

No. 629,417.

Patented July 25, 1899.

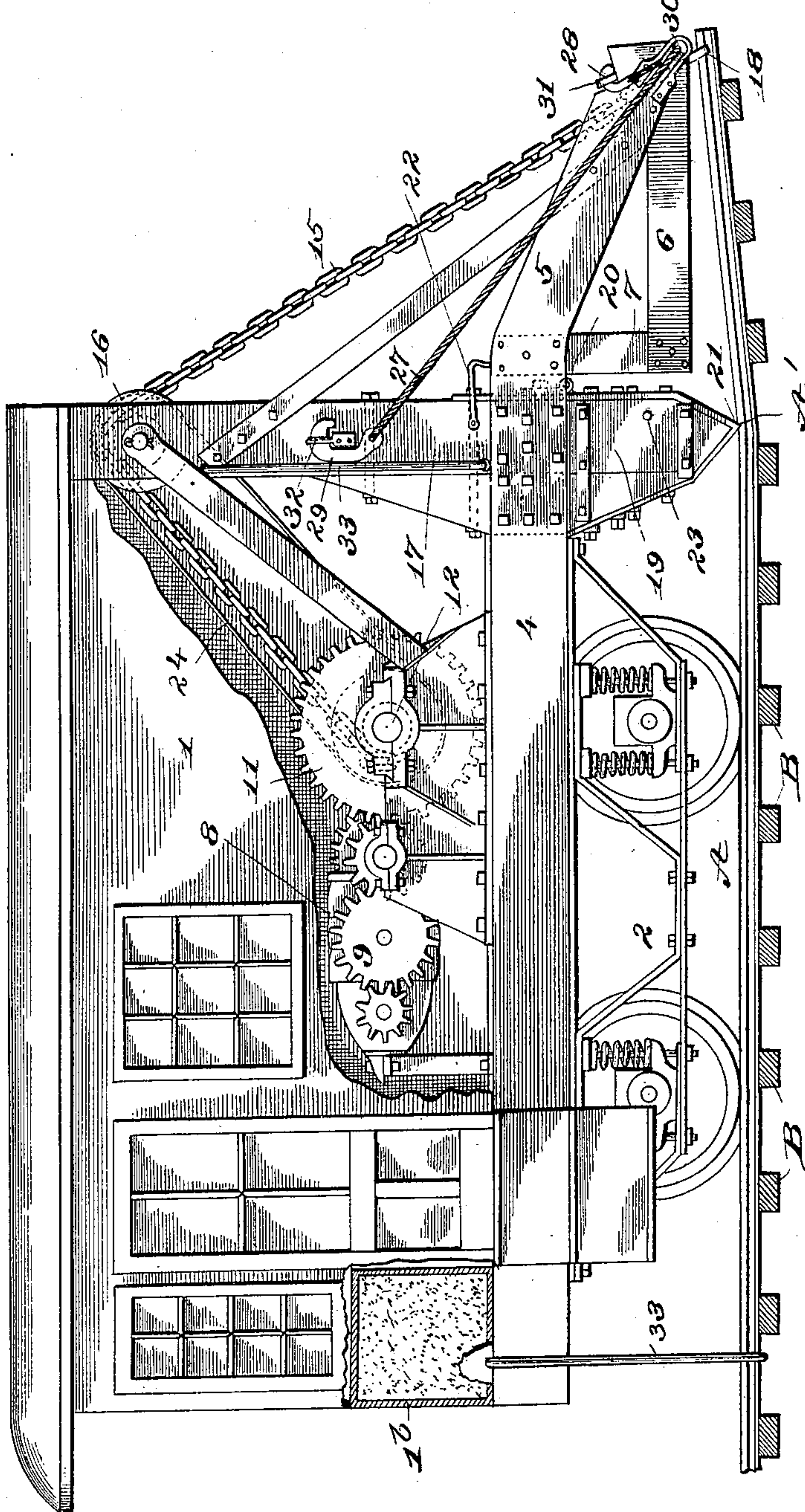
G. W. BAUMHOFF & O. SCHMID.
RAIL BREAKING MACHINE.

(Application filed Mar. 31, 1899.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1.



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Fig. III.

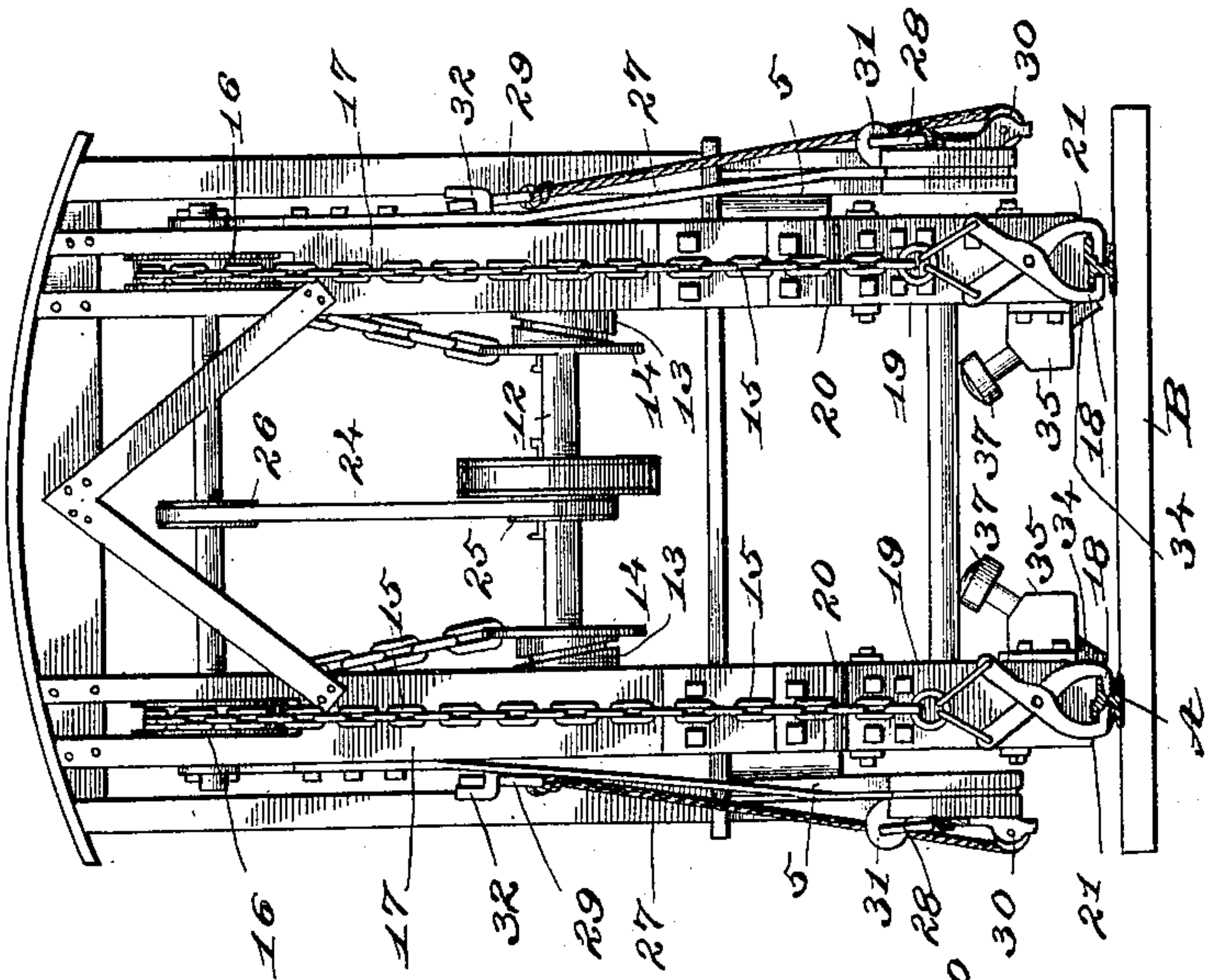
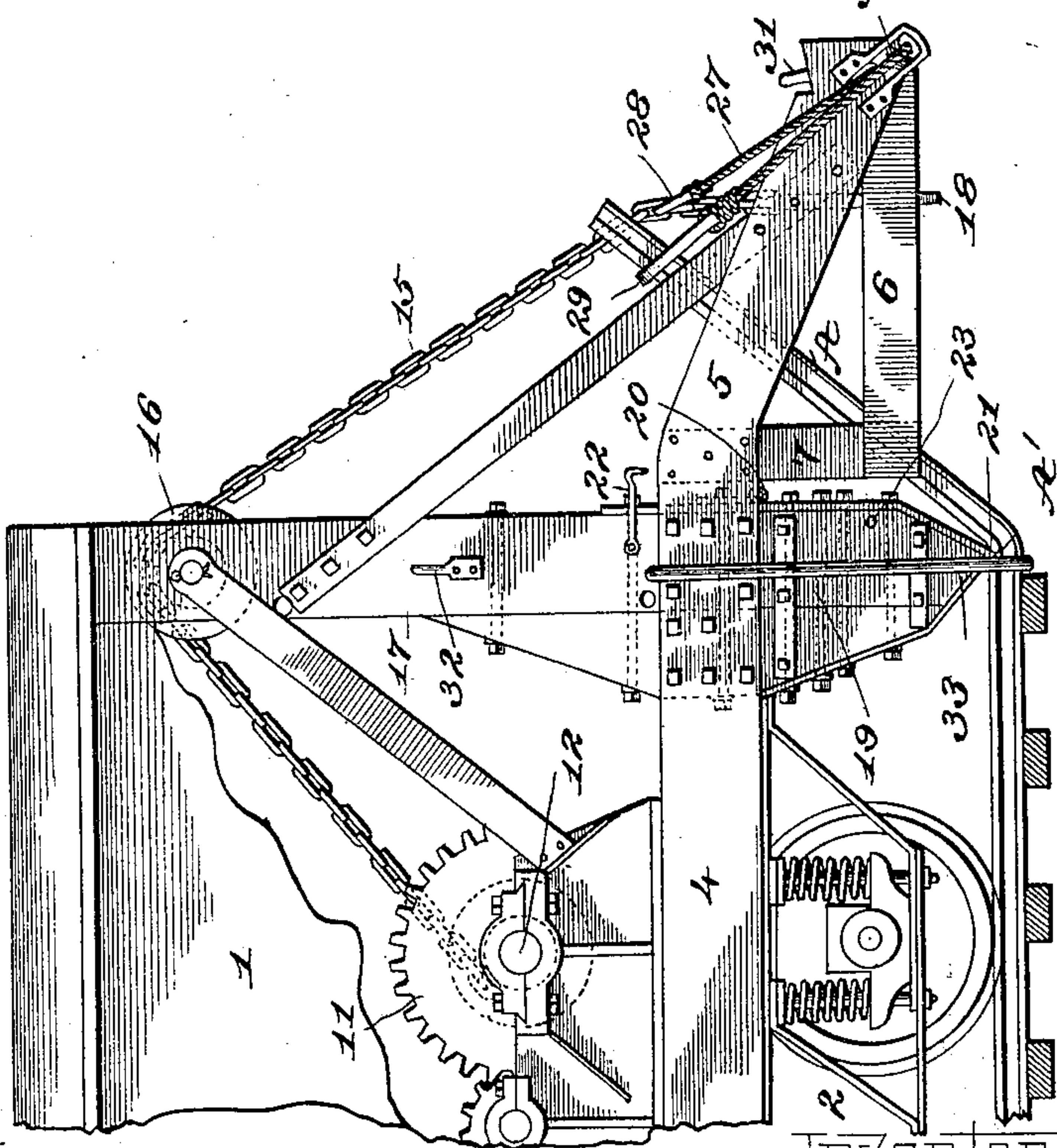


Fig. II.



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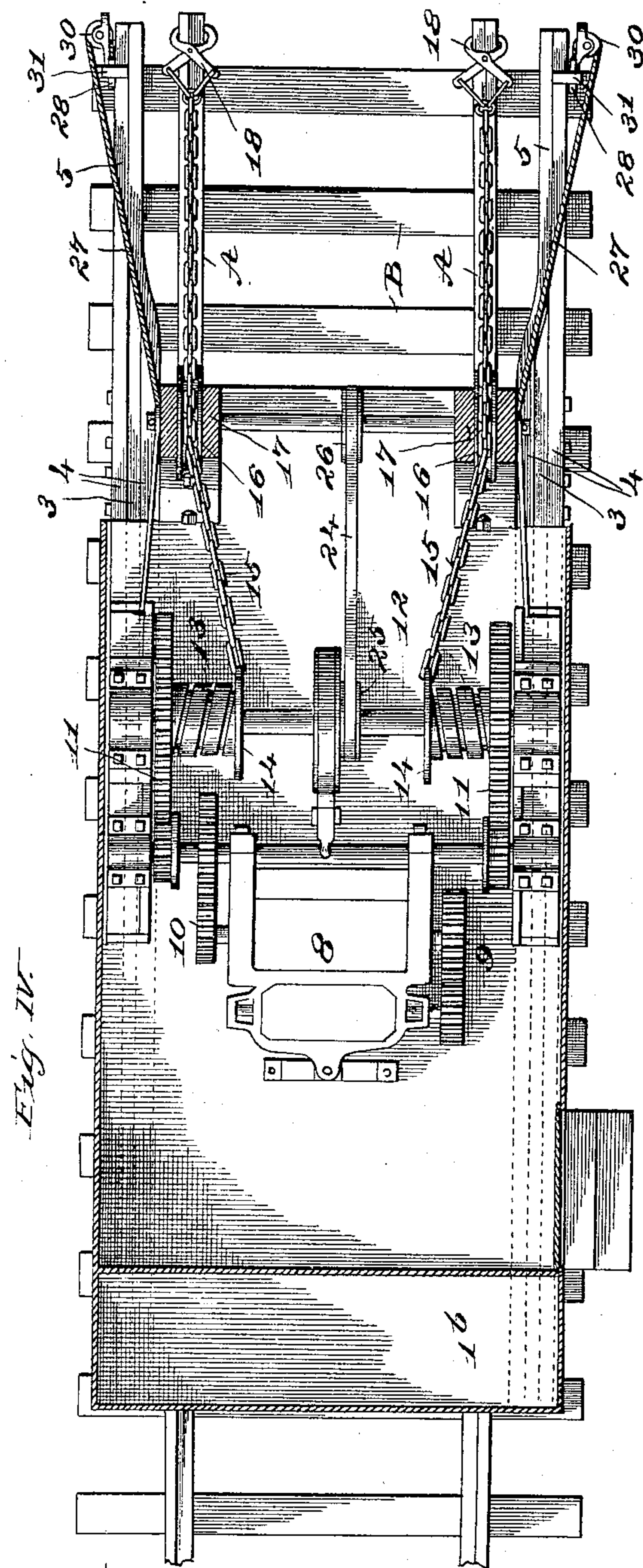


Fig. IV.

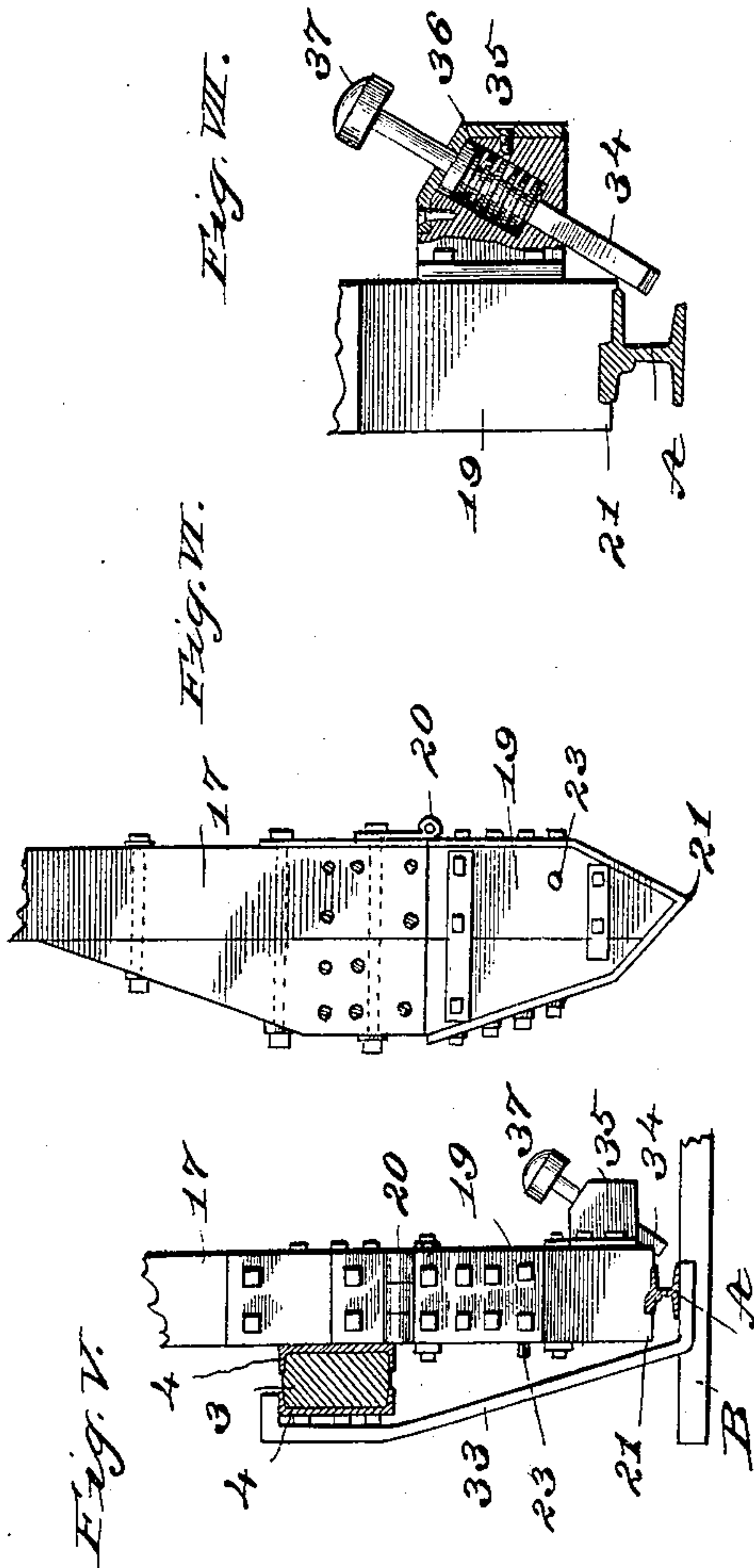


Fig. V.

Fig. VI.

Fig. VII.

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Fig. IX.

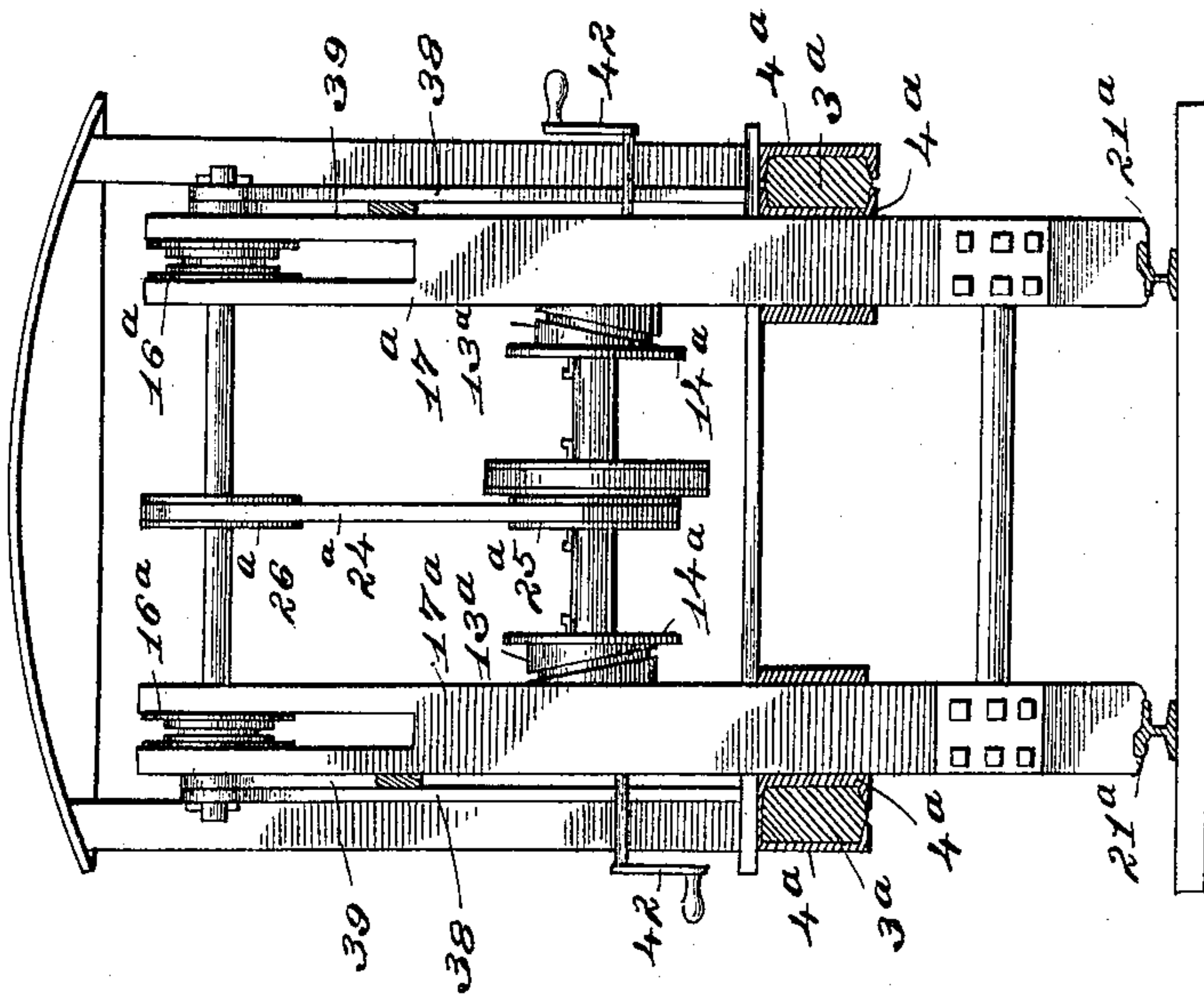
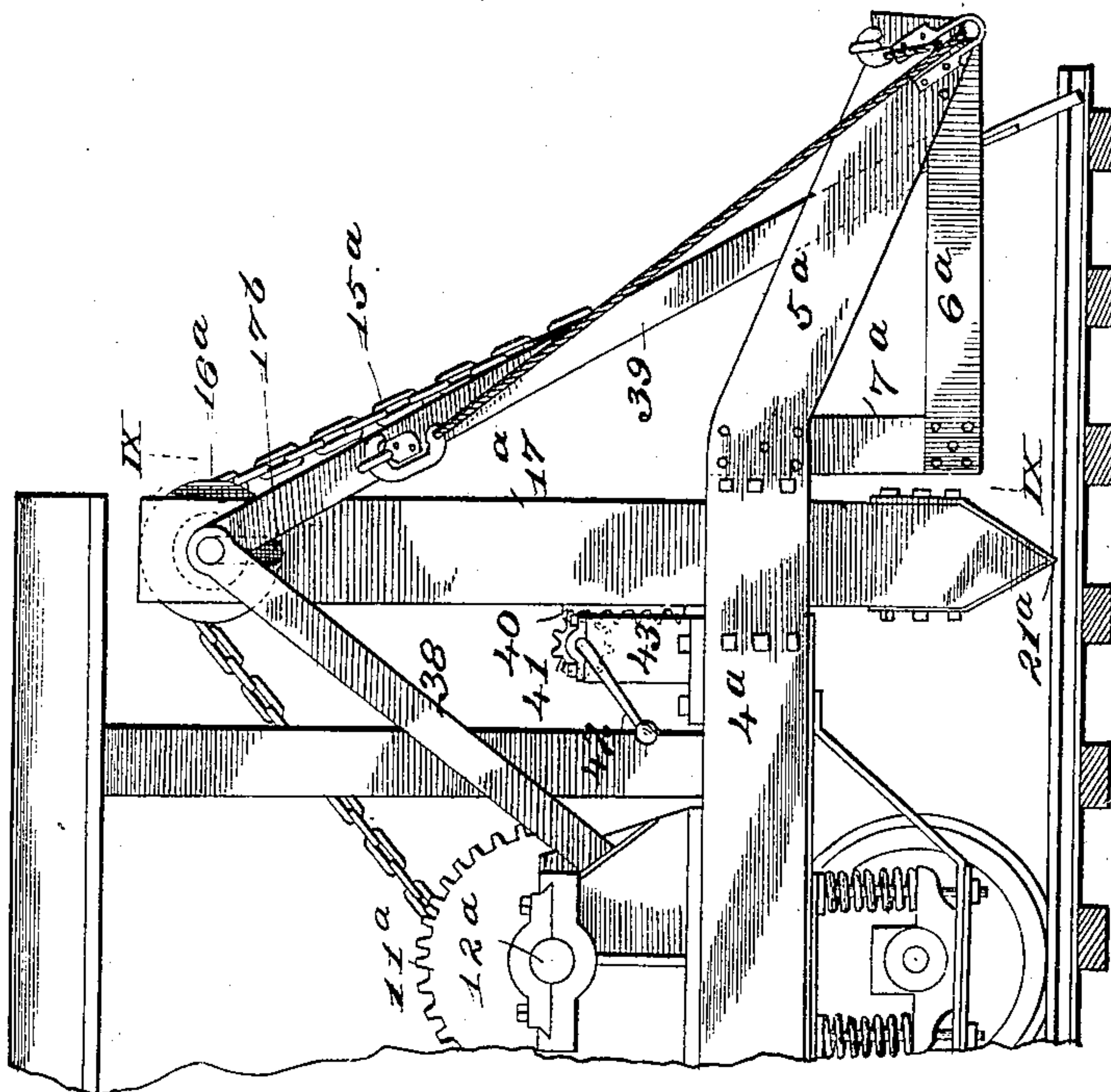


Fig. VIII.



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UNITED STATES PATENT OFFICE.

GEORGE W. BAUMHOFF AND OTTO SCHMID, OF ST. LOUIS, MISSOURI,
ASSIGNORS TO WILLIAM M. HORTON, OF SAME PLACE.

RAIL-BREAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 629,417, dated July 25, 1899.

Application filed March 31, 1899. Serial No. 711,223. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. BAUMHOFF and OTTO SCHMID, citizens of the United States, residing at the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Rail-Breaking Machines, 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 a machine for use in breaking rails of a railway-track into small sections, the device being designed for use in tearing up railway-tracks of which no further service is desired, owing to the rails becoming worn or for any other reason.

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

Railway-tracks, especially those of electric railways, as at present constructed have the rails thereof united at their ends by welding throughout the extent of the track, so that practically continuous rails are produced. With railway-tracks constructed in the manner stated it has heretofore been necessary in removing the old rails to cut the rails up into sections, such cutting being accomplished by the use of chisels and hammers manipulated by hand. This process of breaking up the tracks has proven very tedious; and it is the object of our invention to provide a machine that may be moved along the track being broken up and through means of which the track may be quickly torn up and the rails be broken into any desired length of sections and in the use of which machine it can be readily conveyed along the track as the process of destruction thereof progresses.

Figure I is a side elevation with one of the side walls of the machine-body partly broken away to show the motor and gearing on the interior. Fig. II is an elevation of the front end of the machine, illustrating the parts in the position assumed when the rails to be broken have been drawn upwardly in the action of breaking them. Fig. III is an end view showing the parts in the position assumed when the rails are first grasped previously to their being bent upwardly. Fig. IV is a plan view showing the parts in the

positions seen in Fig. III and the body of the apparatus in horizontal section. Fig. V is a detail elevation of one of the hinged fulcrum knife-edge members and one of the stay-bars by which the machine is held to the track. Fig. VI is a side view of the fulcrum knife-edge members shown in Fig. V. Fig. VII is an enlarged detail view of the lower end of the fulcrum knife-edge member and chisel carried thereby. Fig. VIII is a side elevation illustrating a modification. Fig. IX is an end view of the modification shown in Fig. VIII, with parts of the apparatus shown in vertical section, taken on line IX IX, Fig. VIII.

1 designates the body of the machine carried on a truck 2, adapted to travel on the track-rails A, mounted on the ties B. At each side of the body 1 is a pair of channel-bars 4, that inclose filling-timbers 3. The channel-bars 4 protrude beyond the end of the body 1 and form extensions 5, said extensions projecting downwardly toward the track, but exterior of the rails, in position above the extremities of the track-ties B. Extending inwardly from the ends of the extensions 5 are horizontally-arranged bars 6, the inner ends of which are connected to the extensions 5 by brace-bars 7.

8 designates a motor mounted within the body 1. This motor may be of any desirable form, and where the machine is used in tearing up the tracks of an electric railway the motor is preferably an electric motor that may receive its power from the ordinary electric conductors used in the operation of cars on railways of this class. The motor is provided with suitable gearing 9 and 10, that communicate the power from the motor through the gearing 11 to a shaft 12. The shaft 12 is provided with a pair of drums 13, having flanges 14.

15 designates chains, one end of each of which is connected to the flanges 14 of the drums 13, the said chains passing over pulleys 16, mounted in uprights 17 at the working end of the machine. The free outer ends of the chains 15 are equipped with tongs 18, that are adapted to grip the track-rails in the operation of breaking them. (See Figs. I, III, and IV.)

19 designates knife-edge members hinged

at 20 to the frame of the machine-body and provided with knife-edges 21, adapted to bear against the track-rails when swung into position beneath the body of the machine, as clearly shown in Figs. I and II, and when in such position to serve as fulcrum-points at which the rails are broken, as will hereinafter fully appear. When the members 19 are in the position seen in Figs. I and II, their upper surfaces abut firmly against the lower ends of the uprights 17 and the strain on such members is communicated directly from the members to the body of the machine. When, however, the machine is not in use, but is being transported, these members 19 are designed to be elevated by swinging them on their hinges up against the uprights 17, where they may be held by hooks 22, engaging pins 23 on the members or by any other suitable means of support.

The first step performed in breaking the rails with the use of this machine is to swing the knife-edge members 19 into lowered position beneath the machine-body, where the knife-edges will rest in positions against the top surfaces of the track-rails. The tongs are then connected to the rails, the connection of said tongs being effected at a distance from the knife-edges and near the ends of the portions of the rails that are broken. The motor 8 is then put into operation and its motion is communicated to the drums 13, the shaft of which is geared to the motor, as explained. The turning of the drums 13 causes the chains 15 to be wound thereon, and thereby a strain is effected upon the track-rails, whereby they are elevated, together with the ties to which they are connected, thus raising a portion of the entire track, as seen in Fig. I. As this portion of the track is elevated the knife-edges fulcrum at the points A' (see Figs. I and II) against the rails. The said knife-edges are caused to bite into the rails by reason of the strain effected by the upward pull on the rails. In drawing the ends of the rails A up into the position shown in Fig. II the ties B, to which the rails are connected, are successively brought against the horizontal bars 6, carried by the extensions 5, which, as explained, occupy positions above the extremities of the said ties. The ends of the rails in their upward movement force the ties against the horizontal bars 6 and the connections from the rails to the ties are strained or broken loose, thereby separating the ties and allowing them to fall to the ground, while the upward movement of the ends of the rails continues.

In the instance of tough rails it is sometimes impossible to effect a breakage of the rails by a single upward movement of the ends thereof into the position shown in Fig. II by fulcruming said rails against the knife-edges 21, and in such instance it is necessary to effect a reverse movement of the rail ends in order to finish breaking them. In such instance we employ a means which will now

be described. With the ends of the rails bent into the position seen in Fig. II it is first necessary to release the gripping-tongs 18, and in doing so the chains 15 necessarily have to be slackened. In accomplishing this the operation of the motor 8 is reversed, thereby turning the shaft 12 and the drums 13 in the opposite direction from that in which they were previously moved and slackening the chain. In order to carry the chains on the pulleys 16 during the period of effecting their slackening, we provide a belt 24, placed upon a pulley 25 on the shaft 12 and a pulley 26 on the shaft by which the pulleys 16 are carried. By means of this belt connection between the shaft 12 and the shaft of the pulleys 16 the pulleys 16 are rotated in the reverse movement of the drums 13, and thereby the chains 15 are carried on said pulleys to convey the slack to the outer ends of the chains and provide for the easy disconnection of the gripping-tongs 18. To effect the return or downward movement of the ends of the rails, which have been bent upward, short pieces of rope are brought into use in the following manner:

27 designates the ropes, which are provided at their ends with hooks 28 and 29. These ropes are arranged to travel on pulleys 30, mounted at the extremities of the extensions 5. When the chains 15 are to be slackened and the gripping-hooks released from the rails, the hook 28 is engaged in one of the links of said chain, while the hook 29 at the other end of the rope is connected to the upturned end of the rail. (See Fig. II.) The motor 8 being then again put into operation, the chains 15 are wound on their drums, as before, and a pull upon said chains causes the ends of the ropes connected to the chains to be drawn, and the ropes traveling on the pulleys 30 effect a downward pull upon the upturned ends of the rails by reason of the hooks 29 being connected to the said rails. The upturned rail ends are thereby drawn downwardly and a breakage at the location of the fulcruming knife-edges is accomplished, or in the event of such breakage not occurring the previous operation of bending the rails upwardly is again effected, and the two operations are continued until such time as the rails are broken. When the ropes 27 are not in use, one of their hooks is hung on eyes 31 at the extremities of the extensions 5 and the other hook is hung upon hooks 32 at the sides of the uprights 17.

In order to prevent the strain of bending the rails from causing the machine to be lifted upwardly at either end during the operation thereof, we employ stays by which connection may be effected between the machine and the rails upon which the machine is standing. These stays are in the form of hooked bars 33, that are adapted to engage beneath the rails at one end and to engage above the channel-bars 4 at the opposite ends. In effecting the upward pull upon the rail ends these stays are connected with the ma-

chine at the rear end thereof, as seen in Fig. I, for the reason that the tendency at such time is to lift the rear end of the machine and to depress the forward end. When, however, the rail ends are to be bent downwardly after being bent upwardly, the stays are used to connect the machine and rails, as seen in Fig. II, as in this instance the tendency is to elevate the forward end of the machine and to depress the rear end. When the stays are not in use, they are inserted in openings in the uprights 17 made to receive them. (See Fig. I.)

In some instances it is advisable to nick the rail-flanges in order to cause them to be more readily broken, and for this purpose we have provided chisels carried by the knife-edge members 19, adapted for use in the connection mentioned. These chisels (designated by 34, see Figs. III, V, and VII) are mounted in boxes 35 and are provided with retracting-springs 36, located in said boxes, each chisel being provided with a head 37. The chisels are arranged obliquely to the members 19, so as to be presented at an angle to the track-rails, and they are adapted to be struck by sledge-hammers to drive them into the base-flanges of the rails for the purpose of nicking the said rails and causing the severance thereof at the points at which the rails are to be broken.

The weight of the parts at the working end of the machine being in excess of the weight at the opposite end, it is necessary to counterbalance the weight of the working parts by means of suitable ballast, and for this purpose we have provided a box 1^b, (see Fig. I,) in which sand or other material may be placed to add to the weight of the machine at the location thereof.

In Figs. VIII and IX we have shown a modification in which the uprights 17^a are movably mounted and are adapted to serve as stems for the knife-edges 21^a, that bear against the rails, as is the case with the construction of said knife-edges hereinbefore described. In this modification the upper ends of the uprights are supported by braces 38 and 39, supported by the machine-body and the extensions 5^a. The uprights are provided with pulleys 16^a, the shaft of which is mounted in the braces 38 and 39. The uprights 17^a are provided with vertical slots 17^b, that permit a vertical movement of the uprights, whereby they may be elevated to raise the knife-edges from contact with the track-rails when the machine is moved from place to place. On the uprights are racks 40, that are adapted to receive the engagement of toothed wheels 41, arranged to be manipulated by a crank 42, the shaft of which is mounted in standards 43. By this arrangement the uprights may be raised from and lowered to the track-rails by turning the crank 42 and causing the teeth of the wheels 41 to work in the racks 40 and move the uprights at will when the strain upon the chains 15^a is relieved.

We claim as our invention—

1. In a machine of the character described, the combination of a carriage, the fulcrum 70 carried by said carriage adapted to bear against a railway-rail, and means for elevating said rail against said fulcrum to break it; substantially as described.

2. In a machine of the character described, the combination of a truck and body carried thereby, a knife-edge carried by said body adapted to bear upon a railway-rail, and means for elevating said rail against said knife-edge as a fulcrum to break it, substantially as described.

3. In a machine of the character described, the combination of a truck and body carried thereby, a knife-edge carried by said body adapted to bear upon a railway-rail, means for elevating the rail against said knife-edge as a fulcrum to break it, and a bar arranged over the track-ties arranged to be struck by said ties to break them away from the rail, substantially as described.

4. In a machine of the character described, the combination of a truck and body carried thereby, a knife-edge carried by said body adapted to bear upon a railway-rail, a chain, a pair of tongs carried by said chain by which said rail may be gripped, and mechanism for effecting a strain upon said chain, substantially as described.

5. In a machine of the character described, the combination of a truck and body carried thereby, a knife-edge carried by said body adapted to bear upon a railway-rail, means for bending said rail upwardly against said knife-edge as a fulcrum, and means adapted to be connected with said first-named means whereby said rail may be bent downwardly again, substantially as described.

6. In a machine of the character described, the combination of a truck and body carried thereby, a pair of knife-edges adapted to bear against the rails to be broken, a pair of drums mounted upon said body, mechanism for driving said drums, a pair of chains connected to said drums and adapted to be wound thereon, tongs carried by said chains by which the rails may be gripped, and ropes adapted to be connected to said chains and rails for the purpose of bending them downwardly after they have been elevated, substantially as described.

7. In a machine of the character described, the combination of a truck and body carried thereby, knife-edges adapted to bear against the rails to be broken, means for gripping and elevating the rails, and spring-actuated chisels carried by the members by which said knife-edges are carried adapted to be driven into the rails to be broken for the purpose of nicking them, substantially as described.

8. In a machine of the character described, the combination of a truck and body carried thereby, knife-edge members carried by said body adapted to bear upon rails to be broken, said knife-edge members being movably con-

5 nected to said body providing for their being elevated away from said rails, and means for elevating said rails against said knife-edge members as a fulcrum when the knife-edge members are lowered thereagainst, substantially as described.

9. In a machine of the character described, the combination of a truck and body carried thereby, knife-edge members carried by said
10 body adapted to bear upon rails to be broken, said knife-edge members being hinged to said

body providing for their being elevated away from said rails, and means for elevating said rails against said knife-edge members as a fulcrum when the knife-edge members are lowered thereagainst, substantially as described. 15

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In presence of—

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