

No. 750,530.

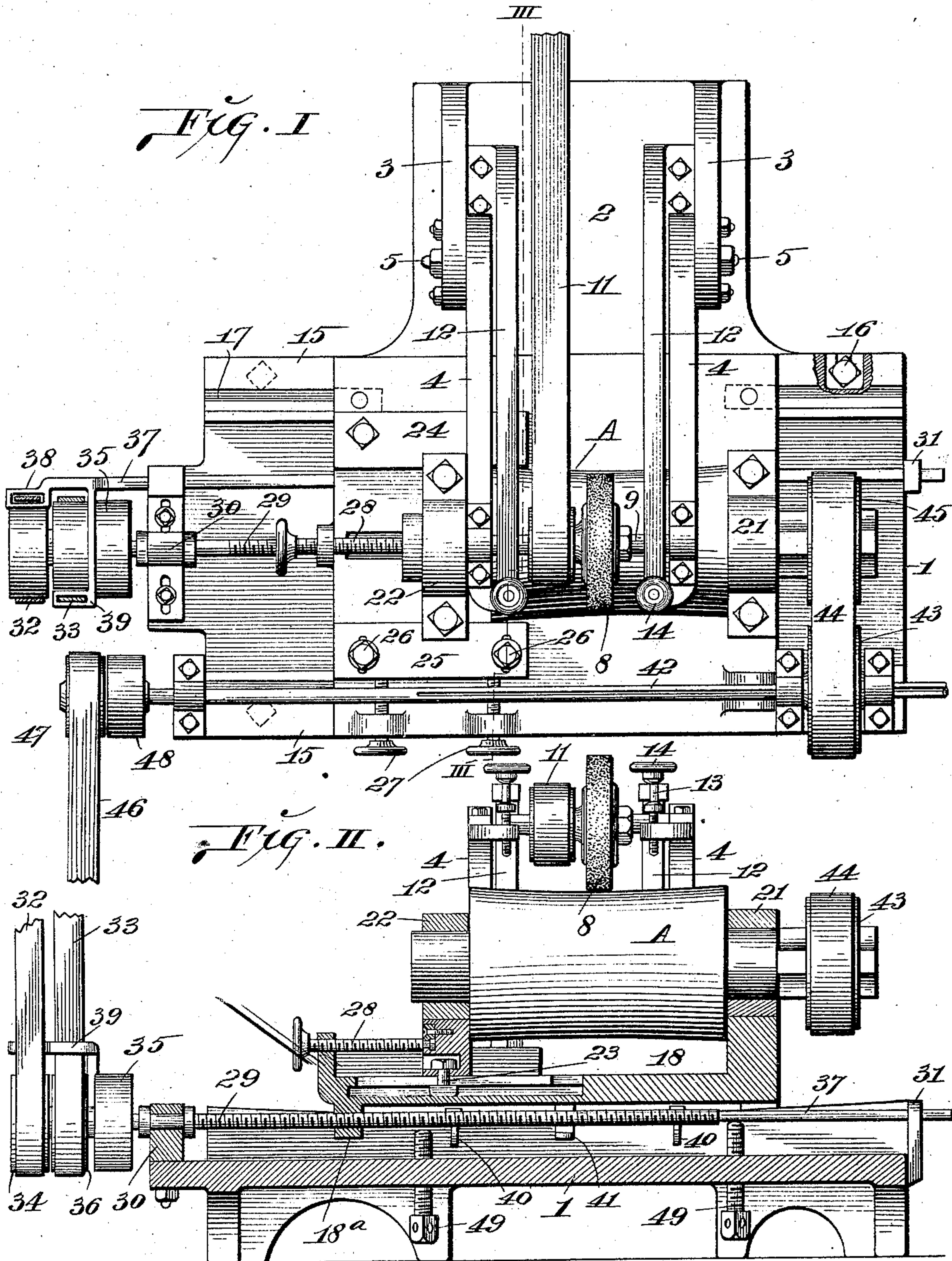
PATENTED JAN. 26, 1904.

G. R. FORD & B. F. ALLEN.
ROLL GRINDING APPARATUS.

APPLICATION FILED MAR. 12, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Attest:—
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E. J. Knight

Inventors:—
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By *Thight Brothers*

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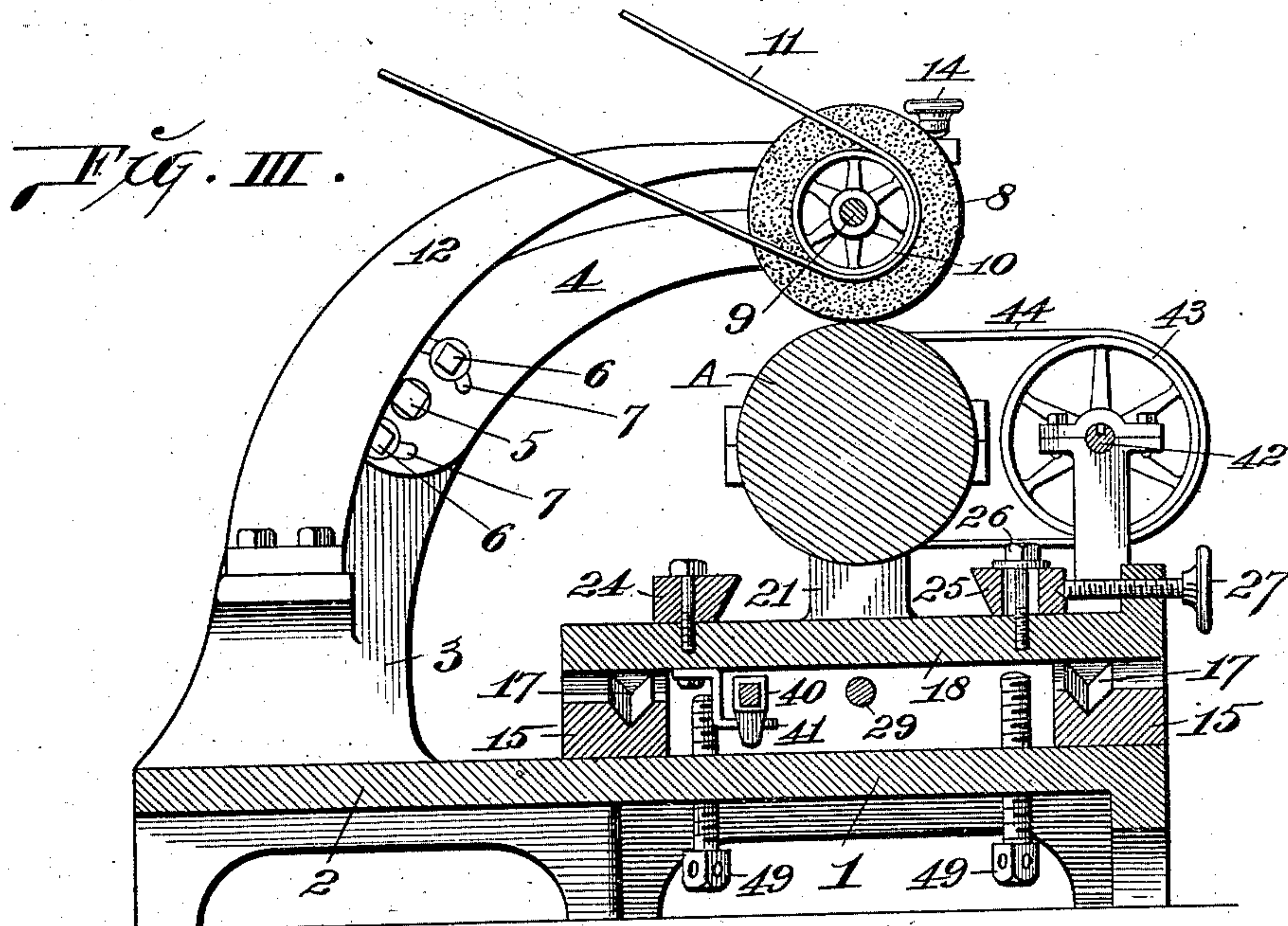


Fig. IV.

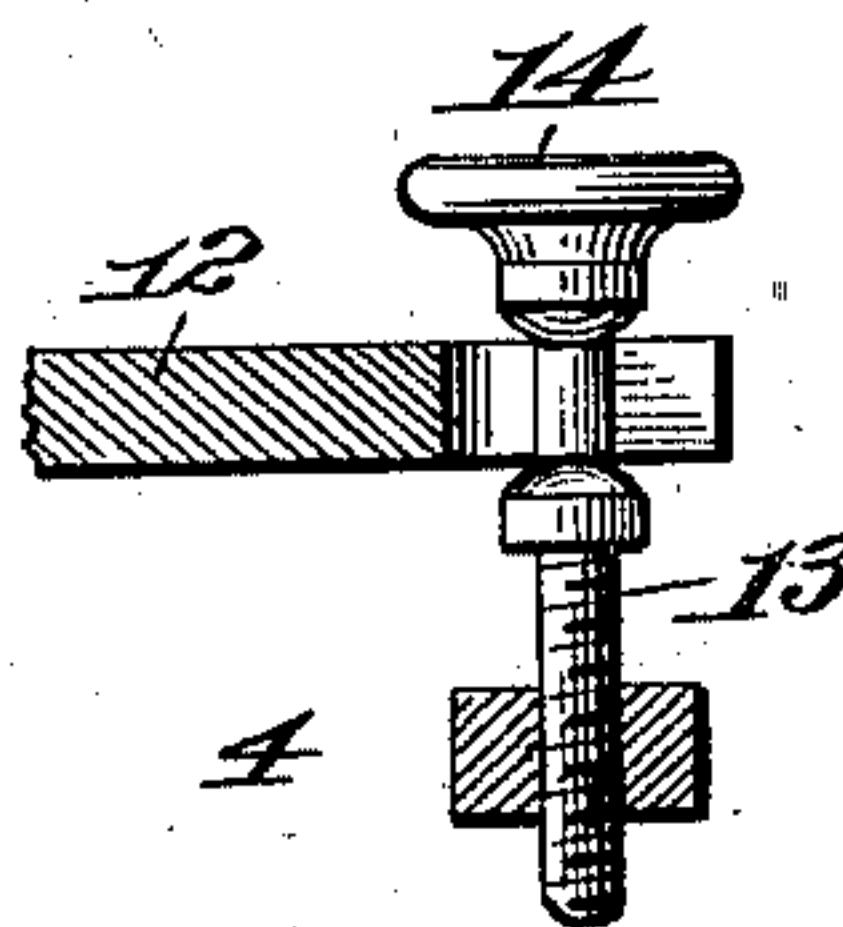


Fig. V.

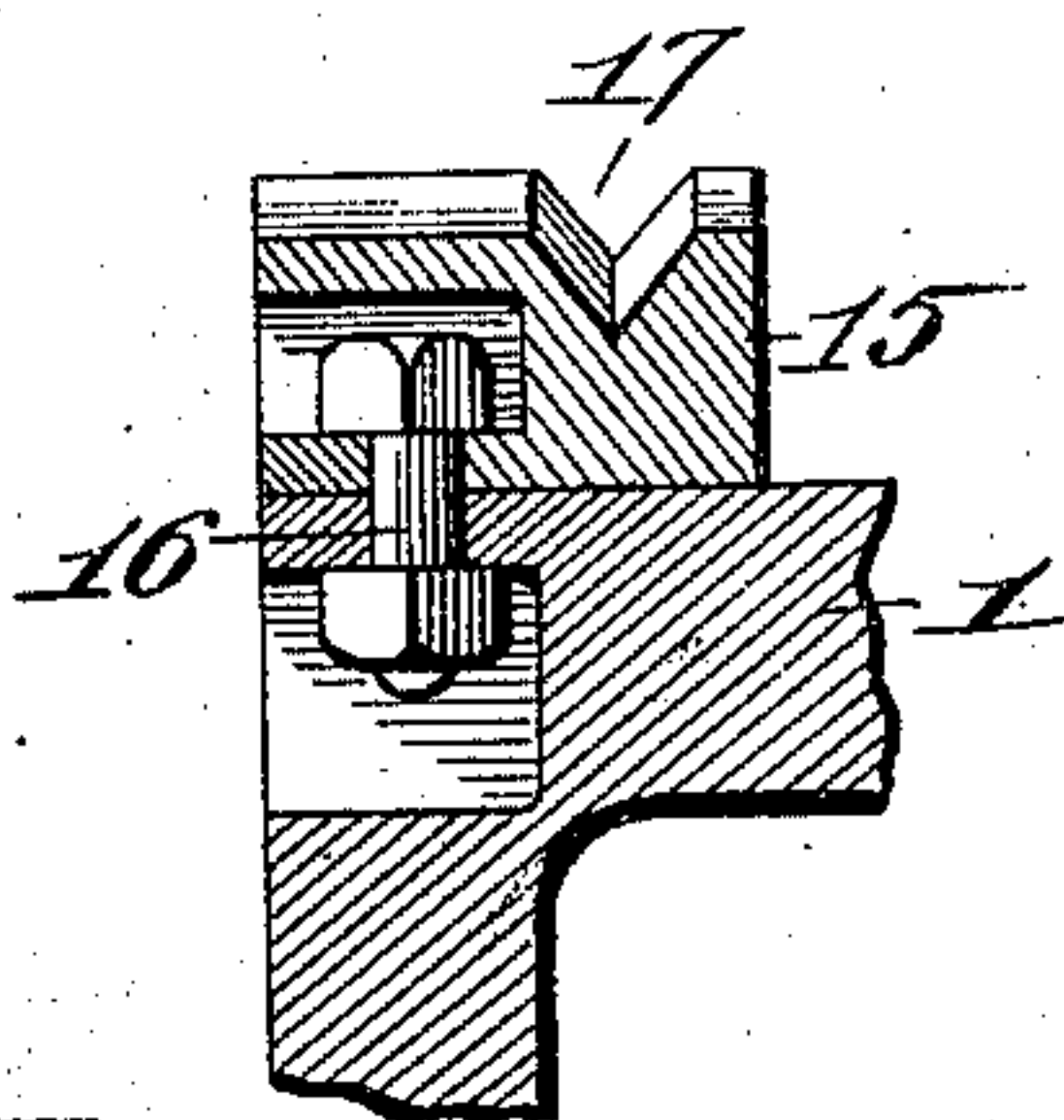


Fig. VI.

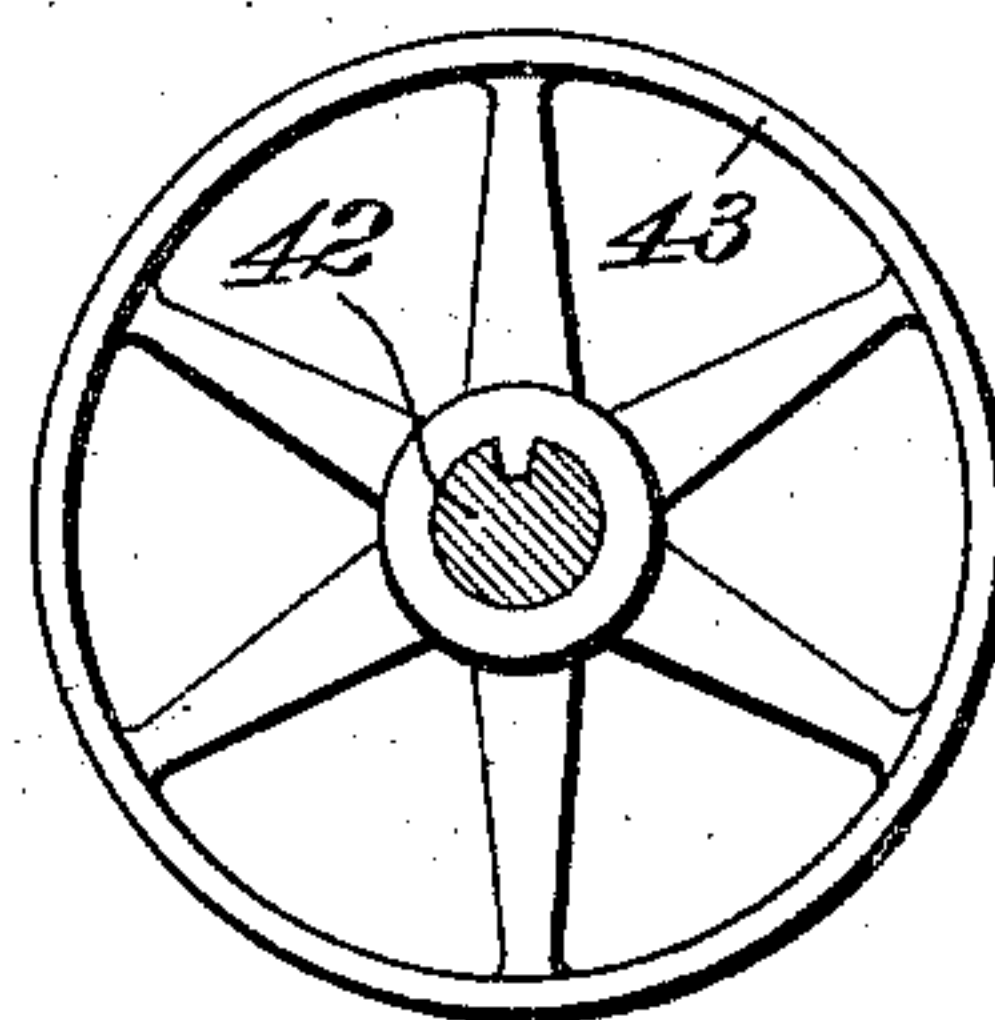
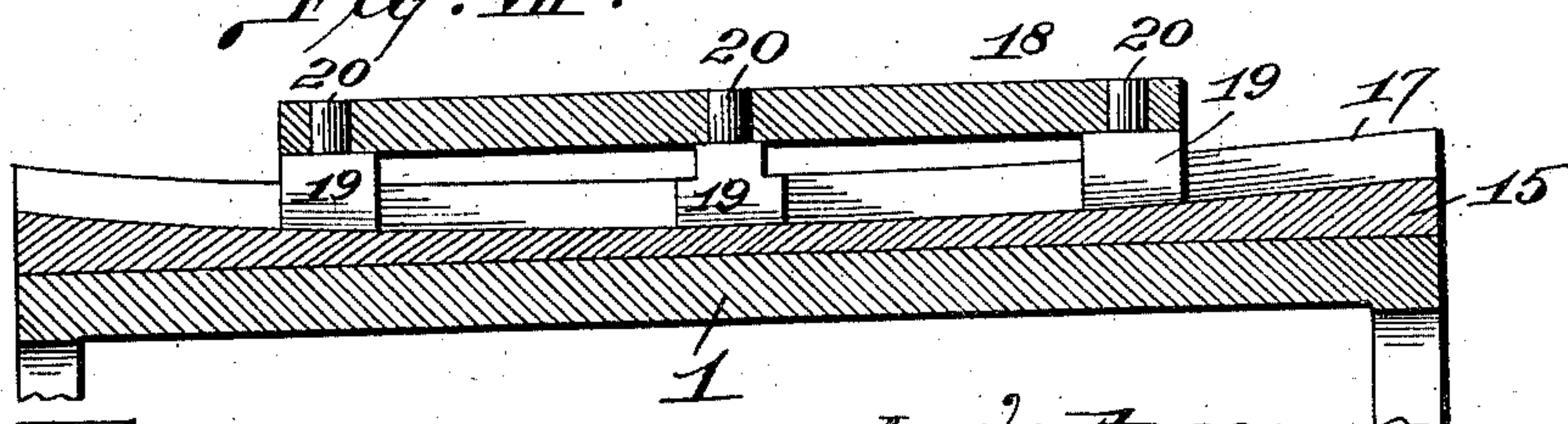


Fig. VII.



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UNITED STATES PATENT OFFICE.

GEORGE R. FORD AND BENJAMIN F. ALLEN, OF ST. LOUIS, MISSOURI;
SAID ALLEN ASSIGNOR TO SAID FORD.

ROLL-GRINDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 750,530, dated January 26, 1904.

Application filed March 12, 1903. Serial No. 147,443. (No model.)

To all whom it may concern:

Be it known that we, GEORGE R. FORD and BENJAMIN F. ALLEN, citizens of the United States, residing in the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Roll-Grinding Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our invention relates to an apparatus for turning or dressing mill-rolls, the construction in the present invention being particularly intended for operation upon concave rolls and equally serviceable in operating upon convex rolls.

The invention consists in features of novelty hereinafter fully described and pointed out in the claims.

Figure I is a top or plan view of our apparatus. Fig. II is a view partly in elevation and partly in longitudinal vertical section. Fig. III is a vertical transverse section taken on line III III, Fig. I. Fig. IV is a view, partly in elevation and partly in section, of the grinding-wheel swing-arm-supporting means. Fig. V is a vertical cross-section of one of the roll-carriage track-rails. Fig. VI is a side view of the roll-driving pulley, the shaft on which it is mounted being shown in cross-section. Fig. VII is a longitudinal section of the roll-carriage and one of the carriage-track rails.

1 designates the bed of the apparatus, which has a rear extension 2.

3 designates a pair of standards surmounting the bed extension 2.

4 designates swing-arms that are connected to the standards 3 by pivot-bolts 5 and are adjustably held in fixed positions by set-bolts 6, that pass through slots 7 in the arms and are seated in the standards.

8 is a grinding-wheel fixed to a shaft 9, journaled in the swing-arms 4. This shaft is equipped with a pulley 10, that receives a belt 11, which leads from a suitable source of power to impart rotation to the grinding-wheel.

12 designates posts fixed to the standards 3 and having their forward ends extending over

the grinding-wheel shaft 9. (See Figs. I and III.) These posts are designed for service in supporting the swing-arms 4 to uphold the grinding-wheel in an adjusted position after said swing-arms have been moved on their pivots to properly position the grinding-wheel with respect to the roll against which it is to operate. The forward ends of the posts 12 are forked, and seated therein are adjustment-screws 13, that are provided with hand-wheels 14. The shanks of these screws are arranged in said posts, and their threaded portions pass through the forward ends of the swing-arms 4 to thereby connect the swing-arms to the posts and provide for a vertical adjustment of the arms with respect to the posts.

15 designates curved track-rails mounted on the bed 1 of the apparatus and extending longitudinally thereof, each rail being preferably removably attached to the bed by means of bolts 16. (See Figs. I and V.) The upper surfaces of the rails 15 are curved downwardly from each end of the longitudinal center of the rail, and in the upper side of each rail is a runway 17, preferably of V shape, as seen most clearly in Figs. III and V.

18 designates the base of the roll-carriage, that is arranged to reciprocate in a curving path on the track-rails 15.

19 designates shoes located beneath the carriage-base 18 to travel in the runways 17 and having shanks 20, that seat in the carriage-base to connect the shoes thereto.

21 is an upright surmounting the carriage-base 18 and having a journal-box that receives one of the spindles of the roll A that is to be operated upon by the grinding-wheel 8 when supported in the manner hereinbefore stated. 22 is a tail-stock in which the second spindle of the roll A is journaled. This tail-stock is movably mounted on the carriage-base 18 to permit its movement toward or away from the upright 21 to acquire the proper distance between said members for the mounting of rolls of varying lengths. The tail-stock 22 is held in a fixed position by an anchor-bolt 23, connecting the tail-stock to the carriage-base, and it rides when moved

to and fro between a guide-bar 24, fixed to the carriage-base, and a guide-bar 25, shiftably held to the carriage-base by set-bolts 26.

27 designates set-screws by which the guide-bar 25 is adjusted to compensate for its wear or the wear of the tail-stock.

28 is a shift-screw by which the tail-stock 22 is moved to and fro on the carriage-base.

29 designates a feed-screw journaled in bearings and extending longitudinally of the apparatus-bed 1 midway between the track-rails 15. This feed-screw passes through a screw-threaded lug 18^a, projecting from the roll-carriage base 18 (see Fig. II) for service in reciprocating the roll-carriage to and fro beneath the grinding-wheel of the apparatus. The feed-screw 29 is reciprocated alternately first in one direction and then in the opposite direction through means of belts 32 and 33, that are applied to pulleys 34 and 35, fixed to the feed-screw, either of which belts passes onto a loose pulley 36 when the other belt is serving to drive the feed-screw.

37 designates a shifter-rod having a loop-arm 38, that receives the belt 32, and a loop-arm 39, that receives the belt 33. The shifter-rod 37 is slidably mounted beneath the carriage-base 18 and bears a pair of collars 40, spaced apart from each other. These collars are adapted to be struck by a trip-finger 41, secured to the carriage-base 18, when the carriage reaches the limit of its reciprocation in each direction, whereby the shifter-rod is moved longitudinally to alter the position of the belts 32 and 33 on their pulleys and effect reverse reciprocation of the roll-carriage.

The roll A to be operated upon is rotated through the medium of a drive-shaft 42, bearing a pulley 43, that receives a belt 44, which leads to a pulley 45, secured to the roll-spindle projecting through the carriage-upright 21. Power for operation of the drive-shaft 42 is communicated thereto through a belt 46, that operates on a tight pulley 47 or may run upon a loose pulley 48 when the apparatus is at rest.

49 designates jack-screws, preferably four in number, that pass upwardly through the bed 1 of the apparatus and are adapted for service in lifting the base 18 of the roll-carriage off of the track-rails 15 for the purpose

of permitting the removal of the track-rails previously in use and the introduction of other track-rails whenever such change is desired to be made, owing either to wear of the rails or to the necessity of change required by the service to be performed thereby.

In the practical use of the apparatus, as hereinbefore described, the roll-carriage travels in a downwardly and then an upwardly curving path to convey a concave roll being operated upon in a curving path beneath the grinding-wheel, the path of travel corresponding to the longitudinal curvature of the roll. It is obvious that track-rails 15 of varying curvature may be used to suit the contour of the concave roll whenever the rolls ground differ from those being previously ground.

While we have shown and described the apparatus herein set forth as utilized for grinding concave rolls, it is obvious that by a slight change the same apparatus can be rendered serviceable for use in grinding convex rolls, the only change necessary being that the track-rails 15 curve upwardly from each end to their longitudinal center instead of downwardly, as will be readily understood. We therefore do not limit ourselves to the precise construction of the apparatus shown and described as utilized for grinding concave rolls.

We claim as our invention—

1. In an apparatus of the character described, the combination of a bed, a grinding-wheel located above said bed, curved track-rails mounted on said bed, and a roll-carriage to travel on said track-rails in a downwardly and upwardly curving path beneath said grinding-wheel, substantially as set forth.

2. In an apparatus of the character described, the combination of a bed, a grinding-wheel surmounting said bed, track-rails having their upper surfaces curved downwardly and upwardly and provided with grooves, a roll-carriage mounted on said track-rails, and shoes extending from said carriage into said track-rail grooves, substantially as set forth.

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In presence of—

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