

(No Model.)

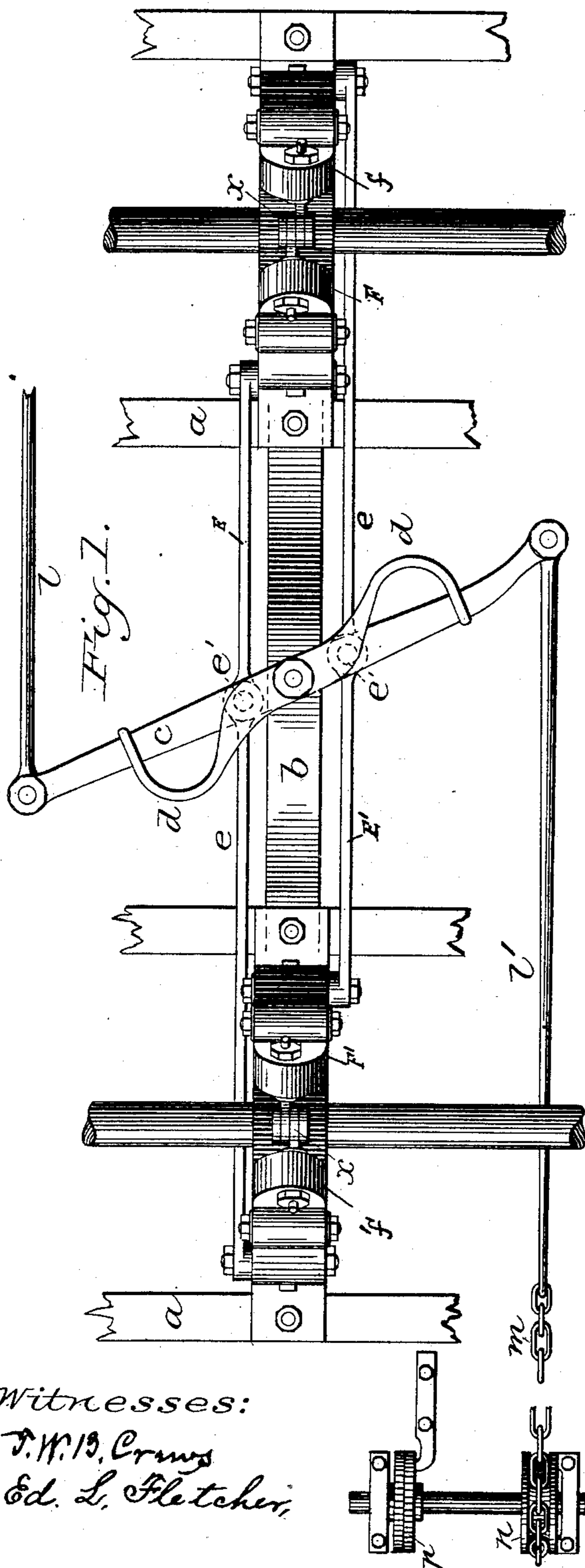
2 Sheets—Sheet 1.

C. H. B. BURRIS.

STREET CAR BRAKE.

No. 367,699.

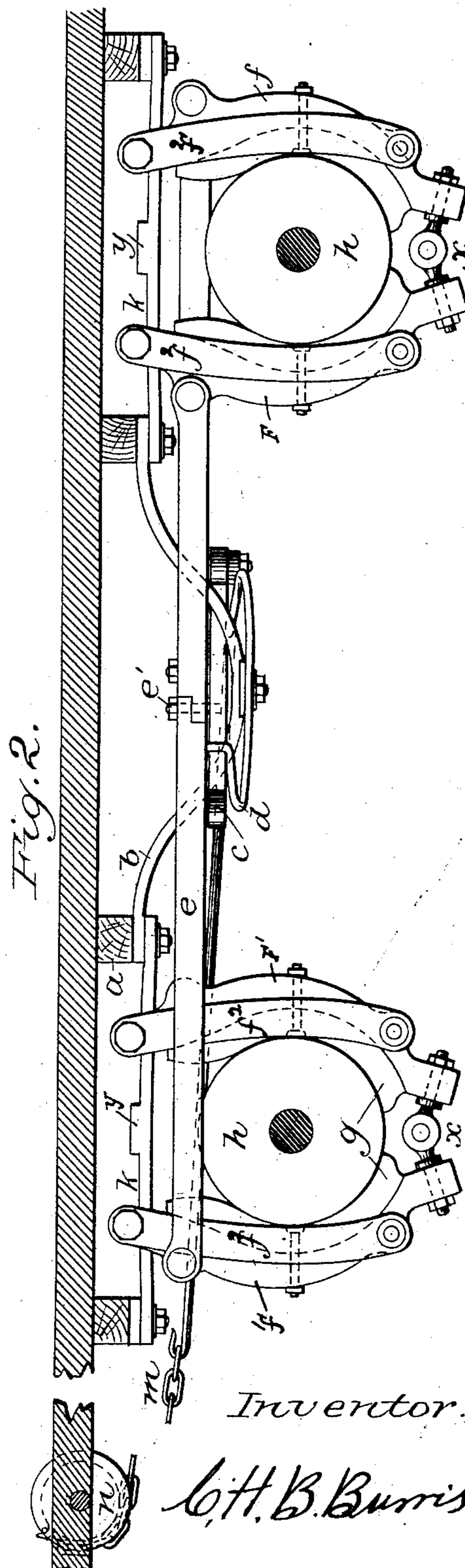
Patented Aug. 2, 1887.



Witnesses:

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Ed. L. Fletcher,



Inventor:

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

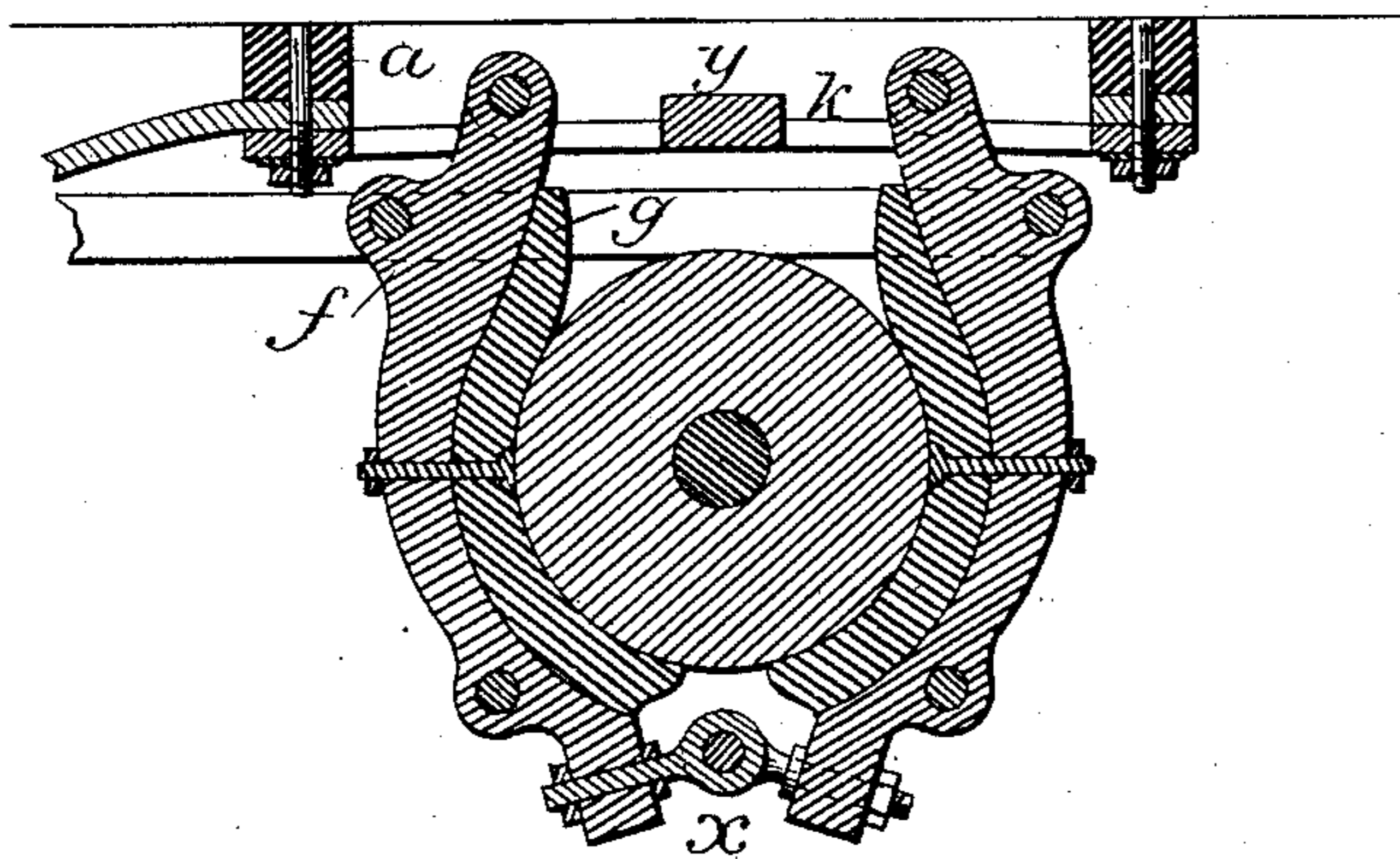
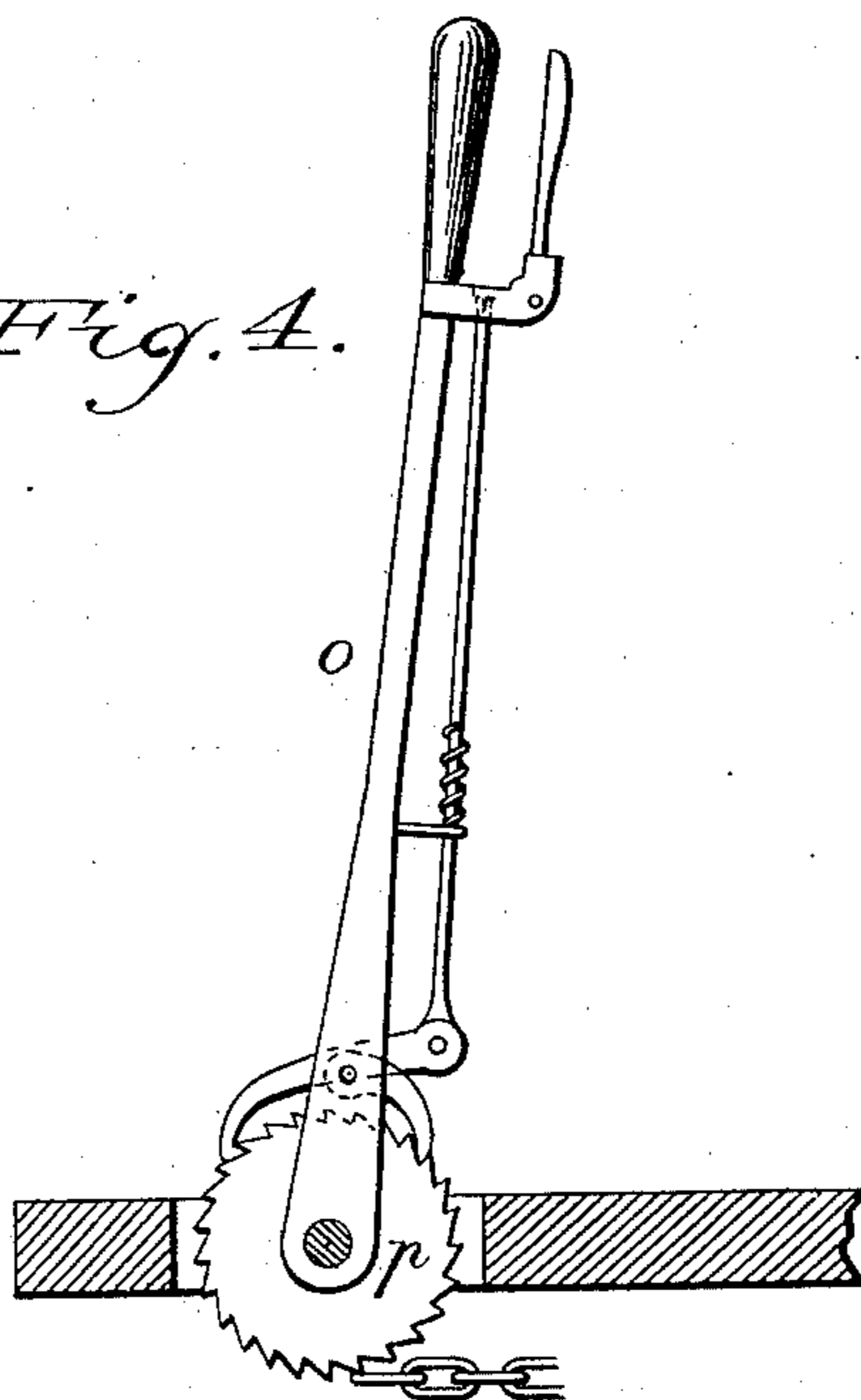


Fig. 4.



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UNITED STATES PATENT OFFICE.

CRAVEN H. B. BURRIS, OF ST. LOUIS, MISSOURI.

STREET-CAR BRAKE.

SPECIFICATION forming part of Letters Patent No. 367,699, dated August 2, 1887.

Application filed September 24, 1886. Serial No. 214,467. (No model.)

To all whom it may concern:

Be it known that I, CRAVEN H. B. BURRIS, of the city of St. Louis, in the State of Missouri, have invented a new and useful Improvement in Street-Car Brakes, which improvement is fully set forth and explained in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of my improved brake as seen from beneath. Fig. 2 is a side elevation, partly in section, of the same. Fig. 3 is a vertical longitudinal section of the drum on one of the axles and its brake-shoes, through the center thereof. Fig. 4 is an elevation of the brake-handle.

Like figures of reference refer to like parts in each figure.

My invention relates to that class of brakes in which the axle of the car is provided with a drum, to which the brake-rubber is applied; and it consists in the means hereinafter described by which the brake-rubbers are applied to the periphery of the drum at the same time and with equal pressure on either side.

Referring to the drawings, *a a* designate the cross-girts of the car, to which the brake apparatus is attached. Two of these cross-girts situate between two of the axles of the car support a depending hanger, *b*, a convenient form of which is the curved metal bar shown in Figs. 1 and 2. To the hanger *b* are pivoted the cross-lever *c* and the spring *d*. The lever *c* is connected at each end by pivots with the brake-bars *l l'*, which communicate with the handles *o*, placed on the platform of the car by suitable means—such, for example, as the chain *m* and grooved wheel *n* shown in Figs. 1 and 2. The lever *o* is preferably reversible, having a double ratchet-wheel, *p*, of which one of the wheels is stationary; but any well-known means may be used to apply power to the brake-bars *l l'*.

The spring *d* is preferably of the **S** form shown in Fig. 1, and the ends engage each an arm of the cross-lever *c* by hooks or otherwise. It is fixed immovably at its center, so that on the arms of the lever *c* moving forward it is put into a state of tension, and by this means tends to draw back the arms of the lever *c* when the pull thereon ceases to the normal position.

To the cross-lever *c*, on each side of and at

equal distances from the fulcrum thereof, as at *e'*, are pivoted the two brake-levers *e e*, which again are pivoted to the brake-shoes *F f'* and *F' f*, respectively.

The axles of the car are provided with drums *h h*, which are keyed or pressed thereon, or made in sections and bolted on in the ordinary manner. The diameter of the drums *h* should not be less than one-fourth of the diameter of the car-wheel, and its periphery not less than one-fourth of the width of the rim of the car-wheel; but larger dimensions may of course be used when it is desired to increase the effect of the brakes. The periphery of the drums is made wider than the brake-shoes, to guard against lateral movement of the latter. As an additional precaution, the drum may be provided with flanges, so as to form a groove, within which the brake-shoes are confined.

Above the axles of the car and the drums *h h* thereon and extending between cross-girts *a a* are hangers *k k*, made, preferably, slightly convex on the upper surface and with the shoulder *y* at the center. The slight convexity of the hangers *k k* will cause the brake-shoes to recede or fall apart when released, and thus avoid the necessity of springs or like devices, while the shoulder or lug *y* will limit the inward movement of the shoes, and thus control the force applied and prevent the sliding of the car-wheels. They are provided with longitudinal slots, through which are inserted the top projections of the brake-shoes. (See Fig. 3.) In the figures the brake-shoes are designated by the letters *F f* in one brake, and *F' f'* in the other. On each side of the hangers *k k* are two braces, *f² f²*, one on each side of each brake-shoe, and pivoted thereto at the top by a bolt passing horizontally above the hanger *k*, through the part of the brake-shoe projecting through the slot therein and through the brace *f²* on each side of the brake-shoe, and also at the lower ends of the brake-shoes and braces in a similar manner. The brake-shoes are thus suspended upon the hangers *k k*, and are free to move thereon between the end of the hanger and the central shoulder, *y*.

The brake-shoes on either side of the axle of the car are hinged together beneath the drum *h* by means of a hinge, *x*, which, as shown in the drawings, may consist of eyebolts secured to the brake-shoes by nuts and a pintle passing

through the eyes of the bolts and forming the hinge.

Upon the inner surface of the brake-shoes are secured the brake-rubbers *gg* by bolts and nuts or other suitable means. The rubbers are made with a curved surface corresponding to that of the drums *h h*, and the brake-shoes are preferably of a similar shape, but have their ends projecting tangentially to form bearings for the hinges *x* below and the supporting-bolts above. The tangentially-projecting ends of the brake-shoes and the eyebolts forming the hinge *x* constitute a hinge-joint, which greatly facilitates the separation or falling apart of the brake-shoes when the braking-power is removed. The brakes on both axles are precisely similar in construction, as are also the brake-shoes *F f F' f'*.

The brake-levers *e e*, which are pivoted to the cross-lever *c* at *e' e'*, are pivoted to the brake-shoes in the following manner: Each bar *e* is pivoted at one end to the brake shoe on the same side of the axle as the cross-lever *c*, and at the other end to the brake-shoe on the farther side of the other axle. The part *E* of the lever *e*, which is pivoted to the shoe *F* on the nearer side of the axle, is on the same side of the cross-lever *c* as the brake-bar *l*, and the other part of the lever *e*, which is pivoted to the shoe *f'* on the farther side of the axle, is on the other side of the lever *c* to the brake-bar *l*. The brake-shoes *F'* and *f* are connected in the same manner with regard to the cross-lever *c* and brake-bar *l'*. The levers *e e* are thus connected to alternate brake-shoes.

The operation of my improved brake is as follows: Power is applied to one of the brake-bars—*l*, for example—by means of handle *o*, wheel *n*, and chain *m*, and is thus transmitted by the cross-lever *c* to the brake-levers *e e*. The part *E* of the brake-lever *e*, being on the same side of the lever *c* and its fulcrum as the bar *l*, moves forward in the same direction and pushes the brake-shoe *F* and its rubber *g* forward onto the drum *h*. At the same time the other part of the bar *e*, on the other side of lever *c*, is moved forward and pulls the brake-shoe *f'* on the drum *h* on the other axle. Simultaneously with these movements corresponding movements are given to the bar *e* on the other side of the hanger *b*. The bar *E'* pushes the shoe *F'* on the drum *h* and the other part of the bar *e* pulls forward the shoe *f* on the drum *h* of the other axle. These movements of the brake-shoes are permitted by their arrangement in the slots of the hangers *k k*, while the hinges *x x* keep the lower ends of the shoes together and against the surface of the drums. It will be seen that the drums of both axles are thus embraced simultaneously and on both sides of each drum by the

brake-rubbers. A very large surface of the drums is thus subjected to a uniform pressure.

I do not limit myself to the arrangement of two brakes together in the manner shown and described, for it is evident that a single brake may be employed by using the levers *e* on one side of the cross-lever *c* only.

I claim—

1. In a brake mechanism, the combination of a centrally-pivoted brake-lever and an S-shaped spring fixed at its center, substantially as and for the purposes specified.

2. The combination, with brake-shoes pivotally connected below and free above, of a convex hanger or suspension track and mechanism for actuating the brakes, substantially as and for the purposes specified.

3. In a brake mechanism, the combination, with two brake-shoes having tangential projections and a hinge connection, as at *x*, below, of a convex hanger or suspension-track, substantially as and for the purposes specified.

4. In a car-brake, the combination of slotted hanger *k*, brake-shoes, and braces *f'*, on either side of said brake-shoes and pivoted thereto, substantially as and for the purposes described.

5. The combination, with two brake-shoes pivoted together below, of a convex hanger or suspension-track having a central lug or shoulder, as at *y*, substantially as and for the purposes specified.

6. The combination of brake-shoes with cross-lever *c* and brake-levers *e e*, pivoted to the lever *c* and the brake-shoes, substantially as and for the purposes described.

7. In a car-brake, the combination of brake-shoes arranged on either side of an axle of the car, with cross-lever *c*, fulcrumed at its center, and brake-levers *e e*, arranged on either side of the fulcrum of the lever *c* and connecting the brake-shoes with said lever, substantially as and for the purposes described.

8. In a car-brake, the combination, with the axles of a car, of brake-shoes arranged on either side of said axles, a cross-lever, *c*, fulcrumed centrally, and brake-levers *e e*, pivoted to said cross-lever on either side of its fulcrum and pivoted each to alternate brake-shoes, substantially as and for the purposes described.

9. The combination of two suspended brake-shoes having at their lower ends tangential projections provided with eyebolts forming a hinge, *x*, the upper ends of said brake-shoes being free to move to and fro, and brake-levers for actuating said brake-shoes, substantially as and for the purposes specified.

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Witnesses:

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