(No Model.)

A. GORDON.

LATHE.

No. 340,207. Patented Apr. 20, 1886.

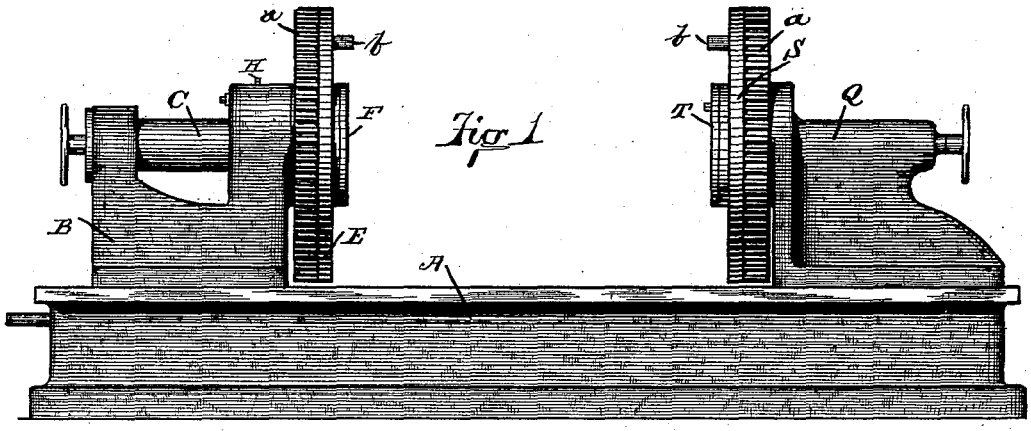

Fig 1

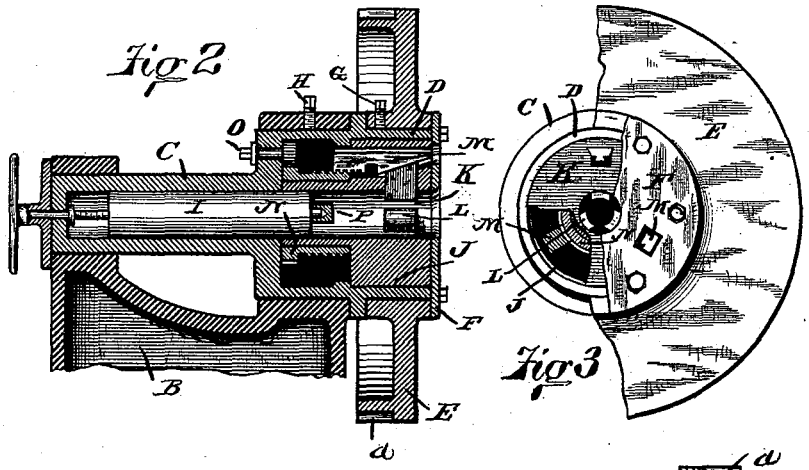

Fig 2

Fig 3

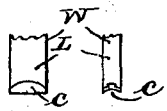

Fig 7

Fig 8

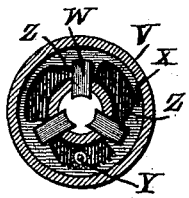

Fig 5

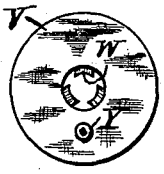

Fig 6

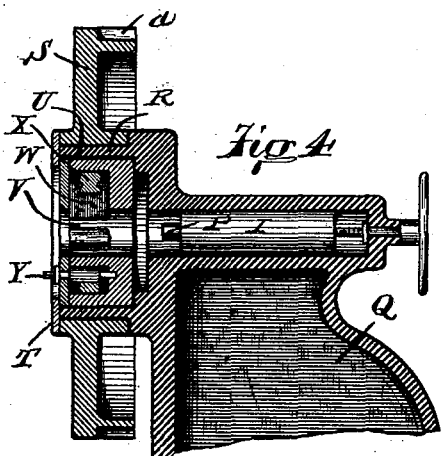

Fig 4

Witnesses:
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UNITED STATES PATENT OFFICE.

ALEXANDER GORDON, OF HAMILTON, OHIO, ASSIGNOR TO THE NILES TOOL WORKS, OF SAME PLACE.

LATHE.

SPECIFICATION forming part of Letters Patent No. 340,207, dated April 20, 1886.

Application filed December 10, 1884. Serial No. 150,046. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER GORDON, a subject of the Queen of Great Britain, and a resident of Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Lathes, of which the following is a specification.

This invention pertains to lathes for turning car-wheels upon their axles; and it relates to improvements in the means for the support of the ends of the axles in the head-stocks of the lathe. In re-turning car-wheels it is found that the old axles vary in some respects, and that consequently the same method of support is not always applicable.

By means of my improvements a single car-wheel lathe may be so constructed as to enable the car-axle to be supported, at the will of the operator, in either one of several different modes, thus permitting of a choice of the mode of support best adapted to the individual peculiarities of the axle in hand. Thus the axle may be carried on ordinary conical centers in case the old centers of the axle are in good condition and the wheels require but light re-turning; or the axle may be carried by its own journals running loosely in bearings formed by the jaws of a chuck which does not rotate, provided the old axle-journals are in good form; or, in case the axle-journals are in bad shape, the journals may have the chuck-jaws grasp them tightly, and the chuck may revolve; or one end of the axle may be supported by one mode while the other end is supported by one of the other modes.

I am cognizant of application No. 145,004, filed October 8, 1884, by George T. Reiss, of Hamilton, Ohio, for United States Letters Patent for improvements in lathes. I am fully cognizant of application No. 137,175, filed July 9, 1884, by John R. Williams, of Chicago, Illinois, for United States Letters Patent for improvement in lathes. Whatever matter of invention may be found set forth in his said application I concede as being the invention of said Williams. The entire subject-matter of my application was conceived in view of the contents of the said Williams' application and said Reiss' application, and was designed to constitute highly-important improvements upon their devices.

The improvements will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a front elevation of portions of a lathe, illustrating my improvements; Fig. 2, a vertical longitudinal section of the parts of the left-hand head-stock; Fig. 3, a face view of the left-hand head-stock parts, a portion of the face-plate, a portion of the front plate, and a portion of the chuck-body being broken away; Fig. 4, a vertical longitudinal section of the parts of the right-hand head-stock; Fig. 5, a view of the interior of the right-hand chuck; Fig. 6, a face view of the right-hand chuck; Fig. 7, a side view of the chuck-jaw with compensating-pad, and Fig. 8 a front view of same.

In the drawings, A represents a lathe-bed; B, a head-stock; C, a lathe-spindle fitted to revolve therein; D, the hollow nose of the spindle; E, the geared face-plate fitted on the nose; F, a front plate to the spindle, for retaining the face-plate; G, a set-screw in the face-plate, for locking the same to the spindle; H, a set-screw in the head-stock bearing, for locking the spindle against rotation; I, center spindles in each head-stock; J, the concentric bore of the cavity of the spindle-nose; K, a chuck seating in the bore of the spindle; L, the jaws of this chuck; M, longitudinally-sliding wedges for actuating these chuck-jaws; N, a threaded sleeve engaging threaded heels of the chuck-wedges; O, a pinion journaled in the spindle and engaging a geared flange on this threaded sleeve; P, thrust-caps on the lathe-centers, held in the center spindles; Q, the right-hand head-stock; R, a fixed hollow nose projecting from the same; S, a geared face-plate fitted to revolve upon this nose; T, a front plate bolted to this nose to retain the face-plate; U, the bore of this nose; V, a chuck seating within this bore; W, the jaws of this chuck; X, the chuck-ring; Y, a pinion engaging teeth in the chuck-ring; Z, inclines in the chuck-ring, engaging the chuck-jaws; *a*, the face-plate gears; *b*, the drivers, and *c* pads secured in the ends of the chuck-jaws.

Referring to the left-hand head-stock, by revolving the pinion O the chuck-wedges are moved inward or outward, and the chuck-jaws

open and close. The chuck-jaws being open, the interior of the chuck presents a smooth bore, through which the center spindle may slide, if desired. The projecting journal of the car-axle may be inserted into the bore of the chuck, and the lathe-center may engage the center of the axle, while the car-wheel comes close up against the face-plate, to be engaged by the driver. In practice equalizing-drivers will be used with both face-plates. Instead of the axle being supported, as mentioned, upon the lathe-centers, the chuck-jaws may be brought down upon the axle-journal, and the axle be thereby firmly and concentrically clasped within the spindle, the spindle revolving with the face-plate, which is to be locked to it. The face-plates are to be driven by pinions upon the back shaft in the manner common with driving-wheel lathes. Instead of gripping the axle-journal firmly in the chuck, the chuck may be brought down closely, but not tightly, so as to form a bearing in which the axle-journal may be revolved, the spindle and its chuck being locked stationary, while the face-plate revolves freely upon it. While the axle thus revolves in the chuck as a bearing, the thrust-cap P is adjusted up against the end of the axle, to serve as a thrust-bearing. In one of the modes of operation referred to the axle revolved on the lathe-center, by another mode the axle revolved upon its journal in the stationary chuck-jaws, and by another mode the axle was clasped firmly and revolved with the spindle. By still another mode the chuck may be firmly tightened upon the axle, the spindle locked against rotation, the face-plate revolved freely upon the spindle, and the axle and chuck revolved, the real bearing of rotation being the periphery of the chuck where it bears within the bore of the spindle.

The lathe may have both of its head-stocks constructed after the manner of the left-hand head-stock; or the right-hand head-stock may be an ordinary tail-stock in case the lathe is designed for turning but one wheel at a time.

I have designed the right-hand head-stock to perform the office of a dead-center tail-stock, a dead-bearing tail-stock, and a driving head-stock.

Referring to the right-hand head-stock, the chuck in this case will be recognized as of the common cam-ring form, and it is fitted to revolve freely within the fixed nose of the spindle, while it is clamped firmly upon the car-axle, thereby forming at its periphery the real journal of rotation; or it may be clamped closely, but not tightly, upon the car-axle, and thereby serve as a fixed bearing, in which the car-axle may revolve, the face-plate in all cases freely revolving upon its nose, and the center spindle serving precisely as indicated in regard to the left-hand head-stock.

I claim as my invention—

1. In a lathe, the combination of a head-stock, a lathe-spindle fitted to rotate therein and to be locked against rotation and provided with a frontal nose, a center spindle fitted to slide axially in said lathe-spindle, a face-plate fitted to rotate loosely upon said nose and to be locked thereto, so as to rotate with it, a chuck-body having a cylindrical periphery fitting the bore of said nose and having a concentric bore fitting the said sliding center spindle, and a pinion-spindle journaled in and projecting outside of the lathe-spindle, substantially as and for the purpose set forth.

2. In a lathe, the combination of a head-stock, a lathe-spindle fitted to rotate therein and to be locked against rotation and provided with a frontal nose, a center spindle fitted to slide axially in said lathe-spindle, a face-plate fitted to rotate loosely upon said nose and to be locked thereto, so as to rotate with it, and a chuck-body having a cylindrical periphery fitting the bore of said nose and having a concentric bore fitting said sliding spindle, substantially as and for the purpose set forth.

3. In a lathe, the combination of a head-stock, a lathe-spindle fitted to be rotated therein and to be locked against rotation and provided with a frontal nose, a center spindle fitted to slide axially in said lathe-spindle, a face-plate fitted to rotate loosely upon said nose and to be locked thereto, so as to rotate with it, and a chuck disposed within said nose, substantially as and for the purpose set forth.

4. In a lathe, the combination of a head-stock supporting a frontal nose provided with an exterior cylindrical bearing-surface for a face-plate and a concentric interior bearing-surface for a chuck, a face-plate fitted to revolve upon the exterior bearing-surface of said nose, and a chuck-body fitted to revolve in the interior bearing-surface of such nose, substantially as and for the purpose set forth.

5. In a lathe, the combination of a head-stock supporting a frontal nose, a center spindle supported by said head-stock axially with reference to said nose, and a cylindrical chuck-body fitting the bore of said nose and having a concentric bore fitting said center spindle, substantially as and for the purpose set forth.

ALEXANDER GORDON.

Witnesses:
J. W. SEE,
W. A. SEWARD.