

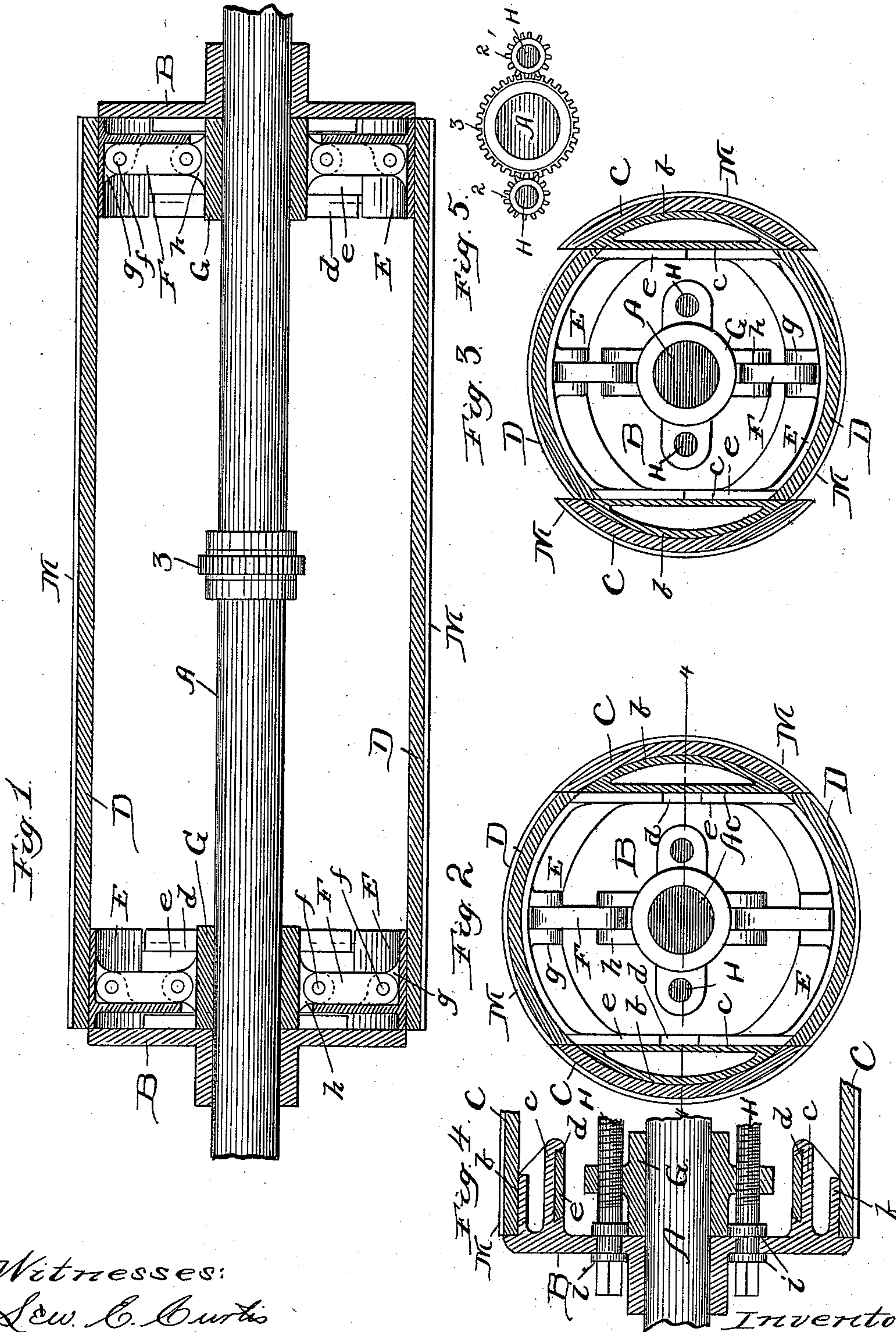
(No Model.)

E. S. EVARTS.

EXPANDING CYLINDER FOR POLISHING MACHINES.

No. 528,534.

Patented Nov. 6, 1894.



Witnesses:

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UNITED STATES PATENT OFFICE.

EDWARD S. EVARTS, OF CHICAGO, ILLINOIS.

EXPANDING CYLINDER FOR POLISHING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 528,534, dated November 6, 1894.

Application filed November 10, 1892. Serial No. 451,523. (No model.)

To all whom it may concern:

Be it known that I, EDWARD S. EVARTS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Expanding Cylinders for Polishing-Machines, of which the following is a specification.

This invention relates to the construction of that class of cylinders used in polishing machines which are adapted to be contracted preparatory to putting on the sand paper, and then expanded to tighten it, and is an improvement upon the previous constructions of such cylinders.

My principal endeavor in the invention has been to simplify the cylinder by reducing as much as possible the number of movable parts therein without sacrificing the efficiency or changing essentially the mode of operation of the cylinder.

Another object has been the avoidance of gaps or openings in the periphery of the cylinder when expanded at the joints between the staves, thereby preventing any depression at those points likely to injuriously affect the action of the cylinder.

The nature of my improvement is fully disclosed in the accompanying drawings, wherein—

Figure 1 is a longitudinal section of my improved cylinder. Fig. 2 is a transverse section thereof, showing the same expanded. Fig. 3 is a like section showing the cylinder contracted. Fig. 4 is a partial longitudinal section on the line 4—4 of Fig. 2, and Fig. 5 is a detail showing the gearing connecting the two adjusting screws.

In the drawings A represents the shaft carrying the cylinder, and rigidly mounted thereon are heads B B forming the ends of the cylinder. The surface of the cylinder is composed of four staves, two, C C, of which are immovably supported, and the other two, D D, of which are movably supported, as hereinafter more particularly set forth. The movability of staves D D is in an inward direction, and through this movement I obtain the contraction desirable for putting on the sand

paper. The staves D are also adapted to be expanded to tighten the sand paper.

Projecting from the side faces of each of the heads B are curved flanges *b*, which serve as supports for the stationary staves C C, and straight flanges *c* in which are formed ways *d* running lengthwise of flanges *c*. These ways receive the slides *e* formed upon the ends of segments E supporting the movable staves D. To draw the staves D inward and force them outward I employ links F attached by pivots *f* to ears *g* formed upon the segments E, and also attached by similar pivots to like ears *h* upon the sliding hubs G mounted upon the main shaft and actuated thereon by the screws H having threaded portions engaging said hubs and confined in one of the heads B by collars *i*. The threaded connection of these screws with one of the hubs is illustrated, but it will be understood that there is a threaded connection with the other hub, and that both hubs G are to be simultaneously actuated thereby, and that the thread upon the screws runs according to the direction in which it is desired to move the hubs. The sliding of the hubs by turning the screws in one direction causes the links F to draw the movable staves toward the axis, and the reverse movement of the hubs due to the reversing of the screws causes the links to force the staves outward, and in these movements of the staves the slides *e* travel in or out along the ways *d*.

The screws H are geared together by the pinions 1, 2 and 3, the latter being an idler loose upon the main shaft, so that if power is applied to the squared end of either screw the other will move in unison with it. I find however that a single screw answers very well in the majority of cases, and in that case the pinions are unnecessary, it only being necessary in that event to properly balance the weight of the single screw in some suitable way.

I have shown in the drawings a cylinder having but two heads and the hubs and links appertaining thereto, but it will be understood that others may be added between the ends in the case of long cylinders. It will

also be understood that the hubs may all move in the same direction, or part in one direction and part in the other, the operating screw or screws being threaded to agree with the direction of movement desired. M represents the felt customarily employed with these cylinders to cushion the sand paper. This may be made continuous, or in sections corresponding to the staves, as desired.

10 It will be noticed that when my cylinder is expanded there exists no opening or gap between the several staves forming the surface thereof, but on the contrary the felt is supported upon a practically continuous and
15 uniform surface at all points. This feature tends to improve the character of the work done, and to economize the paper, all parts of which are compelled to do duty alike.

When the stationary states are located at
20 opposite sides of the cylinder, the movable staves should also be opposite each other and between the stationary staves. The latter and their supports may thus be made to serve as ways in which the movable staves may
25 slide in their movements.

The stationary heads in conjunction with the staves secured thereto act to truss or stiffen the shaft and to prevent any bending of the latter in any direction. This is important, especially in the case of those expanding
30 cylinders the bearing at one end of whose

shaft is made removable as is sometimes the case.

I claim—

1. The expanding cylinder, the periphery 35 whereof is composed of contractible staves and stationary staves, substantially as specified.

2. In an expanding cylinder, the combination of stationary staves and their supports, 40 the latter having ways for the slides of the movable staves, said movable staves, slides attached thereto and traversing said ways, and means for moving said staves in and out, substantially as specified. 45

3. The combination in an expanding cylinder, of stationary heads, staves stationarily mounted thereon, movable segments E, staves mounted thereon, and means for moving said segments in and out, substantially as specified. 50

4. The expanding cylinder consisting of the stationary staves, the movable staves, the heads supporting the stationary staves and having ways *d*, and segments E supporting 55 the movable staves and having slides *e*, the sliding hubs, the links and the screw for moving the hubs, substantially as specified.

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Witnesses:

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