

(No Model.)

G. Q. WHITNEY.

FEED REVERSING ATTACHMENT FOR LATHES.

No. 395,531.

Patented Jan. 1, 1889.

Fig. 1

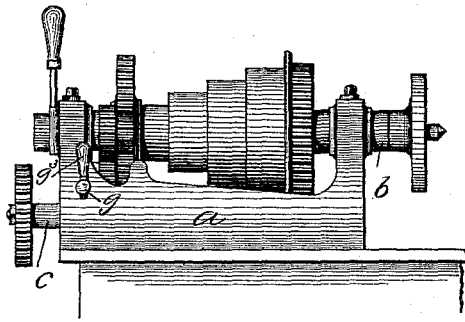


Fig. 2

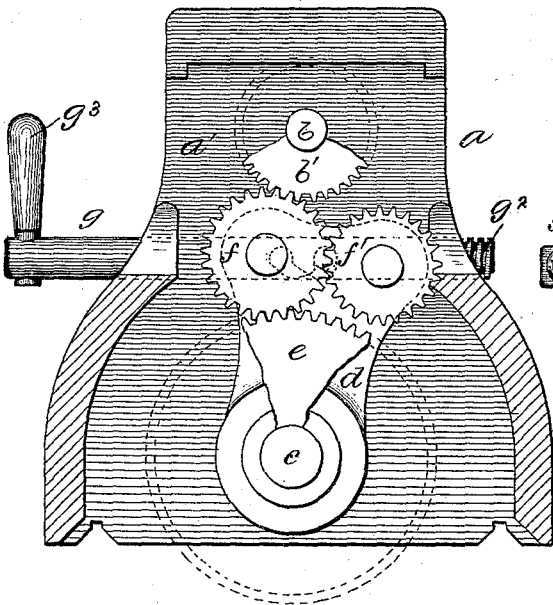


Fig. 3

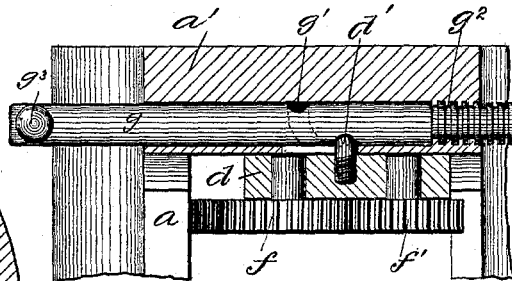
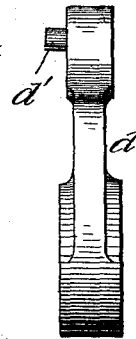


Fig. 5



Fig. 4



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## FEED-REVERSING ATTACHMENT FOR LATHES.

SPECIFICATION forming part of Letters Patent No. 395,531, dated January 1, 1889.

Application filed August 21, 1888. Serial No. 233,329. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE Q. WHITNEY, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Feed-Reversing Attachments for Lathes, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of my invention is to provide in a lathe a gear-shifter that shall be simple in construction and perfect in operation, while reducing the number of parts and the need of great accuracy of workmanship in fitting parts that belong to gear-shifters of the prior art.

My invention consists in the combination of a slotted shifter-spindle borne in a socket in the lathe-head and a rocker bearing the usual gears and a pin that engages the slot in the shifter-spindle.

It further consists in the combination of the slotted shifter-spindle having a threaded end, the spindle-socket threaded for part of its length in the lathe-head, and the rocker with the pin engaging the cam-slot in the spindle.

It further consists in details of the several parts making up the gear-shifting mechanism and their combination, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a view in side elevation of a lathe-head. Fig. 2 is a detail view, in vertical cross-section, of the head on enlarged scale. Fig. 3 is a detail view, in horizontal section, of part of the head on the plane of the axis of the shifter-spindle. Fig. 4 is a detail edge view of the rocker. Fig. 5 is a detail view of the spiral form of cam in the spindle.

In the accompanying drawings, the letter *a* denotes a lathe-head, that may be of any ordinary form and construction, having the live-spindle *b* and usual driving-pulleys, and in the lower part of the head the feed-shaft *c*. On this shaft, and preferably on the inner side of the end wall, *a'*, of the head, is mounted a rocker, *d*, by the side of the gear-wheel *e*, fast to the shaft *c*, and on the outer end of the rocker are also mounted the two gear-wheels *f* and *f'*, that are respectively in gear with the center wheel, *e*. On the back

of the rocker is a pin, *d'*, that extends into the cam-slot *g'* in the shifter-spindle *g*, that is located in a socket in the lathe-head *a*. This spindle *g* is seated in a hole that is drilled through the head, then counterbored part way through and tapped as to the balance, a left-hand thread being preferred. The inner end, *g<sup>2</sup>*, of the spindle is threaded to fit the threaded socket in the head, the end wall of which is cut away, so that the pin *d'* on the rocker will project through it into the right spiral groove or cam-slot *g'* in the shifter-spindle. A handle, *g<sup>3</sup>*, is secured to the outer end of the shifter-spindle in a position easy of access from the front of the lathe, and is preferably so secured to the spindle that it will stand in a vertical position when the spindle-gear *b'* is out of engagement with the rocker-gears. The latter may be thrown into engagement with the spindle-gear by a partial rotation of the spindle that turns the handle aside, the position of the handle indicating to the workman at a glance the engagement or non-engagement of the rocker and spindle gears.

The threaded end of the spindle-gear, fitting, as it does, in a threaded socket, provides means for holding the spindle against side-wise play, (except, of course, such as is due to the rotation of the spindle,) and also provides means of getting a quick throw of the rocker with less pitch to the cam-slot and in a half-revolution of the spindle. The cam-slot preferably terminates in a straight part, with walls at right angles to the axis of the spindle, that forms a locking-socket and serves to hold the rocker when the gears are engaged against accidental movement out of engagement.

It will be seen that my gear-shifter with parts as above described is simple in construction, positive in operation, and can be made and fitted to the machine by simple tools and methods and at comparatively small expense. When the slot *g'* is at right angles to the axis of the spindle, the lengthwise play will be caused by the screw-thread only.

I claim as my invention—

1. In combination with a lathe-head having the live-spindle and feed-shaft, the rocker mounted on the latter bearing the rocker-gears, and a pin that projects into a cam-slot

in the shifter-spindle, the shifter-spindle having the cam-slot and having rotary movement in the socket in the lathe-head, all substantially as described.

5 2. In combination with a lathe-head or like part of a machine-tool, a live-spindle, and a feed-shaft mounted in the head, the rocker loosely mounted on the feed-shaft and bearing the rocker-gears, the pin projecting from  
10 the rocker-arm, the shifter-spindle having a cam-slot for the reception of the pin on the rocker, and a threaded end fitting the threaded socket in the head, all substantially as described.

15 3. In a lathe-head gear-shifter, in combination with the rocker bearing the rocker-gears and a projecting pin, a rotary shifter-spindle

having a threaded end fitting the threaded socket, and a cam-slot terminating in locking-sockets, and a handle located on the outer end  
20 of the spindle, all substantially as described.

4. In a lathe-head gear-shifter, in combination with the lathe-head having a spindle-socket threaded as described, the tilting rocker bearing the rocker-gears and a projecting pin,  
25 a rotary shifter-spindle having a threaded end fitting the threaded socket in the head, a pin-slot, and a handle located in the outer end of the spindle, all substantially as described.

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Witnesses:

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