(No Model.) 2 Sheets—Sheet 1.

F. B. DEMING.

HUB BORING MACHINE.

No. 387,773. Patented Aug. 14, 1888.

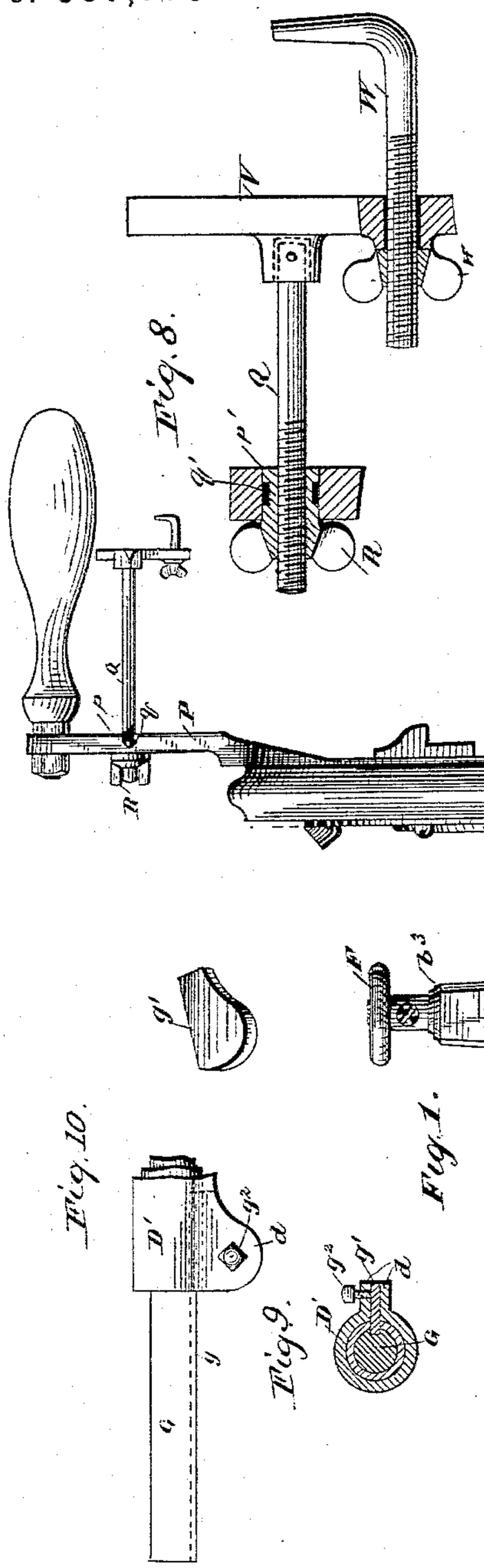

Fig. 8.

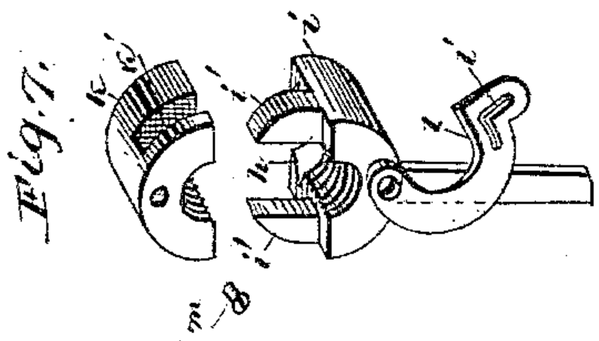

Fig. 7.

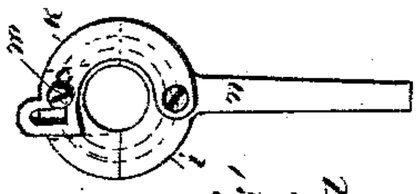

Fig. 5.

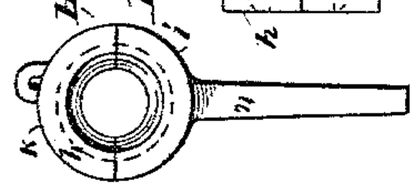

Fig. 4.

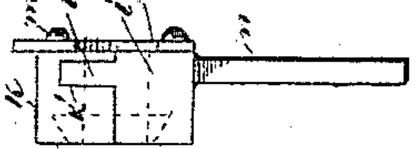

Fig. 6.

Fig. 1.

Fig. 10.

Fig. 9.

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(No Model.) 2 Sheets—Sheet 2.

F. B. DEMING.

HUB BORING MACHINE.

No. 387,773. Patented Aug. 14, 1888.

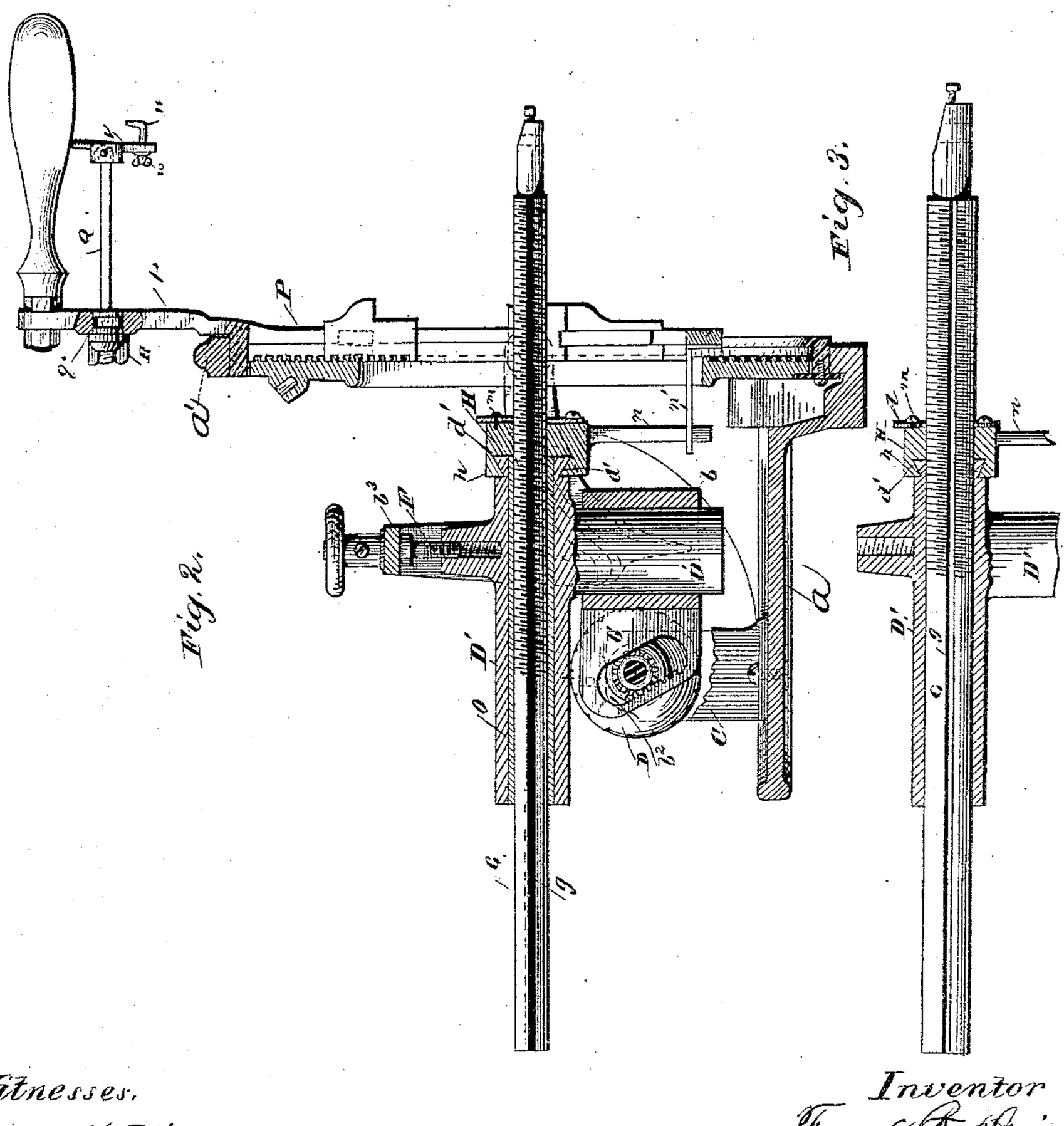

Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

FRANK B. DEMING, OF SALEM, OHIO.

HUB-BORING MACHINE.

SPECIFICATION forming part of Letters Patent No. 387,773, dated August 14, 1888.

Original application filed October 4, 1886, Serial No. 215,874. Divided and this application filed November 15, 1887. Serial No. 255,205. (No model.)

To all whom it may concern:

Be it known that I, FRANK B. DEMING, a citizen of the United States, residing at Salem, in the county of Columbiana and State of Ohio, have invented certain new and useful Improvements in Hub-Boring Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to improvements in hub-boring-machines; and it consists in the construction and combination of parts, as shown and described, and particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a side elevation of the machine. Fig. 2 is a longitudinal section thereof. Fig. 3 is a longitudinal section showing the support for the mandrel without the sleeve and a larger size of mandrel. Fig. 4 illustrates the inner end, and Fig. 5 the outer end, of the feeding-nut. Fig. 6 is a side view thereof, and Fig. 7 a perspective of the parts separated. Fig. 8 is a section of a wheel-clamp. Fig. 9 is a cross-section of the mandrel and bearing on line at the point where the set-screw g^2 is placed to hold the spline in place. (See Fig. 1.) Fig. 10 is a plan view of the sectioned parts with a separate view of the spline at one side.

This application is a division of my application filed October 4, 1886, Serial No. 215,874, for hub-boring machine, and certain important parts are common to both cases.

A represents the frame proper of the machine, comprising the base *a* and the vertical part *a'*, of ring form, in which the head for holding the wheel is supported. Upon this frame I pivot a yoke, B, having a vertical hub, *b*, and a slotted extremity, *b'*. A short standard, C, fixed on the frame or base, is provided with an adjusting-nut, D, that works in the slot b^2 in the extremity *b'*, whereby the angle of the hub is adjusted to regulate the taper of the bore.

D' is the bearing for the mandrel, provided with a close-fitting spindle that occupies the hub *b*, and is held vertically adjustable therein by a handled screw, F, passing through a loop, b^3, on the yoke B. In the main these parts are similar to those described in my other application above referred to. At this point, however, I make a departure. Here I have a mandrel or cutter-shaft, G, provided with a groove, *g*, which is engaged by a spline, *g'*, supported in ears *d* on the outer extremity of the bearing D', where a set-screw, g^2, is shown for holding the spline in place. This prevents rotation of the mandrel and insures a rectilinear feed. On the inner extremity of the bearing I form a dovetailed annular groove, *d'*, to support a sectional feed-nut, H, having a corresponding dovetailed extension, *h*, at one side to engage said groove and work therein. This nut is formed in two parts, *i k*. The part *i* has two studs, *i' i'*, on its meeting face, which engage open slots or notches *k'* in the sides of the part *k*. A lock, *l*, having a substantially right-angled slot, *l'*, is pivoted on the section *i'*, and held on the section *k* by a set-screw, *m*. When the lock is in the position about as seen in Fig. 5, the sections are brought together, and if the nut be turned when in this position it will feed the mandrel; but if the lock be thrown so as to bring the vertical part of the slot over the set-screw *m*, the sections will separate by gravity to the extent of said slot, and no feeding will occur. The section *i* of the nut-bars has an arm, *n*, which is engaged by a finger, *n'*, on the revolving head that carries the wheel, the hub of which is to be bored.

In Fig. 2 I show a sleeve, *o*, inside the bearing for the mandrel; but this is dispensed with when a larger mandrel is employed, as seen in Fig. 3.

My improved clamping mechanism for the wheel is most clearly shown in Fig. 8. It will be observed that the revolving head P, set in the main frame, has the usual arms, as *p*, for holding the wheel. These arms have holes, as *p'*, at their extremities, in which are supported short screw-rods Q by means of nuts R, screw-threaded inside to engage said rods and free to turn in the arms, in which they are held by set-screw *q* entering an annular groove, *q'*, in the nut. This enables the rods Q to be adjusted by turning the nuts R without themselves being turned, which is of great advantage in arranging a wheel in the machine for

boring. On the outer end of the short rod Q is swiveled a clamp-plate, V, and in one arm of this plate I have an L-shaped clamping or gripping bolt, W, held on the inner side of the plate by a nut, *w*. By giving the clamp-plate V some play in its socket and swivel-connection with the rod that supports it I adapt the clamp to be used with wheels having staggered or uneven spokes.

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

1. In a hub-boring machine, a yoke having a vertical hub, a bearing for the mandrel having a spindle set in the hub and adjustable therein, a mandrel, and a feed-nut fixed on the inner end of the bearing, substantially as set forth.

2. In a hub-boring machine, a vertically-adjustable yoke pivoted on the main frame, a bearing for the mandrel vertically adjustable in said yoke, and a spline to guide said mandrel, in combination with a feed-nut on the inner end of the bearing, substantially as set forth.

3. In a hub-boring machine, a sectional feed-nut, one section having studs on its meeting face and the other section having slots fitting about the studs, and a lock pivoted on one section and having a substantially L-shaped slot and a set-screw, substantially as set forth.

4. In a hub-boring machine, a sectional feed-nut having studs, and slots for the studs, and a dovetailed groove at one end to engage the bearing for the mandrel, in combination with a lock pivoted on one section and having a slot and a set-screw to hold it on the other section, substantially as set forth.

5. In hub-boring machines, a nut formed in two parts having a dovetail groove at one end to engage the bearing for the mandrel, studs on one part and slots on the other part, and a lock on the nut at its outer end, constructed to clamp the nut on the mandrel, in combination with the mandrel and the bearing therefor, substantially as set forth.

6. In hub-boring machines, a clamping device consisting of a screw-rod adjustable in the arm of the revolving head, a clamp-plate pivoted on said screw-rod and a clamping-bolt adjustable in said plate, substantially as set forth.

7. In a hub-boring machine, a revolving head for carrying the wheel, having arms with holes through their extremities, nuts swiveled in said holes, and screw-rods in the nuts, with clamping-plates on the outer ends of the rods and clamping-bolts on the plates, substantially as set forth.

8. In a hub-boring machine and combined with the revolving head for holding the wheel to be bored, swivel-nuts set into the arms of the revolving head, rods adjustable in said nuts, and clamps for holding the wheel pivotally attached to the outer extremities of said rods, substantially as set forth.

In witness whereof I hereby set my hand this 29th of October, 1887.

FRANK B. DEMING.

Witnesses:
J. C. BOONE,
C. C. SNYDER.