A. DWELLE.

DEVICES FOR TURNING SHAFTING.

No. 182,808. Patented Oct. 3, 1876.

Fig. 1.

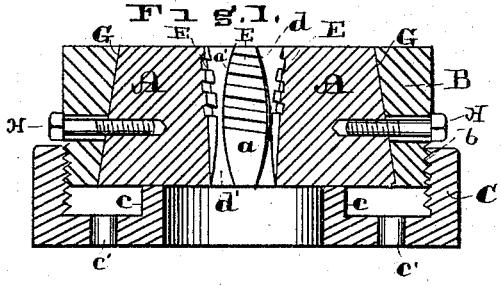
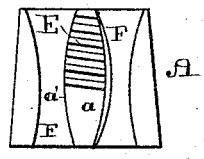


Fig. 3.



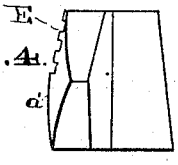


Fig. 4.

Fig. 2.

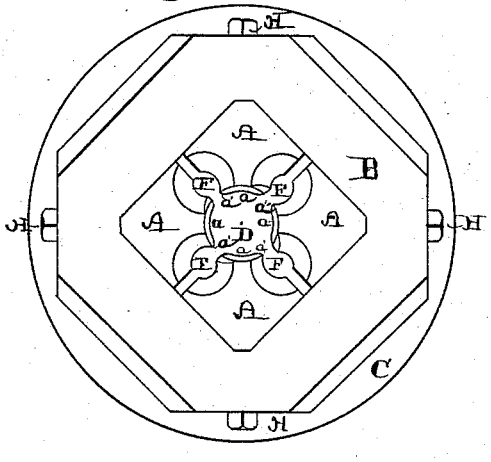
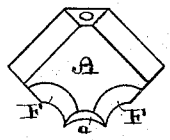


Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

ALBERT DWELLE, OF VIRGINIA, ILLINOIS, ASSIGNOR OF ONE-HALF HIS RIGHT TO GERARD B. ALLEN & CO., OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN DEVICES FOR TURNING SHAFTING.

Specification forming part of Letters Patent No. **182,808**, dated October 3, 1876; application filed July 11, 1876.

To all whom it may concern:

Be it known that I, ALBERT DWELLE, a resident of Virginia, Cass county, State of Illinois, have invented a new and useful Improvement in Machines for Turning Shafting, of which the following is a full, clear, and exact description, reference being had to the annexed drawing, making part of this specification, in which—

Figure 1 is a longitudinal section of the invention; Fig. 2, a front elevation of the same; Fig. 3, a view of one of the dies looking toward its face, or that side which is presented to the shafting; and Figs. 4 and 5, respectively, a side and an end elevation of the die.

Similar letters refer to similar parts.

The aim of the present invention is to provide an improved means for turning shafting and reducing rough bars of round iron, of indefinite length, to smooth cylindrical bars of uniform diameter.

Considered generally, the invention consists of a series of similar dies, of peculiar shape, held in a die-stock, and arranged therein so as to inclose a space partly cylindrical and partly conical, through which the shafting to be turned is passed, the shafting being turned by coming in contact with the cutting-edges with which the dies at their faces, are respectively, furnished.

The invention has relation to the means employed in effecting the cutting of the shafting, and for holding it properly while being turned. It also has reference to the provision for feeding the shafting through the dies. It further relates to the means for holding and adjusting the dies.

Referring to the annexed drawings, A A A A represent a series of similar dies. They are held in a die-stock, B, which, in turn, is held in a cap, C. I preferably employ four dies, as shown, but do not wish to be limited to a special number. The dies are arranged in the die-stock uniformly around the longitudinal axis of the device, and they are so shaped and spaced apart as to inclose a space, D, which, in its general outline, is conical for a portion, *d*, of its length, and cylindrical for the remainder, *d'*—that is, beginning at the entrance end of the device, with a diameter large enough to admit the rough bar or shaft, the space *d* gradually contracts until it is in diameter that of the intended finished shaft, whence it continues cylindrical, *d'*, to the other end of the device, and in practice I preferably make the space *d* at the entrance thereto slightly bell-mouthed. Opposite the latter space the dies are threaded, and, preferably, screw-threaded, as shown at E, Figs. 1 and 3. The thread is made to run out at the inner end of the space *d*, and, to reduce the shafting more rapidly, is, preferably, made deeper toward the outer end of the space. This space, however, whether estimated from the base or the top of the thread E is of a conical outline, and the diameter of the cylindrical space *d'* is slightly less than that of the inner end of the conical space *d*. Throughout their entire length, including the threaded part, the dies are each provided with a cutting-edge, *a' a' a' a'*. The faces *a a a a* of the dies are so shaped as not to bear upon the shafting, saving at the cutting-edges *a' a'*, &c.; and as the dies to adjust them to the desired size of shafting, or to provide for wear, can be moved radially in the die-stock, as hereinafter described, the cutting-edges *a' a'*, &c., are arranged upon or slightly back of the radial lines of motion, respectively, of the dies, so that as the dies are closed inwardly the cutting-edges will always have a proper bearing upon the work. Therefore, for this purpose, the faces *a a*, &c., saving their edges *a' a'*, &c., do not lie exactly in the periphery of the space D, but enough away from it to give proper relief to the edges *a' a'*, &c., and at the same time near enough to contain a lubricant. The dies are cut away at their sides F F, &c., to provide clearance for the chips. This also rounds the cutting-edges *a' a'*, &c., in a longitudinal direction, as shown in Figs. 1 and 4. To enable the dies to be adjusted radially, they are at their backs made tapering, as shown at G G, &c., Fig. 1, and fitted to a corresponding taper in the die-stock. By moving the dies outwardly in the stock they are drawn together. This is preferably effected by screwing the die-stock (it being for this purpose furnished with a suitable thread, *b*,) into the cap C. This causes a

flange, *c*, with which the cap at its outer end is provided, to bear upon and move the dies, and when moved to firmly support them. To aid in holding the dies, especially when the die-stock and cap are separated, screws H H, &c., are passed radially inward from the stock into the dies; and, to provide for the radial adjustment of the dies, the screw-holes in the stock are elongated.

In operation the device (the dies having been properly adjusted in the die-stock) is attached to a hollow mandrel of a lathe (not shown) by means of suitable fastenings passed through the holes *c' c'*, &c., in the cap C, and rotary motion imparted thereto. The shafting is then passed into the conical space *d* of the device, where it comes under the action of the thread E. The latter serves a double purpose. The cutting-edge thereon effects a removal of a portion of the metal, and prepares the shafting for the finishing operation, and it also serves, when the thread is in the form of a screw, to automatically feed the shafting through the device. As the shafting passes through the space *d* it is gradually reduced in diameter, and made ready for the finishing cut, which is effected by means of the cutting-edges along the smooth portion of the die-faces, and which are opposite the space *d'*.

The cutting-edges of the dies at the extreme end of the space *d'* are rounded off, to avoid leaving any tool-mark upon the work. The shaft is prevented from turning with the dies by means of a suitable clamp or clamps.

In this manner, by means of a cheap simple device, shafting of any desirable length can easily be reduced and finished.

A modification of the above-described arrangement is as follows: The device, instead of being attached to the lathe-mandrel, and revolving with it, can be attached to the slide-rest of the lathe. In such case the shafting is hung in the lathe-centers and made to rotate. The dies are then suitably adjusted in line, but do not revolve. In this case one end of the shaft must previously be reduced before passing it through the device.

I am aware that a die having a cutting-edge partly threaded and partly smooth has heretofore been suggested, and I therefore do not claim such, broadly; but

What I claim is—

1. The herein-described shafting-turning device, consisting of the dies A A A A, die-stock B, and cap C, combined and operating substantially as described.

2. Arranged and held in a suitable die-stock, the dies A A A A, shaped so as to include the cylindrical space *d'* and conical space, *d*, and provided with the thread E, substantially as described.

3. The dies A A, &c., shaped and arranged to inclose the cylindrical space *d'* and conical space *d*, and provided with a screw-thread, E, for the purpose of feeding the shaft into the device, substantially as described.

4. The dies A A A A, shaped and arranged to inclose the conical space *d* and cylindrical space *d'*, and provided with the cutting-edges *a' a' a' a'*, for the purpose of turning shafting.

5. The combination of the dies A A A A, and the die-stock B, substantially as described.

6. The combination of the cap C provided with the flange *c*, the die-stock B, thread *b*, and dies A A A A, operating substantially as described.

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Witnesses:
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