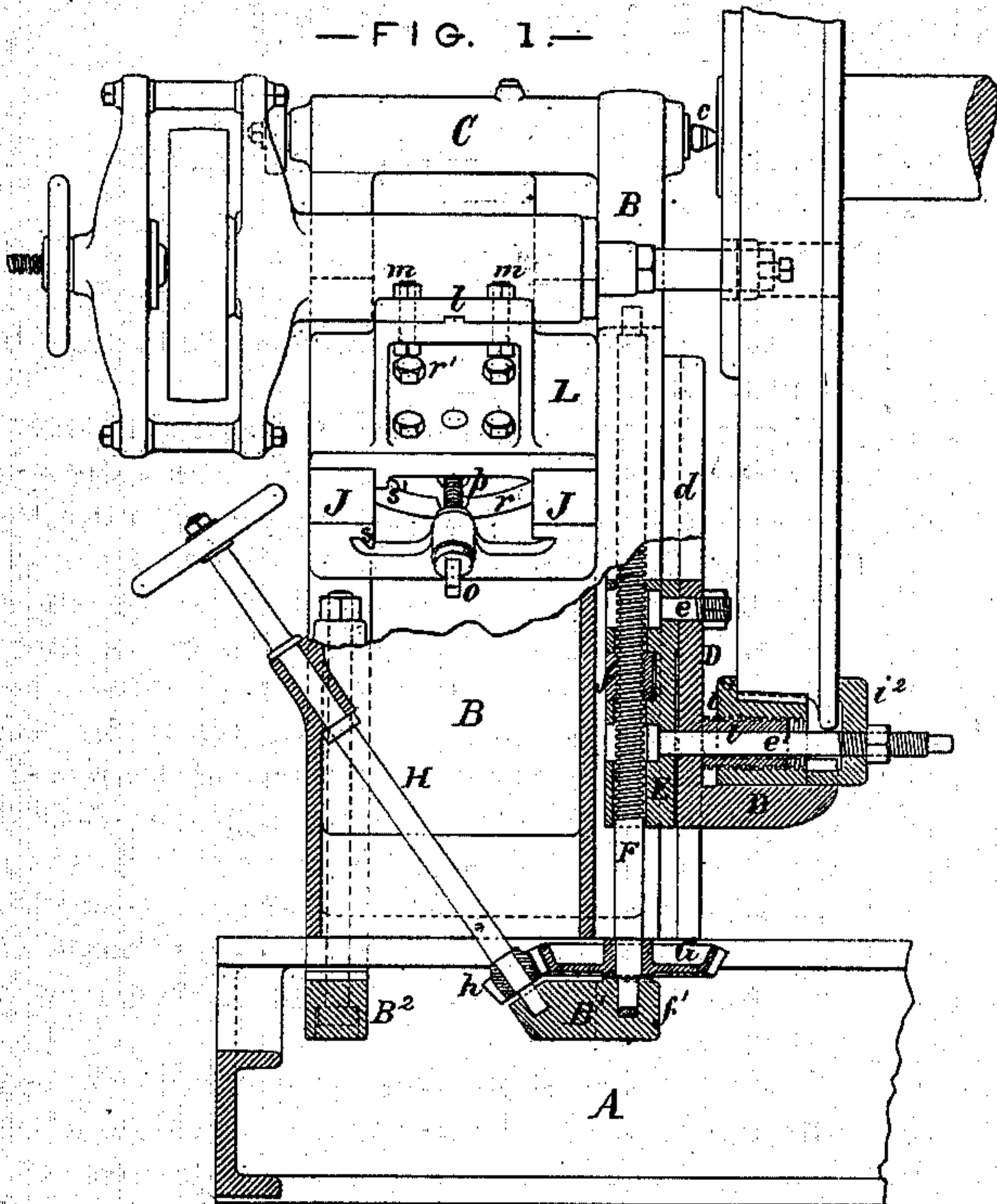


**W. SELLERS.**  
**Wheel Quartering Machines.**

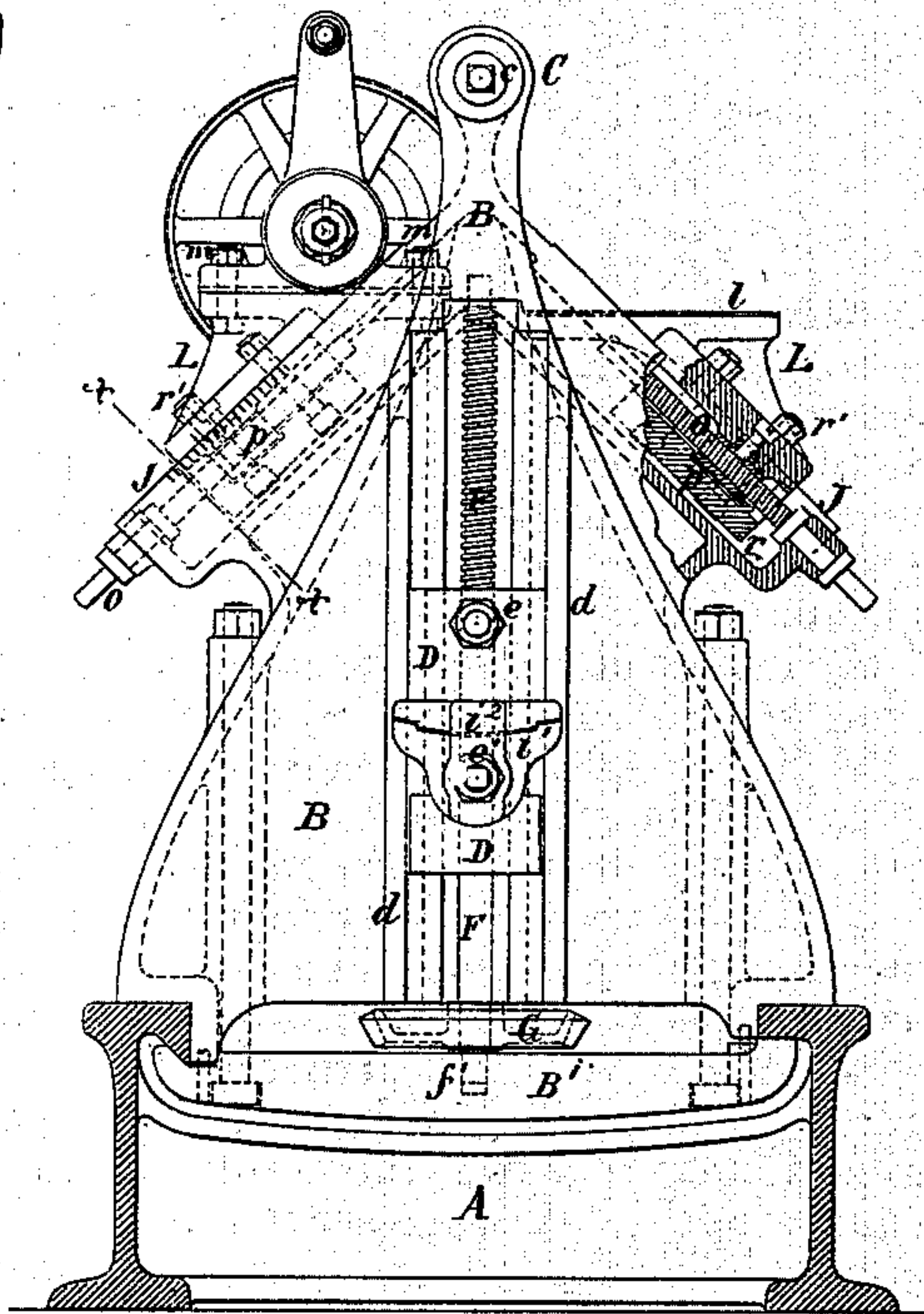
No. 139,482.

Patented June 3, 1873.

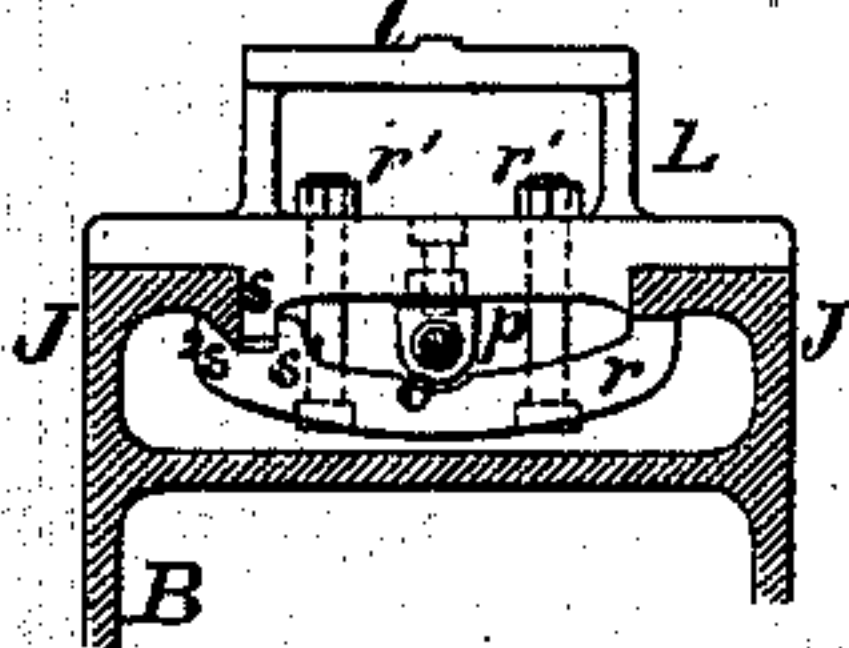
—FIG. 1.—



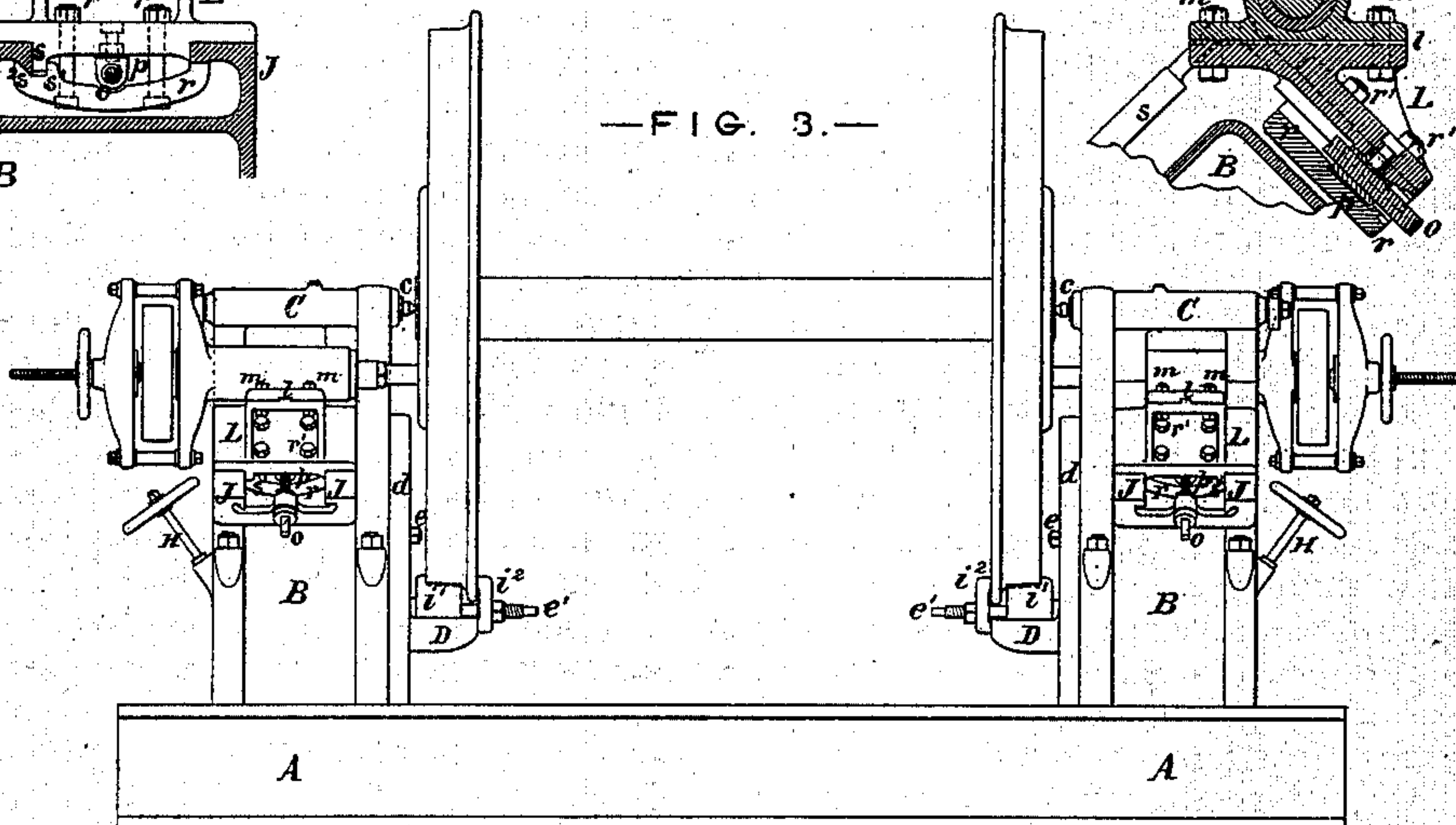
—FIG. 2.—



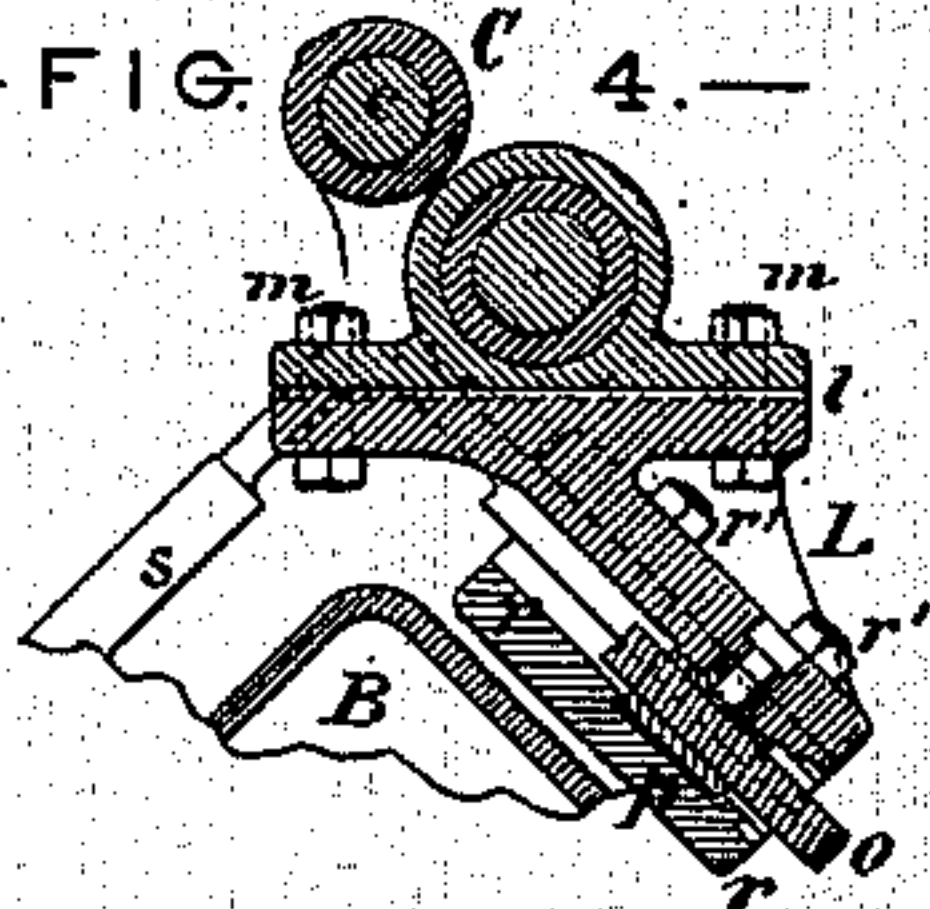
—FIG. 5.—



—FIG. 3.—



—FIG. 4.—



WITNESSES:

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# UNITED STATES PATENT OFFICE.

WILLIAM SELLERS, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN WHEEL-QUARTERING MACHINES.

Specification forming part of Letters Patent No. **139,482**, dated June 3, 1873; application filed December 11, 1872.

*To all whom it may concern:*

Be it known that I, WILLIAM SELLERS, of the city and county of Philadelphia, in the State of Pennsylvania, have invented new and useful Improvements in Wheel-Quartering Machinery, of which the following is a specification:

My invention relates to machinery of that class specially adapted for boring crank-pin holes in the driving-wheels of locomotives. It is customary, in order to insure the accurate relative disposition of the two crank-pins of a pair of driving-wheels mounted on a common axle, to bore these holes after the wheels have been permanently secured upon the axle with their crank-arms arranged at an angle approximating the true one. It is not only of great importance that the cranks should be of equal lengths, but it is essential that one of the crank-pins shall be ninety degrees in advance of its fellow relatively to their plane of rotation, to secure uniformity in the working of the engine when running either forward or backward. The function of the mechanism which fixes this angular relation of the two crank-pins, is technically called quartering, and the mechanism itself is technically called a wheel-quartering machine. A quartering-machine to meet the practical requirements of locomotive builders must not only be so organized as to bore holes suited to any required length of crank, but also must be capable of adaptation to the altered relation of the crank-pins necessary in changing from the ordinary construction in which the right-hand crank leads, to the more exceptional, but still not infrequent one, in which the left-hand crank leads. It is the object of my invention to provide a machine possessing the desiderata above-mentioned. The subject-matter claimed is hereinafter particularly specified. The accompanying drawings represent all my improvements as embodied in a machine of the construction best adapted to meet the requirements of locomotive builders; some of these improvements, however, may be used without the others, and in a machine varying somewhat in the details of its construction from that herein shown; obvious equivalent modes of constructing some of the devices hereinafter described will readily suggest them-

selves to a skillful mechanic on reading this specification.

Figure 1 represents a side elevation, partly in section, of one end of the machine, showing the centering, adjusting, clamping, and boring mechanisms. Fig. 2 represents an end elevation, partly in section, of the parts shown in Fig. 1. Fig. 3 shows a side elevation of the entire machine, with a pair of wheels centered, adjusted, and clamped, ready for boring. Fig. 4 represents a vertical transverse section through the centering spindle, the boring mechanism, and its inclined traversing base detached. Fig. 5 represents an end view, partly in section, of the traversing base and its bed-plate or main support on the line *x x* of Fig. 1.

Two independent centering-heads, or supporting frames, B, are mounted upon a bed-plate or main-shear, A, in such manner as to be movable endwise thereon; they are also capable of being clamped securely thereon at any desired distance apart.

In Letters Patent of the United States, granted to me December 28, 1869, for an improvement in lathes, means are shown for adjusting the poppet-heads of lathes accurately. I prefer the devices therein shown for adjusting the centering-heads above mentioned, and need not therefore describe them in detail here; they are, however, shown in Fig. 2 of the accompanying drawings. The distance between the centering-heads is regulated by the devices above indicated. A tubular bearing, C, is cast with and supported at each end upon the centering-head, but some little distance above it, for a purpose hereinafter explained. A centering-spindle, *c*, mounted in this bearing, as poppet-heads are arranged in lathes, takes into the conical center hole in the end of the driving-axle upon which the wheels to be bored are mounted and centers them accurately. In addition to this axial adjustment and support of the axle upon two centers, I provide mechanism for supporting the principal weight and securely clamping the rims of the wheels while being bored, and to accommodate wheels of different diameters and width of tread, I make this mechanism adjustable. To this end I mount upon the inner side of each centering-head an L-shaped



bracket, D, the vertical part of which moves between guides *d*. A shoe, E, is secured to this bracket by bolts *e e'*, and carries a nut, *f*, for an adjusting-screw, F. The inner one, B<sup>1</sup>, of the two clamps B<sup>1</sup> B<sup>2</sup>, which clamps fasten the centering-heads to the shear, has a step-bearing, *f*<sup>1</sup>, for this adjusting-screw, the upper end of which has a suitable bearing in the centering-head. The bracket D is raised or lowered by rotating this screw through the intervention of bevel-gears G and *h*, and an inclined shaft, H, mounted in proper bearings in the centering-heads and actuated by means of a hand-wheel. This secures the desired adjustment relatively to the diameter of the wheel. To adjust the shoe to the tread of the wheel the lower clamping-bolt *e'* is made to extend clear through the shoe, and is provided with an enlarged head to prevent its drawing out. A screwed sleeve, *i*, mounted on and turning with this bolt moves a clamping-flange, *i*<sup>1</sup>, which acts upon the outer face of the rim of the wheel, while a corresponding clamp, *i*<sup>2</sup>, acts in a similar manner upon the inner face of the rim of the wheel, and thus securely holds it against lateral strains in either direction. By this mode of construction the tightening up of the nut on the screw-bolt *e'* not only clamps the two sides of the wheel, but secures the shoe and bracket rigidly to the centering-heads.

In addition to the functions hereinbefore indicated, the centering-heads support the boring mechanism, to adapt them to which duty slides J are cast thereon. For a purpose hereinafter indicated, the surfaces of these slides are arranged symmetrically on each side of the axis of the centering-spindle, with their planes inclined to the bed A at an angle of forty-five degrees, the apex of the two angles being a short distance below the tubular bearing C, hereinbefore mentioned, so as to leave a space between the lower part of this bearing and the upper part of the slides J. A bracket, L, moves endwise in this bed-plate, and the top of this bracket is horizontal and serves as a base-plate, upon which the boring mechanism rests. A tongue, *l*, keeps the boring mechanism accurately adjusted in its proper relation to the centering-spindle, while bolts *m* hold it securely in position.

The parts are made to fit accurately, and are interchangeable from one side of the spindle to the other. Whichever position is occupied, the axis of the boring-tool remains parallel with that of the centering-spindles. The boring-tool may be adjusted nearer to or further from the spindle to suit cranks of different lengths; and as the adjustment is effected by moving the bracket L on its inclined bed by means of an adjusting-screw, *o*, and nut *p*, the axes of the two boring-tools always form an angle of ninety degrees with the center of the wheels to be operated upon, it being understood that the two tools always occupy opposite sides of their respective centering-heads. Either right or left hand leading-cranks may

thus be bored, at pleasure, with their proper relative positions always accurately preserved.

Owing to the construction of the tubular bearing C or spindle-support with a space between it and the inclined slides J, the boring mechanism may slide under it to some extent when placed on either incline, and thus enable a crank-pin hole to be bored closer to the driving-axle than could otherwise be done. When adjusted to bore a given length of crank, which may conveniently be done with accuracy by means of a scale marked on the inclined slides, the bracket is securely fastened by means of a clamp, *r*, and bolts *r'*, Fig. 5. The beveled edge of the under side of the shear *s*, in combination with the projections *s*<sup>1</sup> *s*<sup>2</sup> on the clamp *r* and bracket, respectively, always draws the bracket laterally to its true position relatively to the other parts of the machine, as in the clamping devices shown in my patent of 1869, hereinbefore referred to.

I deem it unnecessary here to describe the boring mechanism, as it constitutes no part of the subject-matter herein claimed, and may be of any of the usual well-known forms of construction.

The operation of the machine will readily be understood from the foregoing description, and need not therefore be further specified.

I am aware that among the quartering-machines heretofore invented, one described in English Letters Patent No. 2,591, granted to James Reid, September 13, 1867, contains some elements which are also embodied in my improved machine, hereinbefore described, and I, of course, do not claim anything that is described or shown in said English Letters Patent; but my improvements distinguish my machine from this as from all others of which I have any knowledge in several important particulars, among the principal of which I may specify the following: To effect a change of the boring-bar from one diagonal disposition to the other it is transferred bodily, and without any other change, from one base-plate to the others; and this is rendered practicable by the fact that I make my base-plate horizontal instead of inclined. In my machine the boring is from the outside, and the wheels are centered by a spindle taking into the center of the axle. This disposition enables me to make the centering-spindle and its support much smaller than the driving-axle, so that I can bore a hole in the wheel much nearer its center than would be possible if the boring apparatus was placed between the wheels. I provide supports for holding the wheels while they are being bored, so that I can use the centering-spindles for centering only, thereby diminishing their size and increasing the range of the machine, while the wheels are secured in place by an independent device, so that I can bore crank-pins for short-stroke engines, such as are used on narrow-gage railroads—a class of work which Reid's machine could not do.

I claim as my invention—



1. In a wheel-quartering machine, the combination of a centering-head having inclined slides, a horizontal base-plate bracket movable upon said slides, and boring mechanism mounted upon said bracket, the bracket being arranged, substantially as hereinbefore set forth, so as to permit the adjustment of the boring mechanism to bore the crank-pin holes in the driving-wheels at different distances from their centers, and with either crank leading.

2. In a wheel-quartering machine, the combination of a centering-head, a bracket base-plate movable thereupon, boring mechanism mounted upon said bracket, and a centering-spindle mounted in a tubular support on the frame, under which spindle-support the bracket base-plate slides, substantially as set forth.

3. In a wheel-quartering machine, the combination of sliding heads, centering-spindles for accurately centering the wheels to be bored, and adjustable clamping-supports to sustain

and hold the rims of the wheels while being bored, substantially as set forth.

4. In a wheel-quartering machine, the combination of centering-heads having symmetrical sides, spindle-supports mounted in the heads, and interchangeable boring mechanism, substantially as set forth, to adapt the machine to the boring of either right or left hand leading-cranks.

5. In a wheel-quartering machine, the combination of the vertically-adjustable supporting-bracket D, flanges for clamping the inner and outer faces of the rim of the wheel, and the clamping bolt and nut, by which all the parts are securely clamped upon the centering head and wheel, substantially as set forth.

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Witnesses:

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WM. S. LYNN.