O. REIRSON.

CYLINDER GRINDER FOR LEATHER SHAVING MACHINES.

APPLICATION FILED SEPT. 8, 1910.

980,561. Patented Jan. 3, 1911.

Fig. 1.

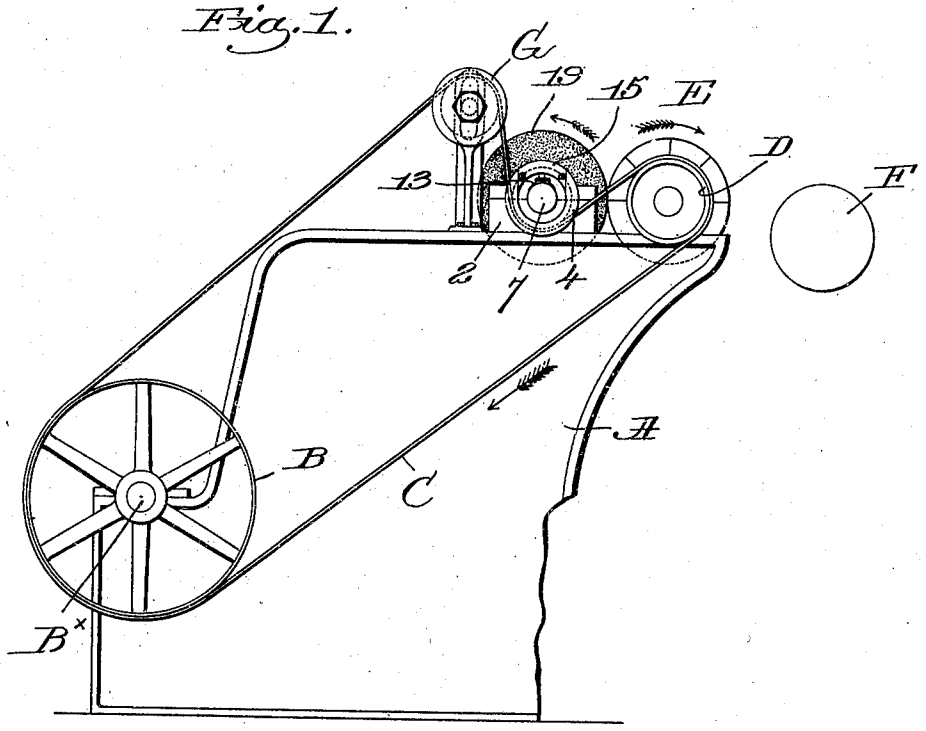


Fig. 2.

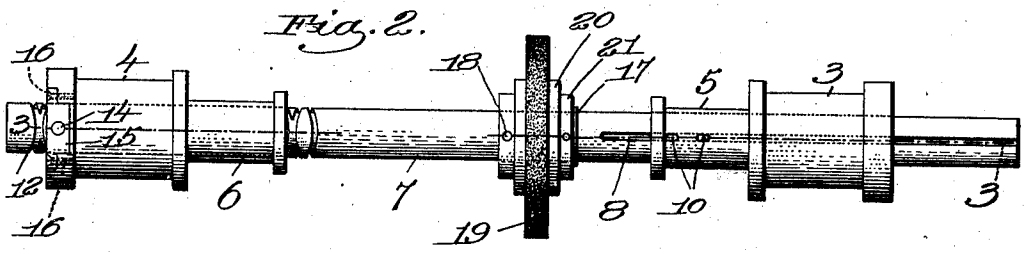


Fig. 3.

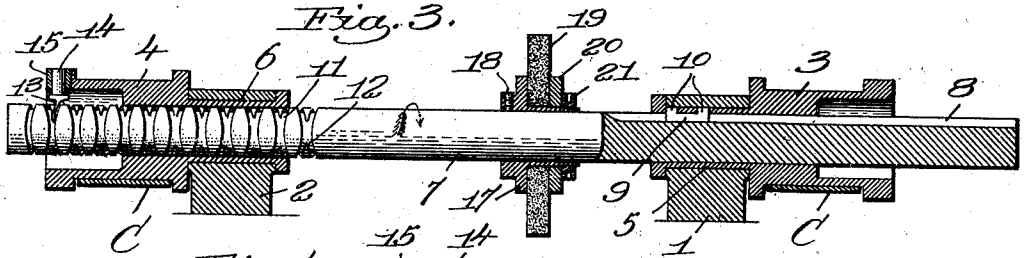
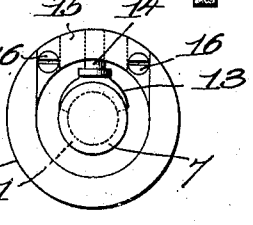


Fig. 4.



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UNITED STATES PATENT OFFICE.

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CYLINDER-GRINDER FOR LEATHER-SHAVING MACHINES.

980,561. Specification of Letters Patent. Patented Jan. 3, 1911.

Application filed September 8, 1910. Serial No. 581,013.

To all whom it may concern:

Be it known that I, OSCAR REIRSON, a citizen of the United States, and resident of Peabody, county of Essex, State of Massachusetts, have invented an Improvement in Cylinder-Grinders for Leather-Shaving Machines, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention has for its object the production of an automatic device for grinding a rotary cutting member during the operation of the latter, and my invention as herein shown is more particularly adapted for grinding the knife or cutting cylinder of a leather shaving machine.

In machines of this type the skin or leather to be shaved is subjected to the action of a rapidly rotated cutting member comprising essentially a cylinder provided with helically arranged blades or knives, and it is necessary, to effect the best results, that the knives be kept sharp all of the time. This is effected by traversing a rotating grinding member, such as an emery wheel, lengthwise of the cylinder and so positioned as to grind the cutting edges of the blades during the rotation of the cylinder.

The operation of the grinding member is now accomplished by somewhat complicated mechanism, and considerable trouble is frequently experienced due to the chattering or vibrating of the grinding member, which results in an imperfect and inefficient sharpening action on the blades of the cylinder.

In my present invention I have simplified the construction of the grinding means, and I have so arranged the various parts thereof that the power to rotate and reciprocate the grinder shaft is applied thereto positively and directly, said shaft being so mounted and controlled that it runs smoothly and easily, without chattering or vibrating.

The various novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

While for convenience I have herein illustrated my invention in connection with a leather shaving machine it will be understood that my invention is not restricted to such application, as it can be used in connection with any form of apparatus comprehending a cylindrical form of rotating cutter.

Figure 1 is a side elevation of a sufficient portion of a leather shaving machine, with one practical embodiment of my invention applied thereto; Fig. 2 is an enlarged view in elevation of the novel features of my invention, the bearings being omitted; Fig. 3 is a partial longitudinal section thereof taken on the line 3—3, Fig. 2; Fig. 4 is a left hand end view of the pulley by which longitudinal reciprocation of the shaft is effected.

Referring to Fig. 1, the frame A, main shaft $B^{\times}$, driving pulley B, connected by a belt C with a pulley D on the shaft of the rotary cutter or cylinder E, (one of such belts and the pulley being located at each side of the machine,) and the roll F over which the work is fed, are and may be all substantially of well known construction in leather shaving machines, except that herein I provide an idler pulley G, at each side of the frame, around which idlers the belts C travel.

Back of the cylinder E the frame-sides support axially alined bearings 1, 2, Fig. 3, provided with suitable removable caps, and said bearings sustain rotatable pulleys 3, 4 in axial alinement, and maintained a fixed distance apart.

The general construction of the pulleys is the same, the pulley 3 having an annularly grooved, extended hub 5 at its inner end, rotatably mounted in the bearing 1, a similar hub 6 of the pulley 4 being rotatably mounted in bearing 2.

I prefer to flange or annularly groove each pulley, as shown, to prevent any possibility of the driving belt slipping off, one belt C passing from its idler G to and partway around the pulley 3, the other belt C being similarly arranged with relation to the pulley 4, see Fig. 1, so that each pulley is continuously rotated by the belt coöperating therewith, and at a constant speed.

The bores of the pulleys and their hubs present elongated, sleeve-like bearing surfaces which coöperate with a shaft 7 extended therethrough and longitudinally movable therein, the portion of the shaft traversing the pulley 3 having a longitudinal key-way 8 with which coöperates a key 9, Fig. 3, shown as having lugs 10 to enter holes in the hub 5, the shaft being parallel to the axis of the cylinder E. Manifestly, by this connection the shaft will be rotated positively and directly by and in unison

with the pulley 3, while said shaft is free to move longitudinally with relation to said pulley.

The portion of the shaft 7 which traverses the pulley 4 has two crossed spiral grooves 11, 12, which meet at their adjacent ends, and with said grooves coöperates a yoke-like follower 13, having its shank 14 swiveled in a block 15 seated in the recessed outer end of the pulley 4 and held in place therein by suitable screws 16, Figs. 2 and 4.

As the shaft rotates the follower, coöperating with the crossed grooves, effects a longitudinal reciprocation of the shaft, and in order that this reciprocating motion may be made at a low speed, to effect the best results, I rotate the pulley 4 at a different rate of speed from that of pulley 3. This differential rotation of the pulleys may be secured in various ways, but in the present instance I conveniently accomplish it by making the face of the pulley 4 slightly larger than that of the pulley 3, for instance about $\frac{1}{16}$ of an inch.

Between the pulleys a shouldered collar 17 is fixed on the shaft by a set-screw 18, and a grinding member 19, such as an emery disk or wheel, is slipped upon the collar and tightly set up against the shoulder thereof by a washer 20 and nut 21, the latter screwed onto the collar, the diameter of the grinding member being such that it will properly act upon the cylinder knives or blades.

From the foregoing description, taken in connection with the drawing, it will be apparent that the grinding member will be rotated at a relatively high speed, and it will be reciprocated longitudinally of the cylinder E at a low speed, to effect the proper grinding of the blades thereof.

As the belts C, one at each side of the machine, are driven at the same speed from the main shaft $B^{\times}$ it follows that the pulley 4, having the larger diameter, will be rotated at a slightly slower rate than the pulley 3, for the object hereinbefore mentioned, namely, to impart a slow reciprocation to shaft 7 and the grinding member 19 fast thereon. The grinding member thus reciprocates between the two pulleys, and the latter provide direct and elongated bearings for the shaft, being in turn supported by the fixed bearings, all chattering and vibration of the shaft and the grinding member is eliminated, the direct controlling connections between the shaft and the coaxial pulleys assisting in securing such results.

The construction is simple, the parts are few in number, easily constructed, and readily assembled.

Various changes or modifications in details of construction and arrangement may be made by those skilled in the art without departing from the spirit and scope of my invention as set forth in the claims annexed hereto.

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

1. In apparatus of the class described, fixed bearings, a rotatable shaft supported thereby and longitudinally movable relatively thereto, a grinding member fast on said shaft, a driven pulley connected with said shaft to rotate it while permitting longitudinal movement thereof, a second driven pulley co-axial with the shaft and rotated at a different rate of speed from the first-named pulley, and means intermediate the second pulley and the shaft to effect a reciprocating longitudinal movement thereof.

2. In apparatus of the class described, two axially alined pulleys rotated at different speeds, each pulley having an extended hub, fixed bearings in which the pulleys are rotatably mounted, a shaft extended through said pulleys and their hubs and longitudinally movable therethrough, a grinding member fast on the shaft, a connection between one pulley and the shaft to effect rotation of the latter in unison with said pulley, and means carried by the other pulley and coöperating with the shaft to effect longitudinal reciprocation of the shaft and the grinding member thereon.

3. In apparatus of the class described, two axially alined pulleys rotated at different speeds, means to sustain and prevent axial movement of the pulleys, a shaft extended through and longitudinally movable with relation to the pulleys, said shaft having crossed spiral grooves therein near one end, a follower on one pulley coöperating with said grooves to effect longitudinal reciprocation of the shaft, a connection between the other pulley and the shaft to rotate the latter in unison with such pulley, and a grinding disk fast on the shaft.

4. In apparatus of the class described, two axially alined pulleys rotated at different speeds, means to sustain and prevent axial movement of the pulleys, a longitudinally movable shaft extended through said pulleys and having a longitudinal key-way in the portion traversing one pulley and crossed spiral grooves in the portion traversing the other pulley, a key carried by one pulley, to enter the key-way and effect rotation of the shaft, and a follower carried by the other pulley, to coöperate with the crossed grooves and effect longitudinal reciprocation of the shaft, and a grinding member fast on the shaft between the pulleys.

5. In apparatus of the class described, two axially alined, separated pulleys, driven at different speeds, each pulley having an extended, annularly grooved hub, fixed bearings in which the grooved hubs of the pul-

leys are rotatably mounted, a shaft extended through the pulleys and their hubs and longitudinally movable therein, said shaft having crossed spiral grooves in the portion traversing one pulley, a swiveled follower carried by said pulley and coöperating with the grooves, to effect longitudinal reciprocation of the shaft, means whereby the other pulley effects rotation of the shaft in unison therewith while permitting longitudinal reciprocation of the shaft, and a grinding member fast on the shaft between the pulleys.

6. The combination with a rotatable, longitudinally movable shaft, and a grinding member fast thereon, of pulleys located at opposite sides of said member and co-axial with the shaft, said pulleys being rotated at different speeds, fixed bearings for the pulleys, a direct connection between one of said pulleys and the shaft, to effect positive rotation thereof, and a direct-acting, positive connection between said shaft and the other pulley, to effect longitudinal reciprocation of the shaft at a speed dependent upon the relative speed of rotation of the pulleys.

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

OSCAR REIRSON.

Witnesses:
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