(No Model.)

F. G. RABUS.

CENTER REST FOR LATHES.

No. 537,548. Patented Apr. 16, 1895.

Fig. 2.

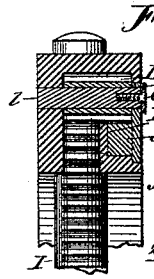


Fig. 1.

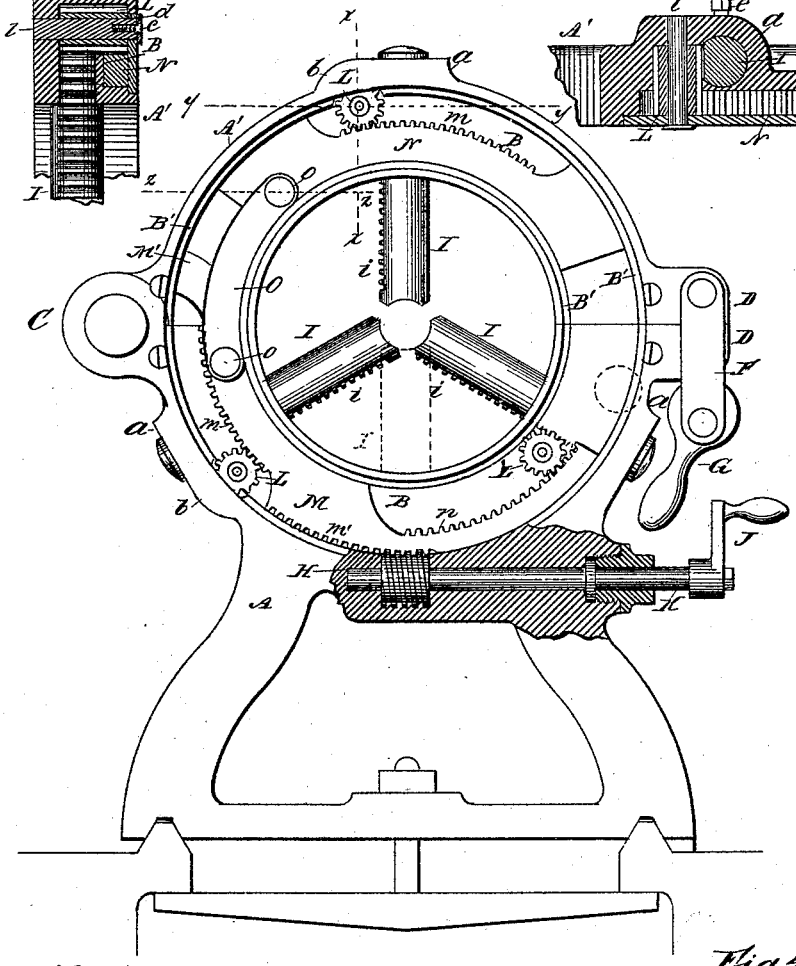


Fig. 5.

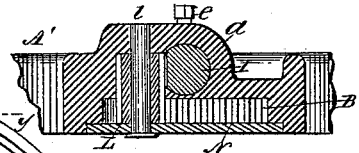


Fig. 6.

Fig. 7.

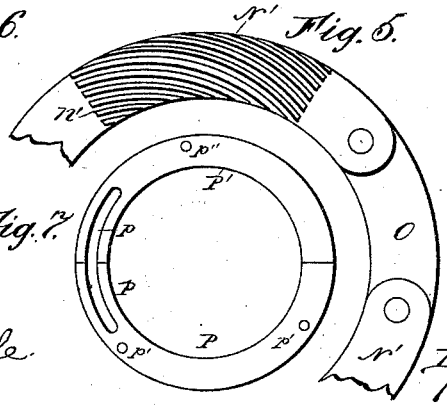
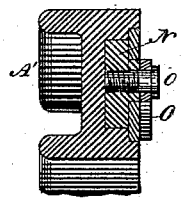


Fig. 4.



Attest.
Jos. Kubicek
Frank Christle.

Inventor.
Frederick G. Rabus.
By J. M. St. John.
Atty.

UNITED STATES PATENT OFFICE.

FREDERICK G. RABUS, OF CEDAR RAPIDS, IOWA.

CENTER-REST FOR LATHES.

SPECIFICATION forming part of Letters Patent No. 537,548, dated April 16, 1895.

Application filed November 30, 1894. Serial No. 530,515. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK G. RABUS, a citizen of the United States, residing at Cedar Rapids, in the county of Linn and State of Iowa, have invented certain new and useful Improvements in Center-Rests for Lathes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to so construct a center-rest for a lathe as to provide for a simultaneous and uniform radial movement of the guides. The particular means by which this result is effected will be hereinafter more fully set forth and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a device embodying my invention, looking toward the tail-stock of the lathe to which it is supposed to be attached. Fig. 2 is a fragmentary, sectional view, in the plane of the line *x x*. Fig. 3 is a fragmentary, sectional view, in the plane of the line *y y*. Fig. 4 is a fragmentary section, in the plane of the line *z z*. Fig. 5 is a fragmentary side elevation, showing a modification in the construction of the guide actuating ring. Fig. 6 is an elevation showing a modified form of guide adapted to engage with the ring or rack shown in Fig. 5. Fig. 7 is an elevation on a reduced scale of a ring cap to cover the rack.

Similar letters of reference indicate corresponding parts.

In the operation of the ordinary center-rest (sometimes called a "steady-rest") it is always a somewhat slow and difficult matter to set the several guides properly. This is especially true in the case of long and slender shafts, where the weight of the shaft alone deflects it from a right line. As the effect of any inaccuracy in the setting of the center-rest is to cause the lathe to turn the work tapering, more or less, it is desirable that the center rest be so constructed that the guides shall at all times be perfectly concentric, and thus accurately centralize the work.

Referring now to the drawings, A designates the standard of the center-rest, which is quite similar to those in general use, and is secured to the lathe-bed in any suitable manner. This standard is made divisible, the upper half of the guide-holding circle being hinged to the lower half at C. At the opposite side are lugs D D. To fasten the two parts of the circle together I prefer the device shown in Fig. 1, which is an eccentric hand-lever G connecting with the upper lug by links F, and having a bearing on the under side of the lower lug.

In suitable radial boxes *a a a* are fitted the guides I I I. These are preferably three in number, though two would to a certain extent answer the same purpose, as indicated by the dotted lines in Fig. 1. For convenience in fitting, it is preferable to make the guides of cylindrical material, in which case the bearings for the guides may be bored instead of planed, as would be necessary if the guides are made angular in cross section. On one side of each guide is a rack *i* adapted to engage with the teeth of a pinion L mounted in a suitable housing *b*, formed in the standard A. These pinions extend beyond the guides on one side and engage with the teeth *m m n* formed on the segments M and N fitted in the annular recess B in one side of the circle or guide-ring. These segments are connected by a link O pivoted at *o o*, which imparts simultaneous movement to both segments, and permits the upper half of the guide-ring to be raised for the admission of work to the center-rest. The segments are held from lateral displacement and the annular recess B is closed from dirt, &c., by a pair of semicircular plates P P′, shown in Fig. 7. Slots *p p* therein allow for the necessary movement of the pivot-studs *o o*, the link O being external to the plates, as shown in Fig. 4. The studs *l l l* on which the pinions turn may extend nearly through the holes *p′ p′ p″* in these plates, and by means of screws *c*, (shown in Fig. 2) and washers *d*, the plates are drawn tightly against the shoulders B′ B′ counterbored in the guide-ring. As an additional fastening for the plates marginal screws *f f f f* may be provided, a portion of the screw head overlapping the margin of each plate, as will be readily understood. Motion is imparted to the segments, and thence to the pinions and guides, by a worm H engaging with a rack *m′*. This worm is mounted on a suit-

able shaft K having a bearing in the standard A, and provided with a crank J.

It will be observed that the two racks *m m'* are external, while the rack *n* is internal. This arrangement is preferable to external racks in all three positions, inasmuch as the latter construction would necessitate the placing of one pinion as indicated by the dotted circle in Fig. 1, and this would make the distance from the point of engagement of the rack and pinion to the separating line of the two parts of the guide-ring so short as to materially limit the movement of the segments, and correspondingly shorten the radial movement of the guides. Within the limits of its movement, however, it is of course entirely practicable to make all the racks engaging with the pinions wholly external, or wholly internal. Where external and internal racks are both used, as shown in Fig. 1, it is important that the pitch-line of all should exactly coincide, so that perfect accuracy of movement may be imparted to the guides.

For the purpose of giving additional external bearing to the segment M one end M' may be extended to have a bearing in the upper half of the guide-ring. It is curved back, however, so as not to interfere with the movement of this portion of the guide-ring when raised.

In Figs. 5 and 6 I have illustrated a scroll-rack *n'* on a segment N', and a corresponding rack *i'* on the guide I'. This construction would, within certain limits of movement, serve in place of the racks and pinions already described. The rack and pinion construction is, however, greatly to be preferred, since it largely increases the capacity of the center-rest.

Provision is made for fastening the guides tightly in any desired position, by set-screws *e*, should this in any case be necessary.

The center-rest should not only be accurate in itself, but should be accurately fitted to the lathe to which it is attached. It is therefore desirable that it be set in position on the lathe ways, and the guides being fixed in some suitable position, they be reamed or ground by the lathe itself.

Having thus described my invention, I claim—

1. In a center-rest for lathes, the combination of a standard having a divided guide-ring, toothed guides mounted therein, segments engaging directly therewith, and connected by a pivoted connection, and means for rotating said connected segments, whereby concurrent radial movement is imparted to the guides.

2. In a center-rest for lathes, the combination of a standard having a divided guide-ring, toothed guides mounted radially therein, pinions engaging with said guides, segmental racks mounted in said guide-ring adjacent to the guides, and engaging said pinions, a link connecting said racks, a worm engaging teeth formed on one of said segmental racks, and a crank-shaft for said worm, substantially as and for the purpose set forth.

3. In a center-rest for lathes, the combination of a standard having a divided guide-ring, toothed guides mounted radially therein, pinions engaging each guide, a pair of segmental racks connected by a link, and adapted to turn a limited distance in an annular recess formed in said guide-ring, external gear teeth on one of said racks engaging one pinion, an external and an internal set of gear teeth on the other rack, engaging two other pinions, respectively, and a worm engaging with a worm-gear on one of the racks, whereby concurrent radial movement is imparted to the guides as described.

4. In a center-rest for lathes, the combination of the divided guide-ring A A', having an annular recess B, the guides I I I mounted radially therein adjacent to said recess, the segments M and N provided with racks *m m n*, the pinions L L L engaging said racks and also said guides, the link O connecting said segments, the semicircular plates P P', the worm H engaging the worm-gear *m'*, and a crank-shaft connected to said worm, all substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK G. RABUS.

Witnesses:
JOS. KUBICEK,
EDWARD ZBANEK.