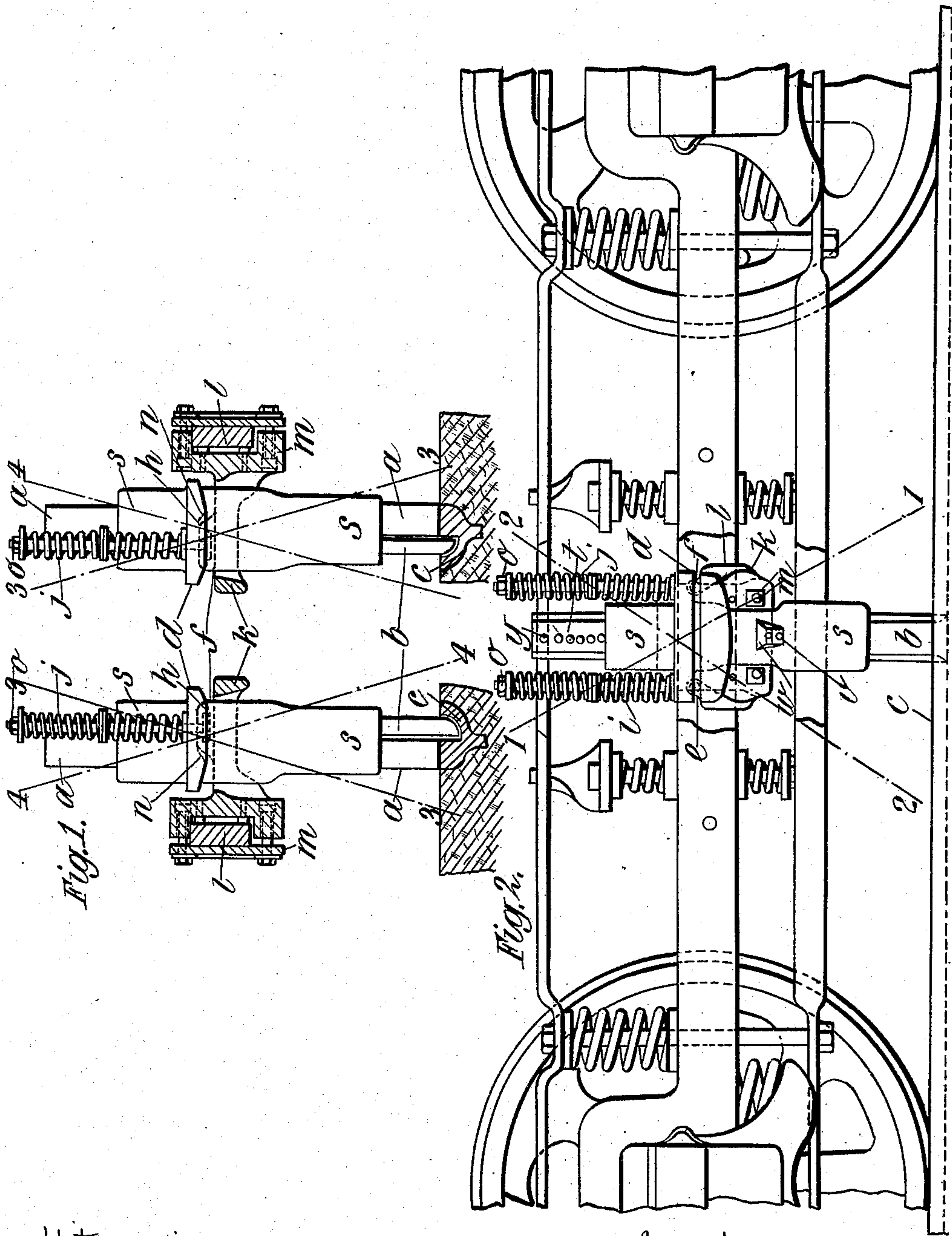


P. J. PRINGLE.  
 APPARATUS FOR CLEANSING THE RAILS OF TRAMWAYS AND RAILWAYS.  
 APPLICATION FILED JUNE 18, 1906.

916,015.

Patented Mar. 23, 1909.

4 SHEETS—SHEET 1.



Witnesses:—  
 Wm. S. Adams.  
 C. B. Franzoni.

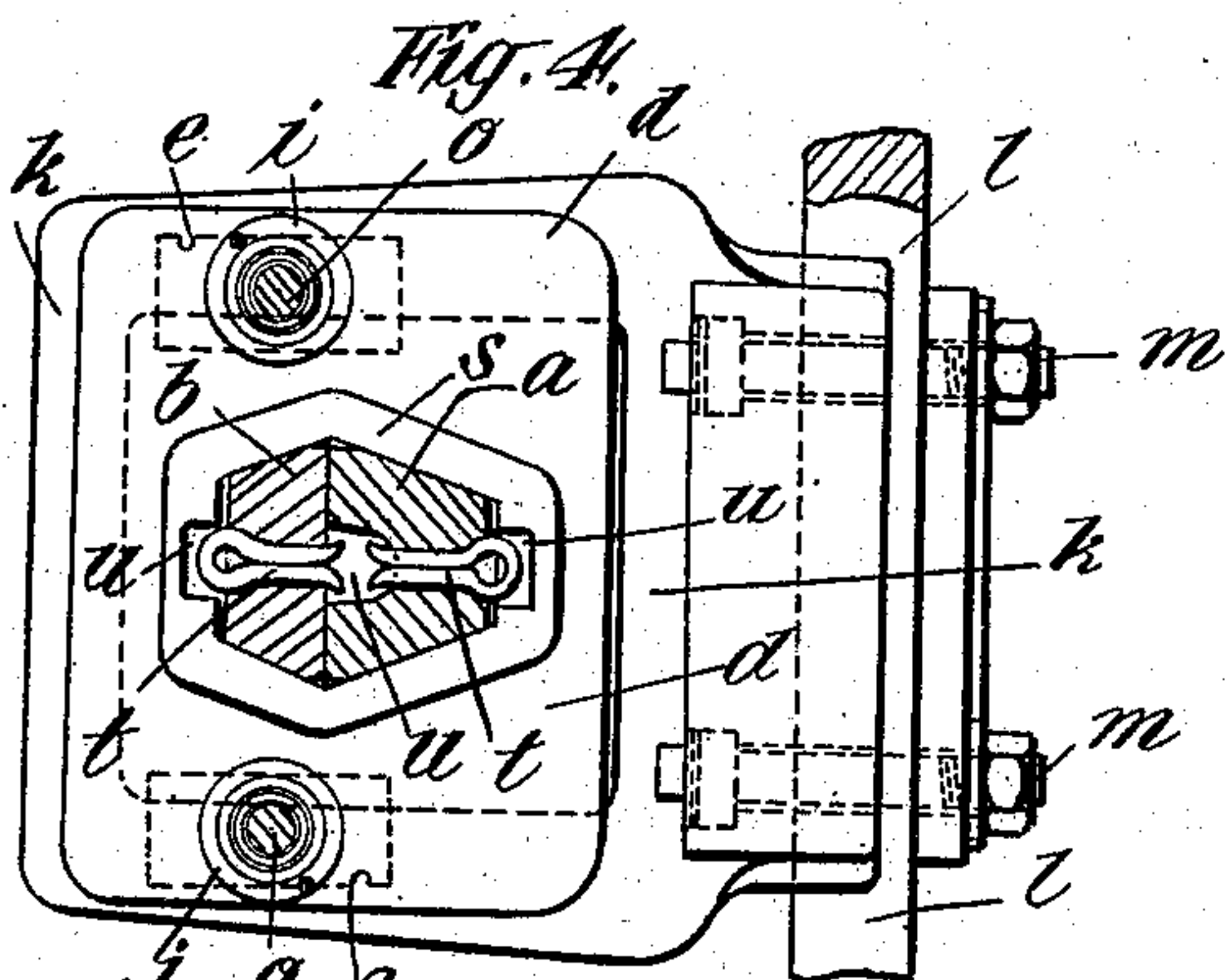
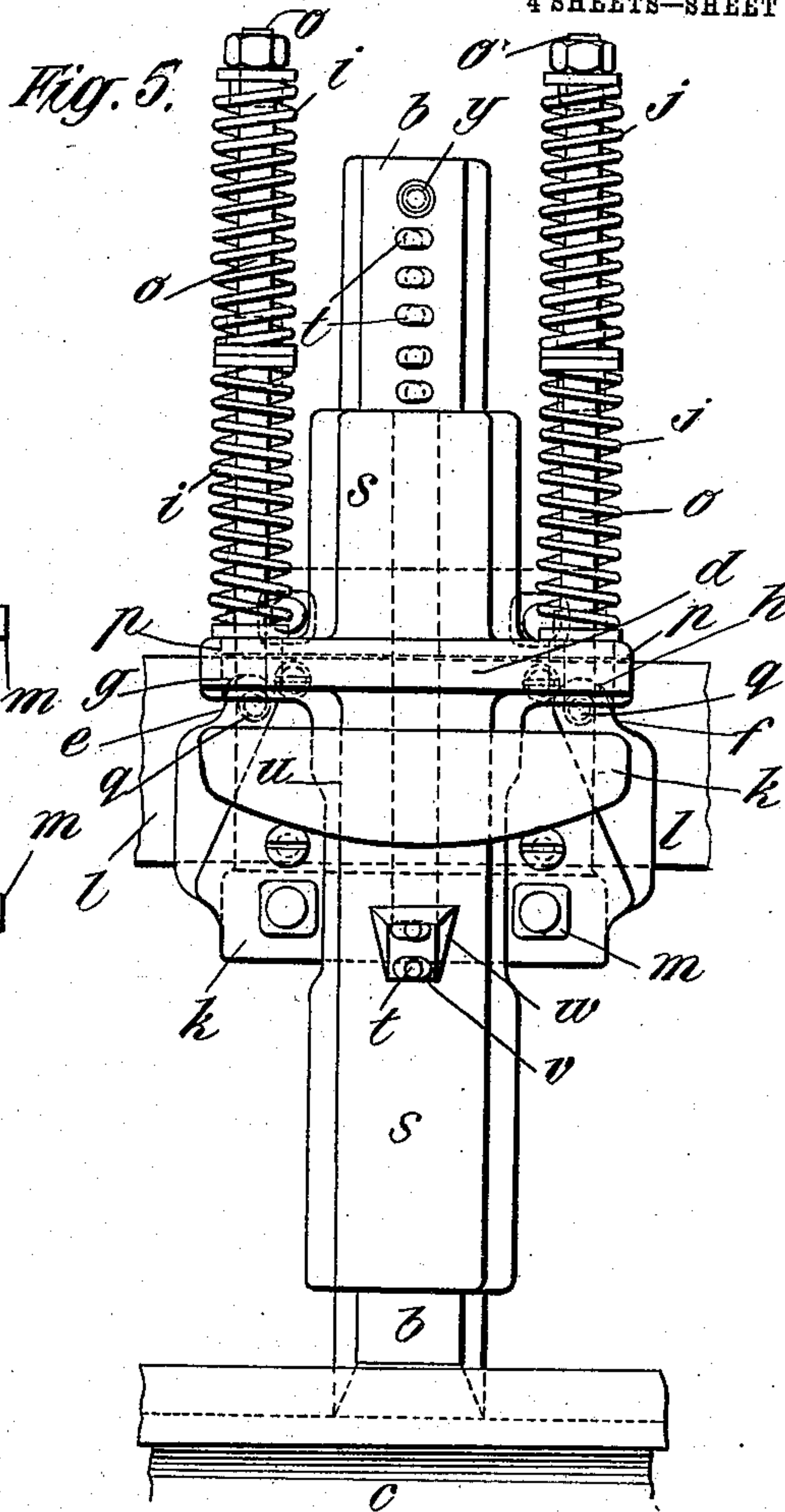
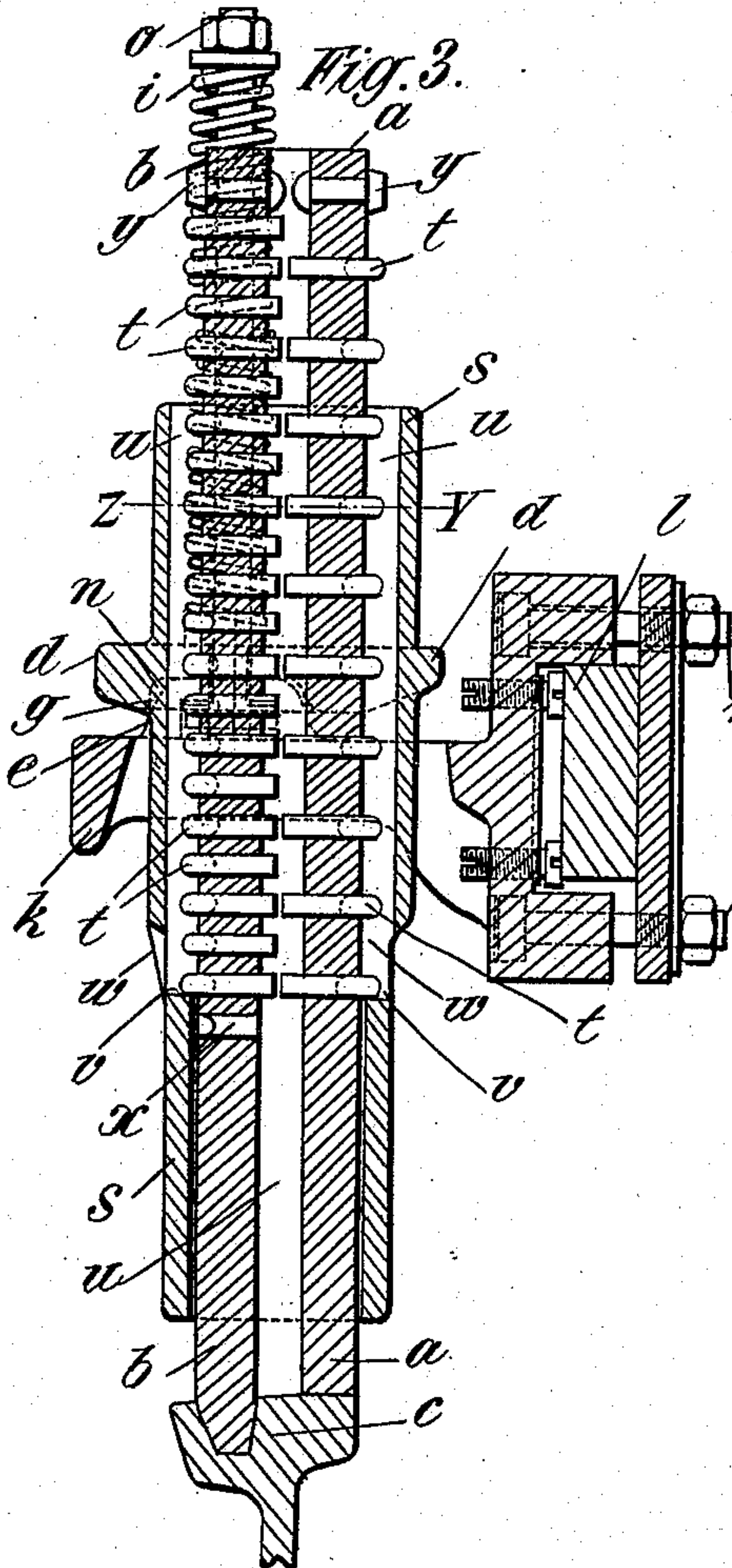
Inventor:—  
 P. J. Pringle,  
 By his Attorneys,  
 Baldwin & Wright.

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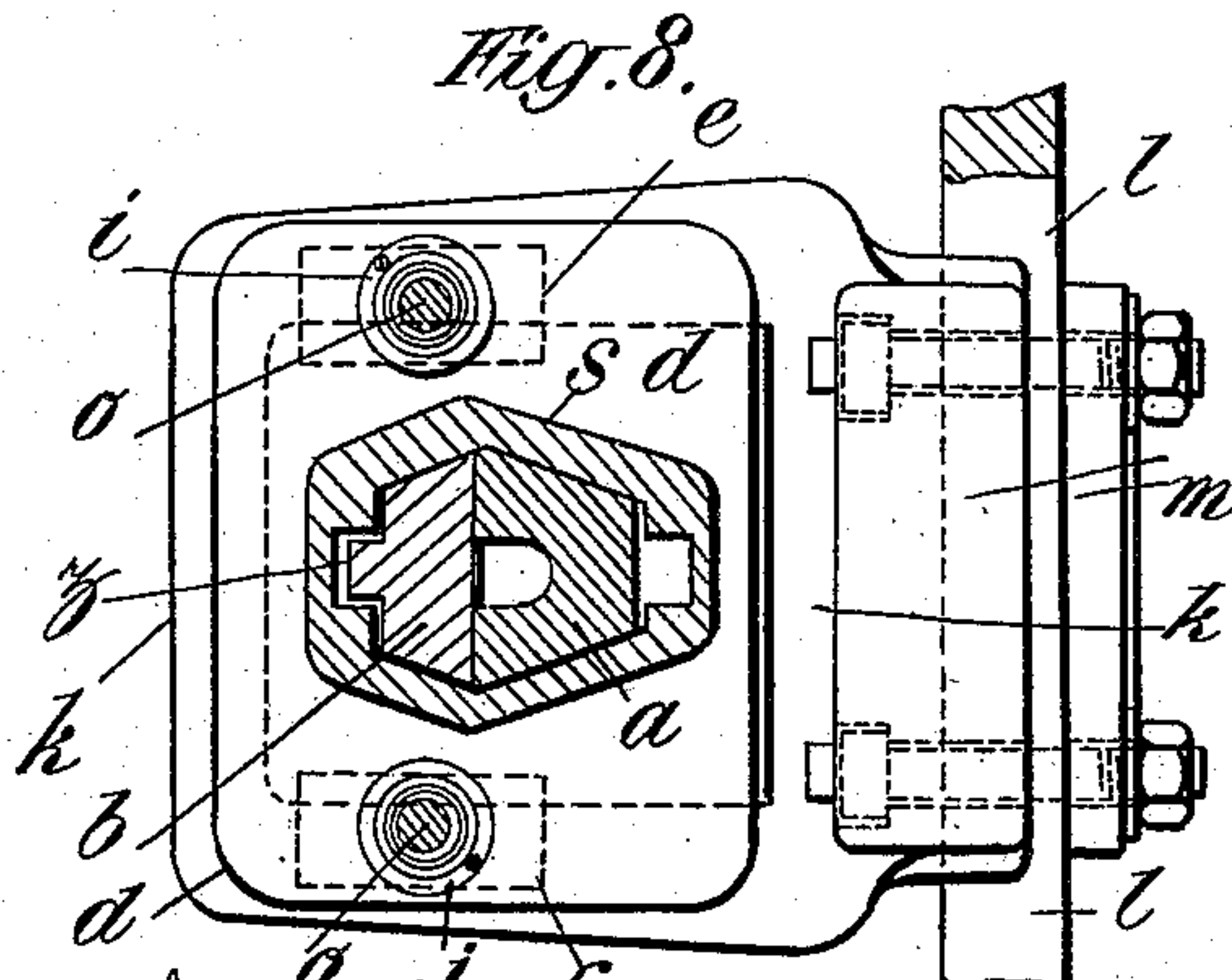
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4 SHEETS—SHEET 2.



Witnesses:  
 Mr. S. Adams.  
 E. B. Franzoni.



Inventor: P. J. Pringle,  
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 Baldwin & Wright.

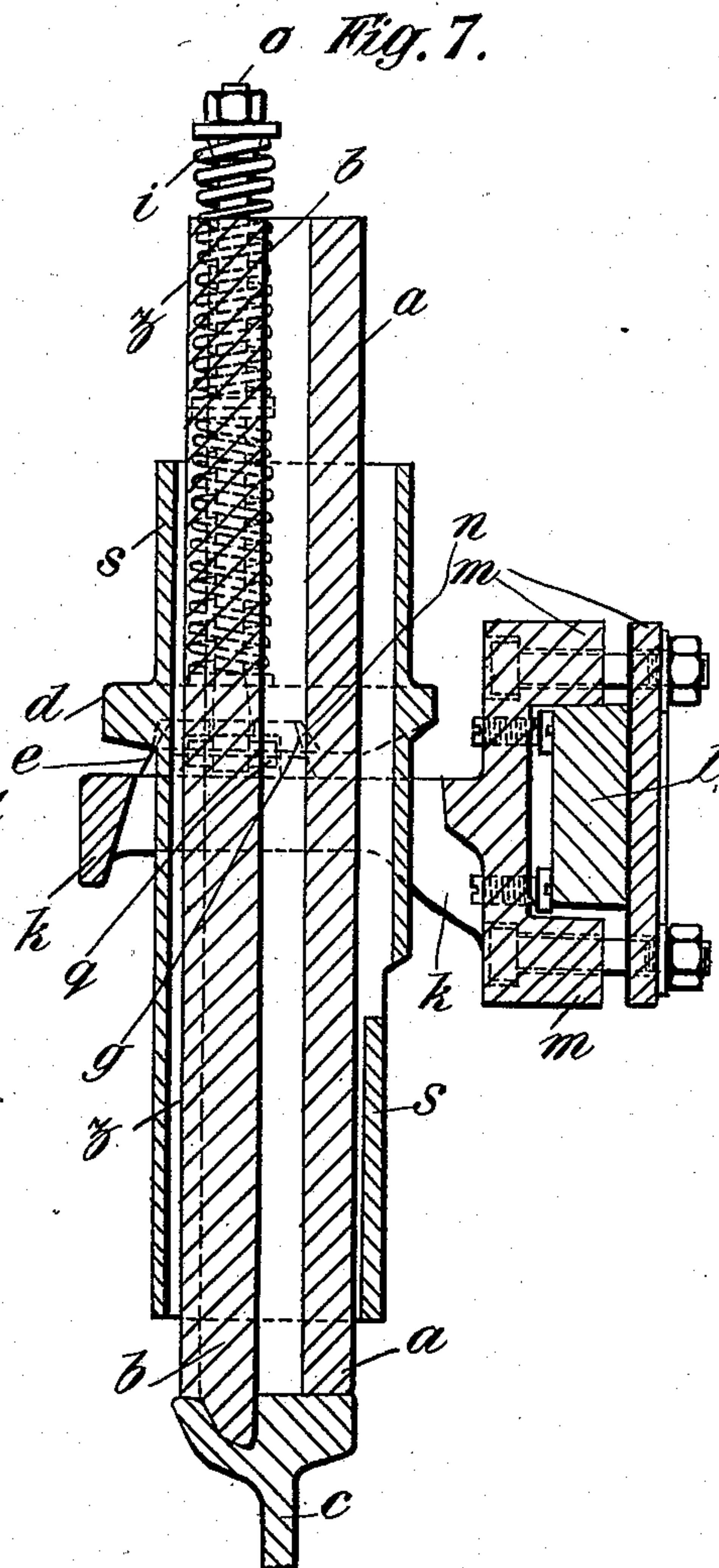
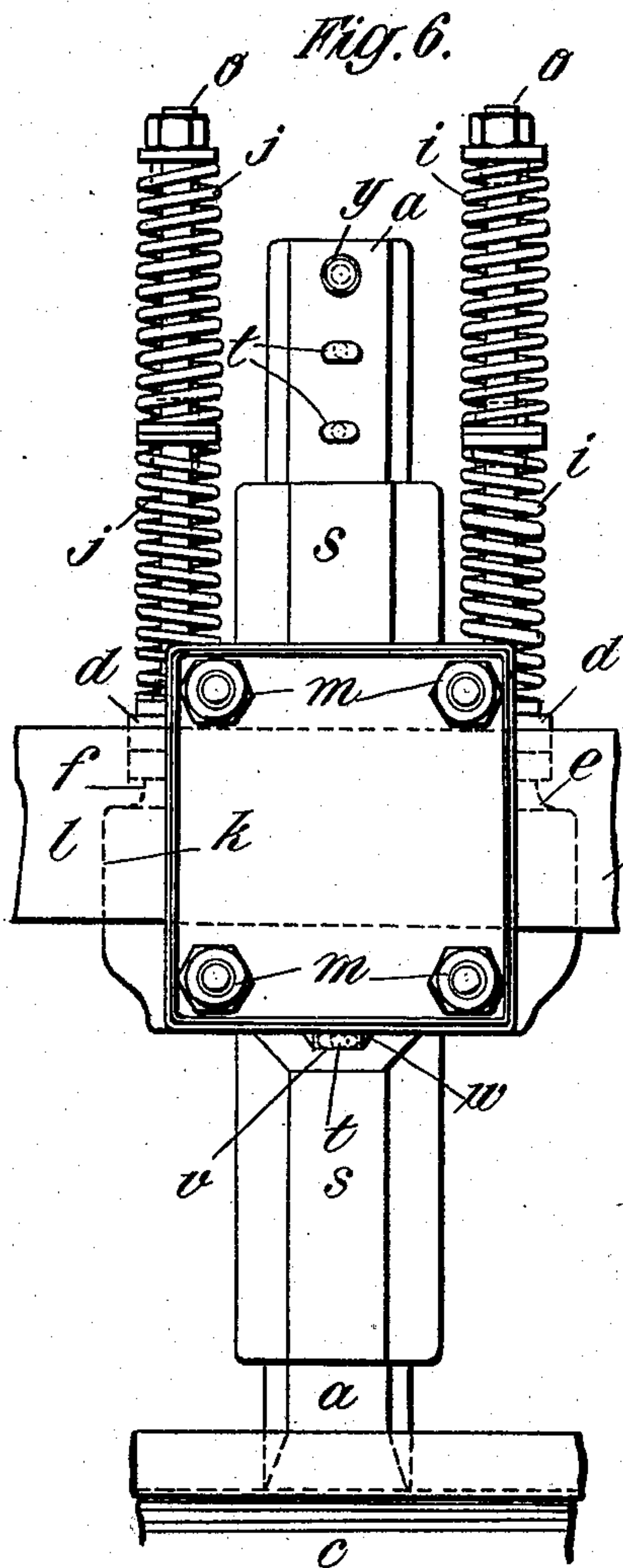


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4 SHEETS—SHEET 3.



Witnesses:-

M. S. Adams.

C. B. Franzoni.

Inventor:-

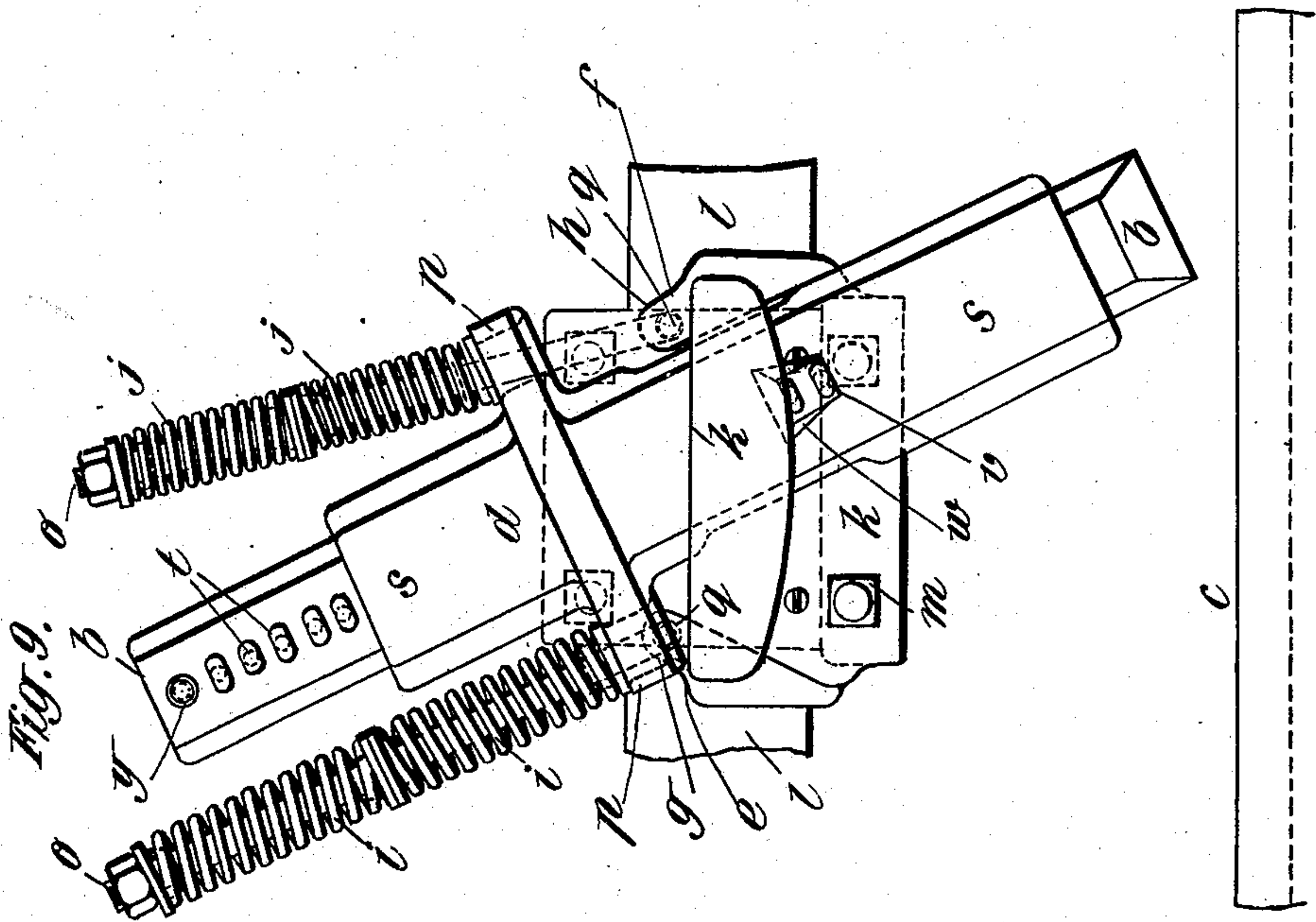
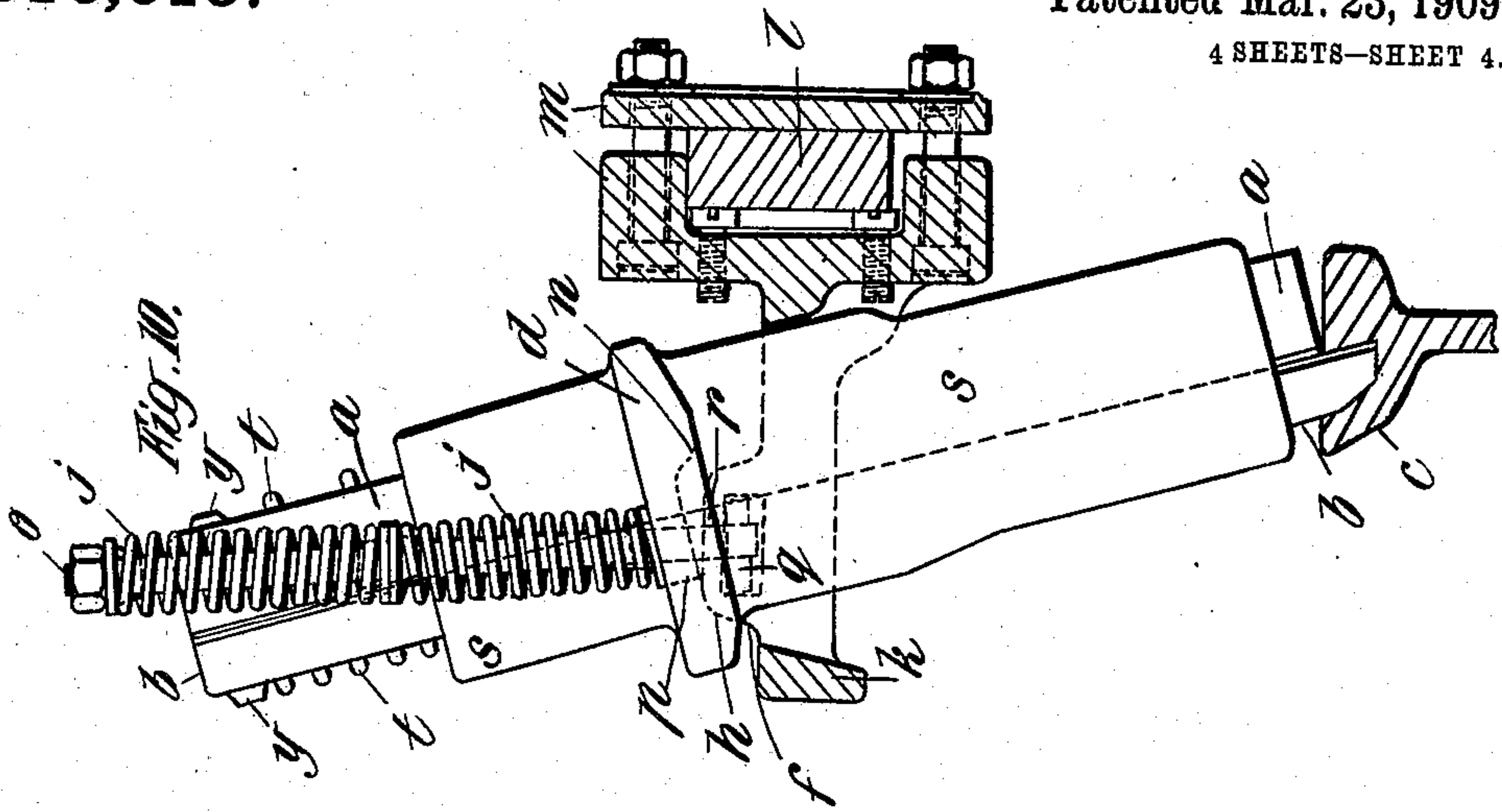
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 4 SHEETS—SHEET 4.



Witnesses:—  
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 P. J. Pringle,  
 by his Attorneys  
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# UNITED STATES PATENT OFFICE.

PERCIVAL JOHN PRINGLE, OF BURTON-UPON-TRENT, ENGLAND.

APPARATUS FOR CLEANSING THE RAILS OF TRAMWAYS AND RAILWAYS.

No. 916,015.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed June 18, 1906. Serial No. 322,297.

*To all whom it may concern:*

Be it known that I, PERCIVAL JOHN PRINGLE, a subject of His Majesty the King of Great Britain, residing at Burton-upon-Trent in the county of Derby and Kingdom of England, have invented certain new and useful Improvements in Apparatus for Cleansing the Rails of Tramways and Railways, of which the following is a specification.

My invention relates to apparatus for cleansing the rails of tramways and railways which it is advantageous to do so as to reduce the tractive effort required to drive the cars, vehicles or trains. Particularly is it desirable where the tramways and railways are laid level with an ordinary road over which horse and other vehicular traffic, as well as foot passengers, are permitted, and more especially when electric traction is adopted and the rails form a part of the return circuit.

Various forms of apparatus have been employed for cleansing the rails, the most suitable being of the type comprising a scraper arranged vertically at each side of the vehicle and designed to bear upon the rail and thus clean the surface or surfaces thereof. In this type it is necessary to mount the scraper so that it may readily adapt itself to obstructions, and to points, crossings, curves and the like. It is, therefore, essential that the scraper, while being maintained in its normal position in contact with the rail, should be able to move, tilt or oscillate longitudinally and transversely relatively to the rail, and though this has been aimed at previously, yet the means for effecting it have not proved satisfactory in practice.

Consequently, one object of my invention is to attain this end in a simple and effective manner for which purpose I arrange the scraper free in a guide which I mount so that it may move, tilt, or oscillate in the required direction while maintaining the scraper in the desired vertical or equivalent working position.

When the rail is of the grooved type, and it is required to clean the tread as well as the groove, it has been the practice to employ a single scraper shaped at the bottom to correspond, thereby obtaining two cleaning portions, but as these portions wear unequally it has not been possible to accomplish the proper adjustment to insure efficient cleansing. It has also been the practice to use two scrapers each shaped at the

bottom to suit the part of the rail it is intended to clean, and the one being connected to the other in such a way as to really constitute a single scraper, and in consequence, the difficulty of adjustment still remains.

Hence, another object of my invention is to simply attain the independent adjustment of each portion, and accordingly I compose my scraper of two distinct blades constituting two separate scrapers in one apparatus—one for operating on the rail-tread and the other in the rail-groove—and I furnish means in connection with them whereby, as they wear away, each adjusts itself automatically or practically so and without regard to the other.

The invention is particularly applicable to electric tramways where the rails are of the grooved pattern, therefore I will, by way of example, describe it with reference thereto with the aid of the accompanying drawings which illustrate the preferred construction, and wherein:—

Figure 1 is a general transverse sectional elevation of a portion of a vehicle truck showing the two apparatus which are fitted one at either side thereof, in the working position on a piece of straight road, and Fig. 2 is a side elevation thereof with a portion of the truck framing broken away and looking, therefore, upon the inner side of one apparatus. The dot-and-dash center lines in these two figures indicate the positions the apparatus may assume longitudinally and transversely with reference to the normal positions. Fig. 3 is a central vertical section representing the apparatus in the operative or normal position when the vehicle is on a straight piece of road, while Figs. 4, 5 and 6 are corresponding views thereof, being, respectively, a sectional plan on the line Z—Y of Fig. 3, an elevation looking at the left hand side, and an elevation looking in the opposite direction. Figs. 7 and 8 are views similar to Figs. 3 and 4 illustrating a slight modification. Figs. 9 and 10 are elevations representing, respectively, the position the apparatus assumes in encountering an obstruction or the like, and in rounding a curve.

In carrying out the invention, and speaking generally, I employ in each apparatus two scrapers *a* and *b*, the scraper *a* operating on the tread of the rail *c*, and the other in the groove thereof, an oblong plate or casting *d* serving as a guide for the scrapers *a* and *b*, two supports *e* and *f* terminating in bearing



pieces *g* and *h* for supporting the ends of the plate or casting *d*, and two springs *i* and *j* applied to the ends of the latter to maintain them in contact with the bearing pieces *g* and *h*.

For convenience of construction, the supports *e* and *f* are formed at the opposite ends of a bracket *k* which is secured to the frame member *l* of the vehicle truck as shown at *m* or in any other appropriate manner. The bearing pieces *g* and *h* of these supports *e* and *f* are of a spherical contour at their upper sides and enter and coact with corresponding recesses *n* in the underside of the plate or casting *d* whose length is parallel with the edges or sides of the rail *c*, and whose plane, under normal conditions, is parallel with the surface thereof. Thus the bearing pieces *g* and *h* constitute lateral pivots whereon the plate or casting *d* can move, tilt or oscillate longitudinally of the rail *c* when an obstruction is encountered or a crossing or point is being negotiated, and transversely thereof when a curve is being rounded, all under the influence of the springs *i* and *j*. Obviously, the bearing pieces *g* and *h* may be arranged to traverse the plate or casting *d* for which purpose they may be combined with rollers or balls and appropriate limiting means.

The springs *i* and *j* bear upon the ends of the plate or casting *d*, and each is arranged around a bolt *o* whose lower extremity passes through a slotted hole *p* therein and is eventually pivotally connected to the supports *e* and *f* so that the springs may accommodate themselves to the movements, tiltings or oscillations of the plate or casting *d*. This connection may be effected in any suitable fashion, but that illustrated is very simple since, as is shown best in Fig. 10, it merely consists in making the supports *e* and *f* each of a hook formation to receive a tee-head *q* on the bolt *o*, and slotting it, as indicated at *r*, to permit of the passage of the bolt. The springs *i* and *j* are each represented as consisting of two separate springs which is desirable because the buckling that would otherwise arise is obviated.

It will have been noticed that the plate or casting *d* is annular and is formed with a sleeve *s* at either side. This is for the purpose of obtaining an efficient support or guide for the scrapers *a* and *b* which are arranged therein in close contact therewith and with one another, though in such a way that when the plate or casting *d* is horizontal or approximately so, they are free to rise and fall vertically, but when the plate or casting *d* is tilted or oscillated unduly they become locked within it and the sleeves *s*. Further, the scrapers *a* and *b* are situated between the bearing pieces or pivots *g* and *h*, consequently a small angular motion of the plate or casting *d* results in their being moved rapidly away from the rail *c* which would not be

the case if they were pivoted on their respective center lines. Each scraper consists of a bar corresponding with the portion of the rail *c* it is to clean and adapted to efficiently deflect the dirt and so forth from the rail *c* in whatever direction the vehicle is traveling. Again, the bar is made of a sufficient weight to maintain itself in effective contact with the rail *c* when in the vertical position or approximately so, though this may be supplemented by a weight or a spring. It will now be evident that the scrapers *a* and *b* cannot fall from the plate or casting *d* beyond the determined limit, but normally they can easily rise and fall together, or quite independently one of the other, and in this way the proper and required adjustment for wear is insured, while each is able to accommodate itself to the varying amount of dirt or other obstruction that may be met with as well as to any up and down motion of the vehicle.

It is desirable in certain constructions of track to limit the amount that the scrapers *a* and *b* can project beyond the end of the lower sleeve *s* and where this is necessary I may adopt either of the ways for effecting this which are, by way of example, illustrated—one in Figs. 1, 2, 3, 4, 5, 6, 9 and 10, and the other in Figs. 7 and 8. In the former arrangement a series of cotter pins *t* constituting projections is inserted transversely in and through the scrapers *a* and *b* at a suitable distance apart, those in the scraper *b* being closer together than in the other which is the one that wears slower. The interior of the plate or casting *d* and of the sleeves *s* thereof as well as of the scraper *a* are slotted, as indicated at *u*, to accommodate the pins *t* whose projecting parts do not bear upon them with the exception of the lowermost one the head of which is, for the purpose of determining the downward motion or drop of the scrapers, adapted to bear upon a shoulder *v* on the lower sleeve *s* obtained by reducing the diameter thereof whereat openings *w* are provided for giving access to the pins *t*. When putting the apparatus into action a sufficient number of the cotter pins *t* are, if necessary, withdrawn from the scrapers *a* and *b* so that there is an ample length available for subsequent use. The dimensions of the openings *w* and the spacing of the cotter pins *t* are both arranged so that access can be obtained to a pin allowing more than the prescribed amount of drop to the respective scraper. Therefore as the scrapers *a* and *b* wear away each of their pins *t* gradually falls nearer the shoulder *v* until it makes contact therewith and when this occurs it is removed through the adjacent opening *w* whereupon the next pin *t* comes into action. In the figures a pin *t* of each scraper is shown due for removal, while as indicated at *x* in Fig. 3 one is supposed to have been removed from the scraper *b*. It will be noticed that each



scraper *a* and *b* is furnished with a rivet *y* at the upper end. This is to prevent the scraper falling out of the plate or casting *d* when all the pins *t* have been withdrawn in which event the scraper will, too, have been worn out, whereupon it will be replaced by a new one. Instead of the pins *t*, projections may be provided integrally with the scrapers *a* and *b*. According to the other means illustrated in Figs. 7 and 8, a strip *z* co-extensive and integral with the scraper *b* is employed, but of much less transverse area. This strip *z* bears upon the rail *c*, but owing to its small area it wears away faster than the scraper, and thus the required adjustment accrues and the scraper cannot fall below its working level. Though shown bearing on the narrow flat portion of the rail *c*, the strip *z* may be arranged to bear upon the tread. The strip *z* may also be provided on the scraper *a*. Again, instead of being integral, the strip *z* may be attached in suitable fashion, and, if required, it may be of softer material, while, further, cotter pins or projections may be substituted for it.

Having explained the construction of my improved apparatus, I will now explain its operation.

Assuming the vehicle is stationary, or that it is running on a straight piece of track, then the apparatus occupies the position shown in all the figures, excepting Figs. 9 and 10, that is to say, the plate or casting *d* is held in the horizontal position in contact with the bearing pieces *g* and *h* of the supports *e* and *f* by the springs *i* and *j*, while the scrapers *a* and *b* assume a vertical position in contact with the tread and groove of the rail *c* which are thereby cleaned as the vehicle proceeds, though at the same time they are free to move up and down to adapt themselves for wear, inequalities of the rail surfaces, and the vertical motion of the vehicle. Supposing, now, an obstruction, point or crossing, is encountered by one or both of the scrapers, a trailing movement or tilt is imparted thereto whereby they are deposed from the vertical, consequently, due to their arrangement within the plate or casting *d* and the sleeves *s* thereof, the plane of the plate or casting *d* is removed from the normal position parallel with the rail surface, the rear end of the plate or casting *d* (that is the end opposite to the end pointing in the direction in which the vehicle is traveling, which end will hereinafter be termed the front) being, as represented in Fig. 9 and indicated by the dot-and-dash line 1 in Fig. 2, canted upward away from its bearing piece *h* against the pressure of the spring *j*, and simultaneously the front end remaining in contact with the bearing piece *g* of the support *e*, becomes the pivot for the said motion, both the scrapers *a* and *b* being rapidly removed away from the rail *c* owing to their

situation behind the center of motion. When the obstruction, point or crossing is passed, the spring *j* at once re-acts and the parts resume their original positions. If the vehicle is traveling in the opposite direction to that just assumed, then the plate or casting *d* and the scrapers *a* and *b* are tilted in the direction indicated by the dot-and-dash line 2 in Fig. 2, the end of the plate or casting *d* (which was previously the front) becoming the rear end and the bearing piece *h* of the support *f* the pivot on which the plate or casting *d* tilts or oscillates.

Assuming, next, the vehicle is rounding a curve, then the position of the scrapers *a* and *b* relatively to the surfaces of the rail *c* differs as compared with that assumed on the straight, hence, owing to the provision of the bearing pieces *g* and *h*, which again become pivots, the plate or casting *d* is, as illustrated in Fig. 10 and by the dot-and-dash lines 3 and 4 in Fig. 1, tilted to one side or the other of the rail *c* by the scrapers *a* and *b*, which are likewise tilted owing to their remaining engaged with the rail, all under the influence of the springs *i* and *j* which return the whole to the original position on the curve being passed. The scraper *b*, of course, is the main factor in this action.

It will now be obvious that the apparatus operates automatically whichever way the vehicle is traveling, and that, during the cleaning of the rail, the scrapers *a* and *b* are vertical or practically so, while, when an obstruction, point or crossing is met, or a curve is being passed, they are relieved from strain and thus breakage and derangement are avoided. Again, it will be observed that by the construction of the apparatus, the amount of power required to operate it is comparatively small, and, further, that compactness and simplicity of design are obtained.

In describing my invention I have only referred to a two-scraper apparatus because this will be the most general form, but, of course, it may be applied to an apparatus having only a single scraper or a scraper with two integral blades, the arrangement and operation being the same as described excepting that in the latter form an independent adjustment of the blades will not be obtainable.

Further, I have not explained any means for putting the apparatus out of use when not required, but obviously such may be combined, and may be of any appropriate construction and arrangement.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In apparatus for cleansing the rails of tramways and railways, in combination, a scraper for operating on a single rail-surface, a movable plate or casting serving as a guide for said scraper and normally retaining it in



a vertical, or in an approximately vertical, position, fixed bearing pieces constituting lateral pivots whereon said plate or casting can move, tilt or oscillate so that said scraper  
5 can adapt itself to obstructions, points, crossings, curves and the like, and springs for controlling the motion of said plate or casting.

2. In apparatus for cleansing the rails of  
10 tramways and railways, in combination, a scraper with integral portions for operating on separate rail-surfaces, a movable plate or casting serving as a guide for said scraper and normally retaining it in a vertical, or in  
15 an approximately vertical, position, fixed bearing pieces constituting lateral pivots whereon said plate or casting can move, tilt or oscillate so that said scraper can adapt itself to obstructions, points, crossings,  
20 curves and the like, and springs for controlling the motion of said plate or casting.

3. In apparatus for cleansing the rails of tramways and railways, in combination, independent scrapers each for operating on  
25 a different rail-surface, a movable plate or casting serving as a guide for said scrapers and normally retaining them in a vertical, or in an approximately vertical, position, fixed bearing pieces constituting lateral pivots  
30 whereon said plate or casting can move, tilt or oscillate so that each of said scrapers can adapt itself to obstructions, points, crossings, curves and the like, and springs for controlling the motion of said plate or cast-  
35 ing.

4. In apparatus for cleansing the rails of tramways and railways, in combination, a scraper for operating on a single rail-surface, a movable, tilting or oscillating guide for re-  
40 taining said scraper in a vertical, or in an approximately vertical, position while permitting it to tilt or oscillate longitudinally and transversely of the rail, supports secured to the vehicle and each provided with a bear-  
45 ing piece or pivot whereon said plate or casting can move, tilt or oscillate, and springs bearing upon said plate or casting for controlling the motion thereof.

5. In apparatus for cleansing the rails of  
50 tramways and railways, in combination, a scraper with integral portions for operating on separate rail-surfaces, a movable, tilting or oscillating guide for retaining said scraper in a vertical, or in an approximately vertical,  
55 position while permitting it to move, tilt or oscillate longitudinally and transversely of the rail, supports secured to the vehicle and each provided with a bearing piece or pivot whereon the said plate or casting can move,  
60 tilt or oscillate, and springs bearing upon the said plate or casting for controlling the motion thereof.

6. In apparatus for cleansing the rails of tramways and railways, in combination, in-

dependent scrapers each for operating on a 65 different rail-surface, a movable, tilting or oscillating guide for retaining the said scrapers in a vertical, or in an approximately vertical, position while permitting them to move, tilt or oscillate longitudinally 70 and transversely of the rail, supports secured to the vehicle and each provided with a bearing piece or pivot whereon said plate or casting can move, tilt or oscillate, and springs bearing upon said plate or casting 75 for controlling the motion thereof.

7. In apparatus for cleansing the rails of tramways and railways such rails having a plurality of surfaces to be cleaned, a corresponding number of separate scrapers each 80 adapted to clean a particular surface and adjust itself independently.

8. In apparatus for cleansing the rails of tramways and railways, in combination, a guide, and a scraper arranged in said guide 85 so that it is free to rise and fall vertically or practically so, but becomes locked within it when out of such vertical position.

9. In apparatus for cleansing the rails of tramways and railways, in combination, a 90 guide, and a plurality of scrapers arranged therein so that they are free to rise and fall vertically, or practically so, but become locked within it when out of such vertical position. 95

10. In apparatus for cleansing the rails of tramways and railways, in combination, a vertically-operating scraper, and a series of transverse projections thereon for limiting the downward motion to meet the adjust- 100 ment.

11. In apparatus for cleansing the rails of tramways and railways, in combination, a plurality of vertically-operating scrapers, and a series of transverse projections on each 105 of said scrapers for limiting the downward motion to meet the adjustment.

12. In apparatus for cleansing the rails of tramways and railways, in combination, a vertically-operating scraper, and a co-exten- 110 sive projection thereon for limiting the downward motion to meet the adjustment, said projection bearing upon the rail and being of less transverse area than said scraper.

13. In apparatus for cleansing the rails of 115 tramways and railways, in combination, a plurality of vertically-operating scrapers, and a co-extensive projection on each of said scrapers for limiting the downward motion to meet the adjustment, said projection 120 bearing upon the rail and being of less transverse area than said scraper.

14. In apparatus for cleansing the rails of tramways and railways, in combination, a vertically-operating scraper, a series of trans- 125 verse projections thereon of small transverse area for bearing upon the rail whereby each projection wears away faster than the said



scraper and thus the adjustment of the latter is always insured and its downward motion determined.

15 15. In apparatus for cleansing the rails of tramways and railways, in combination, a plurality of vertically-operating scrapers, a series of transverse projections on each of said scrapers for bearing upon the rail where-  
10 by they wear away faster than the scraper and thus the adjustment thereof is always insured and its downward motion deter-  
mined.

15 16. In apparatus for cleansing the rails of tramways and railways, in combination, a vertically-operating scraper, and a co-exten-  
sive projection thereon of small transverse area for bearing upon the rail whereby said projection wears away faster than the scraper  
and thus the adjustment thereof is always

insured and its downward motion deter- 20  
mined.

17. In apparatus for cleansing the rails of tramways and railways, in combination, a plurality of vertically-operating scrapers, and a co-extensive projection on each of said 25  
scrapers of small transverse area for bearing upon the rail whereby it wears away faster than the scraper and thus the adjustment thereof is always insured and its downward  
motion determined. 30

In testimony whereof I have hereunto subscribed my name in the presence of two witnesses.

PERCIVAL JOHN PRINGLE.

Witnesses:

C. K. EDDOWES,  
F. A. ROLLOSON.