J. W. SCHLEICHER.

MACHINE FOR DRESSING AND FINISHING WOOD, &c.

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943,102. Patented Dec. 14. 1909.

Fig. 1.

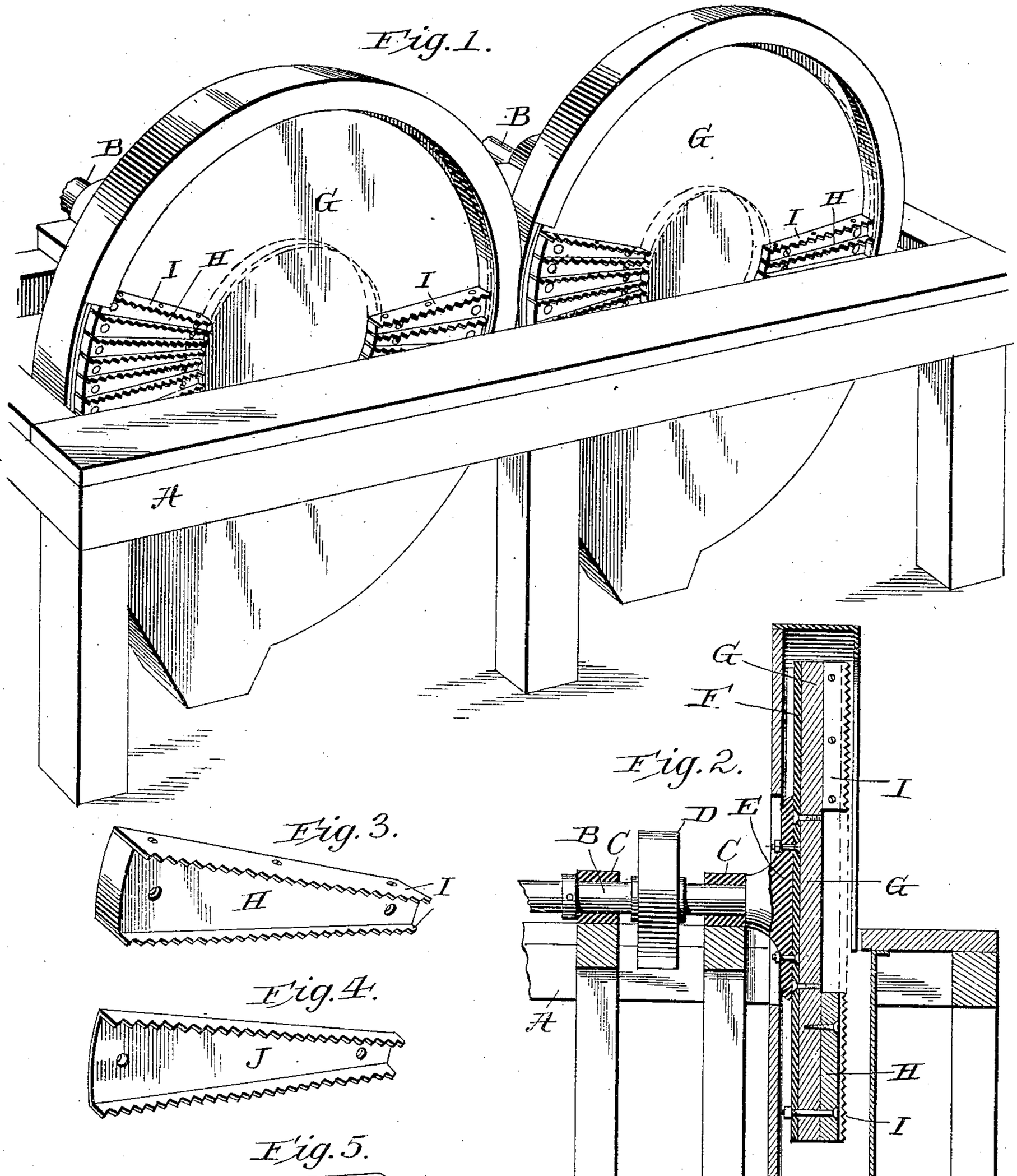
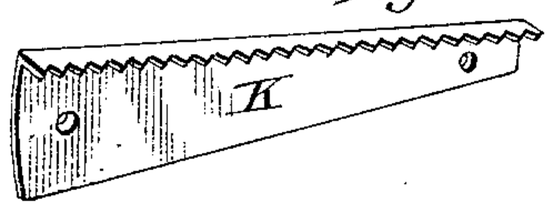


Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

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MACHINE FOR DRESSING AND FINISHING WOOD, &c.

943,102. Specification of Letters Patent. Patented Dec. 14, 1909.

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To all whom it may concern:

Be it known that I, JOHN W. SCHLEICHER, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Machines for Dressing and Finishing Wood, &c., of which the following is a specification.

This invention relates to machinery designed primarily to dress and finish woodwork, though capable of smoothing or dressing other surfaces also.

The invention consists essentially in an abrading surface composed of a great number of small metallic points arranged upon the flat or radial face of a revolving wheel or disk, and so positioned with reference to one another that every portion of a surface brought opposite and in contact with the abrading surface of the wheel will be acted upon by the points.

In a companion application I have shown and described a similar machine in which the points are made of separate lengths of wire or metal, driven into or otherwise secured in the face of a disk and brought to common plane at their protruding ends.

In the present application the points are formed by serrating, or notching, or otherwise treating the edges of sheet metal plates so as to produce thereon a great number of fine points. The sheet metal plates may be secured to the longitudinal edges of segmental wooden blocks which, being in turn secured to a suitable disk or backing, make up the abrading wheel, or they may be themselves made in segmental form with the teeth produced upon the upturned edge, the segments being in such case secured to the face of the disk to make up the abrading surface. It is to this feature, or this mode of making the toothed members and building up the abrading wheel, that the present invention primarily relates.

In the accompanying drawings: Figure 1 is a perspective view of a dressing or finishing machine designed to finish the surfaces of wooden boxes, and constructed in accordance with my invention, two abrading wheels being shown; Fig. 2 is a vertical section through one of the wheels and its casing, showing also the manner of mounting the wheel; Figs. 3, 4 and 5 are perspective views showing variant forms of the serrated metal plates or strips.

A indicates a suitable frame-work which may be of wood or metal, and of dimensions suitable for one or more wheels, as deemed desirable. As the construction of the wheels is or may be identical, except that it is usually preferred to make the teeth of one finer and closer together than those of the other, a description of one will suffice for both.

B indicates a shaft or arbor mounted in journal boxes or bearings C on the frame-work A, a band-wheel D being secured upon said shaft through which to impart motion by belt from any convenient source of power.

E indicates a boss or hub carried by the shaft B, and of suitable diameter to properly support and carry a wheel or disk F which is preferably made of boiler plate iron, but which may be of steel or other suitable material. In practice I find it advantageous to make this disk F about four feet in diameter and about a quarter of an inch in thickness, but these dimensions are purely suggestive, and may be varied as desired.

Screwed or otherwise made fast to the metal disk F is a wooden disk G, which I find it convenient to make of about one and three-eighths of an inch in thickness. To the face of this wooden disk I apply a series of wooden segments H, which may conveniently be made of about seven-eighths of an inch in thickness and about an inch in width at the outer or wider end, which, when the segment is applied to the wooden disk, is coincident with the periphery of the disk and forms a continuation thereof. The segment tapers toward its inner end, the side edges being, when the segment is in position, radial to the center or axis of the wheel.

I indicates a sheet metal plate or strip, which may be from one-eighth to three-eighths of an inch wider than the thickness of the segment, depending upon the thickness of the metal and the hardness or temper to be given it. One edge of this strip is serrated, as shown in Fig. 3, care being taken that the points of all the teeth lie in common plane. The strip so formed is screwed, or otherwise made fast to one edge of one of the segments H, each segment being similarly provided. The segments are then

made fast to the face of a wooden disk, preferably by a bolt at or near the outer end, and by screws toward the narrower end, the segments abutting one against another and jointly forming a complete circle.

In stamping out or producing the strips I, or in positioning them upon the segments H, care should be taken that teeth of one strip alternate with those of preceding and succeeding strips in the wheel, so that there may be no bare spaces left, or spaces untouched by points as the wheel is rotated and the work passed over it. Instead of making the strips in the form shown in Fig. 3, they may be bent up from opposite sides or edges of a plate J, as shown in Fig. 4, the plate with its upturned edges being made of segmental form and screwed, bolted, or otherwise directly secured to the wooden face G of the disk or wheel. In such case the metallic segments or plates J should be spaced apart sufficiently to give equal spacing to the serrated upturned edges.

Still another simple and convenient form is shown in Fig. 5, where one edge only of a segmental strip K is turned up and serrated. The segments thus formed will be arranged to abut edge to edge on the face of the wooden disk. They can be stamped from sheet metal, and bent to form very cheaply and accurately, and by reason of their accurate form they can be positioned upon the face of the disk quickly and with certainty.

Other forms of the metallic plate will readily suggest themselves, but those described are deemed best adapted to the purpose in view.

After the plates are all secured to the wooden disk and the wheel is thus made up, it is desirable that the extreme ends of the teeth or points be brought to common plane, which may be done by rotating the wheel upon its arbor and at the same time traversing across its face, or so much thereof as is occupied by the metallic strips, an emery wheel or other grinding body moving on a suitable guideway.

A machine constructed as above set forth is found to act with great rapidity and efficiency upon wooden surfaces, cutting knots, corner-locks, hard and soft places, and portions that are damp or even wet without difficulty. All portions of the surface are brought to common plane, and a quite smooth surface is produced. Owing to the great number of points which act upon the wood and the very small surface presented to the wood by any single point, the wood is cut away in infinitesimal quantities, but hard and soft spots, knots and the like are removed with seemingly equal facility and without danger or liability of splitting, chipping, tearing, or marring the surface.

The capability of the machine to dress surfaces more or less damp and to work upon lock-cornered boxes where the glue has not become thoroughly set, without in any manner loosening or impairing the joint, gives to the machine a vast advantage over the sand and emery wheels heretofore used. The very considerable loss of time incident to removing and replacing worn emery or sand paper is avoided, as is also the expense thereof.

The wheels are represented in the drawing as provided with a sheet metal shell or casing covering their peripheries, and extending downward in the form of a collecting hopper beneath the wheels. From the lower end of the hopper the dust and cuttings may be led by a pipe to any convenient point.

It will be noted that in each of the forms shown in the drawing the tooth-bearing portions of the sheet metal plates are in plane with the axis of rotation of the machine, or perpendicular to the radial face of the disk, and to the face of the material operated upon as the same is presented to the disk. As a consequence, the action is a scraping rather than a planing, paring, or slicing action, such as is produced by a cutting blade or body set obliquely or at an angle to the surface operated upon. By reason of this form of tooth or point, the great number of points employed, their arrangement out of line with one another, and the high speed at which the disk travels, the surface of the wood or material operated upon is scraped away in infinitesimal particles, without any tendency to chip, splinter, or groove the surface, and with very slight expenditure of power or wear of blades.

Having thus described my invention, what I claim is:

1. A machine for dressing wood and like substances, comprising a rotatable wheel or disk having its radial face armed with serrated sheet metal plates or strips perpendicular to the radial face of the disk, the ends of the teeth of said plates or strips being in common plane; and means for imparting rotation to said wheel.

2. In a machine for dressing and finishing wood, etc., an abrading wheel having its working face formed of a series of segments each having along one edge a strip of sheet metal with toothed or serrated edge, the ends of the teeth of said plates or strips being in common plane, and the strip being perpendicular to the radial face of the wheel.

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

JOHN W. SCHLEICHER.

Witnesses:
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