

No. 778,405.

PATENTED DEC. 27, 1904.

I. DEUTSCH.

POWER TRANSMITTING DEVICE.

APPLICATION FILED MAY 25, 1904.

2 SHEETS—SHEET 1.

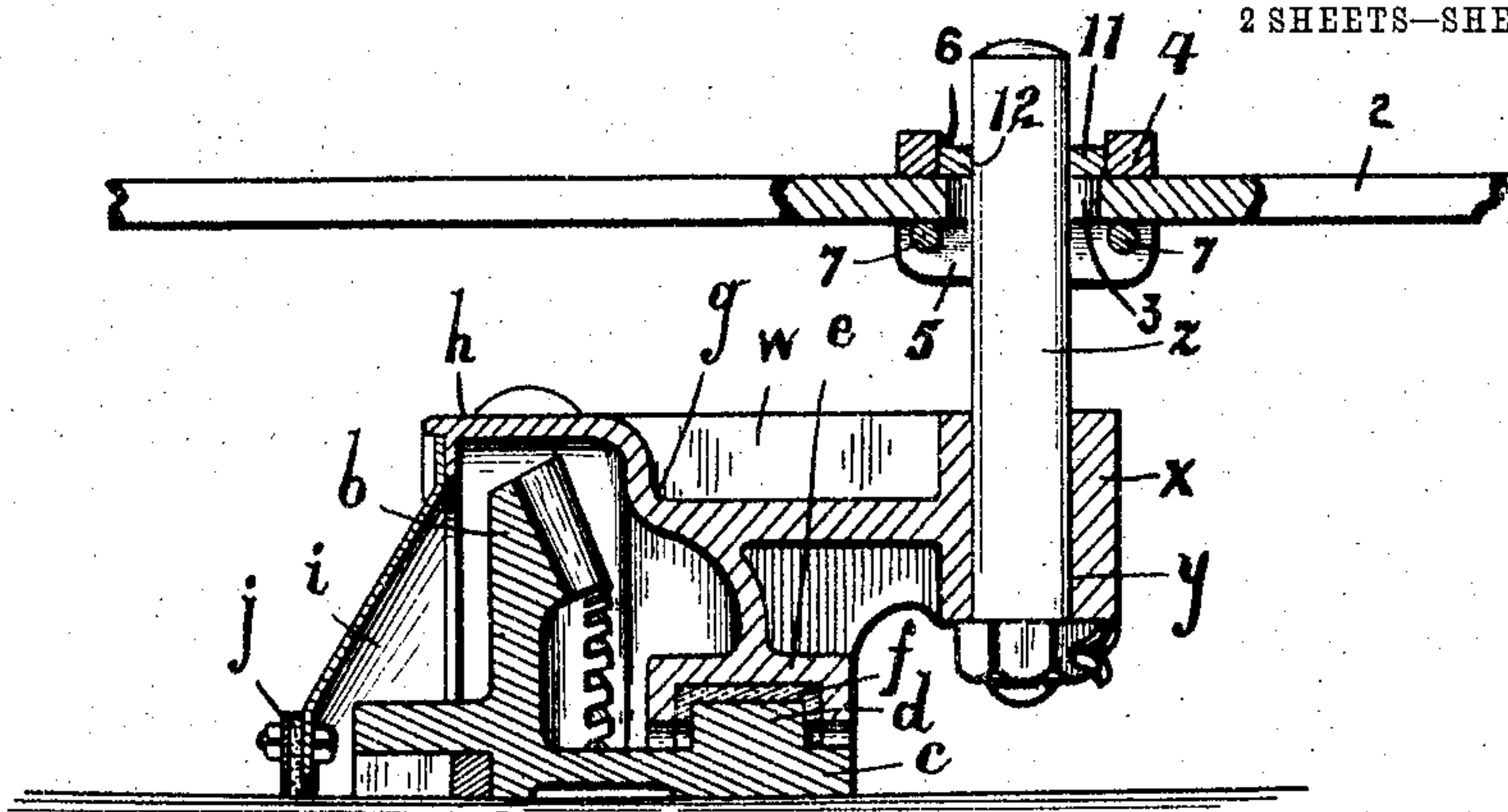
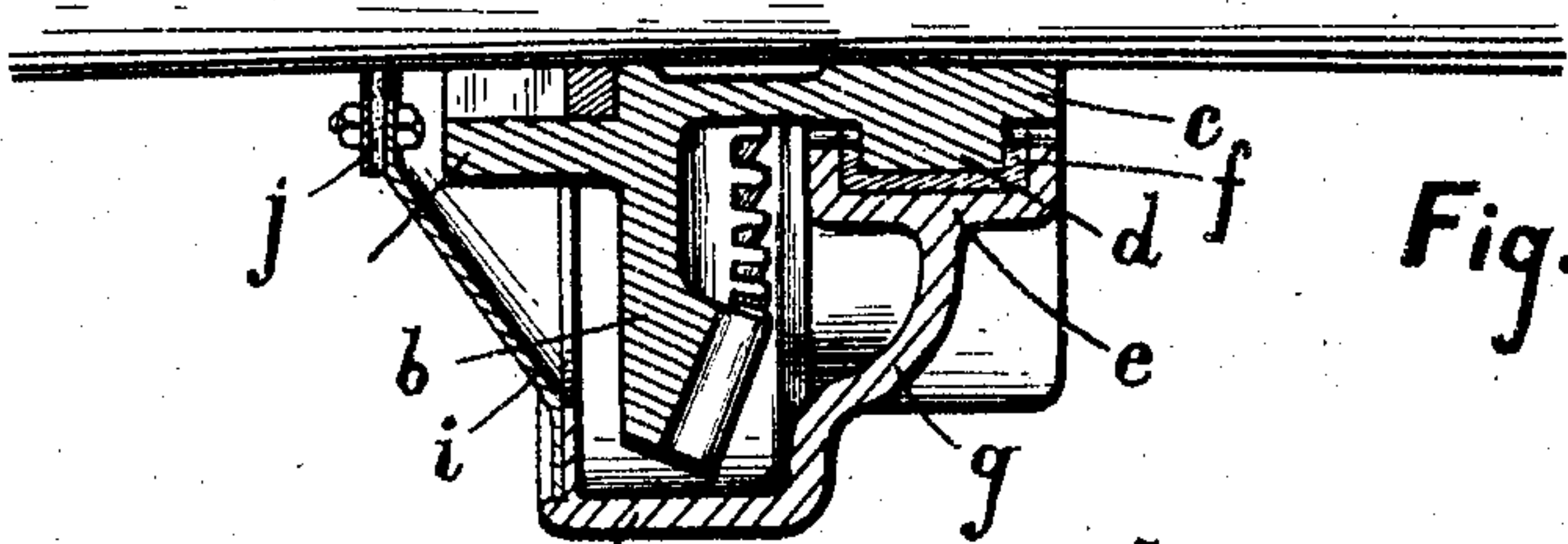
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Fig. 1.

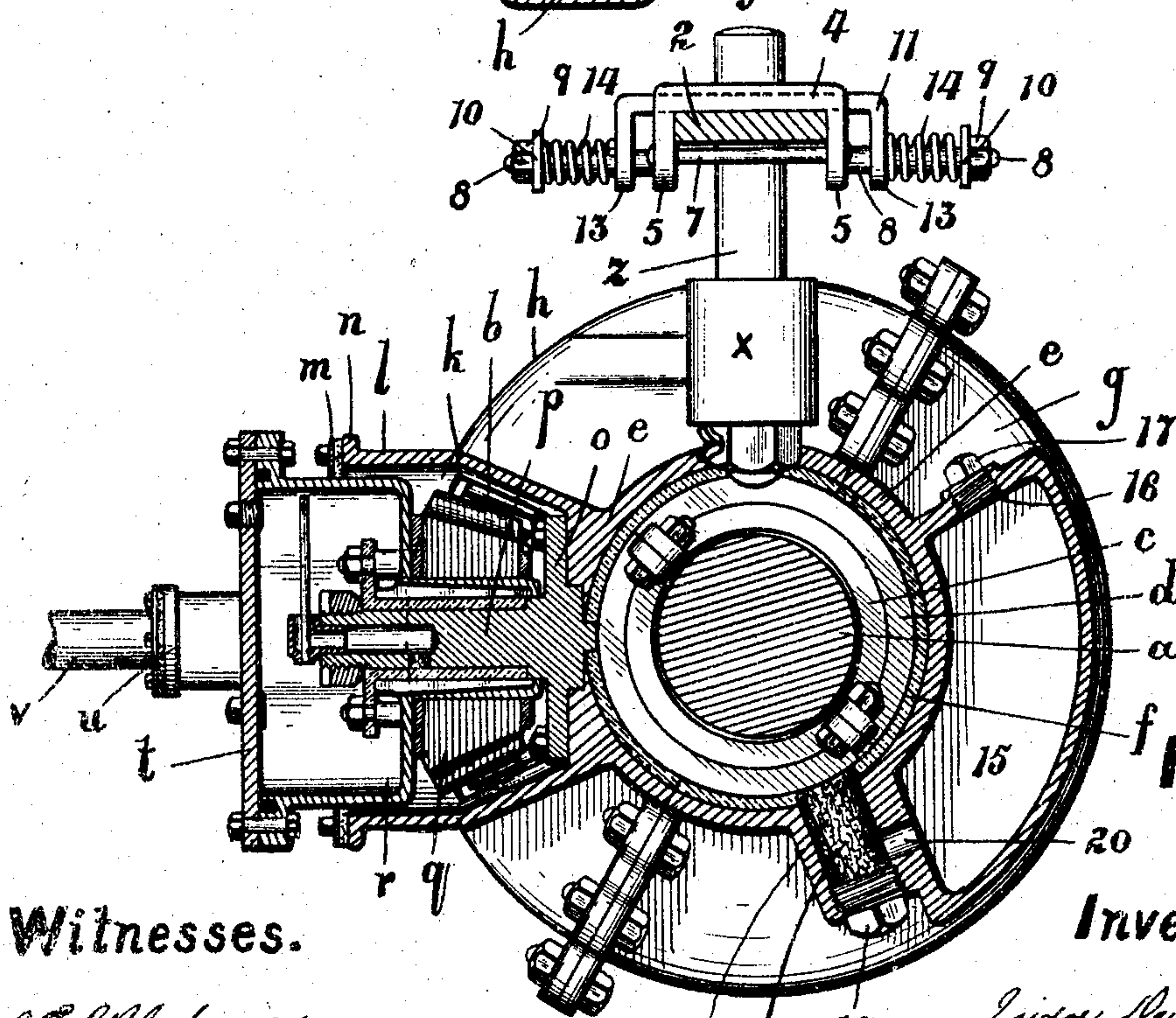


Fig. 2.

Witnesses.

Inventor.

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Isidor Deutsch

by James A. Watson Atty.

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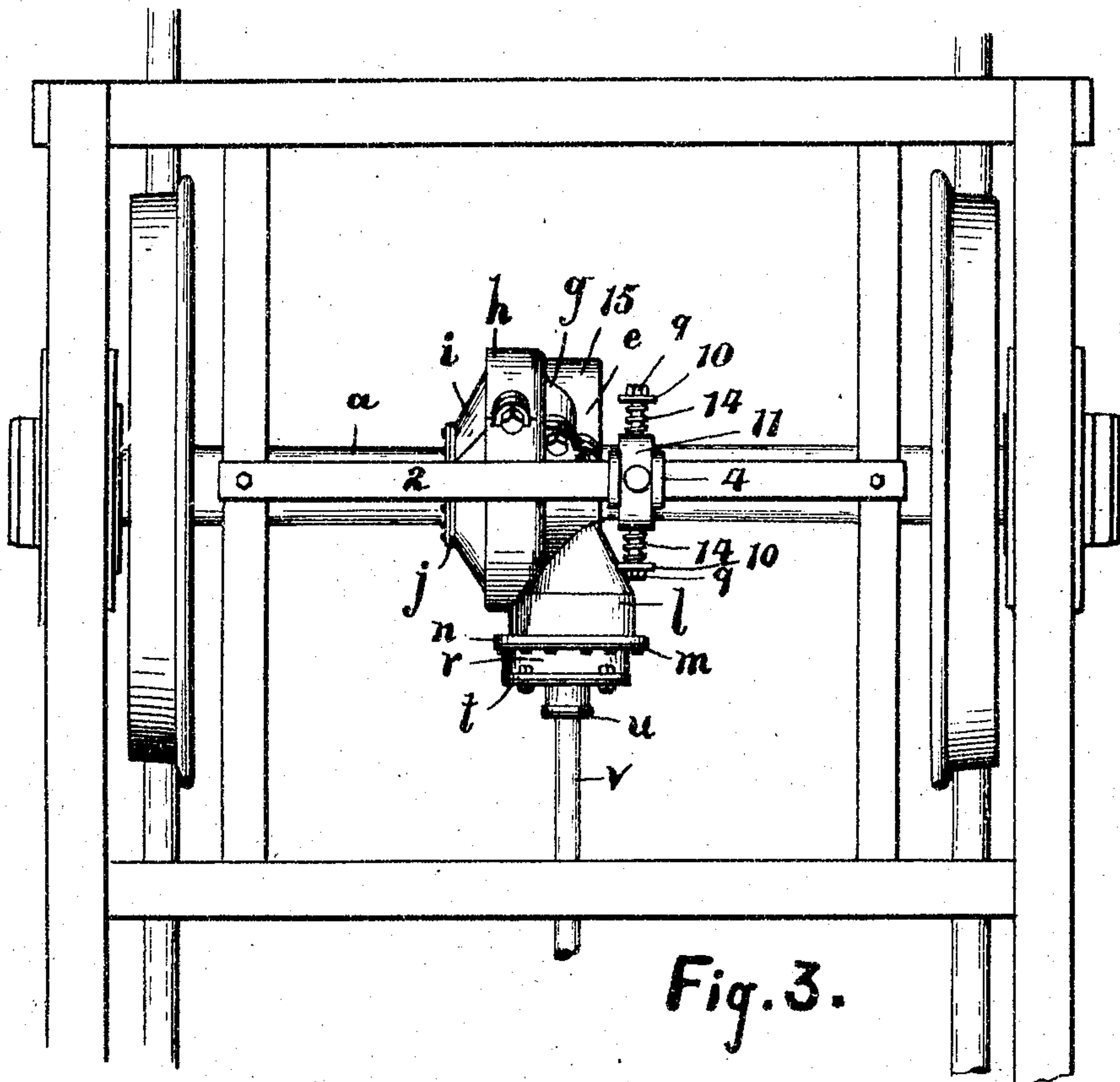


Fig. 3.

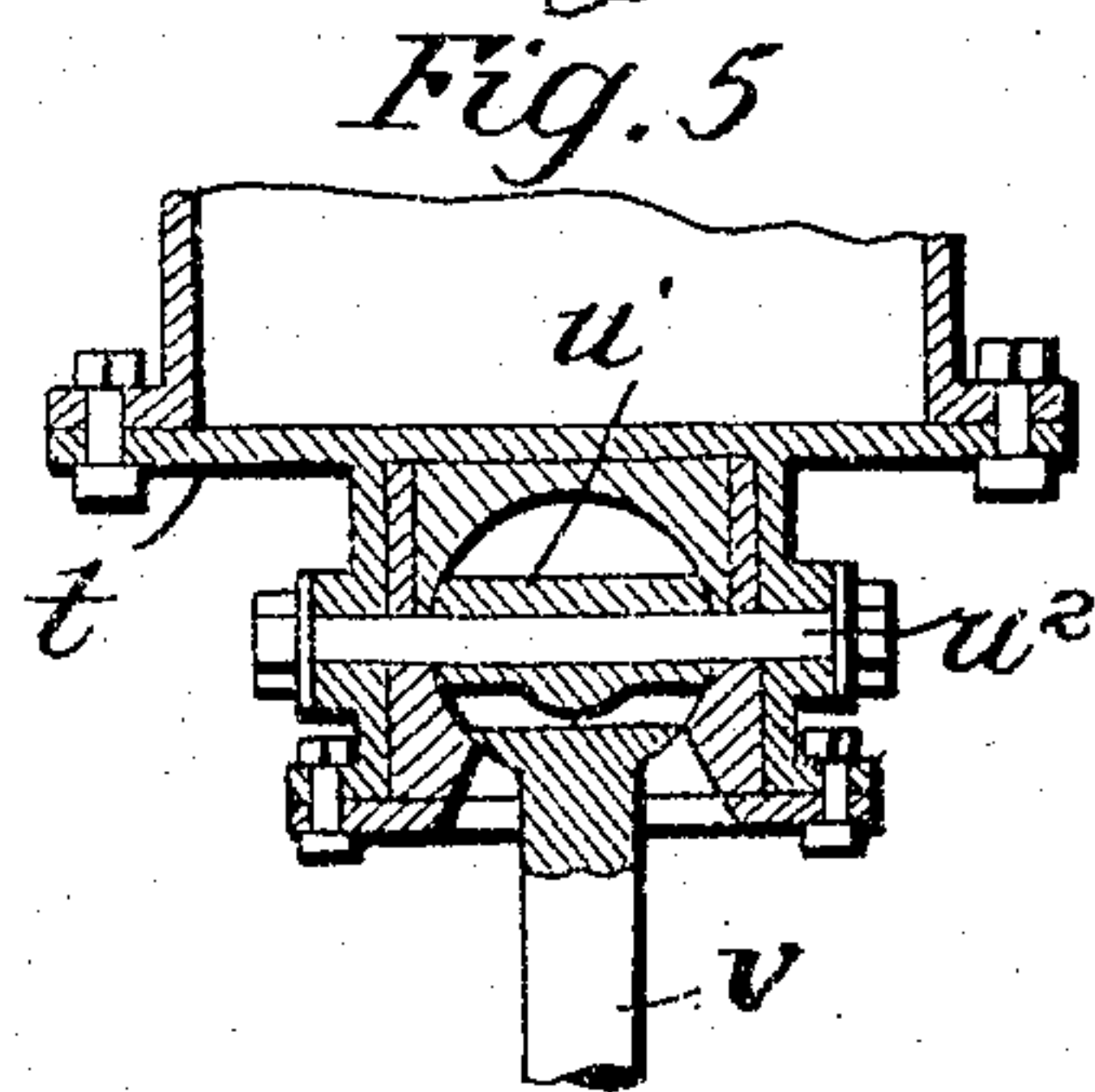


Fig. 5.

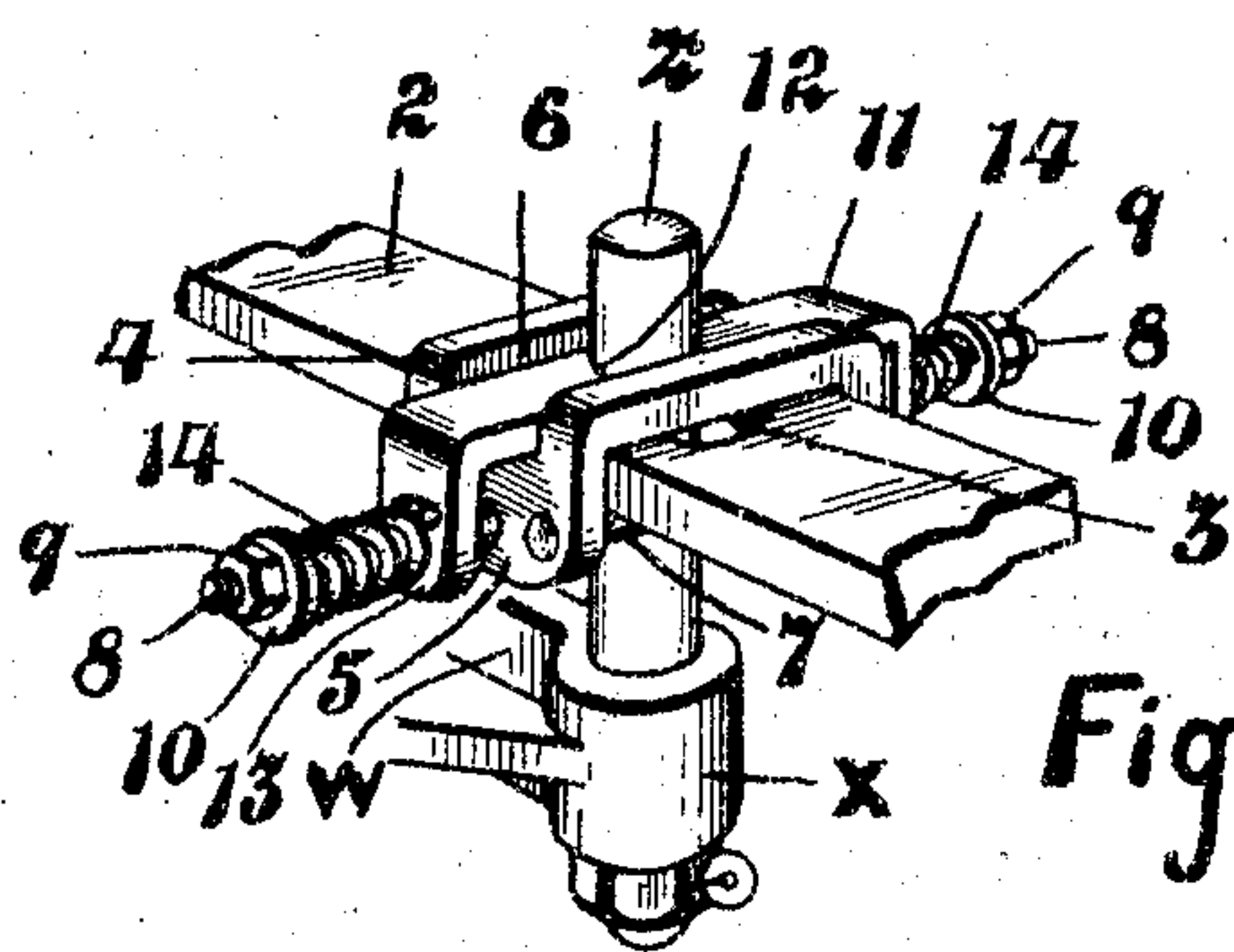


Fig. 4.

Witnesses.

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UNITED STATES PATENT OFFICE.

ISIDOR DEUTSCH, OF MONTREAL, CANADA, ASSIGNOR TO ELECTRIC AND TRAIN LIGHTING SYNDICATE, LIMITED, OF MONTREAL, CANADA, A CORPORATION OF CANADA.

POWER-TRANSMITTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 778,405, dated December 27, 1904.

Application filed May 25, 1904. Serial No. 209,692.

To all whom it may concern:

Be it known that I, ISIDOR DEUTSCH, a citizen of the United States of America, residing at Montreal, in the district of Montreal, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Power-Transmitting Devices, of which the following is a specification.

My invention relates to improvements in power-transmitting devices; and the object of the invention is to devise an arrangement of parts which shall be compact and cheap to manufacture and at the same time of durable construction and whereby the parts are easy of access and the effect of any sudden jolting or jarring provided for; and it consists, essentially, of a gear-wheel secured to a rotatable axle, a strap encircling said axle having a flange extending therefrom and encompassing said wheel and a bearing projecting from one side thereof, a pinion journaled on said bearing, and an arm secured to the strap and flexibly connected to a fixed support, the various parts being constructed and arranged in detail as hereinafter more particularly described.

Figure 1 is a longitudinal view of a portion of an axle, showing my device in section mounted thereon. Fig. 2 is a cross-sectional view of an axle, showing my device partially in section mounted thereon. Fig. 3 is a plan view of my device as applied to a railway-car. Fig. 4 is an enlarged perspective detail of the flexible connection to the fixed support. Fig. 5 is a detail sectional view, on an enlarged scale, of the universal joint.

Like characters of reference indicate corresponding parts in each figure.

a is the axle, preferably tapered toward the center from each side, as customary in the forming of railway-car-wheel axles.

b is the gear-wheel, preferably of the bevel type of gear and split in two sections, though for convenience the parts will be considered as integral throughout the following description. The gear-wheel *b* is mounted on the axle *a* and rotates therewith.

c is a sleeve, preferably forming part with the gear-wheel *b* and extending from the hub on the front side of the said wheel and surrounding the axle *a*.

d is a journal formed by the annular raised portion on the sleeve *c*.

e is a strap having an internal bearing *f*, in which the journal *d* turns.

g is an annular flange from the strap *e*, extending over the face of the gear-wheel *b* and reaching around the edge to the rear thereof and having the turned extremity *h*.

i is a cover surrounding the axle *a*, having a felt packing *j* abutting the axle. The cover *i* is secured to the extremity *h* of the annular flange *g* and forms therewith a complete casing for the gear-wheel *b*.

k is a circular opening from one side of the flange *g*. *l* is a bell-shaped casing forming part with said flange or secured thereto and projecting outwardly.

m is an adjustable packing attached to the flange *n* at the outer end thereof.

o is a supporting-plate secured to the strap *e*. *p* is a shaft projecting from said supporting-plate *o* and fixedly secured thereto. *q* is a pinion turning on said shaft and coacting with the aforesaid gear-wheel and shown herein as having secured to the outer side a circular oil-casing *r*, which turns in the adjustable packing *m*, secured to the bell-shaped casing *l*.

The oil-chamber contained in the casing *r* has suitable means of communication with the journal of the pinion-bearing and has a removable cover *t*.

u is a universal joint incased and secured to the removable cover *t*. *v* is a shaft secured to the other side of the universal joint. As shown in Fig. 5, an enlarged ball-shaped head is formed at the end of the shaft *v*, through a slot in which head extends a bar or bushing *u'*. A pin *u''*, extending through said bushing and suitable apertures in the casing for the head formed on the shaft *v*, has its ends secured to a projection from the removable cover *t*. It will be thus seen that the shaft, joint, and

cover t may be removed without disturbing the pinion, and this much facilitates matters in adjusting or repairing.

w is a rigid arm projecting from the flange g , having the enlarged end x and an orifice y therethrough.

z is a stud inserted in the orifice y and fixedly secured therein. The stud z projects upwardly into a fixed supporting-bar 2 through the opening 3. The opening 3 is sufficiently large to allow for any possible movement of the strap e incident to the jarring and jolting of the axle according to the circumstances under which the device is operating.

4 is a shoe straddling the supporting-bar 2 over the opening 3, having its downwardly-extending lugs 5 abutting the edges of said bar and having a central opening 6 therethrough.

7 represents rods passing under the supporting-bar 2 and fixedly secured to the lugs 5.

8 represents rigid pins projecting outwardly from each lug 5 and having the nuts 9 and washers 10 at the ends thereof.

11 is a shoe straddling the supporting-bar 2 and abutting the same within the opening 6 in the shoe 4.

12 is a central orifice corresponding to the stud z , on which it fits.

13 represents lugs on the shoe 11, having orifices through which the rigid pins 8 extend.

14 represents spiral springs encircling the rigid pins 8 between the washers 10 and the lugs 13 and act as cushions in any movement across the bar 2 on the shoe 11 and in consequence the stud z .

It will be seen from the foregoing description that at every movement of the axle the pinion and gear-wheel both assume the same relative position and also that any turning movement of the strap itself on the axle will be fully accounted for in the cushioning of the supporting-stud z .

It is necessary in this device to have the supporting-stud flexibly connected to the fixed support to permit of a limited movement of the strap and pinion in any direction. Therefore while, as aforesaid, it is most essential to have the most regular motion of the strap and pinion cushioned this must not be done without having the parts capable of allowing movement in other directions. This particular arrangement of shoes will serve the purpose required, as the shoe 4 is stationary in any movement of the stud laterally to the bar, while the said shoe has free movement longitudinally with the bar. The shoe 11, however, provides the flexibility necessary laterally with the bar 2, as the stud at every movement of the strap circumferentially carries the said shoe with it and compresses either one or the other of the spiral springs. In the movement of the stud longitudinally with

the bar the shoe 11 will of course carry the shoe 4 therewith back and forth.

15 is an oil-reservoir formed in the flange g and having the inlet-opening 16 thereto from the outside of said flange and a suitable plug 17 closing said inlet.

18 is a wick-chamber formed in the flange g in proximity to the oil-reservoir 15 and communicating with the journal d . 19 is a plug closing the inlet to said wick-chamber.

20 is a channel formed in the flange g between the oil-reservoir 15 and the wick-chamber 18. 21 is a wick filling said wick-chamber 18.

The reservoir is filled through the inlet-opening 16 and securely closed with the plug 17. The oil then passes through the channel 20 to the wick 21, which becomes thoroughly saturated to where it abuts the rotating journal.

One of the uses to which the power-transmitting device may be applied and to which it is particularly adaptable is that of transmitting power from the axle of a railway-car to a dynamo located elsewhere on the car. The difficulties incident in providing a transmission of this class are many and are chiefly caused by the tremendous jarring, jolting, and pounding which the truck of a railway-car undergoes even on the very best road-bed.

It has always been considered difficult to devise a machine in which the parts would be so closely identified one with the other as to lessen the chances of some of the parts being either shaken off or thrown out of adjustment. In the present application I have provided a strap which is a considerable mass of metal closely identified with the axle and with the other parts, and not only does it support the pinion operated by the gear, but also has extending therefrom the principal part to form the casing. The other salient features besides the support already emphasized are the lubricating means for the internal bearing in the strap. All these features combined are essential to complete the proper working mechanism.

The strap and flange herein described are shown in two sections in the drawings; but in the description this has not been explained, as such construction is altogether a matter of convenience, according to the uses to which this form of device may be applied.

What I claim as my invention is—

1. In a power-transmitting device, the combination with a support and a car-wheel axle, of a gear-wheel secured to the said axle and rotating therewith, a strap encircling said axle having a flange extending therefrom and encompassing said wheel, and a bearing projecting from one side thereof, a pinion journaled on said bearing, and an arm secured to the strap and flexibly connected to the said support, as and for the purpose specified.

2. In a power-transmitting device, the combination with the support and car-wheel axle, of a gear-wheel fixedly secured to the axle, a strap encircling said axle in proximity to the said gear-wheel having a rigid bearing projecting from one side thereof and a flange flaring outwardly therefrom and encompassing the face of said wheel said flange having an opening through which the rigid bearing projects, a pinion turning freely on said bearing, and a support rigidly connected to the said strap and flexibly connected to the aforesaid support, as and for the purpose specified.

3. In a power-transmitting device, the combination with the support and car-wheel axle, of a gear-wheel fixedly secured and having a sleeve extending from the hub portion thereof and surrounding said axle, an annular raised portion on said sleeve forming a journal in proximity to the face of said wheel, a strap having an internal bearing encircling said journal and a rigid bearing projecting from one side thereof, a pinion coacting with the aforesaid wheel, and turning freely on said rigid bearing, a suitable casing extending from said strap having a rigid projection therefrom and inclosing said gear-wheel and pinion, and a stud fixedly secured in said projection and flexibly connected at its other end with the aforesaid support, as and for the purpose specified.

4. In a power-transmitting device, the combination with a support and a car-wheel axle, of a gear-wheel secured to said axle and rotating therewith, a journal formed around said axle in proximity to the face of said gear-wheel, a strap having an internal bearing and encircling said journal, a fixed shaft extending from one side of said strap, a pinion turning freely on the said shaft, means attached to said pinion for lubricating the bearing thereof, and a support from the said strap flexibly connected to the aforesaid support, as and for the purpose specified.

5. In a power-transmitting device, the combination with the support and car-wheel axle, of a gear-wheel secured to said axle and rotating therewith, a journal formed around said axle in proximity to the face of said gear-wheel, a strap encircling said journal and having a flange flaring outwardly therefrom, and encompassing the face of said wheel, an oil-reservoir located in said flange having an inlet-opening at one end thereof and an outlet-opening at the other end, and having a wick-chamber located beneath said oil-reservoir opening into said journal and having an outer

opening-plug therefor communicating means between said oil-reservoir and said wick-chamber, and a support from the flange to the aforesaid support, as and for the purpose specified.

6. In a device of the class described, in combination, an axle, a gear-wheel secured to the axle and rotating therewith, a strap encircling said axle adjacent to the face of said gear-wheel having a flange extending therefrom covering the face and sides of said gear, a rigid arm from the flange having an enlarged outer end, a bearing located to one side of said strap, a pinion journaled on said bearing, a stud fixedly secured to said arm and projecting through an opening in the support, and means for cushioning said stud in said opening, as and for the purpose specified.

7. In a device of the class described, a flexible support for the pinion-bearing of a gear mechanism mounted on a rotating axle, comprising a fixed supporting-bar having a suitable opening, a shoe straddling said bar, and a second shoe associated with the aforesaid shoe and spring-held therefrom, and a stud rigidly connected with the pinion-bearing support and extending through a corresponding orifice in the second shoe, as and for the purpose specified.

8. In a device of the class described, in combination, an axle, a gear-wheel secured to the axle and rotating therewith, a strap encircling said axle adjacent to the face of said gear-wheel and having a flange extending therefrom covering the face and sides of said gear, a rigid arm from the flange having an enlarged outer end and an orifice therethrough, a bearing located to one side of said strap, a pinion journaled on said bearing, a stud fixedly secured in said arm and projecting through an opening in the support, a slotted shoe straddling said support and having rigid pins projecting from its lugs, a shoe straddling the support within the aforesaid shoe and having a central orifice corresponding to said stud and lugs through which said pins extend, and spiral springs encircling the said rods between suitable stops at the ends thereof and the lugs of the second shoe, as and for the purpose specified.

Signed at Montreal, in the district of Montreal, in the Province of Quebec, Canada, this 23d day of May, 1904.

ISIDOR DEUTSCH.

Witnesses:

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W. P. KING.