

(No Model.)

3 Sheets—Sheet 1.

S. W. PUTNAM.

LATHE BED.

No. 291,398.

Patented Jan. 1, 1884.

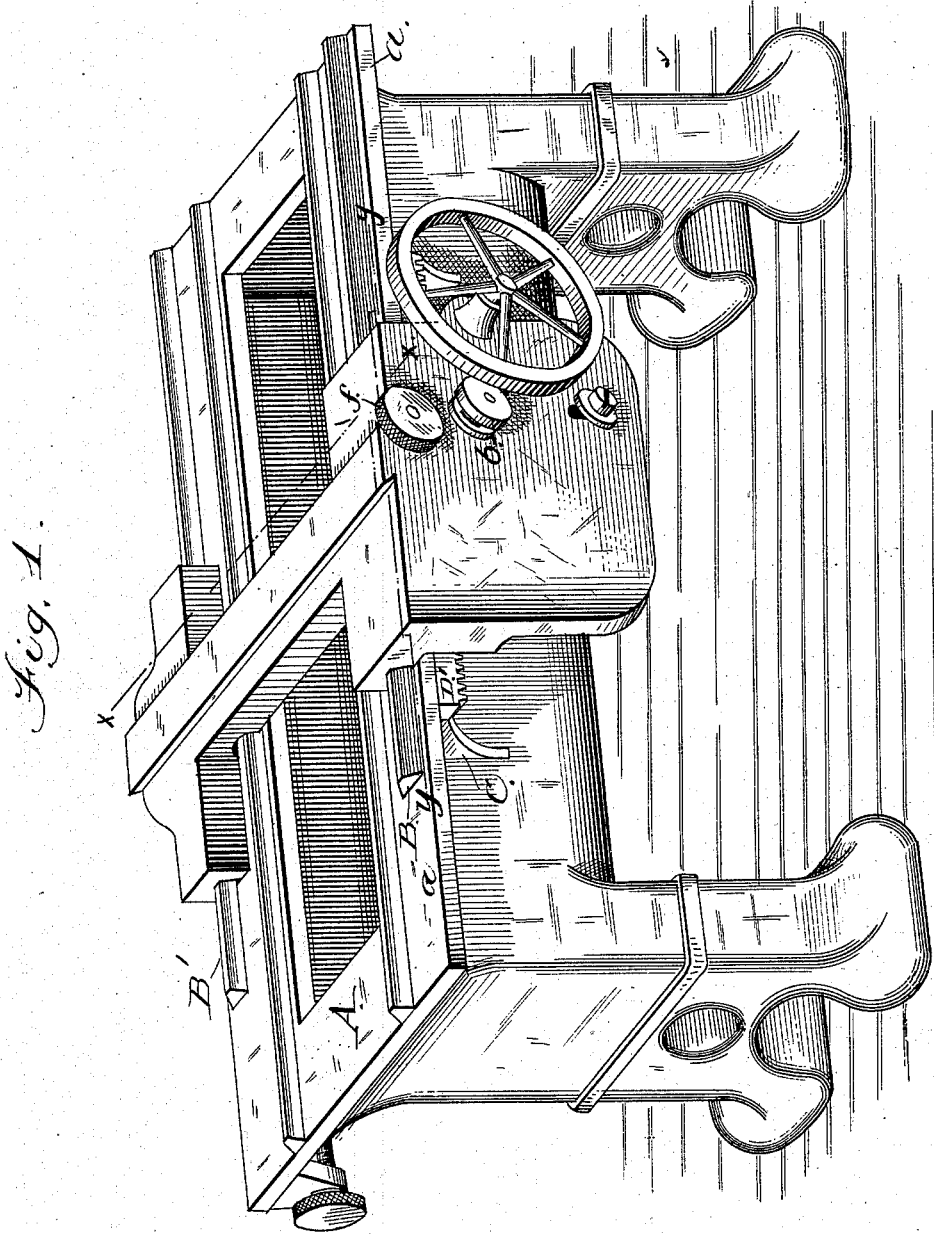


Fig. 1.

Witnesses;

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H. B. Applewhite

Inventor;

Salmon W Putnam
per attys.
A. H. Evans & Co

(No Model.)

3 Sheets—Sheet 3.

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Fig. 5.

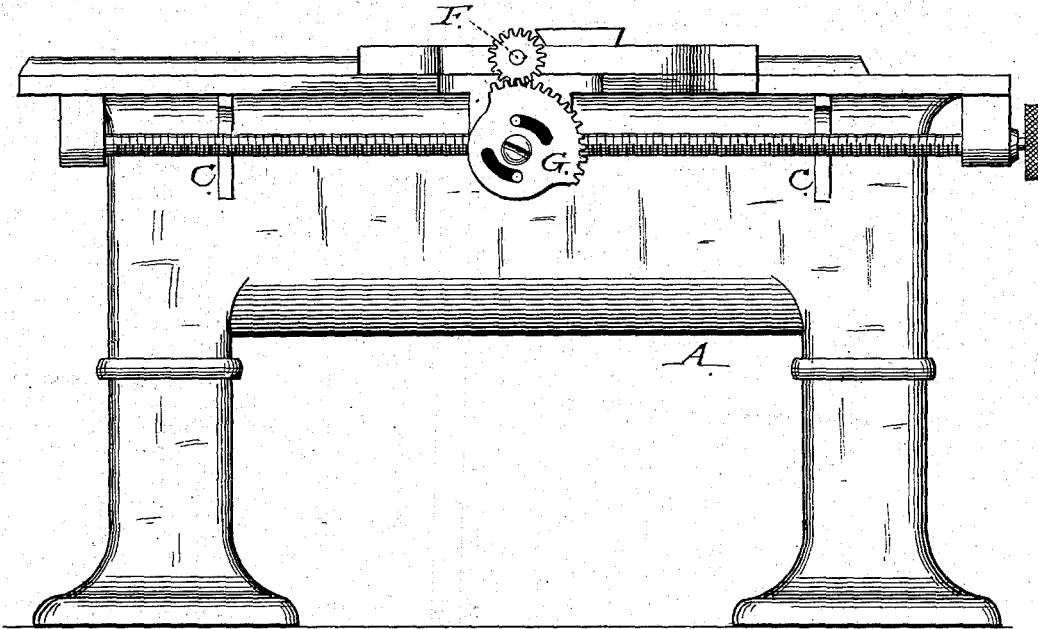
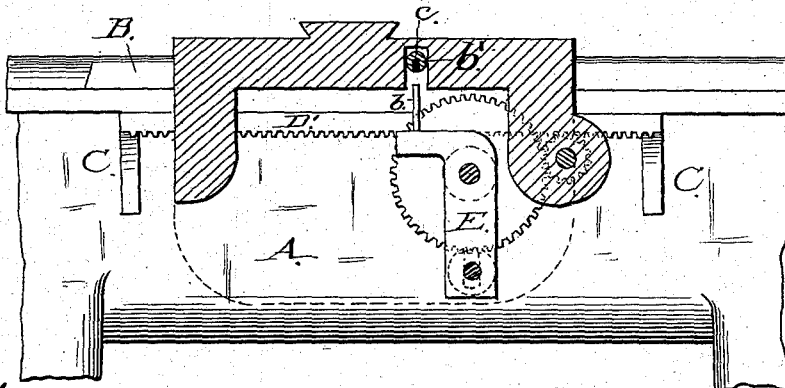


Fig. 4.



Attest;

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UNITED STATES PATENT OFFICE.

SALMON W. PUTNAM, OF FITCHBURG, MASSACHUSETTS.

LATHE-BED.

SPECIFICATION forming part of Letters Patent No. 291,398, dated January 1, 1884.

Application filed July 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, SALMON W. PUTNAM, of Fitchburg, in the county of Worcester, State of Massachusetts, have invented a new and useful Improvement in Lathe-Beds, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of a lathe-bed with my improvements attached. Fig. 2 is a longitudinal vertical section, showing the central rib or truss. Fig. 3 is a cross-section on the line *xx* of Fig. 1. Fig. 4 is a section through *yy* of Fig. 1. Fig. 5 is a rear elevation of the lathe-bed.

My improvements relate to beds of lathes for turning purposes; and they consist in the combination of devices hereinafter explained and claimed.

To enable others skilled in the art to make and use my invention, I will proceed to describe the exact manner in which I have carried it out.

In the drawings, A represents the bed proper, and longitudinally through the center of which I secure the rib-truss or backbone A', for the purpose of giving rigidity to the table and obviating deflection, particularly when the bed has to be made long.

It is well known by those skilled in the art that in all lathes the front of the carriage is much heavier than the rear side, and that also the "weight of the cut," when the machine is at work, falls mostly on the front side of the carriage, and the action of these unequalized weights combines to cause the carriage to wear, settle, and get out of "true" much more rapidly on the front way or track of the lathe than upon the rear one, and this excessive wear is hastened by the prevailing practice of making both the front and rear ways of a like angle, or similar. To overcome this difficulty, and to offset this uneven wear, is one of the essential objects of my present invention. To remedy this great defect in lathes and to retard and offset this uneven wear, I make the front way or track, B, wider and at a more obtuse angle than the rear one, B', as shown in Fig. 3 in cross-section. The amount of vari-

ance to be made between the two ways must be governed by the size and requirements of the work. On the average size lathe I make the variance about twenty per cent., more or less.

All lathe-beds are made with their tops more or less in projection, as shown at *aa* in Fig. 3; but the distribution of metal at these points is such as to resist very imperfectly the shocks and strains brought to bear thereon when the lathe is subjected to severe work, and the result is the carriage works under a tremor or vibration, which produces imperfect work. To remedy this evil is another essential feature in my invention. I place at suitable distances apart the rigid transverse ribs C, as shown in Figs. 1, 3, and 5, and thus stiffen and solidify the bed, to enable it to stand the shock of heavy work without tremor or vibration.

The feed-table of lathes operated by rack and pinion have hitherto supported the rack-gear and pinion by a stud and collar projecting from the inside of the feed-plate, thus leaving the rack-pinion immediately under the rack, and where the greatest strain and wear come, and the farthest from the source of support, which is an element of weakness, and frequently causes very bad work. Another purpose of my present invention is to remedy this defect by supporting the rack-pinion D and gear in a yoke, E, having an arm-bearing, *e*, extending to the rear side of the rack D', thereby giving a double outside end support to the rack-gear and pinion, which greatly increases their durability and firmness.

In lathes constructed with the actuating-screw on the rear side of the bed the operating of the carriage-nut on the screw is performed by the operator reaching over the lathe and taking hold of a handle affixed to the eccentric plate of the said nut. This operation was very inconvenient and annoying, and to avoid this difficulty of having to reach across the lathe to operate the carriage-nut, I pass a rod, F, through the carriage from front to rear, and connect the eccentric plate G of the nut with the gears, as shown in Figs. 3 and 5. Other devices—such as cams, eccentric links, &c.—might be used in the place of the gears to con-

nect the rod and nut without departing from the spirit of my invention. I prefer to employ the gear. A hand-nut, *f*, is applied to the rod on the front of the carriage, through the medium of which the back screw-nut, *g*, may be opened or closed conveniently from the front of the carriage, thus avoiding all occasion for reaching across the lathe to operate the carriage-nut. By the introduction of the cross-rod *F* to operate the back nut, I am enabled to make connection with the feed-table on the front side of the lathe, and there affix a safety-stop, *b*, by which it becomes impossible for the operator, through carelessness or otherwise, to engage at the same time the actuating-screw on the rear side of the lathe or apply the power-feed to the rack and pinion in feed-table on the front of the lathe, thus doing away with the possibility of injuring or breaking the lathe. To make this point more clear, I will say that in lathes of like construction the feed for turning is obtained through a rod connected with the feed-table, and imparting motion to the carriage by engaging with the rack-gear on the opposite side from the hand-feed. On the other hand, the motion of the carriage for screw-cutting is obtained through the actuating-screw. Both of these motions are positive, independent, and at different velocities of speed, and, as hitherto constructed, were liable to have the power-feed in the feed-table and the actuating-screw engaged at the same time, with the usual result—broken gear. To prevent the possibility of such an accident, I introduce the safety-stop *b*. The gears for operating the back nut on screw are so proportioned that it requires a little less than one revolution of the hand-knob to open and close the eccentric nut. The hand-nut has a hub passing into the carriage and on the under side of the carriage, directly under the hub, is a hole, *c*, extending well up into the hub. The stop-pin *b* is connected with the yoke *E*, that carries the rack-gear and pinion. When the rack-pinion is raised into the rack or dis-

gaged therefrom, the upper end of the stop-pin is caused to enter the hole *c* or recede from it. In the former position the eccentric nut is locked by the pin and cannot be thrown into gear, and the carriage is operated through the rack and pinion; but when in the latter position the nut can be closed and the carriage is operated by the screw, while the rack and pinion are disengaged and are locked out. It is evident from this construction that either the screw or the rack-pinion may be in gear, but only one at the same time.

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

1. In a lathe-bed, the front way or track, *B*, made wider or at a more obtuse angle than the rear track, *B'*, in combination with the track *B'* and the carriage, substantially as and for the purpose set forth.

2. The improvement in a lathe-bed, the rigid transverse ribs *C*, the longitudinal rib *A'*, and the projections *a a*, whereby the bed is stiffened and tremor is avoided, substantially as and for the purpose set forth.

3. In a lathe-bed, the rib *A'*, secured longitudinally through the center of the table, substantially as and for the purpose set forth.

4. The rack-pinion *D* and gear, in combination with the carriage and the yoke *E*, arm-bearing *e*, and rack *D'*, constructed to operate substantially as and for the purpose set forth.

5. The rod *F* and gear, in combination with the eccentric plate *G* and screw-nut *g*, whereby the nut may be opened or closed from the front side of the carriage, substantially as and for the purpose set forth.

6. The rod *F*, provided with the hub *b'*, perforated at *c*, in combination with the yoke *E*, provided with the stop-pin *b*, substantially as and for the purpose set forth.

SALMON W. PUTNAM.

Witnesses:

WILLIAM H. WHITNEY,
GEORGE H. CARTER.