(No Model.) 2 Sheets—Sheet 1.

A. H. RANDALL.

LATHE CENTER GRINDING MACHINE.

No. 349,602. Patented Sept. 21, 1886.

FIG. 1.

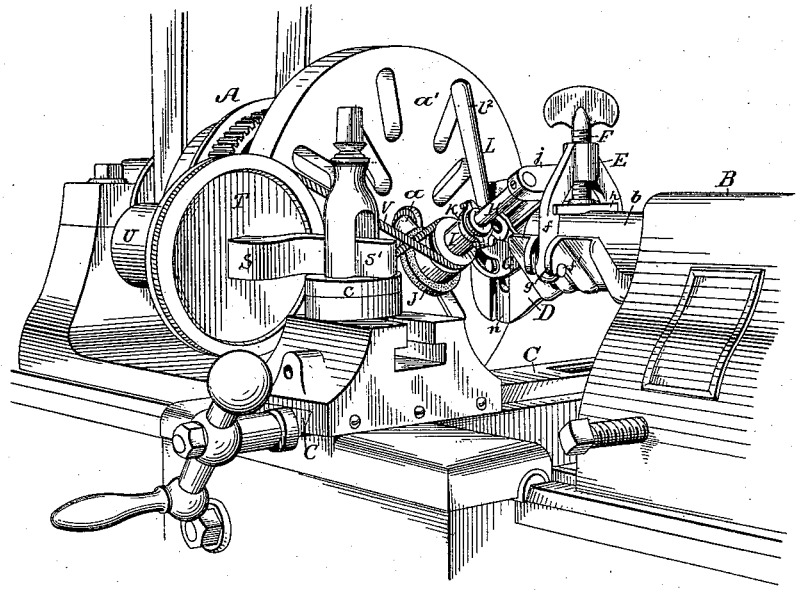


FIG. 5.

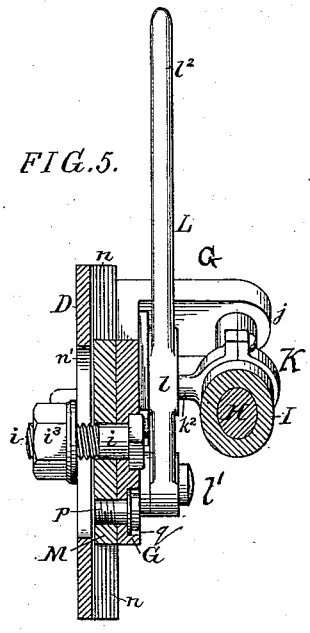


FIG. 6.

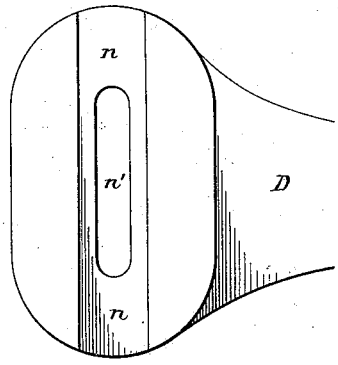


FIG. 7.

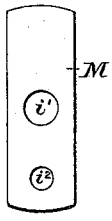
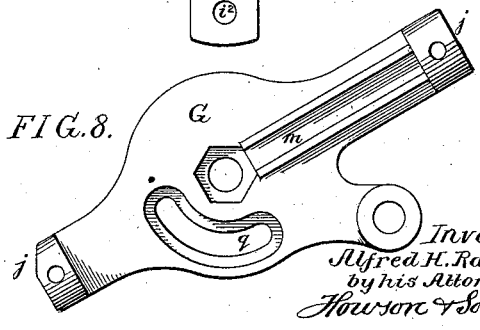


FIG. 8.



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(No Model.) 2 Sheets—Sheet 2.

A. H. RANDALL.

LATHE CENTER GRINDING MACHINE.

No. 349,602. Patented Sept. 21, 1886.

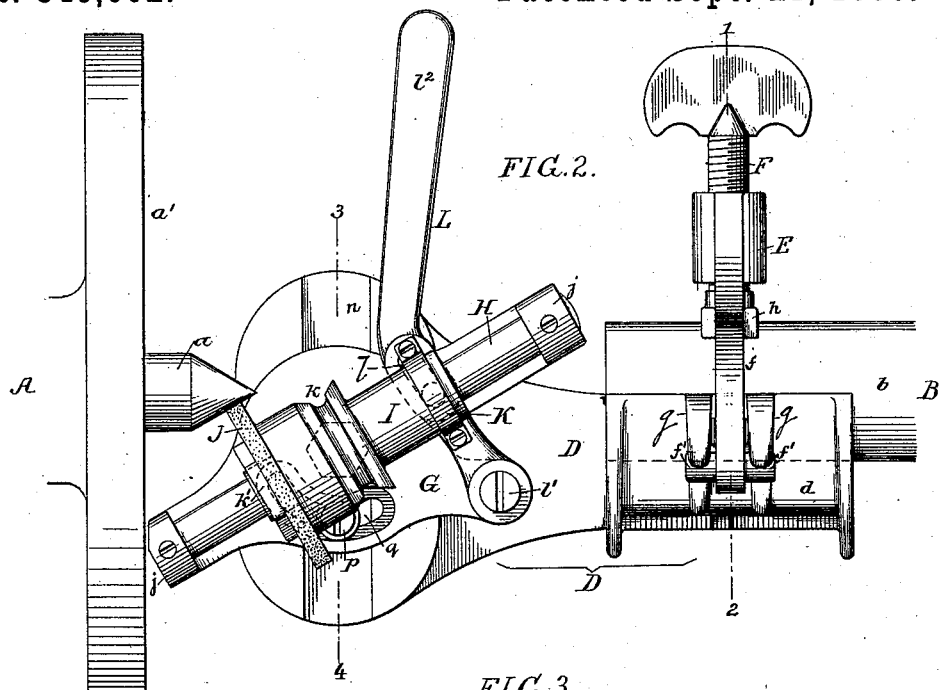

FIG. 2.

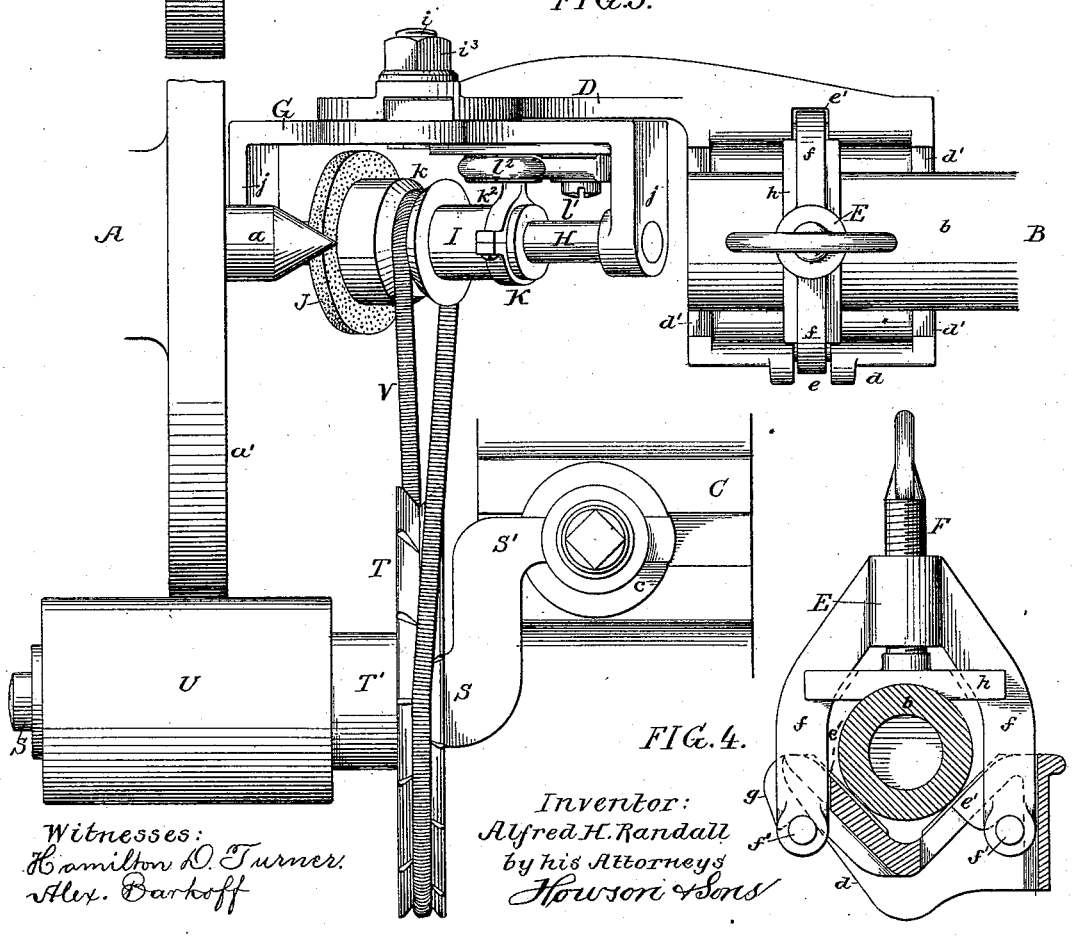

FIG. 3.

FIG. 4.

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UNITED STATES PATENT OFFICE.

ALFRED HAROLD RANDALL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO HERMAN H. LEUCHSENRING, OF SAME PLACE.

LATHE-CENTER-GRINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 349,602, dated September 21, 1886.

Application filed June 26, 1885. Serial No. 169,907. (No model.)

To all whom it may concern:

Be it known that I, ALFRED HAROLD RANDALL, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain new and useful Improvements in Lathe-Center-Grinding Machines, of which the following is a specification.

My invention relates to certain details in the construction of a lathe-center-grinding machine, with the view of permitting the ready centering of the device, the ready adjustment of the parts, the easy manipulation of the same, and the positive driving of the spindle of the grinding-disk, my improvements consisting of certain combinations of parts, fully set forth and specifically claimed hereinafter.

In the accompanying drawings, Figure 1 is a perspective view of a portion of a lathe with my improved center-grinding machine in position thereon. Fig. 2 is a side view of the center-grinding machine, showing a portion of the face-plate and puppet-head of the lathe. Fig. 3 is a plan view. Fig. 4 is a transverse section on the line 1 2, Fig. 2. Fig. 5 is a transverse section on the line 3 4, Fig. 2, and Figs. 6, 7, and 8 are detached views of parts of the device.

Referring to Fig. 1, A is the head-stock of the lathe, B the puppet-head, C the slide-rest, *a* the center the conical end of which is to be ground, *a'* the face-plate, and *b* the puppet-head spindle, all of the usual construction.

D is the frame of the grinding device, this frame having a V-shaped socket, *d*, Fig. 4, slotted on each side at *e e'*, for the reception of the legs *f* of a detachable clamp-yoke, E, said legs having at their lower ends laterally-projecting pins *f'*, which engage with lips *g g'* on the socket *d*.

The clamp E has a set-screw, F, which bears upon a clamp-plate, *h*, and when the device is applied to the puppet-head spindle *b* and the set-screw F tightened the plate *h* will be pressed upon the top of the spindle, and the socket *d* of the frame D will be drawn up against the under side of the said spindle, thus insuring the true centering of the frame D, irrespective of the diameter of the puppet-head spindle. As the socket *d* has bearing-faces *d'* at each end and the plate *h* is equidistant between said bearings, a three-pointed grip upon the spindle is obtained, thus insuring the firm retention of the frame on the spindle.

Pivoted to the frame D by a bolt, *i*, is a frame, G, having lugs *j j*, to which is secured a spindle, H, free to turn and slide, on which is a sleeve, I, carrying the pulley *k* and grinding-wheel J, the latter being made, in the present instance, of emery, and being secured to the sleeve by a nut, *k'*.

To a groove in the sleeve I is adapted a two-part ring, K, having a pin, k^2, which projects into a slot, *l*, in a lever, L, pivoted at *l'* to the frame G. This lever has a suitable handle, l^2, so that by means of the lever a longitudinal movement can be imparted to the sleeve I.

Rotation of the ring K with the sleeve I is prevented by the projection of the pin k^2 into a slot, *m*, formed in the frame G, as shown clearly in Fig. 8.

The frame G can slide vertically on the frame D, said frame having a slot, *n'*, for the reception of the pivot-bolt *i*, and to a groove, *n*, in the face of the frame D is adapted a block, M, perforated at *i'*, for the passage of the bolt *i*, and having a threaded orifice, i^2; Fig. 7, for the reception of a screw-bolt, *p*, which passes through a segmental slot, *q*, in the frame G, Fig. 8. On loosening this screw the frame G can be adjusted on the bolt *i* to different angles, depending upon the taper of the center *a*, the frame G being firmly secured to the frame D after adjustment by tightening the screw-bolt *p* and the nut i^3 on the bolt *i*.

If desired, the frame G can be moved vertically on the frame D, the nut i^3 being loosened, so as to permit the block M to slide freely in the groove *n*, the extent of this movement being determined by the diameter of the center *a*.

The grinding-wheel J is driven from the face-plate *a'* in the following manner: A spindle, S, has a projecting arm, S', which is adapted to the usual slotted tool-post, *c*, secured to the slide-rest C of the lathe. On the spindle S is, in the present instance, a V-shaped pulley, T, having a long hub, T', carrying a friction-drum, U, which is in contact with the periphery of the face-plate *a'* of the lathe. A belt,

v, passes around the pulley T and around the pulley *k* on the sleeve I, this belt being preferably elastic, and being shown in the drawings in the form of a spiral spring, so that it can readily yield to permit the use of the device on lathes having face-plates of different diameters. By turning the usual transverse feeding-screw controlling the slide-rest the friction-wheel U can be moved into or out of contact with the face-plate *a'*, the rotary movement of the grinding-wheel being thus started and stopped at the will of the attendant without stopping the lathe.

When a slot in the face-plate extends to the periphery, I fill the outer portion of the slot with a piece of wood, in order to make a continuous bearing-surface, as will be readily understood.

It will be seen that the adjustment of the grinding-disk to the diameter and facial angle of the center-pin is effected without any corresponding adjustment of the driving devices carried by the tool-post of the lathe, the latter occupying a fixed relation to the face-plate.

By providing the fixed frame or carrier D with a clamp occupying such relation to the fixed frame and grinding device that it can be applied to a spindle projecting from the puppet-head of the lathe, I am enabled to effect the ready application of the device to the lathe, the device being properly centered when the clamp is tightened on the projecting spindle of the puppet-head, and no further adjustment being required, except that necessary to bring the grinding-spindle to bear on the conical end of the center-pin and regulate the angle of traverse of said grinding-disk to accord with the angle of said conical end.

It will be observed that as the arm S', which carries the driving-drum U, is rigid there must be a rigid bearing of said driving-drum against the periphery of the face-plate *a'* of the lathe, more effective driving being possible by this arrangement than when the driving-drum is pressed against the periphery of a rotating portion of the lathe by means of a spring.

I claim as my invention—

1. The combination, in a lathe-center-grinding machine, of a fixed frame or carrier, D, and a supplementary frame pivoted to and adjustable across the face of said fixed frame, and the grinding-disk carried by said adjustable supplementary frame, all substantially as specified.

2. The combination, in a lathe-center-grinding machine, of the fixed frame or carrier D, the supplementary frame pivoted to and adjustable across the face of said fixed frame, and a grinding-disk carried by and movable across the face of said supplementary frame in a direction inclined in respect to the direction of movement of said frame across the face of the fixed frame, all substantially as specified.

3. The combination, in a lathe-center-grinding machine, of a grinding device and a carrier therefor secured to a spindle projecting forward from the puppet-head of the lathe, with driving mechanism carried by the tool-post of the lathe, all substantially as specified.

4. The combination, in a lathe-center-grinding machine, of a grinding device and a fixed frame or carrier, D, therefor, with driving mechanism carried by the tool-post of the lathe, and comprising a belt-pulley and drum carried by a rigid arm secured to the tool-post, the drum being driven by frictional contact with the periphery of the face-plate of the lathe, and the pulley receiving a belt for driving the grinding-disk, all substantially as specified.

5. The combination, in a lathe-center-grinding machine, of the grinding device, a carrier therefor having a V-shaped socket adapted to the puppet-head spindle of a lathe, and a detachable yoke having a clamp-plate and set-screw, whereby said frame is clamped to the puppet-head spindle, all substantially as specified.

6. The combination of the grinding device, the carrying-frame D, having a V-shaped socket, *d*, with slots *e e'* and ears *g*, the yoke E, having legs *f*, with projections *f'*, the clamp-plate *h*, and set-screw F, all substantially as specified.

7. The combination of the frame D, having a groove, *n*, and slot *n'*, the block M, adapted to the groove, the frame G, having a segmental slot, *q*, the pivot-pin *i*, and the bolt *p*, all substantially as specified.

8. The combination of the frame D, the frame G, hung thereto and adjustable thereon, and having a groove, *m*, the grinding device having a sleeve, I, the slotted operating-lever L, and a ring adapted to a groove in the sleeve I, and having a projection adapted to the slot in the lever L and to the groove *m* of the frame G, all substantially as specified.

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JOHN H. DALE.