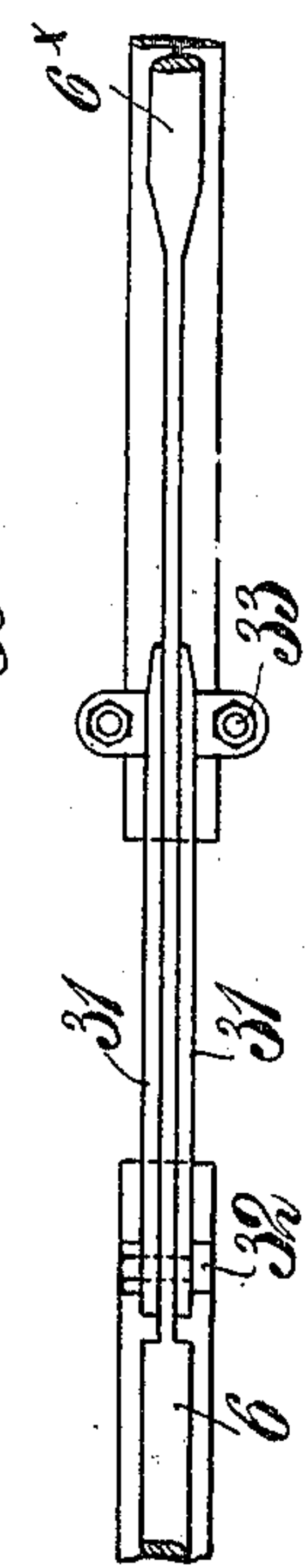
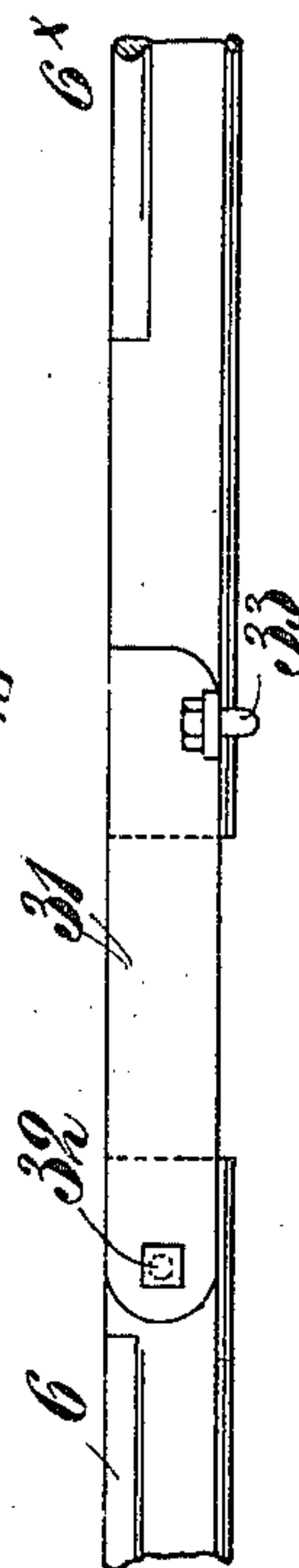
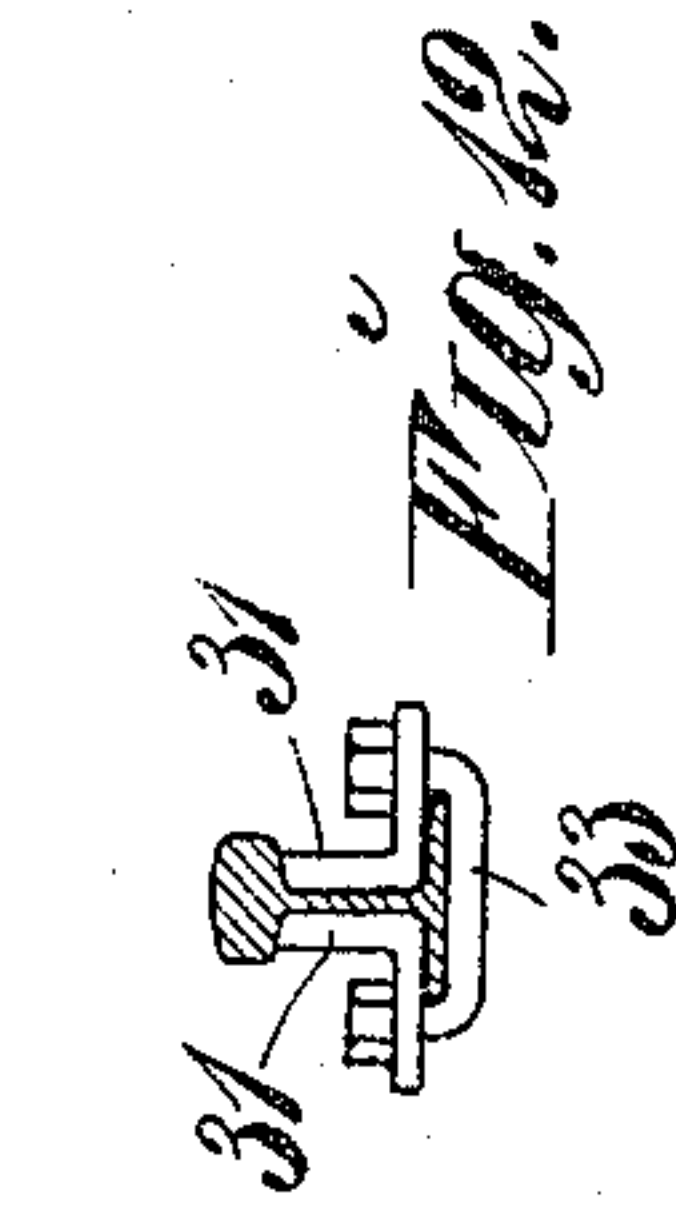
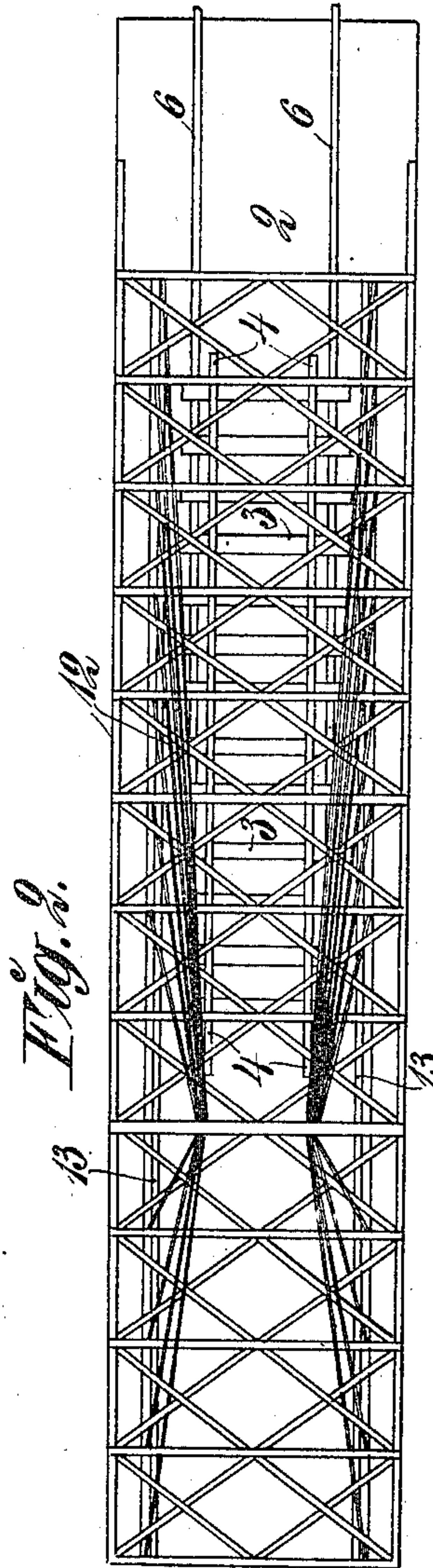
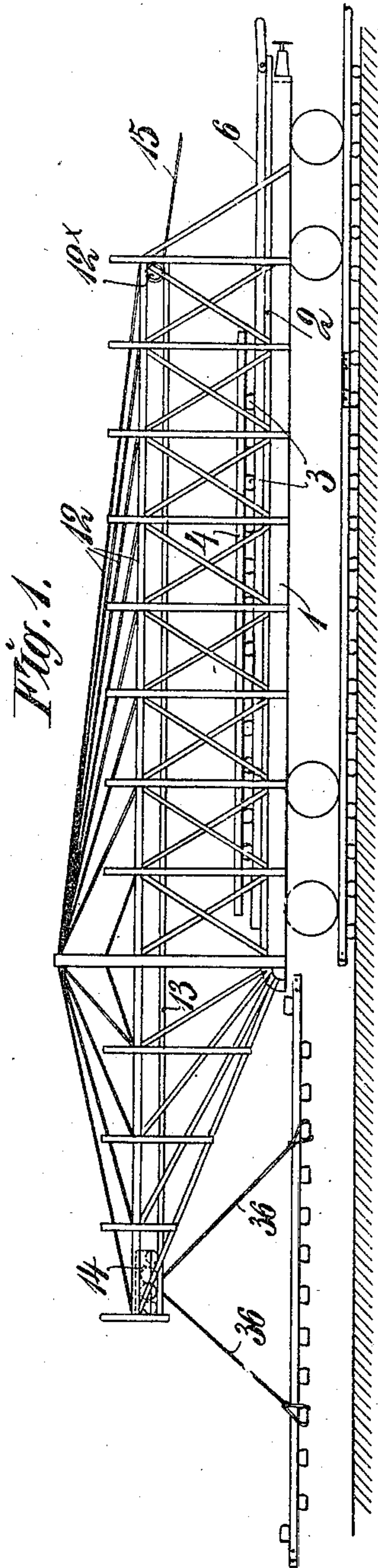


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 TRACK LAYING MACHINE.  
 APPLICATION FILED APR. 20, 1910.

989,931.

Patented Apr. 18, 1911.

4 SHEETS—SHEET 1.



Witnesses  
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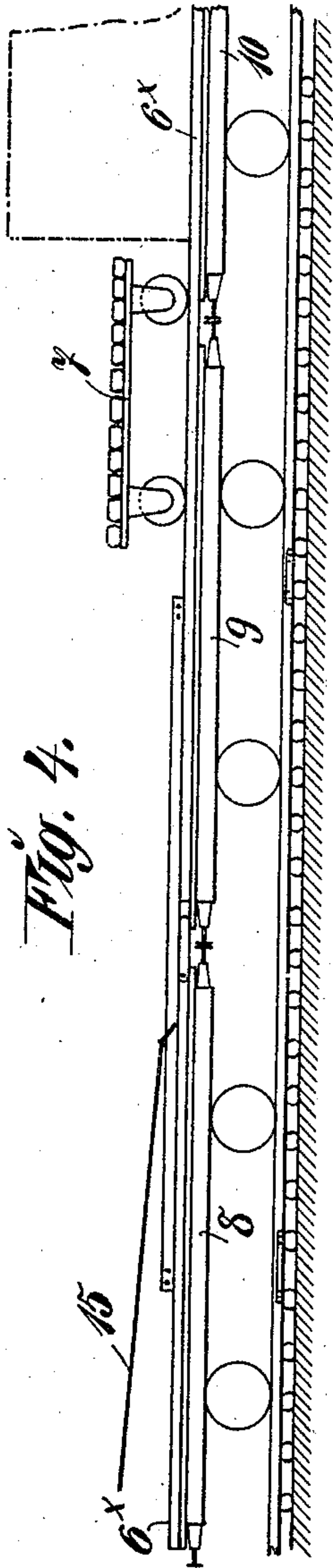


Fig. 4.

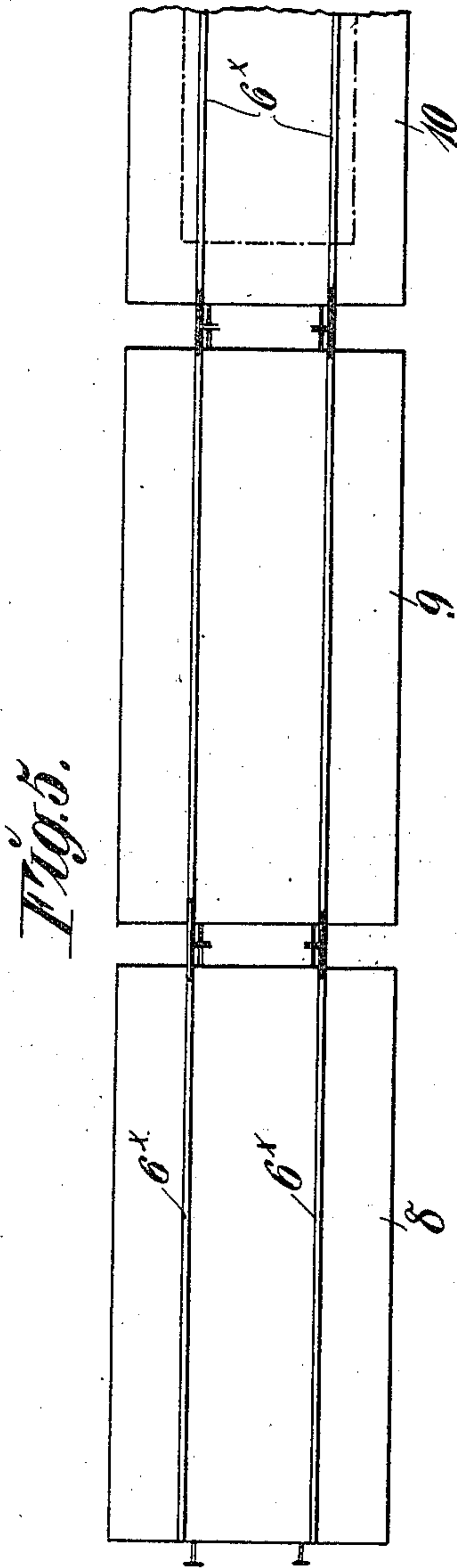


Fig. 5.

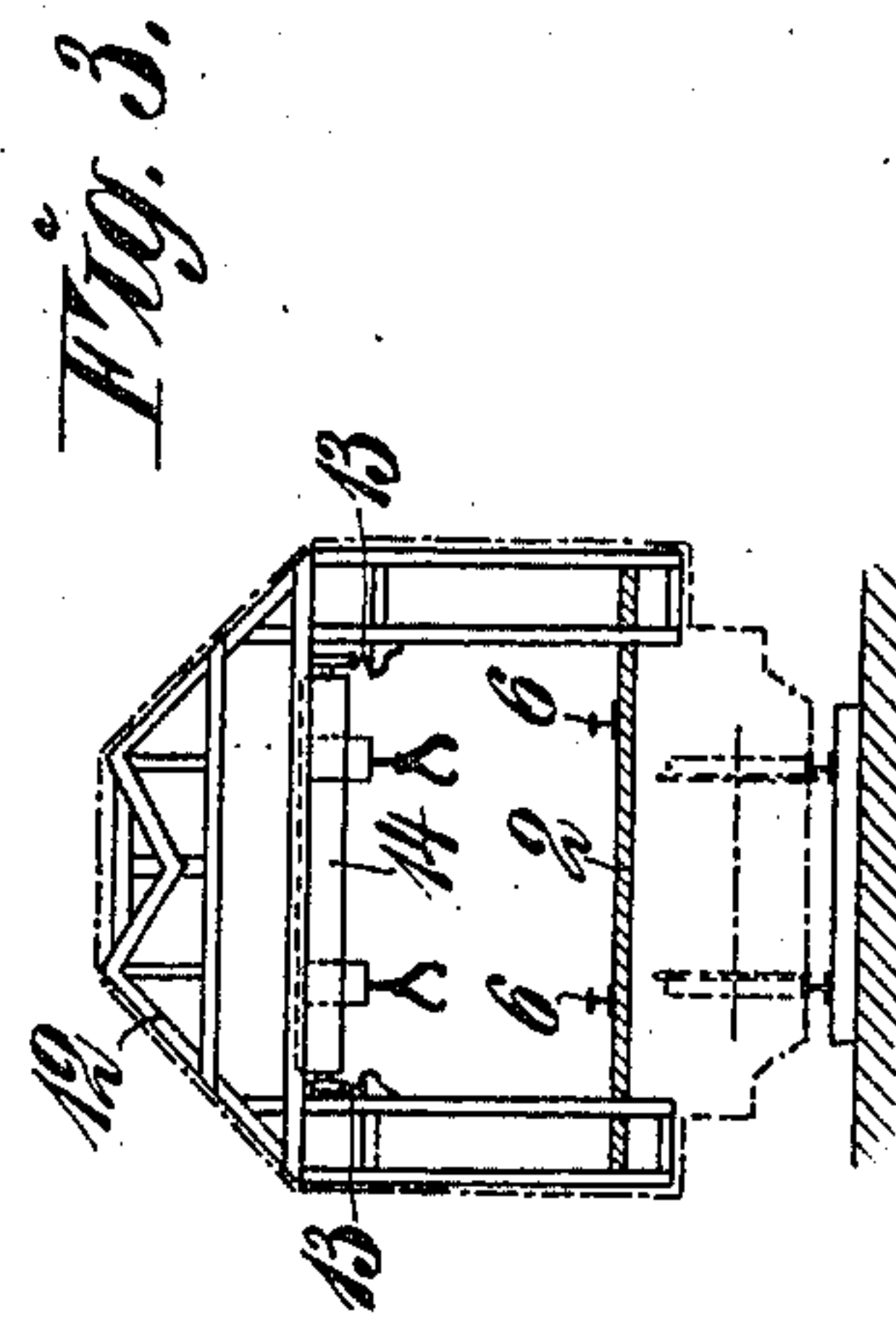


Fig. 3.

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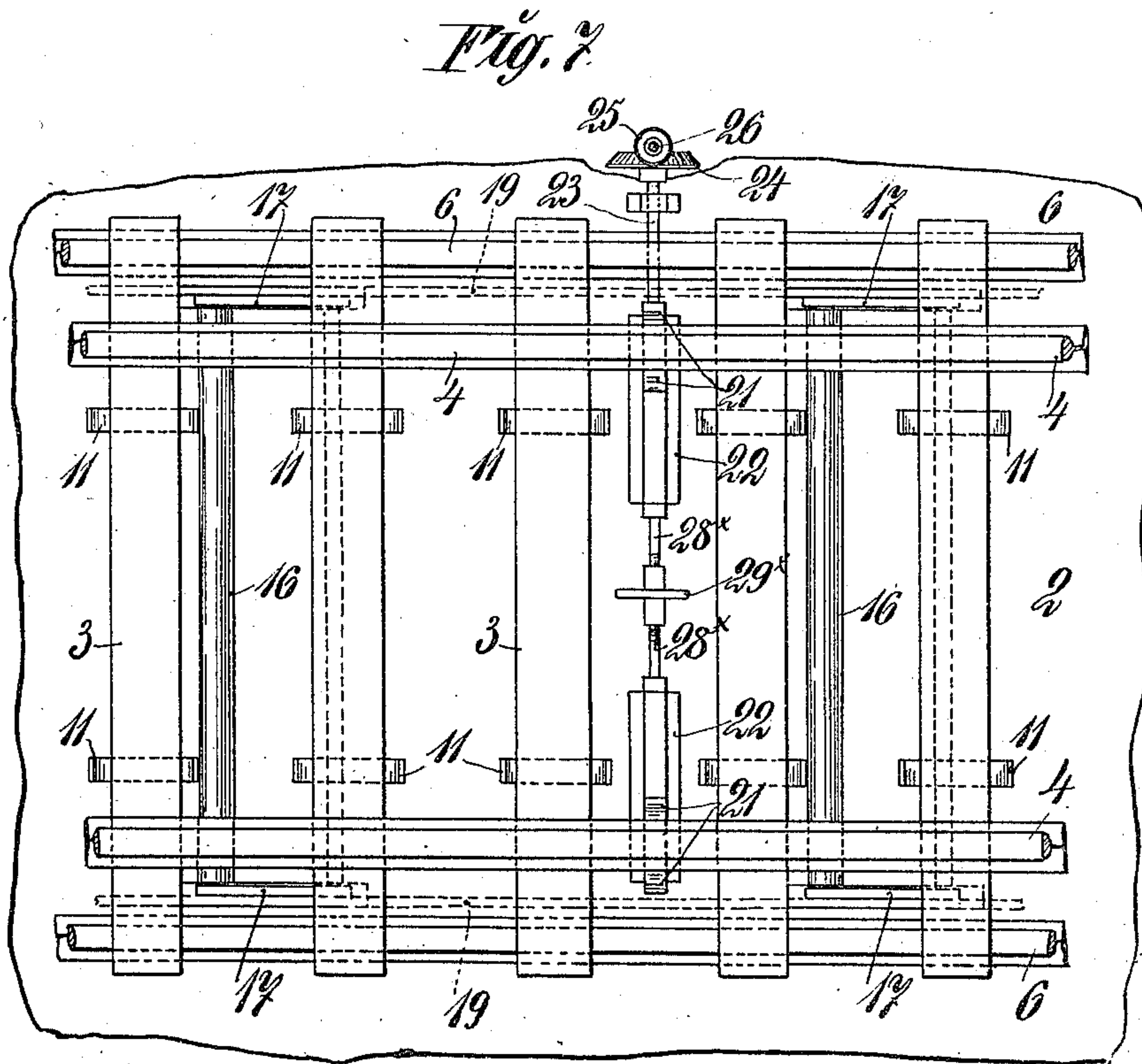
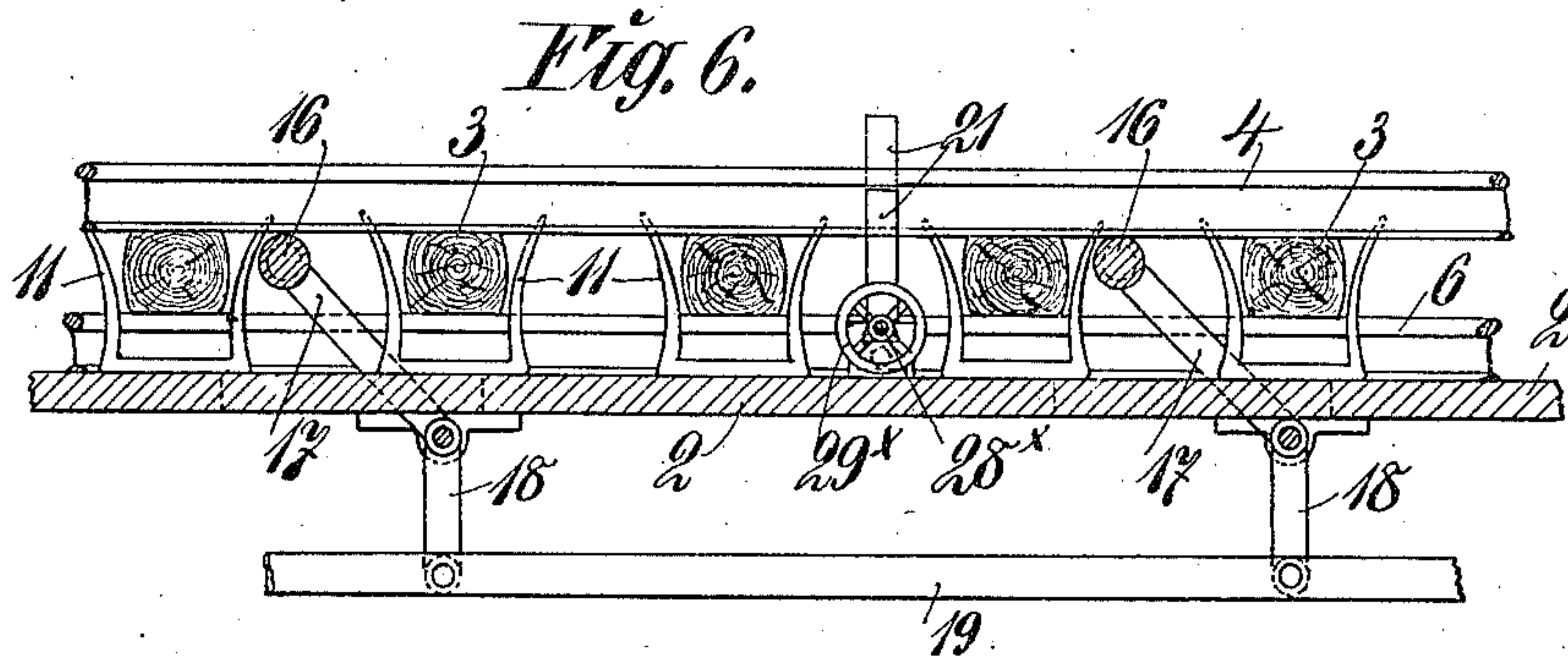


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4 SHEETS—SHEET 3.



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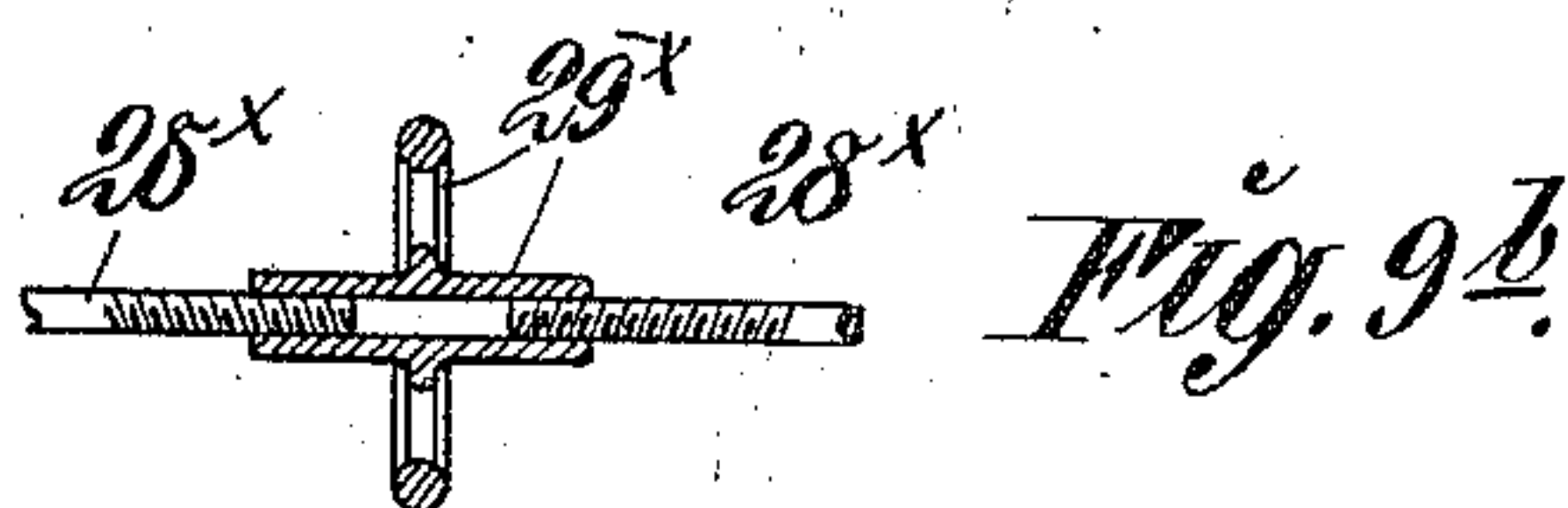
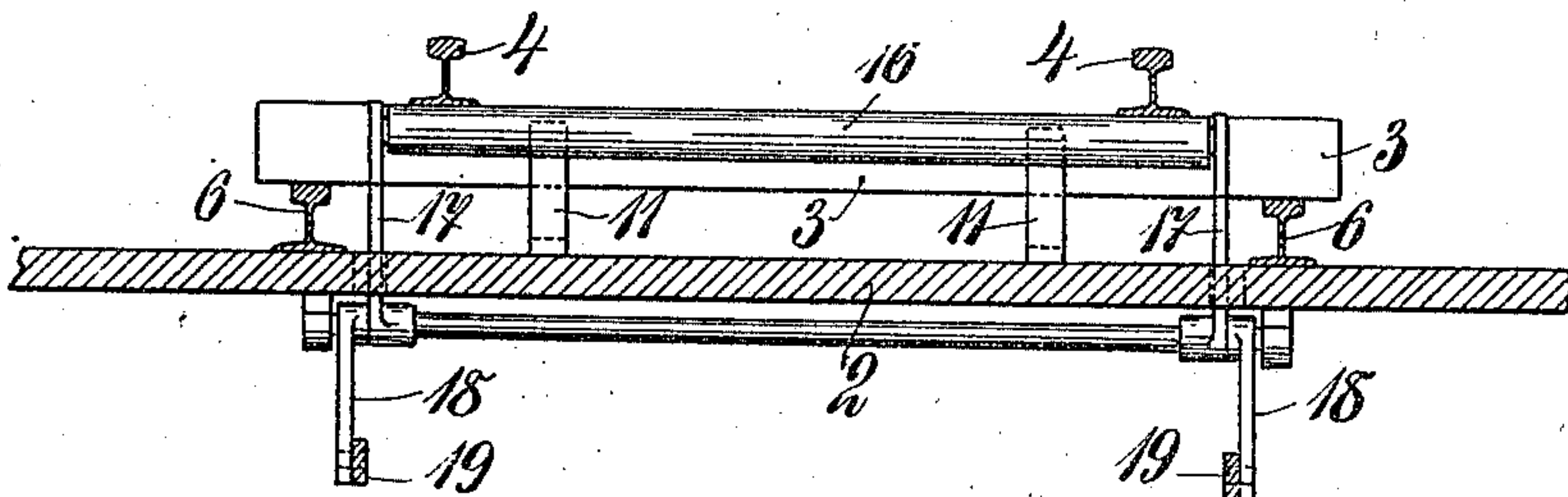
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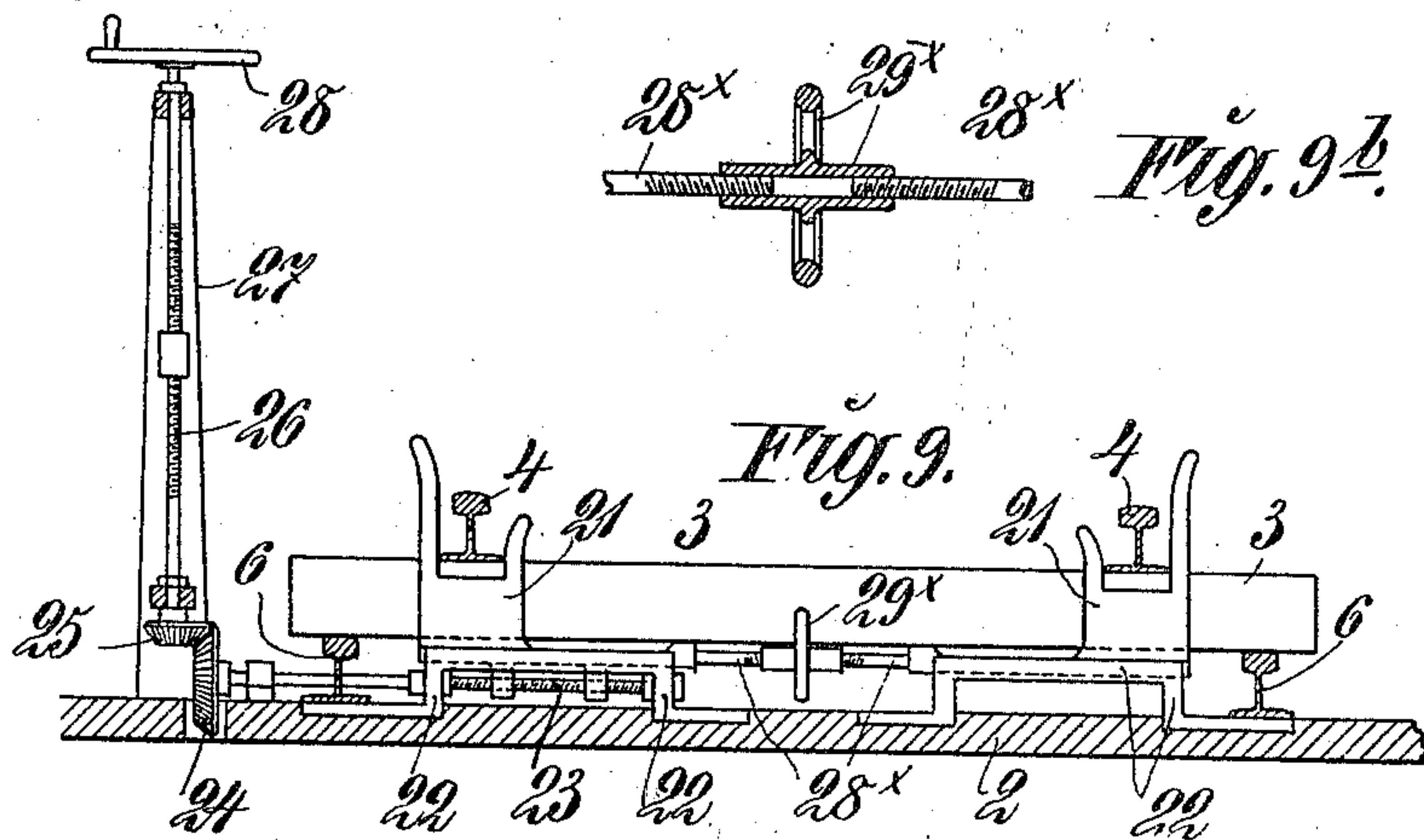
Patented Apr. 18, 1911.

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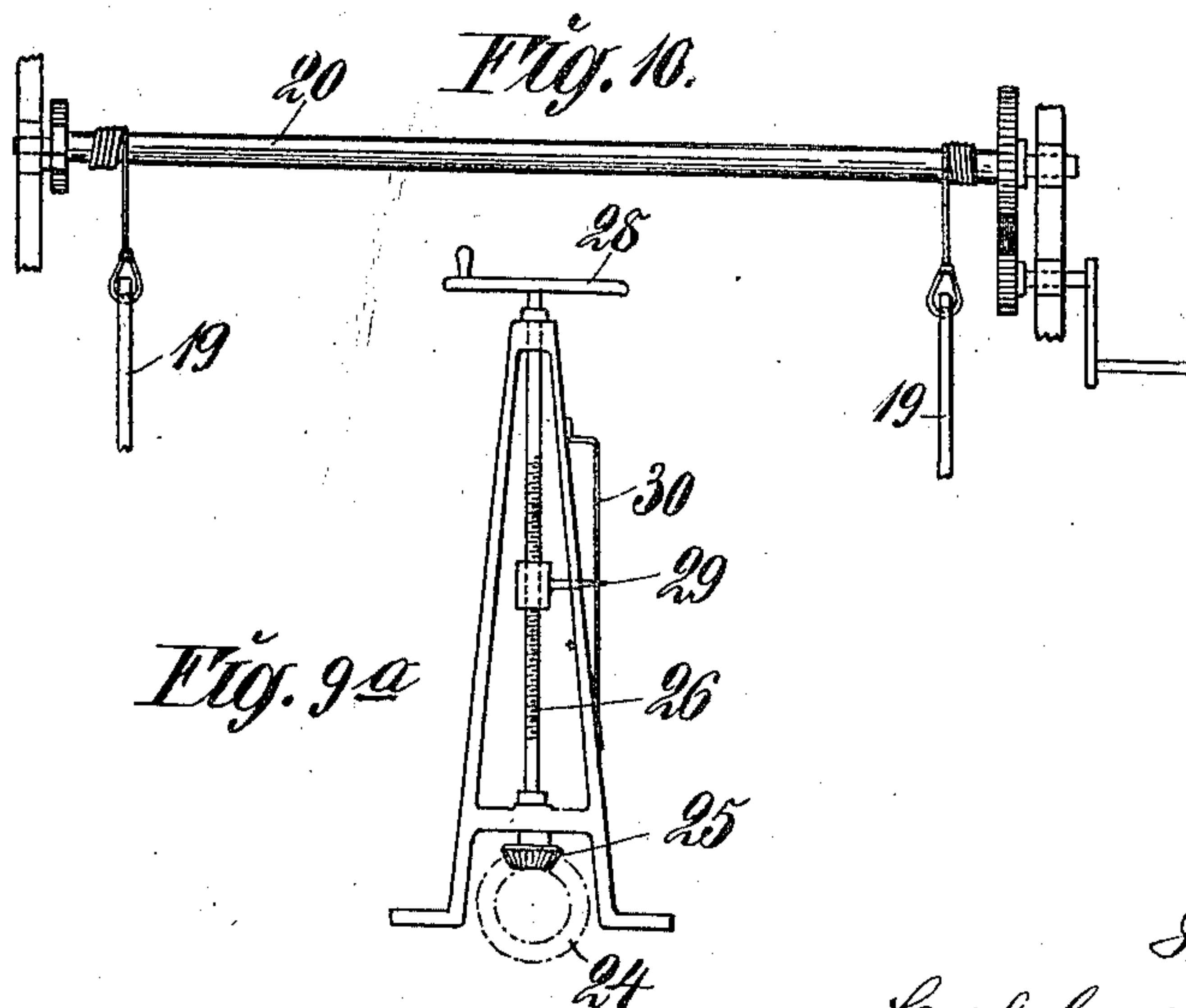
*Fig. 8.*



*Fig. 9b.*



*Fig. 9.*



*Fig. 10.*

*Fig. 9a.*

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# UNITED STATES PATENT OFFICE.

CARL GUSTAF SMITH, OF STOCKHOLM, AND AXEL CONRAD AULIN, OF ORSA, SWEDEN;  
SAID AULIN ASSIGNOR TO SAID SMITH.

## TRACK-LAYING MACHINE.

989,931.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed April 20, 1910. Serial No. 556,592.

*To all whom it may concern:*

Be it known that we, CARL GUSTAF SMITH, a subject of the King of Sweden, and resident of Karlbergsvägen 40, Stockholm, in the Kingdom of Sweden, and AXEL CONRAD AULIN, a subject of the King of Sweden, and resident of Villa Hvilan, Orsa, in the Kingdom of Sweden, have invented certain new and useful Improvements in Track-Laying Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a machine for laying tracks in the constructing of railroad roads and tramways.

The said machine comprises a railroad car, provided with a solid floor of suitable width and adapted for the positioning and connecting of the ties and the rails, which will form a pair of rails or track section (having the same length as the rails). The said floor, called the connecting bed in the following specification, is located at the same or substantially the same level above the track supporting the car, as the floor of ordinary goods-wagons and is provided with a track extending longitudinally of the connecting bed and adapted to support a transport trolley, by means of which the ties and the rails can easily be moved to the connecting bed from wagons behind the machine, which also are provided on their floors with a corresponding track, which by suitable means can easily be connected with the track on the machine car or with the track of the next wagon. The connecting bed is provided with suitable guiding means for the ties and the rails to be connected, so that they are located in the proper position with relation to each other and are held in the said position in a reliable manner during the connecting operation. The connected ties and rails are moved as a whole from the machine to the road-bed. The said movement is effected by means of a trolley, which is provided with a winch and supported by a track, provided on a superstructure on the machine car and extending longitudinally of the same. The finished track section is lifted from the connecting bed by means of the winch and is then advanced on the machine car for such a distance, that it can be lowered to the road-bed in front of the said car.

The characteristic features of the inven-

tion consist in the said connecting bed and means provided at the same for moving the rails on the ties and for their proper adjusting and connecting with the ties, and in the said superstructure forming with the winch-trolley an overhead traveling crane, by means of which each track section can easily be moved from the machine car to the road-bed.

In the accompanying drawings Figure 1 is a side view of the machine and Fig. 2 a plan view of the same. Fig. 3 is an end view of the machine. Figs. 4 and 5 are a side view and a plan view respectively of auxiliary wagons, adapted to be connected with the machine car. Fig. 6 is a longitudinal section and Fig. 7 a plan view of a part of the connecting bed. Fig. 8 is a cross section of the connecting bed and Figs. 9, 9<sup>a</sup>, 9<sup>b</sup> and 10 are details of the same. Fig. 11 is a side view, Fig. 12 a cross section and Fig. 13 a plan view of a device for connecting the tracks provided on the machine car and the auxiliary wagon, so that the transport trolley can pass from one of the tracks to the other.

The machine comprises a bogie car 1 provided with a floor 2 forming the connecting bed mentioned above. The width and length of the said bed are so great, that the ties 3 necessary for a track section can be placed on the same and the rails 4, 4 of the said section then located on the ties and fixed to the same. A track 6, 6 for the transport trolley 7, is provided on the car 1 at the connecting bed 2 and extends longitudinally of same. The said track is continued by tracks 6<sup>x</sup> provided on the auxiliary wagons 8, 9, 10 . . . , so that the trolley can be moved along the whole set of wagons. The rails of the track 6, 6 also serve as a support, on which the ties can be placed. At the connecting bed forks 11 are provided for the locating of the ties, two forks being provided for each tie, as shown in Fig. 7. The distance between the forks longitudinally of the machine is adapted to the desired distance between the ties. The transport trolley 7 loaded with ties is moved on the track 6, 6 to the front end of the bed 2, one tie at a time being then discharged in the forks, while the trolley is moved backward. The rails are then moved to the ties in the manner described below.

The machine also comprises the super-



structure 12 made of frame irons and provided with a track 13 for the winch trolley 14. The height and the width of the said superstructure inside the same are so adapted, that there is a sufficiently large room below the same for the performance of the work on the connecting bed and for hoisting up the connected track section from the said bed by means of the overhead trolley 14 and moving the same forward. The said superstructure 12 extends forward, outside the front end of the machine for such distance, that the raised track section can be moved forward sufficiently to be lowered to the road-bed. The superstructure 12 is provided at its rear end with a special winch 12<sup>x</sup> for moving the rails forward. The said winch 12<sup>x</sup>, as well as the winch trolley 14, is of any ordinary construction and is, for that reason, not shown in Fig. 2. After the ties have been placed on the connecting bed 2, the rails 4, 4 are pulled forward from the wagon by means of the winch 12<sup>x</sup>. In the drawings the rope 15 is shown connecting the rails with the winch. In order that the ties may not be displaced by the heavy rails during the said operation, the machine is provided with a runway formed by rollers, which can be raised and lowered and on which the rails are moved. The said runway is arranged in the following manner.

At certain points of the bed 2, between the places for two ties a roller 16 is located, extending transversally of the bed, above the same, and journaled with its end pins in the top arms 17 of two bell crank levers, which are journaled at each side of the machine in such a manner, that they can be swung in a vertical plane extending longitudinally of the machine. The downward extending arms 18 of the said levers at the respective side of the machine are connected with a rod 19 extending longitudinally of the machine. Ropes are fixed to the rods 19 at the end of the machine and wound around a roller 20 journaled in the machine, which roller can be rotated by means of a crank and a suitable gearing, Fig. 10. By rotating the rollers, so that the ropes and rods are strained, all the rollers 16 will be raised above the top side of the ties. A pawl, engaging a ratchet wheel fixed to the roller 20, keeps the rollers in their raised position. The rails are advanced on the runway thus formed without displacing the ties. The rollers 16 are then lowered, so that the rails are supported by the ties. For guiding the rails forks 21 are provided on the bed, three at least for each rail and located one at each end of the machine and one at the center of the same. The said forks are adjustable transversally of the rails, so that they can be located at the proper distance from each other, dependent on the curvature of the rails, adapted for curves, and on the dis-

tance between the two rails at the straight parts of the track, different from that at the curves. Means for adjusting the said forks are shown in Figs. 9 and 9<sup>a</sup>.

In the bed 2 a guide 22 is provided, in which the fork can slide transversally of the rail 4. A horizontal screw threaded spindle 23 is journaled in the said guide and is engaged by the fork, so that the latter is moved, as the spindle is rotated. The spindle is provided with a bevel-wheel 24, meshing with a pinion 25 fixed on a vertical shaft 26. The said shaft 26 is journaled in an upright 27 and provided at its top end with a hand wheel 28, by means of which the shaft can be rotated. An index 29 is fixed on the screw threaded shaft 26 and coöperates with a dial 30 fixed to the said upright 27. Between the two forks, located in the same line transversally of the rail, a rod 28<sup>x</sup> is fixed, which is divided at its center into two parts, the screw threaded ends of which are engaged by a nut 29<sup>x</sup>, Fig. 9<sup>b</sup>, provided with a hand wheel. By means of the said device the distance between the forks can be exactly adjusted. By rotating the hand wheel 28 both the forks can be adjusted into the proper position laterally with relation to the center line of the connecting bed. Only one shaft 26 is shown in Fig. 7 but such a shaft is provided at all the forks located at the same side of the machine.

After the positioning of the ties the trolley 7 is moved backward on the next wagon loaded with rails. The wheels of the said trolley are so high, that the trolley can pass over the rails on the said wagon.

As the ties and the rails have been positioned on the connecting bed in the described manner, the rails are fixed to the ties by means of spikes or screws either manually or by a special machine. The finished section is then hoisted up from the connecting bed by means of the winch trolley which for the said purpose is provided with four ropes 36 and is then moved forward, supported by the said trolley, as shown in Fig. 1, and lowered to the road bed in order to be connected with the track before laid on the same. The ties for the next track section are then laid on the connecting bed and the operations described above repeated.

The device for connecting the rails of the machine car and the wagons is arranged in the following manner: The heads of the two rails are reduced at the ends to the same width as the body of the rails. Pieces 31 are provided at both the sides of the rails having the same height as the rails and are supported by the foot pieces of the same. The said side pieces are fixed to the end of one of the rails by means of a bolt 32 passing through the same and to the end of the other rail by means of a loop 33 embracing the bottom part of the rail. The screw threaded



ends of the said loop, provided with nuts, pass through lugs extending from the side pieces. Owing to the said arrangement a sliding movement to a certain degree can take place longitudinally of the rails; so that the cars can pass curves, be moved onto sidings etc. without straining being effected. The ends of the side pieces are rounded with the bolt as center point, so that they can be turned upward and downward.

Having now described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a track laying machine the combination of a railroad car provided with a plane bottom surface (2), on which the ties can be placed and the rails, supported by the said ties, means at the said surface for guiding the ties and the rails respectively for their locating in the proper position on the said surface, tracks (6, 6) for a trolley for transporting the ties to the surface (2) and their placing on the same, a superstructure on the said car provided with a track (13) for a winch-trolley (14), the said superstructure being so high and wide inside, that there is room for the performance of the operations on the said bottom surface, and so long, longitudinally of the car, that the pair of rails fixed to the ties and lifted from the bottom surface by the winch-trolley (14) can be located in front of the bottom surface, by moving the trolley forward on the track (13), and then be lowered to the road bed.

2. In a track laying machine the combination of a railroad car, a plane bottom surface (2), provided on the same, on which the ties and the rails, which have to form a track section, can be placed and connected, means at the said surface for guiding the ties and the rails into their proper positions and holding the same during the connecting operation, a runway for the rails moved to the bottom surface, said runway comprising rollers and means for raising and lowering the same, and means provided above the bottom surface for lifting the finished track section from the bottom surface, locating the same in front of the bottom surface and lowering to the road bed.

3. In a track laying machine the combination of a railroad car, a plane bottom surface in the same, on which the ties and rails forming a track section, when connected, can be placed and connected, forks at the said surface for guiding the ties into their proper positions, forks for guiding the rails into their proper position on the ties, the forks, last mentioned, being adjustable transversally of the rails for adjusting the rails with relation to curves and to the proper distance from each other, and means for moving the finished track section from the car downward to the road bed.

4. In a track laying machine the combination of a railroad car, a connecting bed provided on the same, on which the ties and the rails, which are to be connected, are placed, forks at the said connecting bed for guiding the ties and the rails respectively into their proper positions and holding the same during the connecting operation, the guide forks for the rails being movable transversally of the rails and connected with a screw, and means for rotating the said screw for adjusting the rails into their proper positions.

5. In a track laying machine the combination of a railroad car, a connecting bed provided on the same, on which the ties and the rails, which form a track section, are laid and connected, forks for guiding the rails, which forks are adjustable in the connecting bed transversally of the rails, a rod (28\*), connecting the pair of forks located in the same transverse line with relation to the rails and divided transversally into two parts, a nut engaging the screw threaded adjacent end of the said parts and provided with a hand wheel for adjusting the said forks into the desired distance from each other, a screw threaded spindle journaled in the connecting bed transversally of the rails, means connecting the said pair of forks with the said spindle, and means for rotating the said spindle for moving the pair of forks laterally.

6. In a track laying machine the combination of a railroad car, a bottom plane surface provided on the same, on which the ties and the rails forming a track section can be placed and connected, means at the said surface for guiding the ties and the rails respectively and holding the same during the connecting operation, and a runway on which the rails can be moved to their places on the said bed, the said runway comprising rollers, located between certain places for the ties and transversally of the bed, levers located at both sides of the machine and supporting the rollers respectively, and means for turning the said levers simultaneously for raising and lowering the rollers.

7. In a track laying machine, the combination of a railroad car and wagon, a stationary plane surface in the car on which ties and rails to be connected to form a track section are placed and connected, means for conveying the rails to the said plane surface of the car, means for raising and lowering the aforesaid means, guiding means on the said plane surface of the car for holding the ties and rails in position during the connecting operation, a track extending longitudinally of the machine for supporting a transport trolley for conveying the ties to the said plane surface of the car from said wagon loaded with ties and located behind the car, a track on the said wagon and means for



4  
connecting the said tracks on the main car and wagon.

8. In a track laying machine the combination of a railroad car, a connecting bed  
5 provided on the same on which the ties and rails, which connected form a track section, are laid and connected, a track provided at  
the said surface and extending longitudinally of the machine, a trolley supported by  
10 the said track and adapted for transporting the ties to the connecting bed from a wagon located behind the machine and provided with a track, and means for connecting the said tracks, the said means comprising side

pieces, pivotally connected with the rails on 15 one of the cars, and loop shaped pieces (33), located under the rails on the other car and embracing the same and projecting with their ends through the said side pieces.

In witness whereof, we have hereunto 20 signed our names in the presence of two subscribing witnesses.

CARL GUSTAF SMITH.  
AXEL CONRAD AULIN.

Witnesses:

HEDWIG MELINDER,  
ROBERT APELGREN.