

(No Model.)

2 Sheets—Sheet 1.

W. G. STEVENSON.  
GRINDING PAN.

No. 462,336.

Patented Nov. 3, 1891.

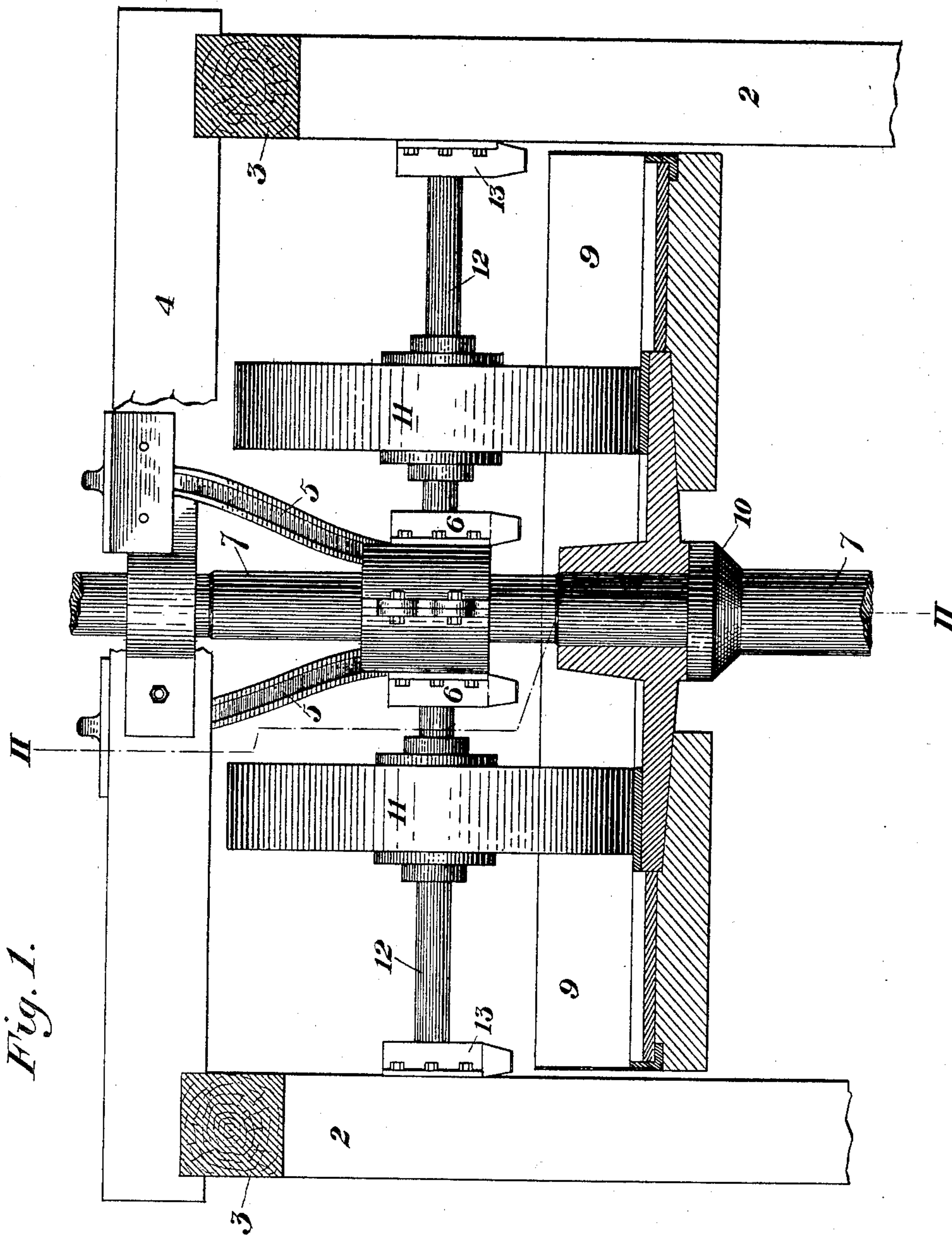


Fig. 1.

Witnesses

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L. J. Symes

Inventor

William G. Stevenson

by W. Baxendale & Sons

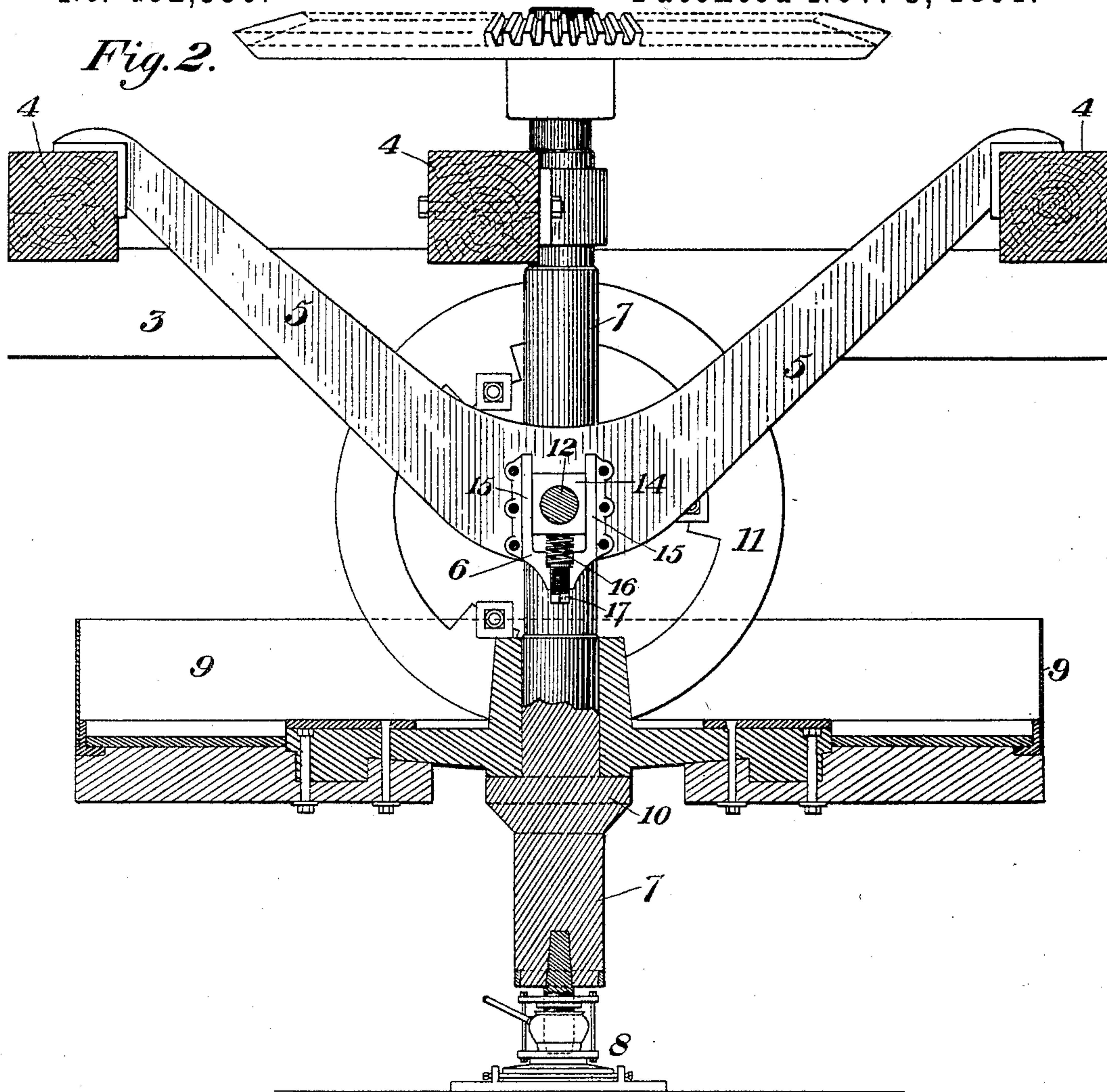
Attorneys

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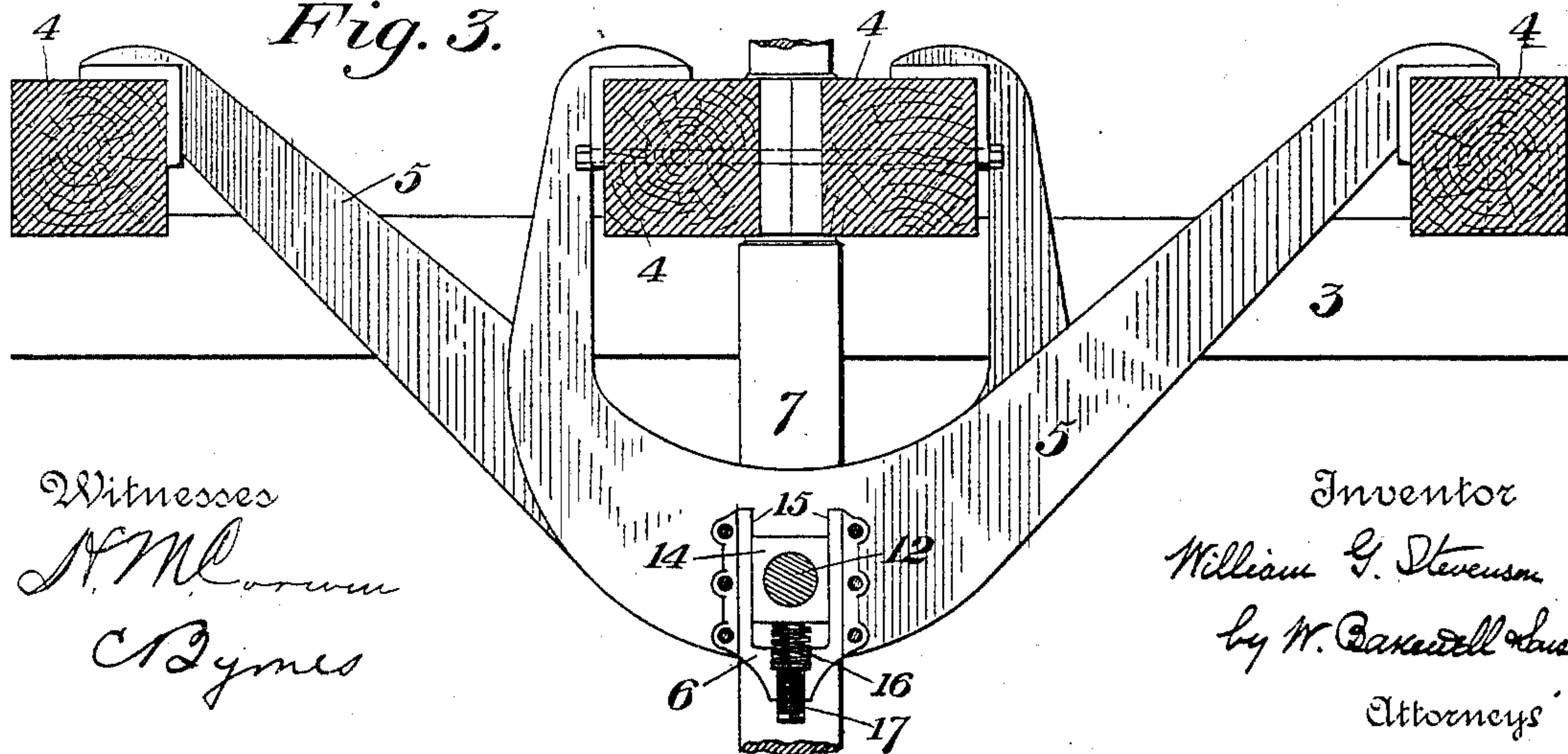
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*Fig. 2.*



*Fig. 3.*



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*William G. Stevenson*  
by *W. B. Baxendale*  
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# UNITED STATES PATENT OFFICE.

WILLIAM G. STEVENSON, OF WELLSVILLE, OHIO, ASSIGNOR TO STEVENSON & COMPANY, OF SAME PLACE.

## GRINDING-PAN.

SPECIFICATION forming part of Letters Patent No. 462,336, dated November 3, 1891.

Application filed May 19, 1891. Serial No. 393,298. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM G. STEVENSON, of Wellsville, in the county of Columbiana and State of Ohio, have invented a new and useful Improvement in Grinding-Pans, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

10 Figure 1 is a side elevation, partly in section, of my improved grinding-pan. Fig. 2 is a cross-section on the line II II of Fig. 1. Fig. 3 is a similar cross-section showing a modification.

15 My invention relates to the construction of grinding machinery in which heavy rollers are employed, and is designed to prevent vibration and straining of the frame-work, and also to make the machine stronger and less liable to breakage, which often necessitates troublesome delays for the purpose of repairs.

25 The frame-work of my machine consists of the end uprights 2 2, cross-pieces 3 3, connecting the upper portions of the uprights, and beams 4 4, running longitudinally and bolted to the cross-pieces. These longitudinal beams are three in number, and from the outer pair depend the hangers 5, which bend 30 downwardly and inwardly to support at their lowest portion sliding bearings 6, and are extended laterally at such point to surround and form a vertical bearing for the pan-shaft 7. This shaft 7 is supported in a step 8 below the pan, passes upward through a collar on the middle beam 4 and is provided at its upper end with a bevel gear-wheel, by which motion is transmitted to the pan 9. This pan is supported upon and rigidly secured to an annular ring 10, which surrounds and is integral with the shaft 7, and therefore rotates 35 with the shaft 7. Upon the inner surface of the pan rests the rolls 11, having shafts 12, which enter the sliding bearings 6 and 13, which bearings are bolted respectively to the hangers 5 and the uprights 2. In each of the bearings 6 and 13 a bearing-block 14 slides in 45 guideways 15, and is supported upon a spring 16, the tension of which may be regulated by

means of an adjusting-screw 17, bearing upon its lower end, all as shown in Fig. 2.

In Fig. 3 I show a modification in which the hangers 5, instead of resting upon the outer beams, are each bent upwardly near the center and are supported on opposite 55 sides of the middle beam 4.

The operation is as follows: Power being transmitted to the shaft 7 by means of the bevel gear-wheel the pan is rotated, and the rolls, by their frictional contact with said 60 pan, are also revolved. The ore or other material being fed into the pan is crushed by the heavy rolls, and whenever either roll passes over a large clod or lump the sliding bearings allow the same to rise and pass over 65 the clod, thus preventing the straining of the frame, which would necessarily arise where a single shaft carried both rolls.

The advantages of my construction lie in the great strength which results from the 70 peculiar shape and position of the hangers and in the absence of any binding in the bearings, which would tend to crack and destroy the same. This freedom from binding results from the independence of motion of 75 the rolls, which are supported on separate shafts.

Many changes will suggest themselves to those skilled in the art, and I therefore do not wish to limit myself to the exact construction shown; but

What I claim is—

1. A frame-work for pan-crushers, comprising end supports, longitudinal beams connecting said supports, and hangers depending 85 from the connecting-beams and bent inwardly to surround and form a bearing for the pan-shaft, substantially as and for the purposes described.

2. A grinding-machine comprising a rotary 90 pan, rolls resting upon said pan, a separate shaft for each roll, sliding bearings at each end of the roll-shafts, and springs supporting said bearings, substantially as and for the purposes described.

3. A grinding-mill comprising uprights, longitudinal beams connecting said uprights, hangers depending from said beams and ex- 95

tending inwardly to a bearing, a shaft passing through said bearing and provided with a pan, sliding bearings mounted on the frame uprights and upon the hangers, and rolls  
5 resting upon the pan and having separate shafts entering said sliding bearings, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 16th day of May, A. D. 1891.

WILLIAM G. STEVENSON.

Witnesses:

P. M. SMITH,  
W. E. SMITH.