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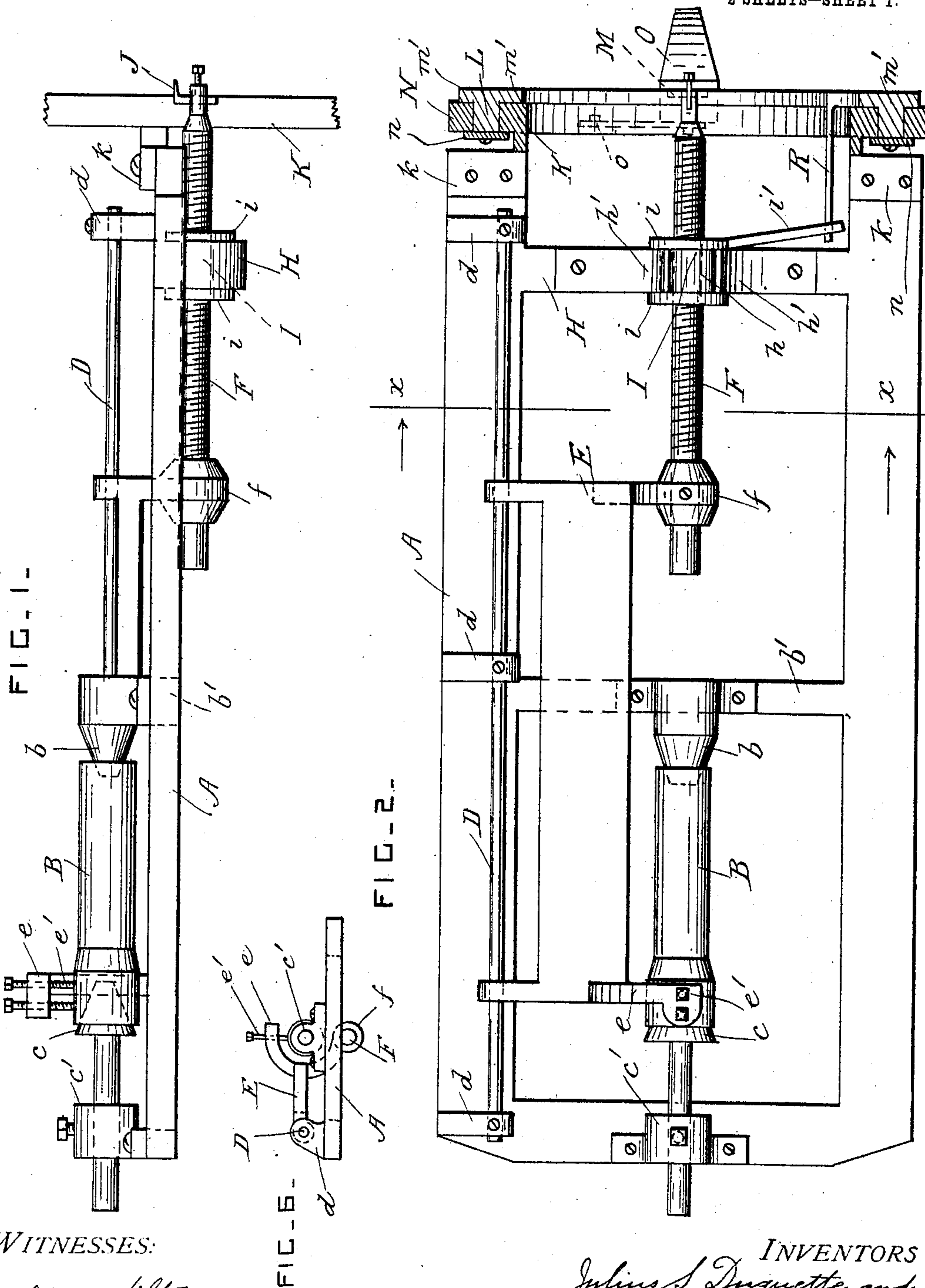
J. S. DUQUETTE & J. W. HEATH.

BORING MACHINE.

APPLICATION FILED SEPT. 10, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

Geo. Hilton  
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INVENTORS  
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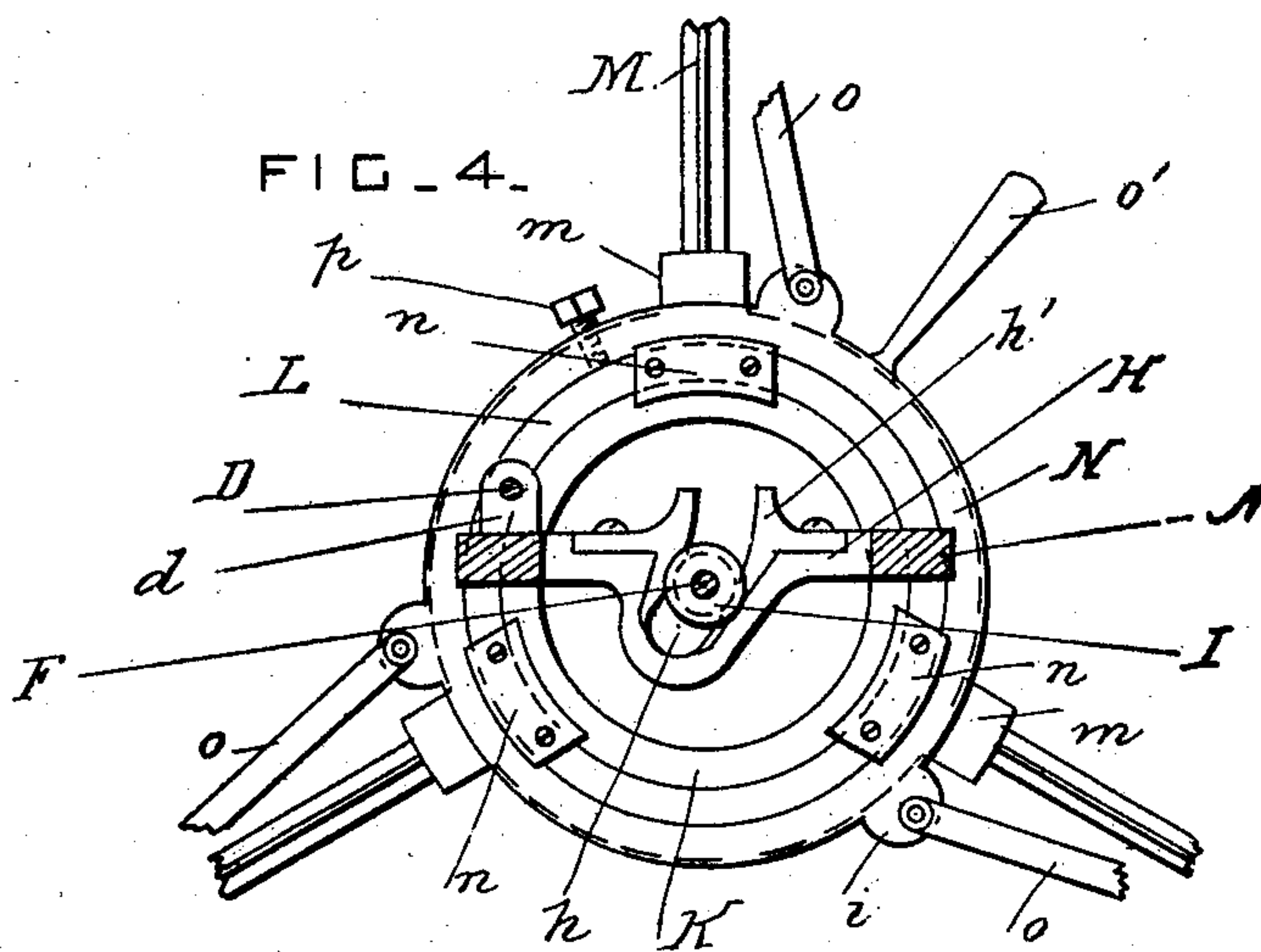
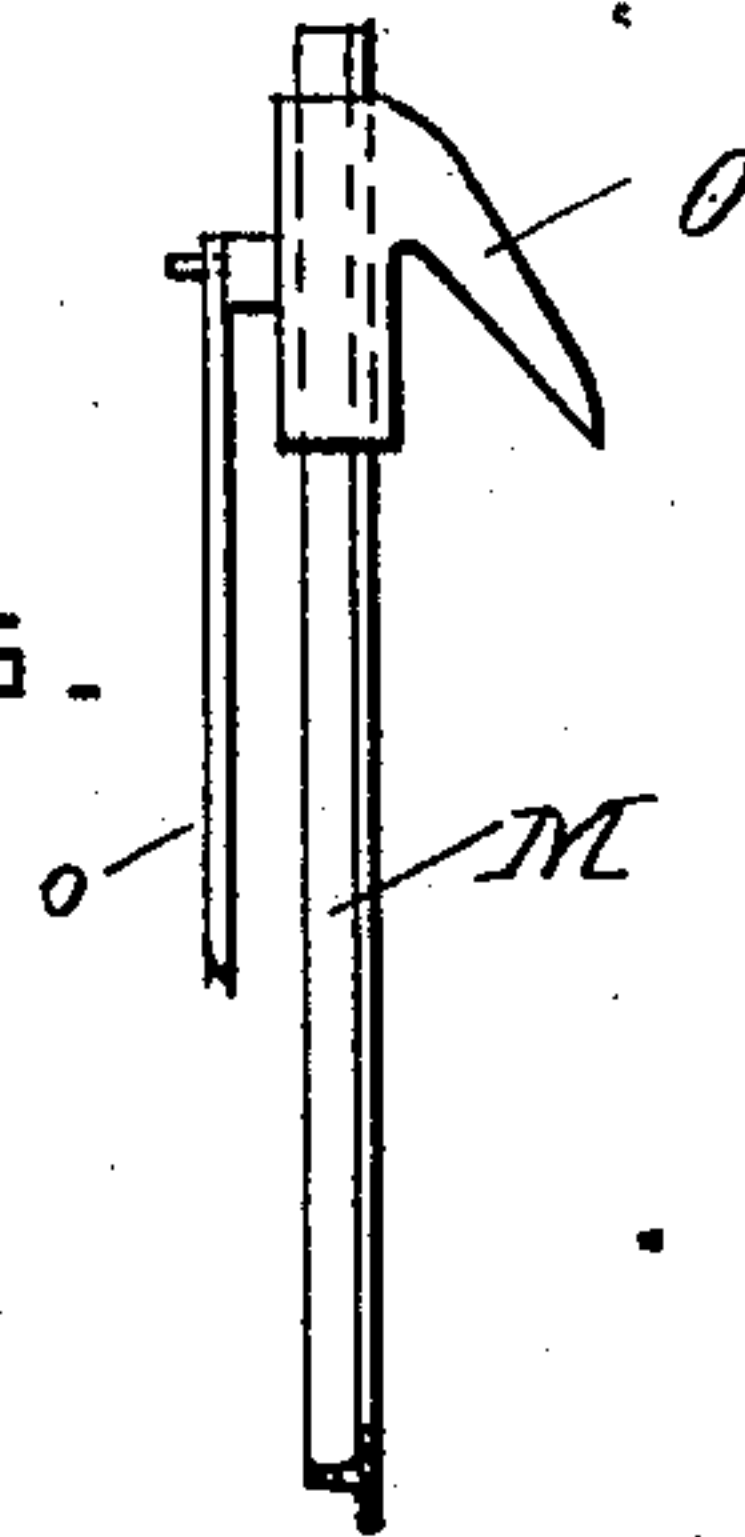
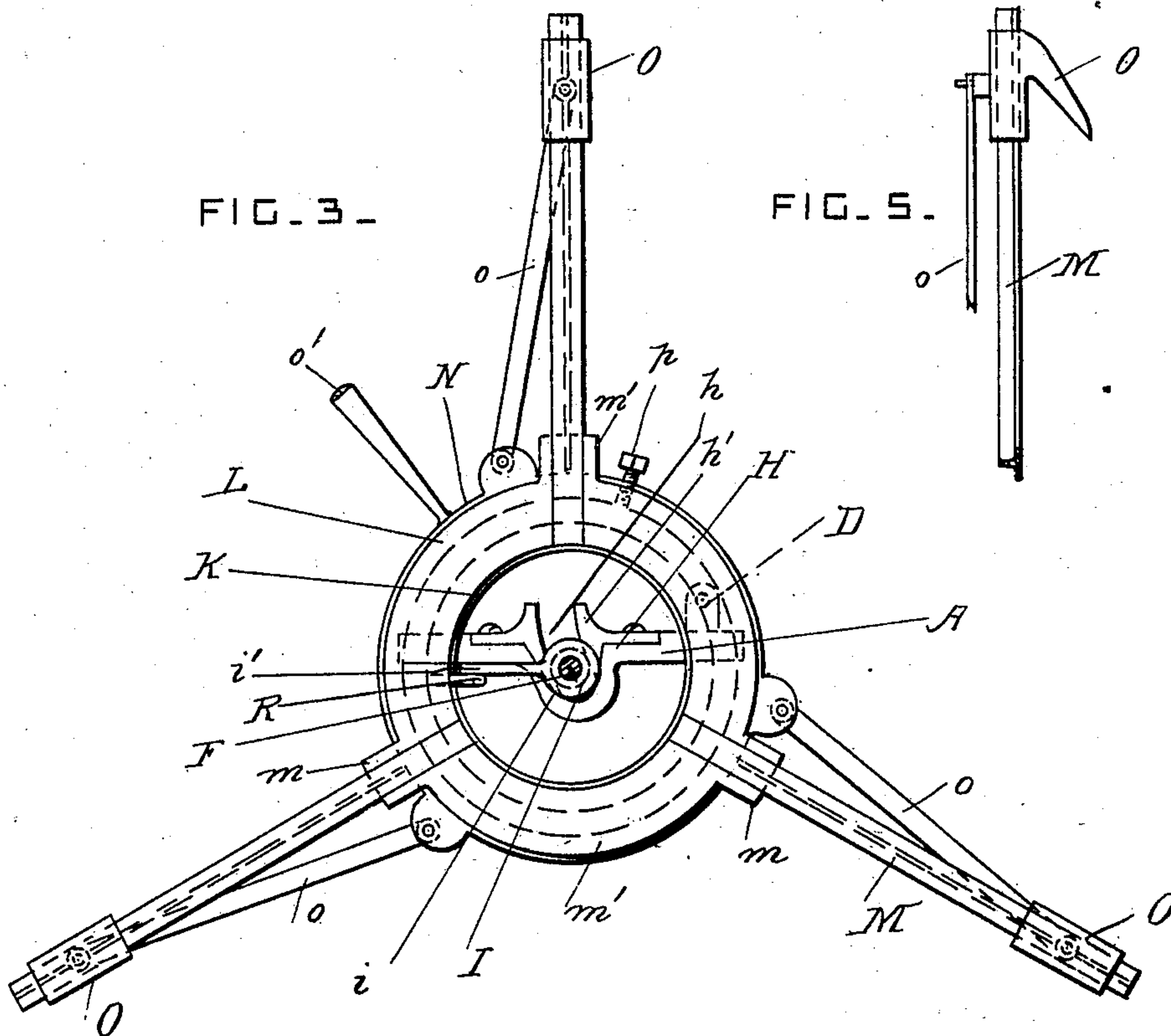
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Geo. Hilton  
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# UNITED STATES PATENT OFFICE.

JULIUS S. DUQUETTE AND JAMES W. HEATH, OF ATHOL, MASSACHUSETTS.

## BORING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 763,738, dated June 28, 1904.

Application filed September 10, 1903. Serial No. 172,629. (No model.)

*To all whom it may concern:*

Be it known that we, JULIUS S. DUQUETTE and JAMES W. HEATH, residing at Athol, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Boring-Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to machines for boring the hubs of vehicle-wheels; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a side view of the machine with the clamping devices omitted. Fig. 2 is a plan view of the machine, partly in section. Fig. 3 is an end view of the machine, showing the clamping devices. Fig. 4 is a cross-section taken on line *xx* in Fig. 2 and looking in the direction of the arrows. Fig. 5 is a detail side view of one of the arms M. Fig. 6 is an end view from the left, showing the parts at that end of the machine. Figs. 3 to 6, inclusive, are drawn to a smaller scale than Figs. 1 and 2.

A is the frame of the machine, and *b* and *c* are two conical centers upon which a pattern B is secured. The center *b* is secured to a cross-bar *b'* at the middle part of the frame, and the center *c* is slidable in a guide-block *c'*, which is secured to one end of the frame. The slidable center is secured in its guide-block by a set-screw or other equivalent fastening device.

D is a longitudinal guide-bar secured at one side of the frame A in brackets *d*, and E is a guide-block which is slidable longitudinally on the said guide-bar. One end of the guide-block is provided with an arm *e*, provided with one or more contact-screws *e'*, which rest on the upper surface of the pattern B. The pattern B is varied according to the shape of the hole to be bored in the wheel, and any approved shape of pattern can be used. The other end of the guide-block E is provided with a bearing *f*, in which the feed-screw F is secured. The feed-screw F is arranged

longitudinally in the frame and approximately in line with the two centers.

H is a bar near the front part of the frame A. This bar or cross-bar is provided with a curved guide-slot *h* at its middle part, the curvature of the said slot being concentric with the guide-bar D. This slot is preferably formed between removable side plates *h'*, which can be renewed as often as they become worn.

I is a feed-nut which is revoluble in the said guide-slot *h* and which is provided with flanges *i* at its ends which prevent it from sliding longitudinally. This feed-nut has also a projecting arm *i'*, by means of which it is revolved, and it engages with the feed-screw F, which also forms the boring-bar of the machine.

J is the cutting-tool, which is secured to the front end portion of the screw or bar F in any approved manner.

K is a bearing-ring, which is secured to the front end of the frame A by means of flanges *k* and suitable bolts and which is arranged axially in line with the centers which support the pattern.

L is a clamping-ring which is journaled upon the bearing-ring K and which is provided with radial sockets *m*.

M represents radially-arranged bars, which are preferably T-shaped in cross-section. These bars M are secured in the sockets *m*, and three bars are preferably provided. The clamping-ring L has a flange *m'* on one side, which prevents it from slipping off the bearing-ring K.

N is a locking-ring which is mounted on the clamping-ring and which may be oscillated back and forth upon it. Plates *n* are secured to the clamping-ring at suitable intervals and prevent the locking-ring from sliding off it and also prevent the clamping-ring from sliding off the bearing-ring K in the opposite direction from the flange *m'*.

O represents hooked dogs which are slidable radially on the end portions of the bars M, and *o* represents connecting-rods which are pivoted to the said dogs at one end and to the locking-ring at the other end. The lock-



ing-ring is provided with an operating-handle  $o'$ , and  $p$  is a set-screw or other equivalent fastening device for securing the locking-ring to the clamping-ring after the dogs have been moved into engagement with the rim of the wheel to be bored. The wheel to be bored is held by the dogs so that its hub is axially in line with the centers and the pattern. The wheel and its clamping-ring are revolved in any approved manner by hand or by power.

$R$  is an arm which projects rearwardly from the clamping-ring and which engages with the arm  $r'$ , which projects from the feed-nut, so that the said feed-nut is revolved when the wheel is revolved.

The operation of the machine is as follows: A suitable pattern is secured upon the centers provided at the rear part of the frame, and a wheel is clamped, by means of the dogs, to the clamping-ring at the front part of the frame. A suitable cutting-tool or boring-bit is secured to the front end of the feed-screw, and the contact-screw of the arm  $e$  is adjusted so that it bears on one end of the pattern and so that the boring-bit is in the required position. The wheel is now revolved, and the feed-nut is also revolved at the same time. The boring-tool is fed forward by the boring-bar or feed-screw, which also is moved, together with the feed-nut, in the guide-slot  $h$ , so that the hole in the wheel-hub is bored to correspond with the pattern supported in the centers at the rear part of the machine.

What we claim is—

1. In a boring-machine, the combination, with a stationary bearing-ring, of a clamping-ring journaled on the said bearing-ring and provided with projecting bars and a flange which projects internally and externally on one side of the clamping-ring, clamping-dogs slidable on the said bars, a locking-ring mounted on the said clamping-ring, connecting-rods between the said locking-ring and the said dogs, and plates secured to the opposite side of the said clamping-ring from its flange and which overlap the said bearing-ring and locking-ring.

2. In a boring-machine, the combination, with a frame, of a revoluble clamping-ring supported by the said frame and provided with clamping devices for the work, a revoluble feed-nut which is movable laterally, a guide for the said feed-nut, a connection between the said nut and the said clamping-ring so that they revolve together, a boring-bar provided with a screw-threaded portion which engages with the said feed-nut and is moved longitudinally by it, a guide-block which moves longitudinally with the said boring-bar, a guide for the said guide-block, and a pattern which adjusts the position of the said guide-block and moves the said nut laterally in the said nut-guide.

3. In a boring-machine, the combination, with a frame, and a bearing-ring secured to one end of the said frame; of a clamping-ring journaled on the said bearing-ring and provided with clamping devices for the wheel and a rearwardly-projecting arm, a longitudinal guide-bar carried by the said frame, a cross-bar provided with a guide-slot which is concentric with the said guide-bar, a feed-nut revoluble and slidable in the said guide-slot and provided with an arm which engages with the aforesaid arm; a guide-block mounted on the said guide-bar, and a feed-screw carried by the said guide-block and engaging with the said feed-nut.

4. In a boring-machine, the combination, with a frame provided with a cross-bar, and curved side plates secured to the said cross-bar and forming a guide-slot; of a feed-nut slidable and revoluble in the said guide-slot, means for revolving the said feed-nut, a feed-screw which engages with the said feed-nut, a guide-block having the said feed-screw secured to it, a guide for the said guide-block to slide on, and a pattern which adjusts the position of the said guide-block and slides the said nut in its guide-slot.

5. In a boring-machine, the combination, with a frame provided with a stationary cross-bar at its middle part, of a center secured to the said cross-bar, a movable center carried by the rear part of the said frame, a pattern supported by the said centers, a guide-bar carried by the said frame, a guide-block pivoted on the said guide-bar and provided with two projecting arms, a contact-screw carried by one of the said arms and resting on the said pattern, a feed-screw carried by the other said arm, a feed-nut engaging with the said feed-screw, and means for revolving the said feed-nut whereby the said feed-screw and guide-block are moved longitudinally under the control of the said pattern.

In testimony whereof we affix our signatures in presence of two witnesses.

JULIUS S. DUQUETTE.  
JAMES W. HEATH.

Witnesses:

HENRY MOORE,  
ANDREW J. HAMILTON.