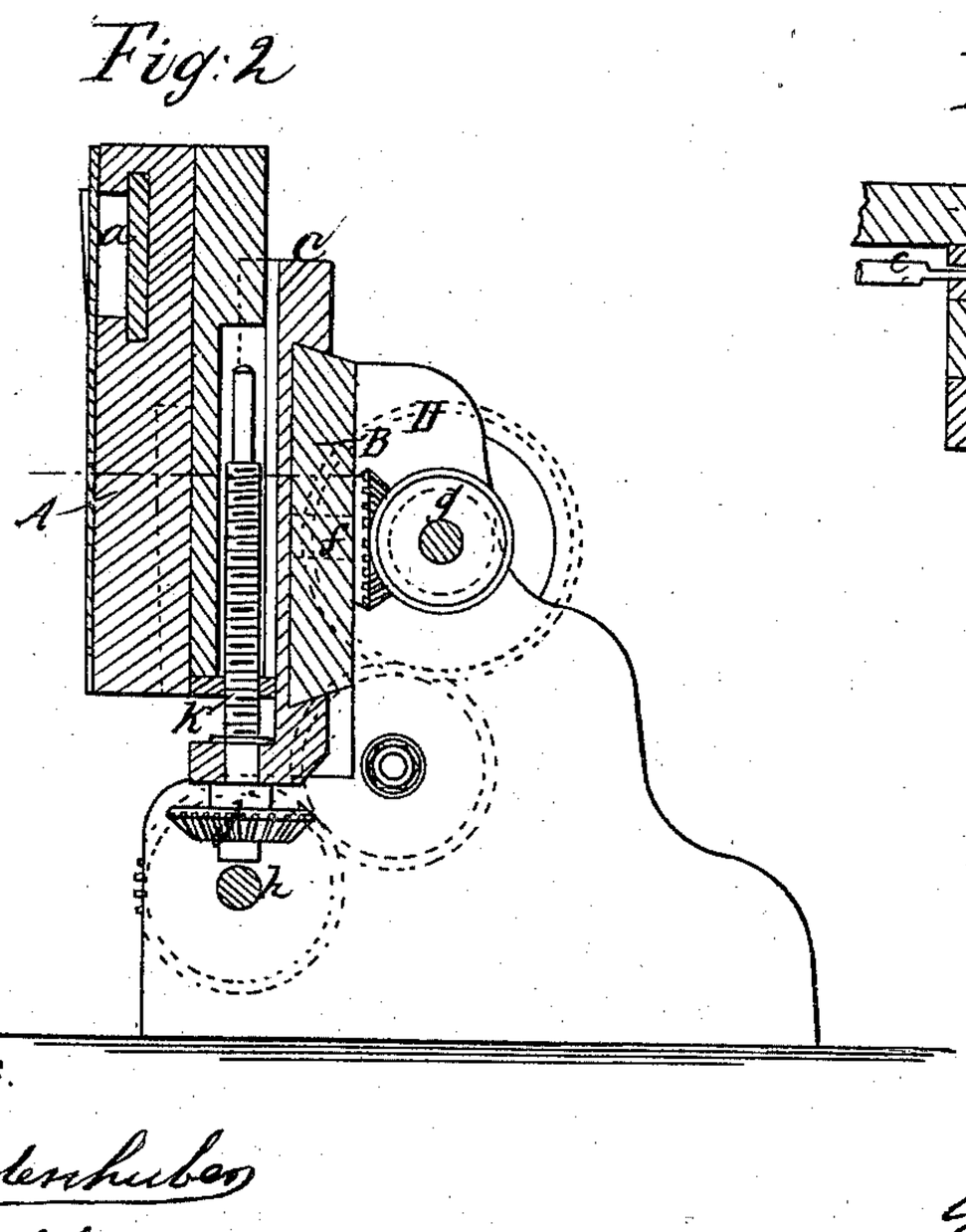
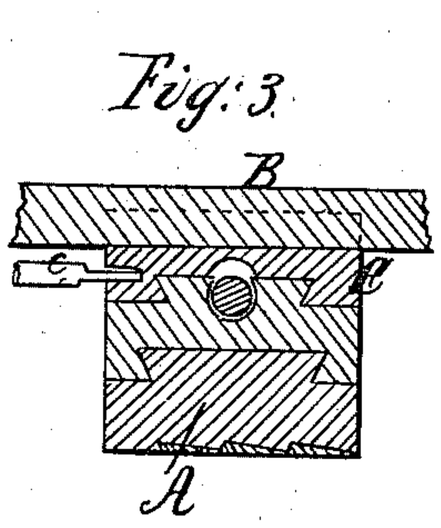


Fig: 3.



Witnesses.

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JONAS P. CURTISS, OF NEW BRITAIN, CONNECTICUT.

Letters Patent No. 81,608, *dated September* 1, 1868.

IMPROVEMENT IN MACHINE FOR GRINDING METAL ARTICLES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JONAS P. CURTISS, of New Britain, in the county of Hartford, State of Connecticut, have invented a new and improved Machine for Grinding Metal Articles; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 represents a front elevation of this invention.

Figure 2 is a transverse section thereof.

Figure 3 is a horizontal section of the holder and its carriage detached.

Similar letters indicate corresponding parts.

This invention consists in the arrangement of a holder, to which a quick automatic reciprocating motion is imparted transversely to the grinding-surface of the stone, in such a manner that said grinding-surface remains perfectly level and free from ridges, and retains always the proper working condition. The invention consists also in the arrangement of a series of clamping-jaws, placed side by side, and operated by a set-screw in such a manner that two or more knives, files, or other articles can be clamped simultaneously in said holder without trouble or loss of time, and the operation of grinding a number of such articles can be effected with great expedition.

A represents a holder, which is made of cast iron or any other suitable material, and fitted into a carriage, C, which is provided with V-shaped flanges to catch over corresponding V-shaped edges of the guide-plate B, so that said holder slides freely up and down in the carriage which traverses on the guide-plate, the motion of the holder being at right angles to that of the carriage.

In the holder is arranged a series of jaws, *a*, which are subjected to the action of a set-screw, *b*, and which are made in such a shape that they fit the tangs of knives or of files, or the ends of other articles to be ground, and which can be readily taken out and replaced by another set to correspond to the articles to be ground, in such a manner that a number of such articles (two or more) can be clamped simultaneously in the holder, and by releasing the set-screw all the articles can be readily taken out and another set can be introduced without loss of time.

The face of the holder may also be shaped to correspond to the shape of the articles to be ground, so that the surface to be ground will be parallel to the grinding-surface of the ston

The carriage C connects by a rod, *c*, with an eccentric wrist-pin, *d*, which projects from the face of a disk, *e*, that is moulded on the end of a shaft, *f*. This shaft is geared together by bevel-wheels, or in any other suitable manner, with the driving or main shaft *g*, so that it receives a rapid revolving motion, and thereby a quick reciprocating motion is imparted to the carriage C, together with the holder B, giving to the articles to be ground a rapid reciprocating motion transversely to the grinding-face of the stone. By these means the grinding-surface is preserved in the proper condition, and the operation of grinding is materially facilitated.

The shaft *g* has its bearings in standards D, to which the plate B is firmly secured, and said shaft is geared together with a second shaft, *h*, on which is mounted a bevel-wheel, *i*, which meshes into a similar bevel-wheel, *j*, secured to the end of a screw-spindle, *k*.

The bevel-wheel *i* slides on its shaft *h*, being compelled to rotate with the same by a feather-key, and its hub is provided with a groove, to receive a forked arm, *l*, which is firmly secured to the carriage C.

The screw-spindle *k* has its bearings in said carriage, and it is mounted therein in such a manner that it can revolve without being permitted to move in a direction parallel to its length. Said screw-spindle is tapped into a nut screwed to the holder A, and when a revolving motion is imparted to the shaft *g*, the carriage C and the holder A receive a rapid reciprocating motion, as heretofore described, and the bevel-wheel *i*, being compelled to slide on its shaft with the carriage, receives at the same time a revolving motion, which is transmitted to the screw-spindle *k*, so that the holder A is caused to move in the carriage in a direction at right angles to the reciprocating motion which is produced by the eccentric wrist-pin *d* and rod *c*. By these means the arti-

cles to be ground are gradually brought in contact with the grinding-surface of the stone throughout their whole length.

The standards D are intended to be secured to a bed-plate, to which a motion can be imparted towards and from the stone, either by hand or by a suitable mechanism, so that the articles to be ground will be held in contact with the stone as the grinding-surface of the same wears away.

If desired, a suitable mechanism can be connected to said bed-plate to move it towards and from the stone, in accordance with the shape of files or other articles to be ground.

In practice, I propose to construct the holder out of two parts, so that the part containing the clamping-jaws *a* can be removed, and another part, of a similar nature, inserted in its place. By these means the operation of introducing and removing the articles to be ground can be effected without stopping or interrupting the motion of the machine.

I am aware that a patent has been granted to Samuel Darling, August 30, 1853, in which the holder receives a slow intermittent traversing motion by a ratchet and pawl. I do not claim broadly, therefore, as my invention, to give to the holder a traversing motion across the grinding-face of the stone, and I disclaim everything shown and described in said patent of Darling.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The arrangement of a series of clamping-jaws, *a*, in the holder A, substantially as and for the purpose set forth.

2. The holder A, made in two parts, one part being fitted into the carriage C, and retained by the screw-spindle *k*, while the second part is connected to the first part, so that it can be readily removed, all as and for the purpose described.

3. The combination, with the holder A, of the pitman *e*, crank-motion *d e*, and screw-spindle *k*, operating substantially as described.

4. The sliding-wheel *i*, the wheel *j*, forked arm *l*, and screw-spindle *k*, in combination with the reciprocating holder A, substantially as described.

JONAS P. CURTISS.

Witnesses:

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