

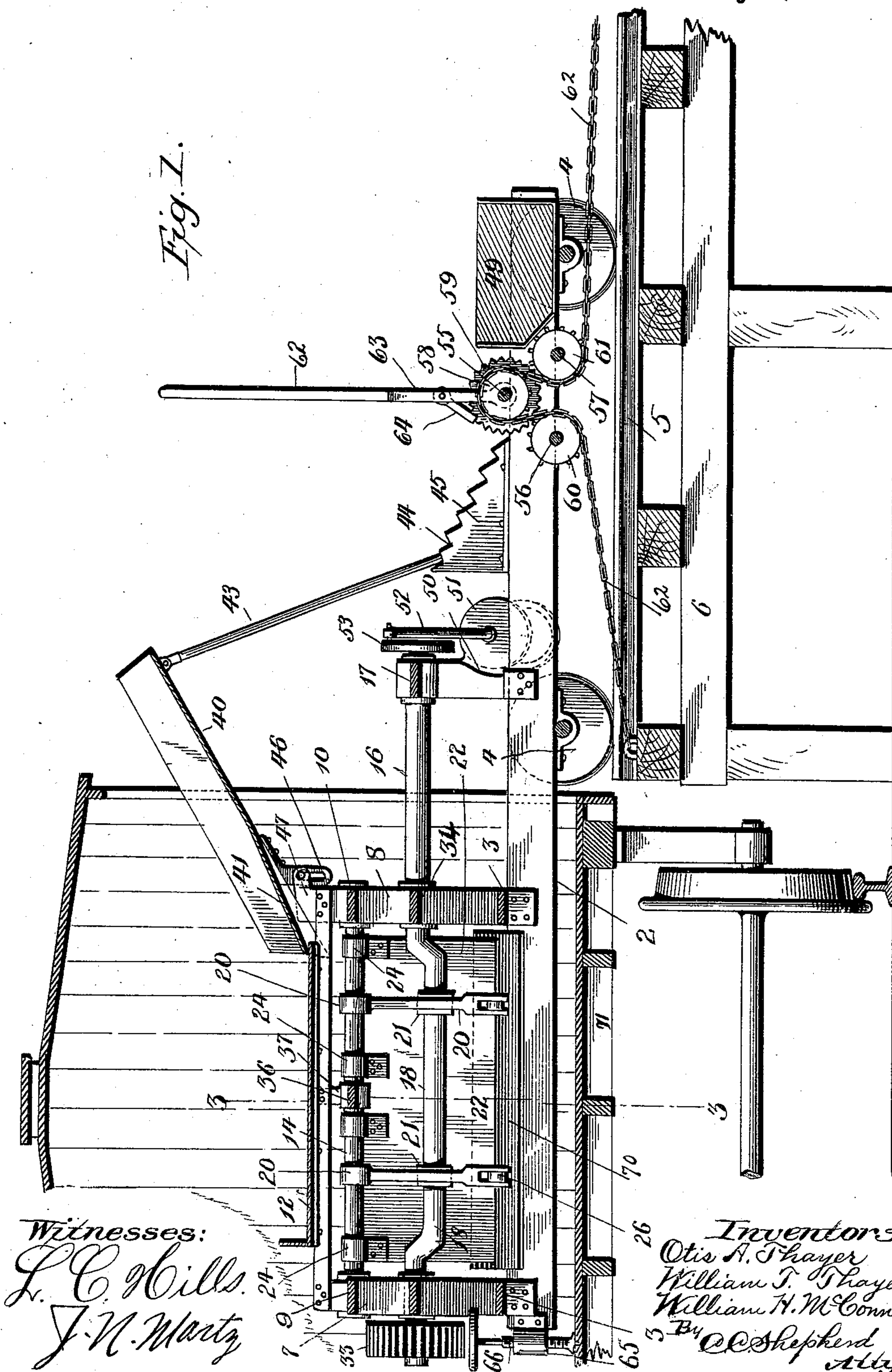
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5 Sheets—Sheet 1.

O. A. & W. T. THAYER & W. H. McCONNELL.
CAR LOADING MECHANISM.

No. 542,381.

Patented July 9, 1895.



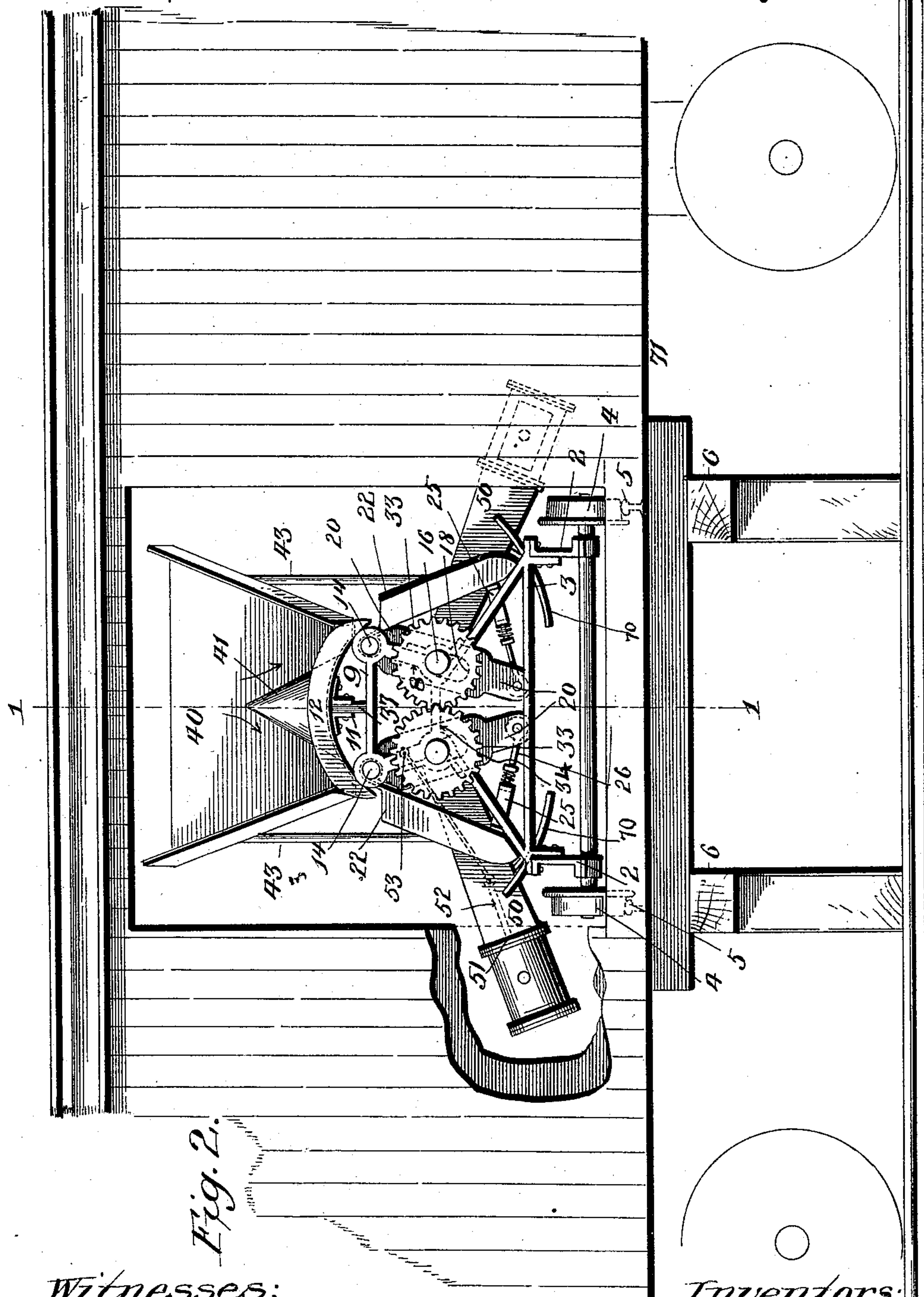
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J. H. Martz

Inventors:
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William H. McConnell
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Atty.

(No Model.)

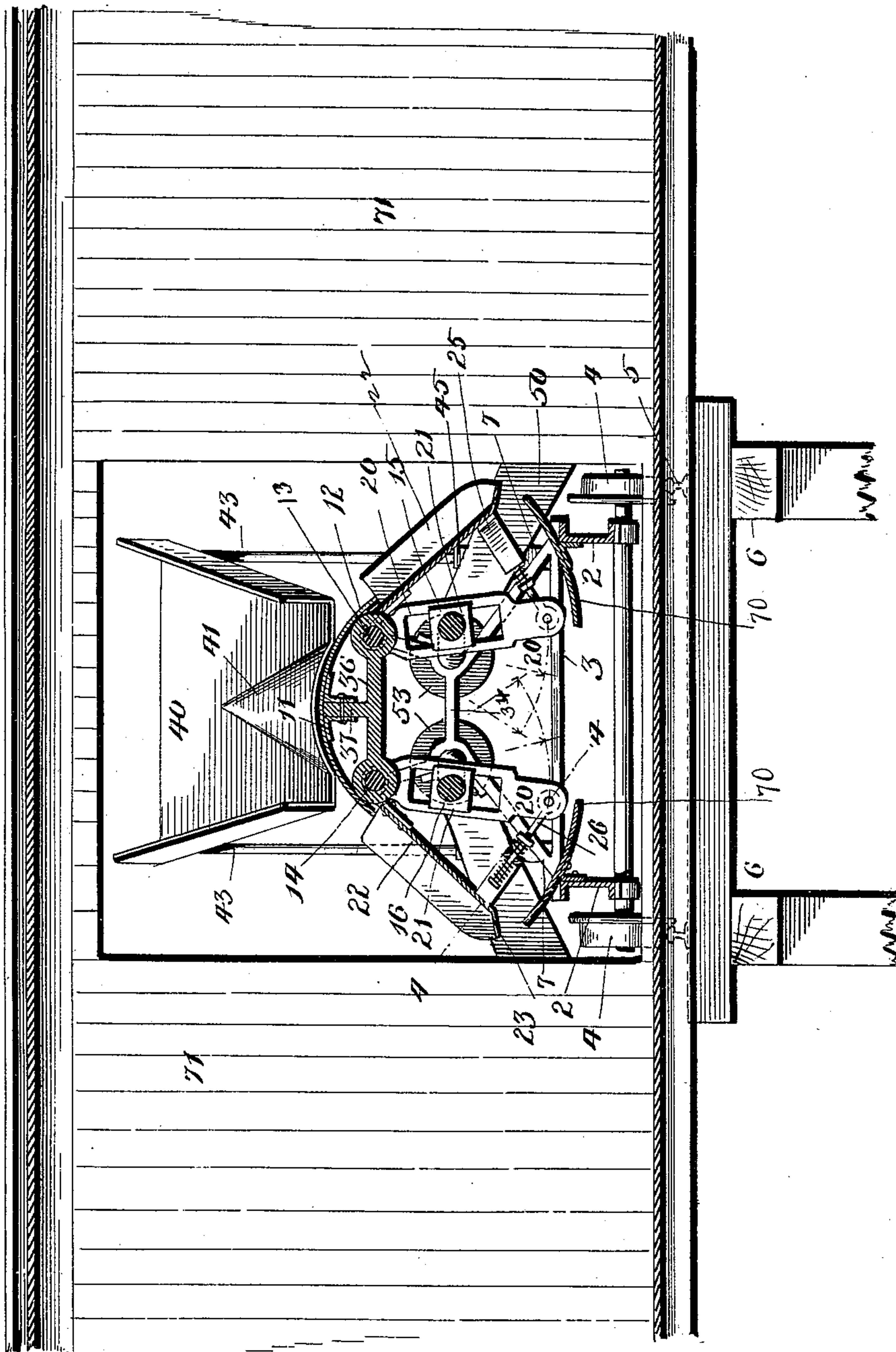
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Fig. 3.



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Fig. 4.

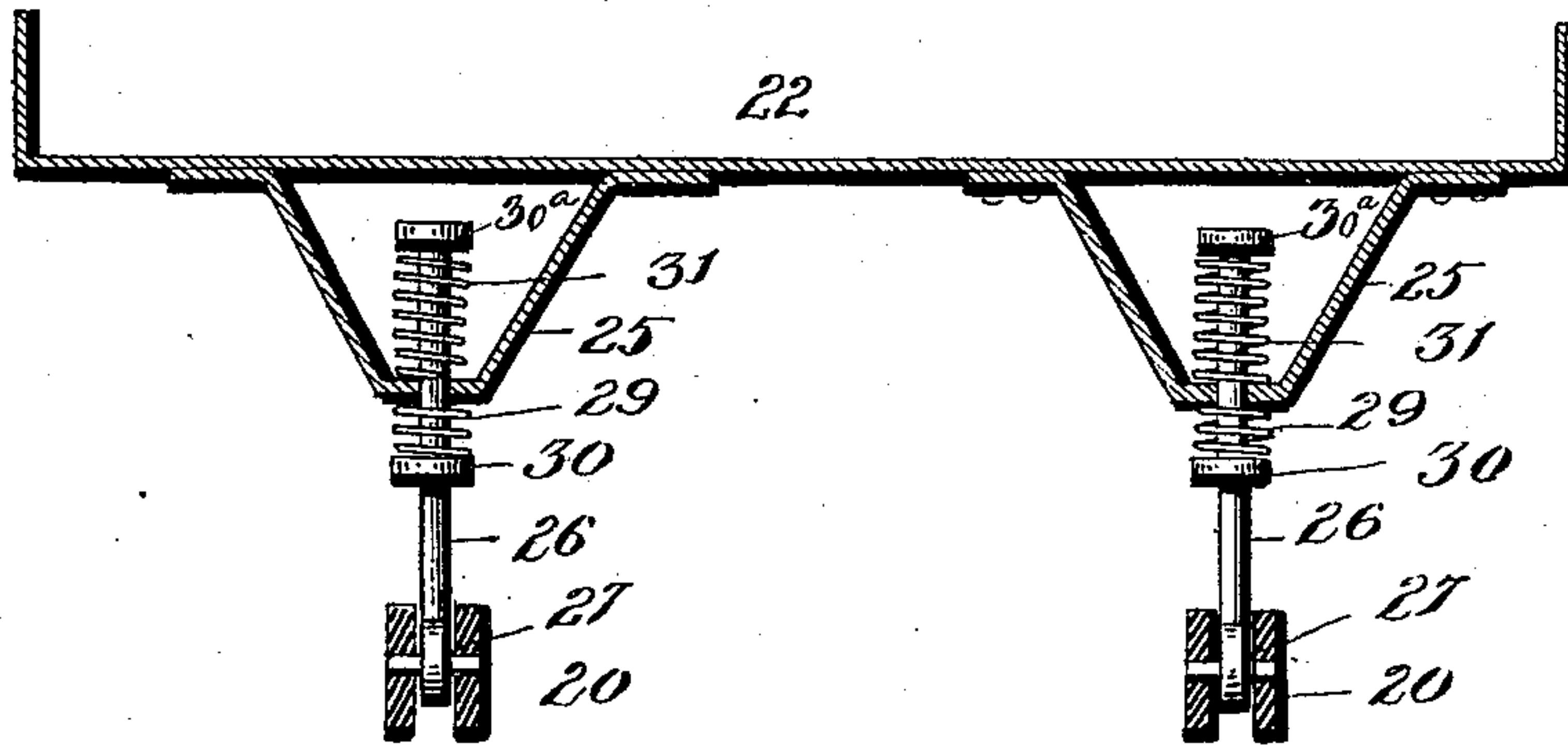


Fig. 5.

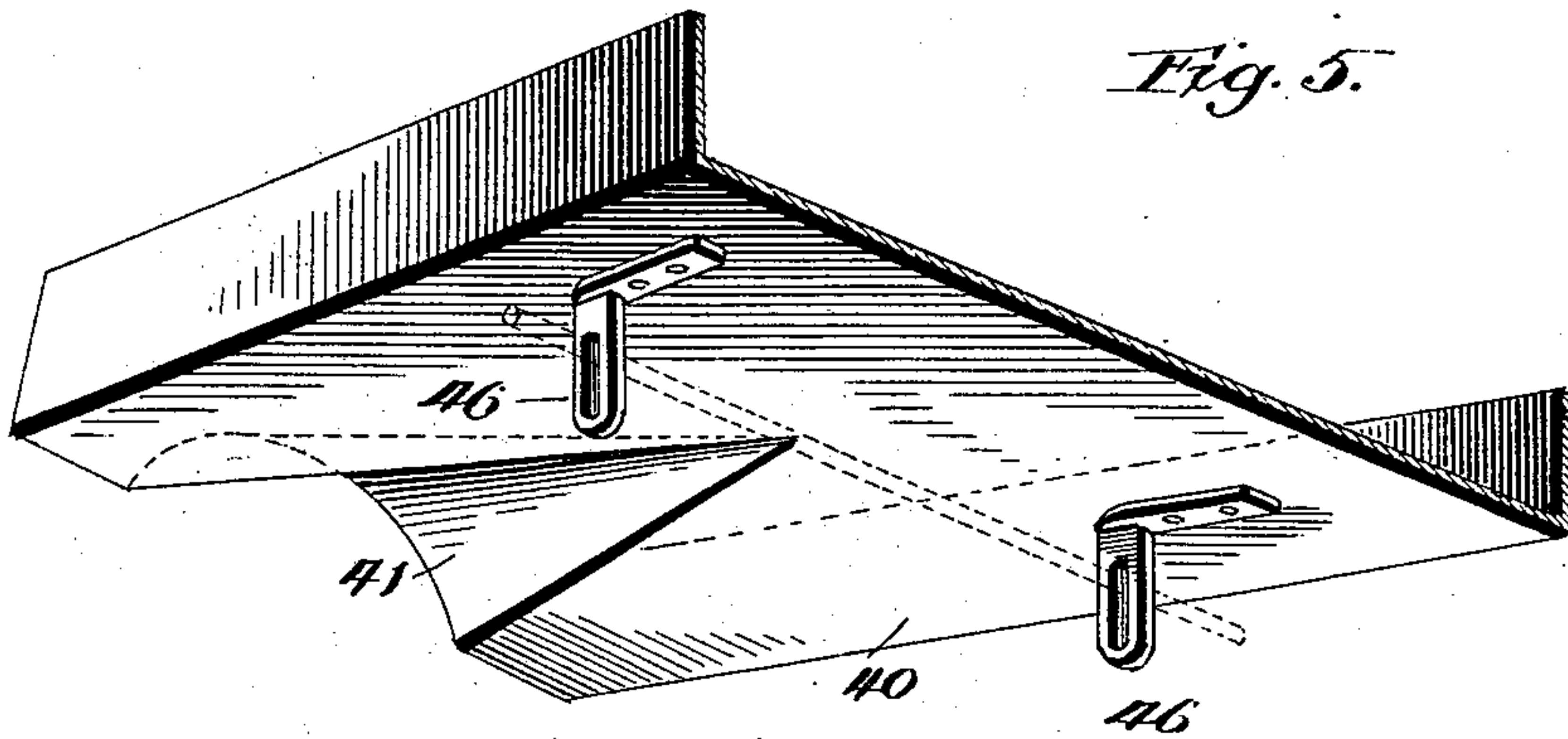


Fig. 6.

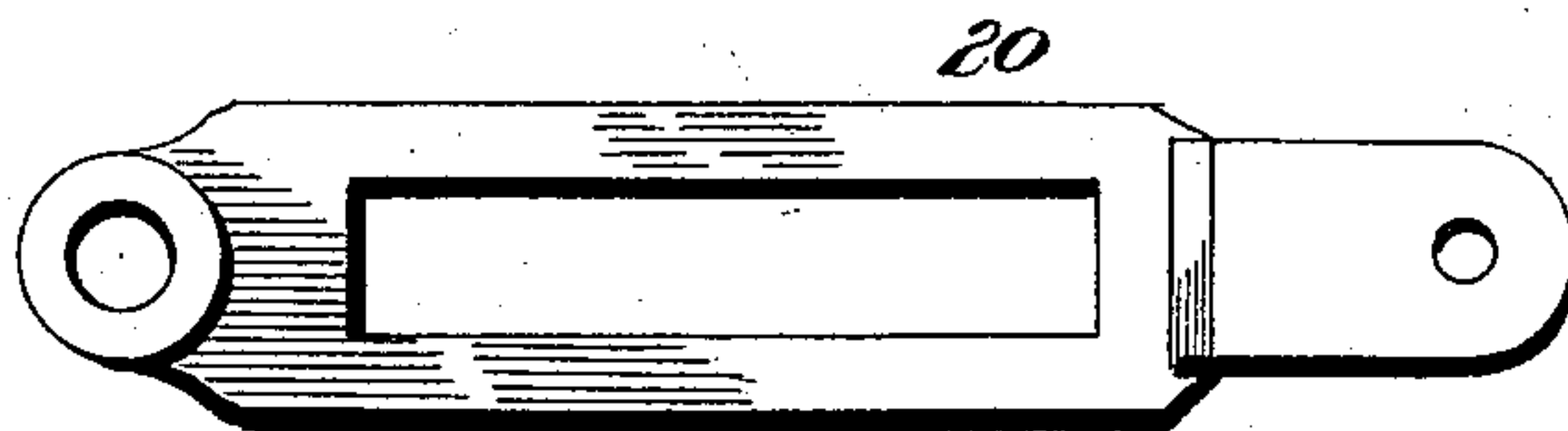
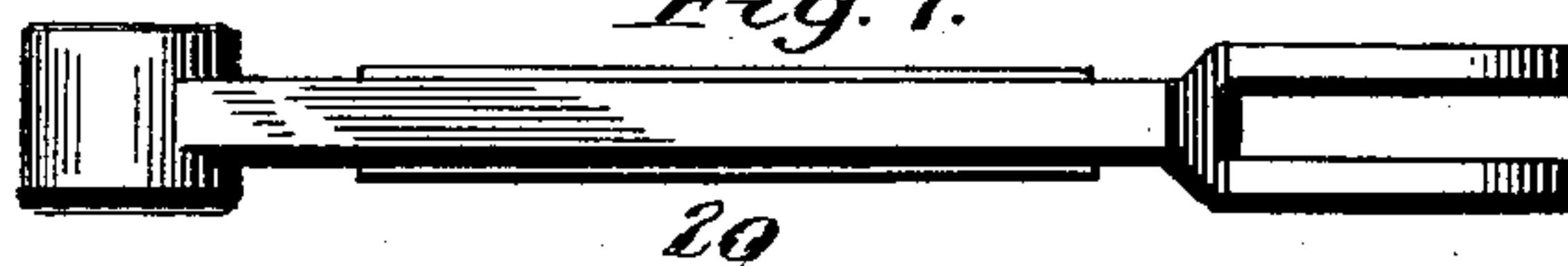


Fig. 7.



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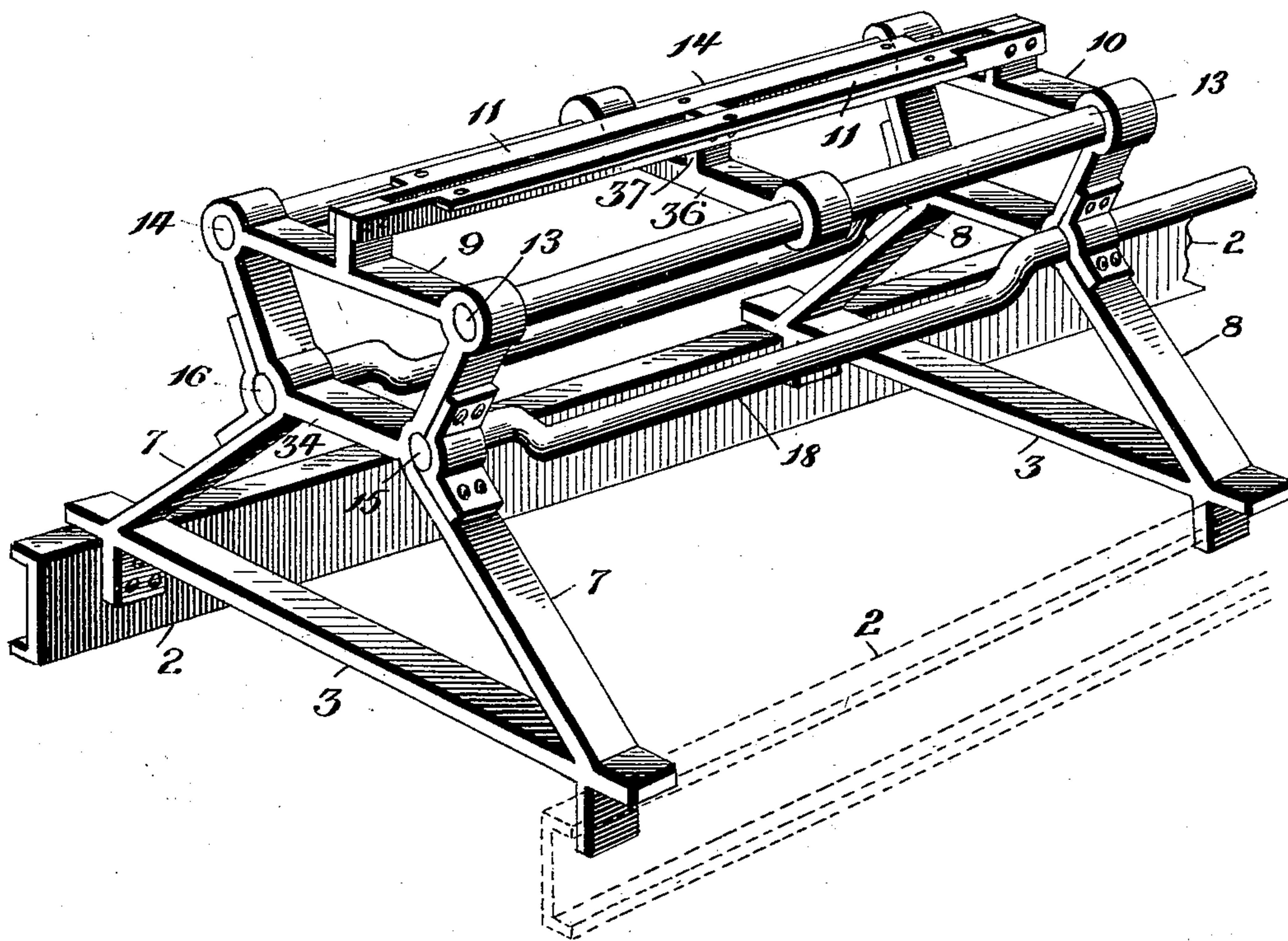
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Fig. 8.



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UNITED STATES PATENT OFFICE.

OTIS A. THAYER, WILLIAM T. THAYER, AND WILLIAM H. McCONNELL, OF
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CAR-LOADING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 542,381, dated July 9, 1895.

Application filed October 24, 1894. Serial No. 526,816. (No model.)

To all whom it may concern:

Be it known that we, OTIS A. THAYER, WILLIAM T. THAYER, and WILLIAM H. McCONNELL, citizens of the United States, residing at Charleston, in the county of Kanawha and State of West Virginia, have invented a certain new and useful Improvement in Car-Loading Mechanism, of which the following is a specification.

Our invention relates to the improvement of car-loading machines of that class which are adapted to handle coal or other material.

The objects of our invention are to provide a loading mechanism of this class of superior construction and arrangement of parts; to so construct said machine as to impart a variable motion to the shovels; to provide means for discharging the coal or other material at desirable points within the car or other receptacle; to admit of the car being loaded rapidly with comparatively slight damage to the coal or other material; to admit of the coal being discharged on both sides of the center of the car simultaneously and to provide in conjunction therewith means for regulating the discharge in either direction with reference to quantity, and to produce other improvements, the details of construction of which will be more specifically pointed out hereinafter. These objects we accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a central longitudinal section of our machine, showing the same projected into a car. Fig. 2 is a front elevation of the same. Fig. 3 is a transverse section on line 3 3 of Fig. 1. Fig. 4 is an enlarged sectional view on line 4 4 of Fig. 3. Fig. 5 is a detail view, in perspective, of the chute as viewed from the under side thereof. Fig. 6 is a face view, in detail, of one of the pendulums. Fig. 7 is a side elevation of the same. Fig. 8 is a perspective view of the frame of the machine.

In the construction of our device we employ a base-frame consisting of parallel longitudinal channel bars or beams 2, which extend throughout the length of the machine. These beams 2 are connected by suitable cross-pieces 3, one of which is arranged at the forward end of the frame and the other at a point in

rear thereof. The rear half of the base-frame thus produced is mounted, as shown, upon suitable track-wheels 4, the latter being adapted to run upon track-rails 5, which are supported upon a suitable elevated structure 6.

7 represents oppositely-located standards or brackets, which rise from opposite ends of the cross-piece 3 at the forward end of the frame, and 8 represents similar brackets, which rise from the rear cross-piece 3. These bracket-arms are of the substantially V shape shown, and the upper ends of each pair are connected by cross-pieces 9 and 10. The central portions of these cross-pieces are connected, as shown, by longitudinally-arranged angle-bars 11, the latter being secured to the under side of a convex plate or apron 12.

In the upper ends of the standards or brackets 7 and 8 are supported parallel shafts 13 and 14, which run, as shown, lengthwise of the machine. In the central portions of said brackets are journaled parallel shafts 15 and 16, the rearwardly-extending portions of which are journaled in brackets 17, which rise from the rear portion of the base-frame. The shafts 15 and 16 are formed between the brackets 7 and 8 with cranks, as indicated at 18. Pivoted on each of the shafts 13 and 14, and at a distance from each other, are the upper ends of two swinging pendulums 20, the latter being shown most clearly in Figs. 6 and 7 of the drawings. Each of these pendulums has formed therein a longitudinal mortise, in which is adapted to fit and slide a block 21. Through these blocks pass, as shown, the crank portions of the shafts 15 and 16.

22 represents the shovels, each of which consists substantially of a base-plate having elevated side pieces. The lower end portion of this base-plate is, as indicated at 23, turned outward at an obtuse angle with the body thereof. As shown in the drawings, two of said shovels are employed, being arranged opposite each other and having a swinging connection with the shafts 13 and 14, from which they are suspended by means of eye-pieces 24. From the under side of each of the shovels near its outer or lower end project stirrup-

shaped brackets 25. We provide two rods or bolts 26, the inner ends of the latter being, as indicated at 27, pivotally connected with the outer or lower ends of the pendulums, which are on the corresponding side of the machine. These rods 26, extend outward and pass loosely through the ends of the brackets 25.

29 represents a coiled spring, which surrounds the rod 26 on the rear side of each of the brackets 25 and bears between said bracket and a stop lug or collar 30 on said rod. The outer extremity of each of the rods 26 is provided with a flanged nut 30^a, and between said nut and the end of the bracket 25 is interposed a coiled spring 31.

On the forward end of each of the crank-shafts 15 and 16 is carried a gear-wheel 33, said gear-wheels being of equal size and gearing one with the other.

For the sake of imparting the desired rigidity to and strengthening the parts, we preferably connect the brackets 7 by arms 34, the latter being arranged in line with or opposite the points where the crank-shafts bear within said brackets.

36 represents a transverse yoke, which connects the shafts 13 and 14 at about the centers of their lengths. This yoke is provided with an upwardly-projecting central arm 37, which is connected with the angle-bars 11.

40 represents an inclined chute, which converges toward its lower end and which, as indicated more clearly in Fig. 5 of the drawings, is formed in its lower half with a central half-conical elevation or spreader 41, the lower and larger end of which fits over and conforms to the curve of the convex apron 12. The outer end portion of the chute is adjustably supported by means of prop-arms 43, which are pivotally connected with said chute. The lower ends of these props are adapted, as shown, to rest upon the desired ones of a number of graduated steps 44, formed in brackets 45, which are supported on the rear portion of the base-frame.

46 represents slotted hangers, which project from the under side of the forward portion of the chute-body, said hangers being pivotally supported upon lugs 47, which extend from the upper ends of the standards or brackets 8. On the rear portion of the base-frame is carried a suitable weight 49, the latter being adapted to act as a counterbalance for that portion of the machine which is projected beyond the track-wheels 4.

With the standard 17 are formed outwardly-extending frame-arms 50, each of which supports a steam-cylinder 51. These steam-cylinders are provided with the usual pistons 52, which connect with wrist-pins on the outer faces of disks 53, the latter being carried, respectively, on the rear ends of the crank-shafts.

On the rear portion of the base-frame we journal a transverse shaft 55, and below and

on opposite sides of said shaft are journaled similar parallel shafts 56 and 67. On the shaft 55 are carried, adjacent to each other, a chain or sprocket-wheel 58 and a ratchet-wheel 59, while on the shafts 56 57 are carried sprocket-wheels 60 and 61.

62 represents a chain which runs over the wheel 58 and thence about the inner portions of the wheels 60 61, the ends of said chain being secured, respectively, to a forward and rear point on the track structure 6.

62' represents a hand-lever, the lower end being fulcrumed on the shaft 55. This hand-lever has its lower portion forked at 63, and within said forked portion is pivoted a pawl 64, the latter being adapted to engage with the upper sides of the ratchet-wheel teeth on either side of the lever.

At each of the forward corners of the machine-frame we provide a projection 65, the latter being provided with a threaded opening therethrough. Through each of these openings is passed a screw-stud 66, the latter being adapted to be turned downward into a car-floor, and thereby retain the forward portion of the machine in the desired position.

70 represents concave floor-plates, one of which is supported longitudinally from the inner side of each of the beams 2. These floor-plates describe arcs of circles struck from the pivot-points of the shovels and slightly greater than those described by the lower ends of the shovels in their movements, as hereinafter described.

As indicated in the drawings, the track-supporting structure is of sufficient height to admit of the forward and operating portion of our machine being projected into the door of a box-car 71. This movement of our machine we attain by turning the pawl 64 to the opposite side of the lever 62' from that shown in Fig. 1 of the drawings. The lever is then forced to the rear and, through pressure of the pawl upon the ratchet-teeth, the forward portion of the chain is taken up and the machine consequently driven forward.

The operation of our machine is substantially as follows: Through the engines and their pistons rotary motion is communicated to the crank-shafts, the latter being revolved in opposite directions. This rotation of the crank-shafts must result in a sliding motion of the bearing-blocks within the pendulum-mortises, and this movement of said blocks must result in an outward and inward swinging movement of the shovels. Owing to the fact that the speed of the shovels must depend upon the relative positions of the sliding blocks and the pivot-points of the pendulums it will be seen that a variation of speed must occur at each quarter-turn of the cranks, thus imparting to the shovels the desired or variable shoveling movement. As the shovels are swung outward it will be seen that the springs 29 will be compressed against the brackets 25,

while the springs 31 will be relaxed. The pendulums having reached their outward limit, it will be seen that the shovels will be given a final outward "kick" or pitch, while the first returning motions of the pendulums will be executed with great speed. In this manner it will be observed that the desired variable or natural pitching movements will be imparted to the shovels.

By regulating the speed of the operating-engine it is evident that the coal, which enters the chute from a suitable supply, may be thrown at different distances, as may be desired.

It is obvious that the half-conical ridge or divide will separate the coal or other material, so as to divide the discharge into the shovels. By raising or lowering one of the chute-props 43 and resting the same on the proper step 44 it is evident that the amount of material which passes into one shovel or the other may be regulated, and that by this operation the discharge to the shovels may be equalized in case the feed to the chute is not central. Such coal as is lodged on the floor-plates 70 as the shovels recede will be taken up by said shovels in their succeeding outward movement.

It will be seen that the gearing together of the crank-shafts must result in a uniform movement of said shafts and insure their operation in opposite directions.

The method of withdrawing the machine from the car consists in reversing the movement of the lever 62 and its pawl heretofore described for moving the machine forward.

From the construction and operation herein shown and described it will be seen that a machine is provided in which a rapid, effective, and natural shoveling operation is attained, and that the parts are so constructed and arranged as to insure a positive action and desirable results.

Having now fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a car loading mechanism, the combination with a movable frame and oppositely rotated crank shafts journaled therein, of oppositely arranged swinging shovels yieldingly and pivotally connected to the crank shafts, and means for feeding material onto said shovels, substantially as described.

2. In a car loading mechanism the combination with a movable frame, oppositely rotated crank shafts journaled therein, mortised pendulums pivotally supported above said crank shafts and sliding blocks in said pendulum mortises in which said cranks are journaled, of oppositely arranged and swinging shovels and a yielding and pivotal connection between said shovels and pendulums and means for feeding material into the path of said shovels, substantially as and for the purpose specified.

3. In a car loading mechanism the combination with a movable frame, oppositely rotated crank shafts journaled therein, mortised pendulums pivotally supported in the frame work and sliding blocks in said mortises in which said cranks are journaled, of oppositely arranged swinging shovels, stirrup shaped brackets 25 on said shovels, bolts 26 passing loosely therethrough and having a pivotal connection with the pendulum ends, a collar on each bolt, springs 29 between said collars and brackets and springs 31 between said brackets and nuts on the ends of the bolts, substantially as and for the purpose specified.

4. In a car loading mechanism the combination with a movable frame, oppositely rotated crank shafts journaled therein, and gear wheels connecting the ends of said shafts, of oppositely arranged swinging shovels, said shovels having a pivotal and yielding connection with said shaft cranks and means for feeding material on to said shovels, substantially as and for the purpose specified.

5. In a car loading mechanism the combination with a movable frame, oppositely rotated crank shafts journaled therein, and gear wheels connecting said shafts, of oppositely arranged swinging shovels said shovels having pivotal and yielding connections with said shaft cranks and concave floor plates supported beneath the paths of said shovels in arcs of circles struck from the pivot points of the latter, substantially as and for the purpose specified.

6. In a car loading mechanism the combination with a movable frame, oppositely rotated crank shafts journaled therein, and oppositely arranged swinging shovels having pivotal and yielding connections with said shaft cranks, of a convex apron arranged to discharge on said shovels, an inclined chute leading on to said apron and a semi-conical separating elevation in said chute, substantially as and for the purpose specified.

7. In a car loading mechanism the combination with a movable frame, oppositely rotated crank shafts journaled therein and oppositely arranged swinging shovels having pivotal connections with said shaft cranks, of a convex apron arranged to discharge on said shovels, an inclined chute leading to said apron and jointedly connected with the machine frame, brackets 45 supported on the frame base having graduated steps and props 43 pivotally connected at their upper ends with the upper portion of the chute substantially as and for the purpose specified.

8. In a car loading mechanism the combination with a frame work the rear portion of which is mounted upon wheels, the latter running upon an elevated track and a shoveling mechanism mounted on the forward portion of said frame, of transverse shafts 55, 56 and 57 journaled as described in said frame,

5 sprocket wheels 58, 60 and 61 on said shafts, a ratchet wheel on the shaft 55, a lever fulcrumed on said shaft 55, a pawl pivoted on said lever adapted to engage with the teeth of said ratchet wheel on either side of the center of the latter and a chain 62 running over the wheel 58 and against the inner sides of the wheels 60 and 61, said chain being at-

tached at its ends to the track frame, substantially as and for the purpose specified.

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WILLIAM H. McCONNELL.

In presence of—

J. E. CRAWFORD,

P. A. SIMPSON.