

C. P. BOSSERT.
HAIR GRINDING MACHINE.
APPLICATION FILED APR. 23, 1908.

957,729.

Patented May 10, 1910.

2 SHEETS—SHEET 1.

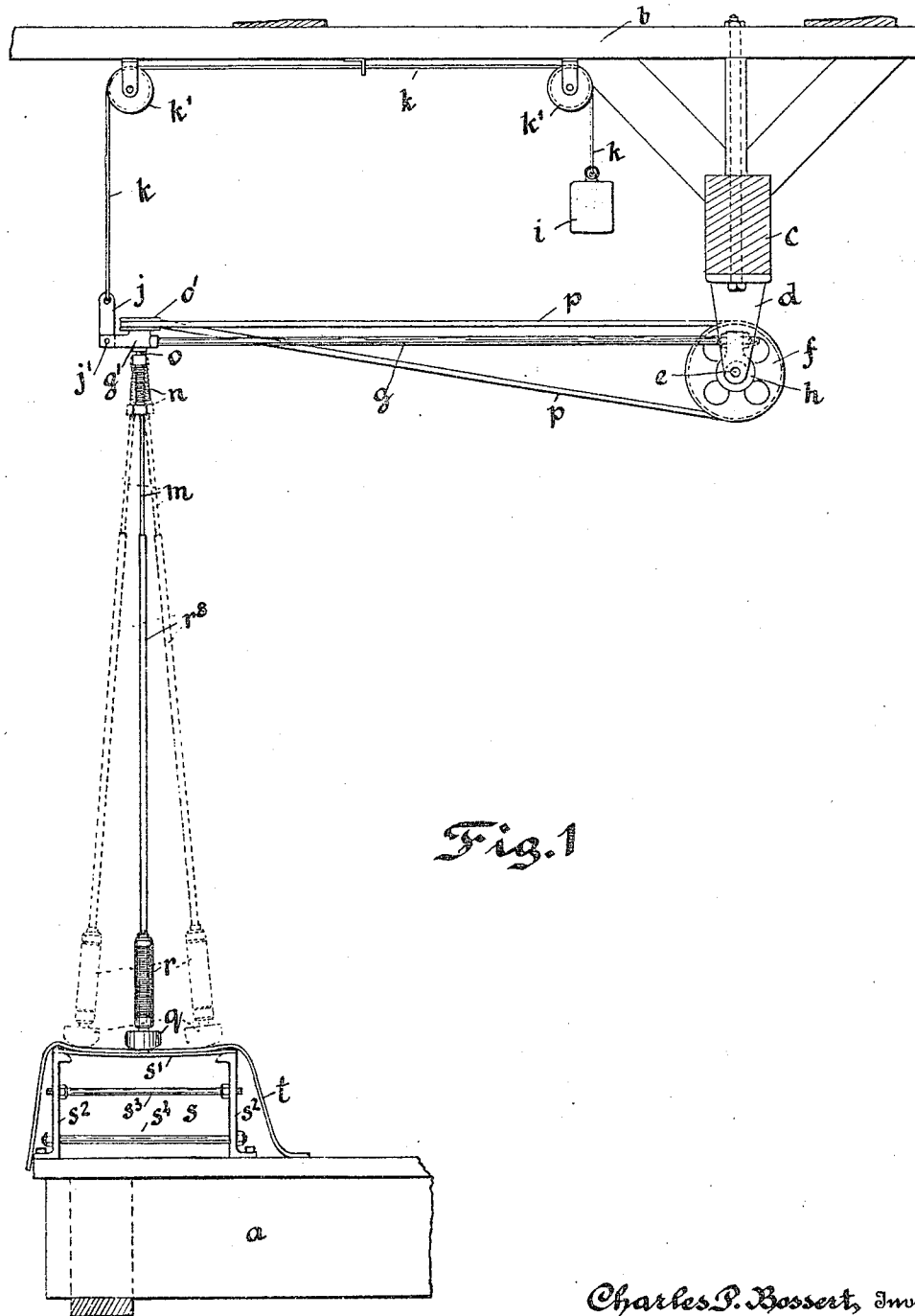


Fig. 1

Charles P. Bossert, Inventor

Witnesses
For the Inventor
Minnie D. Schienbein

By *Georgie Detmore Colles*
Attorney

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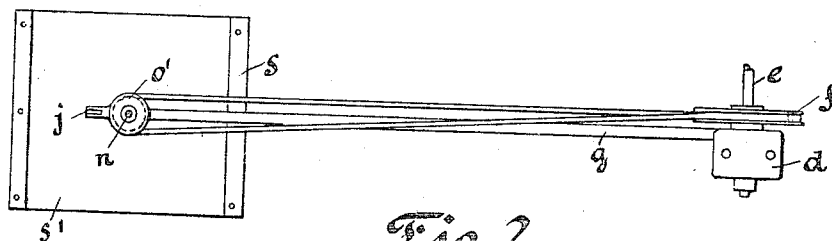


Fig. 2

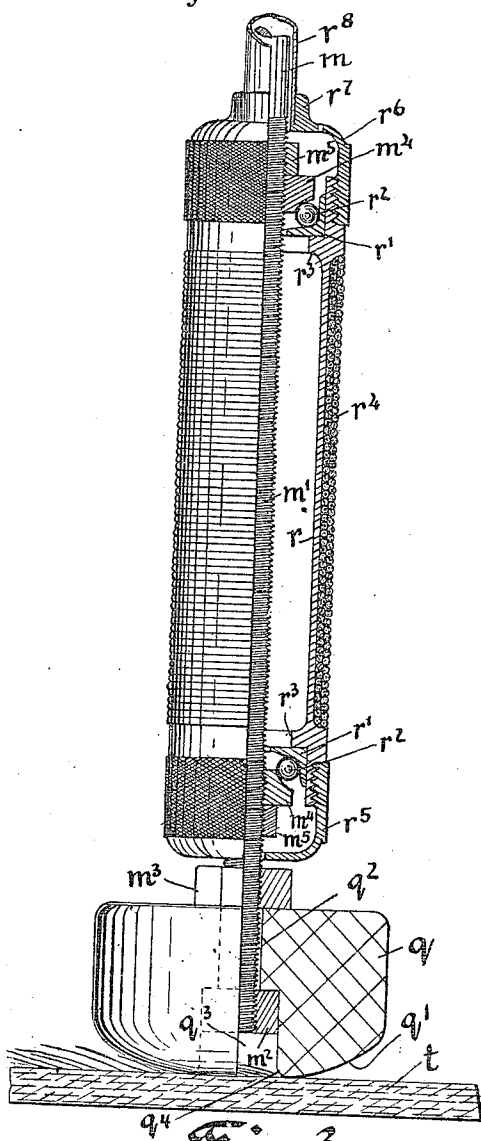


Fig. 3

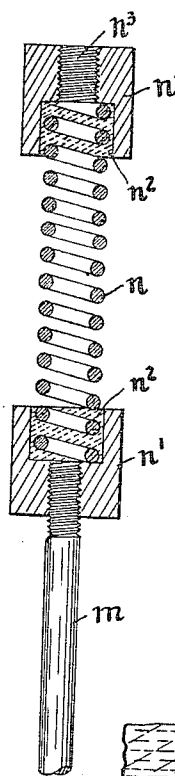


Fig. 4

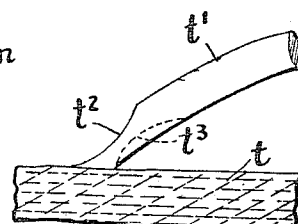


Fig. 5

Charles P. Bossert, Inventor

Witnesses

Joe M. Bomber
Minnie Schinheim

By

George W. Moore, Attorney

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UNITED STATES PATENT OFFICE.

CHARLES P. BOSSERT, OF MILWAUKEE, WISCONSIN.

HAIR-GRINDING MACHINE.

957,729.

Specification of Letters Patent.

Patented May 10, 1910.

Application filed April 23, 1908. Serial No. 428,810.

To all whom it may concern:

Be it known that I, CHARLES P. BOSSERT, of Milwaukee, Wisconsin, have invented a Hair-Grinding Machine, of which the following is a specification.

This invention has for its object to provide some means for completely removing the fine hairs from the surface of leather. As is well understood by tanners, a large proportion of the hides which pass through the factory carry over a part of their surface, in addition to coarse hairs or fur which are readily removed by scraping, a villous under-covering of fine hairs which are not amenable to treatment with scraping-knives and which are very difficult to remove economically without injuring the surface of the leather. Heretofore this work has been accomplished by the use of hand tools which has necessitated often a whole day's work upon a single hide, and although the value of the hide, only a part of which is so covered, warrants this expenditure of labor to save it, the process is still very expensive in proportion to the amount actually accomplished.

In my present invention I aim to dispense with a large part of the manual labor and more particularly with the muscular labor required, by providing a machine adapted to remove expeditiously and cleanly all of the fine hairs in a small part of the time now occupied. This I accomplish by a novel process of grinding whereby the individual hairs are caused to be ground alternately on opposite sides so that they break off at the base.

My invention involves, in its general features, a grinding tool carried on the end of a rapidly rotating shaft which is flexibly suspended over the operating table by a manner of suspension which does not interfere with its revolution nor with the free translation of the tool to any desired point on the hide. I further provide in this connection a flexible elastic support or rest for the piece of leather, upon which support the latter is laid. The shape and adaptation of the tool itself which is mounted upon the shaft forms a particular feature of my invention in connection with the novel process or mode of operation which it involves, all of which is herein described and claimed.

In order that my invention may be fully understood by those skilled in the art to which it appertains, I have shown in the accompanying drawings the most improved

form thereof which I have described in detail hereinafter.

In these drawings, Figure 1 is a side elevation of the complete machine and elastic rest hereinbefore referred to; Fig. 2 is a plan view thereof; Fig. 3 is a side elevation of the tool on an enlarged scale; Fig. 4 is a fragmentary side elevation of the upper end of the spindle on an enlarged scale; and Fig. 5 is a diagrammatic view on a much magnified scale illustrating the process of grinding a hair as accomplished by my apparatus.

In these drawings every reference letter and numeral refers always to the same part.

The outfit shown in Fig. 1 includes a worktable or bench *a* (only a portion of which is shown in the drawing); a part of the overhead-floor *b*, including a longitudinal stringer *c* to which are secured the shaft hangers *d* of the longitudinal shaft *e*, which may be of any length and provided with any number of the hair-grinding apparatus set side by side, said shaft *e* being driven by any suitable source of power (not shown); a main driving sheave *f* on the shaft *e*; a swinging distance-arm *g*, one end of which is secured in a yoke or collar *h* pivotally mounted on the hub of the sheave *f*, or upon the shaft *e*, so that said arm has a free up-and-down motion; a counterweight *i* for said arm and the mechanism carried thereby, which counterweight is connected thereto by a link *j*, secured at *j'* to the free end of said arm, and a cord or chain *k* passing over pulleys *k'*; a vertical spindle *m* connected by a flexible coupling such as a spring *n* to a shaft *o* turning in a bearing *g'* in the end of the arm *g*, and having mounted on its upper end a sheave *o'* which is driven from the sheave *f* by a belt *p*; the grinding-tool *q* mounted on the lower end of said spindle; a handle-sleeve *r* rotatably mounted on the spindle *m* for manipulating the tool in the manner hereafter mentioned; and the work-rest or platform *s*, provided with the elastic sheet *s'* on which rests the leather *t* undergoing treatment. The special form of work-rest *s* here shown however is not essential to the operation of the rest of the apparatus, but I provide it as an improvement over the ordinary rigid work-rest. The work-rest here shown consists of standards *s²*, which have the flexible rubber sheet *s'* secured to their upper ends, and the latter stretched by the action of distance bolts *s³* which hold the standards *s²* apart and tension-bolts *s⁴*

which draw their lower ends together, whereby the requisite degree of tension in the sheet s is accurately regulated.

The special construction of the tool and its accessories, as shown in detail in Figs. 3 and 4, are more specifically as follows: Said tool q consists of a block of slate of cylindrical form but with its lower or active surface q' convexly rounded and provided with a central bore q^2 to receive the threaded end m' of the shaft and an enlarged recess q^3 in the center of its lower surface q' to receive a nut m^2 , between which and a second nut m^3 said block q is clamped. The recess q^3 thus forms in conjunction with the active surface q' , a circular grinding edge q^4 which is very efficient in attacking the hairs over which the tool passes close to their base and on opposite sides thereof in the manner herein-after described. The threaded part m' of the spindle m extends as shown a considerable distance from the end in order to receive the bearing-nuts m^4 and lock-nuts m^5 of the ball-bearings on which the sleeve r turns, said bearings comprising further annular blocks r' having a raceway for the balls r^2 and abutting on shoulders r^3 formed on the interior of the sleeve r . The exterior surface of said sleeve r is bound with a winding of cord r^4 to provide a convenient grasping surface for the hand, and the ends of the sleeve are threaded to receive caps r^5 , r^6 covering the bearings and inclosing the same. The upper cap r^6 has a boss or socket r^7 on its upper end which receives the end of the tube r^8 , said tube being long enough to inclose the spindle m for such distance as is necessary to screen the spindle from contact with the hair or clothing of operatives and thereby prevent danger from anything becoming entangled in said spindle.

The flexible connection n may be made in various forms, but as here shown it consists, as illustrated in Fig. 4, of a spring having mounted on its ends bases or sockets n' in which it is firmly embedded by means of solder n^2 ; and said sockets n' are provided with internal threads n^3 which receive the threaded ends of the spindle m and shaft o . The purpose and effect of the flexible connection n is to permit the tool q to be moved freely around upon the surface of the leather t , while the swinging suspension of the rod q permits the tool to be raised or depressed, and a greater or less pressure to be exerted, as found to be desirable; so that the tool may be freely moved, within proper limits, in any direction.

I will now describe the process by which I am enabled to remove the fine hairs from a hide by means of this apparatus. The tool q , it will be understood, is rotated at a high speed during operation, whereby any hairs upon the leather which come in contact therewith are ground. As, however, it

is desired not to grind the surface of the leather any more than absolutely necessary to remove the hairs, it is not desirable to continue the grinding until the thickness of the hairs is absolutely ground through, but according to the process as executed by my tool they are ground first on one side and then on the other, as illustrated in Fig. 5, which shows a hair t' in process of grinding, as at t^2 and t^3 . It will be seen that, in moving the tool over the surface of the hide, any given hair will be first acted on by the lower surface q' , and more particularly the edge q^4 , on one side of the center, which side as it travels in one direction will bend the hair over in that direction, and grind the corresponding side of the hair, as at t^2 , and as the tool progresses, the same hair will ultimately be ground by the surface q' and edge q^4 on the opposite side of the center, which is moving in the opposite direction, so that the hair will be turned thereby in the opposite from its original position, and will be ground on the opposite side as at t^3 . The effect of the grinding on the two opposite sides is to quickly weaken the hair so that it breaks off at the base without necessity of grinding all the way through. The result of this action is to remove the fine hairs from the leather almost as quickly as the tool can be moved over them, and without any substantial injury to the surface of the leather itself; so that, in place of taking for example a whole day to treat a dozen pieces, as has so far been the case, it requires as a rule less than an hour, and that without muscular exertion or nervous strain upon the operative.

My invention is not limited to the form of apparatus exactly as described but may take various forms within considerable limits and alterations may be made in the details without departing from the spirit thereof. I therefore do not consider the invention further restricted than is expressed by the reasonable scope of my claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A hair-grinding machine comprising, in combination, a vertical shaft, means for rotating the same, means for raising and lowering the same, a vertical swinging spindle, a flexible connection between said shaft and spindle, an abrading tool mounted on the lower end of said spindle, a sleeve mounted to rotate freely on said spindle just above said tool, and a tube mounted on the upper end of said sleeve and inclosing it to a distance above the height of a worker thereon.

2. A hair-grinding machine comprising, in combination, a shaft, a sheave mounted thereon, a distance-arm mounted to turn

about said shaft as an axis, a vertical shaft
mounted to turn in the end of said arm, a
sheave mounted on said vertical shaft, a ver-
tical swinging spindle flexibly connected to
5 said shaft, an abrading tool comprising a
block of abrading material having a con-
vexly rounded centrally recessed lower sur-
face mounted on the lower end of said
spindle, a manipulating sleeve mounted in
10 bearings on said spindle just above said
tool and having an extension tube connected

therewith above the same, a flexible elastic
work-rest under said tool, a counterweight
for said arm and the apparatus carried
thereby, and a belt connecting said sheaves. 15
In witness whereof, I have hereunto set
my hand this 16th day of April, 1908.

CHARLES P. BOSSERT.

Witnesses:

LOUIS E. LEVI,
FRANCIS SCHOEPPEL.