C. P. HAYES.

Machine for Cutting and Grinding Logwood.

No. 198,614. Patented Dec. 25, 1877.

Fig: 1.

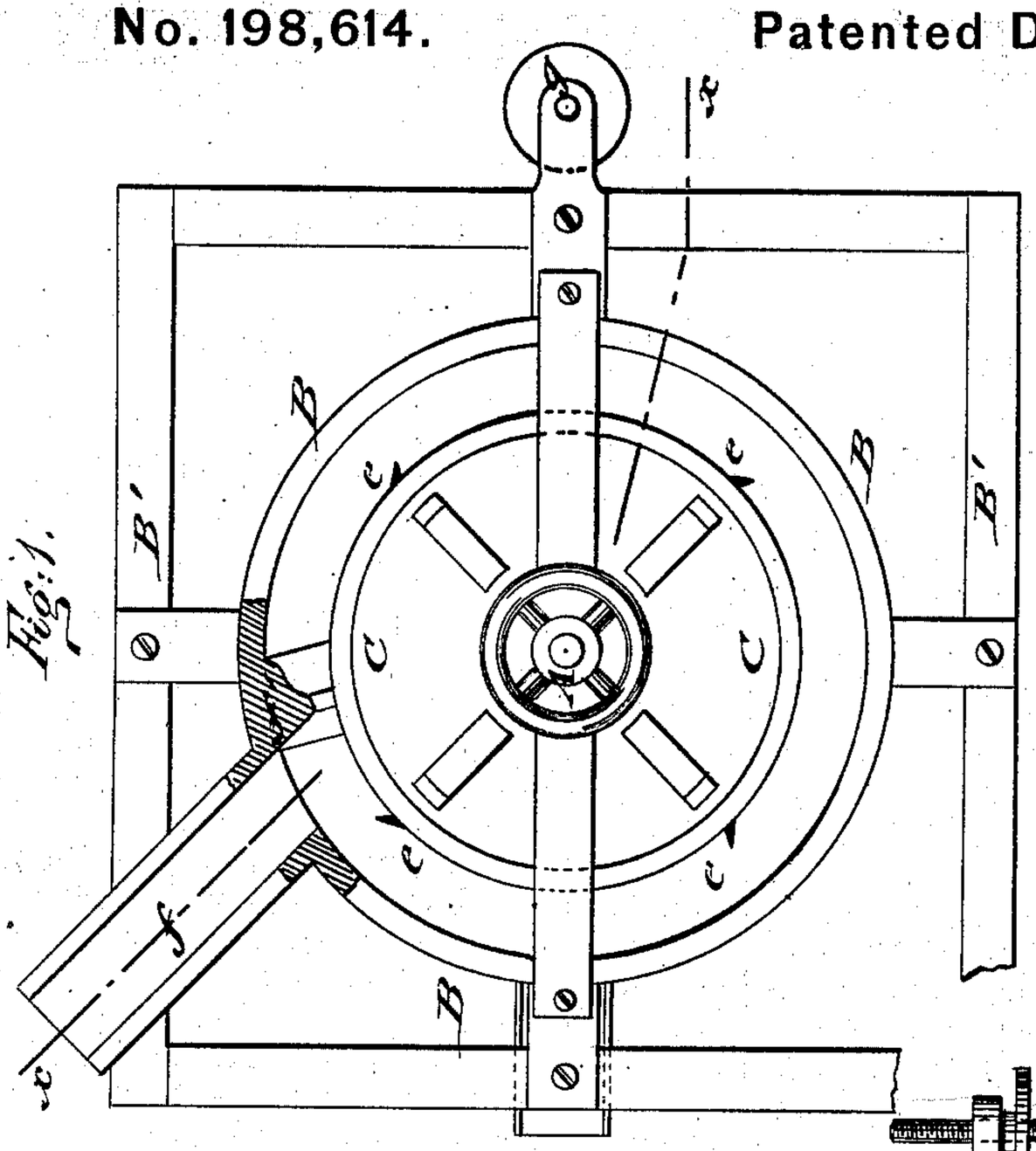


Fig: 3.

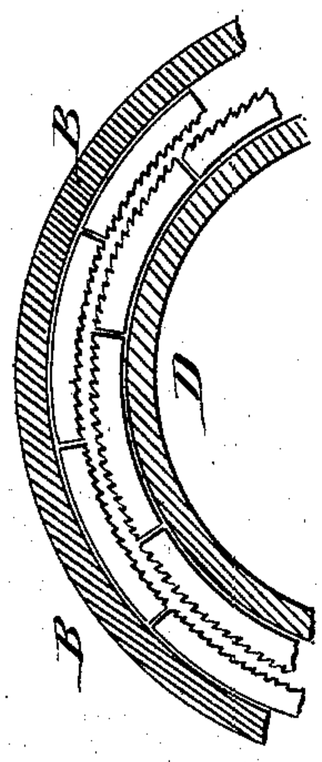
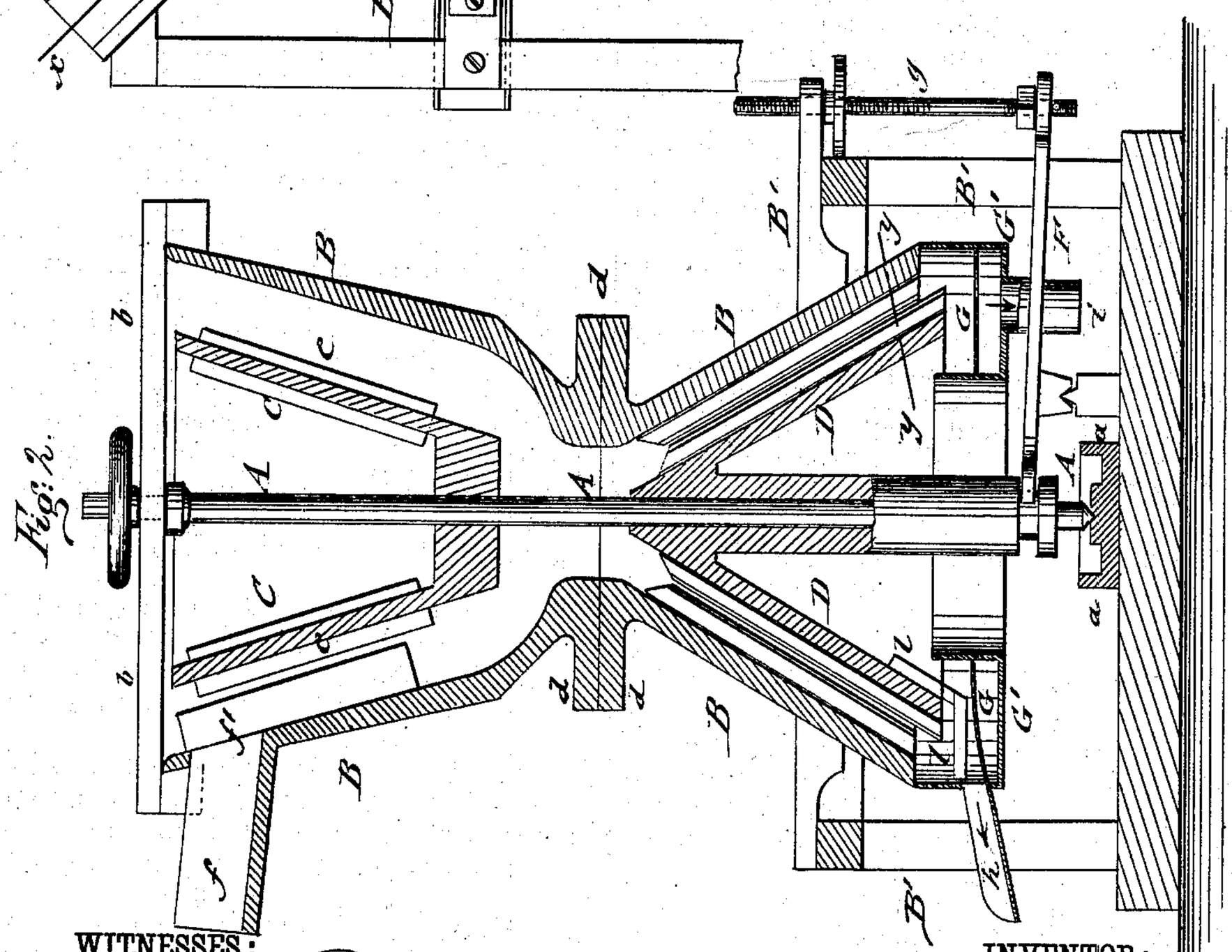


Fig: 2.



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CLARK P. HAYES, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN MACHINES FOR CUTTING AND GRINDING LOGWOOD.

Specification forming part of Letters Patent No. **198,614**, dated December 25, 1877; application filed November 8, 1877.

To all whom it may concern:

Be it known that I, CLARK P. HAYES, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Machine for Cutting and Grinding Logwood, of which the following is a specification:

In the accompanying drawings, Figure 1 represents a top view, partly in section, of my improved machine for cutting and grinding logwood. Fig. 2 is a vertical central section of the same on line *x x*, Fig. 1; and Fig. 3, a detail horizontal section of the grinding-cone on line *y y*, Fig. 2.

Similar letters of reference indicate corresponding parts.

This invention is intended to furnish, in place of the separate machines that are at present employed for cutting up and grinding logwood, one machine, of simple and effective construction, by which both operations may be accomplished in a quicker and more economical manner than heretofore, and also the finely-ground particles of logwood separated in reliable manner from the coarser chips, which latter are conducted off and reground.

The invention will first be described in connection with the drawing, and then pointed out in the claims.

Referring to the drawing, A represents a vertical center-shaft, that is revolved by any suitable appliance from a power-shaft, and supported on a bottom step, *a*, and in a top bearing of a cross-piece, *b*, of the outer casing or jacket B of the machine. The casing or jacket B is supported on a base-frame, B′, and secured by radial braces or arms to the same. The casing B is made of two conical sections, of which the upper is supported in inverted position on the lower section, and firmly attached thereto by flanges *d*, that are bolted or otherwise connected together.

To the upper part of the revolving shaft A is keyed an inverted conical shell, C, that corresponds in its taper to the outer jacket-section, and is provided with outer fixed cutting or chipping knives *e*.

The block of logwood is fed in any suitable manner along a guide-channel, *f*, to the inside of the upper jacket, and exposed, at a suitable inclination, to the action of the knives of the rapidly-revolving cone C, the block resting against a projecting cheek-piece, *f′*, of the upper jacket B, so as to be retained steadily in position for the cutting action of the knives.

The chips thus cut off drop from the upper jacket-section down through the annular space around the center-shaft, at the joint of the cones, and are then passed between the grinding-surfaces of a lower revolving cone, D, and of the lower jacket-section B, which are both—the former at the outer surface, the latter at the inner surface—covered with sectional grinding-plates, of steel or other suitable material, that are so attached as to be readily removed and replaced.

The lower cone, D, is, like the upper cone, C, keyed to the shaft, and adjusted relatively to the inner grinding-surface of the lower jacket-section by a fulcrumed lever, F, that engages by its forked end the grooved portion of the cone sleeve or shaft, and is set by a screw-rod and hand-wheel, *g*, acting on the outer end, so as to bring the grinding-cone closer to or farther from the grinding-surface of the lower jacket-section, without, however changing the action of the knives of the upper cone.

The ground-up particles of logwood drop from the grinding-surface onto a ring-shaped screen, G, that is secured to a sheet-metal casing, G′, attached by its outer flange to the lower jacket-section.

The screen is slightly inclined toward the inner flange of the casing, with the exception of one part thereof, that is inclined downward to a spout, *h*, of the casing G, for the escape of the coarsely-ground parts. The finely-ground logwood is drawn through screen by the action of a suction-fan, that is connected to the bottom of the casing G by a tube, *i*, and conducted to a suitable receptacle for use, while the coarse chips and parts that cannot pass through the screen are swept by fixed radial scoops or stirrers *l*, secured at suitable intervals to the lower edge of the grinding-cone, over the screen and to the exit-spout, the stirrers facilitating the separating of the fine particles from the coarser ones, and the conducting off of the latter, which are then

passed again through the grinding-mill until all the chips are ground up to the required degree of fineness.

The cutting up and grinding of logwood are thus accomplished by a single machine, of simple, compact, and effective construction, that takes up less place, is less expensive, and may be run with greater economy than the separate cutting and grinding machines at present in use.

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

1. The upper cone-jacket B, having guide-channel *f* and cheek-piece *f'*, and the upper cone C, having the chippers *c*, in combination with lower cones B D, provided with inside and opposite grinding-plates, as and for the purpose described.

2. The combination, with the lower grinding-cones B D, of a ring-shaped screen and bottom casing, with suction-pipe and exit-spout, as and for the purpose set forth.

3. The combination, with lower grinding-jacket cone B, of a rotary grinding-cone, D, provided with radial scoops at lower edge, to act in connection with exit-spout, as specified.

CLARK P. HAYES.

Witnesses:
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