

(No Model.)

3 Sheets—Sheet 1.

R. R. HICE.

CAR BRAKE.

No. 347,039.

Patented Aug. 10, 1886.

FIG. II.

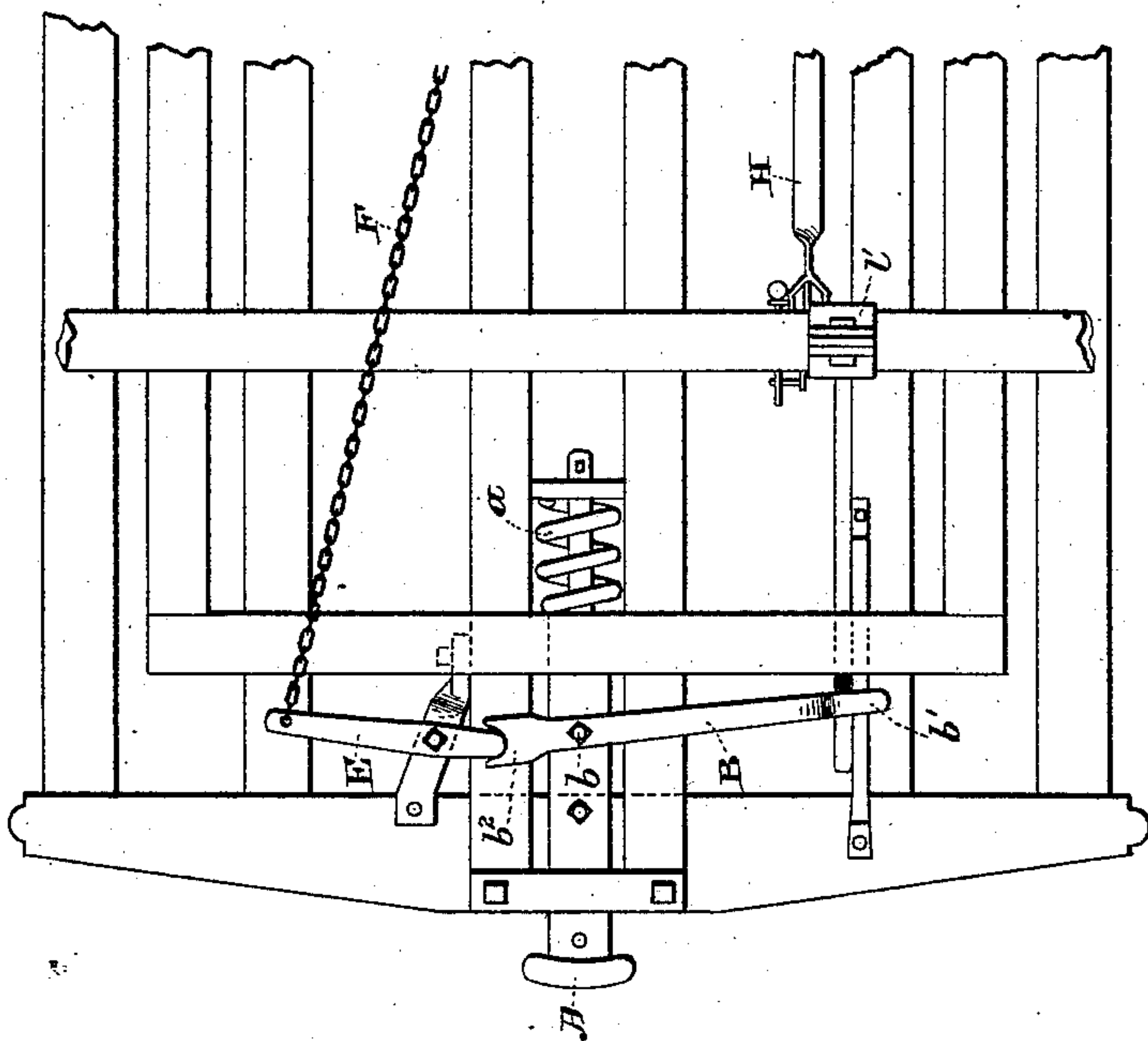
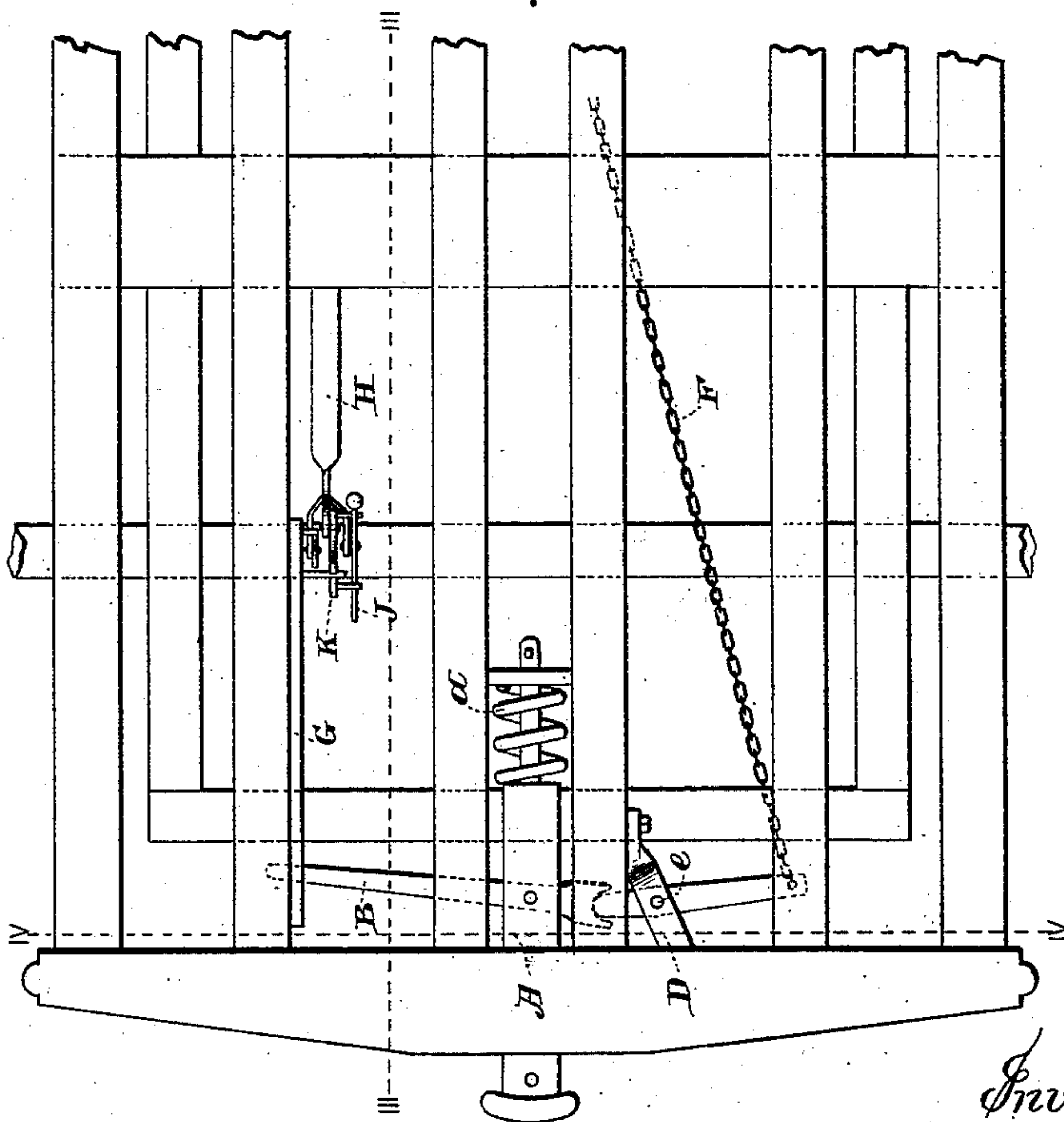


FIG. I.



Attest
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att'y.

(No Model.)

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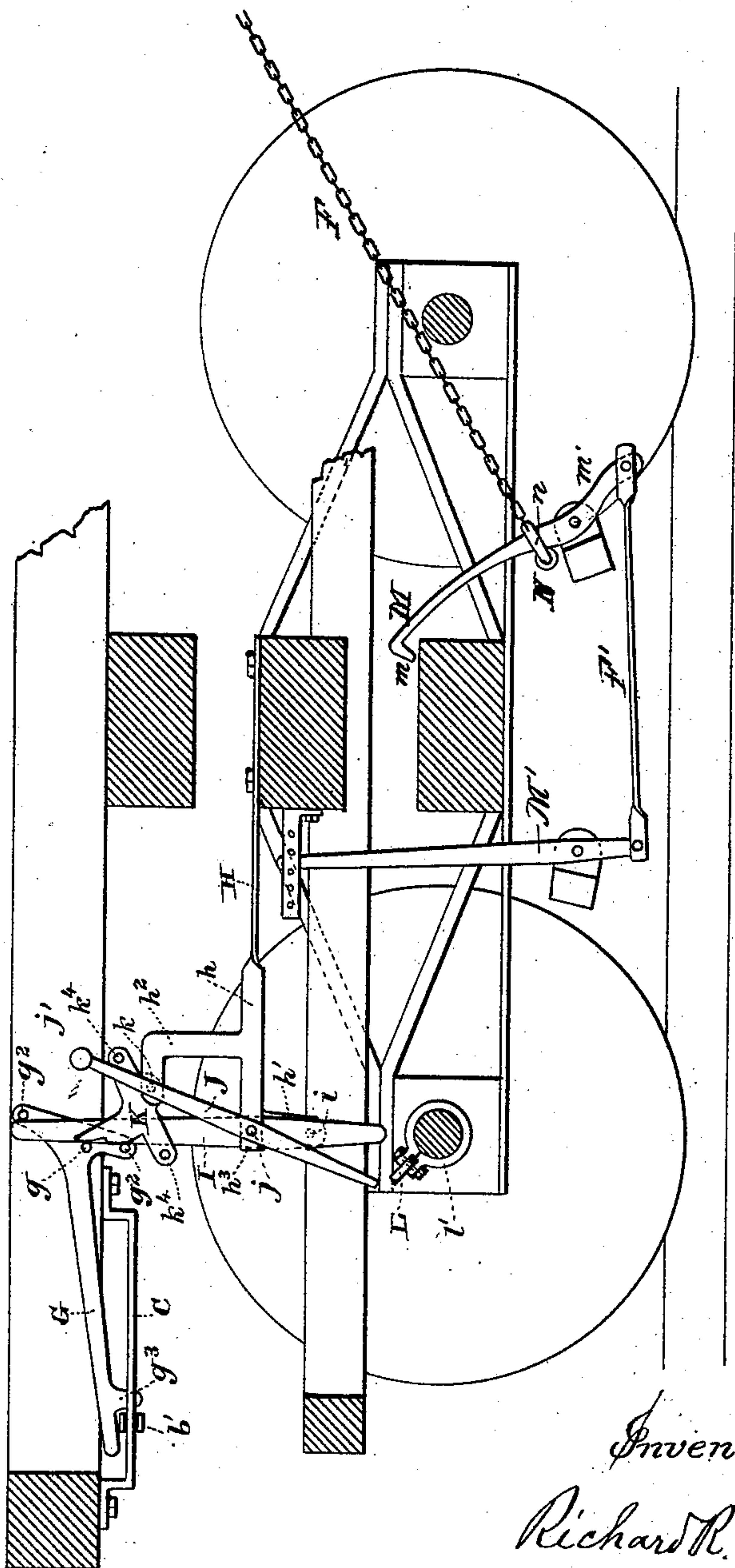
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FIG. III.



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FIG. IV.

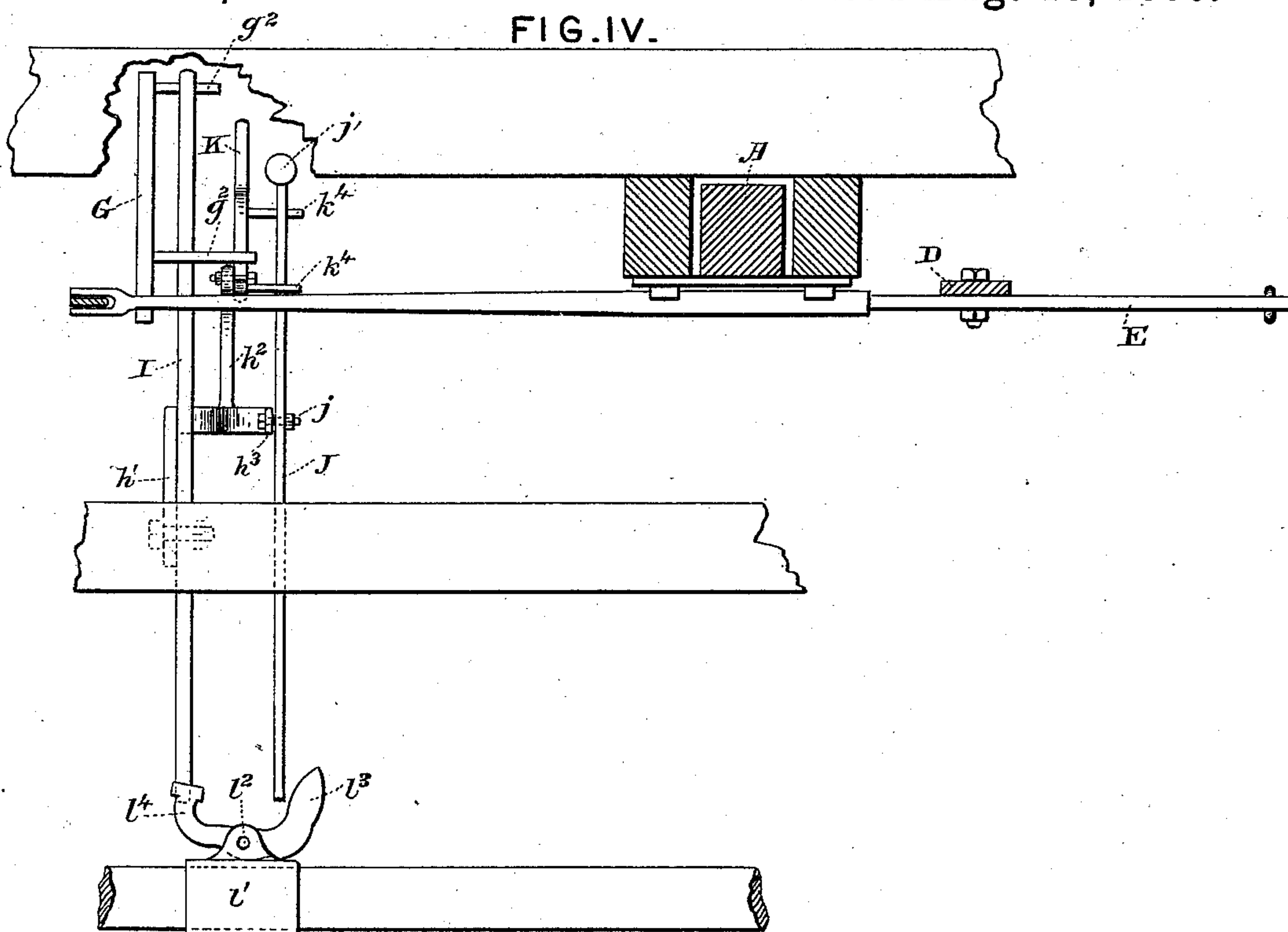


FIG. V.

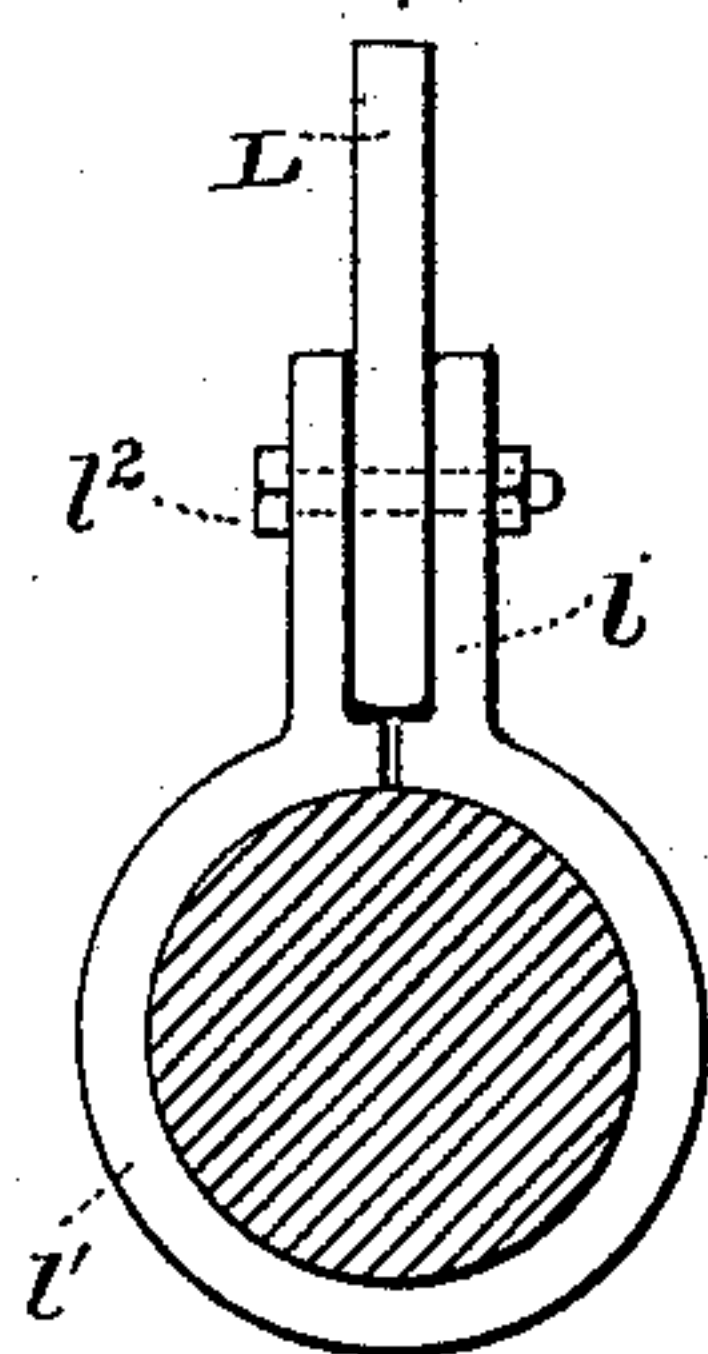


FIG. VI.

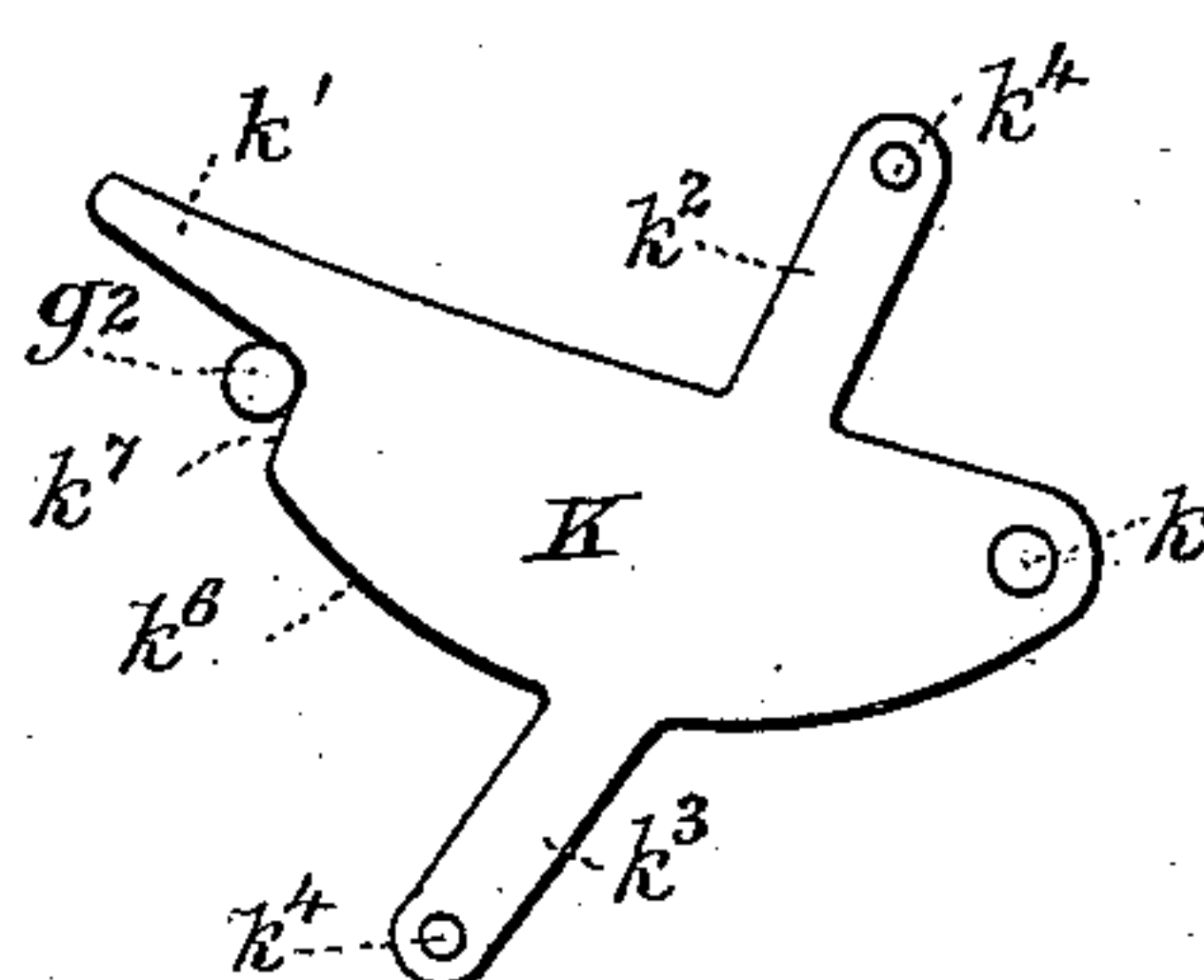
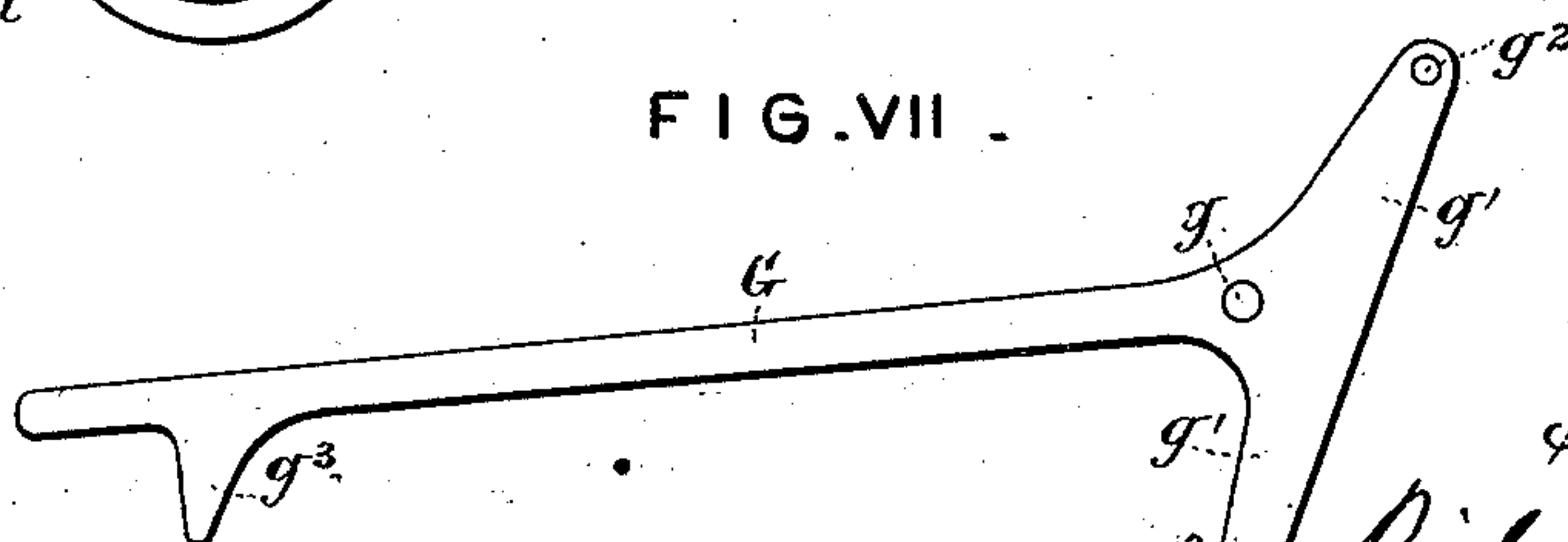


FIG. VII.



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UNITED STATES PATENT OFFICE.

RICHARD R. HICE, OF BEAVER, PENNSYLVANIA, ASSIGNOR TO THE ROTE
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CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 347,039, dated August 10, 1886.

Application filed April 27, 1886. Serial No. 200,322. (No model.)

To all whom it may concern:

Be it known that I, RICHARD R. HICE, of Beaver, county of Beaver, and State of Pennsylvania, have invented a new and useful Improvement in Automatic Car-Brakes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

This invention relates to that class of car-brakes in which the brake-shoes are automatically applied to and released from the wheels in consequence of the inward and outward movements of the draw-bar or buffer, and more particularly to those automatic brakes in which the said movements of the draw-bar or buffer are rendered either effective or non-effective by the action of a centrifugally-acting governor mounted upon the truck-axle and operating upon interposed connections to the draw-bar in such manner that when the car or train is traveling slowly the inward and outward movements of the draw-bar shall have no effect upon the brakes, while when the car attains an ordinary degree of speed the said movements of the draw-bar shall serve to automatically apply the brakes.

The object of this invention is to produce an automatic car-brake in which the connections interposed between the draw-bar and the governor shall be simple and durable in construction, and at the same time direct and positive in action; also, to produce an automatic car-brake, the governor of which shall be very simple and positive in its action and readily applied to or disconnected from an ordinary truck-axle. Furthermore, to produce an automatic car-brake in which the power developed by the effective movement of the draw-bar shall be quickly applied to the brake-shoes without loss of either motion or force, and in which the recovery of the various connections between the draw-bar and the brake-beam consequent upon a release of the brakes shall be prompt and free from any slackening of the brake-chains.

To the above purposes the invention consists, first, in the combination, with an inwardly and outwardly moving draw-bar, of a pair of interlocking levers mounted pivotally in the car-frame, one of said levers being connected to the brake-chain and the other lever being engaged and disengaged by suitable

connections for rendering the movements of the draw-bar effective or non-effective, as hereinafter described and claimed.

The invention further consists in the combination, with a peculiarly-constructed stop-lever arranged to engage and disengage an arm or lever upon the movable draw-bar, of a pendent pivoted lever engaged at its lower end at times by a centrifugally-acting governor upon the truck-axle and in constant engagement at its upper end with said stop-lever, whereby a movement of the pendent lever in either direction shall move the stop-lever out of engagement with the arm of the draw-bar, and thereby render the brakes inoperative, as hereinafter described and claimed.

The invention further consists in the combination, with the stop-lever and the pendent lever before mentioned, of a second pendent lever weighted at its upper end and engaging at its lower end a centrifugal governor upon the truck-axle, and a pivoted dog in constant engagement with said second lever, which, when moved by the latter, shall hold the stop-lever out of engagement with the draw-bar arm and also release said stop-lever to allow the same to assume its operative position relative to the draw-bar arm.

The invention still further consists in the peculiar and novel construction and arrangement of the centrifugal governor, and in the peculiar and novel construction and arrangement of the brake-lever and its connections to the draw-bar lever, all as hereinafter described and claimed.

In order that the invention may be fully understood, it will be now described with reference to the accompanying drawings, in which—

Figure I is an upper side plan view of a car-frame with the improvements applied. Fig. II is an under side plan view of the same. Fig. III is a vertical longitudinal section of the car-frame and its truck with the improvements applied thereto, the section being taken on the line 3 3 of Fig. I. Fig. IV is a vertical transverse section of the same on the line 4 4 of Fig. I. Fig. V is a detached view of the governor in operative position upon the truck-axle. Fig. VI is a detached view of the dog, and Fig. VII a similar view of the stop-lever.

In the said drawings, A designates the draw-bar or buffer, which is arranged to move in-

wardly and outwardly in a suitable casing or housing upon the car-frame, and preferably against the action of a buffer-spring, a , in the usual manner.

5 B designates an arm or lever, which is pivoted at b upon the under side of the draw-bar A, and which extends transversely of the car-body, as shown. The outer end of this lever is forked or bifurcated at b' to embrace an elongated U-shaped hanger or guide, C, which is 10 suitably secured beneath the body-frame of the car, as shown. This guide or hanger extends longitudinally of the car-body, and the end b' of lever B, working on said hanger, is engaged at times by a stop-lever, to be hereinafter described. The inner end of lever B extends beyond the draw-bar head and is U-shaped, as shown at b'' . Within or between 15 the arms of the inner end of lever B lies the inner end of a lever, E, the outer end of which is connected by a chain, F, with the brake-lever, hereinafter described. This lever E is pivoted at e upon a bracket, D, which is secured to the front end of the body-frame and 20 near to the draw-bar. Pivoted at g , upon one of the outer longitudinal beams of the body-frame, is a stop-lever, G, which extends longitudinally of the car-body, and upon the under side of the outer end of which is formed a 30 downwardly-extending stud or stop, g^2 , which, when the outer end of said lever is depressed, engages the outer end of lever B. Thus it will be seen that when the outer end of the arm or lever B is engaged by the stop-lever G the inward movement of the draw-bar A will cause 35 the inner end of lever B to act powerfully upon the contiguous end of lever E, and that the latter acting pivotally will draw powerfully outwardly at its outer end on the brake-chain F and apply the brakes. On the other hand, when the outer end of lever B is not engaged by the stop-lever, any inward or outward movement of the draw-bar A will cause 40 said lever to move freely on its pivot b , the tension of the brake mechanism rendering lever E sufficiently rigid to resist any movement and serve at its inner end as the fulcrum for the free movement of lever B.

The inner end of the stop-lever G is T-shaped, having two oppositely-extending arms, 50 g' , and at the outer extremity of each of these arms is formed or secured an inwardly-extending pin, g^2 , the T-shaped end of this stop-lever extending inwardly beyond the pivotal point 55 g of said lever.

60 H designates an arm or bracket, which is secured at one end to one of the transverse timbers of the truck, and which extends horizontally outward from said point of attachment. The outer end of this arm H is enlarged, as shown at h , and this enlarged portion is formed with a downward extension, h' , an upward L-shaped extension, h^2 , and an outward horizontal extension, h^3 .

65 Upon the downward extension h' is pivoted, at i , a lever, I, the upper end of which extends between the pins g^2 of the stop-lever G.

The lower end of this lever I extends downwardly toward and sufficiently near to the truck-axle to be engaged at times by the governor, as hereinafter described. 70

To the forward extension, h^3 , of the arm H is pivoted, at j , a lever, J, the upper end of which is weighted, as shown at j' , and the lower end of which depends toward and sufficiently 75 near to the truck-axle to be engaged at times by the governor thereon. Upon the upward extension, h^2 , is pivoted, at k , a dog, K, which is of substantially the form shown in Fig. 6. This dog is formed with an extension, k' , projecting in alignment with the greatest length 80 of the body portion of the dog, and also two extensions, k^2 k^3 , projecting transversely to the length of the body portion of said dog and just beyond its pivotal point. At each extremity 85 of the arms k^2 k^3 is formed or secured a pin, k^4 , and by referring to Fig. 3 it will be seen that the upper weighted end of the lever J extends between the said pins k^4 . Immediately beneath the extension k' the dog K is formed 90 with a notch, k^5 , and from this notch or shoulder the lower edge of the dog is curved, as shown at k^6 .

Upon the contiguous axle of the truck is mounted the centrifugally-acting governor L, 95 which consists of a U-shaped casting having two arms, l^2 l^1 , the arm l^2 being heavier than the arm l^1 . This governor is pivoted at l^2 upon a split ring or collar, l , each end of which is formed with a lug, l , through which the pivot 100 l^2 passes, said pivot serving not only as the means for adjusting the governor L, but also as the means for drawing the end of the ring or collar l snugly together, and thus securely attaching said ring or collar to the axle. This 105 governor is so placed upon the truck-axle that its lighter end l^1 lies below the lower end of the lever I, while its heavier end lies below the weighted lever J, and it will be readily seen that when the car is moving slowly—for 110 instance, just after the train has started—the lighter end l^1 of the governor will, as the axle revolves and brings the governor uppermost, strike the lower end of lever I and throw the upper end of said lever in one or the opposite 115 direction, according as the train is going ahead or backing, and thus raise the outer end of stop-lever G out of engagement with the lever B, so that the inward or outward movement of the draw-bar will not affect the brakes. At this 120 moment the dog K will drop by gravity, the lower pin, g^2 , of stop-lever G being caught in the notch k^5 of the dog, and thus the stop-lever G will be locked or held with its outer end raised. Now, when the car or train has 125 attained its usual speed, the heavier end of the governor L will be thrown outward by the rapid revolution of the axle and will strike the lower end of lever J, throwing its upper end forcibly against one or the other pin, k^4 , according to the direction of movement of the car or train, and tripping the dog out of engagement with the stop g^2 of the lever G and 130 allowing the outer end of said lever to fall by

gravity, so that its stud g^3 shall engage the arm or lever B upon the next inward movement of the draw-bar A, and consequently causing such movement to apply the brakes.

5 The brakes being applied and the speed of the car or train being reduced, the heavier end of the governor will fall when the governor is brought above the axle, and its lighter end will tilt the lever I, and consequently release
10 the brakes.

In Fig. 3 is shown a form of brake-lever which is peculiarly adapted for use in connection with the member E of the pair of interlocking levers, above described, inasmuch
15 as when the lever B causes the brakes to be released this brake-lever will instantly take up the slack in the brake-chain. M designates the brake-lever, the lower part of which is connected by a rod, F' , with a companion
20 lever, M' , of the usual or any preferred form. The upper part of this lever M has its upper extremity bent over angularly, as shown at m , and is preferably bent in curved form, while at its lower end said lever is preferably weighted,
25 as shown at m' . A pulley, N, is journaled in a strap, n , which embraces the lever M, and to which is connected the brake-chain F, before referred to as connected at its opposite end to the free end of lever E. Thus when
30 the lever B is engaged by the stop-lever G and the draw-bar moves inwardly the strain upon chain F will cause the pulley N to impart an initial pressure of the brake-shoes upon the truck-wheels and immediately there-
35 after to run upward upon the lever M and apply a powerful pressure upon the brake-shoes. As soon as lever B is released, as before described, this pulley N will run down upon lever M, and in so doing as the said le-
40 ver moves outward from the wheels instantly take up the slack of the brake-chain F.

Thus it will be seen that the entire brake mechanism is of the simplest construction and of the utmost durability, and that it quickly
45 responds to the varying requirements incident to actual use.

Having now described the invention, what is claimed as new and desired to be secured by Letters Patent is—

50 1. In an automatic car-brake of the kind above specified, a pair of interlocking levers connected pivotally with a longitudinally-movable draw-bar, one of said levers being connected directly to a brake-lever and the
55 other lever being rendered fixed or freely movable by suitable connections from the truck-axle, substantially as described.

2. In an automatic car-brake of the kind above specified, an arm or lever pivotally
60 connected to the draw-bar, and a stop-lever engaging and disengaging said arm or lever to render the same fixed or freely movable, in combination with a pivoted pendent lever in constant engagement with the draw-bar arm
65 or lever, and a centrifugally-acting governor arranged to trip said pendent lever and there-

by throw the stop-lever out of engagement with the draw-bar, arm, or lever, substantially as set forth.

3. The combination, with an arm or lever 70 pivotally connected to the draw-bar, and a stop-lever engaging and disengaging said arm, of a pivoted lever in constant engagement with the stop-lever, a dog falling into locking position relative to the stop-lever, a pendent 75 weighted lever engaging said dog to throw it into engagement with the dog, and a centrifugal governor engaging said lever in consequence of varying speeds of rotation of the axle, substantially as specified. 80

4. The combination, with a pair of pivoted levers interlocking at their contiguous ends, and a longitudinally-movable draw-bar oper- 85 ating upon said levers, of a stop-lever arranged to resist the inward thrust of the draw-bar, and a brake-lever having a longitudinally-moving pulley connected by the brake-chain to the opposite member of the said interlocking levers, as set forth.

5. The combination, with the longitudinally- 90 movable draw-bar, of the lever B, pivoted upon said draw-bar and having its inner end bifurcated, and the lever E, pivoted upon the car-frame, said levers being respectively in engagement with a stop-lever and connected to 95 a brake-lever, whereby the inward movement of the draw-bar shall cause the lever B to become fixed at its outer end and apply the brakes through the medium of lever E, sub-
stantially as described. 100

6. The combination, with the pivoted stop-lever G, having the stud g^3 and pins g^2 , of the pivoted lever H, extending between said pins and operating to raise the outer end of the stop-lever by a movement of its upper 105 end and in either direction, substantially as described.

7. The combination, with the pivoted stop-lever G, having the pins g^2 , and the lever I, extending at its upper end between said pins, 110 of the dog K, pivoted upon the truck-frame and having the arms k^2 k^3 , with pins k^4 and notch k^1 , and the weighted lever J, extending at its upper end between the pins k^4 , said le-
vers I and J being pivoted on the truck-frame 115 and in contact at their lower ends with the arms of a governor on the axle, as set forth.

8. The governor having the pivoted U-shaped piece with its operative arms of rela- 120 tively greater and less weight, in combination with levers I and J, acted upon by said arms, substantially as described.

9. The bracket H, having extensions h^1 , h^2 , and h^3 , in combination with the levers I J, and dog K, pivoted upon said extensions, as de- 125 scribed.

In testimony whereof I have hereunto set my hand this 24th day of April, A. D. 1886.

RICHARD R. HICE.

Witnesses:

WINFIELD S. MOORE,
JOHN M. SCOTT.