

No. 725,266.

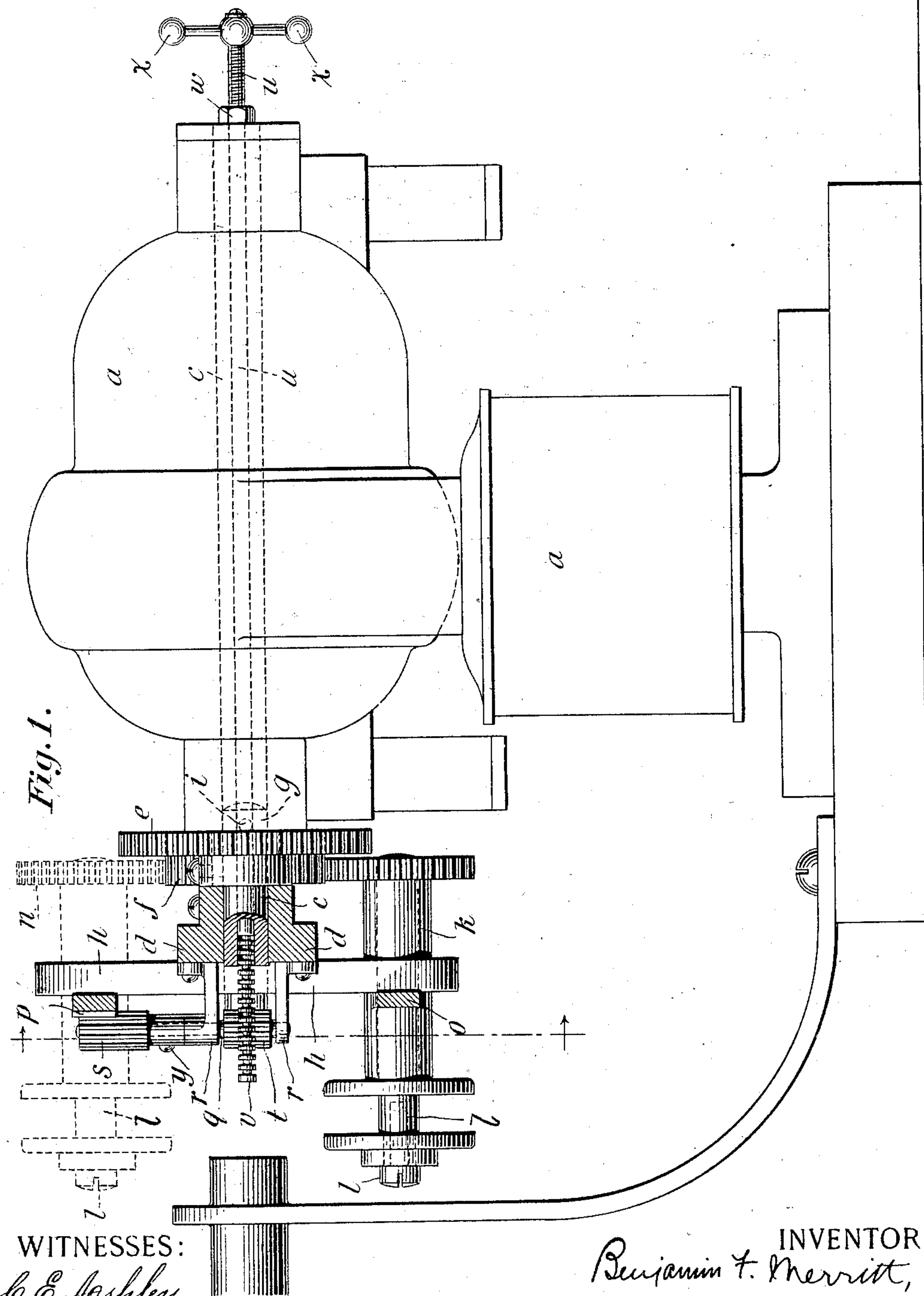
PATENTED APR. 14, 1903.

B. F. MERRITT.
GRINDING OR POLISHING MACHINE.

APPLICATION FILED JAN. 7, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:
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Geo. C. Herming

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By his Attorney,
Richard W. Barkley.

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2 SHEETS—SHEET 2.

Fig. 2.

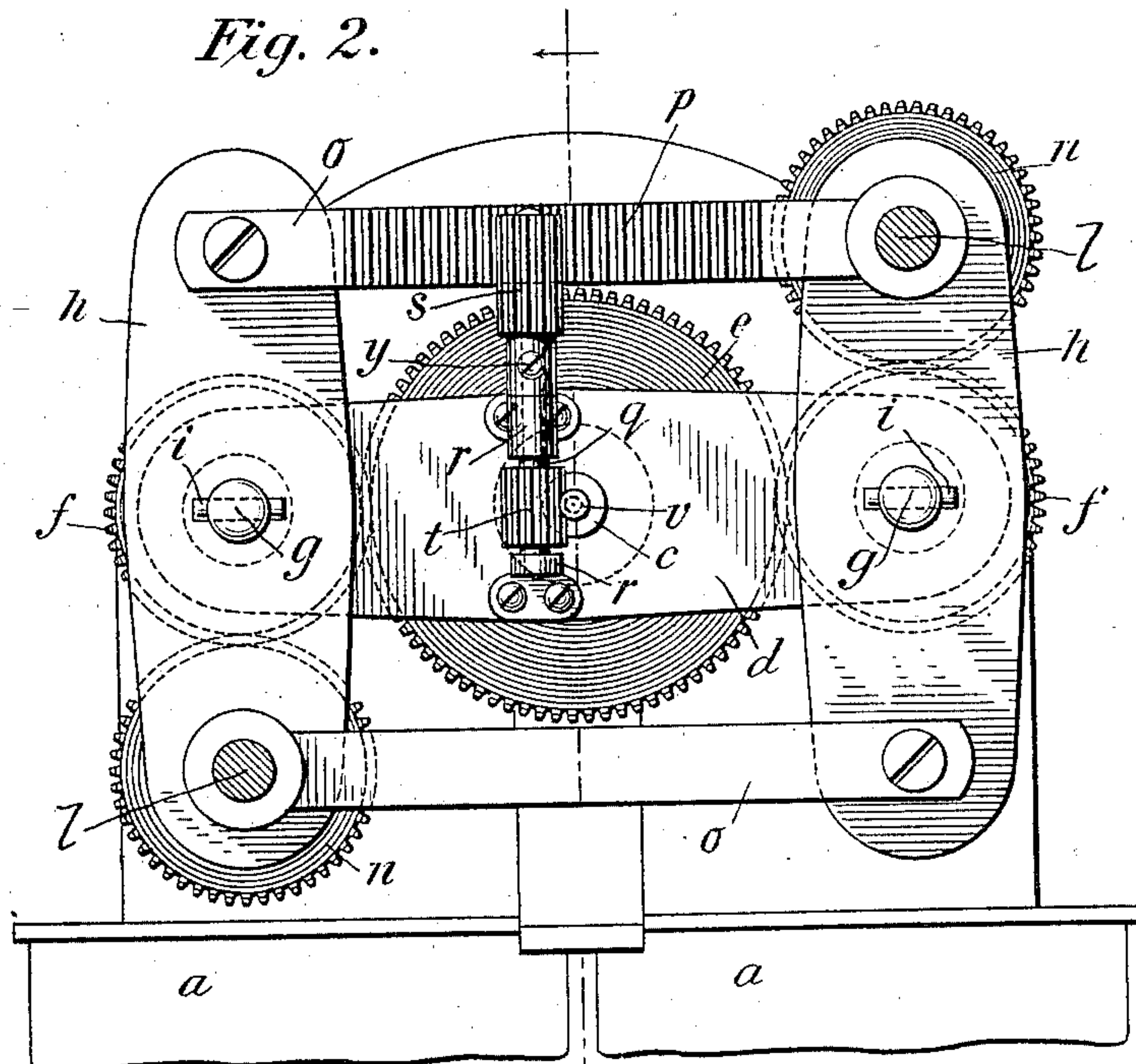
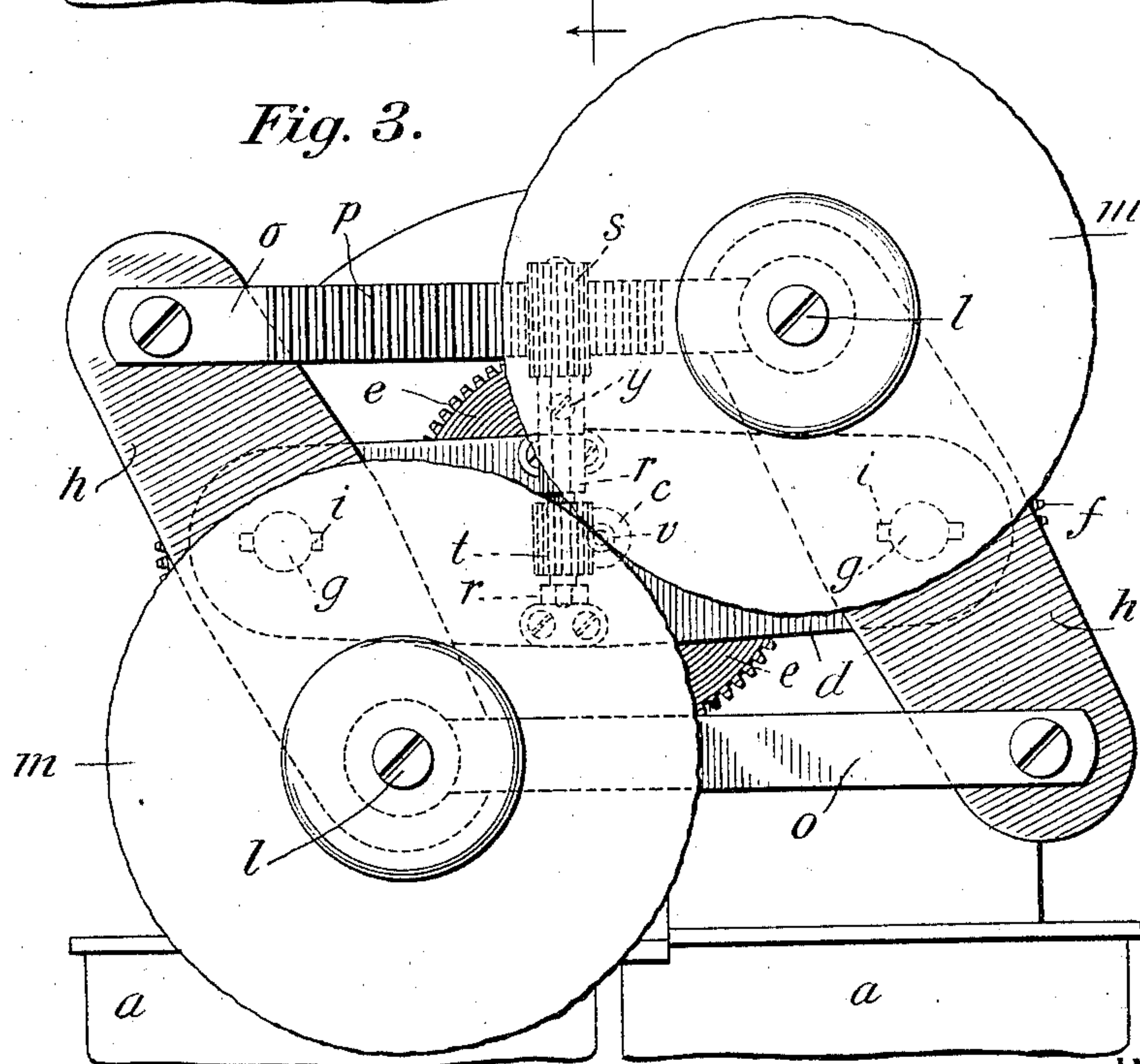


Fig. 3.



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UNITED STATES PATENT OFFICE.

BENJAMIN F. MERRITT, OF EAST ORANGE, NEW JERSEY.

GRINDING OR POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 725,266, dated April 14, 1903.

Application filed January 7, 1903. Serial No. 138,117. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. MERRITT, a citizen of the United States, and a resident of East Orange, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Grinding or Polishing Machines, of which the following is a specification.

The present invention relates to grinding and polishing machines, and has for one object the revolution of the grinding or polishing wheels about the objects operated upon, as well as their rotation on their own axes. Another object is the adjustment of such wheel toward and from its external axis of revolution. Another object is to make such adjustment while the machine is in operation. Another object is to use a plurality of wheels on one piece of work. Other objects will appear hereinafter.

To these ends the invention consists of features of construction and combinations of devices hereinafter described, and more particularly pointed out in the appended claims.

One form of the invention is illustrated in the accompanying drawings, forming part hereof, in which—

Figure 1 is a side elevation, partly in section on the line 1 1 of Fig. 2, of a machine in which the invention is embodied. Fig. 2 is an end view of the same; and Fig. 3 is a like view, partly in section, showing the parts in another position.

In the drawings the reference *a* designates an electric motor for operating the machine, and *b* a work-holder connected with the base of the motor *a*. The shaft *c* of the motor is hollow and projects toward the holder *b*. Fast on the projecting end of the shaft *c* and rotating therewith is an arm *d*, which is double or projects in opposite directions from the shaft. Between the hub of the arm *d* and the bearing in the fixed frame of the motor for the shaft *c* is a gear *e*, which is fast to said motor-frame. Near the ends of and rotatably mounted on the arm *d* are pinions *f* on short shafts *g*. Mounted on the same shafts *g* are levers *h*, pins *i* preventing displacement of levers *h* and gears *f*. One end of each of the levers *h* has a bearing *k* for a shaft *l*, one shaft to each lever, which carry

buffing or grinding wheels *m* and gears *n*, which mesh with the gears *f*. The wheels *m* are, by preference, disposed symmetrically about the axis of the shaft *c* and holder *b*. 55

The levers *h* are connected by one or more links *o*, which are pivotally connected thereto, and one of the links *o* has a rack *p* formed on or attached to one side thereof. The connection of the rack-bearing link *o* with levers *h* is such that the link has a parallel motion. A shaft *q* is mounted in bearings *r* on the arm *d* at right angles to the rack *p* and is provided with pinions *s* *t*, the latter of which is slightly to one side of the axis of motion of the arm *d*. 60 65

Passing through the hollow shaft *c* is a rod *u*, which is provided with annular grooves at one end, forming a rack *v*, which meshes with the pinion *t* and permits the last to revolve about the rod *u* without hindrance while permitting of the endwise motion of the rod *u*, even when the machine is in operation. Near its other end the rod *u* is provided with screw-threads which engage with the threaded nut *w*, which is fixed to the stationary frame of the motor *a*, said nut being removable from said frame, if desired. This arrangement permits of endwise motion of the rod *u*, which may be very small to bring about small adjustments of the levers *h* on their fulcras, with corresponding small movements of the wheels *m* toward or away from the axis of the shaft *c* and the work in holder *b*. 70 75 80

By loosening the set-screw *y*, which fixes the pinion *s* to the shaft *q*, the rod *u* may be run out (to the right in Fig. 1) to move it away from the work without at the same time moving the wheels *m* relatively to the work in holder *b*. 85 90

The operation of the above-described devices is as follows: The work is placed and held in the holder *b* in any suitable way, the wheels *m* being at the time sufficiently separated to permit the work to be moved in between them. Then by turning the rod *u* in the proper direction the wheels *m* are caused to impinge upon the work, and the motor is started. The work may be moved through the holder to bring other parts thereof into position for action thereon by the wheels *m*. The wheels *m* may be adjusted 95 100

inward and outward while the machine is in operation, so as to suit work of different diameters or thicknesses.

While I have shown and described one embodiment of my invention, I do not limit myself thereto, since many changes and substitutions may be made without departing from the spirit of the invention. Thus instead of the epicycloidal gearing shown for driving the wheels *m* the equivalent hypocycloidal gearing may be substituted, &c. Also it is obvious that the mechanism shown is equally adapted for grinding, polishing, or, by the substitution of a milling-cutter for the grinding or polishing wheels above described, for cutting the outside or the inside of work. Thus solid work may be ground, polished, or cut on the outside, or hollow work may be ground, polished, or cut internally by the above-described mechanism.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination of a rotating drive-shaft, a buffing or grinding wheel carrier connected to and revolved thereby, a fixed gear, on the fixed framework and toothed gearing connecting said fixed gear and said carrier for rotating the latter as it is revolved about said shaft, substantially as described.

2. The combination of a rotating drive-shaft, an arm fast thereon, a lever fulcrumed on said arm, a buffing or grinding wheel carrier rotatably mounted on said lever, a fixed gear, a plurality of gears connecting said fixed gear and said carrier, and means for varying the angular relation of said arm and said lever, substantially as described.

3. The combination of a drive-shaft, a double arm fast thereon, levers fulcrumed on said arm, buffing or grinding wheel carriers rotatably mounted on said levers, gearing for rotating said wheel-carriers, and means for simultaneously moving said levers to vary the angular relation thereof to said arms, substantially as described.

4. The combination of a drive-shaft, a double arm fast thereon, levers fulcrumed to said arm near the ends thereof, buffing or grinding wheel carriers rotatably mounted on said levers, a link pivoted to and connecting said levers, a rack on said link, a shaft journaled

in bearings on said arm, a gear on said shaft meshing with said rack, and means for rotating said shaft, substantially as described.

5. The combination of a rotatory double arm, levers fulcrumed thereon near the ends thereof, a link pivoted to and connecting said levers, and means for swinging said levers on their fulcra, with buffing or grinding wheel carriers rotatably mounted on said levers, and means for driving said carriers, substantially as described.

6. The combination of a drive-shaft, a double arm fast thereto, levers fulcrumed on said arm near the ends thereof, buffing or grinding wheel carriers rotatably mounted on said levers, a link pivoted to and connecting said levers, a rack on said link, a shaft journaled on said arm, a gear on said shaft meshing with said rack, a second gear on said shaft, and a rack meshing with said second gear to operate the same, substantially as described.

7. The combination of a drive-shaft, a double arm fast thereon, levers fulcrumed on said arm near the ends thereof, buffing or grinding wheel carriers rotatably mounted on said levers, a link pivoted to and connecting said levers, a shaft journaled on said arm and connected to operate said link and levers, and means for operating said shaft, substantially as described.

8. The combination of a hollow drive-shaft, a double arm fast thereon, levers fulcrumed on said arm near the ends thereof, buffing or grinding wheel carriers rotatably mounted on said levers, a fixed gear, a plurality of gears for each carrier and carried around by said arm and levers and driven by said fixed gear, a shaft journaled on said arm and connected with said levers to swing them on their fulcra, and a rod passing through said hollow drive-shaft and connected with said shaft on said arm for operating the same, substantially as described.

Signed at New York, in the county of New York and State of New York, this 31st day of December, A. D. 1902.

BENJ. F. MERRITT.

Witnesses:

GUS. C. HENNING,
R. W. BARKLEY.