No. 672,511. Patented Apr. 23, 1901.

J. M. NASH.

ABRADING MACHINE.

(No Model.) (Application filed Aug. 11, 1900.

3 Sheets—Sheet 1.

Fig. 1.

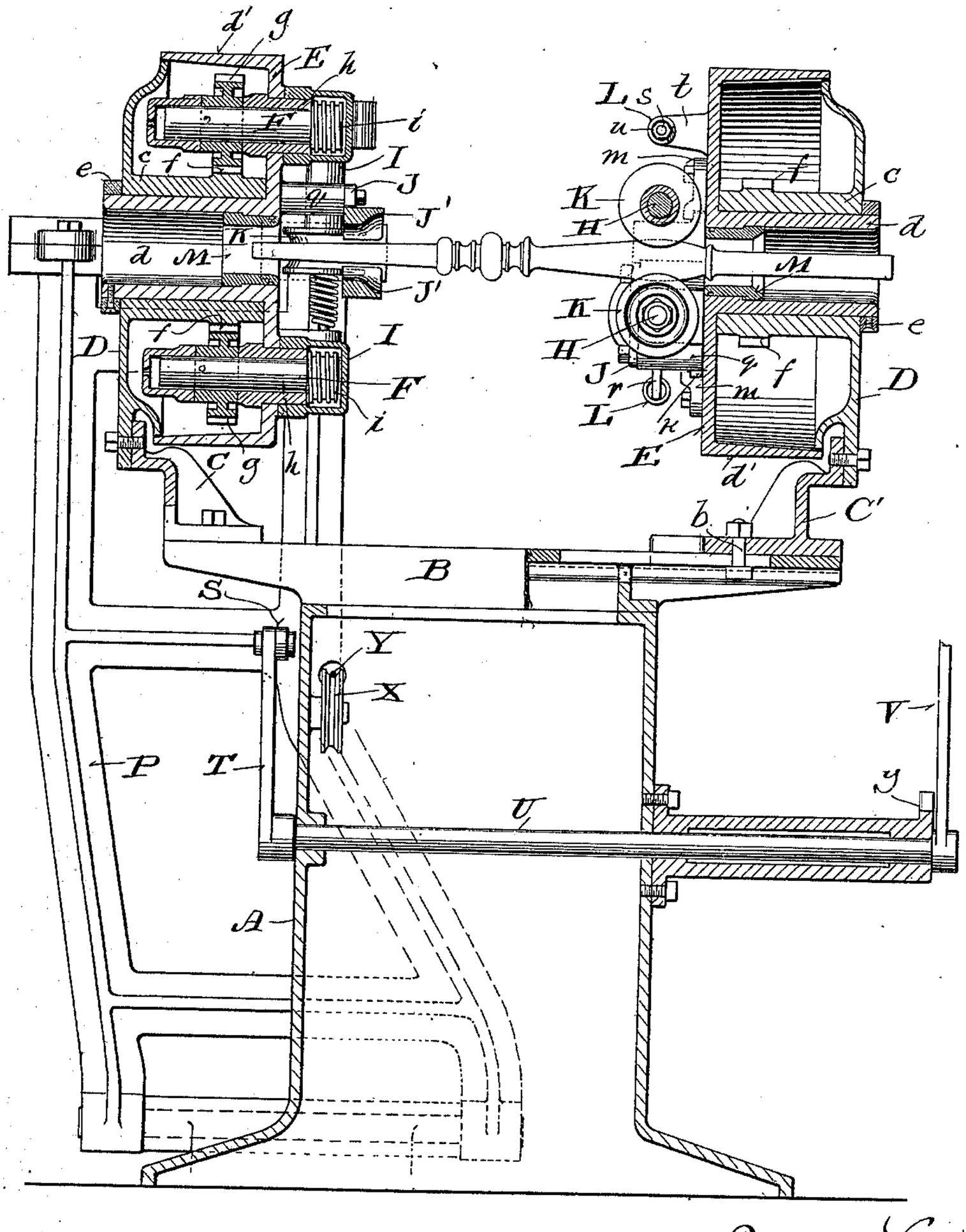

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Fig. 2.

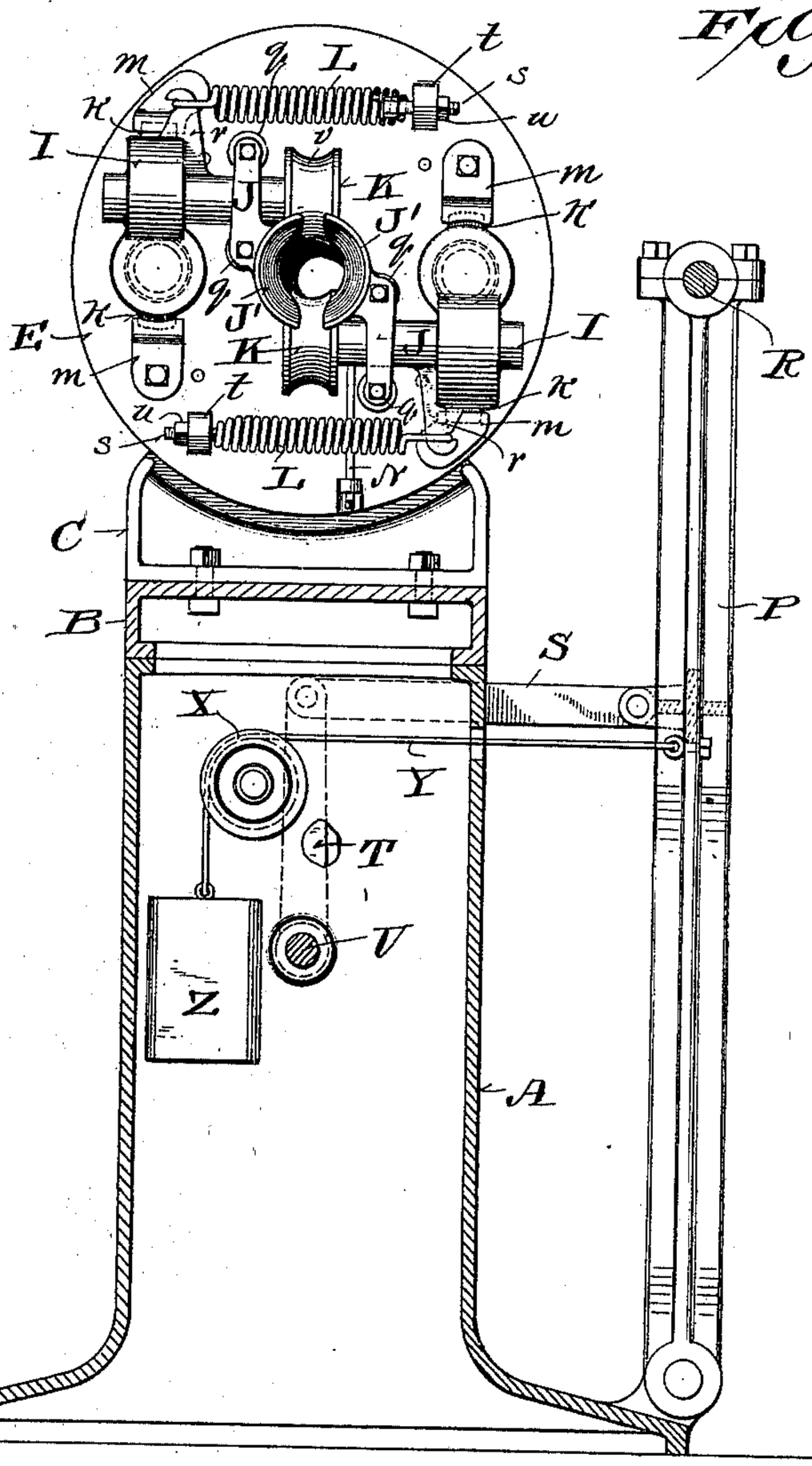

Fig. 7.

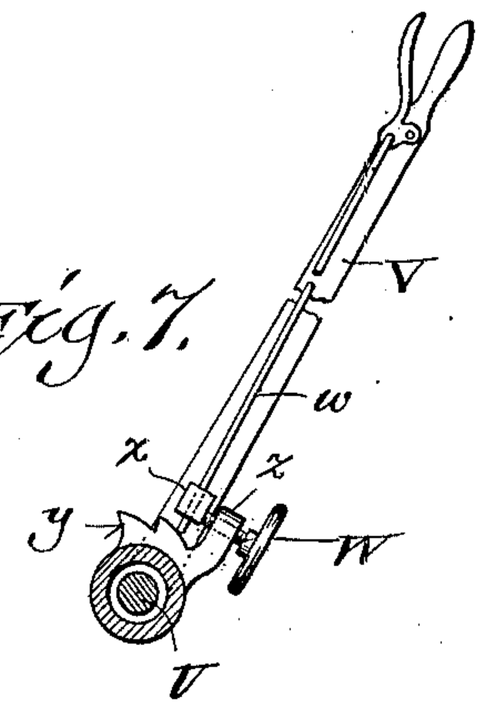

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Fig. 4.

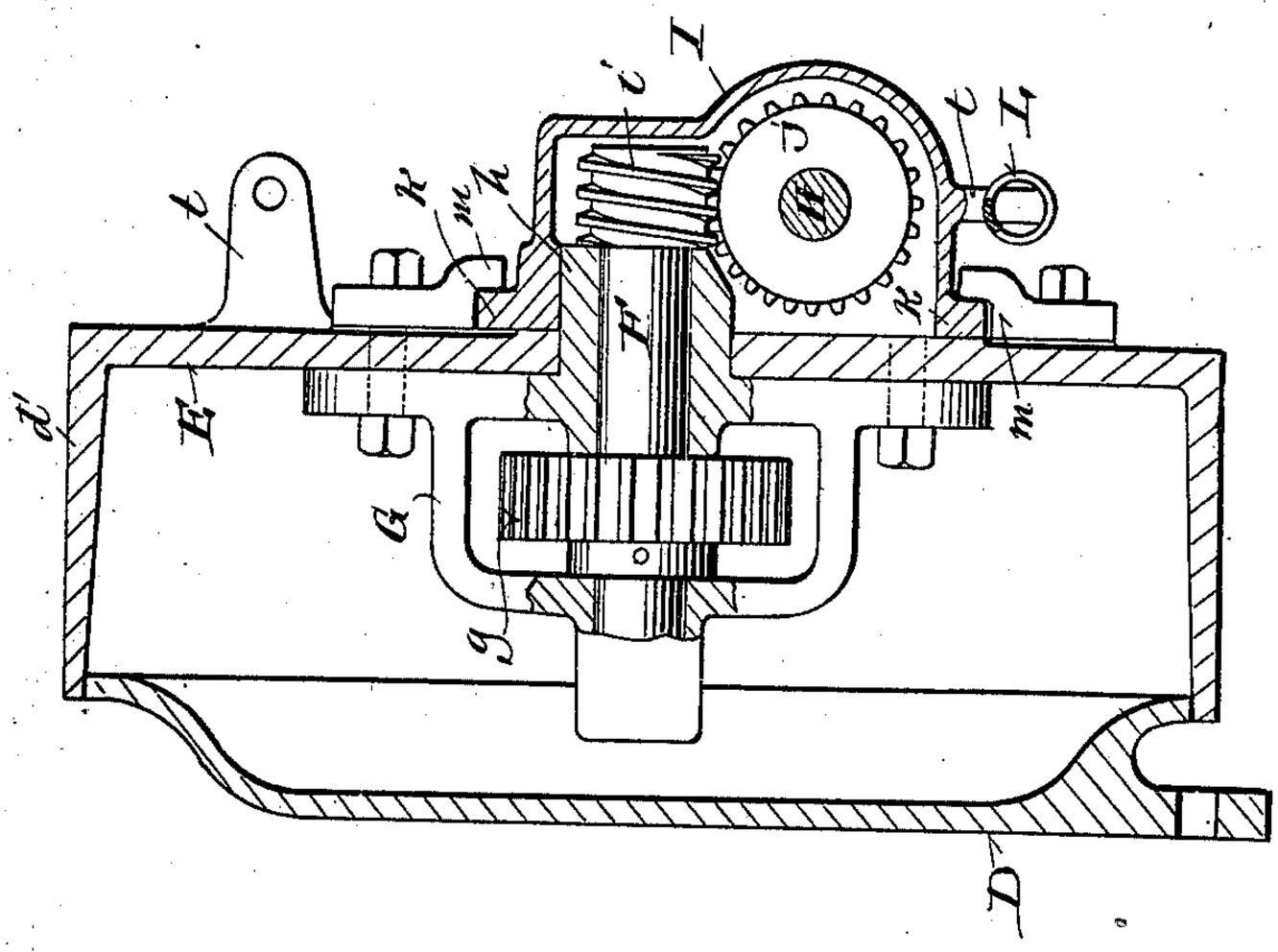

Fig. 3.

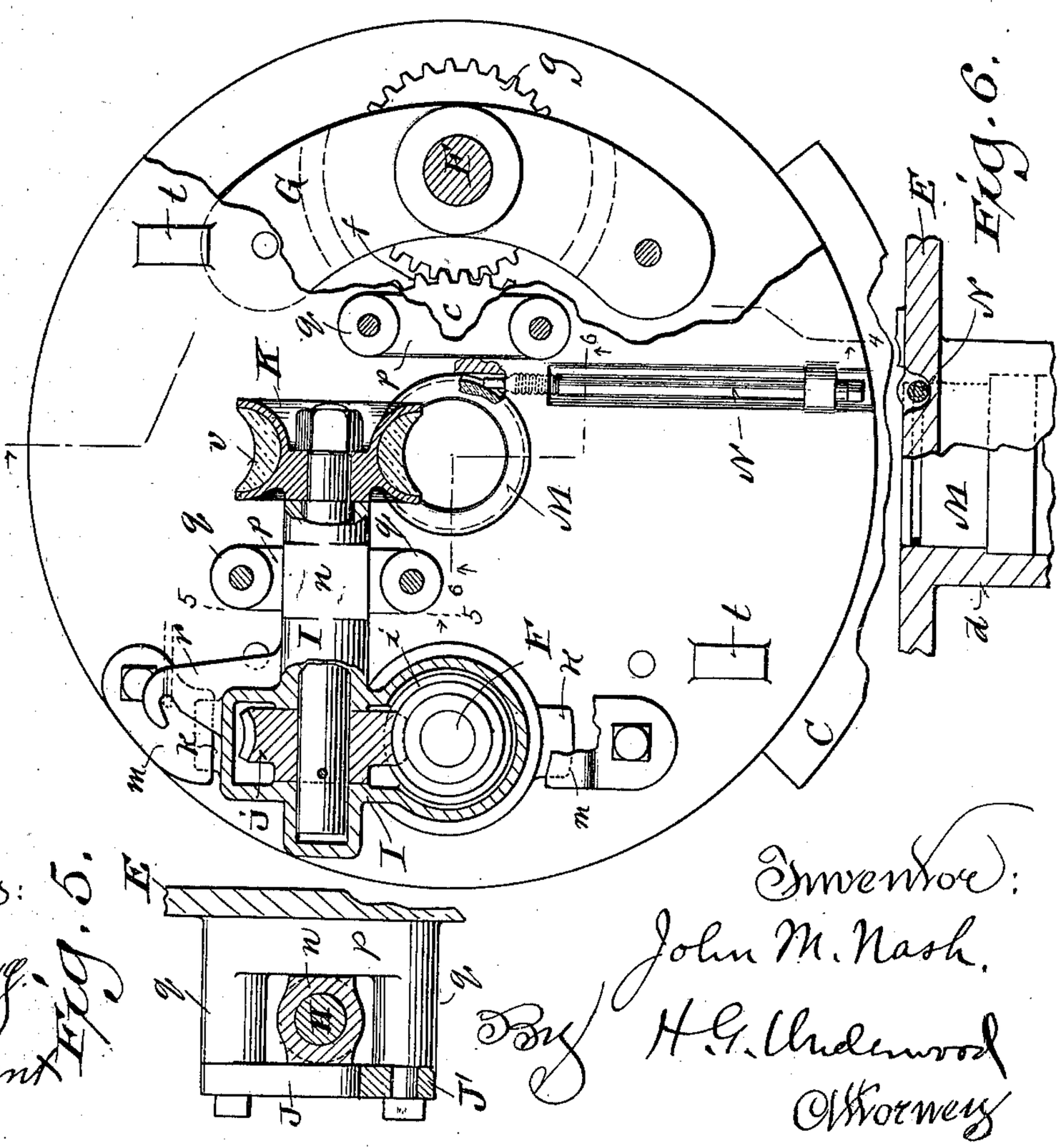

Fig. 6.

Fig. 5.

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UNITED STATES PATENT OFFICE.

JOHN M. NASH, OF MILWAUKEE, WISCONSIN.

ABRADING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 672,511, dated April 23, 1901.

Application filed August 11, 1900. Serial No. 26,568. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. NASH, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Abrading-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to improve the machine set forth in my Patent No. 430,398, of June 17, 1890; and it consists in certain peculiarities of construction and combination of parts hereinafter specified with reference to the accompanying drawings and subsequently claimed.

Figure 1 of the drawings represents a partly-sectional front elevation of my improved machine; Fig. 2, a detail sectional elevation illustrating a counterbalanced carrier, one end of a rotary drum, and mechanism in connection with the drum; Fig. 3, an end view of a rotary drum and parts in connection therewith, partly broken; Fig. 4, a detail sectional view indicated by lines 4 4 in the preceding figure; Fig. 5, a detail partly-sectional view indicated by line 5 5 in the third figure of the series; Fig. 6, a similar view indicated by lines 6 6 in said third figure, and Fig. 7 a detail view illustrating the carrier-lever and an adjustable stop for same.

Referring by letter to the drawings, A indicates a hollow standard, and B a table surmounting the standard. Opposite brackets C C′ are bolted to the table transversely of the same, and in order that the distance between these brackets and parts in connection therewith may be varied the bolts *b*, in connection with bracket C′, are adjustable in slots longitudinally of said table. It is within the scope of my invention to have both brackets and parts in connection therewith adjustable on the table.

Bolted to each bracket is an offset flange-lug of a disk D, having an inwardly-extended sleeve *c*, engaged by a tubular hub *d* of a head E, having a flange *d′*, that overlaps the periphery of said disk, the head with its hub and flange constituting a rotary drum that is held in working position by means of a collar *e*, fast on the outer end of said hub against the aforesaid disk. The sleeves *c* of the disks D are provided with circular series of spur-gear teeth *f*, and spur-pinions *g* on shafts F mesh with said teeth. The shafts F have their bearings in brackets G, bolted to the inner sides of the drumheads E, one bearing *h* of each of these brackets being extended through a corresponding aperture in the adjacent drumhead.

Worms *i* on the outer end of the shafts F mesh with worm-pinions *j* on other shafts H, supported in brackets I, that swing on the bearings *h*, constituting parts of brackets G aforesaid. Portions of the brackets I are made to incase the worm-gearing, and these brackets are provided with lugs *k*, opposed by guides *m*, bolted to the drumheads, an enlargement *n* of one of the bearings for each shaft H being made flush with an opposing projection *p* of the adjacent drumhead and a plate J, bolted to twin studs *q*, extending from said drumhead at the extremities of said projection.

Opposing concave feed-rollers K are arranged on the shafts H, and spiral springs L connect hooks *r* of the brackets I with bolts *s*, that extend through drumhead-lugs *t*, nuts *u* being run on the bolts against said lugs to tension the springs. In the present machine the feed-rollers are faced with cushions *v*, of rubber or other elastic material, and these rollers are arranged in pairs adjacent to the hub-apertures of the drumheads.

Like in my former patent each drumhead-hub *d* is provided with an inner annular shoulder that forms a stop for a bushing M, having an annular groove. In the present machine the bushing-groove is engaged by the point of a binding-screw N, for which clearance is provided in the outer side of the adjacent drumhead, the head of said screw being adjacent to the periphery of the drum, convenient for the application of a socket-wrench, as is best shown in Fig. 3. By the construction just described the bushings are detachably retained in working position, it being intended that each machine shall be accompanied by several sets of bushings having bores of various diameter to accommodate stuff of varying thickness, and it is preferable to have the mouth of each bushing funnel-shaped in order that the material passing

through the same may not be impeded in its travel.

The rotary drums are to be driven by belts or otherwise, their rotation causing the pinions *g* to travel around the toothed portions of the stationary disk-sleeves *c* to impart rotary motion to the shafts F, this motion being communicated by the worm-gearing to the shafts carrying the feed-rollers, whereby these rollers have planetary movement, and stuff run through the machine is kept constantly turning.

The plates J, carried by one of the drums, have funnel-section extremities J′, that facilitate the proper feed of the stuff, especially in case any of this stuff is crooked.

In pivotal connection with the standard A is a frame P, constituting a carrier for a shaft R, upon which to mount an abrading-head or an abrading belt-pulley, as may be most convenient, and a link S connects the frame with a crank T on one end of a shaft U, for which said standard is provided with bearings, as is clearly shown in Fig. 1. In accordance with the length of the material to be operated upon and the width of the abrader the bracket C′ and parts in connection therewith are adjusted longitudinally of the machine-table. Fast on the other end of shaft U is a hand-lever V, provided with a reciprocative latch *w*, guided in a lug *x* upon the inside of said lever, this latch being engageable with a rack *y* on the adjacent shaft-bearing to hold the carrier in normal position. A lug *z*, extended above the rack, is engaged by a stop-screw W in opposition to the lever-lug, whereby the working throw of the carrier is regulated to vary pressure of the abrading device (not shown) on the work.

Supported on a pulley X, mounted inside of standard A, is a runner Y, that connects with carrier P, and a counterweight Z is suspended from the runner, this counterweight operating to hold the abrader in yielding contact with the work when said carrier is swung toward the feed mechanism above specified.

In the operation of the machine an ornamental spindle or other round work is started through the bushing M of the drum at the lever end of the machine and caught between the adjacent pair of feed-rollers K, that are held in yielding frictional contact with the work by the power of the springs L exerted on the spring-brackets I, the yield being in proportion to varying thickness of the work. By providing rollers K with the face-cushions *v* the feed is improved and delicate parts of the work saved from injury. The work being caught by the first pair of rollers K, lever V is operated to swing carrier P in the direction necessary for yielding contact of the abrader with said work, this swing of said carrier being regulated by the adjustment of the stop-screw W for the purpose above specified. Before clearing the first pair of feed-rollers the work is caught by the other pair of similar rollers that feed it through in the drum opposite the one at which the operation began, and said work is thus traveled its entire length against the abrader.

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

1. The combination with the spring-controlled oscillative feed-rollers and means for imparting planetary motion thereto, of a pivotal lever-controlled carrier by which to bring an abrader in and out of contact with material traveled by the rollers.

2. The combination with the spring-controlled oscillative cushion-faced feed-rollers and means for imparting planetary motion thereto, of pivotal lever-controlled counterweighted carrier by which to bring an abrader in and out of yielding contact with material traveled by the rollers.

3. The combination with the spring-controlled oscillative feed-rollers and means for imparting planetary motion thereto, of a pivotal lever-controlled carrier by which to bring an abrader in and out of contact with material traveled by the rollers, and means for varying working throw of the carrier.

4. The combination with the spring-controlled oscillative feed-rollers and means for imparting planetary motion thereto, of a pivotal lever-controlled carrier by which to bring an abrader in and out of contact with material traveled by the rollers, a lug on the lever, and a stop-screw adjustable in opposition to the lug to limit working throw of the carrier.

5. The combination with the spring-controlled oscillative feed-rollers and means for imparting planetary motion thereto, of a pivotal lever-controlled carrier by which to bring an abrader in and out of contact with material traveled by the rollers, a lug on the lever, a lever-latch reciprocative in the lug, a stationary rack for engagement of the latch, and a lug-opposing stop-screw adjustable in an extension of the rack.

6. The combination of the stationary sleeves provided with circular series of spur-gear teeth, the rotary drums having hollow hubs engaging said sleeves, feed-rollers carried by shafts in spring-controlled oscillative bearings on the drums, other shafts carried by said drums in worm-gear connection with the roller-shafts, spur-pinions on these other shafts in mesh with the teeth on the aforesaid sleeves, and a pivotal lever-controlled carrier by which to bring an abrader in and out of contact with material traveled by the rollers.

7. The combination of the stationary sleeves provided with circular series of spur-gear teeth, the rotary drums having hollow hubs engaging said sleeves, feed-rollers carried by shafts in spring-controlled oscillative bearings on the drums, other shafts carried by said drums in worm-gear connection with the roller-shafts, spur-pinions on these other shafts in mesh with the teeth on the aforesaid sleeves, funnel-section guides adjacent to one set of feed-rollers, and a pivotal lever-controlled

carrier by which to bring an abrader in and out of contact with material traveled by said rollers.

8. The combination of the stationary sleeves provided with circular series of spur-gear teeth, the rotary drums having hollow hubs engaging said sleeves, annularly-grooved bushings engaging the drum-hubs, binding-screws arranged in the drumheads to engage the bushing-grooves and have their heads adjacent to the periphery of said drums, feed-rollers carried by shafts in spring-controlled oscillative bearings on the drums, other shafts carried by said drums in worm-gear connection with the roller-shafts, and spur-pinions on these other shafts in mesh with the teeth on the aforesaid sleeves.

9. The combination of the rotary drums one at least of which has adjustable connection with a table, spring-controlled oscillative feed-rollers carried by the drums, means for imparting planetary motion to the rollers, and a pivotal lever-controlled carrier by which to bring an abrader in and out of contact with material traveled by the rollers.

10. The combination of the hollow standard, the table thereon, the rotary drums in connection with supports mounted on the table, the spring-controlled oscillative feed-rollers carried by said drums, means for imparting planetary motion to the rollers, the lever-controlled carrier in pivotal connection with the standard, a pulley mounted in said standard, a counterweight, and a pulley-supported runner connecting the carrier and counterweight.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

JOHN M. NASH.

Witnesses:
N. E. OLIPHANT,
B. C. ROLOFF.