

(No Model.)

F. E. REED & J. R. BACK.

METAL TURNING LATHE.

No. 332,833.

Patented Dec. 22, 1885.

FIG. 1.

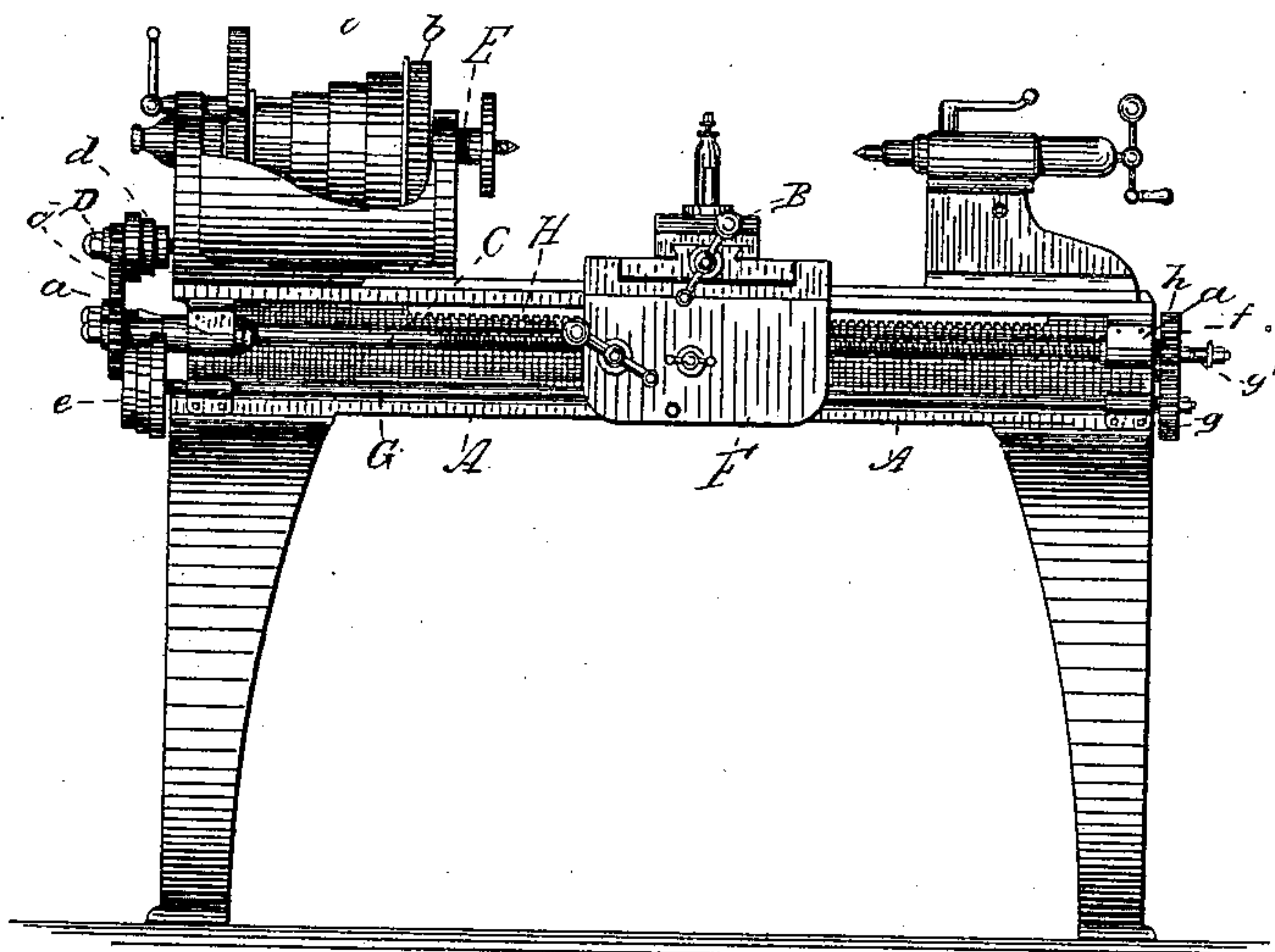


FIG. 3.

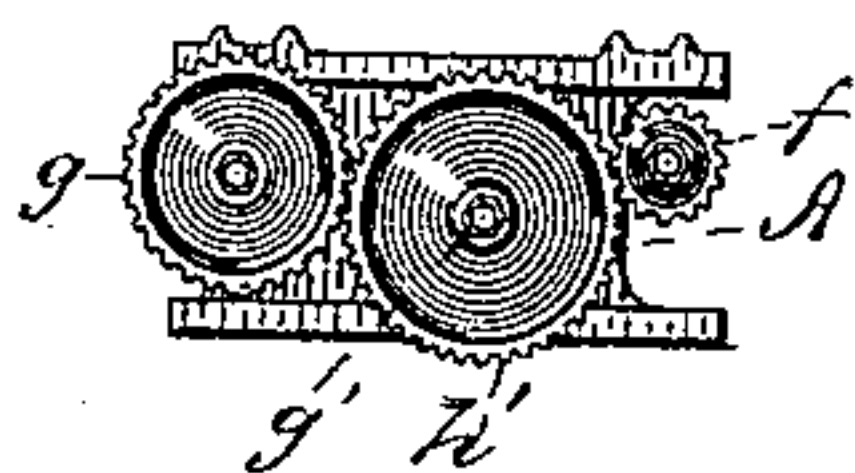


FIG. 2.

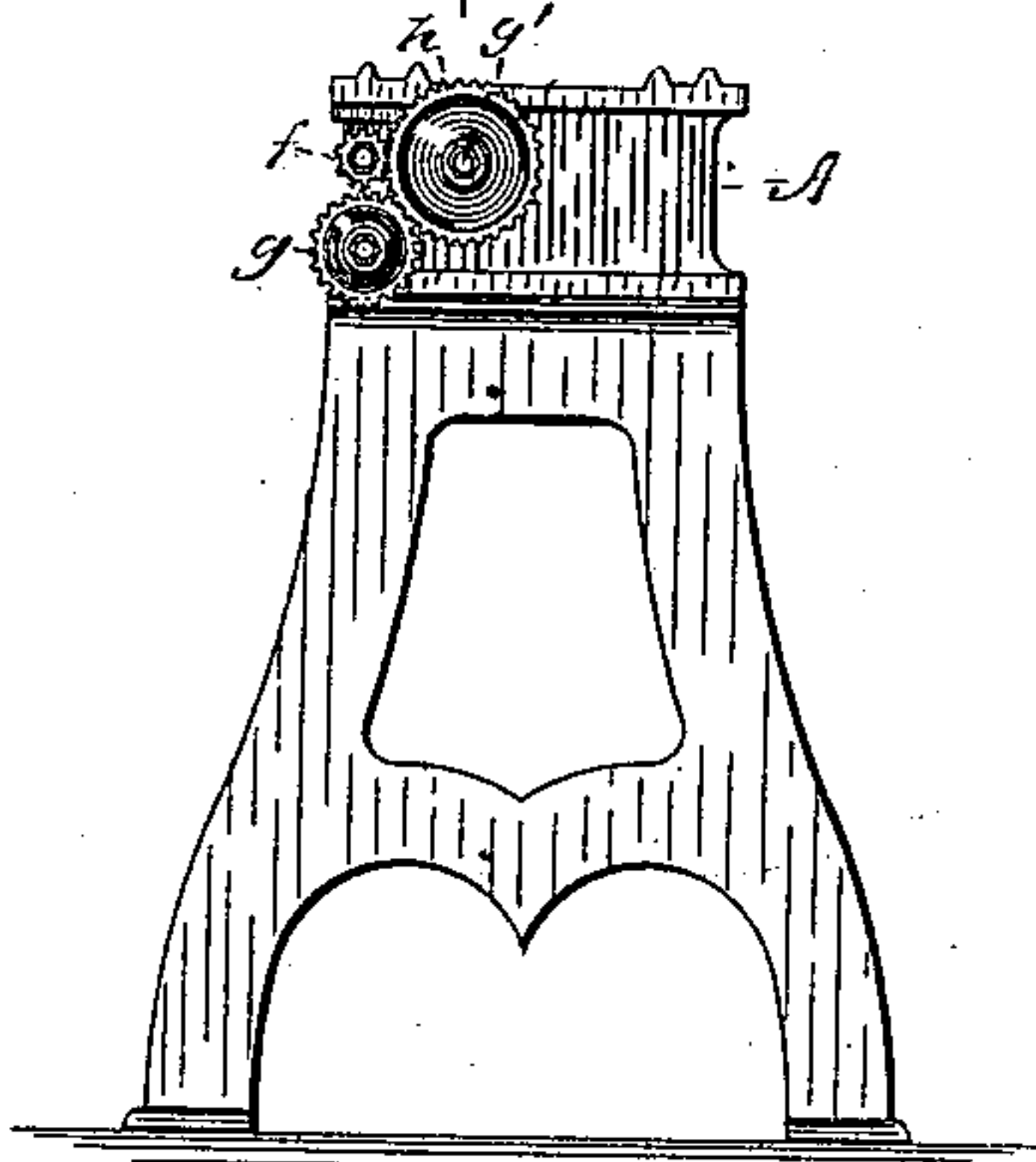


FIG. 4.

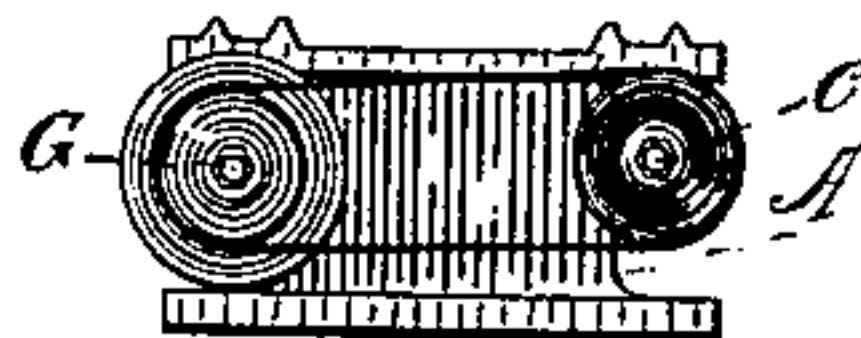
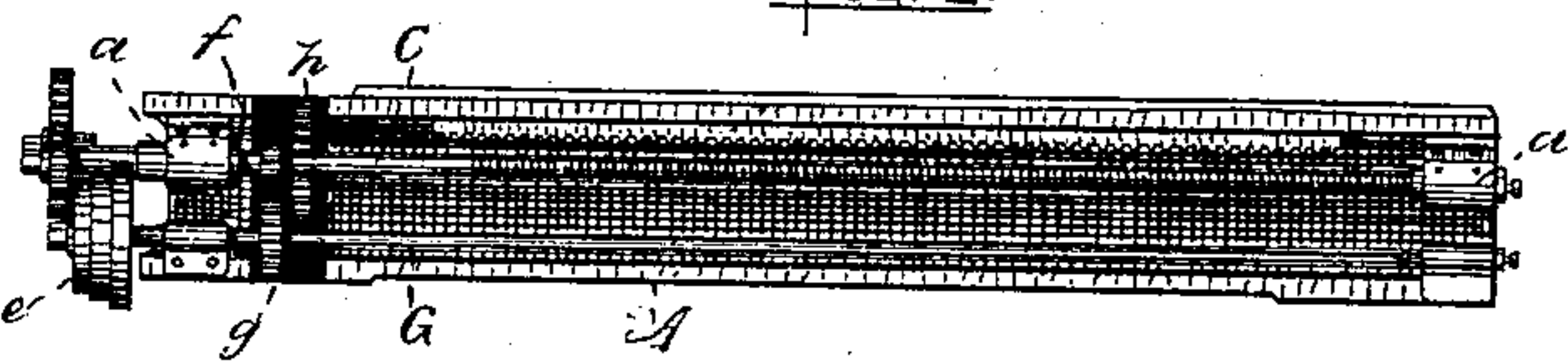


FIG. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

FREDERICK E. REED AND JOHN R. BACK, OF WORCESTER, MASSACHUSETTS.

METAL-TURNING LATHE.

SPECIFICATION forming part of Letters Patent No. 332,833, dated December 22, 1885.

Application filed October 14, 1885. Serial No. 179,881. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK E. REED and JOHN R. BACK, citizens of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Metal-Turning Lathes, of which the following is a specification, containing a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a front elevation of a metal-turning lathe embodying our invention. Fig. 2 is an end view with the heads removed. Figs. 3 and 4 are end views of the bed, showing modified forms of the device illustrated by Fig. 2; and Fig. 5 is a front view of the bed with the gears connecting the screw and feed-rod placed inside their bearings instead of at the end, as shown in Fig. 1.

Similar parts are indicated by similar letters in the several views.

Our invention relates to that part of metal-turning lathes known as the "feeding" mechanism; and it consists in means for actuating the "feed-rod" directly from the "leading-screw" when both are held in bearings fixed to the bed of the lathe, whereby we are enabled to obtain a greater range in the variation of the "feed" than is possible by the methods now in use.

A denotes the bed of the lathe, carrying the usual head-stocks and the sliding tool-rest B, having a traversing motion along the bed. Journaled in bearings *a a* on the bed is a screw-threaded shaft, technically known as a "leading-screw," and rotated by a system of gearing, *c*, connecting the screw with the shaft D, which is driven by the gear *b* on the spindle E. By changing the sizes of the driving-gear on shaft D and the driven gear on the screw C the speed of the leading-screw may be varied relatively to the speed of the spindle E, which is also the speed of the work. A clasp-nut attached to the sliding tool-rest B beneath the apron F, and not shown in the drawings, is made to engage the leading-screw C and impart a traversing motion to the tool-rest B along the bed of the lathe, causing the tool to form an accurate screw-thread upon the work. Upon the shaft D are placed the step-pulleys *d*, which communicate motion by a belt-connec-

tion to the step-pulley *e* on the feed-rod G. By means of a slot and spline (not shown) the rod G is made to impart motion to a train of gearing turning on studs attached to the apron F, which gearing, acting upon the rack H, fixed to the bed of the lathe, causes a traversing motion of the tool-rest along the bed of the lathe. The leading-screw and feed-rod may be connected or disconnected at will from the tool-rest and also from the rotating shaft D.

The construction and operation of so much of the metal-turning lathe as has already been described is common and well known, and has therefore not been shown in full in the drawings or described in detail in the specification. A great variation in the speed of the leading-screw C is secured by increasing the number of sizes of "change-gears," while the speed of the feed-rod G is limited to the changes which can be effected by the steps of the pulleys *d* and *e*.

To secure a greater variation in the speed of the feed-rod is the object of our invention; and it consists in attaching a driving-pinion, *f*, to the end of the leading-screw, which, through an intermediate gear, *h*, turning in a stud, *g'*, in the bed, drives a gear, *g*, attached to the feed-rod G. The stud *g'* is long enough to allow the intermediate gear, *h*, to be drawn out of contact with the gears *f* and *g*, allowing the feed-shaft to be driven by a belt on the pulley *d*, and in the usual manner, if desired.

We use a gear, *f*, on the screw C, smaller than the gear *g* on the feed-rod G, for the purpose of magnifying the variations of speed effected by the several changes of the gears *c*.

Lathes are sometimes constructed with the leading-screw upon the back side of the bed and the feeding-rod upon the front side, as shown in Figs. 3 and 4. In such cases we communicate motion to the feed-shaft, as shown in Fig. 3, by an intermediate gear, *h'*, or, as shown in Fig. 4, by a belt-connection, both methods coming within the scope of our present invention.

We do not confine ourselves to the use of the gears *f* and *g* at the end of the screw C and feed-rod G, as they may be placed inside the bearings of the screw and feed-rod, as shown in Fig. 5, if brought beyond the traverse of the apron F.

We are aware that lathes have been con-

structed in which the leading-screw has been made to perform the function of a feed-rod by having a slot its entire length and a gear connected with the screw by a spline. We are
5 also aware that the leading-screw has been driven from the feed-rod, which has been connected by change-gears with the shaft D; also, that a short shaft carried in bearings attached to the apron F has been driven by a gear-con-
10 nection with the leading-screw. We claim none of these constructions; but

What we do claim, and desire to secure by Letters Patent, is—

1. The combination, with the tool-rest of a
15 metal-turning lathe, of a leading-screw connected with the rotating spindle and held in

fixed bearings on the lathe-bed, and a feed-rod held in fixed bearings on the lathe-bed and driven from the leading-screw, as described, and for the purpose set forth. 20

2. The combination, with the leading-screw and feed-rod, held in fixed bearings on the bed of a metal-turning lathe, of pinions attached to said screw and rod, and an intermediate gear capable of sliding on a stud attached to
25 the bed, as described, and for the purpose set forth.

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Witnesses:

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