

Assignor to D. M. Robertson.

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The drawing shows a microscope with a stage and objective lenses. The stage is labeled A. The objective lenses are labeled B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z. The eyepiece is labeled A. The base is labeled A. The stage is labeled A. The objective lenses are labeled B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z. The eyepiece is labeled A. The base is labeled A.

Fig. 2.

Fig: 2.



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DEARBORN P. GLINES, OF MANCHESTER, NEW HAMPSHIRE, ASSIGNOR TO DANIEL M. ROBERTSON, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN SPINDLES FOR SCREW-MACHINES.

Specification forming part of Letters Patent No. 116,301, dated June 27, 1871.

To all whom it may concern:

Be it known that I, DEARBORN P. GLINES, of Manchester, in the county of Hillsborough and State of New Hampshire, have invented a new and useful Improved Spindle for Screw-Machinery; and I do hereby declare the following to be a full and correct description of the same, reference being had to the accompanying drawing, in which—

Figure 1 is a side elevation of a screw-machine having my improved spindle, and Fig. 2 is a vertical central longitudinal section of the improved spindle and the connected parts.

The same letter refers to the same part in both figures.

The nature of the invention consists of the construction and operation, as hereinafter described, of devices forming part of the spindle of a screw-machine, which afford the means of readily adjusting the griping-jaws which receive and hold the screw-blank while being threaded, and of compensating for their wear, all as hereinafter more particularly described.

In the accompanying drawing the details of construction of the devices constituting the feed motion by which the blanks are delivered to the griping-jaws are not represented, inasmuch as said feed-motion is not of my invention, and a detailed description of it is not necessary to an explanation of my improvements in spindles.

A in the drawing marks the frame of the machine by which the working parts are supported. K is a pulley attached to the spindle, which receives motion from a band driven by any suitable prime mover. A pulley, H, at the end of the spindle, by means of a cord or band, communicates motion to the pulley B on the end of the cam-shaft C, to which is attached the cam D. This cam operates the upright lever E, which has its fulcrum at *f*. The upper end of lever E is in the form of Y, each arm of which has at its end an inwardly-projecting pin, *b*, which enters a groove, *c*, in a cylindrical collar, F, which slides longitudinally on the spindle and also revolves with it. G marks the walls of the hollow rear portion of the spindle; J, the more solid portion; and L, the hollow in its forward end. In the rear end of the portion G of the spindle is inserted the screw-head M, through which passes the rod P, on the threaded end of which plays the nut N. The head M is threaded and works in a female screw at the rear end of G. Its outer portion is

squared to admit of its being turned by a wrench when it is desired to adjust its position in the spindle. The rod or bolt P has a large flat head, R, against which reacts a spiral spring, *i*, compressed between said head and the screw-head M, as seen in Fig. 2. To the head R of the rod P are pivoted, at *m*, the arms S' S', which, with the arms T T', pivoted to them at *m'* *m'*, form a compound lever operating on the principle of the lazy-tongs, to which the sliding rod U is pivoted at *m''*. The arms S' S' have prolongations S S, which pass out through slots *g g* in cylinder G and enter slots *v v* in the sliding collar F. The ends of the projections S S work over the rounded surfaces of the dogs *e e*. As the collar F moves forward the arms S' S' are forced toward each other; as it moves backward they are thrown apart. The rod U passes forward through a perforation in the more solid portion J of the spindle. To its forward end are pivoted, at *s*, the toggle-arms V V, and these are again pivoted at *t t* to the griping-jaws W W, which have their fulcrums at *u u*. As the rod U is pushed forward the arms V V are brought more nearly into line with each other and the griping-jaws are driven together. When the rod U is drawn back the jaws are separated. The play of the rod U is regulated by the position of the rod P, which is adjusted by the screw-head M and nut N. The first or approximate adjustment of the system which operates the jaws W W is made by the screw-head M. The final adjustment is made by the nut N, which, in conjunction with the spring *i*, regulates the position of the rod P relatively to the head M.

The operation is as follows: The screw-blank to be threaded is presented to the griping-jaws by the feeding device of the machine. The opening and closing of the griping-jaws are effected at the proper moment by the reciprocating movement of the sliding collar F, which operates the projecting ends S S of the arms S' S'. The collar F is operated by lever E, driven by cam D on shaft C. It rotates with the spindle on which it slides, the spindle being driven by a band applied to pulley K. The approximation of the griping-jaws W W' is controlled by the throw of the toggle-arms V V, and this is regulated by the position of head M and rod P, as before stated. The jaws can be adjusted to compensate for wear or to gripe blanks of different sizes with more or less

force, as required. The thread is cut in the usual way, which forms no part of my invention.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the head M, rod P, nut N, and spring *i* with the toggle-levers S and T, and mechanism for connecting the same with the gripping-jaws, in the manner and for the purpose described.

2. The combination, with the adjustable and yielding rod P, of the arms S' S' T T', rod U,

arms V V, and jaws W W', in the manner and for the purpose specified.

3. In combination with the rotating mandrel and system of toggles, levers, and jaws, as set forth, the dogs *e* and sliding-collar F, in the manner described.

The above specification of my said invention signed and witnessed at Manchester this 28th day of March, A. D. 1871.

Witnesses: DEARBORN P. GLINES.

C. N. STANLEY,

GEORGE W. MORRISON.