

No. 895,530.

PATENTED AUG. 11, 1908.

H. ZECH.
LOGGING DEVICE.

APPLICATION FILED MAY 15, 1908.

3 SHEETS—SHEET 1.

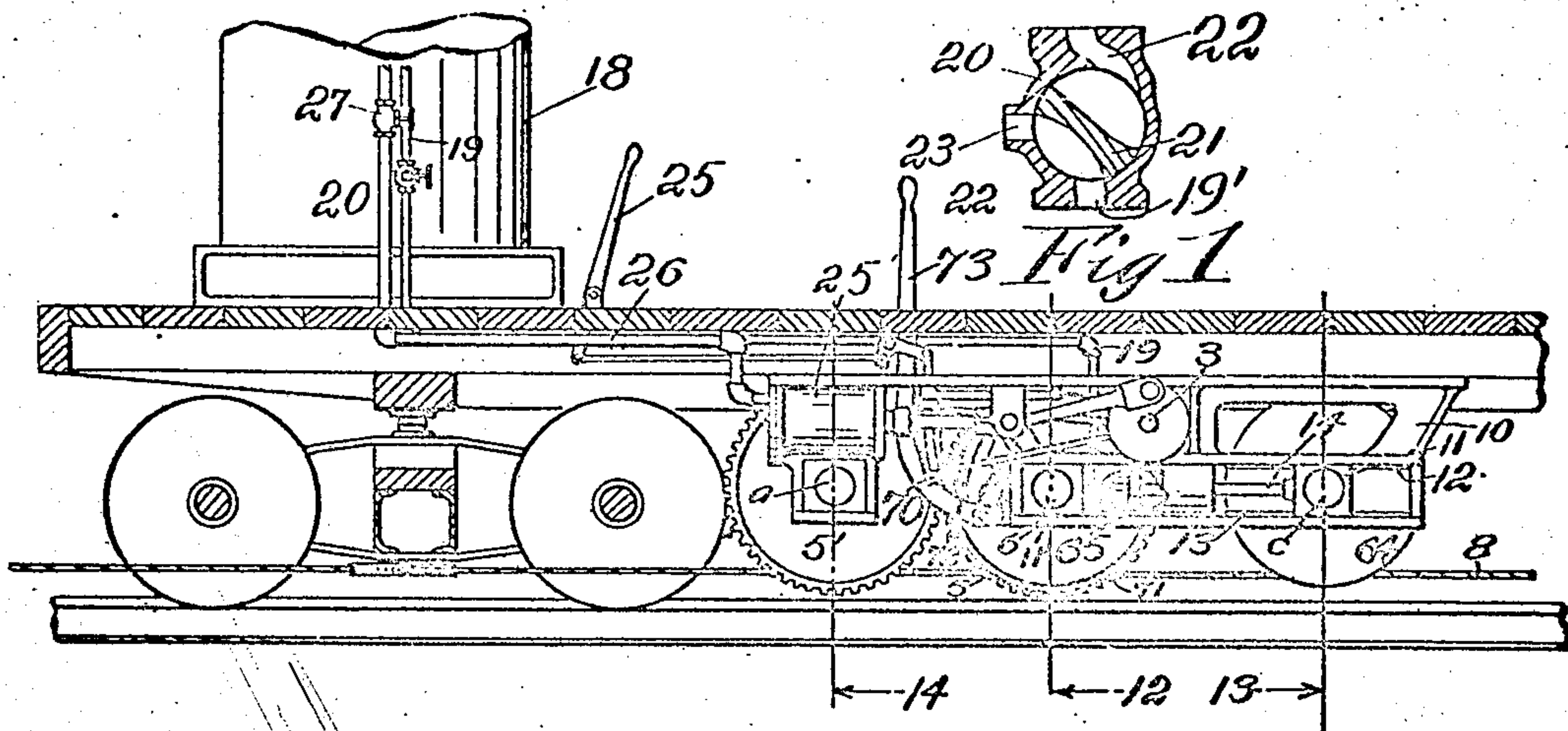
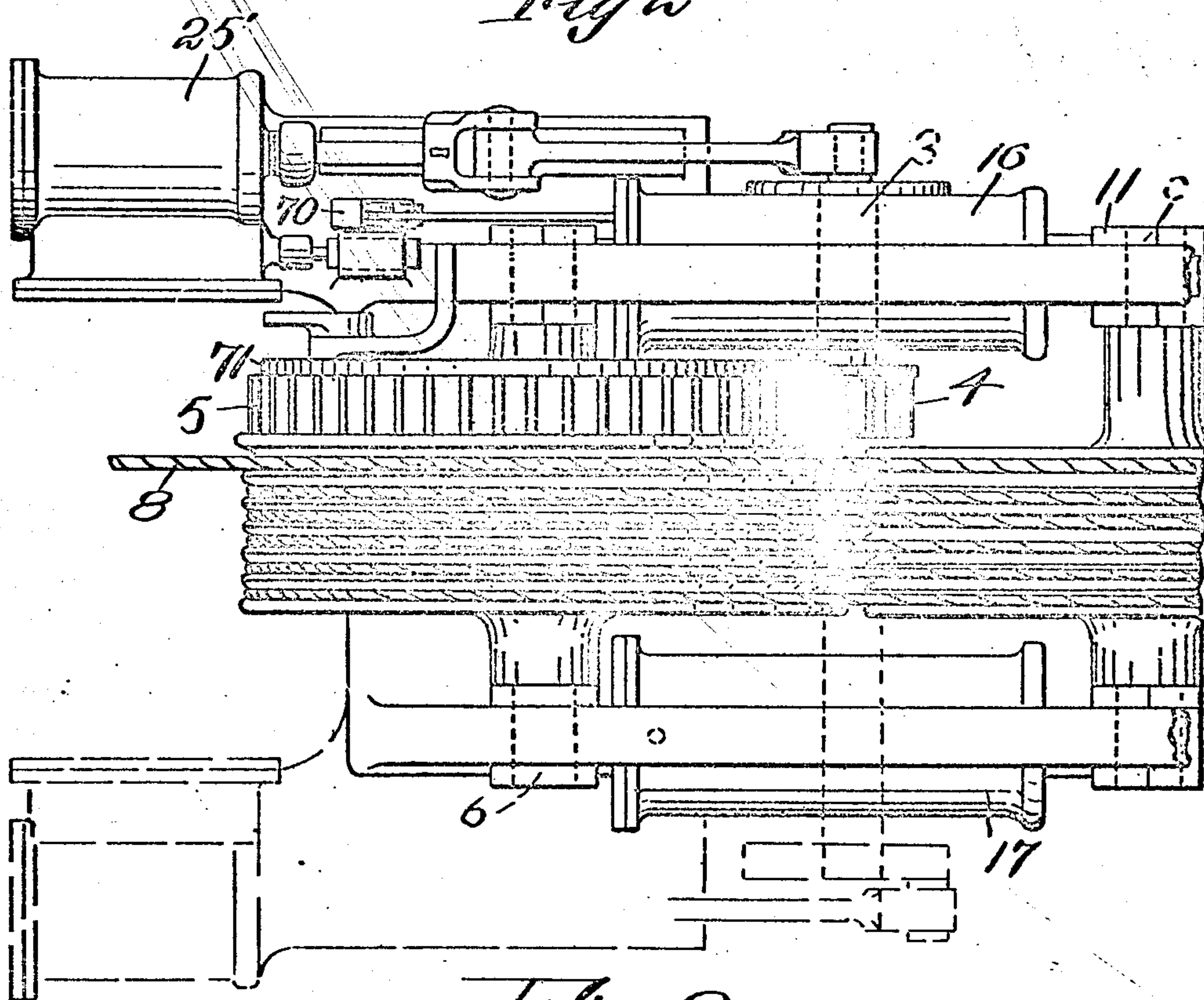


Fig 2



WITNESSES
A. L. Pressely
L. Osborn

Fig 3

INVENTOR
Hieronimus Zech
BY *Paul J. Bolger*
His ATTORNEY

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3 SHEETS—SHEET 2.

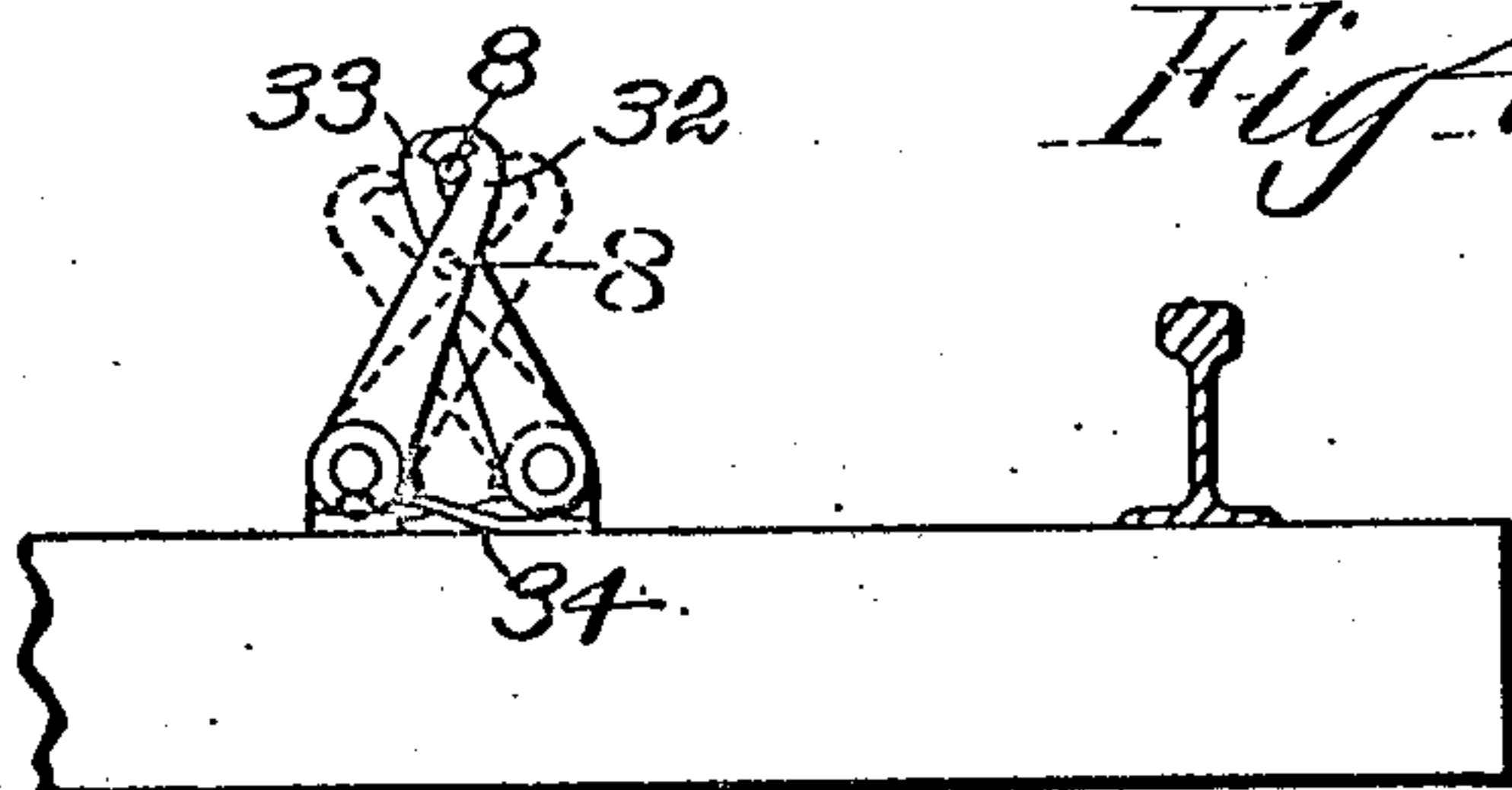
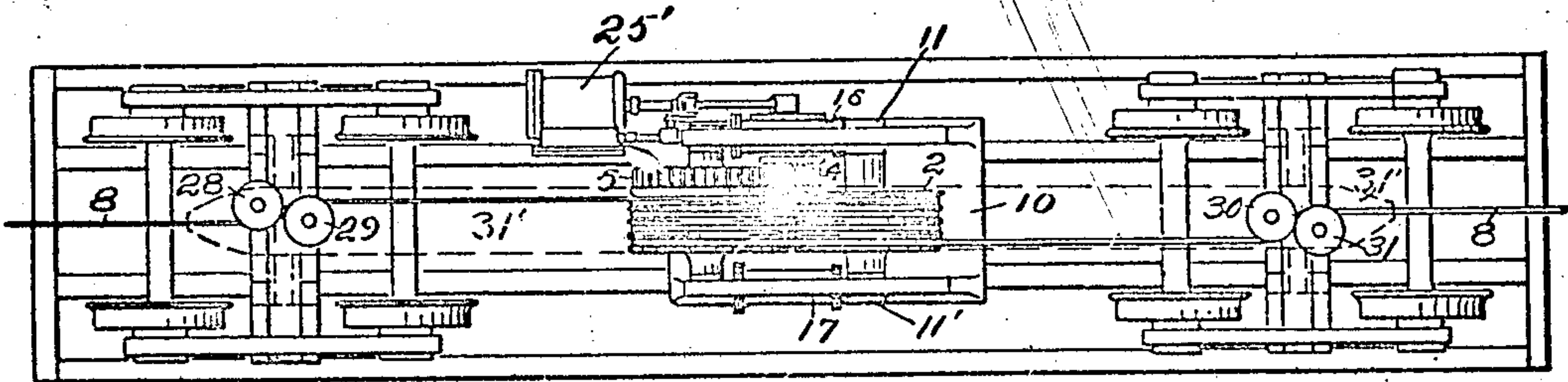


Fig 5

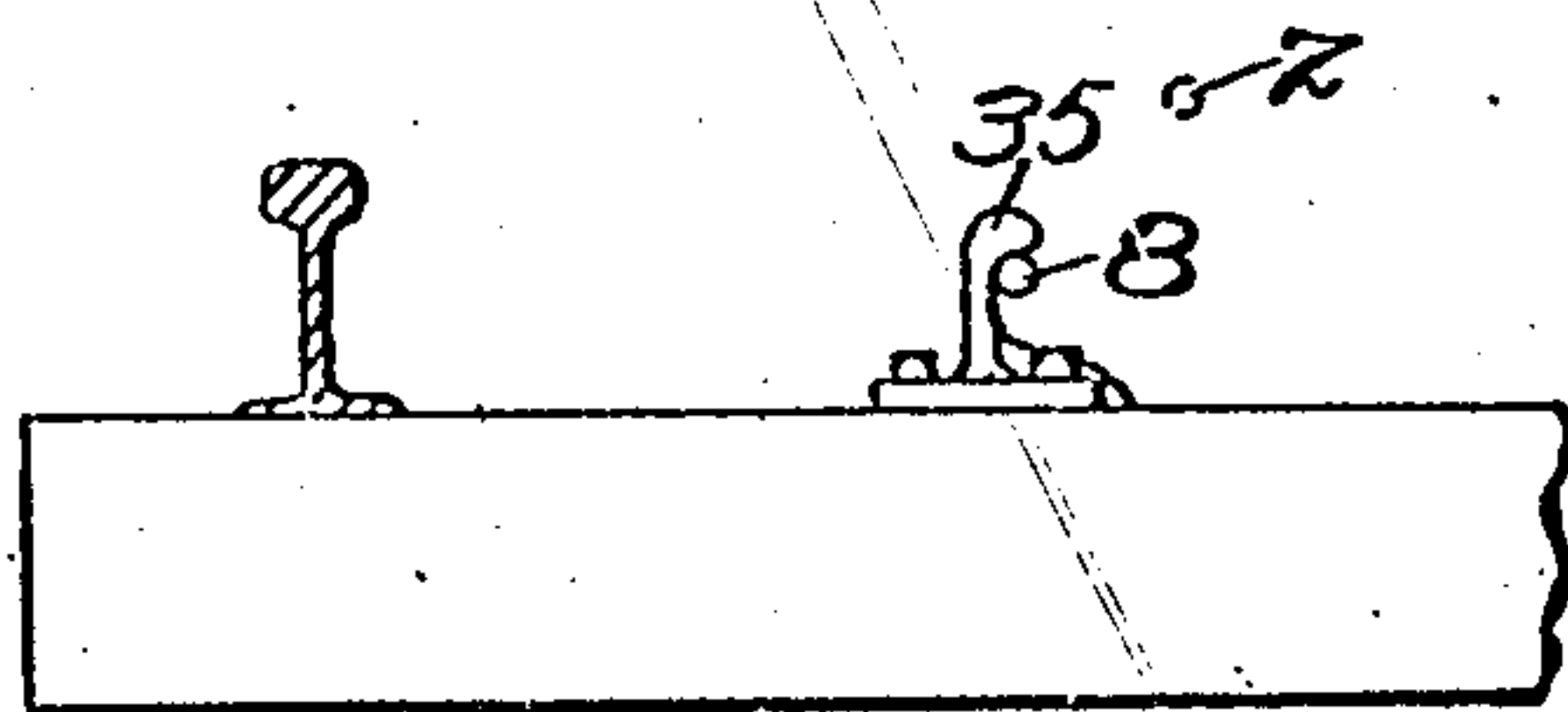


Fig 6



Fig 7

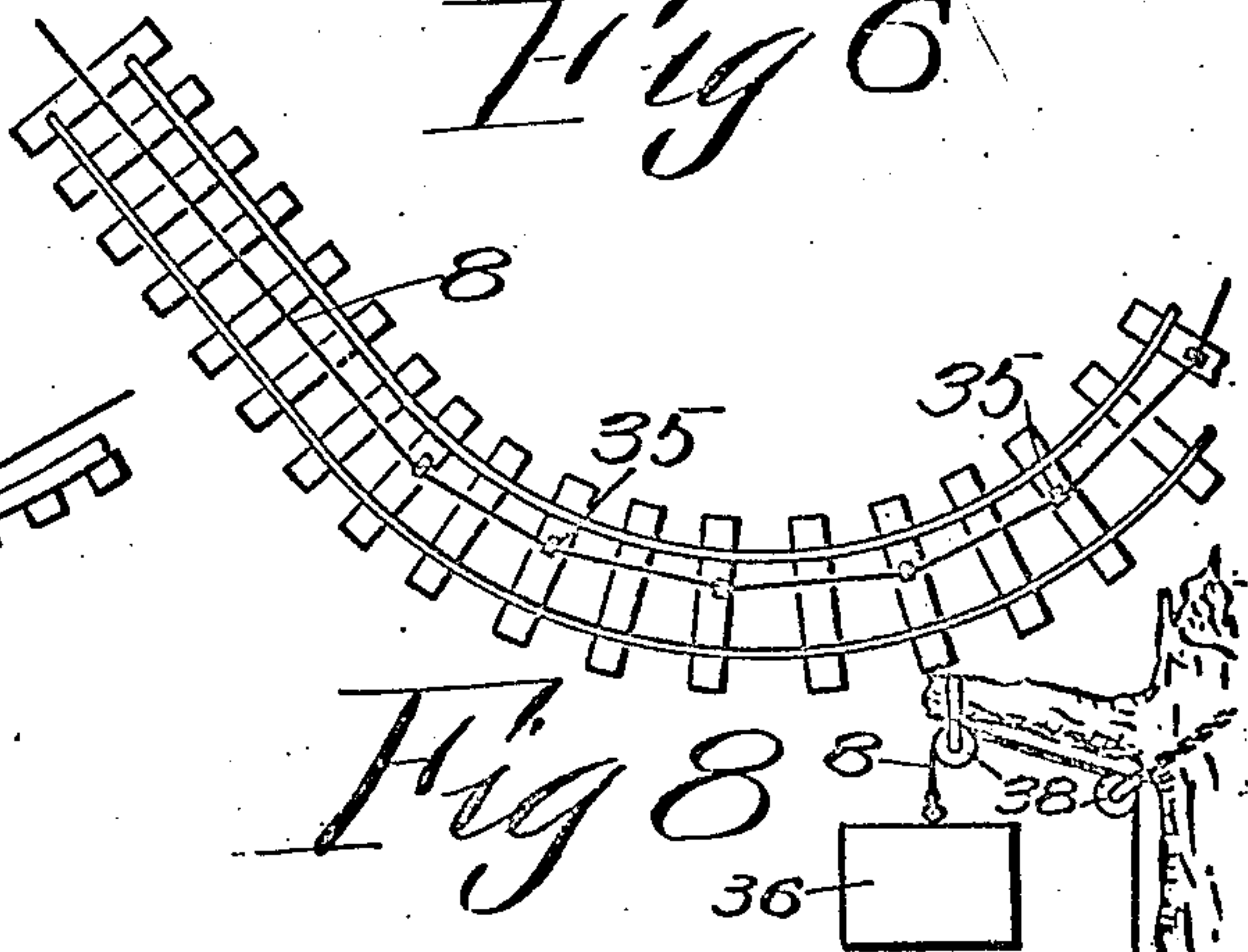


Fig 8

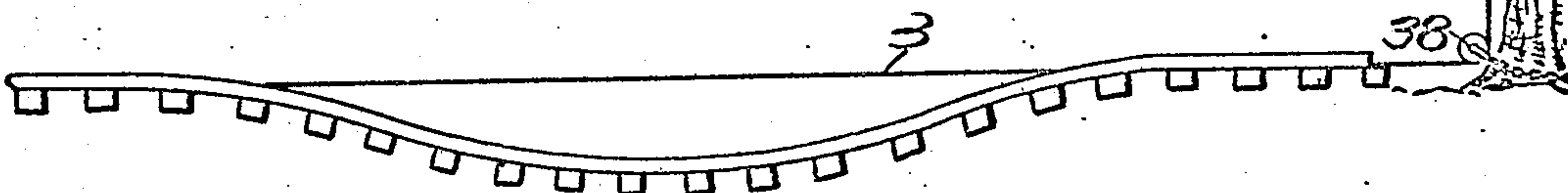


Fig 9



Fig 10

WITNESSES
A. L. Russell
S. Osborn.

Fig 11

INVENTOR
Hieronimus Zech
BY *Paul Talbot*
His ATTORNEY

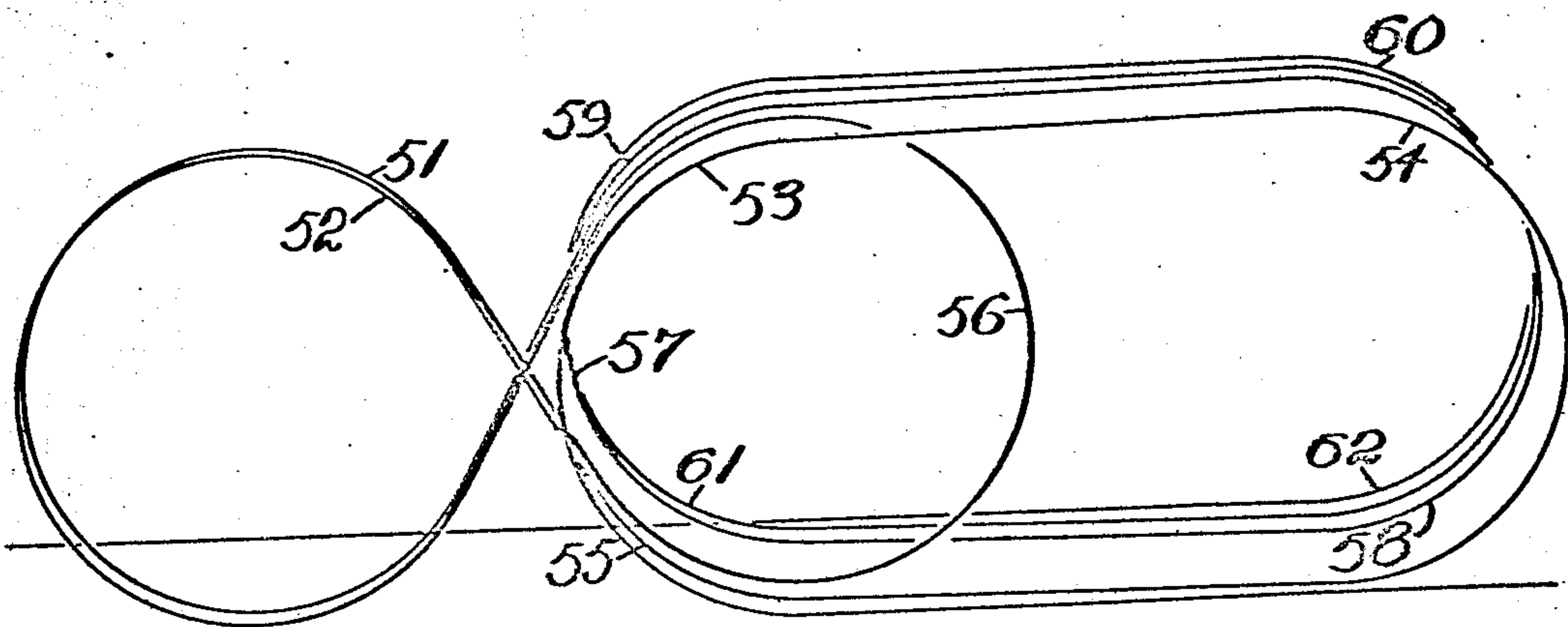
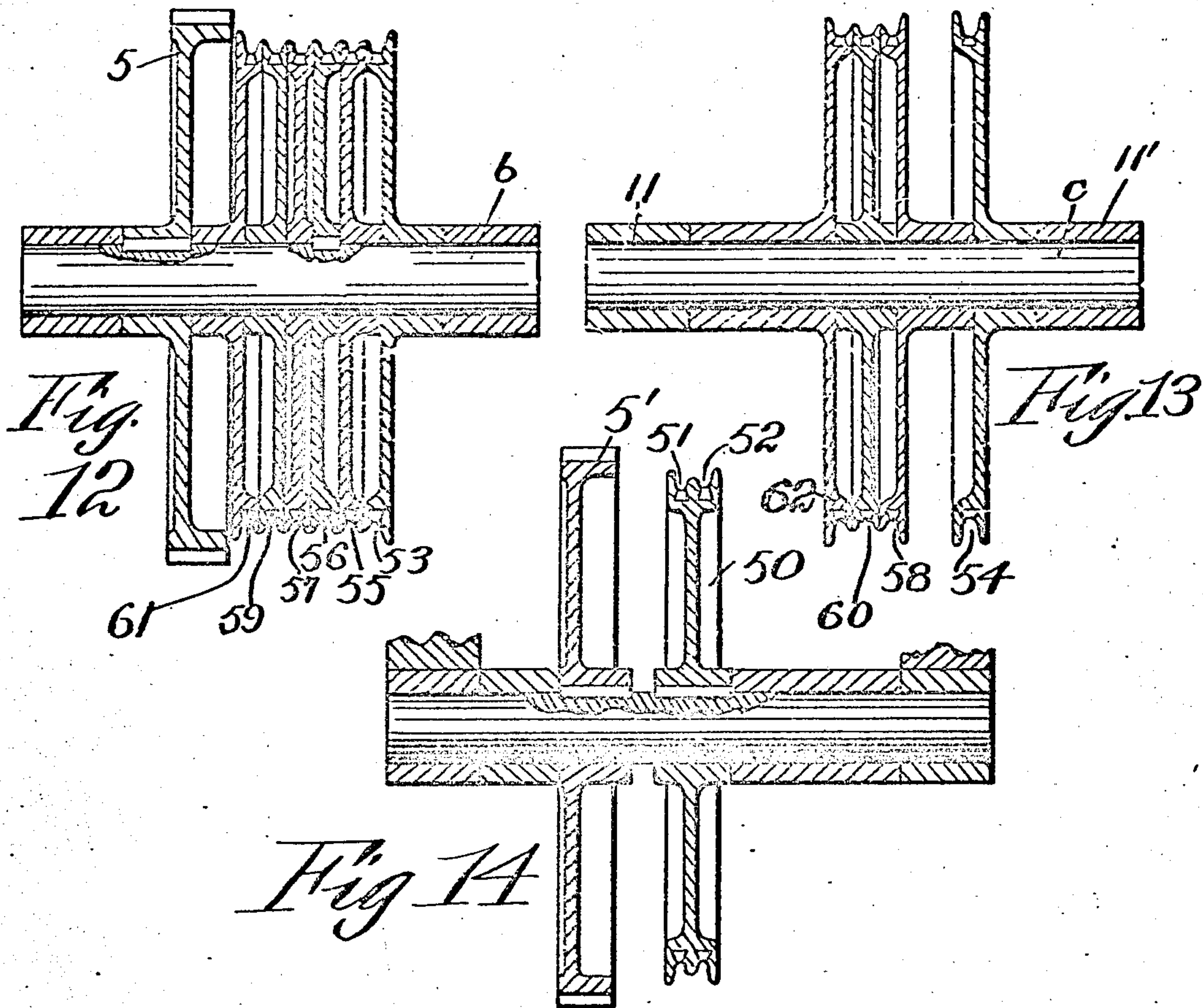
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3 SHEETS—SHEET 3.



WITNESSES
L. Ostrund
& A. Calligan.

Fig. 15

INVENTOR
Hieronymus Zech
BY Paul C. Ballou
His ATTORNEY

UNITED STATES PATENT OFFICE.

HIERONYMUS ZECH, OF WILBURTON, WASHINGTON.

LOGGING DEVICE.

No. 895,530.

Specification of Letters Patent.

Patented Aug. 11, 1908.

Application filed May 15, 1906. Serial No. 317,020.

To all whom it may concern:

Be it known that I, HIERONYMUS ZECH, a citizen of the United States, residing at Wilburton, in the county of King and State of Washington, have invented new and useful Improvements in Logging Devices, of which the following is a specification.

My invention relates to logging devices in which a car is equipped with locomotive means and a stationary cable, said cable being made of wire, Manila rope or any composition adapted to the handling of heavy weights and which is possessed of good wearing qualities.

The objects of my invention are to construct a logging device which is adapted to haul logs from the woods and may operate on very steep grades without relying on the weight or tractive power of the locomotive as a means for applying the power in hauling the logs. I do not wish, however, to be limited to logging only as I may wish to use my device as a locomotive means where it is desired to haul heavy weights and where speed alone is not the most important factor. In my device the rope is preferably rigidly secured at one end and adjustably secured at its other end and lies substantially midway of the rails when the holding down pieces are used and slightly toward the inner rail on curves in the road-bed of the railway on which I may operate my device.

I have shown in the accompanying drawings a portion of the track in which the holding down pieces are not used. This construction is preferred in temporary installations of my device and it is obvious that when the car is traveling in a depression as would occur in a gulch or a ravine running transversely of the road bed of my device the rope will be forced downwardly toward the ties and as the car advances from the said depression the said rope will become slackened. It may be desirable to take up this slack rope and I have here shown a weight attached to one end of said rope and adapted to keep a tension on said rope. In this case I have shown the aforesaid weight as hung from the limb of a tree but I do not wish to be limited to this specific construction within the scope of my patent.

The locomotive car is here shown with a

single or double cylinder geared winch having preferably three shafts one of said shafts being slidably mounted in the framework of said winch the other two being driven by gearing. The said slidably mounted shaft is provided with one or more loose sheaves the said sheaves adapted to receive the cable of my device as hereinafter described; the said slidably mounted shaft is journaled in boxes connected to the pistons of tightening cylinders adapted to cause the said slidably mounted shaft to travel from the gear driven shaft when steam is admitted behind the piston heads attached to the said pistons which will take up any slack there may be in the aforesaid cable. The shaft which is nearest the slidably mounted shaft is provided in this case with a single driving sheave and having on each side of the said driving sheave one or more loosely mounted sheaves adapted to co-act with the said sheaves on said slidably mounted shaft in taking up the slack in the said cable; the third or remaining shaft is provided with a double grooved sheave rigidly secured to the said shaft and adapted to receive the cable from one of the said loosely mounted sheaves on the second named shaft and to permit the said cable to travel around the said third mentioned shaft having the said grooved double sheave and thence on to the sheave on the second named shaft which is rigidly secured to the said shaft and from thence around the second groove in the third named shaft and then on to one of the loosely mounted sheaves on the second named shaft and thence around one of the loosely mounted sheaves on the first named or slidably mounted shaft. I do not wish however, to be limited to one driving sheave on the second named shaft nor to a double grooved sheave on the third named shaft as it may be desirable to increase the number of driving sheaves to prevent the aforesaid cable from slipping on the said driving sheaves.

I do not wish to be limited to a winch consisting of three shafts and have here shown one having but two and with this construction the cable passes around both shafts from under to over the several sheaves as shown, one of the said sheaves being rigidly secured to the shaft having the gear. This

construction however is for smaller installations, three shafts being the preferred construction.

It is obvious that the cable being secured at its ends and remaining stationary will cause the car to travel as the sheaves revolve. I have also shown holding down pieces which are preferably used in permanent installations of my device and which are adapted to hold the cable down to the track in gulches and ravines and when the said holding down pieces are used I may deem it advisable to do away with the weight heretofore described as being secured to the end of said cable and which is supported to the limb of a tree, as with the use of these holding down pieces and curve pieces the slack in the cable will be reduced to a minimum making it possible to take all of the slack up by separating the slidably mounted shaft from those having a driving sheave attached thereto. The engine or engines of my device are provided with a reverse gear which enables the aforesaid car to run in either direction as may be desired. I attain these objects by the mechanism illustrated in the accompanying drawings in which

Figure 1 is a transverse section showing the disposition of the ports in the tightening drum cylinder throttle. Fig. 2 is a side elevation of my device with a portion of the car and two of the wheels removed. Fig. 3 is a bottom view of the simple form of winch or locomotive means of my device showing a second cylinder in broken lines and the single cylinder as well as the attachments connected thereto. Fig. 4 is a bottom view of the entire car showing the arrangement of the several parts when a single cylinder 2 shaft winch is used, and the protection plate in broken lines. Fig. 5 is a fragmentary section of the road-bed showing the arrangement of the holding down pieces as are used in the depressions in the said road-bed. Fig. 6 is a fragmentary section of the track showing the disposition of the curved pieces. Fig. 7 is a side elevation of a portion of the road-bed and shows several of the holding down pieces in place. Fig. 8 is a plan view of a portion of the track showing the arrangement and disposition of several of the curved pieces. Fig. 9 is a side elevation of a portion of the end of the track and shows means for tightening the cable when no holding down pieces are used. Fig. 10 is an end view of the protection plate of my device. Fig. 11 is a side view of said protection plate. Fig. 12 is a section at 12 Fig. 2 of the shaft having a driving sheave and loosely mounted sheaves. Fig. 13 is a section at 13 Fig. 2 of the slidably mounted shaft. Fig. 14 is a section at 14 Fig. 2 of the shaft having a double grooved driving sheave. Fig. 15 is a diagrammatical view showing the manner in which the cable is wound about the several

sheaves. The reference numerals refer to that portion of the cable which rests on the sheave corresponding to the reference numeral in the preferred construction of my device.

Similar reference numerals refer to similar parts throughout the several views in the accompanying drawings.

I have shown the motive power for revolving the several shafts as being a single or double cylindered engine preferably the latter adapted to drive a crank shaft 3 having a pinion 4 adapted to mesh with a gear wheel 5 being adapted to mesh with a similar gear wheel 5' the said gear wheel 5' is rigidly secured to a driving shaft (a) and which also has a double geared sheave 50 having grooves 51 and 52 on its periphery. The cable 8 first passes between the guiding idlers 30 and 31 thence half-way round the sheave 53 thence on to the sheave 54 and from the sheave 54 the said cable 8 then travels on a portion of the sheave 55 and thence on to the driving sheave 50 in the groove 52 and nearly around the said driving sheave 50 to a second driving sheave 56 passing nearly entirely around the said driving sheave 56 and from thence returning to the said driving sheave 50 in a groove 51 passing nearly entirely around the sheave 50 and from thence on to a portion of the sheave 57 and from thence on to the sheave 58 passing half-way around the said sheave 58 on to a sheave 59 passing half-way around the said sheave 59 and on to a sheave 60 and passing half-way around the said sheave 60 on to a sheave 61 and passing half-way around the said sheave 61 and thence on to a sheave 62 and thence the said cable 8 passes from the said winch between the guiding idlers 28 and 29.

The sheaves 54, 58, 60 and 62 are loosely mounted on a shaft (c) the said shaft (c) is slidably mounted by means of journal boxes 11 and 11' and guides 12 and 13 the said journal boxes 11 and 11' have attached thereto one end of piston rods as 14 which are attached to pistons as 65 said pistons 65 are fitted in sheave tightening cylinders 16 and 17 which are supplied with steam through a steam pipe 19 and a three-way valve 20 said three-way valve 20 is adapted to admit steam to the said sheave tightening cylinders 16 and 17 and to exhaust the said steam from said cylinders 16 and 17 when desired. The sheaves 53—55—56—57—59 and 61 are mounted on a shaft (b). In Fig. 1, I have shown a section through the center of the aforesaid valve 20 showing the valve in the exhaust position, the steam as shown passing through the exhaust port 23 and shows the steam port 22 as being shut off.

It is obvious that when the valve 21 is turned to a position which will allow steam passing through the said port 22 and a passage 19' which is in communication with the

aforesaid steam pipes 19, that steam will be admitted behind the aforesaid pistons 65 which will separate the aforesaid shafts (c) and (b) thus causing any slack which may occur in the said cable 8 to be taken up. In this way good contact is maintained on the sheaves 56 and 50. The shafts (b) and (c) are preferably journaled in journal boxes as 11 and 11', the said journal boxes 11' being substantially stationary and adapted to journal the aforesaid shaft (b), gear wheel 5, the driving sheaves 56 and tightener sheaves 61—59—57—55—and 53, the said journal boxes 11 are slidably mounted in the framework 10 and are adapted to be operated as heretofore described by means of the aforesaid valve 20.

I have shown a reversing lever 25 adapted to operate the reverse link motion 70, thus affording a means for reversing the several parts here shown in both directions. The said link motion 70 is of the usual type common to winch construction. I have also shown as projecting above the car deck of my device a lever 73 adapted to operate a brake 72 which preferably bears against the internal surface of the brake rim 71 which is rigidly secured to the aforesaid gear wheel 5. I do not wish however to be limited to this particular form of brake nor do I wish to be limited to brake 72 as being the only brake means for stopping the said car of my device as I may wish to apply air brakes of the usual type on the wheels of the car of my device or in fact any form of brake common to railway equipment.

I have provided a protection plate 31 adapted to cause holding down pieces 32 and 33 to be forced in a depressed position shown by broken lines in Fig. 5, the said holding down pieces are preferably mounted in depressions of the road bed of my device and are adapted to hold the said cable 8 from being raised from the track as shown in Fig. 9 when a strain is applied thereto. The guiding idlers 28, 29, 30, and 31 are so disposed as to cause the said cable 8 to be forced toward the ties as shown in broken lines in Fig. 5, and when said cable 8 is in its lowered position, viz: when the car of my device is passing the portion of the track having the said holding down pieces 32 and 33, the said holding down pieces 32 and 33 will be thrown apart as shown in broken lines in Fig. 5. The said protection plate 31' as the car advances will enter the opening between the open or hooked end of the said holding down pieces 32 and 33 and cause the said holding down pieces 32 and 33 to be separated and depressed by the said protection plate, the said holding down pieces 32 and 33 remaining in this depressed position until the said car has passed beyond the portion of the track or roadbed to which the said holding down pieces 32 and 33 are secured. A spring as 34

adapted to operate upon a lug on the lower end of the said holding down pieces 32 and 33 and cause the said holding down pieces to return to their normal position as shown in Fig. 5, when the aforesaid car of my device has passed the above named portion of the track or roadbed of the said holding down pieces 32 and 33 are depressed. In Fig. 6, I have shown curve pieces as 35 adapted to prevent the said cable from being thrown toward the inner rail of the curves in the roadbed of my device as shown in Fig. 8. The aforesaid guiding idlers 28 and 29 which are carried by the car of my device will cause the said cable 8 to be thrown toward the center of the track as shown in broken lines in Fig. 6, thus allowing the said cable to travel between the guiding idlers 28, 29, 30, and 31, and over the several shafts carried by the car of my device as heretofore described.

I do not wish to be limited to the construction shown in the accompanying drawings but wish to make such changes as are within the scope of my patent.

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

1. In a logging device, a winch having three shafts, one of said shafts slidably mounted in the frame of said winch and adapted to be separated from the remaining two shafts of the said winch by means of pistons 14 and cylinders 16 and 17 supplied with steam from a boiler 18 to take up slack in cable wound on said winch.

2. In a logging device of the nature indicated, a winch having three shafts, one of said shafts slidably mounted in the frame of said winch and adapted to be separated from the remaining two shafts of said winch by means of pistons 14 and cylinders 16 and 17 supplied with steam from a boiler 18, said slidably mounted shaft being provided with loosely mounted sheaves 62, 60, 58 and 54 adapted to receive a cable 8 from sheaves 53, 55, 57, 59, and 61, said sheaves 53, 55, 57, 59, and 61 being loosely mounted on a shaft (b), said shaft (b) being provided with a driving sheave 56 and a gear wheel 5 which are rigidly secured thereto, and said sheave 56 being adapted to co-act with a driving sheave 50, said driving sheave 50 being rigidly secured to a shaft (a) and also provided with a gear wheel 5' adapted to intermesh with the aforesaid gear wheel 5, said gear wheel 5 being adapted to intermesh with a pinion 4 rigidly secured to a crank shaft 3 of a steam engine.

3. In a logging device of the nature indicated, a winch mounted on the substructure of a car, said winch being provided with sheaves adapted to receive a cable 8, means for taking up the slack in said cable 8, means for reversing the motion of said winch, means for applying a brake to the internal surface

of a brake rim 71, guiding idlers 28, 29, 30, and 31 adapted to receive and discharge said cable from shafts mounted on said winch, mounted approximately concentric to the king bolt of the trucks of the car of said logging device and adapted to cause said cable 8 to be guided substantially midway of the rails of the roadbed of said logging device, and a protection plate 31 pivotally secured concentric with the king pins of said car trucks of said logging device.

4. In a logging device of the nature indicated, the combination of a car having a winch adapted to receive a cable, said cable being secured substantially stationary relative to the roadbed of said logging device, said winch being adapted to receive said cable and to cause a car secured thereto to travel along the said cable, and means for tightening said cable by fluid pressure.

5. In railway equipment, a winch having three shafts, one of said shafts slidably mounted in the frame of said winch and adapted to be separated from the remaining two shafts of said winch by means of pistons 14, and cylinders 16 and 17 adapted to be operated by steam from a boiler 18 for the purpose described.

6. In railway equipment, a winch having three shafts, one of said shafts slidably mounted in the frame of said winch and adapted to be separated from the remaining two shafts of said winch by means of pistons 14, and cylinders 16 and 17 supplied with steam from a boiler 18, said slidably mounted shaft being provided with loosely mounted sheaves 52, 60, 58, and 54 adapted to receive a cable 8 from sheaves 53, 55, 57, and 61, said sheaves 53, 55, 57, 59, and 61 being loosely mounted on a shaft (b) which is provided with a driving sheave 56 and a gear wheel 5 rigidly secured thereto, said sheave 56 being adapted to co-act with a driving sheave 50 which is rigidly secured to a shaft (a) being also provided with a gear wheel 5' adapted to intermesh with the aforesaid gear wheel 5, and said gear wheel 5 being adapted to intermesh with a pinion 4 secured to a crank shaft 3 of a steam engine.

7. In railway equipment, a car, a winch mounted thereunder and provided with sheaves, a cable wound thereon, means for taking up the slack in said cable, means for reversing the motion of said winch, a brake rim, means for applying a brake to the internal surface thereof, guiding idlers 28, 29, 30, and 31 adapted to receive and discharge said cable from shafts mounted on said winch and mounted approximately concentric to the king bolt of the trucks of the car aforesaid to cause said cable to be guided substantially midway of the rails of the roadbed of said logging device, and a protecting plate 31' pivotally mounted concentric with the king pins of the trucks of said car.

8. In railway equipment, the combination of a car having a winch adapted to receive a cable, said cable being secured substantially stationary relative to the roadbed of said railway equipment, said winch being adapted to receive said cable and to cause a car secured to said winch to travel along the cable and a roadbed having a stationary cable and holding down pieces 32 and 33 pivotally connected to said roadbed and disposed in pairs crossing under said cable to open by depressing said cable toward said roadbed adapted to prevent said cable from being raised beyond the hooked ends of said holding down pieces.

9. In a logging device, an equipment of the nature indicated, oppositely disposed hooks 32 and 33 pivotally mounted upon the ties of the roadbed of a railway, the aforesaid hooks being provided with a spring 34 adapted to cause said hooks 32 and 33 to close upon and prevent a cable from being substantially raised from and away from said ties of the said roadbed of said railway, the aforesaid hooks crossing under and depressed by said cable, and a protection plate 31', while a car is passing over said hooks 32 and 33.

10. In a logging device of the nature indicated, a railroad car provided with a winch having one or more shafts adapted to receive a stationary cable, said shafts being provided with sheaves, and means for maintaining a tension on the surface of said sheaves and cable by a steam cylinder substantially as and for the purpose set forth.

11. In a logging device of the nature indicated, a track, a car having a winch adapted to receive a cable secured longitudinally to said track, and holding down pieces in pairs pivotally secured to said track and adapted to yieldingly grip said cable.

12. In a logging device of the nature indicated, a track, a car having a winch adapted to receive a cable secured longitudinally stationary to said track, and holding down pieces in pairs pivotally secured to said track, said holding down pieces having the pivotal connections disposed relative to the hooked end thereof to permit said cable when forced downwardly to become disengaged from said cable.

13. In a logging device of the nature indicated, a track, a car having a winch adapted to receive a cable secured longitudinally stationary to said track, and holding down pieces in pairs pivotally secured to said track, said holding down pieces having the pivotal connections disposed relative to the hooked ends thereof to permit said cable when forced downwardly to become disengaged from said cable and having said hooked ends substantially opposite the pivotal connections thereof for the purpose set forth.

14. In a logging device of the nature indicated, curve pieces secured to the track of

said logging device and provided with a hooked end adapted to receive a cable which is substantially stationary to said track, said curve pieces being disposed relatively to one
5 side of the cable when the car is traveling over that portion of said track.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

HIERONYMUS ZECH.

Witnesses:

L. OSBORNE,
GRACE CALLIGAN.