

Patented June 19, 1860.



William Dougherty

UNITED STATES PATENT OFFICE.

WILLIAM DOUGHERTY, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR GRINDING SAWS.

Specification of Letters Patent No. 28,742, dated June 19, 1860.

To all whom it may concern:

Be it known that I, WILLIAM DOUGHERTY, of the city of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Machines for Grinding Saws; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference noted thereon.

The nature of my improvement consists of a block with inclined sides for receiving the saw blades to be ground, the said block being combined with and arranged in respect to two revolving grindstones, in the manner set forth hereafter and a horizontal as well as a vertical reciprocating motion being imparted to the block by the devices hereinafter described or their equivalents, so that the blades may be so far reduced as to have the desired taper or variation in thickness, as well as a uniform and smooth surface.

In order to enable others to make and use my invention I will now proceed to describe its construction and operation.

On reference to the accompanying drawing which forms a part of this specification, Figure 1, is a side view of my improved machine for grinding saws. Fig. 2, a sectional elevation; Fig. 3, a front view, and Fig. 4, a ground plan.

Similar letters refer to similars parts throughout the several views.

A is the base of the machine, on which are erected the four frames or standards B, B' and C, C'. In suitable boxes on the frames B and B' turns a shaft D carrying a grindstone E, and in similar boxes on the frames C and C' turns a shaft D' carrying a grindstone E', each shaft being furnished with a driving pulley *a* and the boxes being secured to the frames in such a manner that the shafts with their grindstones may be moved from and toward each other by any suitable system of screws, levers or other appliances which the builder of the machine may deem most applicable for the purpose.

Between the peripheries of the two grindstones is a vertical block G, secured to or forming a part of the dovetailed carriage H, which is adapted to, and arranged to slide in a dovetailed recess in the plate I. This plate fits snugly between the front frames B and C, and rear frames B' and C', and is provided with projecting brackets *e e* bearing against the inside of the frames so that

the plate can slide in a vertical direction only.

In suitable projections attached to the base plate A turns the driving shaft K, provided with a pulley F, and bevel pinions *h* and *i* the pinion *m* gearing into a bevel wheel secured to the screw L the threads of which are adapted to those on a nut *m* attached to the front end of the plate H, and the pinion *i* gearing into a bevel wheel *h'* on the screw M the threads of which are adapted to those of a nut *n* attached to the rear of the plate H. The screw M has a vertical groove for receiving a key in the hub of the wheel P which is confined between the nut *n* and a bar *q* secured to the under side of the plate H, so that while the screw is incapable of being turned independently of the wheel the latter can traverse freely along the screw. The teeth of this wheel P gear into those of a pinion *t* on the vertical spindle Q turning in a sleeve on the plate H which is provided at the top with a crank T the pin of which is connected by a rod *w* to a pin on the carriage I.

On turning the driving shaft K in either direction a horizontal reciprocating motion will be imparted to the carriage H and its block I, and at the same time the plate I with its carriage and other adjuncts will be either raised or lowered according to the direction in which the driving shaft is turned. The blade of a hand saw of the better class is so ground that the front edge on which the teeth are formed is thicker than the back edge, so as to prevent the jamming of the blade during its operation on the wood. My invention has been especially designed for the purpose of imparting to the saw blade this varying thickness or taper with a precision which cannot be attained by the ordinary process of grinding saw blades by hand.

It will be observed on reference to Fig. 4, that the opposite sides of the vertical block G are inclined, this inclination being determined by the extent of the variation in the thickness of the front and back edge of the blades which are temporarily secured by any suitable attachments, one blade to one inclined side and the other to the opposite inclined side of the vertical block G, the front edges of the blades being of course turned toward the front of the block. A rotary motion is imparted to the driving shaft K as well as to the two grindstones

which are brought to bear against the surfaces of the blades on the block, the latter being gradually elevated by the screws L and M and at the same time receiving a horizontal reciprocating movement from the crank T.

When the block has reached such an altitude that the lower ends of the blades have been submitted to the action of the grindstones the driving shaft is reversed by any suitable appliances and the block gradually descends, (the grindstones still acting on the blades) to be again elevated by another reversal of the driving shaft after the grindstones have acted on the upper ends of the blades, and this operation is continued until the blades have been reduced to the desired thickness and uniformity of surface. The blades are then removed from the block and replaced with their opposite unground faces outward so that the latter may be submitted to the reducing and beveling action of the grindstones.

It will be evident without further description that by the above operation the saw blades are reduced to the desired taper or varying thickness. It will also be evident that although I have described the block G as arranged to receive but two blades one on each side, it may be made of such a length

as to receive two or more blades on each side, and that it may be constructed to receive large mill saws. It will also be seen that by substituting ordinary polishing wheels for grindstones the requisite finish may be imparted to the blades.

I wish it to be understood that I do not claim broadly the employment of two grindstones so arranged that the pressure of one shall be counteracted by that of the other in operating on the blades of the saw, such a device having been described in the patent granted to William Southwell May 4th 1852; but that

I claim as my invention and desire to secure by Letters Patent—

The block G, with its inclined sides in combination with and arranged in respect to the two revolving grindstones E and E' when a vertical as well as horizontal reciprocating motion is imparted to the said block G by the devices herein set forth, or their equivalents.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses.

WILLIAM DOUGHERTY.

Witnesses:

HENRY HOWSON,
CHARLES D. FREEMAN.