

No. 737,906.

PATENTED SEPT. 1, 1903.

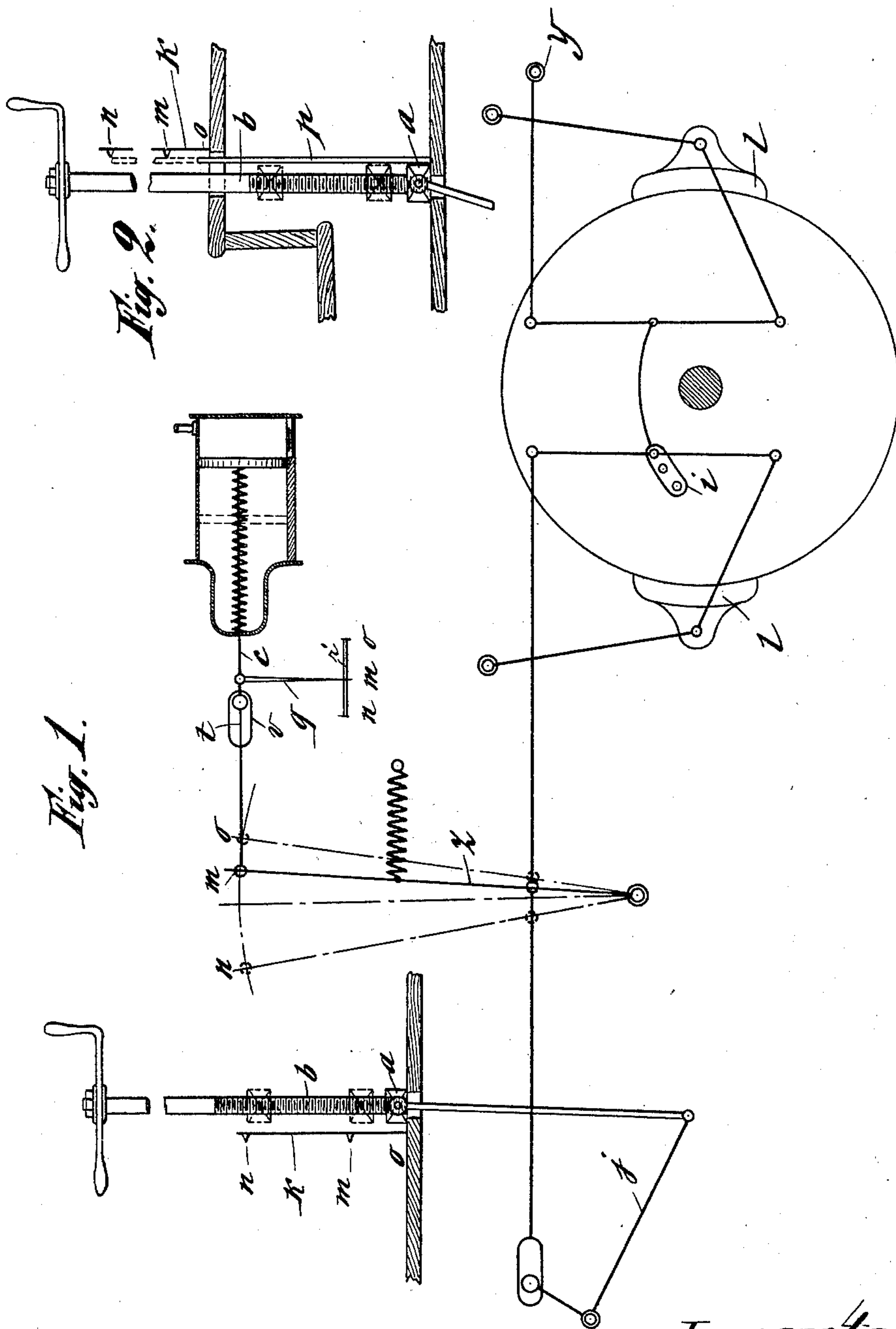
A. CHAUMONT.

COMPRESSED AIR OR OTHER SIMILAR BRAKE.

APPLICATION FILED JULY 23, 1901.

NO MODEL.

5 SHEETS—SHEET 1.



Witnesses:
P. J. Chagle.
L. Howille. By

Inventor:
Adolphe Chaumont.
Niedersheim & Fairbanks.
~~*Attorneys*~~

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5 SHEETS—SHEET 2.

Fig. 5.

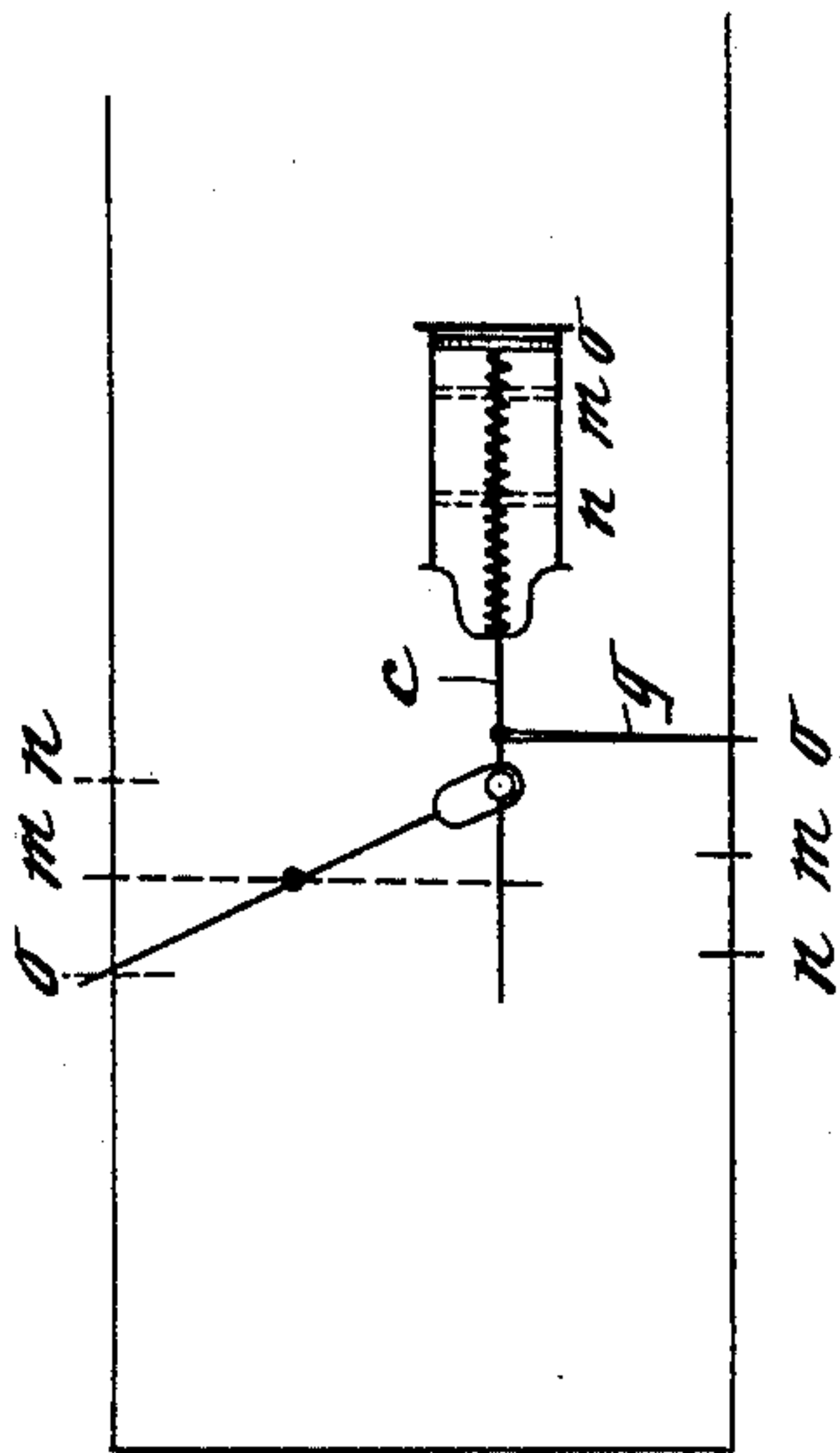


Fig. 9.

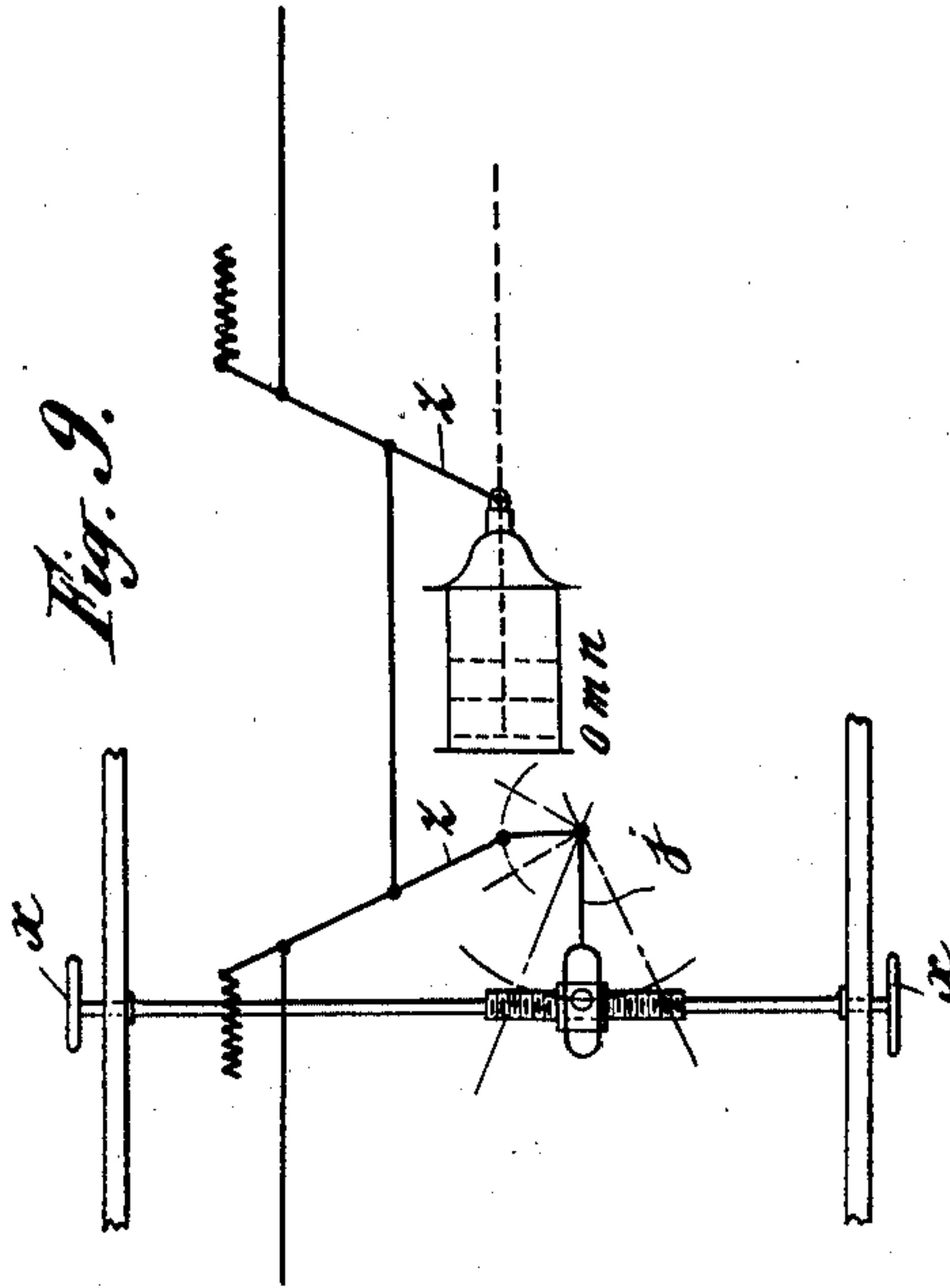


Fig. 3.

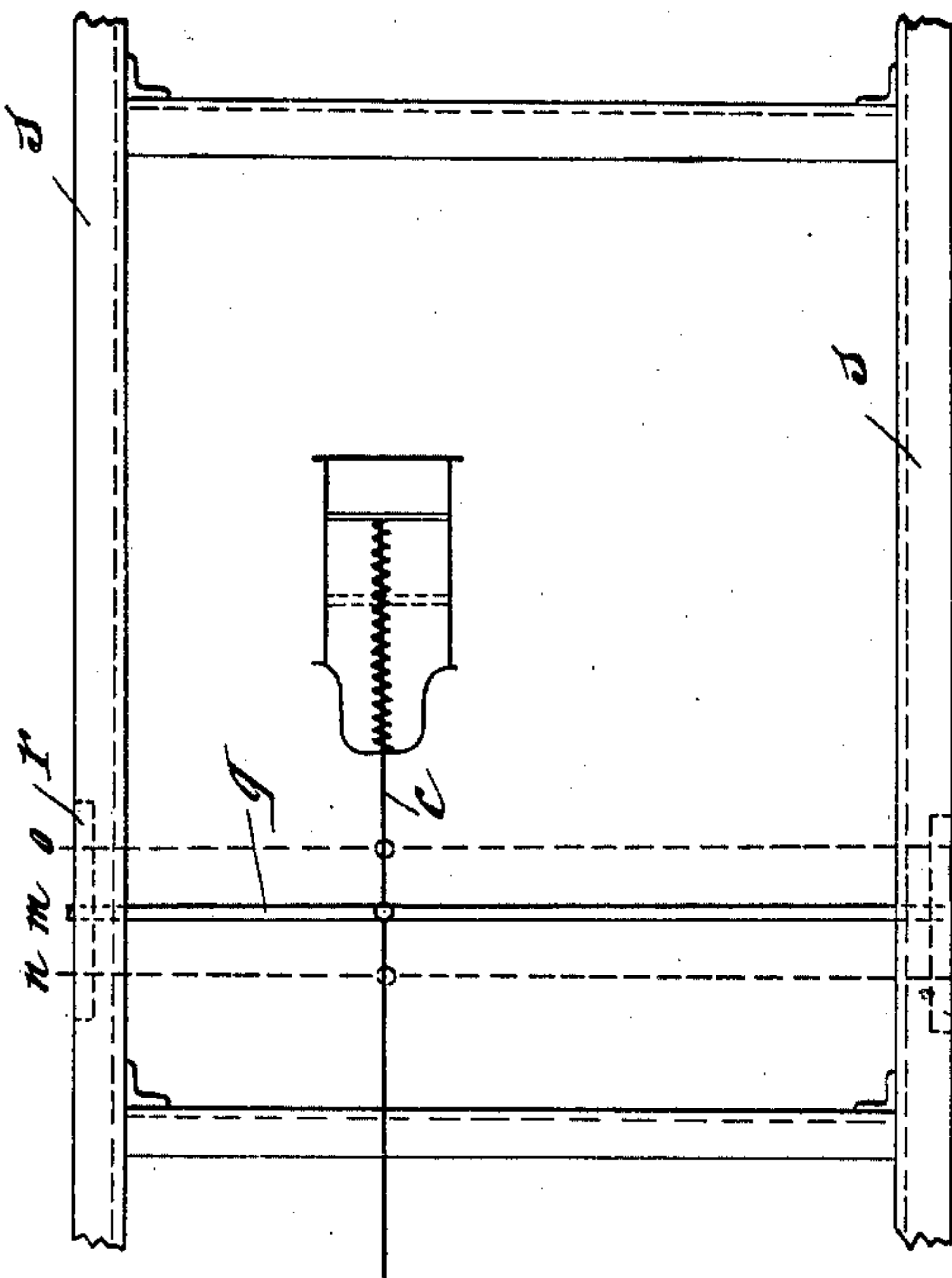
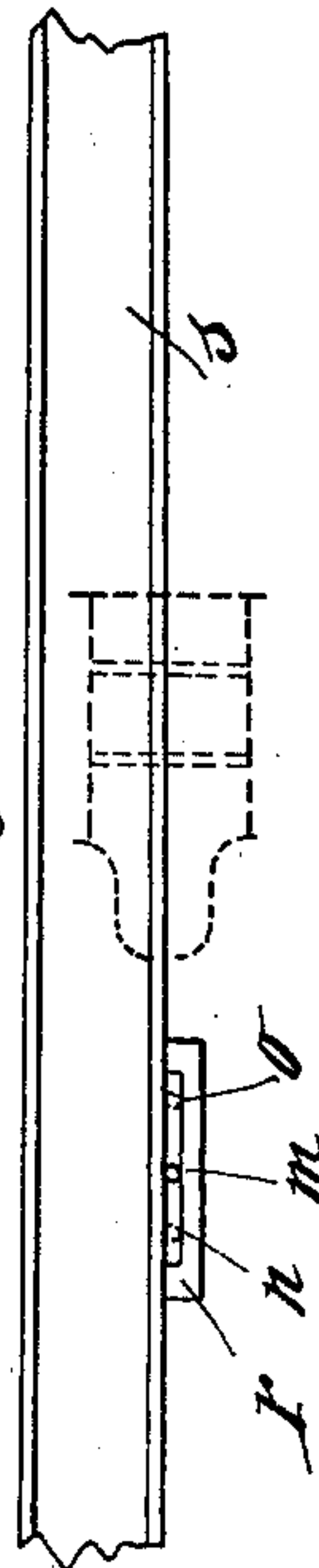


Fig. 4.



Witnesses:
P. J. Nagle.
L. Bouville. By

Inventor:
Adolphe Chaumont.
Wiederheim & Fairbanks.
Attorneys

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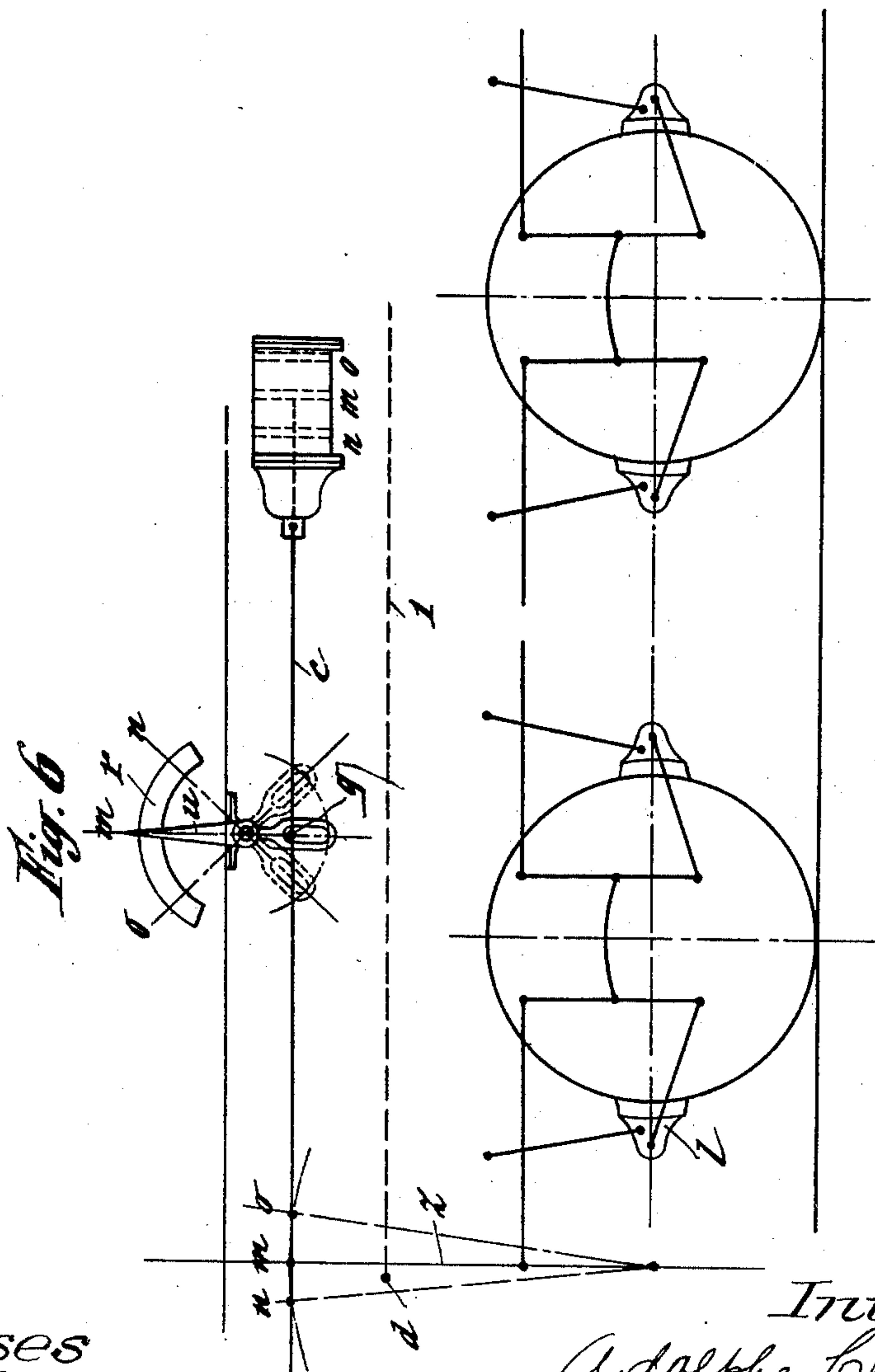
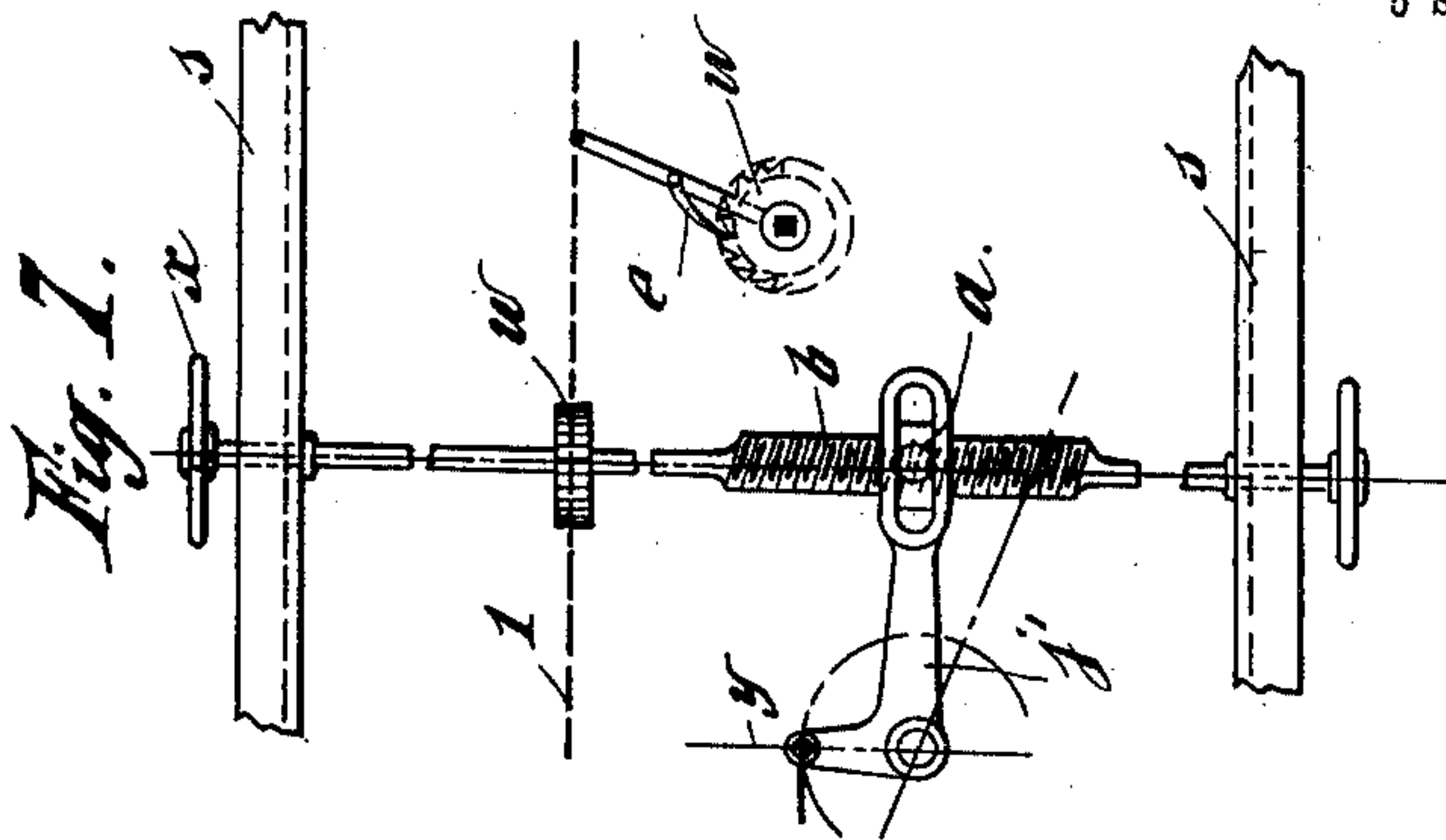
A. CHAUMONT.

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5 SHEETS—SHEET 3.



Witnesses
O. J. Hagle.
L. Bouville.

Inventor:
Adolphe Chaumont,
By Niedersheim & Laitank.
Attorneys.

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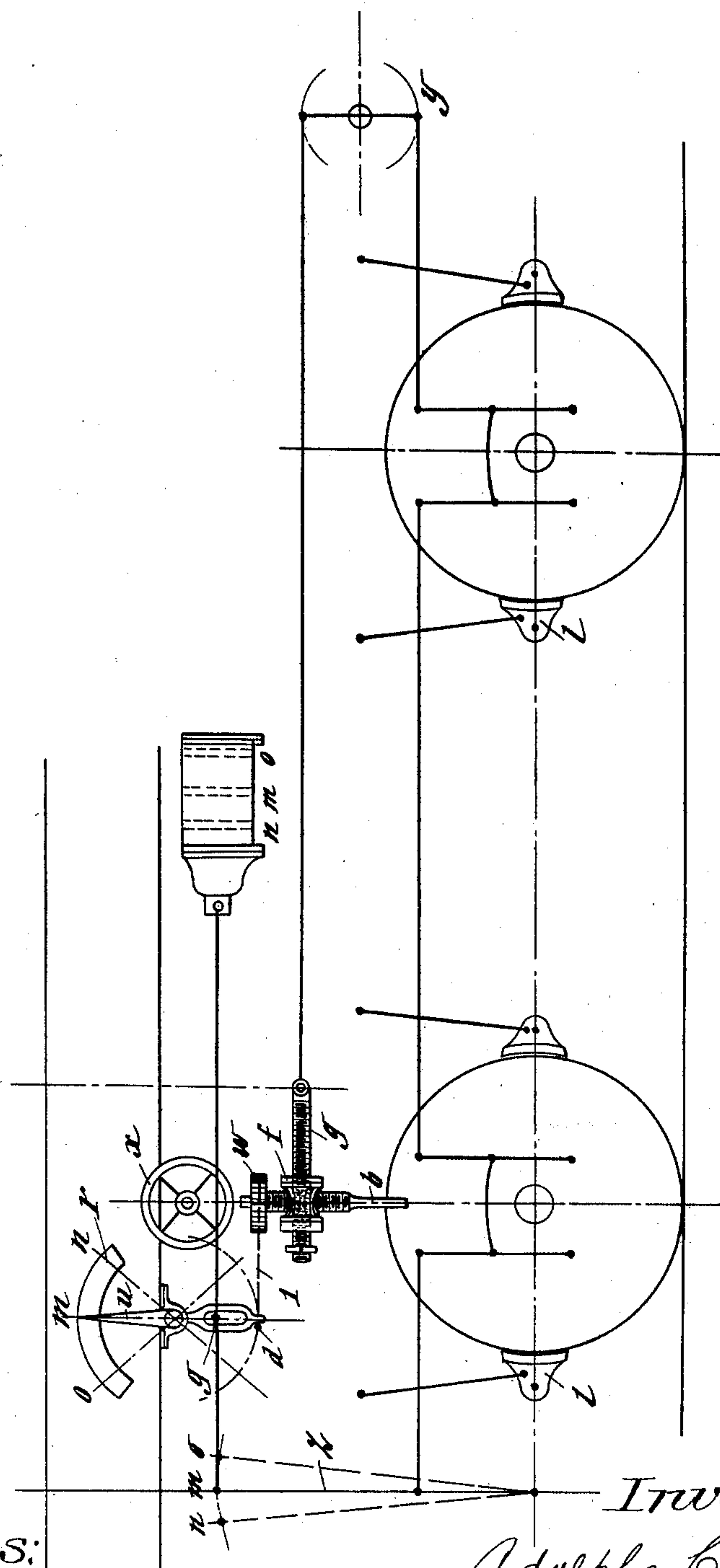
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5 SHEETS—SHEET 4.

Fig. 8.



Witnesses:
O. J. Cagle.
L. Bouville.

By

Inventor:
Adolphe Chaumont,
Niederstein & Fairbanks,
Attorneys

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5 SHEETS—SHEET 5.

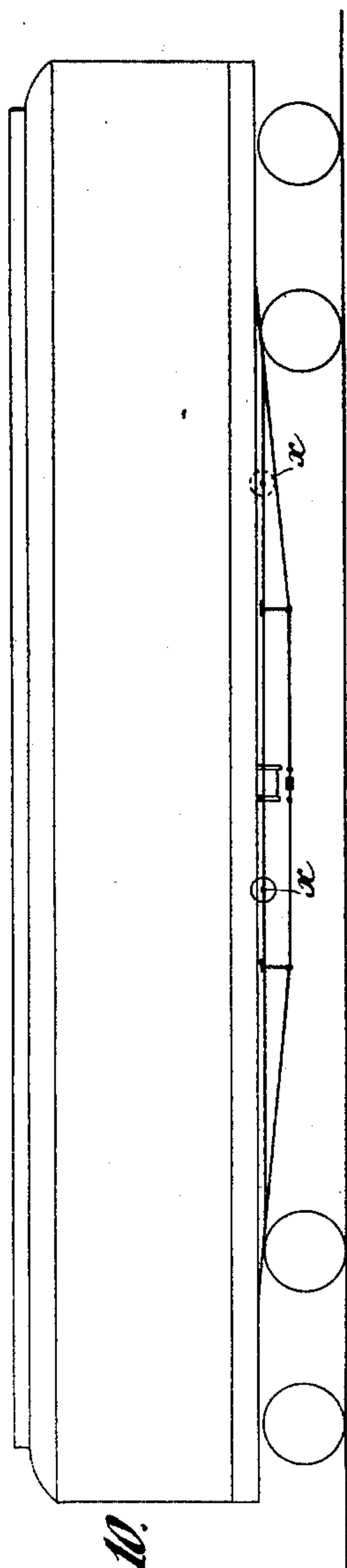


Fig. 10.

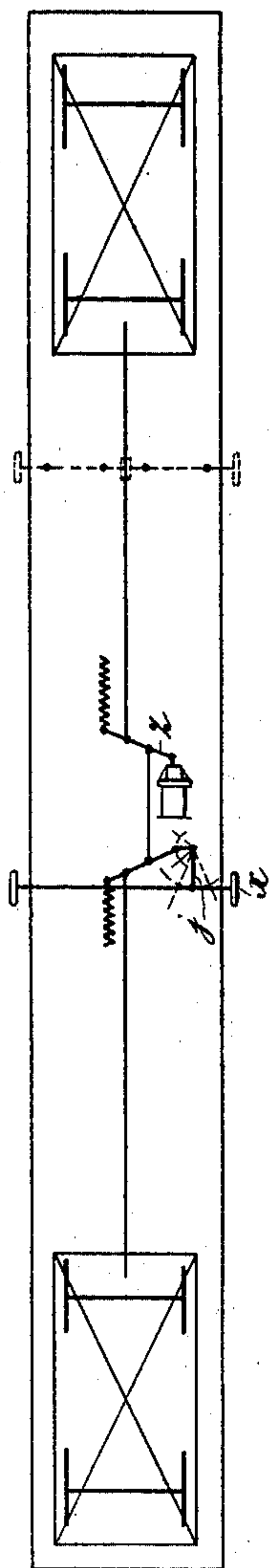


Fig. 11.

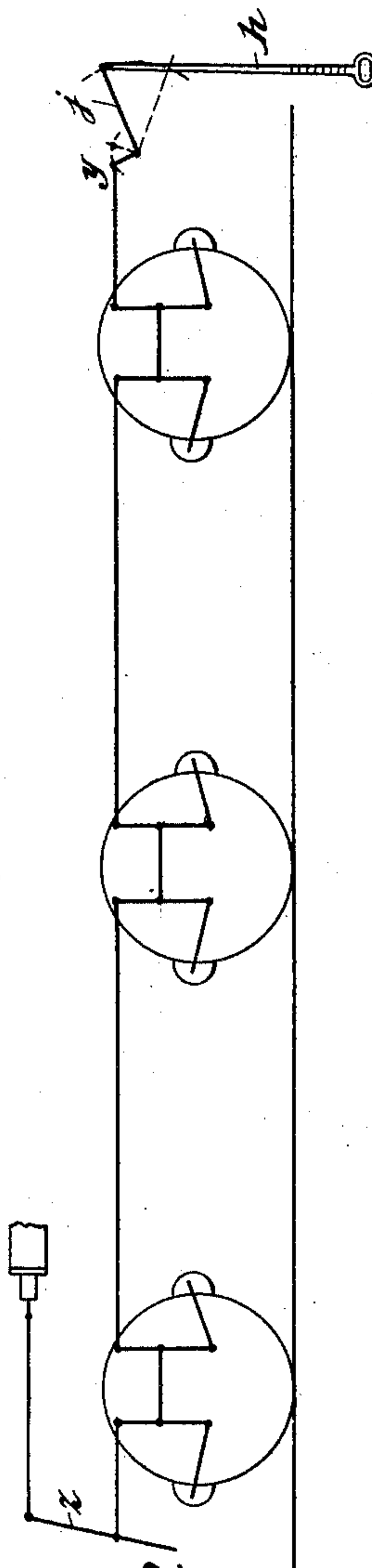


Fig. 12.

Witnesses:
O. H. Kagle.
L. Dowille. By

Inventor:
Adolphe Chaumont,
Diederheim & Fairbanks
Attorneys.

UNITED STATES PATENT OFFICE.

ADOLPHE CHAUMONT, OF BRUSSELS, BELGIUM.

COMPRESSED-AIR OR OTHER SIMILAR BRAKE.

SPECIFICATION forming part of Letters Patent No. 737,906, dated September 1, 1903.

Application filed July 23, 1901. Serial No. 69,352. (No model.)

To all whom it may concern:

Be it known that I, ADOLPHE CHAUMONT, engineer inspector of the Belgian State Railways, a subject of the King of Belgium, residing at 89 Avenue des Arquebusiers, St. Josse-ten-Noode, Brussels, in the Kingdom of Belgium, have invented certain new and useful Improvements in or Relating to Compressed-Air or other Similar Brakes, of which the following is a specification.

This invention relates to a method of and devices for speedily and certainly effecting, either by hand from outside the vehicle or automatically, the exact adjustment of compressed-air or other similar brakes applied to railway-vehicles and also permits of instantly verifying under all circumstances whether the brake is properly adjusted and if it operates with all the requisite certainty.

In accordance with the regulations for the use of the Westinghouse brake, for example, the application of the brake-shoes upon the tires of the wheels should never be effected until the piston has made a certain minimum stroke in the cylinder, permitting it to cover the exhaust-aperture of the said cylinder, nor after it has made a certain maximum stroke, and this for the purpose of insuring efficient and certain action of the brake. It follows from this that in order to adjust the brake and also in order to ascertain whether the adjustment is perfect and the operation effective it is necessary to be guided exclusively by the actual stroke of the piston within the cylinder—that is to say, it is essential that it shall be possible to observe, regulate, and verify the displacements of the piston within the cylinder. With the construction heretofore employed inspection of the stroke of the piston is only possible if the air-brake operates—that is to say, if the vehicle is under air-pressure—the inspector being also obliged to get beneath the vehicle-frame and while in a painful and dangerous position observe, verify, and exactly measure such piston-stroke in order to correspondingly adjust the brake-gear. Owing to these difficulties, the inspectors usually content themselves with adjusting the brake-gear in accordance with the displacement of the brake-shoes—that is to say, in a manner which is only very roughly accurate and which is frequently incorrect,

since the play of the shoes is variable according to the form of gear employed. In order to obviate these existing defects, I have devised a method of and devices for adjusting the brake-gear so as to regulate the braking exactly for a predetermined stroke of the piston (the minimum stroke, for example, as that is the most advantageous) and to ascertain at any moment whether the air-brake is operating under the requisite conditions, such adjustment and verification being effected in an extremely simple and exact manner, without trial, from the outside of the vehicle.

The following is the principle of my invention: I first of all effect the adjustment of the brake-gear by means of parts operated from outside and without displacing the piston in such a manner as to cause the application of the brake-shoes. Then by means of these same parts I lengthen the brake-rods so adjusted by an amount exactly sufficient to permit the piston to effect the desired stroke within the cylinder before the application of the brake-shoes takes place, or vice versa, all the displacements of the piston within the said cylinder being exactly indicated outside the vehicle by means of a suitable indicator connected to the piston-rod. My said method may be carried into practice by employing devices variable as a whole or in their details according to the particular circumstances of each case.

In order that my invention may be readily understood and carried into effect, I will now describe a typical form of such devices with reference to the accompanying drawings, in which they are diagrammatically represented.

Figure 1 is a general diagrammatic view in side elevation of an arrangement in which the visible screw-brake is utilized when the vehicle is provided with the same in the case of brake-rods having no fixed point of attachment. Fig. 2 shows a vertical section of a modification in detail by means of which a concealed screw-brake may be utilized. Figs. 3 and 4 show, respectively, by means of a bottom plan view and a side elevation an arrangement of the part serving to externally indicate the displacements of the piston. Fig. 5 shows diagrammatically another arrangement of this part provided with a jointed portion. Figs. 6 and 7 show, respectively, by

means of a diagrammatic side elevation and plan a device in accordance with which the actuation and adjustment of the brake-gear are effected by displacement of the point of attachment of this latter by means of a screw and lever, with indications of the displacements of the piston by an index and a graduated sector, this arrangement permitting in case of need of maintaining the adjustment of brakes for a piston-stroke not exceeding a certain limit by causing the automatic shortening of the brake-rods when the piston-stroke tends to become greater. Fig. 8 indicates, partly in elevation and partly in plan, a modification of the foregoing device. Fig. 9 shows a diagram of the arrangement of the actuating device illustrated in Fig. 7 in the case of double brake-gear applied to a bogie-vehicle, for example. Figs. 10 and 11 show, respectively, a side elevation and a bottom plan of a car with the device illustrated in Fig. 7 applied thereto. Fig. 12 shows a diagrammatic side elevation of another device for actuating the brake-gear by displacement of the point of attachment by means of a rod provided with a handle and adjusting-holes.

In the case represented in Fig. 1 the displacements of the nut a of the screw-brake b , which actuates the air-brake gear independently of the piston owing to the opening v , correspond exactly to the displacements of the piston within the cylinder, and these displacements may be read directly from the rod k , which is provided with an index $o m n$, Fig. 1, or by means of a slide p , fixed to the nut a upon a rod k similar to the foregoing, Fig. 2. The ratios of the levers j and z are such that the displacements of the nut a are equal to the displacements of the piston for one and the same position of the brake-gear, and the indexes $m n$ of the rod k correspond exactly with the minimum and maximum of stroke admissible for the piston. If the nut a is brought opposite the indexes m and n , the brake-rods will then assume the same positions as if the piston made its minimum or its maximum stroke. The adjustment of brakes to the minimum of the stroke may be effected by bringing the nut a opposite the index m and by then adjusting the brake-shoes l by means of the device i , so that they are in contact with the tires of the wheels. In order to verify the displacements of the piston when the air-brake operates, it is only necessary to attach rigidly to the rod c of the piston a rod q , the free extremity of which is displaced over a scale r' , provided with markings $o m n$, corresponding with the displacements of the piston within the cylinder, Fig. 1. This rod q may be arranged practically as shown in Fig. 3, or it may be in two parts, one of which is pivoted to the piston-rod, as shown in Fig. 5, the extremities of the said rod extending slightly beyond the longitudinal beams s of the framework and being displaced within two slideways r , fixed to these longitudinal beams, as shown in Figs. 3 and 4,

with guide-marks $c m n$. The said rod q may also control a pointer u , displaced above a graduated sector r , as shown in Figs. 6 and 8.

In the case represented in Figs. 6, 7, and 8 the actuation of the gear of the air-brake is effected by displacing the point of attachment y of this brake-gear. For this purpose the said point of attachment y is connected to the short arm of a bell-crank lever j' , the long arm of which is actuated by the displacements of the nut a of a horizontal screw b , operated externally to the vehicle-frame by means of the hand-wheels $x x$. The levers j and z are made of such dimensions that the displacements effected by the piston in order to cause the brake-rods to assume a certain position are equal to those which must be affected by the nut a in order to cause the brake-rods to assume this position, and vice versa. If, therefore, the nut a is displaced by an amount sufficient to bring the shoes l in contact with the wheels and this nut is then displaced in the inverse direction by an amount equal to the minimum stroke of the piston, the brake will be exactly adjusted for the minimum stroke of this piston. In order to verify the adjustment and operation of the brake according to the stroke of the piston, the pointer u , actuated by the rod q , participating in the movements of the piston, at once furnishes the necessary indications. It is obvious that the screw b might control the brake-gear in any other suitable manner—for example, by actuating the nut f of a screw g , as shown in the partial plan view in Fig. 8, said nut f being suitably connected with the brake-gear so as to move the latter.

The operating device represented in Figs. 6 and 7 may obviously be applied to the double-brake mechanism of a bogie-vehicle, as shown in detail in Fig. 9 and generally in Figs. 10 and 11. Finally, the operation might be similar to that shown in Figs. 6 and 7, but more simple, in which movements of the lever j are produced by the operation of a rod h , furnished with a handle and adjusting-openings, as shown in Fig. 12. The various devices described therefore comprise a visible means of verifying the stroke of the piston within the cylinder, but it is obvious that this visible means might be supplemented by an audible means, which might be operated by means of compressed air and which would be actuated by the indicator itself when the piston-stroke departed from the prescribed limits.

The method of operating the brake-gear by the displacement of the point of attachment of this latter also permits, as already stated, of automatically maintaining the adjustment of the brake for a piston-stroke comprised between the two predetermined limits by the employment of a very simple device. (Shown separately in Figs. 6, 7, and 8.) This device consists, essentially, of a ratchet-wheel w , keyed upon the screw-shaft b and operated by means of a pawl e , acted upon by a rod l , which

may be engaged at its free extremity by the lever *z*, Fig. 6, or by the indicating part itself, Fig. 8, when the piston-stroke exceeds a certain length. The ratchet-wheel thus causes the
 5 screw *b* to rotate, thereby producing a shortening of the brake-rods and consequently a diminution of the stroke effected by the piston in order to produce the application of the brake-shoes. By suitably constructing this
 10 special device the piston-stroke may be automatically maintained between two limits, the greater of which is the maximum of the stroke. The whole arrangement shown in Figs. 6 and 8 and which permits of automatically main-
 15 taining the adjustment of the brake therefore at the same time affords the possibility of effecting the adjustment of this brake by hand under all circumstances, especially when the vehicle is not under air-pressure, a result
 20 which cannot be attained with the devices hitherto employed for shortening the brake-rods by displacement of its point of attachment when the stroke of the piston becomes too great.

25 What I claim, and desire to secure by Letters Patent of the United States, is—

1. For the purpose of effecting the adjustment of the brakes for a certain stroke of

piston, a device utilizing the screw-brake and consisting in providing parallel with the rod 30
b of the screw-brake a graduated rod *m n* provided with an index in front of which is displaced the nut *a* or its continuation *p* which attains respectively the positions *m n*
 35 of the rod *k* when the brake-gear reaches the minimum and maximum positions of piston-stroke respectively, this latter remaining motionless owing to the provision of an aperture
v in the rod *c*.

2. In combination with means for exactly 40
 regulating the stroke of the piston, means for permanently controlling the stroke of said piston, consisting of an indicating-rod rigid and fixed transversely to the rod of the piston,
 45 of two slots with visible graduation provided upon each side of the frame and in each of which the corresponding extremity of the rod
q is adapted to move.

In testimony whereof I have hereunto set my hand, in presence of two subscribing wit- 50
 nesses, this 29th day of June, 1901.

ADOLPHE CHAUMONT.

Witnesses:

T. PARETTE,
 GREGORY PHELAN.