S. BEVAN.

Saw-Grinding Machine.

No. 203,993. Patented May 21, 1878.

FIG. 1.

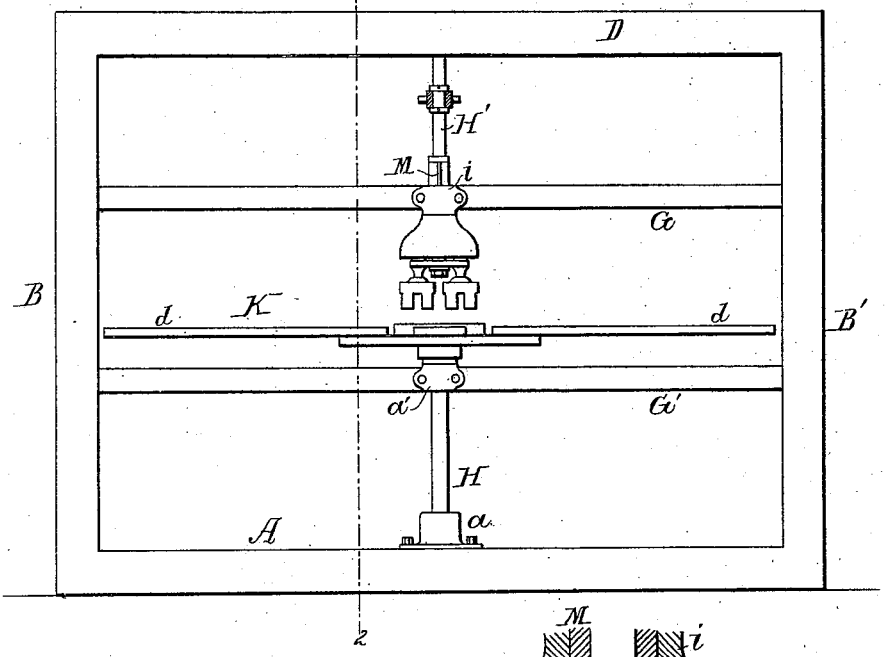


FIG. 2.

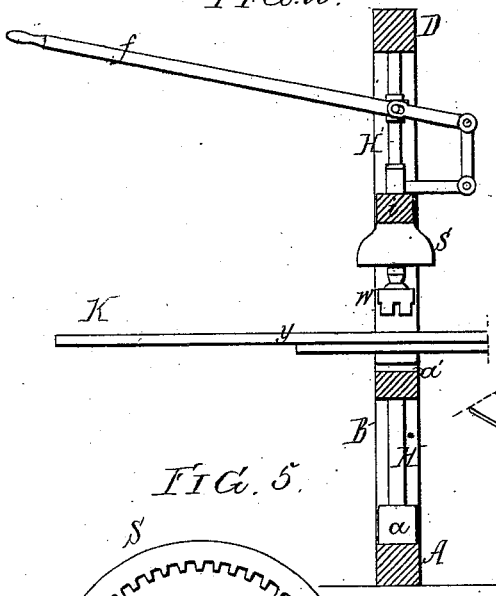


FIG. 4.

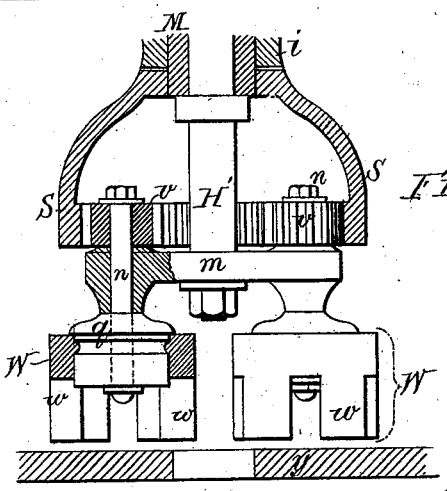


FIG. 5.

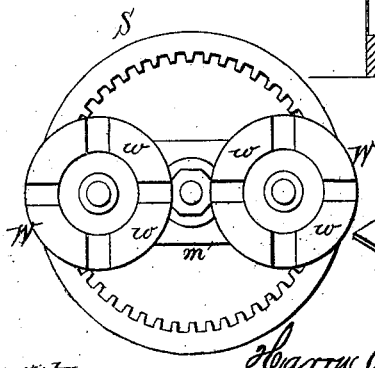
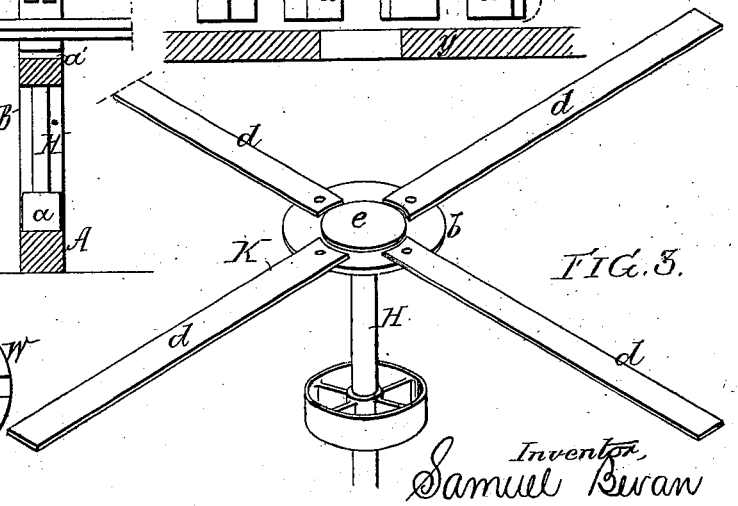


FIG. 3.



Witnesses,

Harry A. Crawford.

Harry Smith

Inventor,

Samuel Bevan

by his attorneys

Howson and Son

UNITED STATES PATENT OFFICE.

SAMUEL BEVAN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HENRY DISSTON & SONS, OF SAME PLACE.

IMPROVEMENT IN SAW-GRINDING MACHINES.

Specification forming part of Letters Patent No. **203,993**, dated May 21, 1878; application filed April 22, 1878.

To all whom it may concern:

Be it known that I, SAMUEL BEVAN, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Saw-Grinding Machines, of which the following is a specification:

The object of my invention is to impart such faces to opposite sides of that portion of a circular-saw blade which is confined between the collars of the spindle that the truth of the saw, when thus confined, shall be assured; and this object I attain in the manner and by the mechanism which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figure 1 is a front view of a machine for carrying my invention into effect; Fig. 2, a vertical section on the line 1 2; Fig. 3, a perspective view of part of the machine; Fig. 4, a detached view of part of the machine, drawn to an enlarged scale; and Fig. 5, an inverted plan view of Fig. 4.

The frame of the machine consists, in the present instance, of the base A, posts B B′, cross-bar D, and two intermediate bars, G G′.

To the upper end of a vertical shaft, H, adapted to bearings *a* and *a′* on the base A and bar G′, is secured a face-plate, K, which consists, in the present instance, of a central hub, *b*, and four arms, *d d d d*, secured to and projecting from the said hub.

These arms serve to support the circular-saw blade and are perfectly straight, their upper surfaces being in one plane at right angles to the vertical shaft, and a central circular projection, *e*, with a perfectly true face, being slightly above, but parallel with, the said plane, so that a circular saw, when placed on the face-plate, will bear harder on the central projection *e* than on the arms, the latter, however, serving to steady the blade and retain it in the desired position.

The face-plate may be in the form of a disk, with a very slight elevation in the middle, so that the central portion of the blade may be properly supported at the point where the lap-wheels, described hereinafter, act on it.

The shaft H, with its face-plate, may be rotated by a belt or any suitable system of gearing. Above the vertical shaft H, and in line therewith, is another vertical shaft, H′, which is arranged to revolve in a sleeve, M, the latter being confined vertically to the shaft by collars on the same. This sleeve can slide freely, but is incapable of turning, in the bearing *i* of the cross-bar G of the frame, and the shaft with the sleeve can be raised and lowered by means of a lever, *f*. To the lower end of this shaft H′ is secured a cross-bar, *m*, to bearings on each end of which is adapted the spindle *n* of a lap-wheel, W, each spindle being provided at its upper end with a pinion, *v*, the teeth of which are adapted to the internal teeth of a wheel, S, the latter being made in the form of an inverted cup, and being secured in any suitable manner to the lower end of the sleeve M.

The lower end of each spindle *n* has a grooved flange, *q*, to which is cast the lap-wheel W, of comparatively soft metal or alloy, this wheel having projections *w*, with intervening spaces, as best observed in the inverted plan view, Fig. 5.

The circular-saw blade having been placed on the face-plate in a position concentric with the two vertical shafts, and the said face-plate being caused to revolve, the shaft H′ is caused to revolve, carrying with it the cross-bar *m* and its two lap-wheels, W W, which thus revolve in a circle, the center of which is in the axis of the said shaft H′, the lap-wheels at the same time revolving on their own axes, in which condition they are applied, with fine emery, to the face of the saw-blade *y* by depressing the shaft H′, so that an annular portion of the blade around the central opening of the same is soon reduced to a uniform and fine level surface, which must necessarily be parallel with the general surface of the blade, inasmuch as the vertical shaft H′ is at right angles to the face-plate on which the blade is supported. After one side of the blade has been thus faced in the center it is turned over, and the opposite side faced by the action of the lap-wheels.

The portions of the opposite sides of the saw-blade thus faced are somewhat larger in diameter than the collars of the spindle be-

tween which the blade is to be confined. The collars being turned perfectly true, the faced blade must necessarily be true on the spindle.

In finishing the faces of a circular-saw blade there will always be minute annular ridges, which do not interfere with the operations of the saw, but which, when they occur at the point where the blade is embraced by and between the collars of the spindle, have often a tendency to throw the blade out of truth. It is these ridges which I remove by the above-described machine without any material reduction of the blade itself, just sufficient being ground away by the lap-wheels to insure that uniform surface on which the truth of the blade depends.

If desired, the machine may be so constructed that the face-plate shall be vertical and the shafts horizontal; but I prefer the arrangement described above, and one lap-wheel, or more than two such wheels, may be used.

I do not desire to claim grinding or polishing wheels or disks which are caused to revolve both round a common center and on their own axes; but

I claim as my invention—

1. The combination of a shaft, H, carrying a face-plate for supporting or holding a circular saw, with a shaft, H′, arranged in line, or nearly so, with the shaft H, and carrying lap-wheels or grinding-disks, and with mechanism whereby the said lap-wheels are caused to revolve in a circle as well as on their own axes, all as set forth.

2. The combination of the shaft H, the sleeve M, through which the shaft passes, and which is arranged to slide on, but not turn with, the said shaft, the wheel S secured to the sleeve, and the lap-wheels or grinding-disks carried by the shaft and geared to the wheel, all substantially as set forth.

3. The within-described face-plate, having a slightly-elevated central portion, *e*, as and for the purpose set forth.

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

SAMUEL BEVAN.

Witnesses:

HARRY A. CRAWFORD,

HARRY SMITH.