No. 642,452. Patented Jan. 30, 1900.

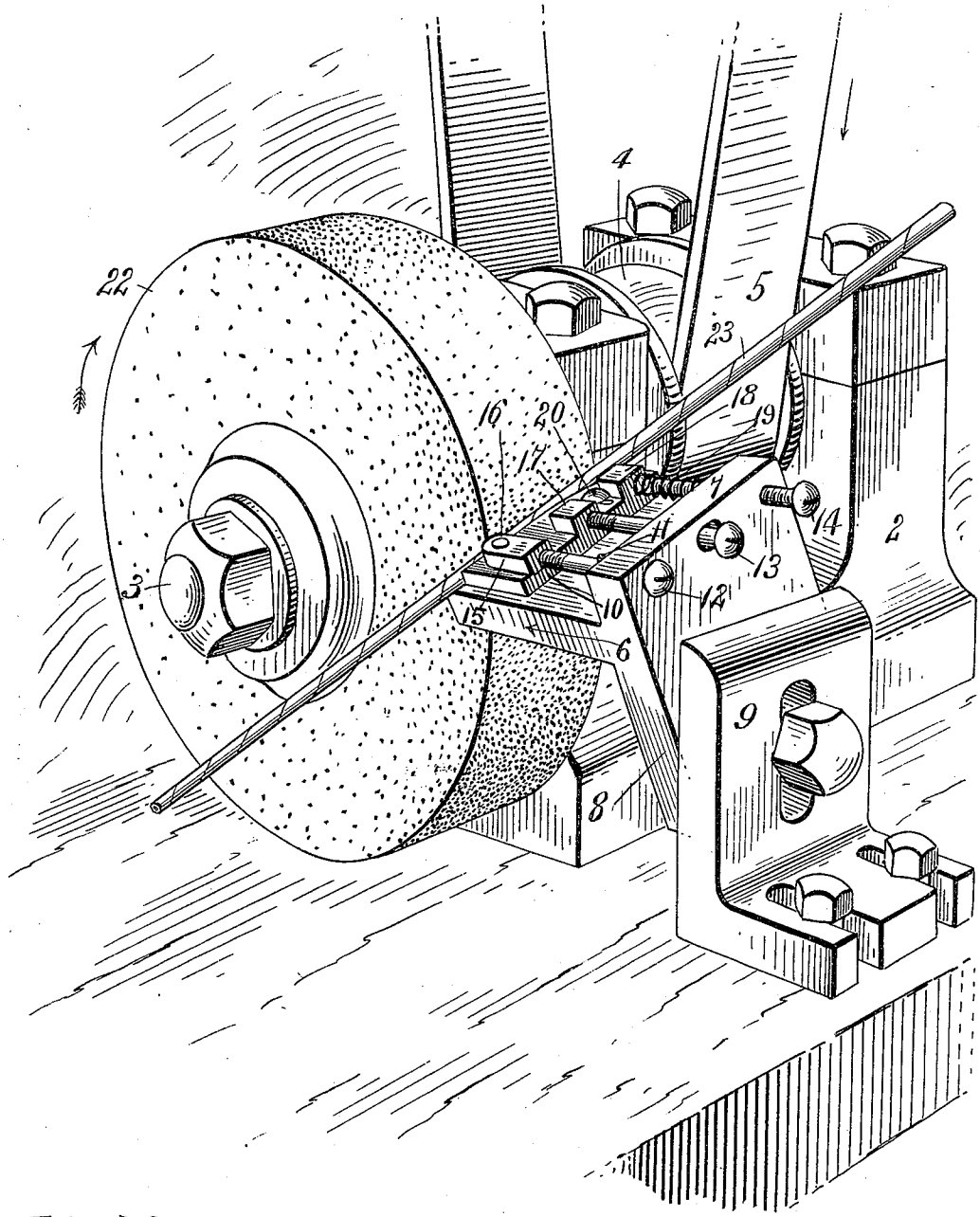
D. C. HULL.

MACHINE FOR GRINDING AND ROUNDING STRIPS OF RAWHIDE OR OTHER MATERIAL.

(Application filed Oct. 16, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

Fig. 2.

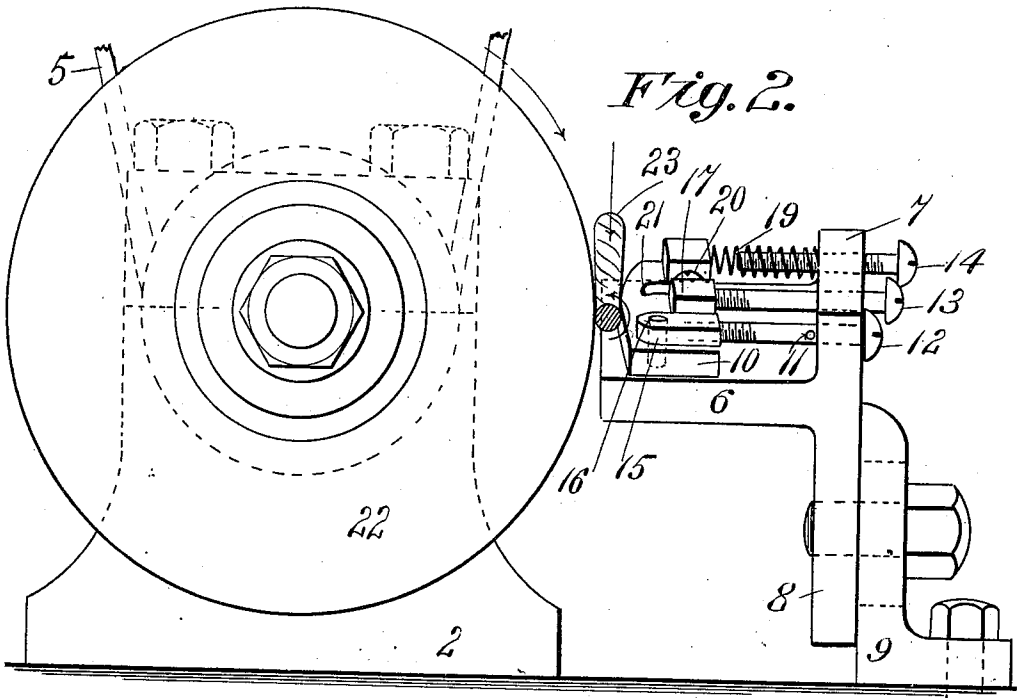


Fig. 3.

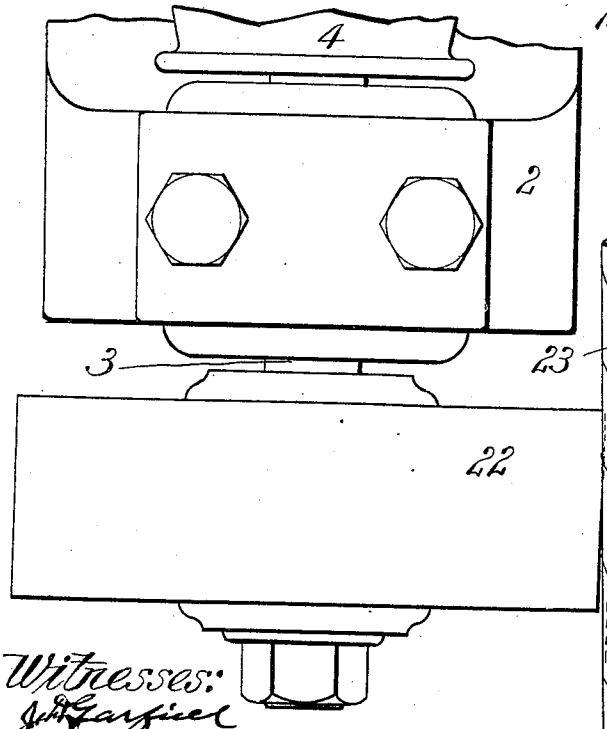
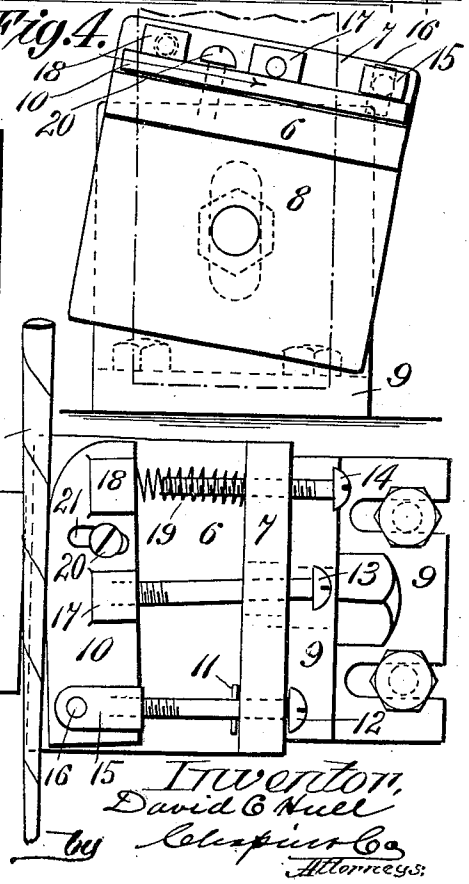


Fig. 4.



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UNITED STATES PATENT OFFICE.

DAVID C. HULL, OF WESTFIELD, MASSACHUSETTS.

MACHINE FOR GRINDING AND ROUNDING STRIPS OF RAWHIDE OR OTHER MATERIAL.

SPECIFICATION forming part of Letters Patent No. 642,452, dated January 30, 1900.

Application filed October 16, 1899. Serial No. 733,743. (No model.)

To all whom it may concern:

Be it known that I, DAVID C. HULL, a citizen of the United States of America, residing at Westfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Machines for Grinding and Rounding Strips of Rawhide or other Material, of which the following is a specification.

This invention relates to machines for producing an even surface upon cylindrical objects of tapering form or otherwise and particularly upon strips of material which are used in the manufacture of whip-stocks or similar articles, the object of the present construction being particularly to provide an improved machine for use in producing an even cylindrical surface upon rough twisted rawhide whip-centers by surface grinding which acts automatically to effect said object after a strip shall have one end introduced into the machine and which is equally effective for similarly working other like-formed materials; and the invention consists in the peculiar construction and arrangement of the several parts of the machine whereby said object is attained, all as hereinafter fully described, and more particularly pointed out in the claims.

In the drawings forming part of this application, Figure 1 is a perspective view of a machine for surface grinding cylindrical strips of materials embodying my improvements and illustrating the position therein of a strip of rawhide while being ground. Fig. 2 is an end elevation of the machine. Fig. 3 is a top plan view of the part of the machine in which the grinding-wheel is carried and of said wheel and of the devices which hold and guide the strip of material while it is being ground, this figure also showing a piece of said material held in grinding position. Fig. 4 is a view of the side of the material-holding mechanism adjoining the grinding-wheel.

Referring to the drawings, 2 indicates the frame of the machine, in which the shaft 3 and the grinding-wheel 22 thereon are supported for rotation by a driving-belt 5 or other suitable means. Said grinding-wheel may be of emery or of such other similar material as may be deemed best adapted to the work to be done. Said frame is supported upon a suitable bench or table, as shown, and near the frame a pillar or standard 9 is bolted adjustably to said bench or table, as shown in Fig. 1, and has a slot through its vertical member through which a bolt passes, as shown, and is vertically adjustable therein. A flat bracket-arm 6 is supported on said standard 9 by said bolt, which engages the leg 8 thereof, and thereby provision is made for so swinging the bracket that its table-like arm 6 may be adjusted to varying degrees of incline relative to the axis of said grinding-wheel 22, as shown, and owing to the described means of connecting said bracket with said standard 9 the bracket may also be adjusted vertically to bring its said arm 6 higher or lower, as may be desired. The purpose of the aforesaid adjustment of said table-like bracket-arm 6 to an incline relative to the axis of the grinding-wheel 22 is to provide for holding the strip or article 23 in such position, as shown in Figs. 1, 2, and 4 of the drawings, against the face of the grinding-wheel that the movement of said wheel-face thereagainst shall serve to both rotate more or less and to impart an endwise movement to the article being operated upon. The said rotary movement is sufficiently retarded by the frictional engagement of the strip 23 with its said supporting devices, so that the surface becomes properly ground or smoothed by abrasion. The endwise movement of said strip between its holding devices on said bracket and the face of the grinding-wheel 22 results from the application of the force of said abrasion to the surface of the article being operated upon in a direction diagonal to the axis of said strip. A variation of the incline of the strip-holding devices is found to vary the speed of the strip past the face of the grinding-wheel because of the increase or decrease in the angle of contact between the wheel and the strip. At the junction of said bracket-arm and the leg 8, extending upwardly above it, a border 7 is provided, and the end of the bracket-arm is supported in a position near to the face of said grinding-wheel 22, as shown in Fig. 2, and provides a narrow base upon which said cylindrical objects rest while being ground or shaped, as shown in Figs. 2 and 3. A work-holding lever 10 is pivotally connected to a block 15 by a pivot-pin 16 in said block, and a screw 12, free to be turned in said border 7, is held

against endwise movement therein by a pin 11, and the said block 15 and the end of said lever 10 are by turning said screw adjusted to vary the width of the space between said lever and the face of the grinding-wheel, according to the required finished diameter of the larger end of the article being ground. The said screw 12 enters the end of a block 15, which has a pivot connection with said lever by the adjustable pivot 16, which is also fixed to said block and has its lower end entering said lever, as indicated in dotted lines in Figs. 2 and 4. Thus the end of the work-holding lever 10, which is connected with said screw 12, may by operating the latter be moved relative to the adjoining face of said grinding-wheel 22 to increase or reduce the space between the pivoted end of said lever and the face of said grinding-wheel. A second screw 13, passing quite loosely through said border 7 and screwed into the part 17 of said work-holding lever 10, serves to limit the swinging movement of the latter toward said grinding-wheel when an object is being ground by the engagement of the head thereof against said border 7. When the parts are properly adjusted for grinding, the head of said screw 13 will be brought nearer the side of said border 7 than it is shown to be in the drawings. The contact of said head with said border 7 will arrest the further movement of said lever toward the wheel and prevent over-grinding the object 23. A third screw 14 (shown screwed into said border 7 and extending beyond the latter toward said work-holding lever 10) serves, if desired, to positively limit the movement of the adjoining end of said lever in a direction away from said grinding-wheel 22 and also, as a support for the spring 19 between said lever and border 7, said spring also serving through the intermediary of said lever to press the article 23 with the required force against said grinding-wheel. Said work-holding lever 10 has a curved slot 21, through which a screw 20 passes into the said bracket-arm 6 and serves to hold the lever in proper operative position on said arm, but allowing the same requisite swinging movements. Thus provision is made for adjusting one end of said lever and holding said end at a fixed distance from said wheel-face and for permitting the part of said lever between its pivot 16 and its opposite end to swing under suitable resistance, more or less, away from said wheel to accommodate itself to the varying form or dimensions of the article passing between it and the said wheel, but constantly holding the article with suitable pressure against the latter. It will be noted that for the purposes herein set forth the border of said lever adjoining the said wheel-face (see Figs. 2 and 4) occupies a position operatively somewhat inclined horizontally relative to the axis of said wheel, and thereby it accommodates itself (through its described actuating-spring 19) to the varying diameters of the article being ground, but continually crowds said article against the wheel while passing through the machine.

The operation of the above-described strip-guiding devices is as follows, it being understood that the proper adjustment of said work-holding lever 10 opposite the face of the grinding-wheel 22 has been made as described: The machine being started, the operator feeds the strips to be ground one by one to it by introducing the larger or smaller end of each one between the face of the wheel and spring-actuated end of the lever 10, and each strip being caught by the wheel is rapidly rotated and drawn endwise and dropped from the machine completely rounded and surface ground.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A machine for rounding and grinding strips of whip and other material, comprising a grinding-wheel and means for driving the same, and means adapted to hold a strip against said wheel at varying angles of contact, whereby the movement of said strip across the face of the wheel may be accelerated or retarded, substantially as described.

2. A machine for rounding and grinding strips of whip and other material, comprising a grinding-wheel and driving means therefor, a work-holding bracket opposite the face of said wheel, a lever pivoted on said bracket between which and said wheel pieces are introduced to be ground, and means for swinging said lever toward said wheel with varying force, substantially as described.

3. A machine for rounding and grinding strips of whip and other material comprising a grinding-wheel and driving means therefor, a swinging work-holding bracket opposite the face of said wheel, a lever pivotally and adjustably connected to said bracket, and means for limiting the pivotal movement of said lever toward said wheel and for varying the force of said movement, substantially as described.

4. A machine for rounding and grinding strips of whip and other material comprising a grinding-wheel and driving means therefor, a swinging work-holding bracket opposite the face of said wheel, a work-holding lever pivotally and adjustably connected by one end to said bracket, and means for adjusting the latter toward and from said wheel, a spring moving the free end of said lever toward said wheel, and means for adjusting the degree of said last-named movement, substantially as described.

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