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TOOL FOR USE IN LEVELING, PLANING, AND/OR SMOOTHING WOOD AND OTHER LIKE SURFACES

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Fig. 1.

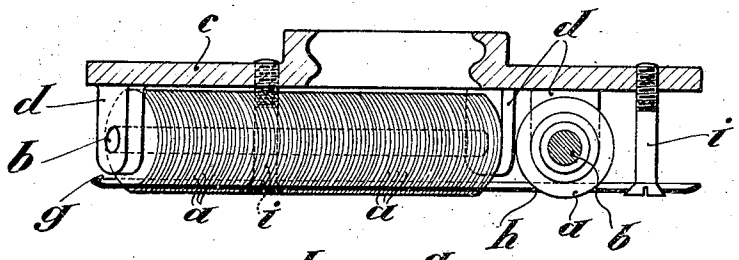


Fig. 2.

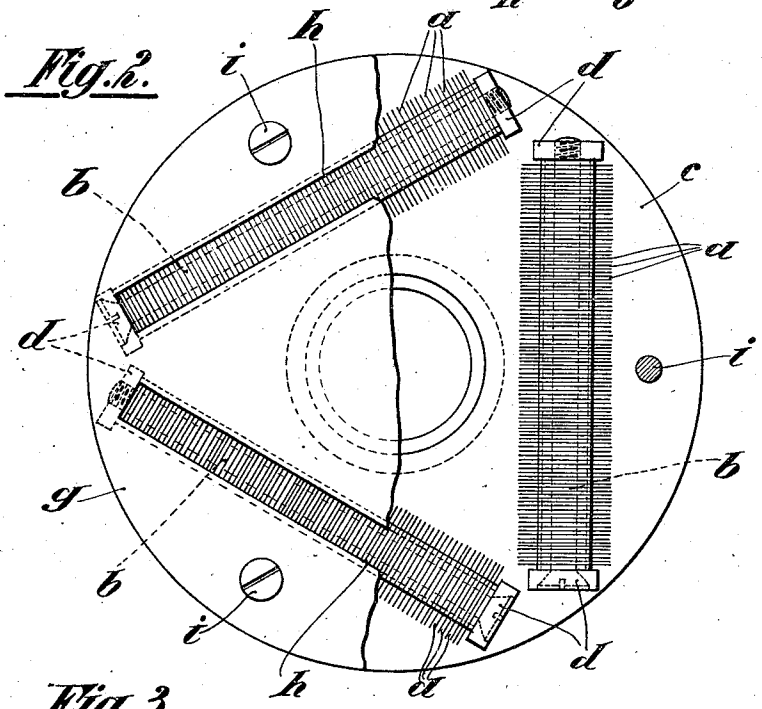
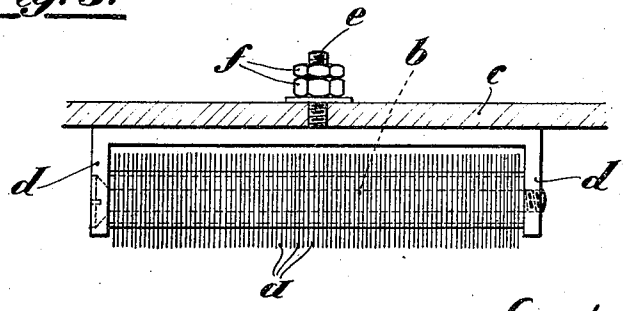


Fig. 3.



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UNITED STATES PATENT OFFICE.

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TOOL FOR USE IN LEVELING, PLANING, AND/OR SMOOTHING WOOD AND OTHER LIKE SURFACES.

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This invention has for its subject-matter a tool for use in leveling, cleaning-up, planing and smoothing wood and other like surfaces. The main advantage of the tool hereinafter described is the fact that it can be used for treating uneven or rough wooden and other like surfaces. It can be used for cleaning-up flooring or floor-boarding as well as in the furniture and other industries.

The tool according to the present invention as compared to tools heretofore used for surfacing or cleaning-up wood and other like surfaces has the essential advantages that the work is not only greatly facilitated but less time is required in the execution thereof. Further the leveling, smoothing or cleaning-up of the surface is not only independent of the condition of the wood or other material to be operated on but the work can be carried out in a better manner than by the methods heretofore extant.

The smoothing of flooring or flooring-boards was heretofore effected by means of scrapers thus necessitating strenuous labour as well as occupying a considerable amount of time. In the furniture industry smoothing is effected by means of glass-paper or the like of different degrees of coarsness but such operation never yields a perfectly smooth surface such as is produced for example by a plane whilst the surface produced by the tool according to the present invention is quite smooth and more or less polished.

The tool according to the present invention essentially consists in that the wood is smoothed by means of loosely rotatable discs which are arranged on a carrier rotatable at a suitable speed but preferably at a high speed about a vertical axis. When the carrier rotates the discs turn according to the degree of resistance offered by the wood the said discs therefore cut out of the wood shavings similar to turnings so that the wood itself becomes thoroughly smooth.

In order that the invention may be clearly understood and readily carried into practice, reference is made to the accompanying drawing which shows by way of example constructional forms in accordance with the present invention.

Figure 1 is a vertical section of a tool in accordance with the present invention.

Figure 2 shows a plan on the left-hand side and an inverted plan view on the right-hand side.

Figure 3 is a side view of an adjustable constructional form.

The tool according to the present invention comprises a plurality of discs *a* which may be obtained for example by stamping the edges thereof serving as cutters, the said edges automatically sharpening themselves when in use.

The discs are loosely and rotatably mounted on a spindle *b* a suitable space being left between adjacent discs so as to permit of each disc operating independently of the other. The spindle *b* on which the discs are mounted is arranged on the underside of a carrier *c* of plate-like form which carrier turns at a suitable high speed about a vertical axis. The spindles *b* carrying the disc cutters *a* are so arranged relatively to the axis of rotation of the carrier *c* that the surfaces of the said discs are more or less inclined to the direction of rotation. The disc cutters therefore acquire a particular movement of rotation corresponding to the stress due to their engagement with the wood.

Further according to the present invention a plurality of such disc cutters are mounted on a spindle *b* common to all the discs so that the discs thus mounted form a kind of roller each disc however being loose and capable of rotating per se. The finest working is obtained when the discs adjacent to the centre of each spindle are disposed radially to the axis of rotation of the carrier. An increased working effect can be obtained by disposal of the spindles in another direction in which case thicker shavings can be removed.

In order to render the disc rollers and their spindles *b* pivotable the latter could for example be rotatably arranged about a vertical axis. In the constructional example this is effected in such manner that the bearing blocks *d* in which the spindles *b* of the disc cutters *a* are supported are provided with a screw-threaded bolt which can be loosely passed through the carrier *c* and

secured thereabove by means of nuts *f* or the like. Any suitable type of adjustment may be used. For example adjustment may be effected in any direction by means of guide-slots.

Any suitable number of disc-cutter-rollers may be used.

The depth of engagement of the disc cutters *a* with the wood may be regulated and damage to the said cutters through accidental tipping or tilting of the tool may be prevented by a projecting bridge-piece *g* provided below the disc rollers the said bridge-piece or guard having holes through which the discs penetrate. The discs *a* penetrate through the slots *h* in accordance with the thickness of shaving or the like to be removed. The projecting guard or bridge-piece *g* can be adjusted by securing screws *i* so as to regulate the thickness of the shaving to be removed.

The tool may be arranged stationary or movable according to the purpose for which it is intended. Further any suitable type of drive may be used.

The discs *a* can be loosely rotatable or fixed on their spindles which may be rotatable.

What I claim is:—

1. A smoothing and surfacing tool for wood and the like comprising a carrier adapted to be rotatably mounted; and a plurality of discs mounted to rotate on said carrier, the axis of rotation of the discs being angularly arranged relative to the radii of the carrier passing thereover and the discs are so thin in proportion to their size and weight as to sufficiently enter the surface to be treated to render and effect a scraping and shaving action on the wood by the discs when the carrier is rotated.

2. A smoothing and surfacing tool for wood and the like comprising a carrier adapted to be rotatably mounted; a spindle mounted on said carrier; and a plurality of discs mounted to rotate freely on said spindle, the axis of said spindle being angularly arranged relative to the radii of the carrier passing thereover and the discs are so thin in proportion to their size and weight as to sufficiently enter the surface to be treated to render and effect a scraping and shaving action on the wood by the discs when the carcier is rotated.

3. A smoothing and surfacing tool for wood and the like comprising a carrier adapted to be rotatably mounted; a plurality of discs mounted to rotate on said carrier, the axis of rotation of the discs being angularly arranged relative to the radii of the carrier passing thereover and the discs are so thin in proportion to their size and weight as to sufficiently enter the surface to be treated to render and effect a scraping and shaving action on the wood by the discs when the carrier is rotated; and a projecting bridge piece provided under the discs and secured to the carrier, said bridge-piece having perforations therein through which the discs project and the distance of the projected portions of the discs controlling the thickness of the shaving.

4. A smoothing and surfacing tool for wood and the like comprising a carrier adapted to be rotatably mounted; a plurality of discs mounted to rotate on said carrier, the axis of rotation of the discs being angularly arranged relative to the radii of the carrier passing thereover and the discs are so thin in proportion to their size and weight as to sufficiently enter the surface to be treated to render and effect a scraping and shaving action on the wood by the discs when the carrier is rotated; a projecting bridge piece provided under the discs and having perforations therein through which the discs project; and means for securing the bridge piece to the carrier and to adjust the distance of the projecting portions of the discs to control and adjust the thickness of the shaving.

5. A smoothing and surfacing tool for wood and the like comprising a carrier adapted to be rotated; a plurality of spindles mounted on said carrier; and a plurality of discs mounted to rotate freely on each spindle, the axis of each spindle being angularly arranged relative to the radii of the carrier passing thereover and the discs are so thin in proportion to their size and weight as to sufficiently enter the surface to be treated to render and effect a scraping and shaving action on the wood by the discs when the carrier is rotated.

6. A smoothing and surfacing tool for wood and the like comprising a carrier adapted to be rotated; a plurality of spindles mounted on said carrier; a plurality of discs mounted to rotate freely on each spindle, the axis of each spindle being angularly arranged relative to the radii of the carrier passing thereover and the discs are so thin in proportion to their size and weight as to sufficiently enter the surface to be treated to render and effect a scraping and shaving action on the wood by the discs when the carrier is rotated; and a projecting bridge piece provided under the discs and secured to the carrier, said bridge-piece having perforations therein through which the discs project and the distance of the projected portions of the discs controlling the thickness of the shaving.

7. A smoothing and surfacing tool for wood and the like comprising a carrier adapted to be rotated; a plurality of spindles mounted on said carrier; a plurality of discs mounted to rotate freely on each spindle, the axis of each spindle being angularly arranged relative to the radii of the carrier

passing thereover and the discs are so thin in proportion to their size and weight as to sufficiently enter the surface to be treated to render and effect a scraping and shaving action on the wood by the discs when the carrier is rotated; a projecting bridge piece provided under the discs and having perforations therein through which the discs project; and means for securing the bridge piece to the carrier and to adjust the distance of the projecting portions of the discs to control and adjust the thickness of the shaving.

8. A smoothing and surfacing tool for wood and the like comprising a carrier adapted to be rotatably mounted; a plurality of pairs of bearing blocks secured to the carrier; a spindle mounted in each pair of blocks; and a plurality of discs mounted to rotate freely on each spindle, the axis of each spindle being angularly arranged relative to the radii of the carrier passing thereover and the discs are so thin in proportion to their size and weight as to sufficiently enter the surface to be treated to render and effect a scraping and shaving action on the wood by the discs when the carrier is rotated.

9. A smoothing and surfacing tool for wood and the like comprising a carrier adapted to be rotatably mounted; a plurality of pairs of bearing blocks secured to the carrier; a spindle mounted in each pair of blocks; a plurality of discs mounted to rotate freely on each spindle, the axis of each spindle being angularly arranged relative to the radii of the carrier passing thereover and the discs are so thin in proportion to their size and weight as to sufficiently enter the surface to be treated to render and effect a scraping and shaving action on the wood by the discs when the carrier is rotated; a projecting bridge piece provided under the discs and having perforations therein through which the discs project; and means for securing the bridge piece to the carrier and to adjust the distance of the projecting portions of the discs to control and adjust the thickness of the shaving.

In testimony whereof I affix my signature.

GUSTAV STAEHLE.