

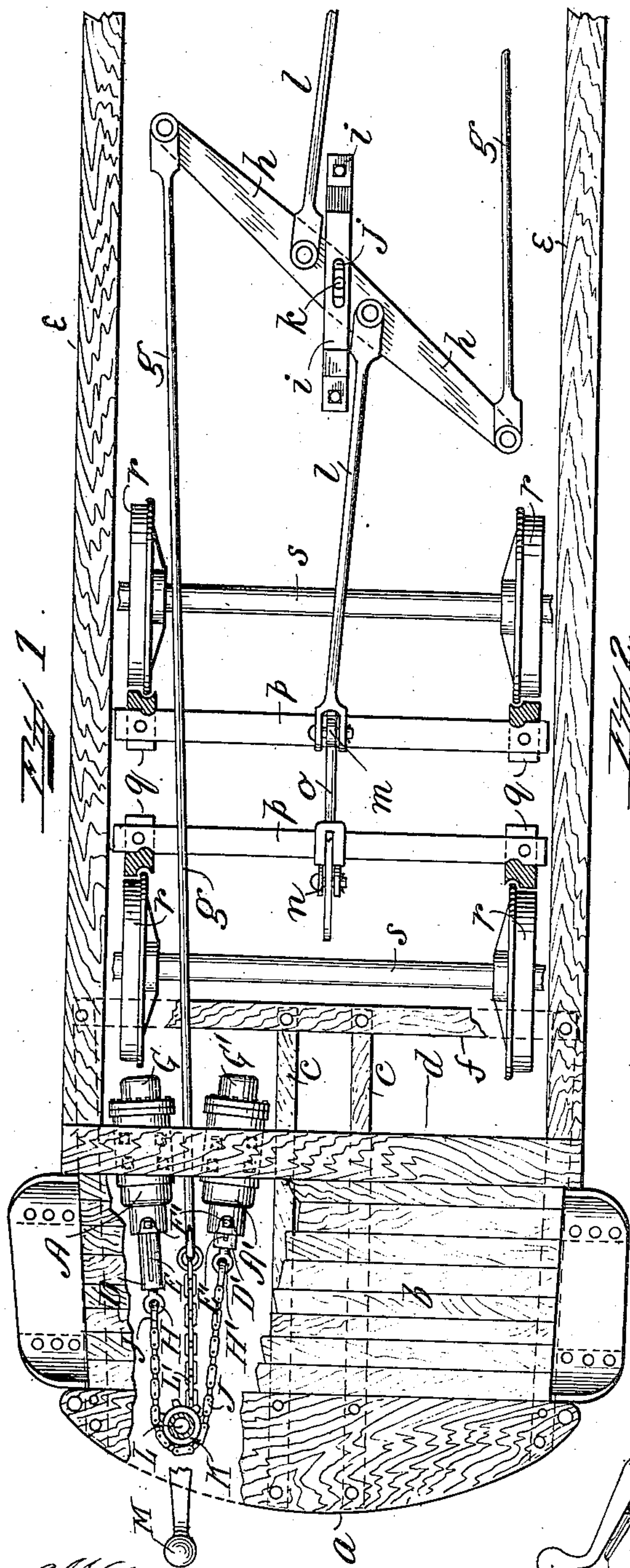
No. 843,625.

PATENTED FEB. 12, 1907.

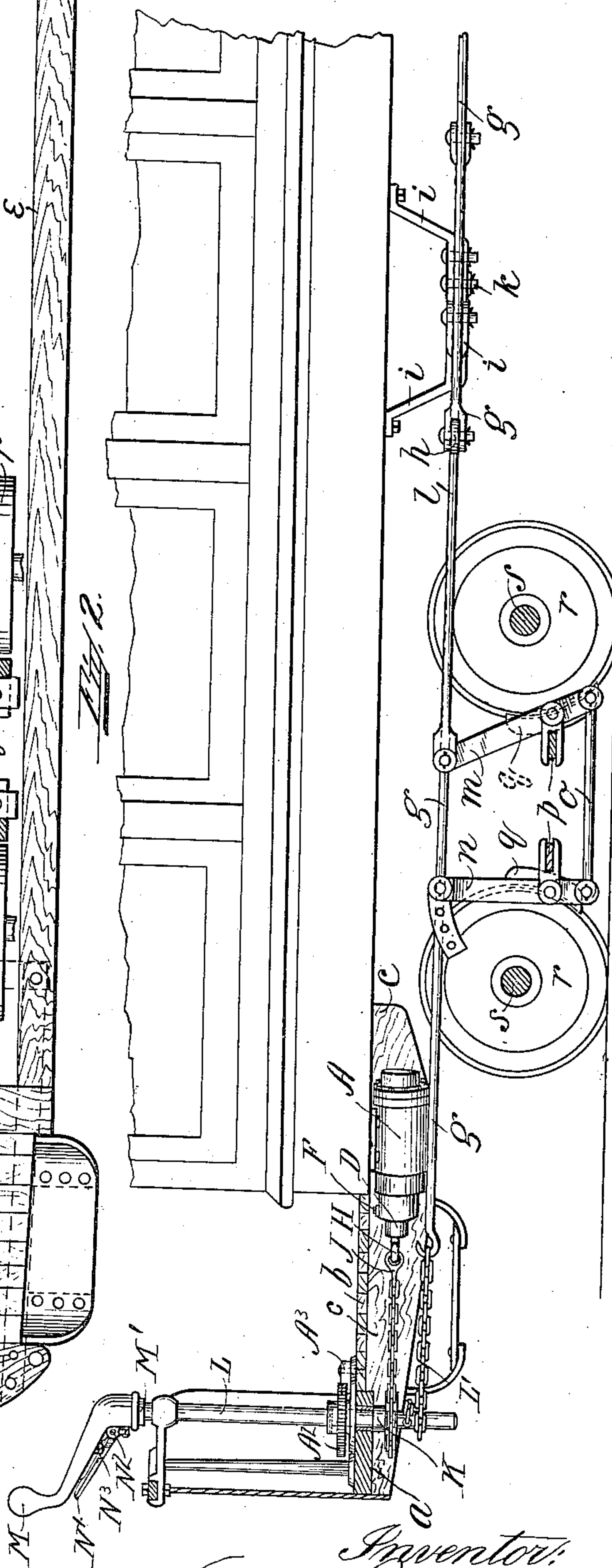
L. PFINGST.
POWER BRAKE.

APPLICATION FILED NOV. 19, 1904.

2 SHEETS—SHEET 1.



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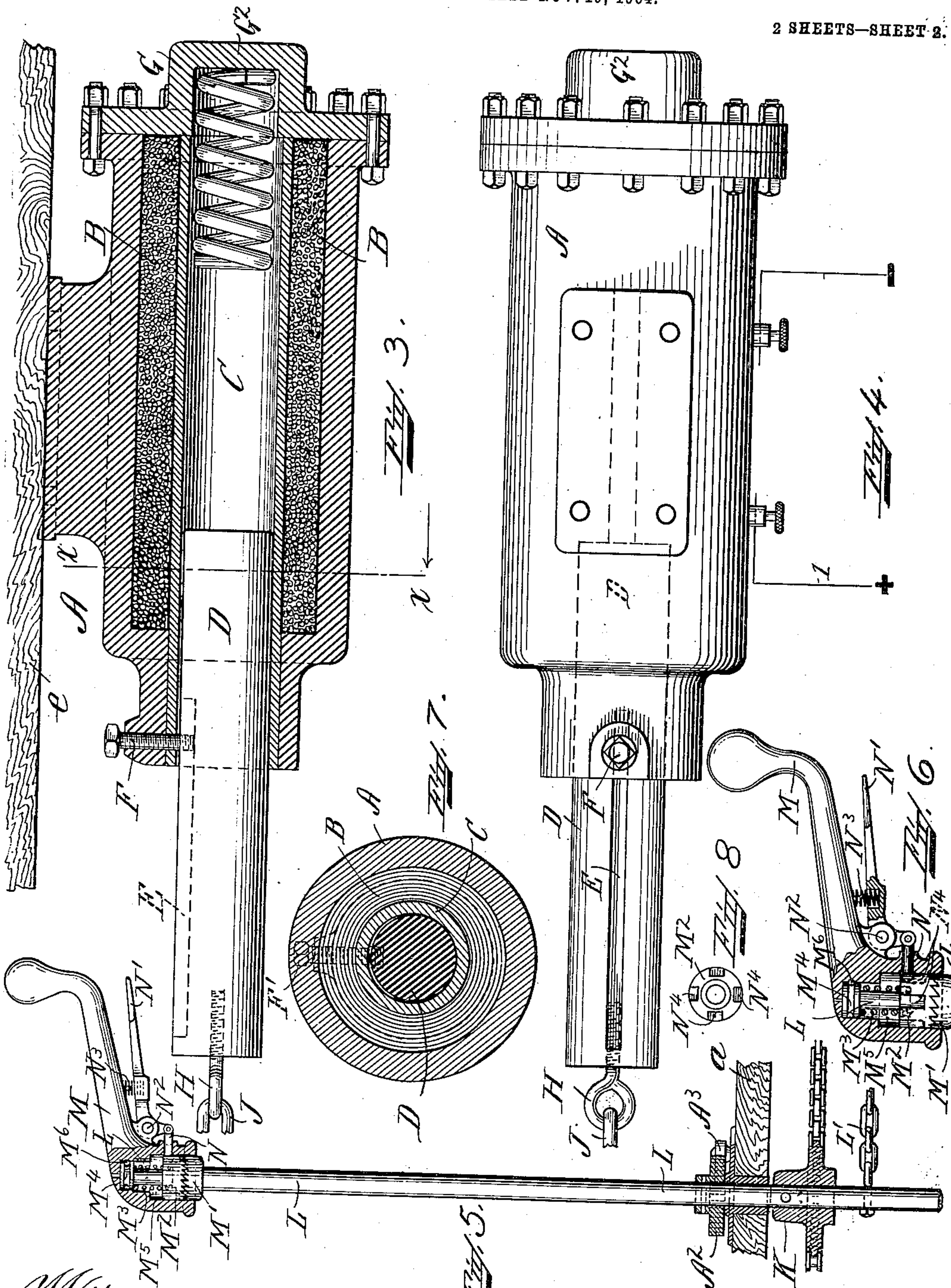
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2 SHEETS—SHEET 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

LOUIS PFINGST, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO PFINGST ELECTRIC MANUFACTURING COMPANY, OF KITTERY, MAINE, A CORPORATION OF MAINE.

POWER-BRAKE.

No. 843,625.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed November 19, 1904. Serial No. 233,469.

To all whom it may concern:

Be it known that I, LOUIS PFINGST, of (Dorchester) Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Power-Brakes, of which the following is a specification.

My invention relates to improved power-brakes, and the object is to rotate a brake-spindle by a solenoid to put on or take off the brakes.

My invention consists of certain novel features hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, which illustrate a construction embodying my invention, Figure 1 is a top plan view of a car with the body removed and showing the platform and location of the power-driven brake-spindle and brake-rigging. Fig. 2 is a side elevation of same, showing the location of the power-driven brake-spindle and brake-rigging. Fig. 3 is a sectional view with parts in full lines of one of the solenoids which apply or release the brakes. Fig. 4 is a top plan view of one of the solenoids. Fig. 5 is a detail view, partly in section, of a brake-spindle and cooperating parts. Fig. 6 is a detail view, partly in section, of the brake-handle and the upper end of the brake-spindle. Fig. 7 is a cross-sectional view through one of the solenoids on the line X X, Fig. 3, looking in the direction of the arrow. Fig. 8 is a top plan view of the upper ratchet member.

Like letters of reference refer to like parts throughout the several views.

As shown in Figs. 1 and 2, the construction of the platform and car-bottom frame consists of buffer-timbers *a*, with a platform-flooring *b*.

c c c c are the supporting-timbers fastened to the body of the car and supporting the flooring *b* and buffer-timber *a*.

d is the end sill which is fastened to the extreme end of the side sill *e*.

f are the bottom frame cross-timbers which are fastened to the side sill *e* to support the flooring.

To the end sill *d* and side sill *e* the end frame and side frame of the car are secured in the usual manner of car-building.

g is the main brake-rod, and at one end of said rod is connected the brake-chain *L'*, and

the other end is pivotally connected to the center brake-lever *h*. The main or center brake-lever *h* is supported by the bracket *i*, secured to the bottom of the car, and has a loose-motion slot *j*, the said brake-lever *h* being held in place by the pin *k*. Pivotally connected to the main brake-lever *h* is the secondary brake-rod *l*, pivoted at its opposite end to the truck brake-lever *m*, which is pivoted on the brake-beam *p*. At the lower end of the brake-lever *m* is pivotally connected the brake-rod *o*, which at its opposite end is connected to the truck-adjusted arm *n*. On the ends of the brake-beams *p* are fastened the brake-shoes *q*, which come in contact with the periphery of the wheels *r*, mounted on the axles *s*.

The brake-rod *g* and the secondary rod *l* (shown on the right of Figs. 1 and 2) extend forward and are connected to similar mechanism at the right-hand end of the car.

The operation of this mechanism is as follows: By rotating the spindle *L* as hereinafter described and winding up the chain *L'* the brake-rod *g* will be pulled forward, thereby actuating the brake-lever *h*. This will pull in the opposite direction the secondary rods *l*, and by this operation the secondary rods will pull the truck-levers *m* toward the center of the car, pressing out the bottom end of the levers *m* toward the end of the car, causing the brake-beams *p* to travel in the opposite direction, and thereby apply the brake-shoes to the wheels. Secured underneath the side sill *e* by suitable bolts, Fig. 1, are two solenoids *A A'*, which are identical in construction, so that a description of the solenoid *A* will apply to both. This solenoid *A* consists of a suitable exterior casing inclosing the coiled wire *B*, and surrounded by the coiled wire *B* is the tube *C*, in which is adapted to travel the solenoid-core *D*. Each end of the solenoid consists of a suitable end plate *G²*, against which rests one end of the coiled spring *G*, and said spring is for the purpose of cushioning the core *D* when the same is drawn in, due to the energizing of the wires *B*. The core *D* is provided on its upper side with a slotted recess *E*, in which is located the pin *F*, adapted to guide said core in its movements. To the outer end of the core *D* is secured the eyebolt *H*, connected to a suitable belt *J*, which passes around a suitable

sprocket-pulley fast on the brake-spindle L, as shown in fig. 5, and its opposite end is secured to the eyebolt H', secured to the core D' of the solenoid A'. The operation of the solenoid in the application of the brakes will be hereinafter described.

Fast on the spindle L is the usual ratchet-wheel A², with which coöperates the pawl A³ for holding the brakes when taken up and to release same when the car starts. On the upper end of the spindle L is secured fast the ratchet member M', with which engages another ratchet member M², both inclosed in the chamber M⁵ of the brake-handle M. This ratchet member M² is in engagement with the ratchet member M' by the pressure of the spring M³, one end of which bears down on the member M² and the other end against the collar M⁴. This spring allows a vertical movement of the member M². A suitable removable pin M⁶ is located freely in the groove in the collar M⁴ and in the metal of the handle M and holds the parts from disengagement. The pin N, connected to the lever N', pivoted at N² of the brake-handle, is normally in engagement with the vertical slot N⁴ in the member M² by the pressure of the spring N³, and this vertical slot allows the member M² to vertically reciprocate when the pin N is in engagement with said slot, so that the member M² can vertically reciprocate with the pin N in and out. With the lever N' raised to draw the pin N out from one of the slots N⁴, the spindle L and its members M' M² will freely revolve. When the pin N is in one of the slots N⁴, the handle may be rotated or reciprocated by the operator to apply the brakes whether the solenoids are used or not. When the solenoids are used either to apply or release the brakes, the pin N is withdrawn by raising the lever N', when the spindle will rotate freely without disturbing the brake-handle M. With the parts in the position shown in Fig. 1 the brakes are off, and to apply the brakes the circuit is closed through the wires 1, coiled wires B, and out-wire 2, which energizing of the wires B draws inwardly the solenoid-core D into the tube C, which pulls the belt J, thereby rotating the spindle L, winding up the chain L', and applying the brakes. During this operation the handle M may be rotated either with the spindle or without it, as the handle, as previously described, is capable of engagement with or disengagement from the spindle through the ratchet members. To take off the brakes, the handle is allowed to rotate in the opposite direction or held by the hand when the upper ratchet member is disengaged from the handle, which permits the brake-spindle and ratchet members to rotate in the chamber of the handle M and releases the brakes. During this operation the current passes to the solenoid A' and draws inwardly the core D' into the solenoid A' while the core

D is moving outwardly from the solenoid A. This closing of the circuit of one solenoid and the breaking of the other is done by the usual controller or double-acting switch, wherein one is put on and the other off; but the switch may be put on a neutral point when no current is running, which would be when the car is running freely.

Having thus described the nature of my invention and set forth a construction embodying the same, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In an apparatus of the character described, a chain-winding brake-spindle, a solenoid for operating said spindle to apply the brakes, and a handle capable of engagement with or disengagement from said spindle.

2. In an apparatus of the character described, a chain-winding brake-spindle, a solenoid for operating said spindle to apply the brakes, and a ratchet-handle capable of engagement with or disengagement from said spindle.

3. In an apparatus of the character described, a chain-winding brake-spindle, a solenoid for operating said spindle to apply the brakes, and another solenoid for operating said spindle to release the brakes.

4. In an apparatus of the character described, a chain-winding brake-spindle, a solenoid for operating said spindle to apply the brakes, another solenoid for operating said spindle to release the brakes, and a handle capable of engagement with or disengagement from said spindle.

5. In an apparatus of the character described, a chain-winding brake-spindle, a solenoid for operating said spindle to apply the brakes, another solenoid for operating the spindle to release the brakes, and a ratchet-handle capable of engagement with or disengagement from said spindle.

6. In an apparatus of the character described, a chain-winding brake-spindle operated by a solenoid for applying the brakes and provided with hand-power mechanism independent of said solenoid for operating said spindle.

7. In an apparatus of the character described, a chain-winding brake-spindle operated by solenoids for applying and releasing the brakes and provided with hand-power mechanism independent of said solenoids for operating said spindle.

8. In an apparatus of the character described, a chain-winding brake-spindle in combination with a solenoid and hand-power mechanism to simultaneously or independently wind up the brake-chain to apply the brakes.

9. In an apparatus of the character described, a chain-winding brake-spindle in combination with solenoids and hand-power mechanism to simultaneously or independ-

ently wind or unwind the brake-chain to apply or release the brakes.

10. In an apparatus of the character described, a chain-winding brake-spindle, a solenoid for operating said spindle to apply the brakes, a brake-handle capable of engagement with or disengagement from said spindle, and means for normally causing the engagement of said handle and spindle.

11. In an apparatus of the character described, a chain-winding brake-spindle, a solenoid for operating said spindle to apply the brakes, a brake-handle capable of engagement with or disengagement from said spindle, and yielding means for normally causing the engagement of said handle and spindle.

12. In an apparatus of the character described, a chain-winding brake-spindle, a solenoid for operating said spindle to apply the brakes, and a brake-handle capable of engagement with or disengagement from said spindle and provided with a chamber in which said spindle is free to rotate when the handle is disengaged from the spindle.

13. In an apparatus of the character described, a chain-winding brake-spindle, a solenoid for operating said spindle to apply the brakes, a solenoid for operating the spindle to release the brakes, and a brake-handle capable of engagement with or disengagement from said spindle and provided with a chamber in which said spindle is free to rotate when the handle is disengaged from the spindle.

14. In an apparatus of the character described, a chain-winding brake-spindle, a so-

lensoid for operating said spindle to apply the brakes, a sprocket-wheel fast on said spindle, and a sprocket-chain for communicating motion from said solenoid to said sprocket-wheel and brake-spindle.

15. In an apparatus of the character described, a chain-winding brake-spindle, a solenoid for operating said spindle to apply the brakes, a solenoid for operating said spindle to release the brakes, a sprocket-wheel fast on said spindle, and a sprocket-chain for communicating motion from said solenoids to said sprocket-wheel and brake-spindle.

16. In an apparatus of the character described, a chain-winding brake-spindle, a magnetic device independent of said spindle, and yielding means interposed between said spindle and said magnetic device for rotating said spindle to operate said brake mechanism.

17. In an apparatus of the character described, a chain-winding brake-spindle, a magnetic device independent of said spindle, yielding means interposed between said spindle and said magnetic device for rotating said spindle to operate said brake mechanism, and a brake-handle capable of engagement with or disengagement from said spindle.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 7th day of November, A. D. 1904.

LOUIS PFINGST.

Witnesses:

E. L. HARLOW,
A. L. MESSER.