W. A. MEYER.

SHOVEL GRINDING MACHINE.

No. 182,588. Patented Sept. 26, 1876.

Fig: 1.

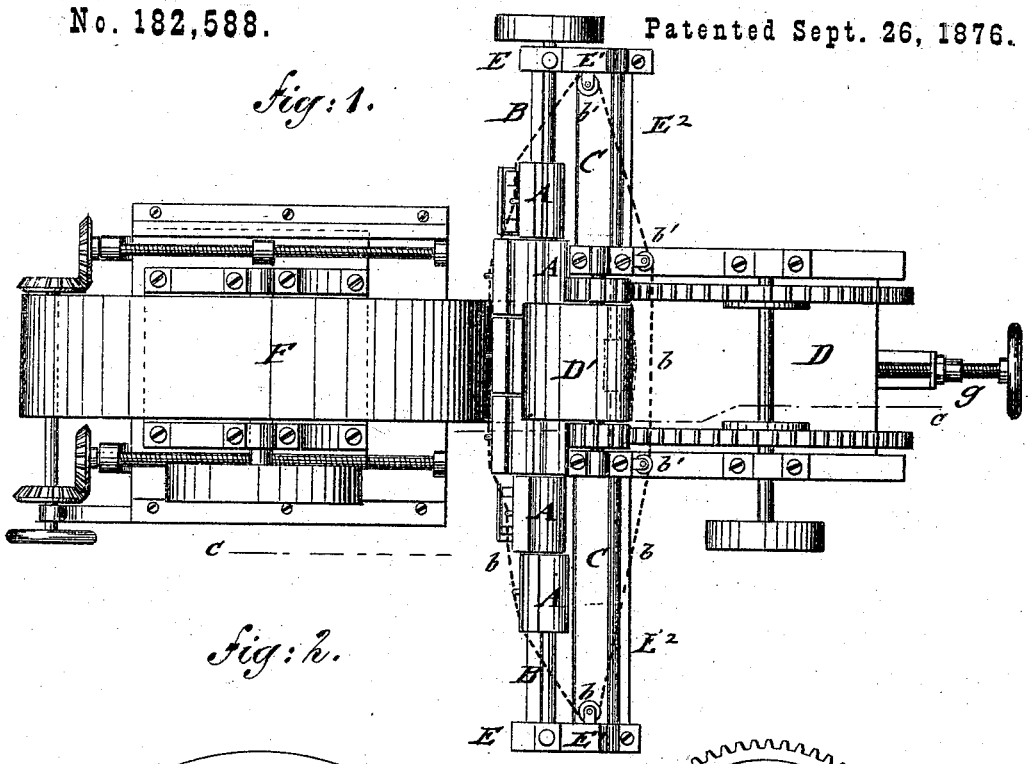


Fig: 2.

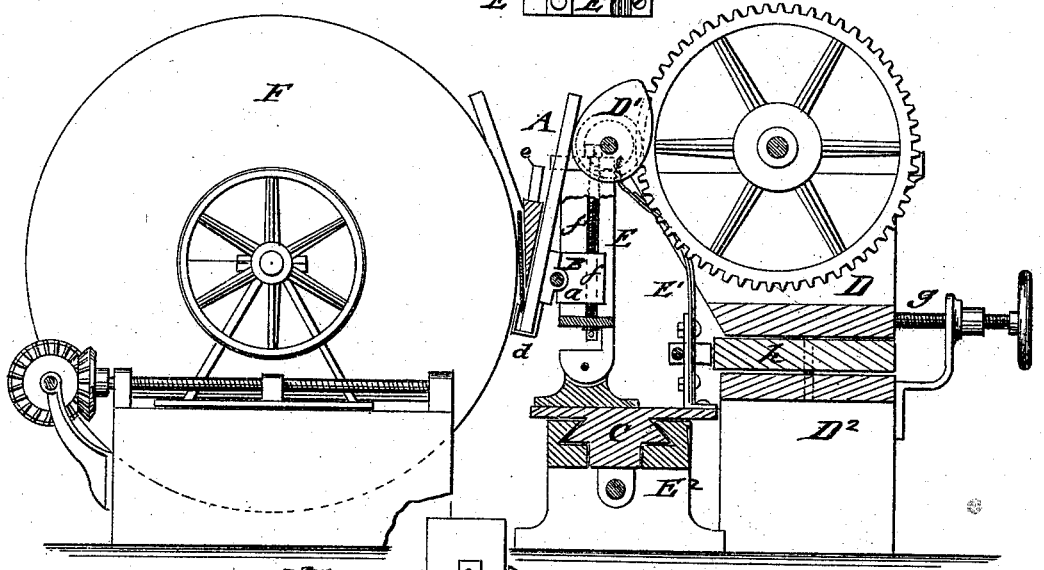
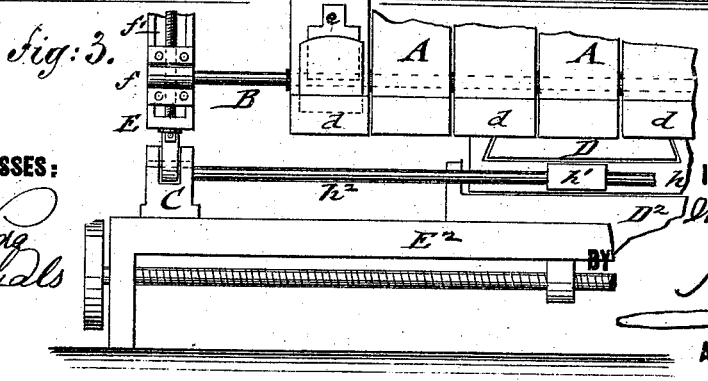


Fig: 3.



WITNESSES:

Chas. Nidg
J. Goethals

INVENTOR:

W. A. Meyer

BY

Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM A. MEYER, OF NORTH EASTON, MASSACHUSETTS.

IMPROVEMENT IN SHOVEL-GRINDING MACHINES.

Specification forming part of Letters Patent No. 182,588, dated September 26, 1876; application filed August 14, 1876.

To all whom it may concern:

Be it known that I, WILLIAM A. MEYER, of North Easton, in the county of Bristol and State of Massachusetts, have invented a new and Improved Machine for Grinding Shovels, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a plan view of my improved machine for grinding shovels; Fig. 2, a vertical longitudinal section of the same on line *c c*, Fig. 1; and Fig. 3, a detail front view of the shovel-blank supporting-frames.

Similar letters of reference indicate corresponding parts.

The invention has reference to an improved machine or apparatus for grinding the steel blanks of shovels in a rapid, uniform, and economical manner over the entire surface of the same; and the invention consists of a series of swinging shovel-blank supporting-frames, that are journaled in a shaft placed on pivoted and spring-acted standards.

The blank-holding frames and standards are supported on a traversing carriage that feeds the blanks successively to a rapidly-revolving and adjustable grindstone, that grinds the entire surface of the blanks, in connection with a revolving eccentric cam, supported on a pivoted and sliding carriage.

In the drawing, A A are a number of swinging frames, that are hung by a rear bearing or sleeve, *a*, applied near to the lower part of the frame to a shaft, B, so as to swing loosely thereon. The upper parts of the frames have a tendency to tilt forward, and are prevented from so doing by a chain, *b*, that passes through eyes of the frames, and over suitable pulleys *b'*, applied to the shaft-supporting carriage C, and of the cam-carriage D at the back of the frames. The frames A are provided at their lower parts with metallic sockets or holders *d*, into which the steel blanks that form the cutting-end of a shovel are placed, and rigidly retained therein by wooden wedge-pieces *e*. In case any other article of flat or other shape is desired to be ground, the supporting-frames have to be constructed so as to be adapted to hold the special article. The frame-carrying shaft B is mounted on bearings *f* of upright standards E, that are pivoted at the lower ends to seats of a traversing carriage, C. The bearings *f* of shaft B are capable of vertical adjustment by means of set-screws *f'*, so that the sustaining-frames A may be raised or lowered, and thereby a smaller or larger surface be ground by the grindstone F. The pivoted or articulated standards E are pressed forward by strong flat springs E^1, that bear on the upper ends, and hold the blanks tightly to the grindstone. The carriage C traverses, by suitable screw mechanism, forward and backward on the bed-frame E^2, and exposes thereby one blank after the other to the grinding action of the rapidly-revolving stone.

The grindstone F is of a diameter corresponding to the work to be done, and turns in bearings that admit the truing of the stone, and also the forward adjustment of the stone to the work in proportion to the gradual wearing off of the stone.

The upper part of the shovel-holding frames A is acted upon by a revolving eccentric cam, D^1, whose shaft turns in bearings of the carriage D. The revolving cam D^1 is of such width as to expose continuously three or more blanks to the action of the grindstone, and serve for the purpose of bringing the entire surface of the blank in contact with the grindstone, producing, in connection with the spring-acted standards, the uniform "lapping" or "hugging" of the blanks to the stone. The forward motion of the cam swings the upper portion of the blank forward against the stone, while the return motion of the cam permits the lower portion of the blank to be exposed to the action of the stone. The compound motion imparted by the spring-acted standards and eccentric cam to the swinging shovel-frames is intended to imitate the hand-grinding process, and to do it in a uniform and reliable manner, producing the grinding of the blanks by mechanical means in a rapid and perfect manner.

The cam-supporting carriage D is capable of being moved toward or from the shovel-frames, as required, by the articles to be exposed to grinding.

An adjusting-screw, *g*, is arranged in the direction of the central axis of the cam-carriage, and produces the adjustment on a base-plate, *h*, of the bed-frame D^2. The base-plate *h* of the carriage D is further connected, by a

central pivot-bolt, with the bed-frame, and the base-plate brought in contact by a forward-extending face part, which is curved or inclined from the corners toward the center, with a convex set-block, h^1, that is rigidly affixed to a longitudinal rod, h^2, of the traversing carriage C. The traversing block h^1, when approaching either end of the face-plate, throws the cam-carriage in lateral direction, and places thereby the cam in a position at a slight angle to the shovel-frames whenever they have arrived at the point at which their lateral motion is reversed.

When one face of the blanks is fully ground, the same are reversed to expose the other side to the stone, and then new blanks are inserted, and so on, the ground steel blanks being finally welded to the upper iron portion of the shovel.

I do not confine myself specially to the application of the machine to grinding of shovel-blanks, as the same may, with small changes, be adapted to grind a variety of other articles of manufacture.

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

1. A machine for grinding shovel-blanks and other articles, consisting, essentially, of a number of swinging and traversing supporting-frames, in combination with a revolving and adjustable grindstone and a revolving adjustable cam-eccentric, the whole being constructed and operated substantially as and for the purpose specified.

2. The combination of the blank-holding frames, with a retaining-chain passing through eyes at their upper ends, and pulleys of the traversing shovel-frame and cam-carriage, substantially as and for the purpose specified.

3. The laterally-swinging cam-carriage, having a projecting base-plate, with concaved or inclined face, in combination with a fixed set-block of the traversing shovel-frame carriage, substantially as described.

WILLIAM ALBERT MEYER.

Witnesses:

PAUL GOEPEL,

C. SEDGWICK.