

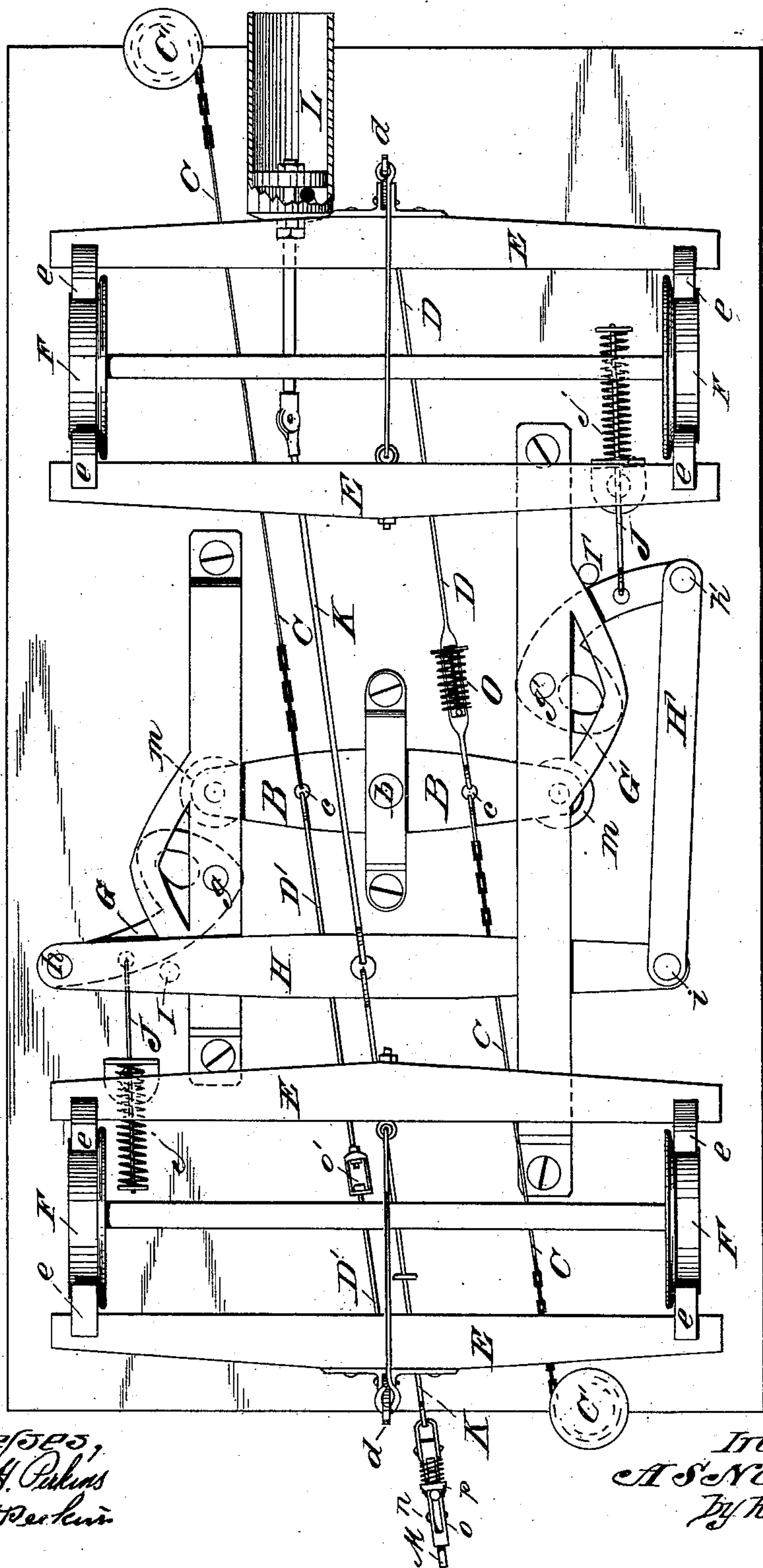
(No Model.)

2 Sheets—Sheet 1.

A. S. NADOW.
STEAM CAR BRAKE.

No. 351,521.

Patented Oct. 26, 1886.



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Witnesses,
Lyman A. Perkins
Jason Beckwith

*Inventor,
A S Nadow,
by R F Hyde
att'y,*

(No Model.)

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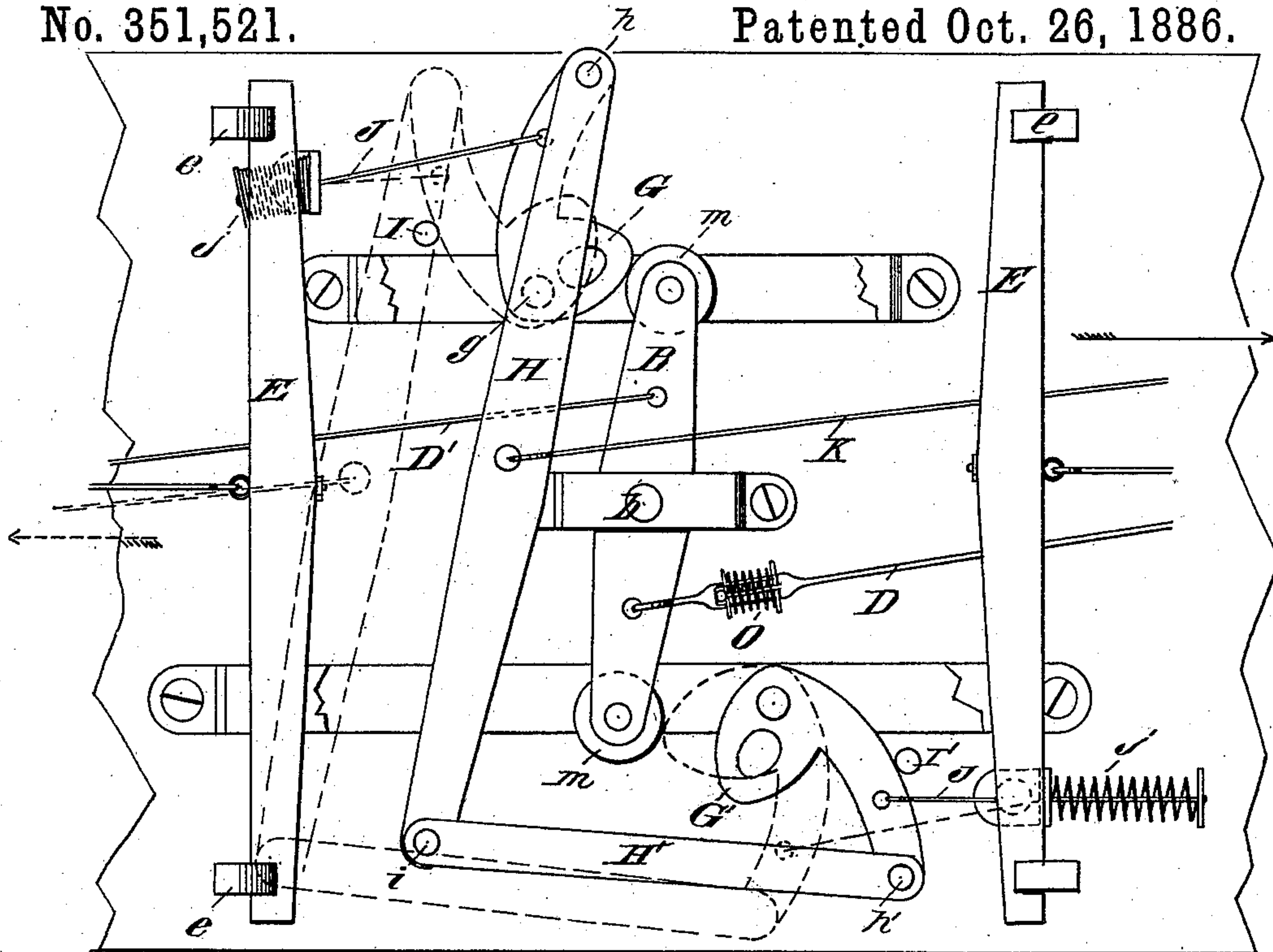


Fig II,

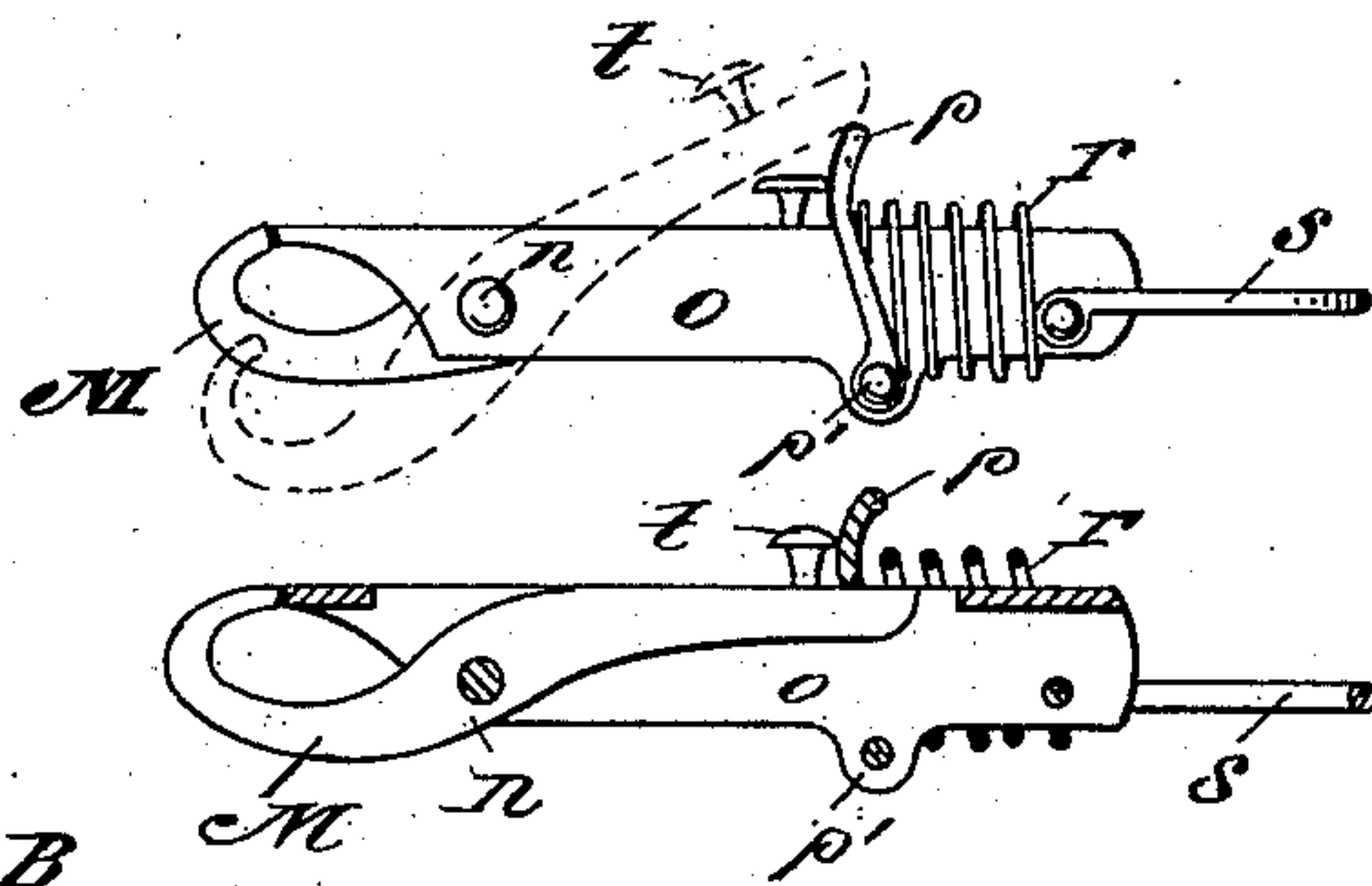


Fig III,

Fig IV,

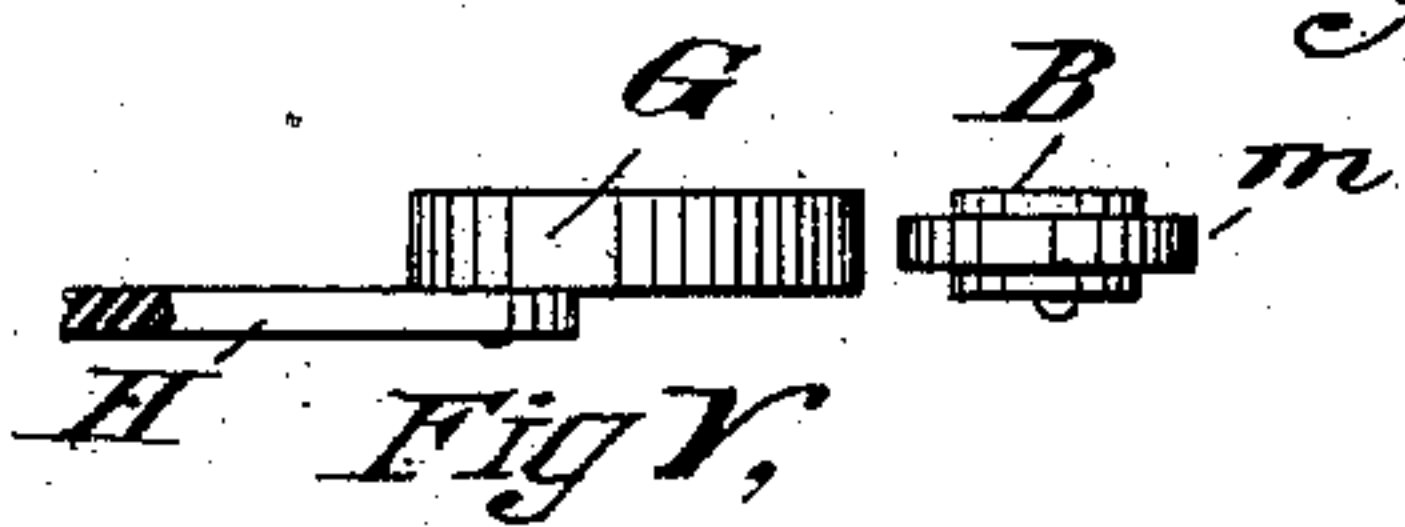
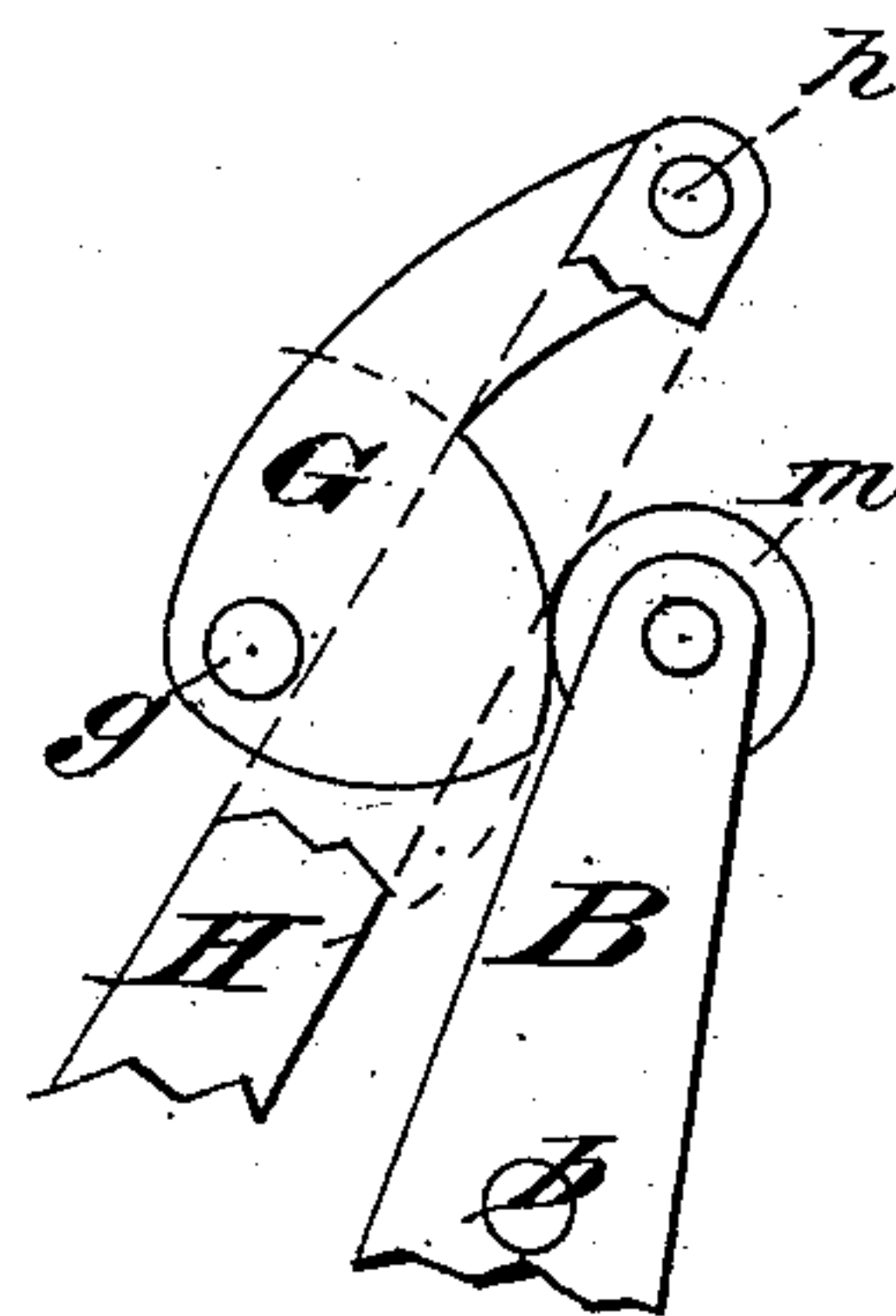


Fig VI,



Witnesses,
Lyman A. Perkins
Jesse Perkins

Inventor,
A. S. Nadow,
by R. F. Hyde
att'y,

UNITED STATES PATENT OFFICE.

ALEXANDER S. NADOW, OF SPRINGFIELD, MASSACHUSETTS.

STEAM CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 351,521, dated October 26, 1886.

Application filed September 2, 1886. Serial No. 212,455. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER S. NADOW, a citizen of the United States, residing at Springfield, county of Hampden, State of Massachusetts, have invented a new and useful Improvement in Steam Car-Brakes, of which the following is a specification.

My invention relates to that class of car-brakes operated by an engine upon the locomotive, to be simultaneously applied to all of the cars of a train; and the invention consists in the combination and construction, as hereinafter described, and more particularly pointed out in the claims.

My invention is fully illustrated in the accompanying drawings, in which Figure I is a plan view of the bottom of a car reversed having my mechanism combined therewith. Fig. II is a portion of the bottom of a car in the same position, showing the parts of my brake in two different positions from that shown in Fig. I. Figs. III and IV are different views of an improved hook for connecting the brake-rods of two cars, and Figs. V and VI are detail views.

B is a lever hung at *b* in the medial center of the car-body, to extend transversely to the body of the car, as shown, and supported from the bottom of the car centrally and at its ends, so as to vibrate in the plane of the car-bottom without sagging.

C C are connections from points *c c* upon opposite sides of the pivot *b*, to the drums C' C' upon opposite ends of the car, and by means of which the lever B is vibrated by hand to operate the brakes.

D D' are connections from points *c c* of lever B to the brake-bars E E, and by means of which connections a movement of lever B is diverted to the shoes *e* of the brake-bars, to either clamp or release the car-wheels F.

In the drawings the brake-bars E are shown upon opposite sides of single wheels, instead of being combined with the wheels of a truck, as they would be in practice, without involving any change of principle in being so constructed, and, as the brake-bars E are hung in the usual way and are approached and released by the usual levers, *d*, to one end of which the connections D D' are attached, it is not deemed essential to show said mechanism in

elevation to explain the operation of my invention.

G G' are cam-levers hung to the bottom of the car at *g g'* at opposite sides, and upon opposite ends of lever B, to move in the same plane with lever B, and adapted to bear alternately upon the ends of lever B to swing it upon its pivot *b* in one and the same direction. The ends of cam-levers G G' are hinged, respectively, to two levers, H H', at *h h'*; the levers H H' being hinged together at their other ends at *i*.

Projecting downward from the bottom of the car are stops I I', arranged at the backs of cam-levers G G' in the path of their swing in one direction, and adapted to limit their movement, and to said cam-levers, and positioned between their hinged ends, are rods J J, provided with springs *j j*, bearing against a fixed point upon the car-body, and which springs act to hold the cam-levers against stops I I' and to resist their movement therefrom.

Between the hinged ends *h i* of lever H, and at a point corresponding with the medial center of the car, is secured to the lever H the rod K from the engine L, and which rod, prolonged, is similarly attached to each lever H of each car of the train.

The engine L (here shown out of place) is located upon the locomotive, and is a single-acting one, in which steam is admitted behind a head having a thirty-six-inch piston-stroke, or thereabout.

In Fig. I the position of the parts is shown when the brakes are loose, the springs upon rods J holding the cam-levers G G' against the stops I I' and the levers H H', as shown. If in this position the hand-brakes C C' are brought into operation, the lever B is swung away from the cam-levers, which can consequently oppose no obstacle to the applying of the brakes by hand. If, on the other hand, the steam brake mechanism were operated from the locomotive, the cam-levers G G' would simply swing inoperative, the lever B having already swung to the point they could move it, in being swung by hand. If when in the position shown in Fig. I power is applied from the engine L in the direction shown by the arrow in Fig. II, the parts assume the position shown

in Fig. II. The cam-lever G' , bearing against its stop I' , brings the lever H' on a dead-center, to cause the hinge i to be the pivot upon which lever H turns to swing cam G against lever B , as shown in Fig. II, and so apply the brake-shoes e . If power is applied in the direction indicated by the dotted arrow, Fig. II, the cam-lever G , bearing against stop I , as shown in dotted lines, leaves the lever H to swing upon h as a hinge, to cause cam-lever G' to be operative to swing lever B , and so apply the brakes. The spring j restores either cam-lever and the levers H H' to their normal position, as seen in Fig. I, upon the engine L , releasing the connection K . It will be seen that by this combination and arrangement of levers and cams a locomotive can operate the brakes from either end of a train of cars, and that any car can be turned end for end without affecting the result.

As it would be nearly impossible to adjust the mechanism of a series of cars, the relative position of any one of which is liable to be changed at any time to that of the rest of a train, so that a given stroke of the engine-piston would simultaneously take up all slack in a train and apply the brakes, I provide a lost motion to the cam-levers G G' , by means of which from a point on their cam-surface in contact with the end of lever B , when the brake is fully applied, they can continue to roll to permit a motion to lever H without further swinging lever B , and without in the least releasing it, which would be in effect to release the brake, and this I do by forming the surface of the cam from the point where its action as a cam is no longer needed, concentric with the hinge g or g' , as seen in Fig. VI, by means of which construction the lever H can continue to swing until, all slack being taken up, all of the brakes of a train are operative. To lessen friction and prevent wear, the ends of lever B are provided with rollers m , against which the cam-levers G G' directly bear. The normal position of lever B is as seen in Fig. I, in which position it is maintained by the weight of the suspended brake-bars E E , assisted by spring O , forming an elastic connection of the one D .

In practice, by means of the turn-buckle o' in connection D' , the lengths of connections C and D are adjusted to the lever B in its position, Fig. I, to have the spring O slack, but so that the full power of the drums, determined by stops thereupon or by the length of the flexible part of connections C , capable of being wound upon them, as well as the full power of the steam-engine, determined by the form of cam-levers G G' , shall not set the spring O in applying the brakes, but shall always leave the brakes elastically applied to the wheels, by means of which the wheels F can be insured from being held firmly enough to slide when there is no ice upon the track.

An improved form of coupling-hook for the rod K is shown in Figs. I, III, and IV, and is specially adapted for use for speedily connect-

ing and detaching corresponding sections of rod K under all conditions of tension or slack of the two.

A hook, M , hinged at n , between side walls, o , has its shank held within said walls, forming the body of the hook, by a spring-clasp, p , adapted, as shown, to swing over said shank when so recessed. The clasp is forked to inclose three sides of the hook-body, and, being hinged to the side of the hook at p' , is capable of being swung to pass over the shank end of the hook proper, M , and of being swung to release it. A spring, T , in rear of the clasp holds it normally in position over the hook-shank. The front face of the clasp is beveled to enable it to be pushed by the action of the hook-shank in closing the hook and the spring snaps the clasp in place. To release the hook, the finger is used to swing the clasp against its spring. The inner contour of the hook end and the position of the hinge n enable the hook to be swung to release it from another hook or link under tension, while it has the advantage of being quickly operated. The hook M cannot release itself while the spring r holds, and I prefer a coil-spring, as shown, for the reason that even if broken it will continue to act, as no coil can escape from the hook when wound around it, as shown, between the clasp p and the link s upon its rear end. A handle, t , upon the top of the shank facilitates its operation.

Now, having described my invention, what I claim is—

1. The within-described improved brake mechanism for railway-cars, consisting of a lever, B , hinged centrally at b , beneath the car-body, provided with connections D D' upon opposite sides of its hinge to the brake-bars E upon either side, and adapted to, through said connections, operate the brake-shoes e upon being vibrated, cam-levers G G' , hinged upon opposite sides and upon opposite ends of lever B in the same plane, and adapted to be swung to swing said lever by contact therewith, stops I I' , adapted, as shown and described, to hold the cam-levers G G' from movement in one direction, spring-connections J j from cam-levers G G' , and adapted to bear said cam-levers against the stops I I' , levers H H' , hinged, respectively, at one of their ends to the cam-levers G G' and at their other ends to each other at i , and adapted, as shown, to cause a motion to lever H to bring one or the other of the cam-levers in operative contact with lever B as said motion is imparted from one or the other end of the car, and connection K to lever H from the engine, all combined and operating as and for the purpose set forth.

2. In car-brake mechanism, the combination, with a lever, B , adapted, through connections therefrom, to apply the brakes upon being swung, and with a swinging lever, H , directly connected with and receiving a motion from the engine, of a cam-lever, G , adapted to impart the movement of lever H to lever B , as shown and described, and of configura-

tion adapting it to hold the lever B at the limit of its deflection, while permitting lever H to continue its movement in the same direction, as and for the purpose set forth.

5 3. In car-brake mechanism, the combination, with a centrally-pivoted lever, B, provided with connections upon each side of its pivot *b* to the brake-bars upon each side, and provided with connections C upon each side
10 of its pivot to the drums C' C', by means of which the brake-bars are operated manually, of means, as *o'*, in connection D', for adjusting the position of lever B, in combination with
15 ed by their drums to be only taken up a de-

termined distance, whereby the shoes *e* are prevented from being manually or by power applied beyond the limit of elasticity of spring O, as and for the purpose set forth.

4. The within-described improved snap- 20
hook for car-brake connections, consisting of the hook M, side walls, *o*, hinge *n*, swinging clasp *p*, and a spring, *r*, arranged to bear the clasp over the recessed shank of the hook M
25 within the walls *o*, all combined and arranged substantially as shown.

ALEXANDER S. NADOW.

Witnesses:

R. F. HYDE,

LYMAN H. PERKINS.