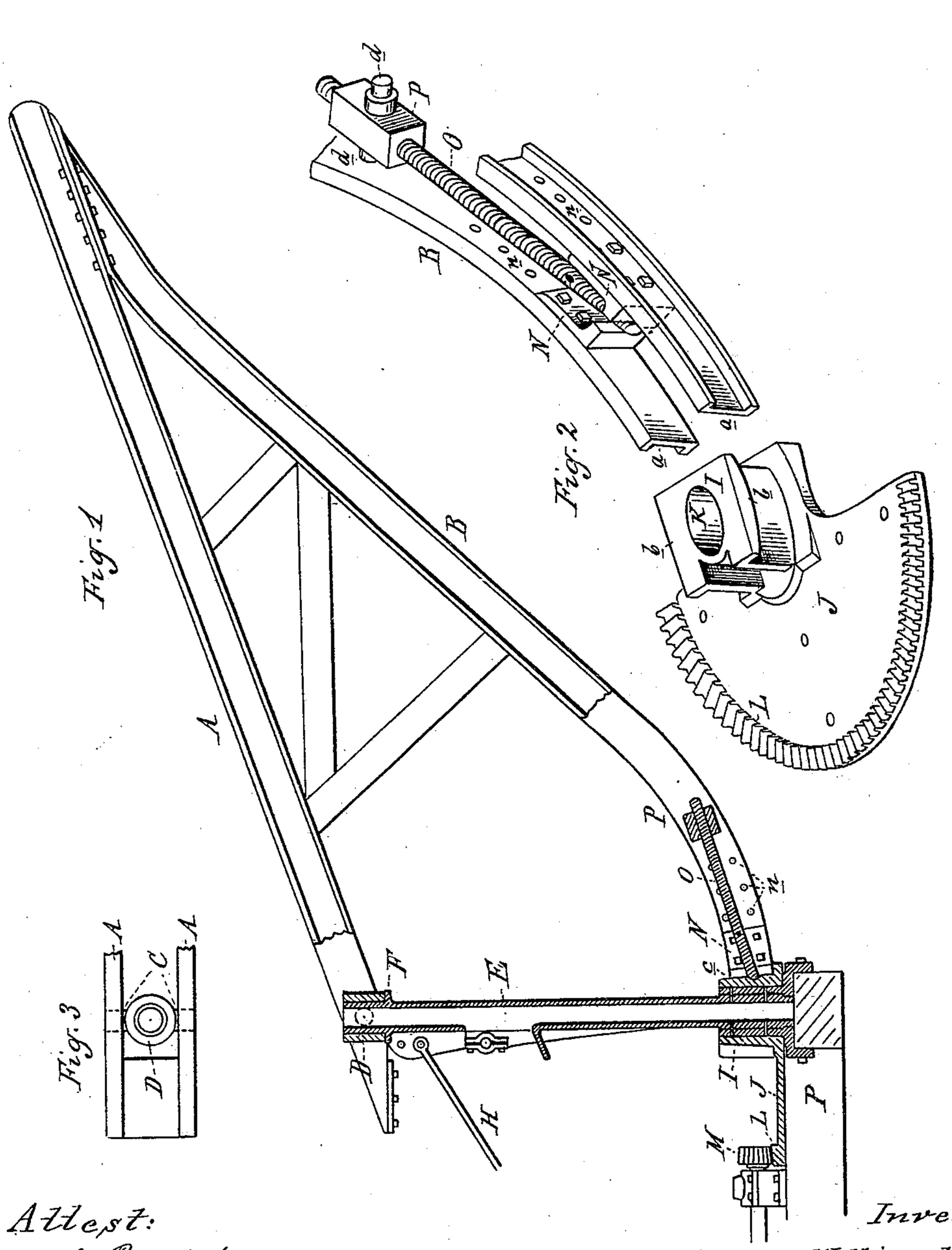
(No Model.)

W. H. RODDA.

EXCAVATING MACHINE.

No. 251,291. Patented Dec. 20, 1881.



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UNITED STATES PATENT OFFICE.

WILLIAM H. RODDA, OF DETROIT, MICHIGAN.

EXCAVATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 251,291, dated December 20, 1881.

Application filed October 12, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. RODDA, of Detroit, in the county of Wayne and State of Michigan, have invented an Improvement in Excavating-Machines, of which the following is a specification.

The nature of this invention relates to certain new and useful improvements in the construction and operation of swinging booms of excavating-machines, and of that class of machines by which heavy bodies are moved by a radial movement from one point to another.

The invention consists in the peculiar construction of the device by means of which the boom may be raised or lowered rapidly, and in combination therewith the devices by which the boom has its radial movement, substantially as hereinafter described.

Figure 1 is an elevation in vertical longitudinal section; and Fig. 2 is an enlarged detail, partially in section. Fig. 3 is a top plan of the mast.

In the accompanying drawings, which form a part of this specification, A represents the upper rail, and B the lower rail, of a boom for an excavating-machine. The rail A is supported at one end upon trunnions C, having bearings in the circular box D, which is sleeved upon the vertical shaft or mast E, resting upon a shoulder, F, thereon, in such a manner that said rail A may have both a vertical movement upon its trunnions and a rotary horizontal movement upon the circular box D.

H is a brace and tie-rod, one or more of which, as is necessary, are employed to support the vertical mast E. The lower end of this mast is rigidly secured to a platform, P, in any desired manner.

The rail B of the boom, at its outer end, is rigidly secured to the rail A. The opposite end of this rail is curved upon a circle the center of which is in the axis of the trunnions C, upon which the rail A is supported. This rail B is made in two parts, as shown in Fig. 2, so that its free ends *a* will embrace the flanged slide-block I, to which is rigidly secured the semicircular turn-table J; and through the slide and turn-table is a bore, K, through which the bottom of the mast passes, such bore allowing the turn-table and slide to rotate upon the mast. The periphery of this turn table J is provided with a rack, L, which engages with a pinion, M, at the end of a shaft, to which any suitable power is applied for operating such turn-table. The free ends *a* of the rail B embrace the sides of the slide I, which is provided with flanges *b* to guide the rail B.

N are angle-irons fitting between the two sides of the rail B, to which such angle-irons are secured by suitable bolts and nuts. When thus secured in place, the exposed flat face of such angle-iron abuts against the front *c* of the slide and converts the rail B into a brace for the rail A. It frequently becomes necessary, when such boom is secured to a car, that the outer end thereof should be adapted to be lowered to the plane of the top of the mast in order to pass under bridges over a railway-track. This has heretofore been accomplished by removing the braces and unscrewing the nuts which connect the outer end of the boom-rails to allow the same to be lowered.

To obviate the difficulties heretofore found in the construction of excavators, I provide the slide and the peculiar construction of the curved rail-brace B, so that by simply removing the angle-irons N the end of the boom may be lowered the required distance, the sides of the rail embracing and being guided in such movement by the slide I. To limit and regulate this movement I provide a screw, O, and a nut, P, which nut is provided with trunnions *d* upon each side, which trunnions have bearings in the two parts of the rail B. The free end of this screw passes between the angle-irons N, as shown in Figs. 1 and 2, and impinges against the front of the slide. The angle-irons being removed, the screw still upholds the boom, and on running the screw up or down then raises or lowers the outer end of the boom. When raised to its desired position the angle-irons are put in place and secured, in order to furnish a more firm bearing, for without it a heavy strain upon the outer end of the boom would have a tendency to bend the screw, and the angle-irons relieve the strain upon the end of the screw, except when such irons are removed for the purpose of adjusting vertically the end of such boom. The rail B is provided with a series of bolt-holes, *n*, to allow the adjustability of the angle-irons at any desired point.

What I claim as my invention is—

1. A boom for an excavator, the upper rail of which is adapted to move vertically and lat-

erally upon a radius from the mast, such vertical radial movement being controlled and limited by the rail B, constructed substantially as described, and the slide I, substantially as and for the purposes specified.

2. In a boom for an excavating-machine, and as a means for controlling the movements of the lower rail of said boom, the slide I and turn-table J upon the foot of the mast, substantially as set forth.

3. The combination of the rails A B, trunnions C, box D, turn-table J, slide I, screw O, nut P, and angle-irons N, the parts being constructed, arranged, and operating substantially as and for the purposes described.

4. In a vertically-adjustable boom, the curved lower rail, B, provided with adjustable angle-irons N, as and for the purposes shown and described.

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Witnesses:
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