

(No Model.)

P. J. WESTPHAL.
GRINDING MACHINE.

No. 551,243.

Patented Dec. 10, 1895.

Fig. 1.

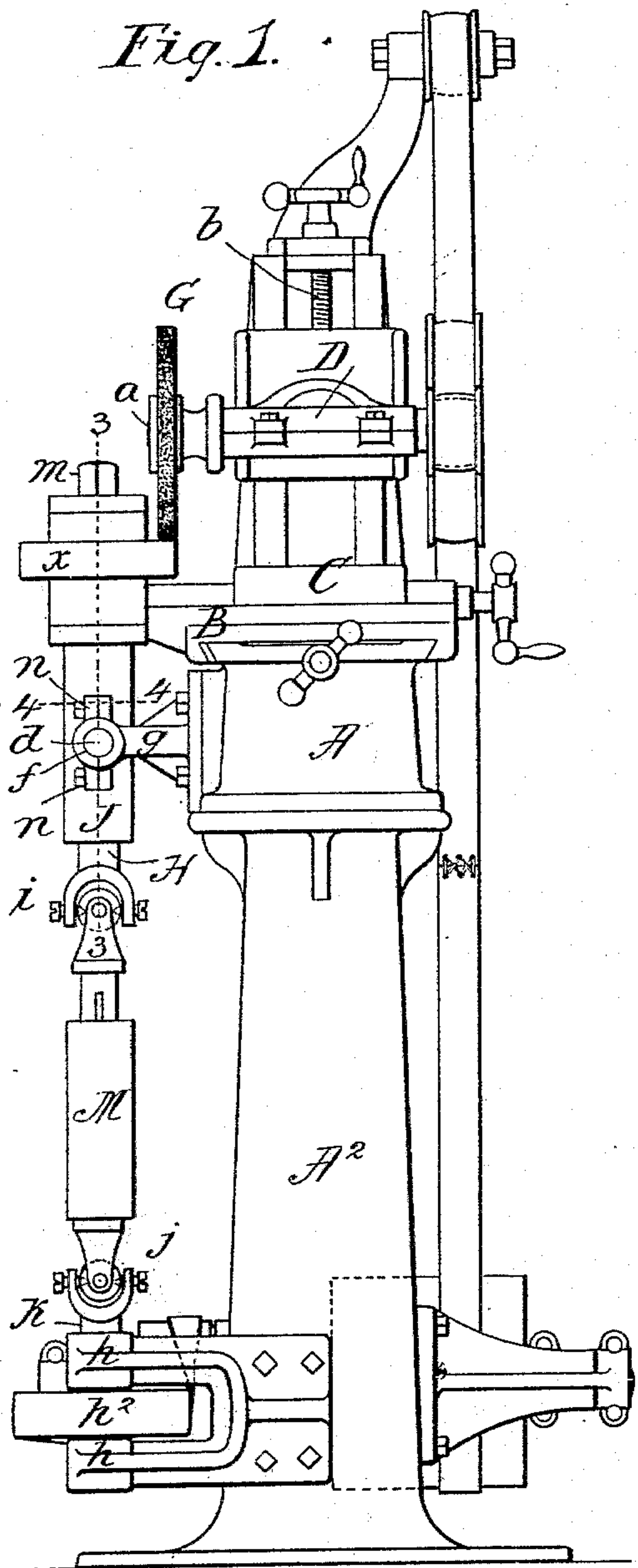


Fig. 2.

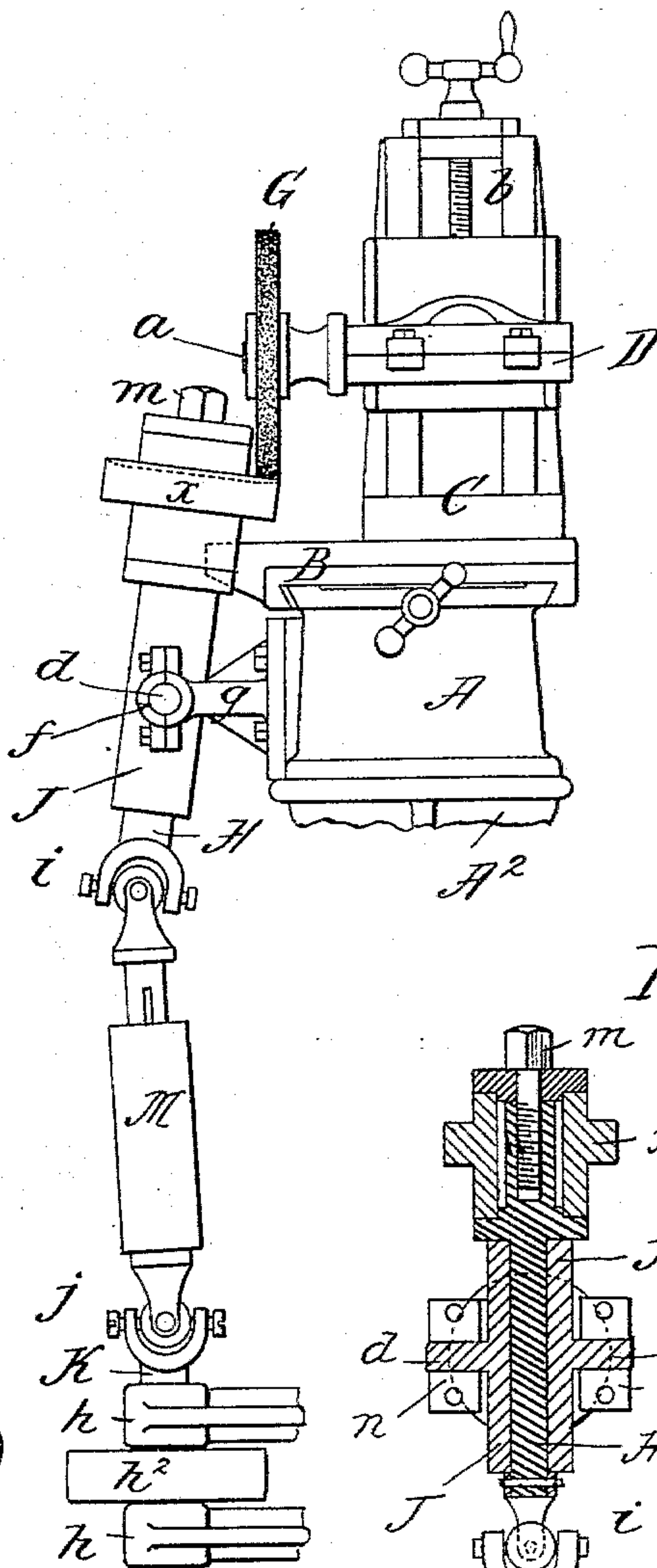


Fig. 3.

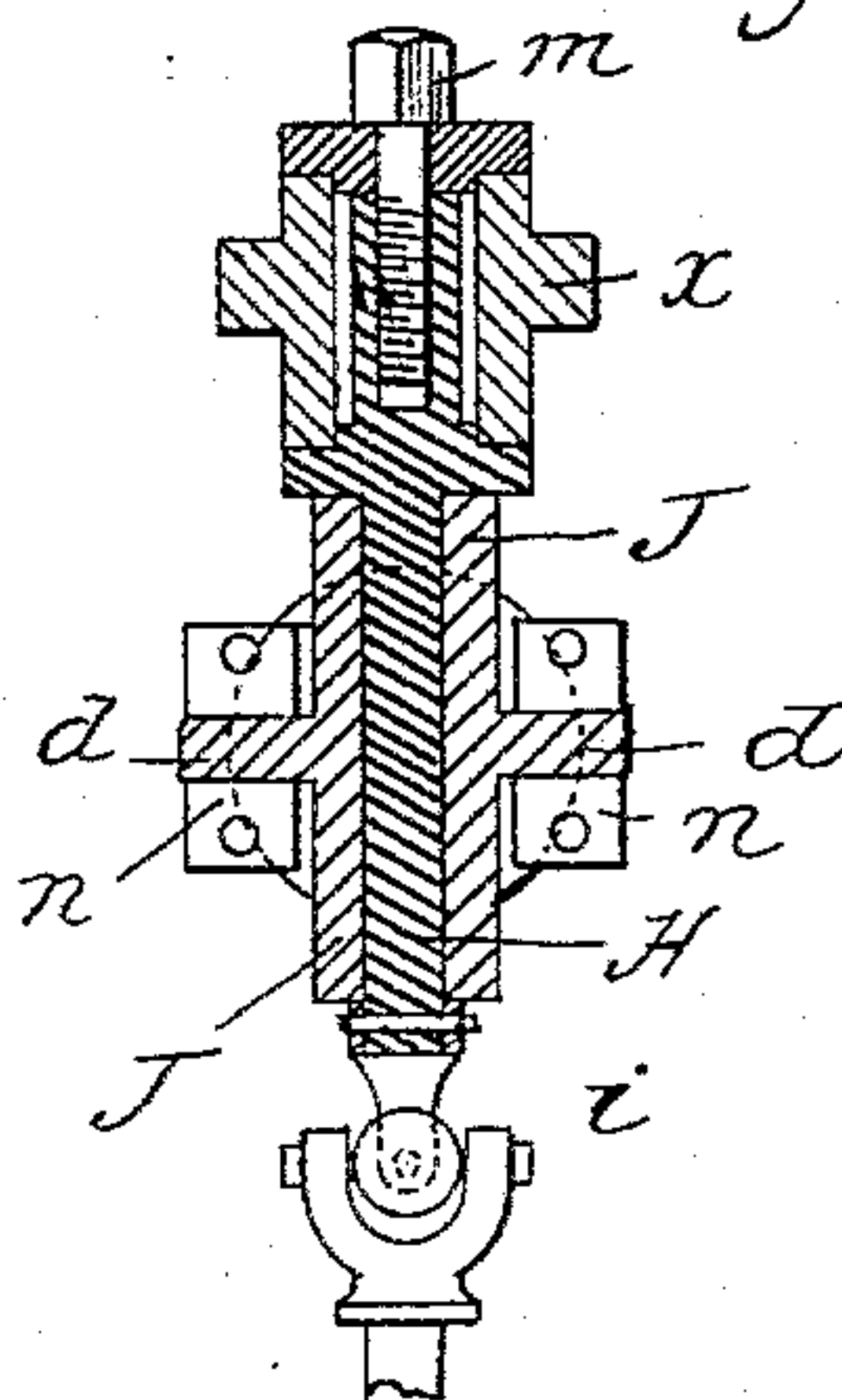
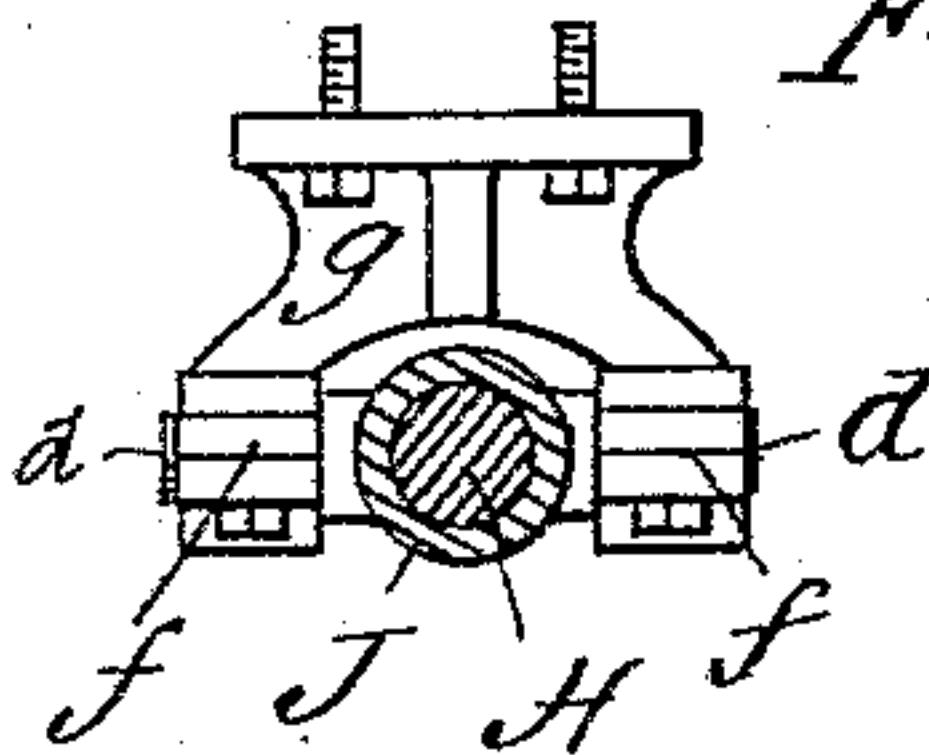


Fig. 4.



Witnesses:

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GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 551,243, dated December 10, 1895.

Application filed April 30, 1895. Serial No. 547,689. (No model.)

To all whom it may concern:

Be it known that I, PETER J. WESTPHAL, a citizen of the United States of America, residing at Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Grinding-Machines, of which the following is a specification.

This invention relates to improvements in grinding machines of a special class—namely, those designed for grinding slitter-cutters for paper, which description of cutters are common and extensively used.

The object of this invention is to devise a machine for grinding and truing slitter cutters or disks which will be capable of grinding the faces of the disks, either perpendicular to their axes or at any obliquity thereto, and which shall be practical, durable, susceptible of convenient and rapid adjustment and operation and altogether convenient and satisfactory in and for the performance of the work which is intended to be performed on and by the machine.

The invention consists in the combination and arrangement of parts and constructions thereof, all substantially as will hereinafter fully appear, and be set forth in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of the machine, showing a disk or paper-slitting cutter mounted thereon ready to be ground and trued at its cutting-edge. Fig. 2 is an elevation substantially the same as Fig. 1, but showing the spindle or holder for the slitter-disk and the directly-united driving connection therefor in somewhat changed positions. Fig. 3 is a vertical longitudinal sectional view of parts taken on the line 3 3, Fig. 1. Fig. 4 is a horizontal cross-section and partial plan view taken on line 4 4, Fig. 1.

The machine will be now described sufficiently in detail in conjunction with the aforementioned drawings, which form a part of this specification.

The machine is constructed with a suitably-mounted bed A, supported by the standard A² at a suitable height above the floor, there being upon the bed the transverse right-angul-
50 arly-arranged slides B and C, the latter having thereon the head D for carrying the

grinding-wheel shaft a, on which the grinding-wheel G is secured, and suitable driving means is provided for the grinding-wheel, and the head on which the grinding-wheel is mounted is vertically adjustable by the feed-screw b. These parts thus far described in themselves constitute no patentable novelty and are not so claimed; but there is combined with the grinding-wheel, which is suitably mounted, (the aforementioned supports therefor being entirely suitable as the mount therefor,) the spindle or shaft H for receiving and carrying the slitter-disk *a*, which spindle has its bearing and support in and through an axially bored, drilled, or otherwise apertured holder or sleeve J, which is externally pivotally supported whereby it may have a bodily swinging or tilting motion in a suitable extent on an axis which is at right angles to the lengths of the spindle H and of the sleeve-support J, in and through which it is journaled. This sleeve-shaped journal-bearing for the rotatable spindle for the slitter-disk, which is to be ground as specifically shown, is pivotally supported by having the laterally-projecting trunnions *d d*, which are hung in sockets *f* therefor of the horizontally and forwardly-extending bracket *g*, which is bolted upon the bed of the machine.

K represents a driving-shaft for the slitter-carrying spindle, the same being mounted to rotate vertically in fixed bearings *h h* and having a pulley *h*² thereon, whereby through a suitably applied and driven belt it may be speeded. The spindle H and the driving-shaft K therefor are connected so that the said shaft will cause the rotation of the spindle and yet not interfere with the oscillatory movements of the said shaft in its journal-sleeve; and to this end the connection is constituted by an intermediate two-part telescopic spline-engaged shaft M, having at its ends, as seen at *i* and *j*, universal joint connections with the said shaft and spindle H K. A flexible shaft in this interposition and connection would be an equivalent means to the required end.

In the utilization of the present machine, the slitter-disk is mounted on the upper end of the spindle and secured thereupon by the headed bolt *m*. The head D is lowered or adjusted to bring the grinding-wheel G, car-
100

ried thereby, to proximity to the work and the spindle is inclined by swinging the sleeve on its trunnion-like bearing-supports to correspond to the bevel which is to be imparted to the face of the disk adjacent its periphery.

The sleeve may be confined or clamped in the given inclination, or in some cases, where a grinding-wheel of proper peripheral contour is provided, in a truly axially vertical position, by constricting the sockets for the trunnions of the sleeve J, which is possible by reason of the split or separable construction of the socketed members of the yoke-formed bracket and the provision of the bolts *n* with set-nuts. As the grinding operation proceeds, the grinding-wheel may have a suitable downfeed by the lowering of the head D through means of the feed-screw *b*.

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

1. In a machine for grinding slitter-disks, the combination with a grinding wheel and rotary supporting means therefor, of a spindle on which to mount the disk, a sleeve-like journal,—within and through which the spindle extends and rotates,—which is pivotally supported whereby it may oscillate relative to the plane of rotation of the grinding wheel, and means for rotating said spindle which has a continuous connection therewith, the position of which, however, may be made variable according to the adjustment of the spindle-supporting sleeve, substantially as described.

2. In a machine for grinding slitter-disks, the combination with a grinding wheel and shaft therefor, and means for imparting to the grinding wheel a bodily feed movement, of a spindle on which to mount the disk, a sleeve-

like journal,—within and through which the spindle extends and rotates,—which is pivotally supported whereby it may oscillate relative to the plane of rotation of the grinding wheel, and means for rotating said spindle which has a continuous connection therewith, the position of which, however, is variable according to the adjustment of the spindle-supporting sleeve, substantially as described.

3. In a machine for grinding slitter-disks, the combination with grinding wheel and supporting and rotating means therefor, of a spindle on which to mount the disk, a journal sleeve within and through which the spindle rotates, a bracket under the grinding wheel by which the journal-sleeve is externally of the latter pivotally supported, a driving-shaft for the spindle and an interposed medium of connection, which at its ends has universal joint connections with the said spindle and its driving-shaft, substantially as described.

4. In a machine for grinding slitter-disks, the combination with grinding wheel and supporting and rotating means therefor, of a spindle on which to mount the disk, a journal sleeve within and through which the spindle rotates, a bracket under the grinding wheel by which the journal-sleeve is externally of the latter pivotally supported, means for confining the sleeve in any of its variously inclined adjustments, a driving shaft for the spindle and an interposed medium of connection, which at its ends has universal joint connections with the said spindle and its driving-shaft, substantially as described.

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