(No Model.) 2 Sheets—Sheet 1.

F. H. SCHMIDT.

APPARATUS FOR GRINDING WOOD.

No. 411,734. Patented Sept. 24, 1889.

Fig. 1.

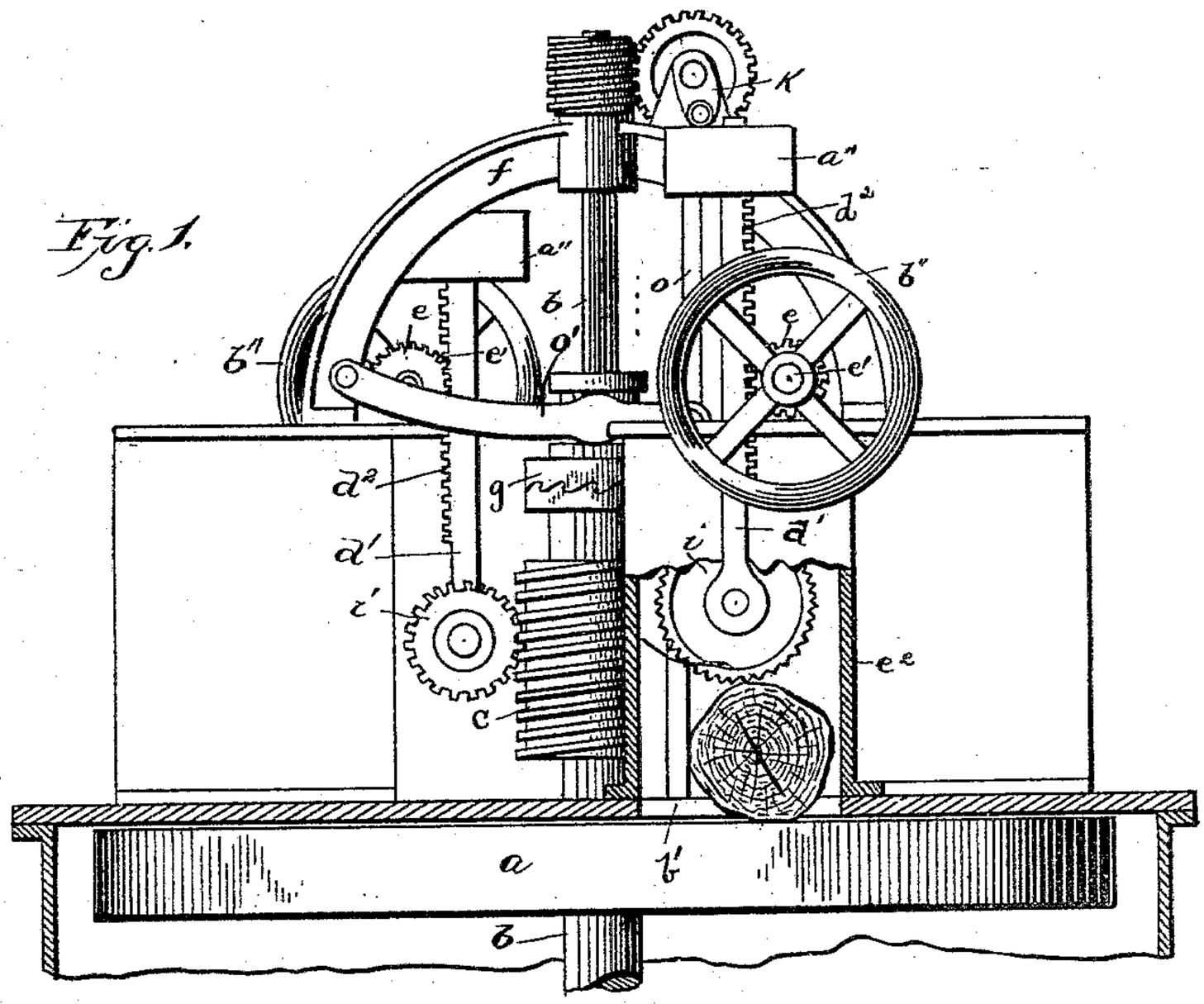
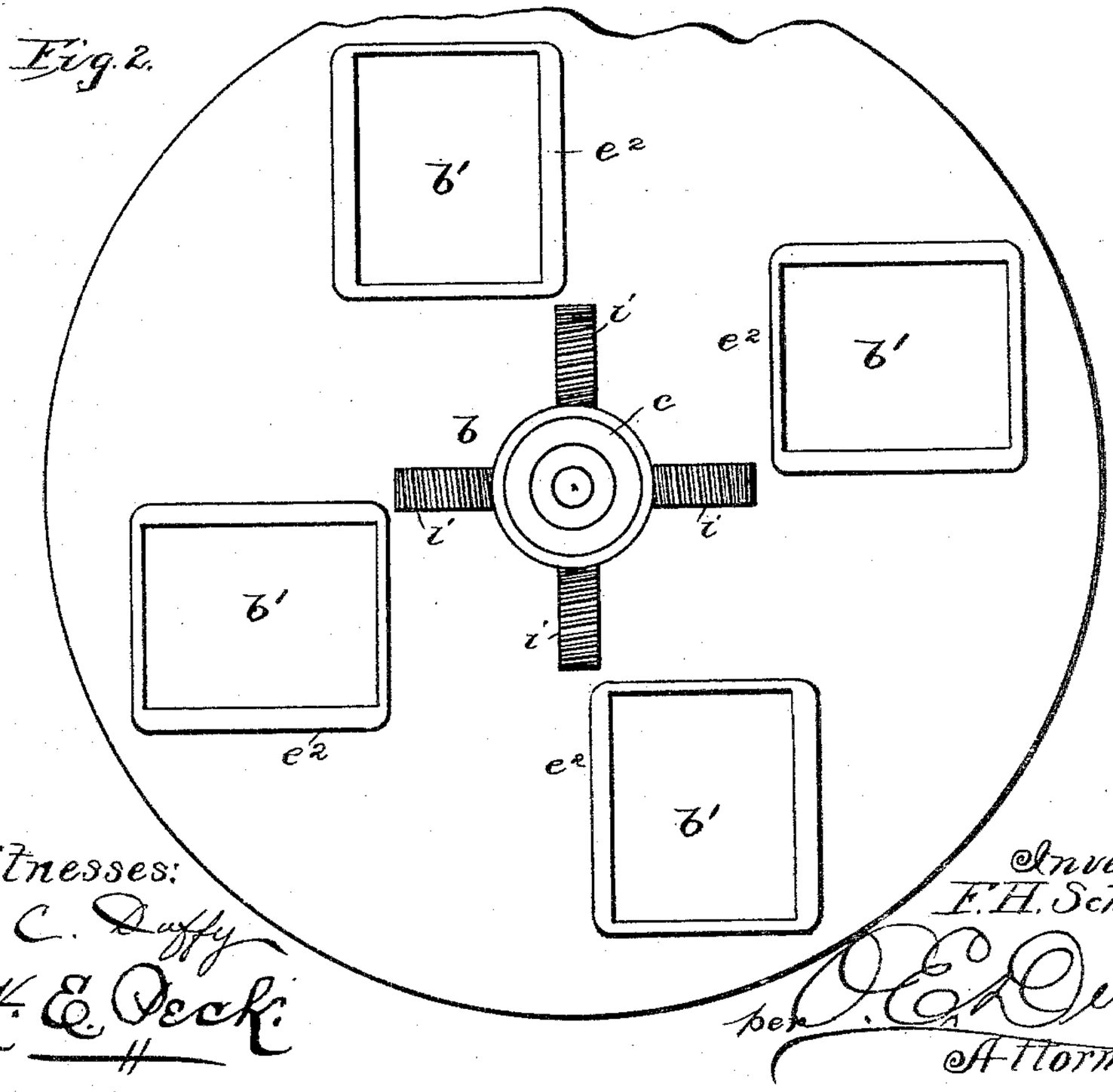


Fig. 2.



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H. E. Deck.

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(No Model.) 2 Sheets—Sheet 2.

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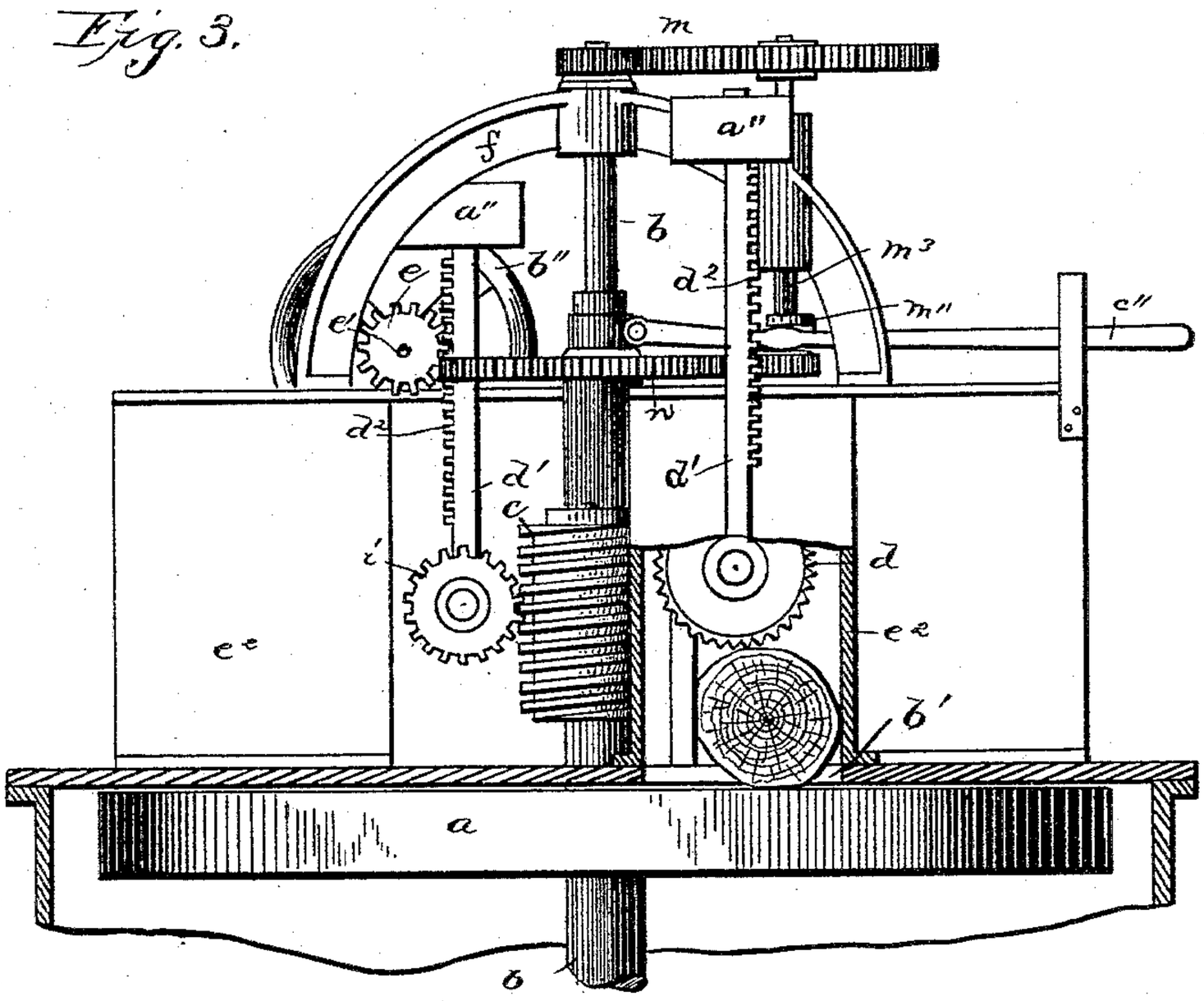
Fig. 3.



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UNITED STATES PATENT OFFICE.

FRIEDRICH HERMANN SCHMIDT, OF SCHINDLERSWERK, NEAR BOCKAU, SAXONY, GERMANY.

APPARATUS FOR GRINDING WOOD.

SPECIFICATION forming part of Letters Patent No. 411,734, dated September 24, 1889.

Application filed November 27, 1888. Serial No. 292,024. (No model.) Patented in Germany June 6, 1888, No. 45,645; in Norway August 31, 1888, No. 1,079, and in Austria-Hungary December 30, 1888, No. 48,079 and No. 45,508.

To all whom it may concern:

Be it known that I, FRIEDRICH HERMANN SCHMIDT, a subject of the King of Saxony, German Empire, residing at the village of Schindlerswerk, near Bockau, in the Kingdom of Saxony, German Empire, have invented certain new and useful Improvements in Apparatus for Grinding Wood, (for which patents have been granted in Germany, No. 45,645, June 6, 1888; Norway, No. 1,079, August 31, 1888, and Austria-Hungary, Nos. 48,079 and 45,508, December 30, 1888,) of which the following is a specification.

In order to produce a fine, long, and uniform fiber of wood with the consumption of less power than heretofore, it is necessary that the surface of the wood pressed against the grindstone be as uniform and as near a constant width as possible and of not greater than a certain fixed width.

The object of this invention is to produce a wood-grinding machine wherein the fiber is ground from the circumference or periphery of the block of wood, which is passed against the grindstone (or other reducing means) and receives either periodically or uniformly a motion or rotation about its axis. This object is accomplished by, and my invention consists in, certain novel features of construction and combinations of parts more fully described hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation of the machine, partly in section. Fig. 2 is a plan with a portion of the operating mechanism removed. Fig. 3 is an elevation of a slightly different construction.

Figs. 1 and 2 show the arrangement for periodically turning the blocks of wood, which are pressed against the horizontally-rotating stone a by means of the pressure-rolls d, which are provided with sharp peripheral teeth to bite into the blocks of wood, and thereby turn the same when the rolls rotate, and these rolls are mounted upon the lower ends of vertically-movable pressure-rods d', provided with counter-weights a'' upon their upper ends to constantly hold the toothed wheels or rolls d in engagement with the wood being ground. These pressure rods or bars are provided with racks or gear-teeth d^2, by which the pressure-rods can be raised by means of gears e, engaging the racks and mounted upon shafts e', having hand-wheels b'', or other means of rotating the same.

b indicates a vertical driving shaft or spindle, upon which the grinder a or other means for cutting or reducing the wood is rigidly mounted beneath a stationary frame or casing, as shown, and this casing is provided with openings b' at the bottoms of the boxes e^2, which receive the blocks or logs of wood in one end and hold the same resting upon the grinder. These boxes also in the present instance form a support for the arch or frame f, in which the upper end of the shaft b is journaled.

The worm c, which is loose upon the vertical shaft b, gears with worm-wheels i, Fig. 2, carried by the pressure-rods d', and makes a few turns when locked to the shaft b by means of the coupling-sleeve (clutch) g, which is pressed downward by means of a lever o', to the free end of which a rod o is pivoted, said rod being connected to the crank-wheel k, provided with gearing meshing with a worm on the shaft b. The result is that the wood blocks are turned (partly) at each revolution of the crank-wheel. If, however, a continuous motion is desired, the arrangement shown in Fig. 3 is used. In this case the worm c, which is likewise loose upon the shaft b, receives a continuous slow movement by means of gearing m and n and effects the continuous rotation of the pressure-rolls d.

The screw c can be thrown out of gear with the shaft b by means of a sliding gear m'' on the counter-shaft m^3 and operated by a lever c''. The breadth of the wood surface against the grindstone depends upon the weight placed on the pressure-rolls d and the circumferential velocity of the same, both of which can be varied.

It is evident that this invention is not limited to the peculiar means here shown for turning the wood; but various constructions can be used for accomplishing this purpose.

I claim—

1. A wood-reducing machine comprising a horizontal rotary grinder mounted on a spin-

dle, a box to receive the wood and allow it to rest upon the face of the grinder, and gearing connected with and actuated by the grinder-spindle and adapted to engage the wood block in the box and hold the block upon the grinder and turn the block, whereby the periphery of the block is uniformly reduced, substantially as described.

2. A wood-reducing machine provided with a toothed roll adapted to hold a block of wood against the grinder and turn or rotate the wood, so that no greater than a certain fixed width of grinding-surface on the periphery of the block shall be reached, substantially as described.

3. A wood-reducing machine comprising a horizontal grinder, a box to receive a block of wood and allow the same to rest upon the grinder, and one or more rotary toothed rolls to hold the block against the grinder and turn the wood, for the purpose set forth.

4. In a wood-reducing machine, the combination of a weighted rod to hold a block of wood against the grinder and gearing partially carried by and moving with the rod to turn the block upon its longitudinal axis, whereby a fine long uniform fiber is produced, substantially as described.

5. In a wood-reducing machine, the combination of a vertically-movable weighted rod, a toothed roll mounted upon the lower end of the same and adapted to engage a block of wood and hold the same against the grinder, and gearing to rotate said roll and thereby turn the block, substantially as described.

6. In a wood-grinder, a horizontal rotary grinder, in combination with a vertically-movable weighted rod adapted to hold a block of wood upon the upper face of the grinder and gearing to rotate said block upon its longitudinal axis, whereby the periphery of the wood will be uniformly reduced, substantially as described.

7. In a wood-grinder, the combination, with a horizontal rotary grinder, of one or more vertically-movable rods adapted to press a block of wood upon the face of the grinder, rotary means carried by the same to engage the wood and hold the same against the grinder and rotate the wood on its horizontal axis, and gearing to rotate said means, substantially as described.

8. In a wood-grinder, a horizontal rotary grinder and a box having an open bottom above the grinder and adapted to receive and retain a block of wood on the face of the grinder, in combination with a vertically-movable weighted rod in the box to hold the wood upon the face of the grinder and provided with a vertical rack, and a shaft provided with a gear engaging said rack and adapted to raise the rod, substantially as described.

9. In a wood-reducing machine, the combination of a toothed roll to engage a block of wood and hold the same in engagement with the grinder, a worm-gear to rotate said roll, and a worm on the grinder-spindle to rotate said gear, substantially as described.

10. In a wood-reducing machine, the combination of a vertically-movable weighted rod, means for raising the same, a toothed roll upon the lower end of the same to engage a block of wood and hold the same against the grinder, a worm-gear carried by the rod to rotate the roll, the grinder-spindle, a worm on the same to rotate said gear, and means for throwing the worm into or out of gear with the spindle, substantially as described.

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

FRIEDRICH HERMANN SCHMIDT.

Witnesses:
FRANZ ELI WAGNER,
CARL KLEINZ KLEMM.