

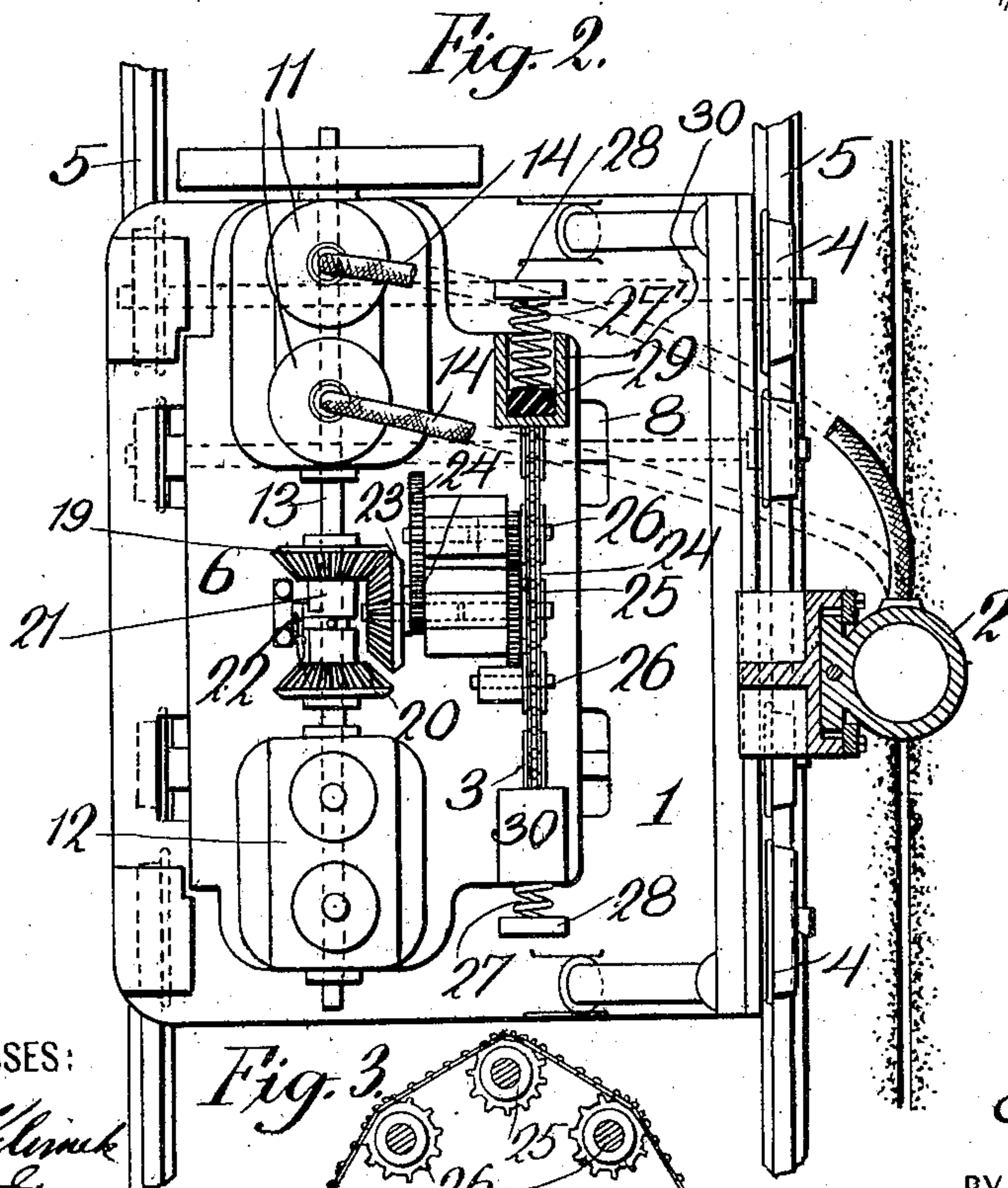
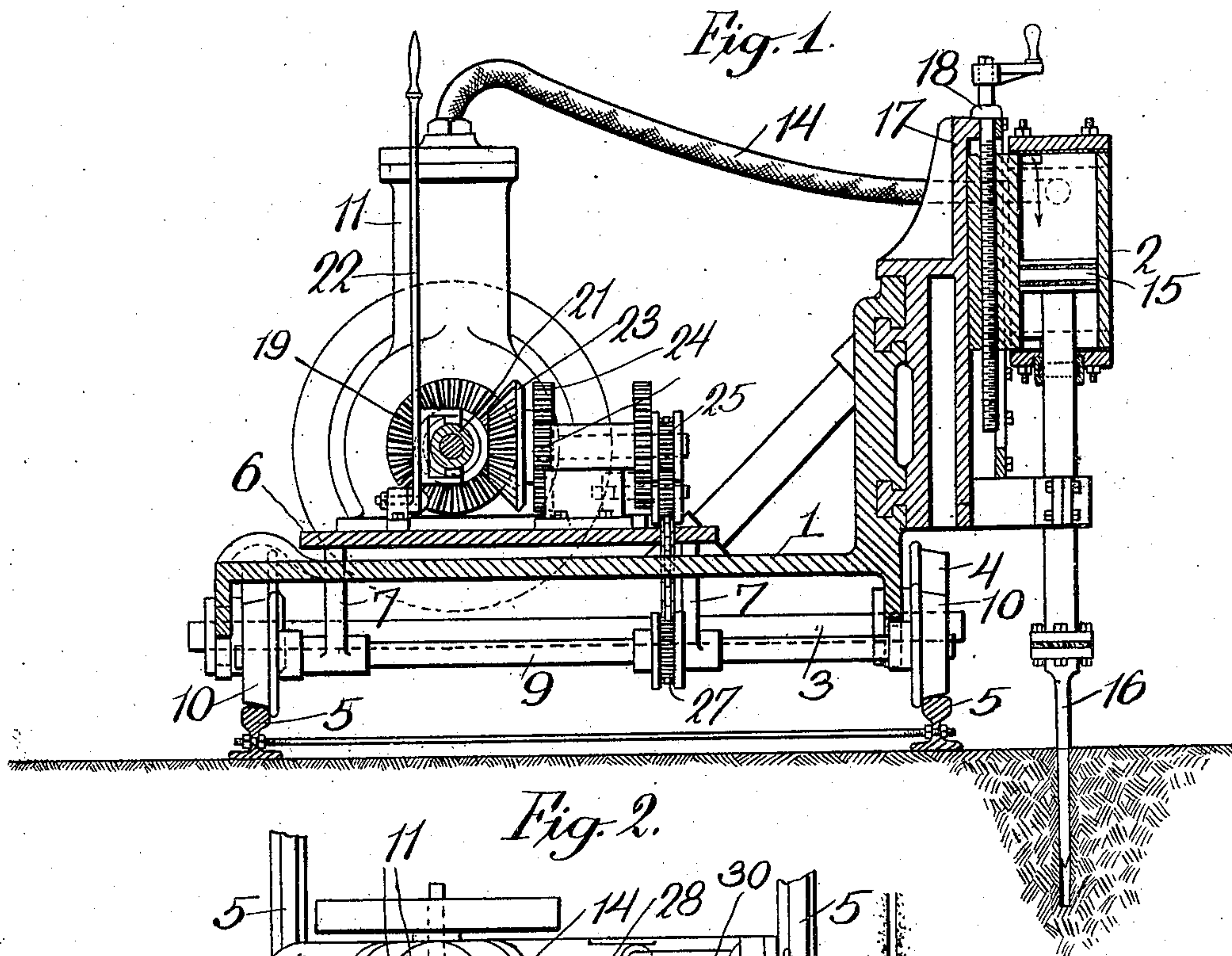
No. 876,863.

PATENTED JAN. 14, 1908.

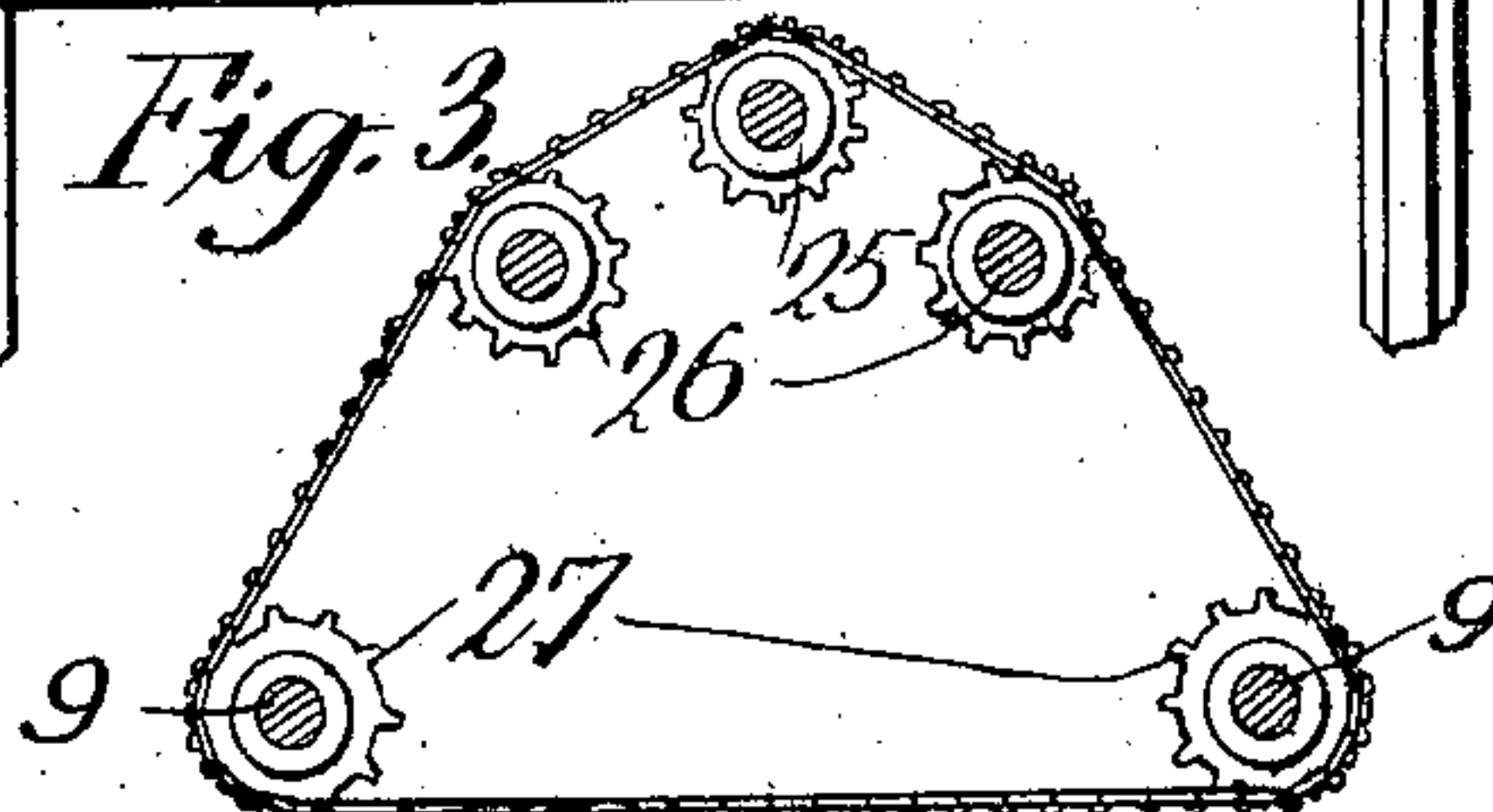
C. A. DAWLEY.
CHANNELER.

APPLICATION FILED APR. 3, 1907.

3 SHEETS—SHEET 1.



WITNESSES:
Geo. A. Kline
Harry L. L...



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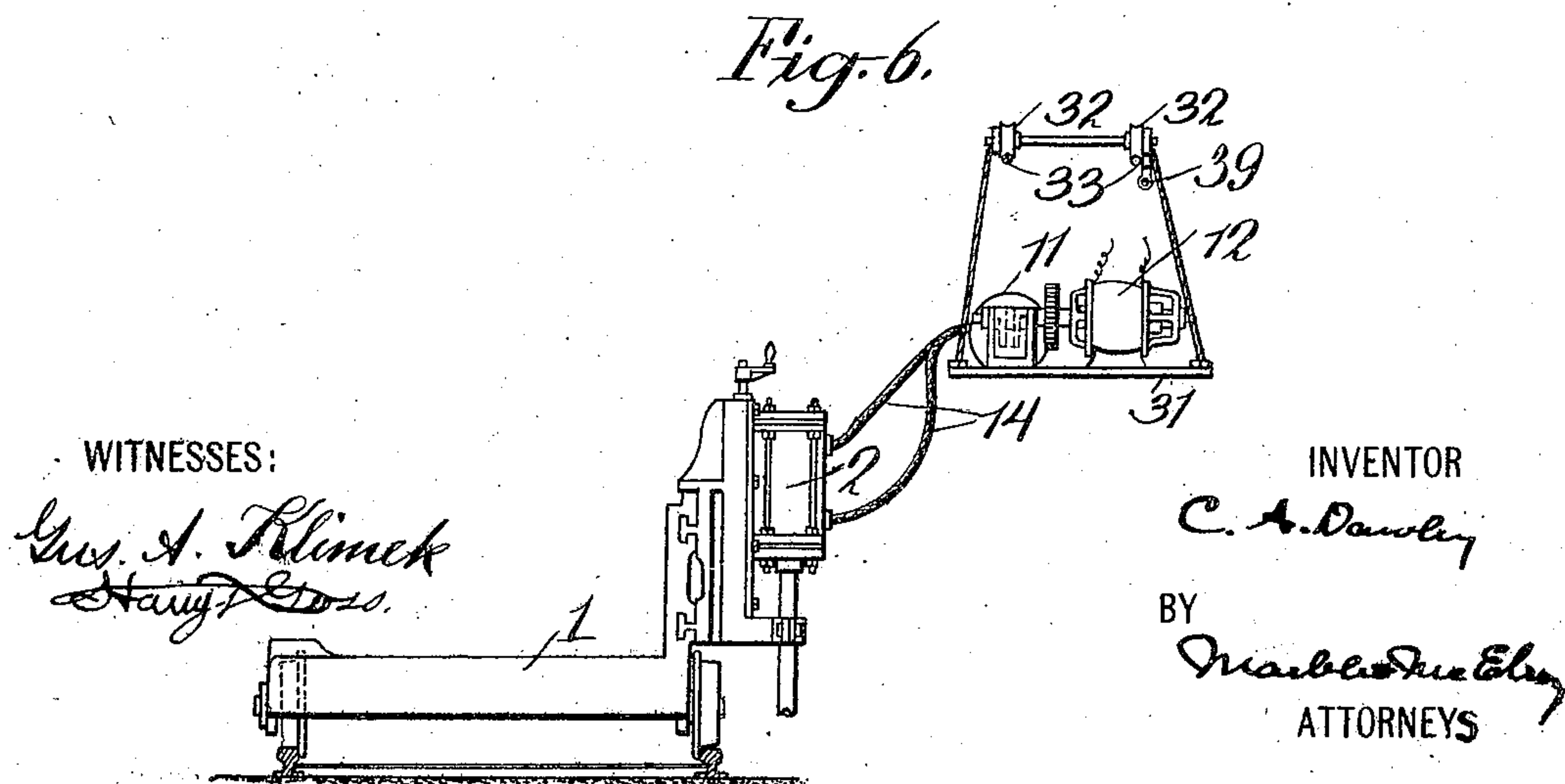
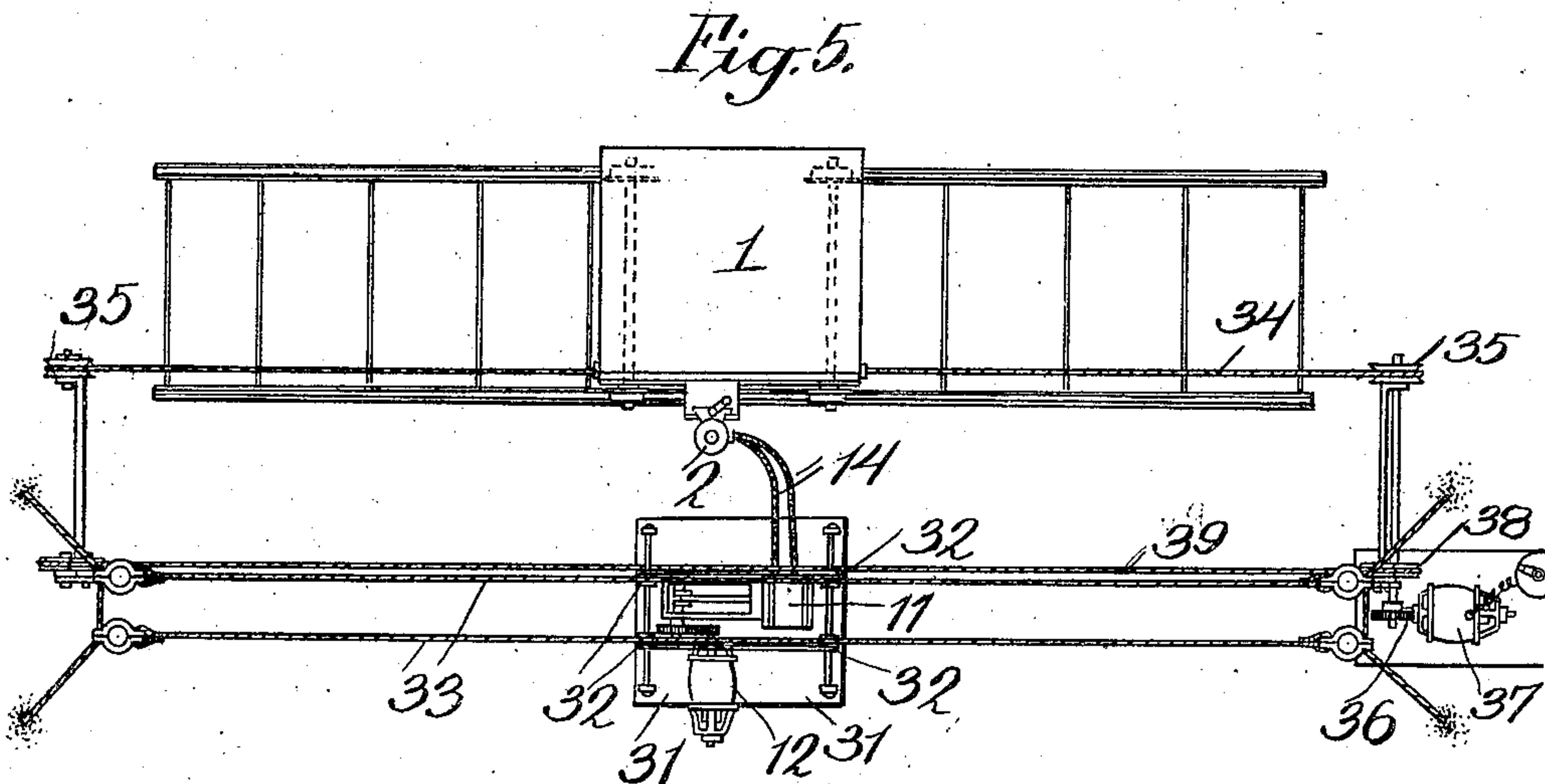
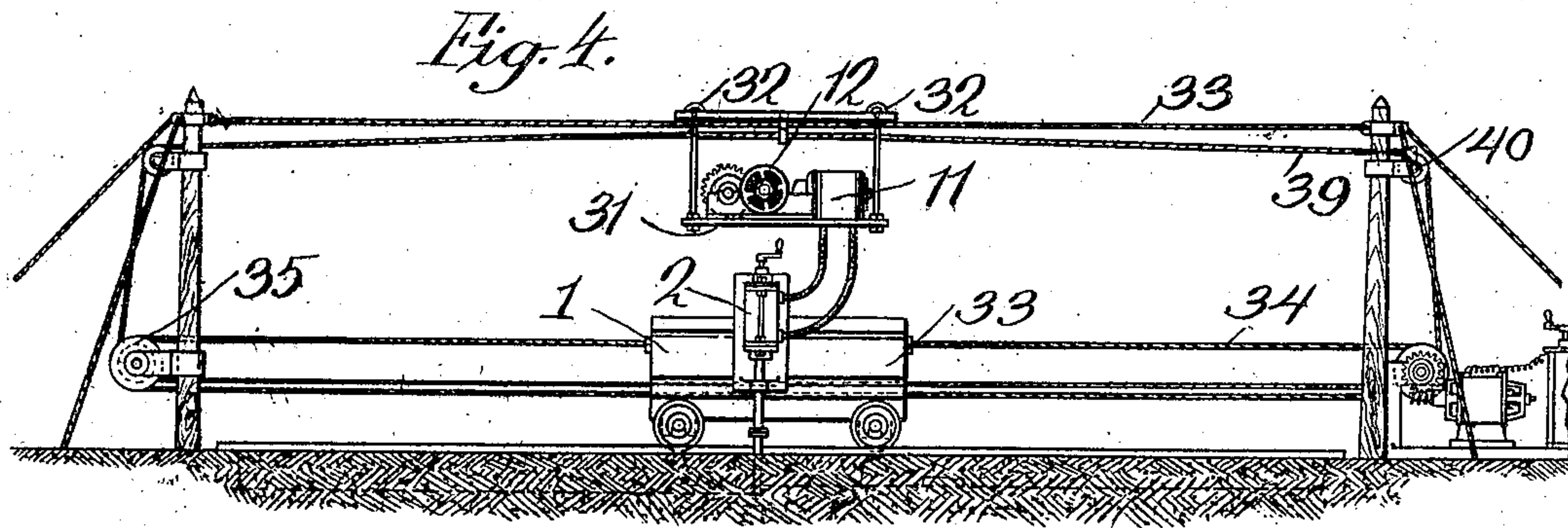
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3 SHEETS—SHEET 2.



WITNESSES:

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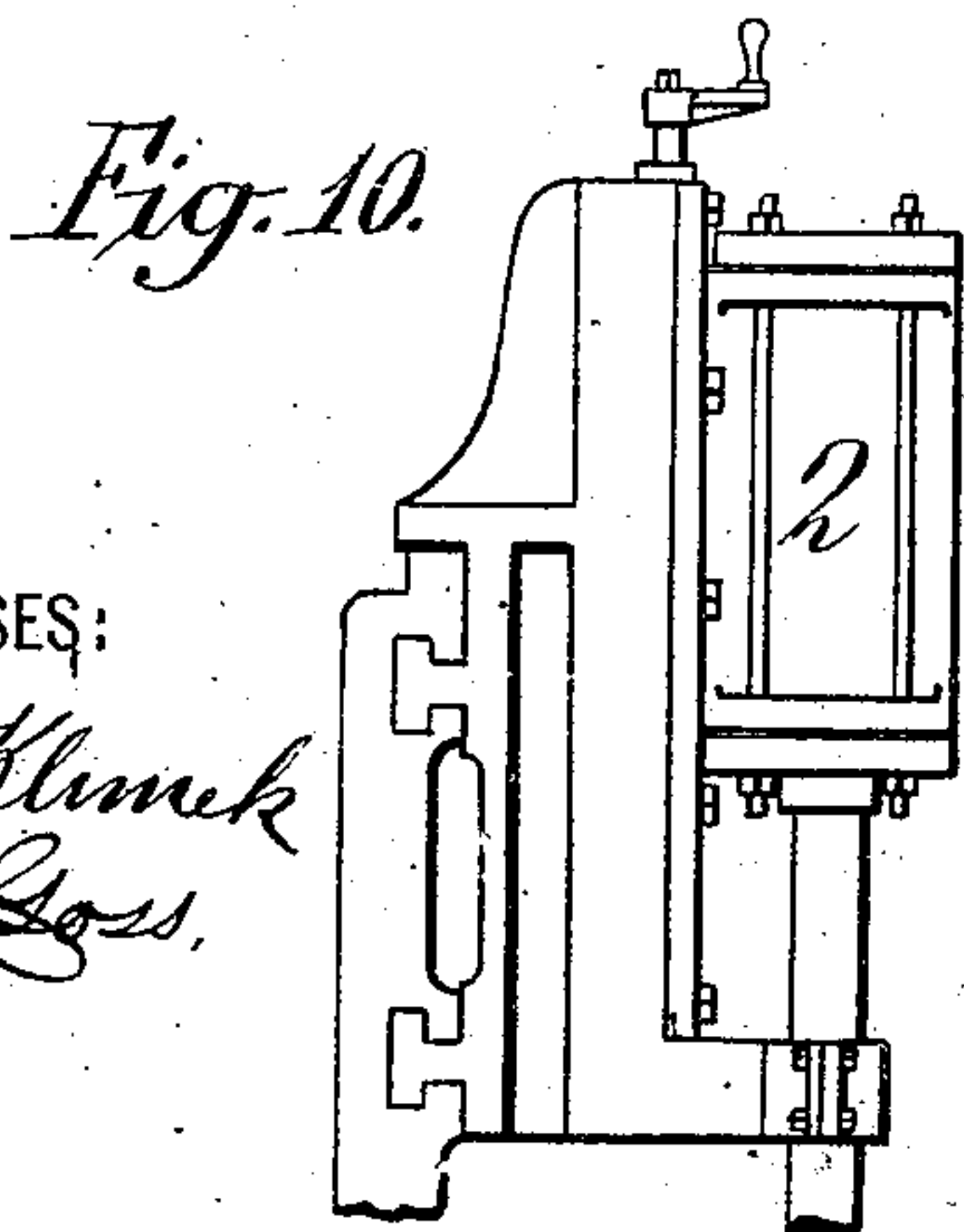
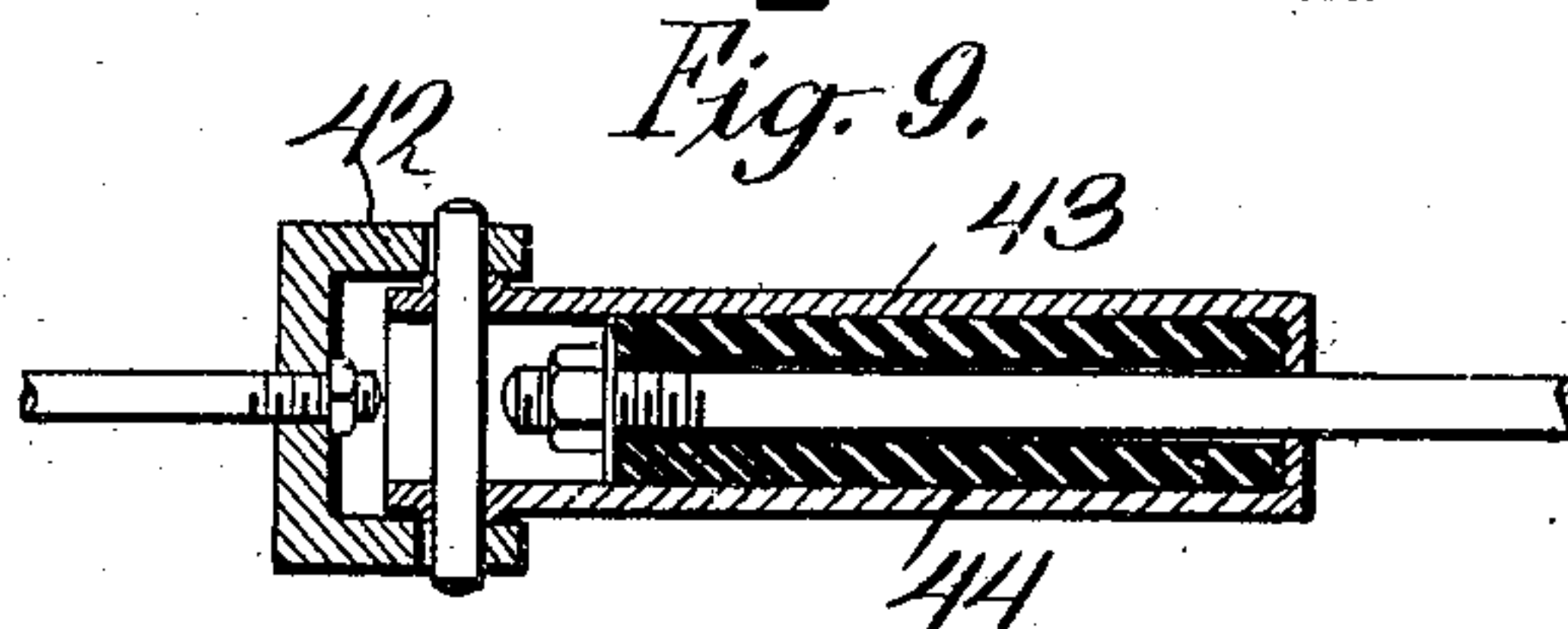
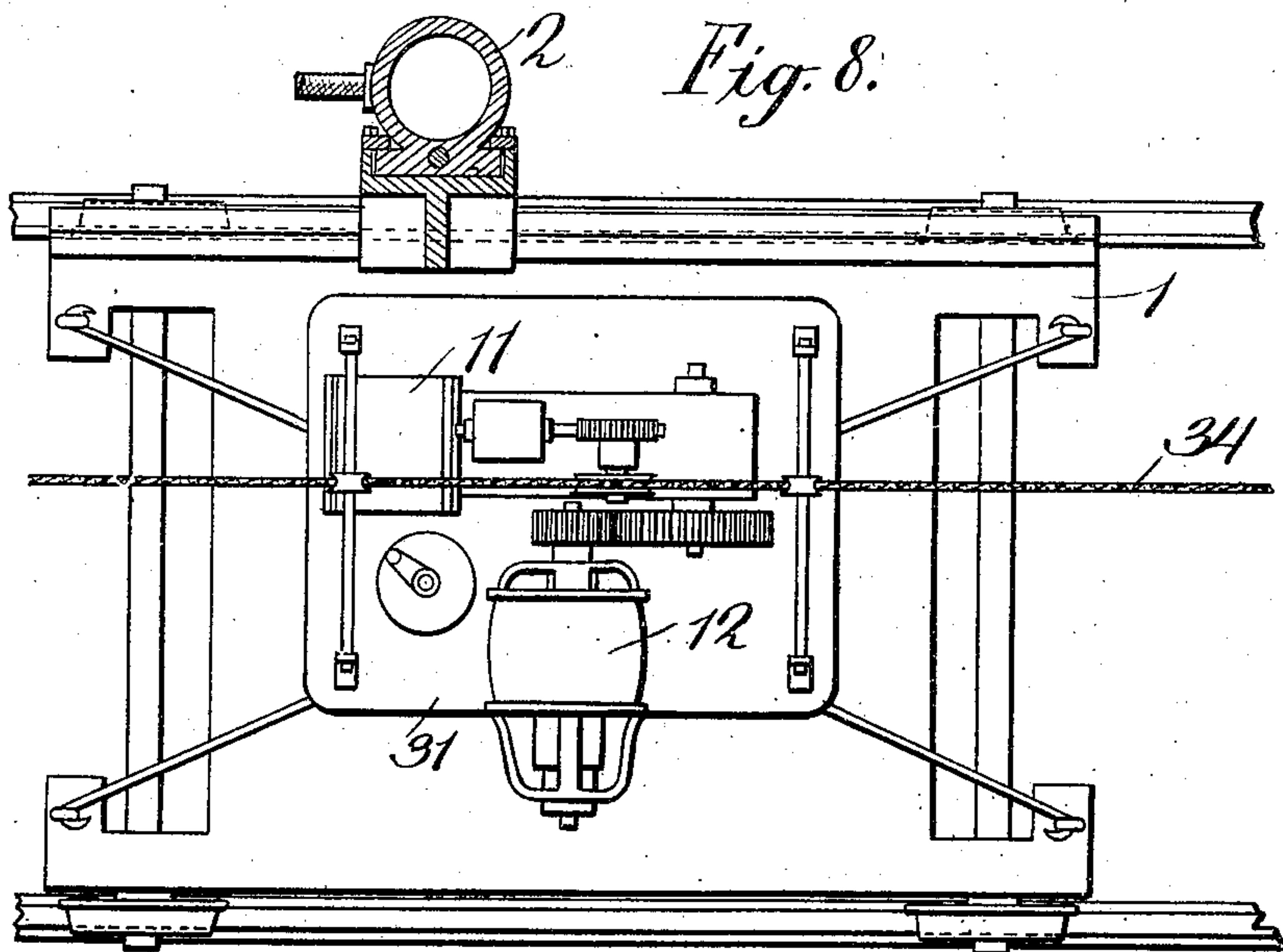
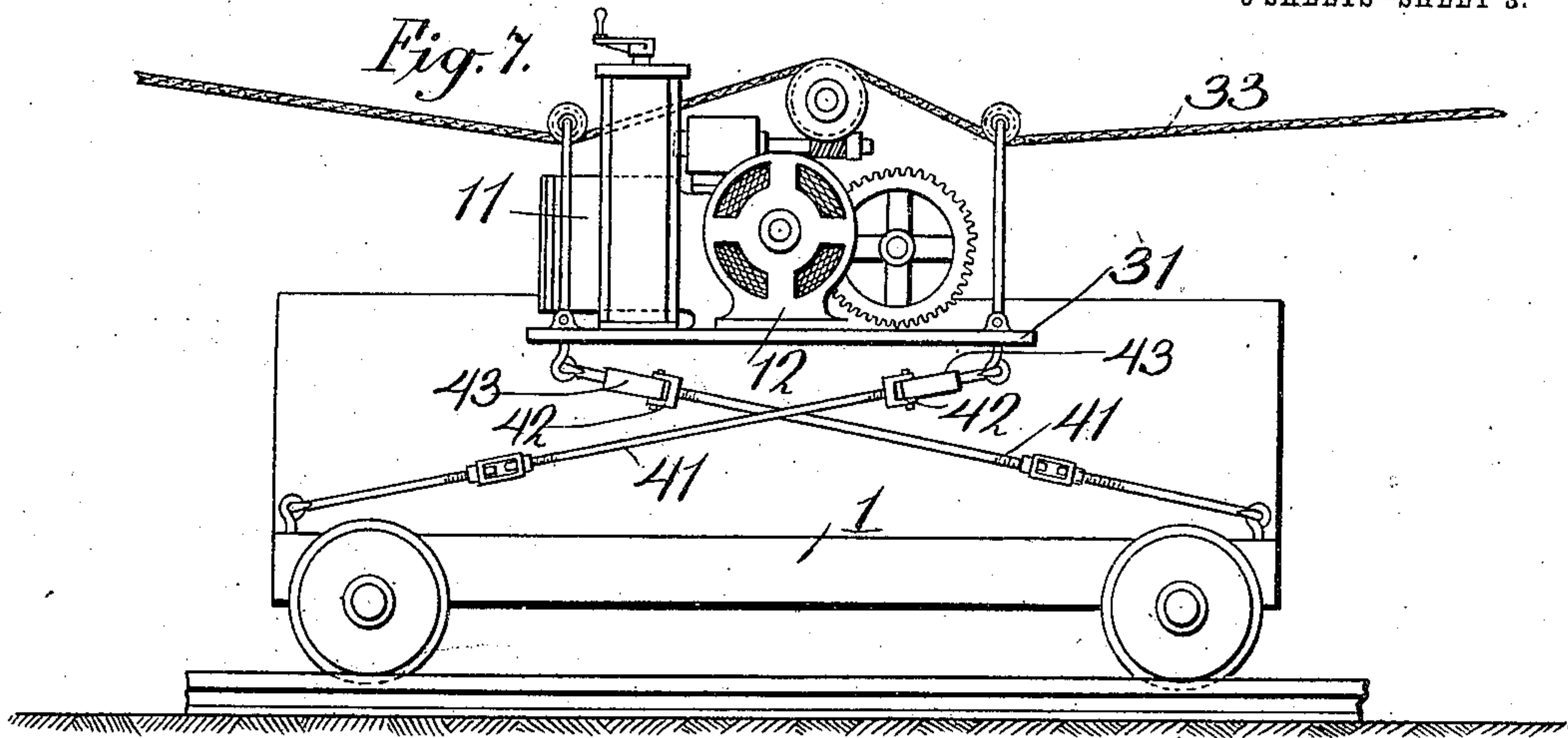
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3 SHEETS—SHEET 3.



WITNESSES:

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INVENTOR

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UNITED STATES PATENT OFFICE.

CLARENCE A. DAWLEY, OF NEW YORK, N. Y.

CHANNELER.

No. 876,863.

Specification of Letters Patent.

Patented Jan. 14, 1908.

Application filed April 3, 1907. Serial No. 366,130.

To all whom it may concern:

Be it known that I, CLARENCE A. DAWLEY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Channelers; and I do hereby declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates generally to rock drilling or cutting machinery, and particularly to that class thereof commonly known as channelers; and more especially to channelers of the pulsating type, that is to say, apparatus in which the piston or like part of a tool of the general nature of a rock drill or cutter is operated by a corresponding compressor or pulsator having a piston or pistons or like part or parts, the motions of which are transmitted to the drill piston by a pulsatory column or columns of air or like fluid transmitting medium.

The cutting or drilling machinery of channelers is usually mounted upon a movable truck or carriage arranged to move forward gradually during the operation of the drilling or cutting apparatus. In former structures of this sort the vibrations transmitted through the drilling or cutting machinery to the truck or carriage are excessive and render it undesirable to mount the pulsating machinery upon the same truck upon which the drilling or cutting machinery is mounted.

My invention consists in pulsating machinery mounted separately from the drilling or cutting machinery, but arranged to move forward therewith, and in other features of invention, all as more fully described hereinafter, and particularly pointed out in the claims.

The objects of my invention are, to avoid injury to the driving apparatus of channeling machines and the like; to avoid the transmission of shock to such driving means; to reduce to a minimum the clearance space in channeling and like machines of the pulsating type; and to make the apparatus simple, compact, efficient, durable and reliable.

According to my invention, to reduce to a

minimum the transmission of vibration to the driving machinery of channelers and like machines, and at the same time to reduce to a relatively small proportion the clearance space in channeling and like machinery of the pulsating type, I mount the compressor or pulsator and the driving motor or engine therefor on a movable support quite separate from and independent of the truck carrying the drill cylinder. In some cases the pulsator and its driving motor are mounted on a separate truck spanned by the truck carrying the drill cylinder, the pulsator being, therefore, relatively close to the drill cylinder so that the flexible tubing transmitting the air pulsations from said pulsator to the drill cylinder (the cubic capacity of which flexible tubing constitutes the bulk of the clearance space of such apparatus) may be relatively short. In other cases I mount the pulsator and its driving motor upon a support, carried by one or more over-head cables, but connected to move with the truck carrying the drill cylinder. In the latter case the pulsator and its driving motor are substantially isolated from the jar and vibration produced from the action of the drill, and yet the pulsator may be exceedingly close to the drill cylinder and therefore may have exceedingly short pipe connections.

In the accompanying drawings I illustrate, somewhat diagrammatically, different forms of pulsating channeling apparatus embodying my invention.

In said drawings: Figure 1 shows a vertical transverse section and Fig. 2 a plan view of a channeling apparatus in which the pulsator and its driving motor are mounted upon a truck separate from but connected to and spanned by the truck carrying the drill cylinder; Fig. 3 is a detail view illustrating the driving mechanism; Fig. 4 shows a side elevation; Fig. 5 a plan view and Fig. 6 a transverse section of an alternative form of channeling apparatus in which the pulsator and its driving motor are mounted upon a support carried by suspension cables; Fig. 7 shows a side elevation of an alternative form of apparatus in which the pulsator and driving motor are mounted upon a suspended platform; Fig. 8 shows a plan view thereof

and Fig. 9 a detail view of one of the hinged cushioning devices connecting the drill-carrying truck and said pulsator-support; Fig. 10 shows a detail side view of one common arrangement of drill cylinder and supports therefor.

Referring first to Figs. 1, 2 and 3, numeral 1 designates a skeleton trunk carrying the drill cylinder 2 and having axles 3 and wheels 4 arranged to travel on rails 5.

6 designates another truck, the platform of which is supported by uprights 7 passing through slots 8 in platform 1 to axles 9 located between axles 3 and mounted upon wheels 10 located between the wheels 4 of truck 1.

11 is a two-cylinder single acting pulsator such as commonly employed in apparatus of this sort, 12 is a driving motor and 13 a shaft transmitting motion from motor 12 to pulsator 11.

14 designates flexible pipes connecting the cylinders of pulsator 11 to the drill cylinder 2 and serving to transmit from said pulsator air pulsations by which the piston 15 of the drill cylinder 2 will be moved up and down rapidly, so operating the drill or cutter 16. The drill cylinder 2 is arranged to be moved up and down in guides 17 by a feed screw 18 in the ordinary manner. For driving the two trucks forward slowly as the drill operates, any suitable mechanism may be employed. I have illustrated one mechanism for the purpose comprising bevel gears 19 and 20 mounted upon a sleeve 21 keyed to the engine shaft 13 but arranged to be moved longitudinally by a hand lever 22 to throw one or the other of said bevel gears, as preferred, into mesh with a third bevel gear 23. Said gear drives, through reducing gear 24, a driving chain passing over a driving wheel 25 and guide pulleys 26 to driving wheels 27 on axles 9. It will be seen that when the motor 12 is in operation and shaft 13 rotating, the two trucks will move in one direction or the other, according as gear 19 or gear 20 is in mesh with gear 23, or will remain stationary if neither of gears 19 and 20 is in mesh with gear 23, lever 22 being in an upright position.

Trucks 1 and 6 are connected elastically by means of springs 27' bearing against stop shoulders 28 of truck 1 and against rubber buffers 29 working in containing cylinders 30 of truck 6.

In the alternative construction shown in Figs. 4, 5 and 6, the driving motor 12 and pulsator 11 are mounted upon a platform 31 suspended from grooved wheels 32 running on suspended cables 33; the pulsator being connected to the drill cylinder 2 by flexible pipes 14 as before. To move the truck 1 on which drill cylinder 2 is mounted, any suit-

able feeding device may be employed, for example, an endless cable 34 connected to the truck and passing over drums 35, one of which is driven by gearing 36 from a suitable motor 37; the same gearing driving another drum 38 which in turn drives a second endless cable 39 passing over guide pulleys 40 and connected to platform 31.

In the further construction shown in Figs. 7, 8 and 9, the motor 12 and pulsator 11 are mounted as in Fig. 4 on a platform 31, carried by a suspension cable 33 (only one cable being shown in this case—the use of one cable or of two cables being optional,) and the drill cylinder 2 is mounted as before on a truck 1, but platform 31 and truck 1 are connected by stay rods 41 including hinge joints 42 and cushioning cylinders 43 containing rubber cushions 44, whereby the connection between the truck 1 and platform 31 is rendered somewhat flexible and elastic, and whereby the transmission of shock is reduced to a minimum.

Because of the short air tubes 14 made possible by the methods of mounting the pulsator independently of but close to the drill cylinder, above described, and the consequent reduction of clearance space, it is practicable to operate the apparatus without the complication of auxiliary compressing apparatus for operating with an initial pressure in the system much above atmosphere. In my apparatus the initial pressure may be that of the atmosphere.

The methods of mounting above described, particularly those in which the pulsator and driving motor are mounted on a platform suspended from a cable or cables, also permits the adjustment of the position of the pulsator to maintain close proximity of the ports of the pulsator to the ports of the drill cylinder, irrespective of the position of the latter on its truck.

What I claim is:—

1. A channeler comprising in combination a tool cylinder, a pulsator, means connecting the same, and independent supports for said pulsator and tool cylinder and means connecting said supports to cause them to move together.

2. A channeler comprising in combination a tool cylinder, a pulsator, means connecting the same, independent supports for said tool cylinder and pulsator arranged to move together, and feed mechanism for said supports.

3. A channeler comprising in combination a tool cylinder, a truck carrying the same, a pulsator, a support therefor, a cableway on which said support is mounted, and means connecting said pulsator and tool cylinder.

4. A channeler comprising in combination a tool cylinder, a truck carrying the same, a pulsator, a support therefor, a cableway on

which said support is mounted, means connecting said pulsator and tool cylinder, and means for feeding said truck and support together.

5 5. A channeler comprising in combination a tool cylinder, a truck carrying the same, a pulsator, a support therefor, a cableway on which said support is mounted and arranged

to be suspended, said support in close proximity to said tool cylinder.

In testimony whereof I affix my signature in the presence of two witnesses.

CLARENCE A. DAWLEY.

Witnesses:

ROGER H. LYON,
H. M. MARBLE.

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