(No Model.) 2 Sheets—Sheet 1.

G. T. REISS.

LATHE.

No. 324,416. Patented Aug. 18, 1885.

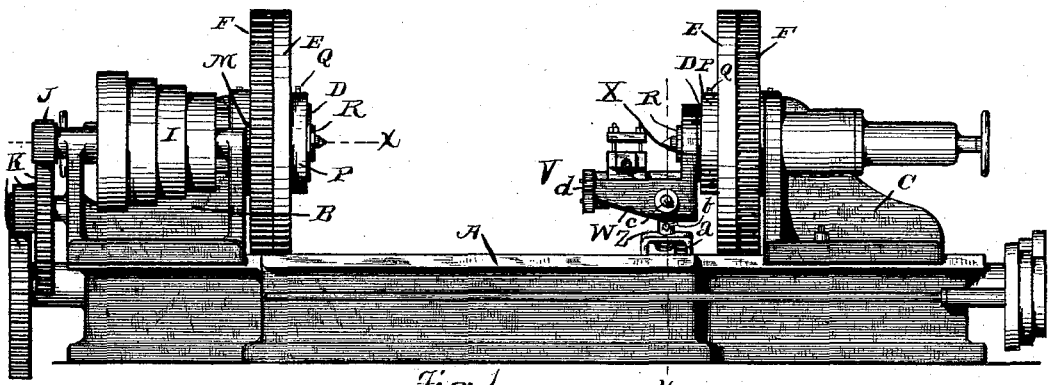

Fig 1.

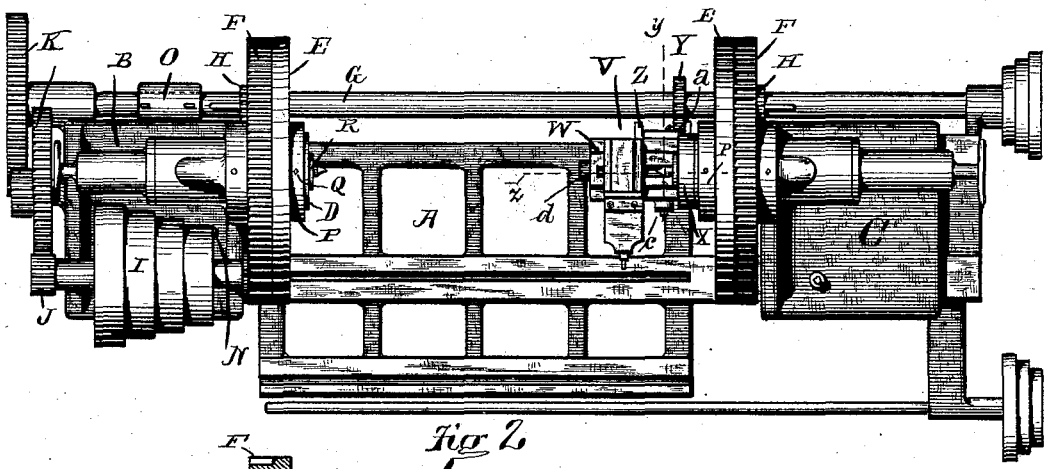

Fig 2.

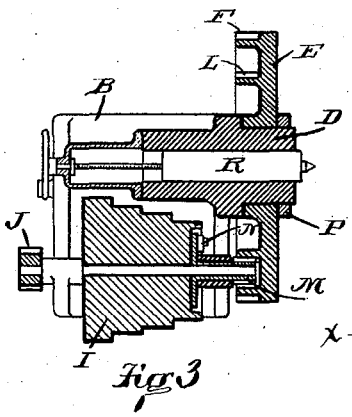

Fig 3.

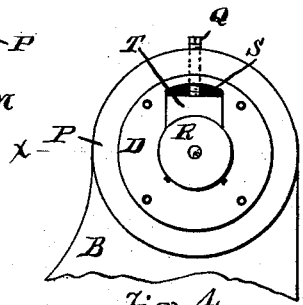

Fig 4.

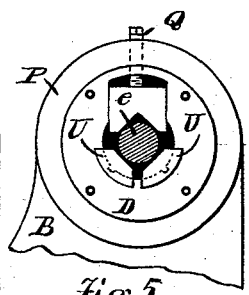

Fig 5.

Fig 6.

Witnesses:

W. A. Seward

L. C. Orrpack

George T. Reiss Inventor

by James N. See

Attorney

(No Model.) 2 Sheets—Sheet 2.

G. T. REISS.

LATHE.

No. 324,416. Patented Aug. 18, 1885.

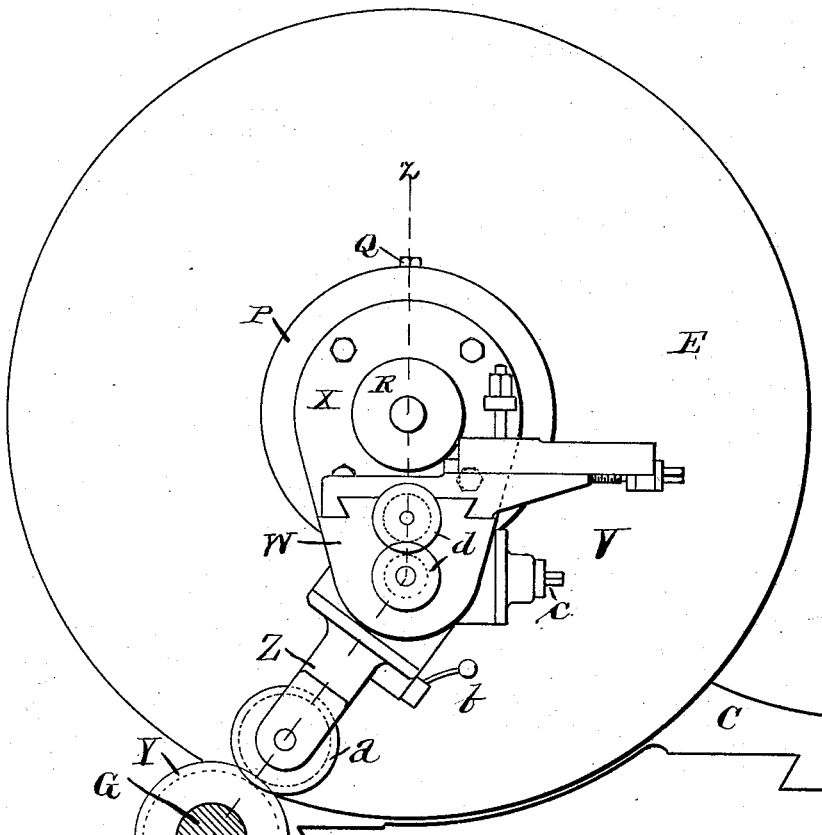

Fig 7

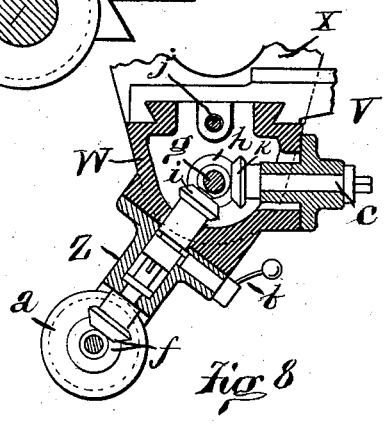

Fig 8

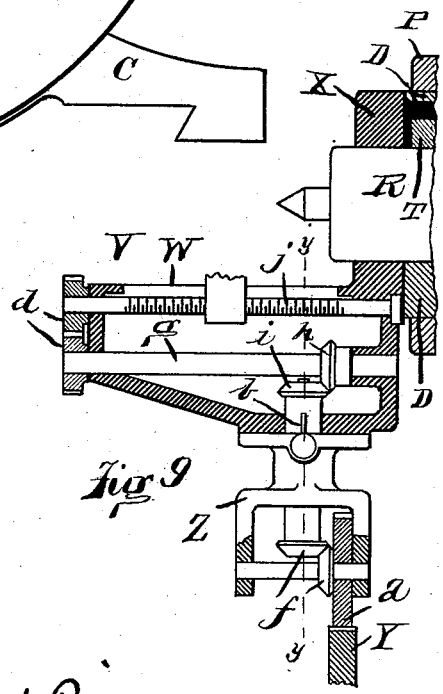

Fig 9

Witnesses:
W. A. Seward
L. C. Overpack

George T. Reiss Inventor
by James W. See
Attorney

UNITED STATES PATENT OFFICE.

GEORGE T. REISS, OF HAMILTON, OHIO, ASSIGNOR TO THE NILES TOOL WORKS, OF SAME PLACE.

LATHE.

SPECIFICATION forming part of Letters Patent No. 324,416, dated August 18, 1885.

Application filed October 8, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE T. REISS, of Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Lathes, of which the following is a specification.

July 9, 1884, John R. Williams, of Chicago, Illinois, filed in the United States Patent Office his application for Letters Patent for certain new and useful improvements in lathes, said application having received the Serial No. 137,175. My present invention pertains to improvements upon the machine forming the subject-matter of the said application. I disclaim as of my invention all devices of construction set forth in said Williams's application.

The Williams lathe is arranged to be capable of turning car-wheels while upon their axles, the axle being revolved upon its own journals instead of upon lathe-centers. The boxes in which the axle-journals were carried were held in noses projecting from the face of the head-stocks, and the face-plates encircled and revolved upon the exterior of the noses.

My invention relates to improvements by which, in addition to the general mode of operation set forth in said Williams's application, I am enabled to revolve the axles upon centers, if desired, in order that the journals may be trued up preparatory to the wheels being turned; also, to arrangements of parts for securing the comparatively high speed required in truing the journals; also the novel arrangement of slide-rest for use in the journal-truing operation.

My invention will be understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a front view of the main portions of a lathe embodying my improvements; Fig. 2, a plan of the same; Fig. 3, a horizontal section (line *x*) of the left-hand head-stock, showing the speed-changing device; Fig. 4, a face view of the head-stock noses when arranged to carry an axle upon its centers; Fig. 5, a similar view of a nose when arranged to carry an axle upon its journals; Fig. 6, a side view of one of the lower journal-boxes; Fig. 7, a face view of the right-hand head-stock with journal-truing slide-rest attached; Fig. 8, a vertical section (line *y*) of the same, and Fig. 9 a vertical section (line *z*) of the same.

The main slide-rests for turning car-wheels are omitted from the drawings, as they are to be of the usual construction.

In the drawings, A represents the bed of a lathe; B, a head-stock secured at one end of the bed, as usual in wheel-lathes; C, a sliding head-stock at the other end of the bed; D, an axial nose projecting from the face of each head-stock; E, the face-plates running loosely upon the noses; F, the gears on the face-plates by which the face-plates are driven when turning car-wheels or other large diameters; G, the usual back shaft, through which motion is transmitted to the face-plate; H, pinions upon the back shaft gearing with the gears F of the face-plate, as usual; I, the belt-cone, by which the machine receives its motion; J, a pinion fast upon the cone-shaft; K, a gear-train, by which the pinion J transmits motion to the back shaft; L, an inner gear upon the left-hand face-plate concentric with its gear F; M, a pinion loose upon the cone-shaft and engaging the inner gear, L; N, a cone-nut of ordinary construction, for locking the pinion M to the cone; O, a coupling in the shaft G near the gear-train K; P, collars upon the noses in front of the face-plates; Q, screws through collars P into the noses, securing the collars in place; R, sliding center spindles, like those of ordinary tail-stocks, and provided with similar adjusting-screws; S, a recess in the upper portion of each nose; T, a vertical sliding pad, one in each of said recesses; U, journal-boxes adapted to fit the bore of the noses when the center spindles are retracted; V, a slide-rest bolted removably to the face of one of the noses; W, the longitudinal body of the slide-rest; X, a feed-pinion upon the back shaft in line with the slide rest; Z, an arm projecting from the slide-rest toward said pinion; *a*, a pinion housed in the lower end of the arm Z and meshing with the pinion Y; *b*, a cam-lever for throwing out of action the slide-rest feed; *c*, a crank-shaft for traversing the tool-block of the slide-rest by hand; *d*, a pair of intermeshing gears—one on the longitudinal screw of the slide-rest and one on the shaft *g* parallel thereto; *e*, Fig. 5, a section of an axle supported on its journal by one of the noses;

f, a pair of bevel-gears for communicating motion from the gear *a* to the feed mechanism of the slide-rest; *g*, a shaft journaled in the slide-rest parallel with its longitudinal feed-screw; *h*, a bevel-gear fast on said shaft; *i*, a bevel-gear meshing with the gear *h*, and fitted to be moved in and out of gear by the cam-lever *b*; *j*, the longitudinal feed-screw of the slide-rest; *k*, a bevel-gear on the crank-shaft *c*, gearing with the bevel-gear *h*.

If car-wheels are to be turned upon their axles and the axle-journals are in good condition, the center spindles, R, are retracted, the journal-boxes U put in place in the noses, the axle placed in position to run upon these journal-boxes, and the pads T adjusted to bear upon the top of the journals by means of the screws Q. Drivers (not shown) of the usual character and fitted in the usual manner in the face-plate engage projections of the car-wheel and revolve the work, the turning being done by tools in ordinary slide-rests mounted on the lathe-bed, the back shaft revolving both face-plates and exerting a driving force upon both of the car-wheels. If the axle-journals are much worn, it is desirable that they be trued up before proceeding with the operation just mentioned. To do this the center spindles are protruded, the axle, with its wheels, mounted upon the centers, and the turning is done by means of the slide-rest V. The cone-nut N is thrown into engagement so as to lock the pinion M to the cone, whereby the cone drives its face-plate through the medium of its pinion and the inner gear, L, the coupling O being disengaged or the pinion H being slid out of gear. By these means the proper speeds are readily obtained for the comparatively small diameters of the journals. The slide-rest V is readily removed from the nose to which it is bolted.

The pinions Y and *a* and the bevel gears *f*, *i*, and *h* give motion to the shaft *g*, which, through gears *d*, operates feed-screw *j* and effects the slide-rest feed.

By means of the cam-lever *b* the bevel-gear *i* may be thrown downward out of gear, thus stopping the feed.

When the feed is disengaged, the tool-block may be operated in an obvious manner by the crank-shaft *c*.

The simple placing in position of the slide-rest upon the nose-projection puts the pinion *a* into engagement with the pinion Y. The center spindles, R, fit the bore of the noses, and the pads T serve as the binders for the same. When the center spindles are retracted, the journal-boxes U fit within the bore of the noses, and the pad T, or another pad of more suitable form, serves as the top element for the journal-bearing. The screws Q serve to secure the collars P, and also to adjust the pads.

The journal-boxes U have bearing-surfaces adapted to suit the size of the journal in hand. I prefer an angular bearing side, as shown in Fig. 5, and I prefer to make the box divided, as shown in Fig. 5. This division of the boxes enables them to be more readily inserted in position.

The sections of the journal-boxes may be doweled to the bore of the noses by feathers, as shown, or by dowel-pins. When the lathe is at work upon large diameters, as car-wheels, the cone does the driving through the medium of the pinion J, and the motion becomes transmitted through the gears F of the face-plates, the cone-nut N being disengaged, so that the pinion M revolves idly independent of the cone.

The main features of my invention are applicable whether the lathe is of the single or double head type.

I claim as my invention—

1. In a lathe, the combination of a head-stock, a nose projecting therefrom, a geared face-plate fitted to revolve upon said nose, a back shaft geared to said face-plate, and a slide-rest removably bolted to said nose, substantially as and for the purpose set forth.

2. In a lathe, the combination of a head-stock, a nose projecting therefrom, a geared face-place fitted to revolve thereon, a back shaft geared to said face-plate, an arm projecting from said slide-rest toward said back shaft, a pinion mounted at the extremity of said arm, shafts and gearing connecting said arm-pinion with the feed-screw of the slide-rest, and a pinion on the back shaft adapted to be engaged by said arm-pinion when the slide-rest is secured to the nose of the head-stock, substantially as and for the purpose set forth.

3. In a lathe, the combination of a head-stock, a nose projecting therefrom, a geared face-plate fitted to revolve upon said nose, a back shaft geared to said face-plate, a slide-rest bolted to said nose, a feed-screw, *j*, in said slide-rest, a shaft, *g*, in said slide-rest disposed parallel to said screw and geared thereto, an arm projecting from the slide-rest toward said back shaft, a pinion at the end of said arm engaging a pinion on the back shaft, a splined shaft disposed within said arm and bevel-geared to the pinion carried at the extremity of the arm, a bevel-gear, *i*, fitted to slide upon said arm-shaft and engage with a bevel-gear upon the shaft *g*, and a cam adapted to slide said bevel-gear upon said arm-shaft, substantially as and for the purpose set forth.

GEORGE T. REISS.

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