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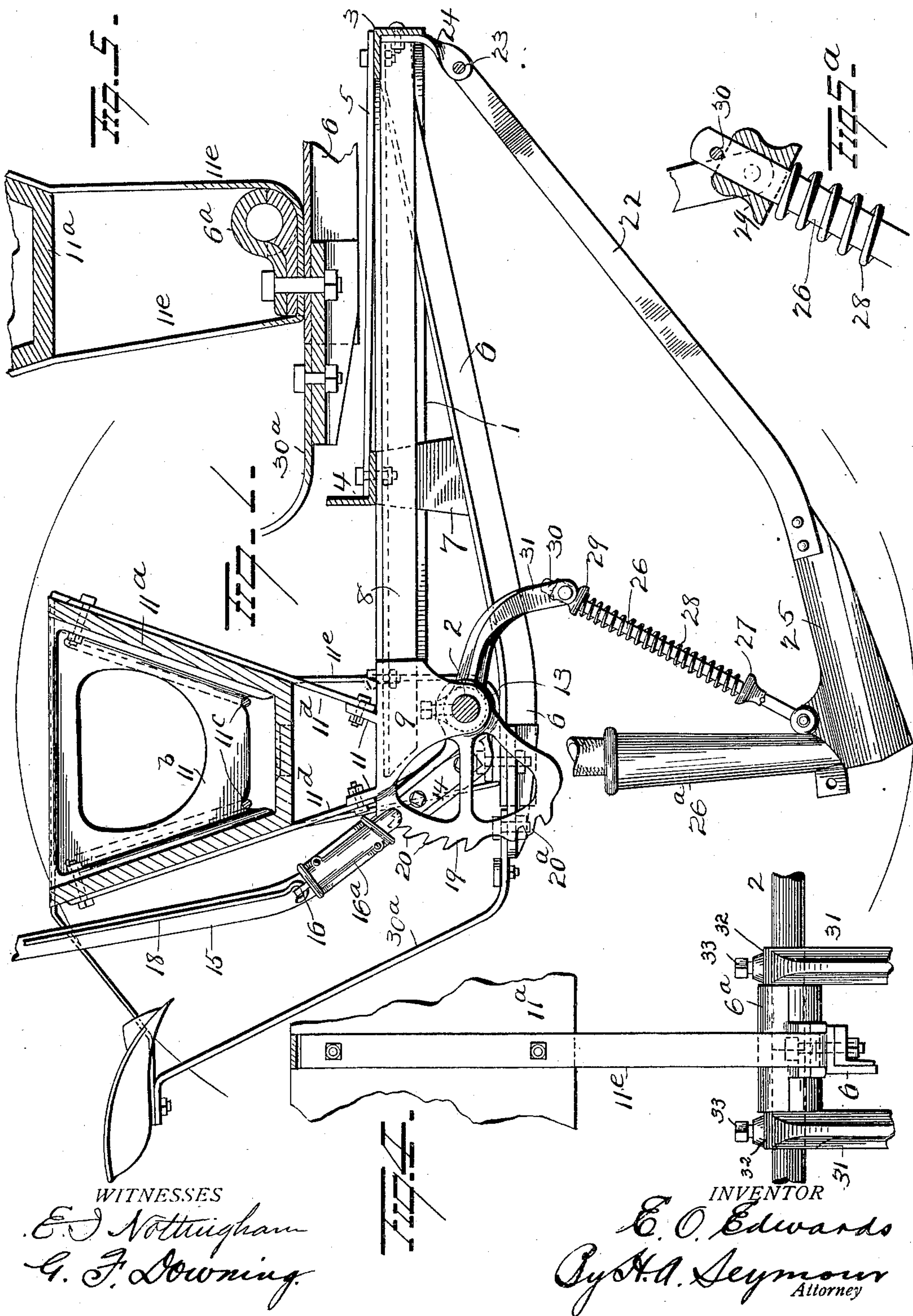
Patented Apr. 23, 1901.

E. O. EDWARDS.  
GRAIN DRILL.

(Application filed Oct. 3, 1900.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES

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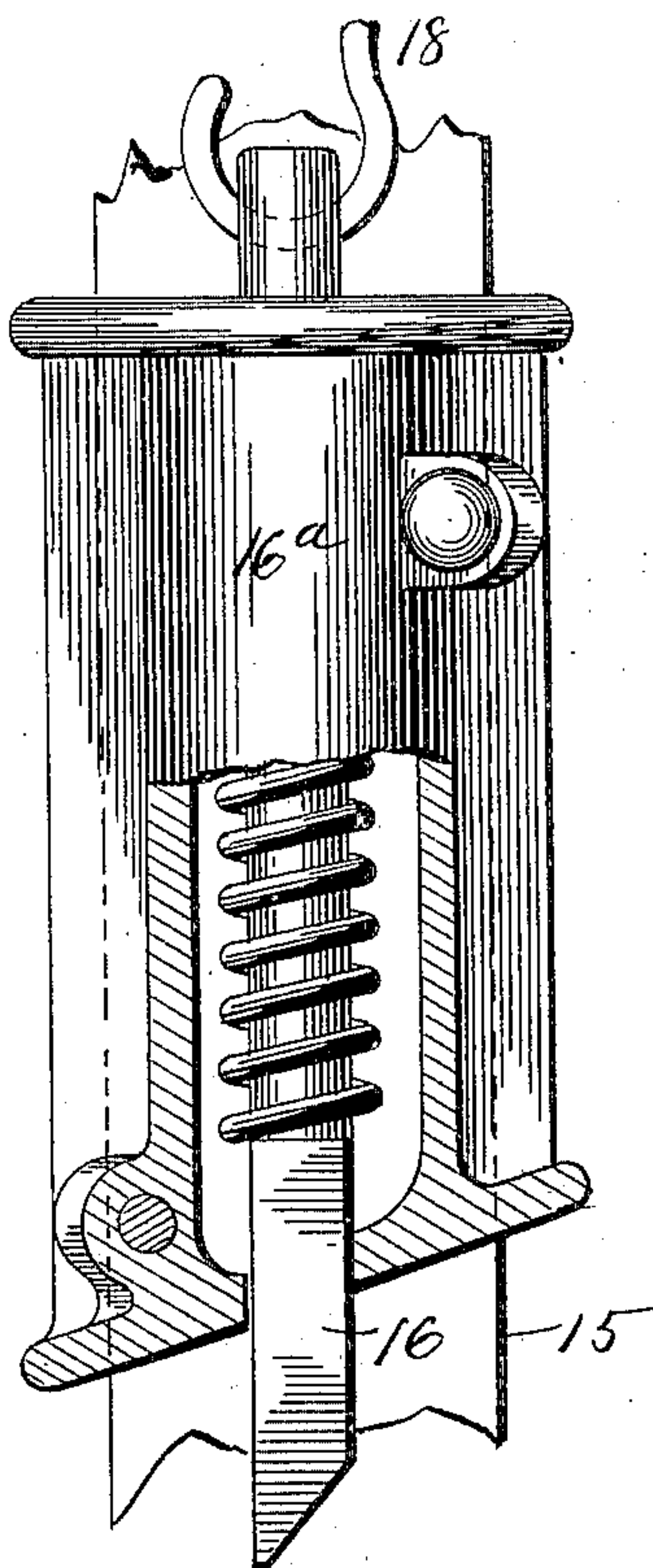
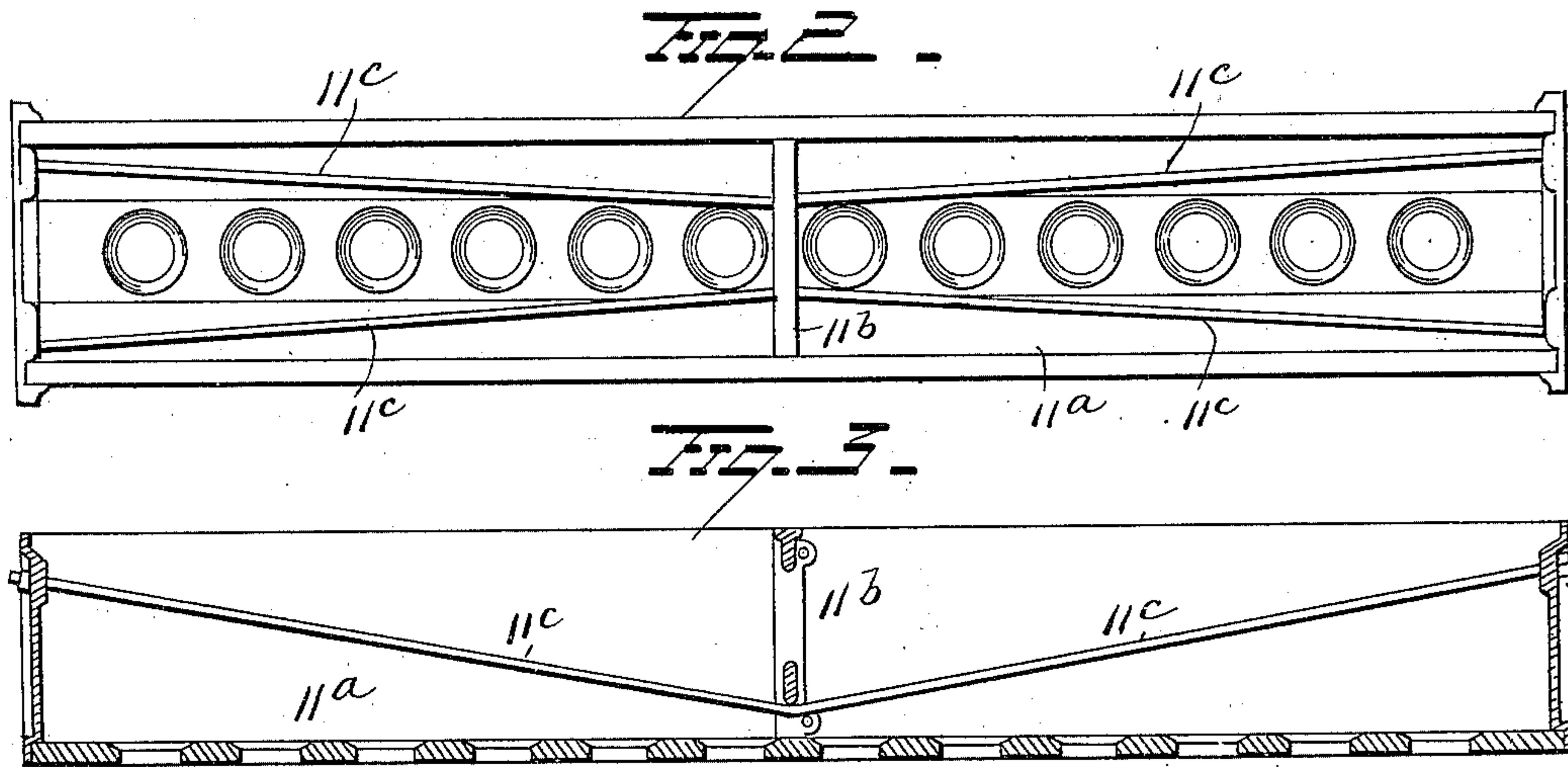
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**FIG. 5.**

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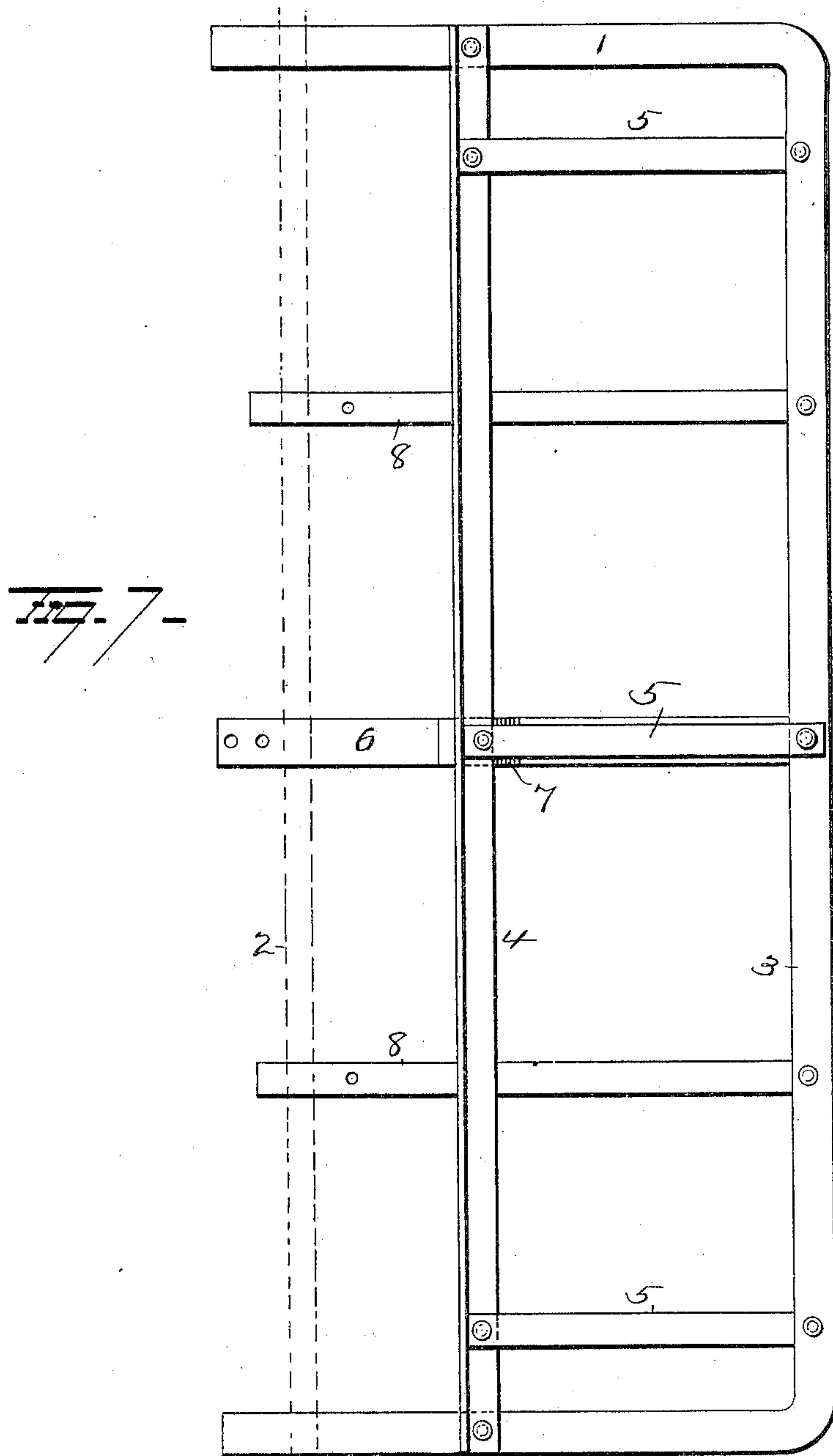
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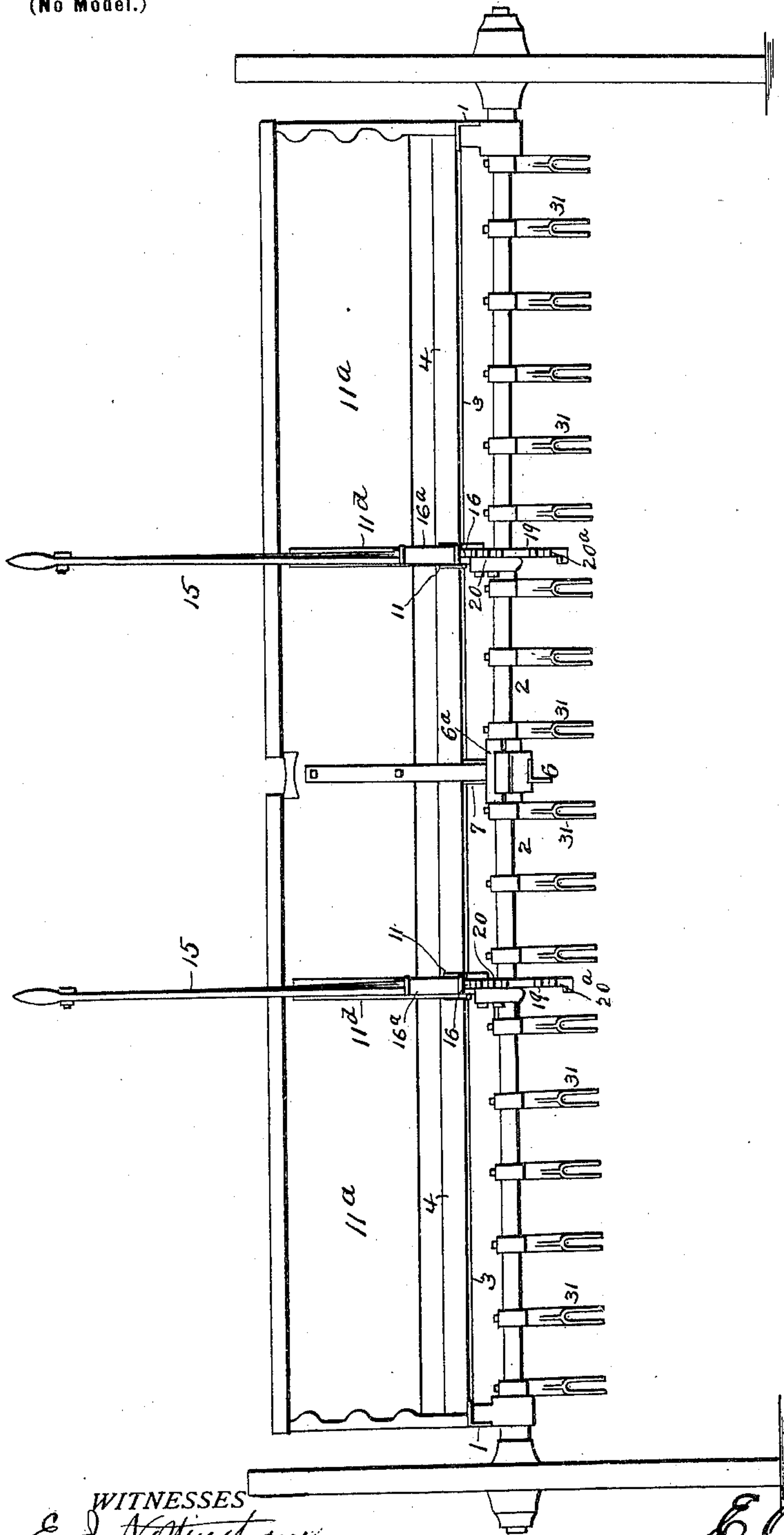
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# UNITED STATES PATENT OFFICE.

EUGENE OSBORNE EDWARDS, OF LA CROSSE, WISCONSIN, ASSIGNOR TO  
FOUNTAIN CITY DRILL COMPANY, OF SAME PLACE.

## GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 672,476, dated April 23, 1901.

Application filed October 3, 1900. Serial No. 31,902. (No model.)

*To all whom it may concern:*

Be it known that I, EUGENE OSBORNE EDWARDS, of La Crosse, in the county of La Crosse and State of Wisconsin, have invented certain  
5 new and useful Improvements in Grain-Drills; 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  
10 use the same.

My invention relates to an improved seed-drill, one object of the invention being to provide a seed-drill with improved mechanism for raising, lowering, and regulating the  
15 spring-pressure of the furrow openers or shoes.

A further object is to provide a drill with improved supporting-frame which will be rigid and strong and maintain the operating  
20 mechanism of the drill always true.

A further object is to so construct a seed-drill employing a divided axle that the major portion of the weight of the seedbox will be disposed some distance laterally from the  
25 bearing of the inner ends of the axle-sections, and thus prevent the latter from sagging.

A further object is to provide a seed-drill which will be simple in construction, in which broken or injured parts can be readily re-  
30 moved and replaced, and which will be of the minimum draft when in use.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts,  
35 as will be more fully hereinafter described, and pointed out in the claims.

In the accompanying drawings; Figure 1 is a view in section illustrating my improvements. Figs. 2 and 3 are views of the seed-  
40 box 11<sup>a</sup>. Figs. 4, 5, 5<sup>a</sup>, and 6 are views of details of construction. Fig. 7 is a plan view of the frame, and Fig. 8 is a rear elevation of a portion of the machine.

The frame of my improved drill comprises  
45 parallel longitudinal angle-irons 1, having bearings secured to them at their rear ends for the axle 2 and connected at their forward ends and between their ends by transverse angle-irons 3 and 4, respectively, and suit-  
50 able metal braces 5 are provided between angle-irons 3 and 4 to strengthen the frame.

The axle 2 is made straight and in two sections when the machine is of any considerable width, and the inner adjacent ends of the axle-sections are supported in an elongated  
55 bearing 6<sup>a</sup> on an angle-iron arm 6, secured at its forward end to the iron 3 and connected with iron 4 by block 7, so as to form a rigid bearing for the inner ends of the axle-sections. It will be seen that by making the axle  
60 in two sections the mechanism connected therewith can be operated independently, and thus greatly relieve the operator.

On each side of arm 6 and some distance laterally from said arm and central bearing  
65 6<sup>a</sup> and irons 1 are provided angle-iron arms or stubs 8, secured at their forward ends to front cross-iron 3, and have secured to their rear ends castings 9, having bearings for the reception of the axle-sections. Divergent  
70 lugs 11 project upwardly from castings 9 and bars or straps 11<sup>e</sup> and 11<sup>d</sup> connect the lugs with the seedbox 11<sup>a</sup>, which latter is supported at its ends by straps connecting it to the irons 1 and connected between its ends by straps  
75 to iron 6.

The seedbox 11<sup>a</sup> is provided with a metal brace 11<sup>b</sup> between its ends, and truss-rods 11<sup>c</sup> connect the brace with the ends of the box, so as to make the same absolutely rigid, and  
80 as the box is secured to both castings 9 it will serve as a rigid support therefor to prevent sagging.

A collar 13 is secured on each axle-section beside the casting 9 and is provided with an  
85 arm 14, to which a lever 15 is secured by bolts and nuts, as shown. A downwardly spring-pressed detent 16 is mounted in a housing 16<sup>a</sup> on one side of the lever 15 and made with a beveled tooth at its end and operated by a  
90 hand-lever at the free end of the lever 15, connected with the detent by a rod 18. The detent 16 is adapted to engage a segment 19 on the casting 9, provided throughout the greater  
95 portion of its length with inclined ratchet-teeth 20 to permit the easy adjustment of the beveled tooth on the detent and with square teeth 20<sup>a</sup> at one end of the segment to more securely lock the detent to the segment. The  
100 lower portion of the segment may be made with inclined notches for the detent and with flat edge between the notches. It will thus



be seen that the detent 16 serves to lock the lever and casting together, and as the latter is secured to the frame it will hold the lever in any position to which it may be moved.

- 5 Drag-bars 22 are connected to the forward part of the frame by a rod 23, which latter is passed through perforated lugs 24, depending from iron 3, and through aligned holes in the forward bifurcated ends of the drag-bars.
- 10 Shoes 25, carrying boots 26<sup>a</sup> to receive seed from the seedbox, are secured in any approved manner to the drag-bars. Rods 26 are pivotally connected at their lower ends to the shoes 25 and have disposed thereon
- 15 near their lower ends collars 27, and coiled springs 28 are mounted on the rods 26. The springs 28 rest at their lower ends on the collars 27 and bear at their upper ends against collars 29, loose on the rods.
- 20 Short arms 31, having bearing-sleeves 32 thereon for the reception of the axle, are secured to the axle at the angle desired by set-screws 33 and are bifurcated at their free ends and pivotally connected to collars 29, a
- 25 pin 30 passing through the rod 26 above the collar 29, so that when the axle-sections are turned in one direction by levers 15 the arms 31 will force collars 29 downward on rods 26, and thus contract springs 28 and force the
- 30 shoes into the ground, and so that when the axle-sections are turned in the reverse direction by the levers 15 the collars 29 will be raised until they strike pins 30 and a continued upward movement of the arms will raise
- 35 the shoes from the ground.

The seat-support 30<sup>a</sup> is secured to the arm 6, thus mounting the seat centrally between the levers 15.

- 40 The operation of my improvements is as follows: When the machine is to be placed in position for planting, the levers 15 are raised, thus revolving the axle-sections and turning arms 31 to contract springs 28, as above described, and forcing the shoes into
- 45 the ground. The depth of planting can be regulated by the position of the levers. When the levers are lowered, the axle will be turned in the reverse direction and the shoes lifted from the ground. This operation of raising
- 50 and lowering the shoes does not change the position of the frame in the slightest, and hence the only work required of the levers is that of adjusting the shoes.

- It will also be seen that the axle-sections
- 55 are not only supported at the meeting ends by the bearing 6<sup>a</sup>, but are supported between their ends by the castings 9; hence preventing any possibility of their sagging under the weight of the machine and driver, whose seat
- 60 will preferably be supported upon the central arm 6, as above explained.

- Various slight changes might be resorted to in the general form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I would have it understood
- 65 that I do not wish to limit myself to the pre-

cise details set forth, but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope 70 of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a seed-drill, the combination with a 75 frame and wheels, of a straight axle mounted in the hubs of the wheels and supported by the frame, crank-arms secured to the axle, shoes pivotally connected with the frame, rod and spring connections between said shoes 80 and crank-arms, a segment secured to the frame and having a bearing for the axle, and a lever secured to the axle and having a latch or detent to engage the segment.
2. In a grain-drill, the combination with a 85 frame, wheels and a straight axle mounted in the hubs of the wheels and extending through the frame, of an arm or stub projecting rearwardly from the frame, a toothed segment secured to the end of said arm or stub and hav- 90 ing a bearing for the axle, a lever fixed to the axle and adapted to be locked to the toothed segment, hinged shoes, crank-arms on the axle and yielding connections between the crank-arms and shoes. 95
3. In a drill, the combination with a frame and wheels, of an axle mounted in said wheels, a toothed segment secured to the frame between the center and end thereof and having a bearing for the axle, a lever se- 100 cured to the axle and adapted to engage the segment and furrow-openers connected with the axle.
4. In a drill, the combination with a frame and wheels, of a divided axle, segments se- 105 cured to the frame intermediate of the ends of the respective axle-sections and said segments having bearings for the axle-sections, levers secured to the axle-sections and adapted to engage the segments, and furrow-open- 110 ers connected with the axle-sections.
5. In a seed-drill, the combination with wheels and axle-sections mounted in the hubs of the wheels, of a frame mounted at its ends on said axle-sections, an arm projecting rear- 115 wardly from the center of the frame, a bearing secured to said arm for the inner ends of the axle-sections, a seedbox secured on the frame and means secured to the latter supporting the axle-sections a considerable dis- 120 tance laterally from said central bearing.
6. In a seed-drill, the combination with a frame, wheels and axle-sections mounted in the hubs of the wheels, of a central arm projecting from the frame, bearing for the 125 inner ends of the axle-sections secured to said arm, castings secured to the frame and having bearings for the axle-sections some distance laterally from the centrally-located bearing, lugs on said castings and a seedbox 130 supported on the frame and connected to said lugs.
7. In a drill, the combination of a rigid frame, independent axle-sections supported



at their outer ends in wheels, a bearing rigidly connected to the rear of said frame and supporting the inner ends of both of said axle-sections, bearings for the center of the axle-sections rigidly secured to the frame, furrow-openers and means connected with the axle-sections for causing the furrow-openers to be raised or lowered independently of the frame when the axle is revolved.

8. In a drill, the combination of an axle and a rigid frame mounted thereon, a bearing for said axle, a toothed segment on said bearing, a lever secured to the axle, a detent on the lever adapted to lock the same and segment together, furrow-openers pivotally connected to the frame, arms rigidly secured to the axle, and rods connecting the free ends of the arms and furrow-openers so that when the axle is revolved by the lever the furrow-openers will be raised or lowered.

9. In a drill, the combination with a frame and an axle, of a casting secured to said frame and having a bearing for the axle, lugs on said casting connected to the seedbox, a segment on said casting having inclined ratchet-teeth thereon throughout the greater portion

of its length and square straight teeth at one end of the segment, a lever secured to the axle, a detent on the lever having a beveled tooth thereon adapted to lock it and the segment together, furrow-openers, and means connecting the axle and furrow-openers in such manner that when the axle is turned by the lever the furrow-openers will be raised or lowered.

10. In a grain-drill, the combination with a frame and a seedbox, an axle or shaft and furrow-openers, of a toothed segment secured to the frame and to the seedbox, and having a bearing for the axle or shaft, a lever secured to the axle or shaft and having a latch to slide over and engage said ratchet-teeth when the lever is raised, arms secured to the axle or shaft and connections between said arms and the furrow-openers.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EUGENE OSBORNE EDWARDS.

Witnesses:

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S. MARTINDALE, Jr.