

(No Model.)

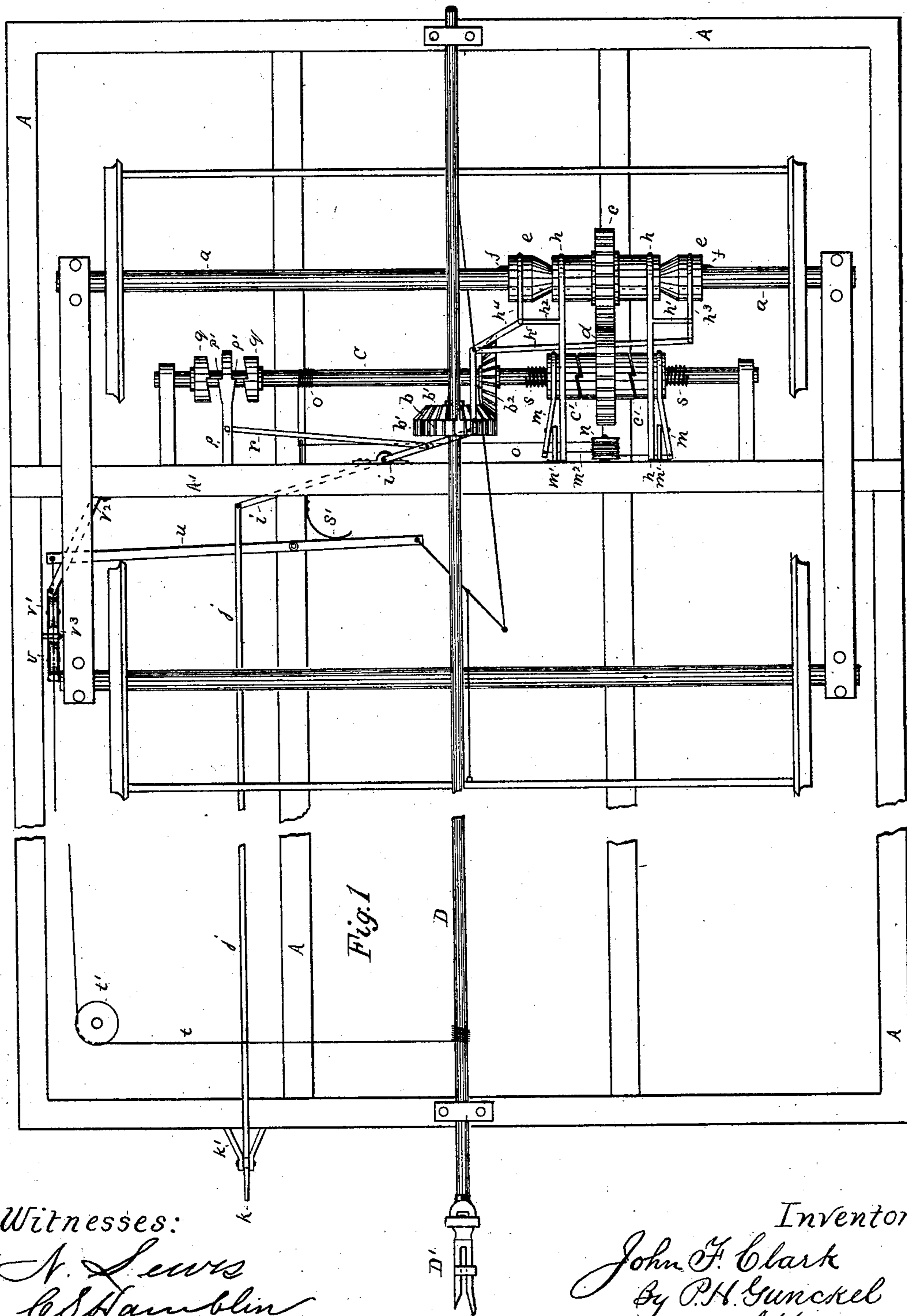
2 Sheets—Sheet 1.

J. F. CLARK.

CAR BRAKE.

No. 361,264.

Patented Apr. 19, 1887.



Witnesses:

A. Lewis
C. S. Hamblin

Inventor:

John F. Clark
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2 Sheets—Sheet 2.

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Fig. 2.

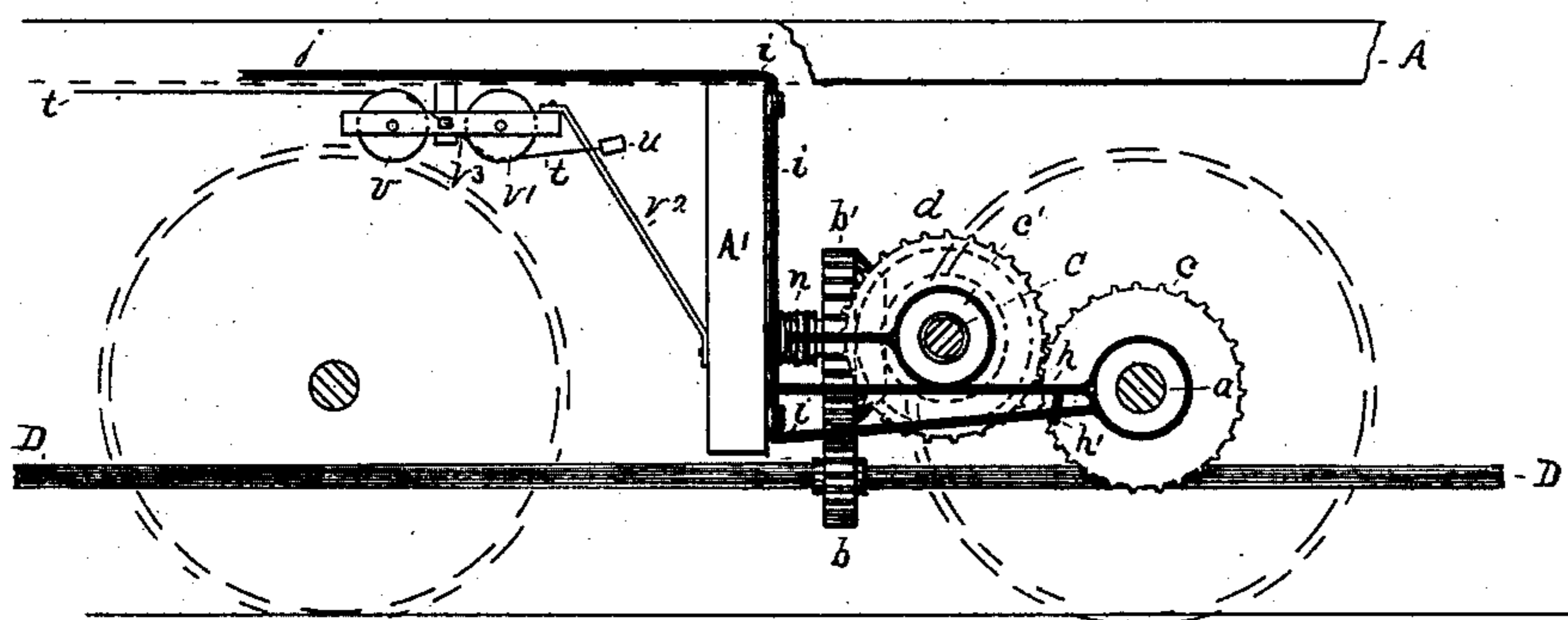
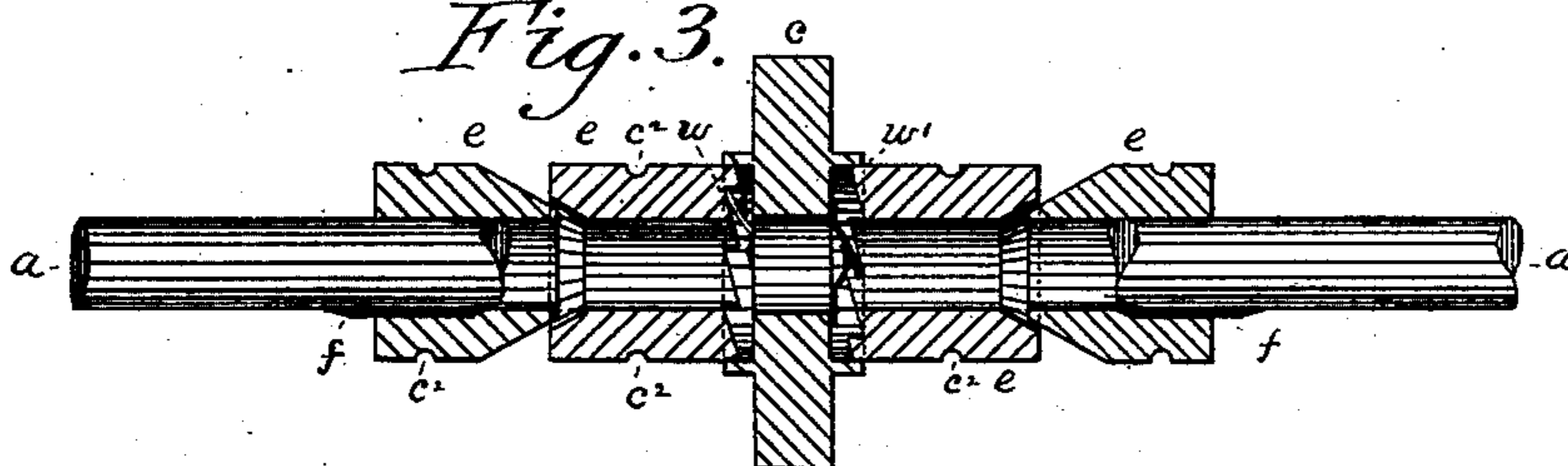


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN F. CLARK, OF MONTROSE, MINNESOTA.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 361,264, dated April 19, 1887.

Application filed April 24, 1886. Serial No. 200,006. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. CLARK, a citizen of the United States, residing at Montrose, in the county of Wright and State of Minnesota, have invented certain new and useful Improvements in Car-Brakes, of which the following is a specification.

My invention relates to the class of car-brakes in which suitable gearing and connecting-rods are used to operate the brakes simultaneously throughout the train.

The object of my invention is the production of mechanism which will enable the brakes of the entire train to be operated from one car, and which will cause the brakes to be set automatically on the detached cars when a train is broken, whether the detached cars incline to go forward or backward.

My invention is illustrated in the accompanying drawings, in which Figure 1 is a bottom view of a portion of a car, showing the mechanism for operating the brakes. Fig. 2 is a side elevation of the same; and Fig. 3 is a longitudinal sectional view of the gearing used on the car-axes.

A represents the frame work of the bottom of the car. A' is a cross-beam, by which the trucks are supported. a' a' are the car-wheels, and a a the car-axes, and a² the cross-rod carrying the brakes.

C is a shaft supported in suitable hangers from the beam A'.

c is a loose spur-wheel on the car-axle a, and meshes with the spur-wheel d on the shaft C.

e e are clutches on the car-axle, sliding on fast feathers f in the axle. These clutches may be ordinary clutch-boxes, one of which is connected to the spur-wheel c, and the other of which rotates with the axle, and may be made to slide by means of the feather f; or, as illustrated in the drawings, friction-clutches may be used, consisting of a cone sliding on a feather, f, in the axle, and adapted to engage in a corresponding cylindrical portion connected to the gear-wheel c.

c' c' are clutches on the shaft C for rotating that shaft. The clutch-boxes next the spur-wheel are fast to that wheel, and the outer boxes slide on the shaft and turn with it by means of feathers f.

h h are bars rigidly attached to the beam A', and have their ends formed into rings or collars which encircle the inner boxes of the clutches c in grooves c², so that while lateral movement is prevented the clutches may rotate freely within the rings. These bars have lateral arms h' h², to which are pivoted bars h³ h⁴, which have rings encircling the outer clutch-boxes. The bar h⁴, pivoted to the arm h², is an angular lever-rod, and to the rod h⁴ and arm h' is pivoted a cross-bar, h⁵, the parts being arranged to slide the outer clutch-boxes inward to engage the inner boxes.

i is a crooked bar having its middle portion supported in bearings at the side of the beam A', and its outer ends bent nearly at right angles to the middle portion and in opposite directions, the one connected to a rod, j, extending to the farther end of the car, and the other pivoted to the bar h⁴.

k is a lever fulcrumed in a bracket, k', at the end of the car and extending vertically above the platform, and designed to operate the rod j longitudinally. This longitudinal movement of the rod j turns the angular bar i and throws the bars h⁴ h⁵ inward or outward, and slides the clutches into or out of engagement at the will of the operator.

Any well-known device may be used to hold the lever k in place when set.

When the clutches e are thus thrown into engagement, the spur-wheel c is rotated and in turn rotates the wheel d and its shaft C. The spiral springs s hold the clutches c' in engagement. m m are bars provided with rings, within which the outer boxes of the clutches c' rotate, and the bars m are pivoted to bars m', secured to the beam A'. To the ends of the bars m are attached chains m², which wind on a pulley, n, and the pulley n is rotated by a chain, o, which winds on the shaft C. As the shaft C is rotated and the chain o is wound upon it the chains m² wind upon the pulley n and draw the bars m inward, thus sliding the clutch-boxes outward, freeing them from engagement and stopping the further rotation of the shaft. To prevent the backward turning of the shaft C when the clutches are thus released, there is provided the bar p, having one end pivoted to the beam A', and the other provided with dogs p', for engaging face-ratchets

q' on wheels q , fast on the shaft C. The bar p is made to shift between the faces of the two wheels q , which are set at a little distance apart, and the bar p is connected by a pivoted bar, r , with the lower arm of the angular bar i , so that the turning of the bar i in throwing the clutches c into engagement also throws the bar p against one of the wheels q . The ratchets then slide over the dog until the direction of movement is reversed, when they engage and the shaft is locked.

D is the rod for operating the brakes, and is connected at the car ends by a coupling, D'.

b is a pinion on the rod D, in gear with a miter-wheel, b' , which meshes with a corresponding miter-wheel, b'' , on the shaft C. Thus the rotation of the shaft C is made to turn the brake-rod D.

t is a chain having one end attached to the rod D and the other to the end of the usual brake-lever, u . The rotation of the rod D winds the chain t upon it, operating the brake-levers and setting the brakes. The chain t is passed over a pulley, t' , and thence under a pulley, v , and over a pulley, v' , the latter two pulleys being secured in a frame, v'' , pivoted at its middle to a hanger from the frame A, and leaving one of its ends attached to a fixed bar, v''' , secured to the beam A'. By this means, when a car is heavily laden and settles, reducing the space between the car-frame A and beam A', the pulley-frame v'' will be tilted and tighten the chain t running on the pulleys, and this results in drawing the brakes tighter in proportion to the weight of the load.

In operating the mechanism, the car being in motion, the lever k is thrown outward, which thrusts the rod j inward, turning the bent bar i so as to cause the lever-bars $h^4 h^5$ to slide the clutches into engagement. This operation sets the spur-wheels c and d in motion, rotating the shaft C, which in turn rotates the rod D and causes the chain t to wind upon it and tightens the brakes. At the same time the chain o is being wound on the shaft C, and when the brakes are at proper tension, which may be regulated by shortening or lengthening the chain o , the bars m are shifted sufficiently to disengage the clutches c' when the shaft C ceases to rotate, and is held in position by the ratchet-and-pawl device $p q$. The brakes will then continue at the same tension until the lever k is again operated to release them.

The brakes are set when the direction of the cars' movement is reversed by means of interior pawls, w , attached to the side of the wheel c , which engages ratchets w' in the ends of the clutch-boxes e and makes the connection between the wheel and clutches rigid. While the axle is turning forward the ratchets w'

slide over the pawls w ; but when the motion is reversed the pawls engage the ratchets and the wheel c is made to rotate. This sets in operation the other mechanism, as heretofore described.

s' is a spring bearing against the brake-lever u , and serves to throw the brakes off the wheels when the mechanism is released and to relax the chain t and other parts of the mechanism when the brakes are freed.

The mechanism described for operating the rod D to actuate the brakes is designed to be provided only at the two ends of a train of cars—at the locomotive and at the rear car-boose—and only the rod D, with the chain t and the pulleys and their tilting frame and the brake-lever connections, need be used on the intermediate cars. The rods D are coupled by the coupling D', which has open lateral jaws attached to an ordinary universal joint.

What I claim, and desire to secure by Letters Patent, is—

1. The combination, with a car-axle, of the loose spur-wheel c , the clutches c , the fixed bars h , the levers h^1, h^2, h^3, h^4, h^5 , and i , for operating said clutches, substantially as set forth.

2. The combination, with the brake-rod D and shaft C, having the gearing $b b' b''$, of the spur-wheel d , fast to said shaft, the clutches c' , springs s , the levers $m m'$, the pulley n and chain o , and the ratchet-and-pawl devices $p q$, substantially as and for the purpose set forth.

3. In combination in a car-brake, a loose spur-wheel on one of the car-axles, a second spur-wheel in mesh therewith and on an independent shaft, clutches on said axle and shaft for engaging said wheels to rotate them, ratchets on said shaft and a movable dog for engaging them, and suitable levers for operating said clutches and dog, substantially as and for the purpose set forth.

4. In a car-brake, in combination with the brake-rod D and mechanism for turning the same, a chain connected to the usual brake-levers and to said rod and running over a pair of pulleys arranged to tilt with the settling of the car and tighten said chain, substantially in the manner and for the purpose set forth.

5. In a car-brake mechanism of the character described, the combination, with the car-axle and clutches thereon, of a loose gear-wheel between said clutches, and ratchets and pawls whereby said clutches are made to engage said wheel and rotate it when the rotation of said clutches is reversed, substantially as and for the purpose set forth.

JOHN F. CLARK.

Witnesses.

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HERBERT WRIGHT.