N. C. STILES.

Turning Shafting.

No. 82,042. Patented Sept 8, 1868.

Fig. 1.

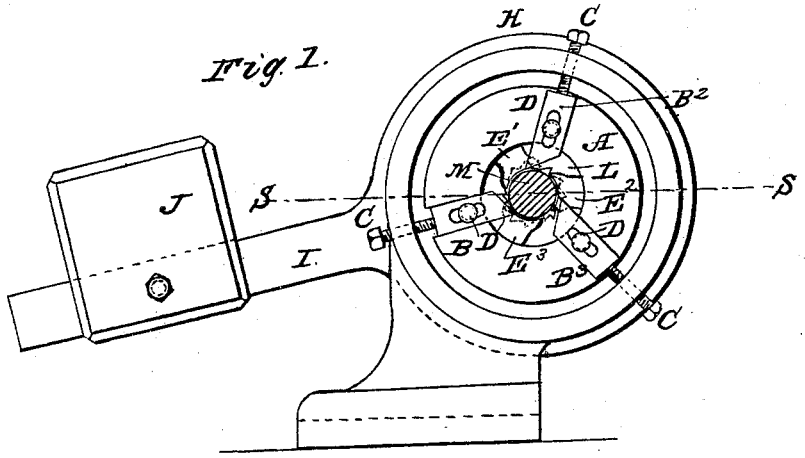


Fig. 2.

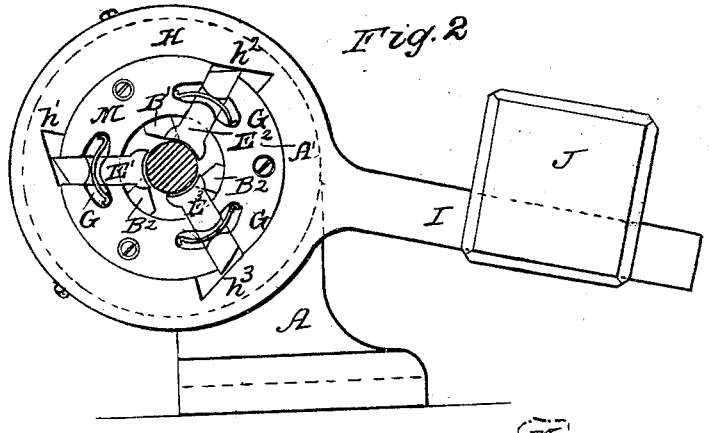
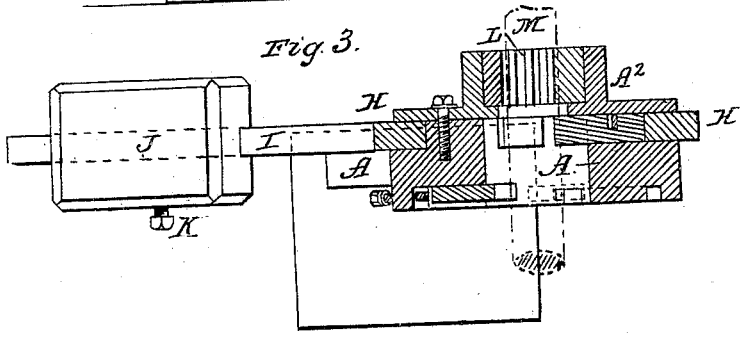


Fig. 3.



WITNESSES

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NORMAN C. STILES, OF MERIDEN, CONNECTICUT.

Letters Patent No. 82,042, *dated September* 8, 1868.

IMPROVED DEVICE FOR TURNING SHAFTING.

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, NORMAN C. STILES, of Meriden, in the county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Mechanism for Turning Shafting, and the like long articles of uniform size; and I do hereby declare that the following is a full and exact description thereof.

My improvements relate to means for guiding the shafting, tubing, or the like, with mathematical accuracy, and for holding it centrally at all points, even when there are appreciable irregularities in the size of the shaft, as it is left by the cutters. It also provides for milling the surface, and giving it a higher degree of finish than is usually obtained with the same labor and expense.

It will be understood that the shaft to be formed is mounted in a lathe or analogous machine, which, taking hold of the shafting by ordinary means, not represented, gives it the proper rotary motion.

My improvements relate to the parts which guide and to the parts which remove the material.

I will first describe what I consider the best means of carrying out my invention, and will afterwards designate the points which I believe to be new therein.

The accompanying drawings form a part of this specification.

Figure 1 is a side elevation of the cutters and other parts, seen in the direction of the axis of the shaft.

Figure 2 is a view in the opposite direction.

Figure 3 is a horizontal section on the line S S in fig. 1.

Similar letters of reference indicate like parts in all the figures.

The figures represent the novel parts, with so much of the other parts as is necessary to indicate their relation thereto.

A is a stand, fixed upon a firm support, and in such relation to the mechanism, not represented, for imparting the rotary motion, that the shaft, tube, or other article, M, to be turned, may be conveniently guided and sustained in the centre of the opening therein provided.

B^1 B^2 B^3 are cutters, mounted on the stand A, as represented. Each is driven forward by an adjusting-screw, C, and is confined very firmly in the desired position by a pinching-screw, D. These cutters may be all alike, and mounted in the same plane; but I prefer to adapt them, one to produce the first cut, another a second cut, and a third a finishing or smoothing-cut. In case the shaft is originally very near the finished size at any point, the first cut B^1 will be of no effect. The arrangement and action of these cutters may be the same in all respects as is now frequently employed for the same or analogous purposes.

E^1 E^2 E^3 are centring-pieces, which are hollowed at their ends. Each is pressed outward by a spring, G, mounted, as represented, in a ring, A^1, which may be a part of the fixture A. The outer ends of the centring-pieces E^1, E^2, &c., project beyond the exterior of the ring A^1, and are bevelled, as represented.

H is a stout ring, adapted to turn freely on the exterior of the ring A^1. It has an arm, I, on one side, which carries a weight, J, the latter being fixed adjustably on the arm I, by means of the pinching-screw K. The inner face of the ring H is notched, as represented at the points h^1 h^2 h^3, which notches receive the projecting ends of the centring-pieces E^1 E^2 E^3 on their inclined faces, as represented.

The several parts being properly lubricated, and the shaft M being turned constantly, and fed forward by means well understood, the centring-pieces E^1 E^2 E^3 hold it with mathematical exactness in the proper central position, while the cutters B^1 B^2 B^3 act upon its surface, and reduce it to the proper size.

When, from any cause, as, for example, a gradual dulling of the cutters, the shaft becomes larger, the centring-pieces E^1 E^2 E^3 move outward, and, by acting with their outer end against the inclined surfaces of the several notches h^1 h^2 h^3, they turn the ring H against the gravity of the weight J. It follows, from this arrangement, that the several centring-pieces E^1 E^2 E^3 must all move outward, each to an extent exactly equal to the movement of each of the others.

When, from any cause, the shaft becomes smaller, as, for example, by regrinding, and adjustment of the cutters, the gravity of the weight J turns the ring H in the opposite direction, and compels the centring-pieces E^1 E^2 E^3 to move inward, each to an extent exactly equal to the movement of the others.

L is a milling-tool, fitted in the ring A^2, which is bolted on the rear face of the fixture A. This milling-tool may be made and mounted in any approved manner. Its function is to treat and reduce the surface of the shaft as a final operation to a mathematically-exact size, and to leave it with a very fine finish. Its duties are severe, or the reverse, according as the cutters B^1 B^2 B^3 perform their work more or less imperfectly. The novelty of this milling-device is not in its structure, but in its relation to the other parts of the mechanism.

I propose, in some instances, to use all the parts of this device, with the exception of the cutters, for a back rest to hold the centre of a long and slender piece while being operated upon to keep it from trembling, and also to hold work to be operated upon at the end of a shaft, to take the place of the ordinary back rest of a lathe.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. The plate A and cutters B^1 B^2 B^3.

2. The arrangement of the centring-device, the cutters, and the milling-tool, substantially as and for the purpose herein described.

N. C. STILES.

Witnesses:

T. S. RUST,

P. S. KNOWLES.