

No. 610,677.

Patented Sept. 13, 1898.

C. L. GROHMANN.
TAIL STOCK FOR MILLING MACHINES.

(Application filed Oct. 28, 1897.)

(No Model.)

Fig. 3.

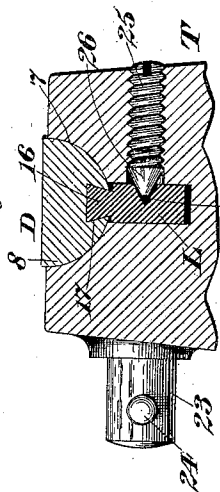


Fig. 2.

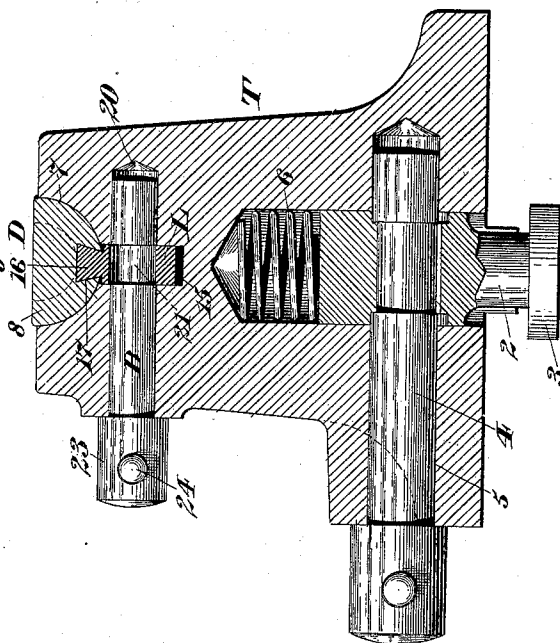


Fig. 4.

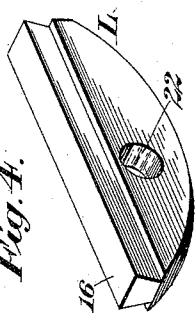
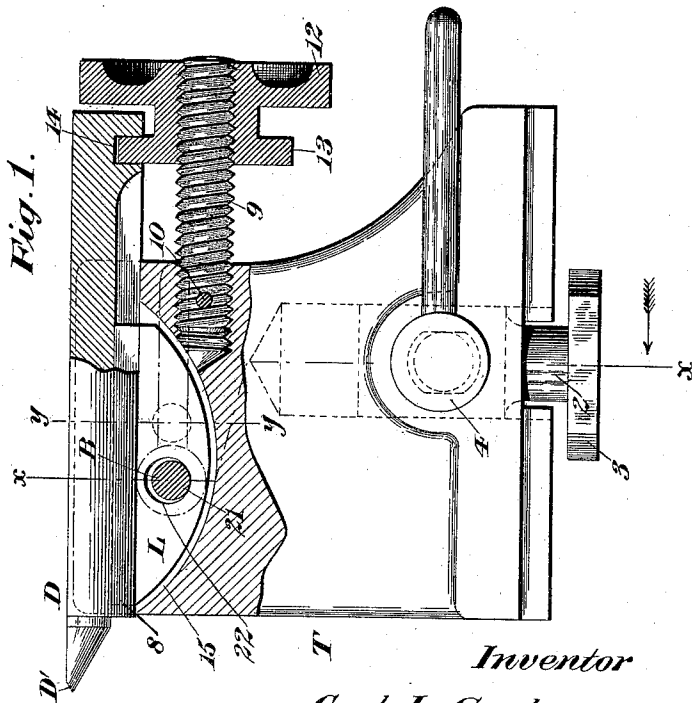


Fig. 1.



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TAIL-STOCK FOR MILLING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 610,677, dated September 13, 1898.

Application filed October 28, 1897. Serial No. 656,684. (No model.)

To all whom it may concern:

Be it known that I, CARL L. GROHMANN, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Tail-Stocks for Milling-Machines, of which the following is a specification.

This invention relates to tail-stocks for milling and other machines; and the object thereof is to provide, in connection with a dead-spindle, means whereby said spindle may be maintained in the desired position and which means will permit of the ready adjustment of the spindle.

The invention includes, in combination with the tail-stock of a milling or other machine and its spindle, a locker seated in said tail-stock and coöperating with the spindle thereon, and an independent actuator for operating the locker to prevent longitudinal movement of the spindle when the latter is set in an adjusted position. The locker is jointed to the spindle and is preferably operated by a cam-bolt carried by the tail-stock. The connection between the spindle and its locker is preferably by a tongue-and-groove joint, the locker being provided with a wedge or other shaped tongue loosely connected in any desired manner to the under side of the spindle, so that when the locker is operated by its actuator the spindle will be lowered therewith to bind the latter tightly against its seat. When the locker is released, the spindle may be freely adjusted by a hand-wheel or analogous device.

In the drawings accompanying and forming part of this specification, Figure 1 is a side elevation of the tail-stock of a milling-machine embodying my present improvements, portions being broken away more clearly to illustrate the invention. Fig. 2 is a central section of the same, taken in line *xx*, Fig. 1, looking in the direction of the arrow. Fig. 3 is a cross-sectional view, on line *yy*, Fig. 1, of the upper part of the stock; and Fig. 4 is a perspective view of the locker for the spindle.

Similar characters designate like parts in all the figures of the drawings.

A tail-stock T of ordinary construction is represented, from which the T-shaped stud 2 depends, the shoe or block 3 of said stud

being clamped to the carriage of the machine by the eccentric-bolt actuator 4, working in the bore 5 of the tail-stock, the stud being preferably forced downward or released by the spring 6 in said bore to insure the quick action of said stud.

The dead-spindle is designated by D, it being horizontally adjustable in the elongated groove or channel 7, extending entirely along the upper face of the tail-stock, the under or working surface 8 of the spindle being of a shape corresponding with that of the wall or surface of the groove 7, so that when the spindle D has been adjusted it may be tightly wedged against said seat and prevented from moving longitudinally. The dead-spindle is, as shown, of semicylindrical shape in cross-section and is provided with a cone center or point D'. The object of forming the dead-spindle in this manner is to locate the point thereof central with the semicylindrical surface of the spindle, in virtue of which said point may be reground and still accurately retain its proper axis with relation to the body of the spindle.

The usual feed-screw is shown at 9 seated in an opening having threaded walls in the tail-stock and held in place therein by the pin 10. The feed-screw 9 carries the feed wheel or nut 12, movable along the same and having at its inner side the annular flange or disk 13, seated in the notch 14 in the spindle D, so that by rotating said hand-wheel the spindle will be slid along its seat.

To hold the spindle when adjusted, a locker, as L, located below the same, is provided, said locker being seated in the tail-stock T and connected with said spindle, so that when the locker is operated it can be either forced downward to hold the spindle or raised to permit the adjustment of said spindle. The locker L is in the form of a block, it being located in the concavity or socket 15, communicating with and below the spindle-receiving channel 7. The locker has along its upper edge the tongue 16, which may be of wedge shape in cross-section, loosely fitted in the similarly-shaped groove 17 in the under side of the spindle D, so that the latter can be freely adjusted longitudinally. Any other suitable means may, however, be substituted for the tongue without departure from my in-

vention. The socket or concavity 15 is somewhat deeper than the locker L, so as to permit the said locker to be lowered transversely to the line of adjustment of the spindle, the tongue 16 on said locker forcing or drawing the spindle D therewith to bind or wedge the latter against its seat, so as to prevent longitudinal movement thereof.

The actuator for lowering and raising the locker L, either to clamp or release the spindle D, consists in the present case of the eccentric clamp-bolt B, working in a transverse socket or opening 20 in the tail-stock, the cam portion 21 of said bolt passing through the hole 22 in the body of the locker, as indicated in Figs. 1 and 2. The head 23 of the bolt is furnished with the handle 24, by which said bolt is manipulated to operate the locker.

In Figs. 2 and 3 the locker L is shown in its highest position, so that the spindle D may be freely adjusted by the hand-wheel 12, and when said spindle has been set the handle 24 of the cam-bolt B is grasped and lowered, the bolt being thereby turned, and the cam portion 21, acting against the lower wall of the hole 22, the locker will be lowered, so that the wedge or other shaped tongue 16 on said locker by acting against the correspondingly-shaped walls of the groove 17 in the spindle will draw the latter against its seat to wedge or bind it firmly thereon. When the bolt is oppositely operated, the spindle D is raised and may be readily adjusted by the hand-wheel 12 by reason of the loose connection between the spindle and its locker.

For holding the center in its seat with sufficient pressure to permit a free sliding action and yet prevent wobbling or chattering I provide independent means for imparting a slight vertical adjustment to the locker L. This means, as shown, preferably consists of an inclined surface, which may be formed either on the locker or on the screw, or on both. In the construction illustrated a seat 26 with inclined walls is formed in the locker, and a screw 25, threaded into the tail-stock, is provided with a conical point, which bears against the inclined wall of the seat or pocket in the locker and may be adjusted either to force the same downward to carry the center into its seat with more or less pressure or may, when retracted, ease the bearing of the parts, as found necessary.

Having described my invention, I claim—

1. The combination, with a tail-stock and its spindle adjustably mounted thereon, of a locker located in a socket below the spindle and movable in a direction transversely to the line of adjustment of said spindle and provided with a tongue connected to the spindle; and an actuator for the locker.

2. The combination, with a tail-stock and its spindle adjustably mounted thereon, of a locker located in a socket below the spindle and movable in a direction transversely to the line of adjustment of said spindle and provided with a wedge-shaped tongue loosely fitted in a correspondingly-shaped groove in the spindle, and a device for actuating said locker.

3. The combination, with a tail-stock and its spindle adjustably mounted thereon, of a locker located in a socket below the spindle and movable in a direction transversely to the line of adjustment of said spindle and provided with a wedge-shaped tongue loosely fitted in a correspondingly-shaped groove in the spindle; and an actuating-bolt on the tail-stock, having a cam portion passing through an opening in the locker.

4. The combination, with a tail-stock, of a horizontally-adjustable spindle whose outer curved surface is adapted to fit against the correspondingly-shaped surface of a groove in the upper side of the tail-stock; a locker located in a socket below the spindle and movable in a vertical direction and provided with a wedge-shaped tongue loosely fitted in a correspondingly-shaped groove in the spindle; and a bolt mounted on the tail-stock and provided with a cam adapted to act against the locker.

5. The combination, with a tail-stock and its spindle adjustably mounted thereon, of a locker connected to said spindle, and a device carried by the tail-stock independently of the locker and serving to adjust the locker and spindle.

6. The combination, with a tail-stock, of an adjustable spindle; a locker connected to said spindle; an actuator for the locker; and a screw carried by the tail-stock and serving to impart an independent adjustment to said locker and spindle.

7. The combination, with a tail-stock, of a spindle and a locker for the spindle connected by a tongue-and-groove joint, the tongue being wedge-shaped in cross-section and the spindle being adjustable on the tail-stock, and the locker being located in a socket below the spindle for movement in a direction transversely to the line of adjustment thereof; a screw on the tail-stock, having a pointed end fitting in a seat with inclined walls in the locker; and a cam-bolt on the tail-stock, the cam portion extending through an opening in the locker.

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