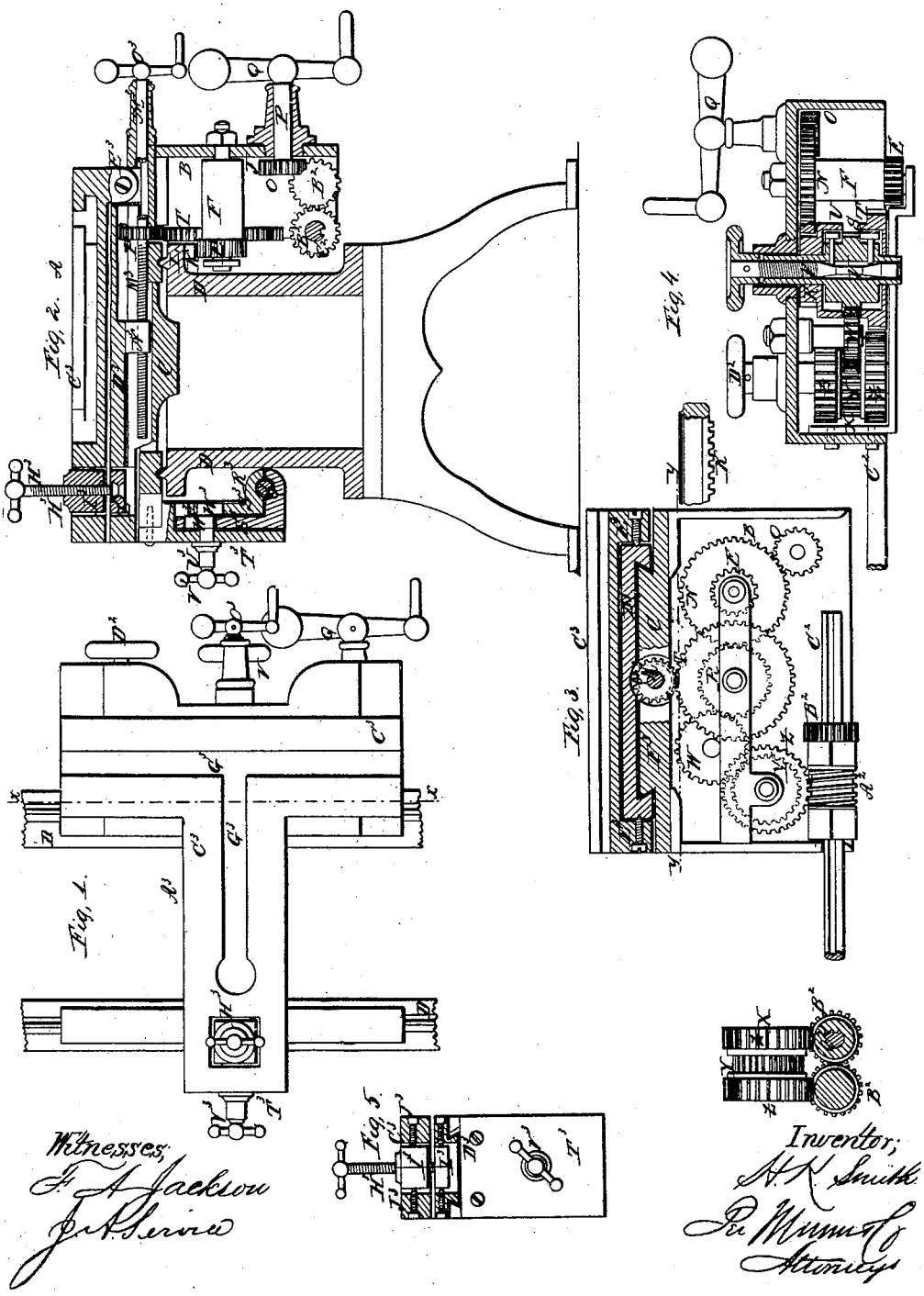
H. K. SMITH.

LATHE REST.

No. 60,950. Patented Jan. 1, 1867.



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HENRY K. SMITH, OF NORWICH, CONNECTICUT, ASSIGNOR TO HIMSELF AND CHARLES OSGOOD, OF THE SAME PLACE.

Letters Patent No. 60,950, *dated January* 1, 1867.

IMPROVEMENT IN LATHE-RESTS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, HENRY K. SMITH, of Norwich, in the county of New London, and State of Connecticut, have invented a new and useful Improvement in Rests for Turning-Lathes; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan or top view of the lathe-rest, showing the rails upon which it moves or slides in red.

Figure 2, a central transverse vertical section through the rest and the bed-piece of the lathe upon which it moves, with the latter in red.

Figure 3, a vertical section taken in the plane of the line *x x*, fig. 1, which section line extends in the direction of the width of the rest.

Figure 4, a horizontal section taken in the plane of the line *y y*, fig. 3.

Figure 5, an elevation of the inner end of the rest with its upper portion in vertical section.

Figures 6 and 7, detail views.

Similar letters of reference indicate like parts.

The present invention consists, first, in a novel arrangement of gearing whereby the movement of the rest can be changed in direction at pleasure, that is, made to move either toward the right or left on the lathe; and, second, in a novel manner of constructing the rest whereby it can be raised and lowered according as may be desired.

A in the drawings represents the framework of the rest, consisting of a box-portion, B, to the top or upper side of which is secured a T-shaped frame, C, extending in a horizontal plane therefrom and in a direction at right angles thereto. This box-portion B comes upon the front side of the lathe, when the rest framework, by its T-shaped frame C, is laid or placed upon the parallel upright bars or rails, D, of the lathe-bed, as plainly shown in the drawings, fig. 2. E, a pinion-wheel at one end of a hollow sleeve or shaft F, arranged to turn upon a fixed centre horizontal shaft of the front plate, J, of the box portion B, which pinion-wheel is in proper position for engaging with the toothed rack-bar *k* upon the under side of the flanch L, at the upper end of the front rail or bar, D, of the lathe-bed, this rack-bar *k* in the drawings being shown in red. To this hollow shaft F, hereinabove referred to, a gear-wheel, N, is secured, with which interlocks or meshes a pinion-wheel, O, secured to the inner end of a spindle, P, that, projecting beyond the front plate J of the box B, has a handle, Q, there secured to it for convenience in turning it. This gear-wheel N upon one side interlocks or meshes with a gear-wheel, R, which is one of a series of gears, R, S, and T, constituting or forming a part of the friction-clutch U. The construction and arrangement of the various parts composing the clutch U are the same as that described in the schedule annexed to the Letters Patent granted to me on the 5th day of December, A. D. 1865, and therefore needs no particular description herein, the gears R and T being the loose gears of the clutch, which, by the screwing in or out of the centre conical-shaped spindle, V, thereof, are thrown into or out of connection with the other or intermediate gear S. With the centre gear S of the clutch U a gear-wheel, W, engages, forming a connection between such clutch and the centre gear-wheel, Y, of another clutch, X, of a similar construction and arrangement of parts. With each of the outside or loose gear-wheels Z Z of the clutch X similar worm-gears, A^2, are engaged, both of which are hung and turn in suitable bearings of the front plate J of the box B, upon its inside, and are interlocked or connected together through a similar pinion-wheel B^2 of each worm-gear. Through one of the worm-gears, A^2, a shaft, C^2, extends, that, in the direction of its length, is grooved, and by a key-pin upon the inside of the worm-gear is connected with the same, so that as the said shaft is revolved the said worm-gear A^2 will be revolved with it, while at the same time the said gear A^2 can freely slide forward and backward upon the same. The friction-clutch X hereinabove referred to is operated by turning its centre conical-shaped spindle, having a milled head D^2, in the proper direction to throw either one or the other of the loose gears, Z, of such clutch into connection with its centre gear-wheel, Y. The shaft C^2 is connected with the running gearing or driving power of the lathe, and by its revolution, according as either one or the other of the loose and outside gear-wheels, Z, of the friction-clutch X is in connection with the centre gear-wheel Y of the same, (with the connection through the loose gear-wheel R of the clutch U and gear-wheel N established,) the

lathe-rest will be made to travel either toward the right or left upon the lathe-bed, as the case may be, and at any time may be changed by properly operating the spindle of the clutch X to throw either one or the other of the loose gear-wheels Z of the clutch X into connection with the centre wheel Y of such clutch, as is obvious without any further explanation. To the upper side of the T-shaped frame C a frame, A^3, corresponding in general shape to that of the frame C, is arranged, as will be now described. This frame is made in two parts or sections, C^3 and D^3, placed one upon the other, with the upper, C^3, hung to the lower at its front end, as shown at E^3 in the drawings, and the lower one, D^3, arranged to slide upon dove-tail tenon strips, F^3, of the upper side of the frame C. In the upper side of the upper section of the frame, A^3, a right-angular T-shaped way or groove G^3 is made, in which is to be arranged the tool-rest of the lathe. H^3, a thumb-screw, screwing into and through a nut, I^3, divided into two equal parts or sections in one direction, and in the other direction suspended upon centre screws, J^3, screwed into the tail portion of the upper section of the frame B^3 from each side of the same. The lower end, K^3, of the thumb-screw is formed of a double truncated conical shape, with the smaller bases together, and turns by such end loosely in a nut, I^3, divided and hung to the lower section, D^3, of the frame B^3 in a similar manner to that above explained for the nut I^3. By means of the thumb-screw H^3, in connection with the nuts I^3 and L^3, it is plain to be seen that the upper section, C^3, of the frame B^3 can be more or less inclined with regard to the lower section, D^3, according as may be found necessary in the use of the tool-rest to present the tool to its work, the dividing of the nuts and the swivelling of them in the frame A^3, as hereinabove described, obviating all strain upon the thumb-screw, and also enabling the wearing away of the parts to be compensated for by simply setting up the centre screws, J^3, properly therefor. M^3, a screw-shaft, screwing into and through a lug, N^3, upon the under side of the lower section, D^3, of the frame B^3, extending loosely through the top of the box-portion B of the lathe-rest frame. O^3, a handle on outer end of screw-shaft M^3 for convenience in turning it. By turning the said screw-shaft N^3 the frame B^3 is made to move either forward or backward upon the main frame A, according to the direction in which the screw-shaft M^3 is turned. On this screw-shaft M^3 is a pinion-wheel, P^3, that engages with the loose gear-wheel T of the friction-clutch U, by means of which, when the said gear-wheel T is in connection with the fixed wheel S of said clutch, the forward and backward movement or cross-feed of the tool-rest frame can be accomplished through the revolution of the slotted shaft C^2, as is obvious without any further explanation. For the purpose of chasing screw-threads the back or inner end of the lathe-rest frame is secured to and moves upon a horizontal screw-shaft, Q^3, extending in the direction of the length of the lathe-bed by means of a screw-threaded nut or sleeve, R^3, divided in the direction of its length into two equal parts, both of which are arranged to slide by their arms, S^3, upon the downward projecting piece T^3 of the lathe-rest, so as to open from or close upon each other; the two parts of the nut R^3, when closed upon each other, embracing the said screw-shaft Q^3 hereinbefore referred to, thereby placing the rest or carriage under control of said screw-shaft, which in turn is connected to the turning gear of the lathe in the usual and well-known manner. The two parts of the nut R^3 are both operated by turning a shaft or spindle U^3, having a handle, V^3, which spindle is provided with two cams or eccentrics W^3, (one for each part of the said nut,) so attached to the same as to move one part of the nut upward, while the other part moves downward, this arrangement of parts being plainly and distinctly shown in fig. 2 of the drawings.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the friction-clutch X, or its equivalent, with the worm-gears A^2, connected together by pinion-wheels B^2, slotted shaft C^2, and intermediate gear-wheels W, R, N, and E, with the latter engaging with the toothed or geared rack-bar K of the lathe-bed, when all combined and arranged together so as to operate substantially in the manner and for the purpose described.

2. In combination with the above, the friction-clutch U, or its equivalent, connected through its loose gear-wheel T with the pinion-wheel P^3 of a screw-shaft, M^3, screwing into and through the lug N^3 of the sliding lathe-rest frame A^3, substantially as described for the purpose specified.

3. The combination of the divided nuts I^3, L^3, and thumb-screw, H^3, with the two sections C^3 and D^3 of the tool-rest frame A^3, substantially as and for the purpose described.

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Witnesses:

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