(No Model.) 2 Sheets—Sheet 1.

H. DUYS, Jr.

CAR STARTER AND BRAKE.

No. 495,725. Patented Apr. 18, 1893.

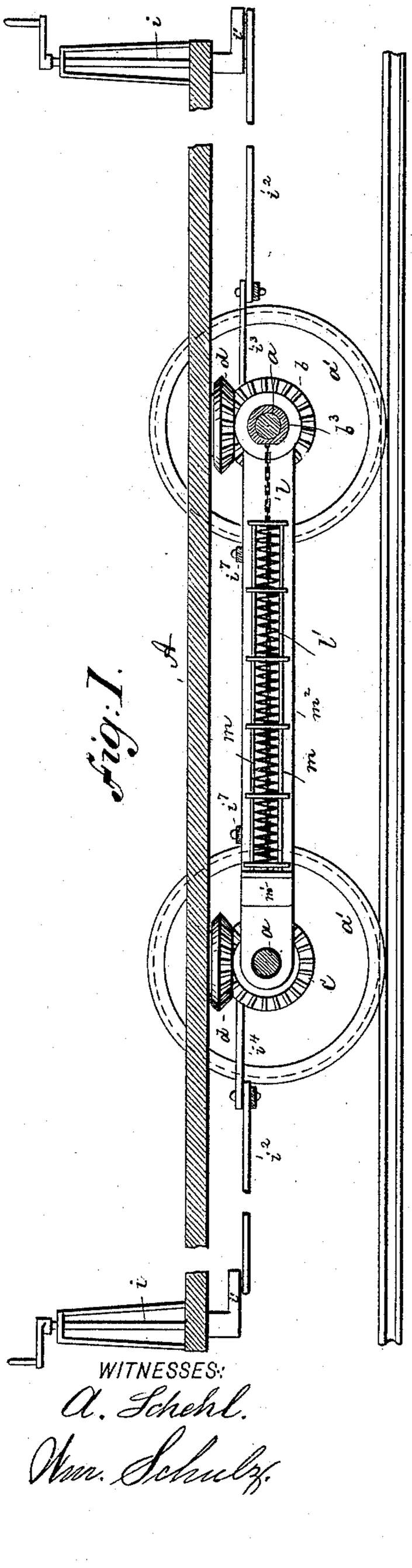

Fig. 1.

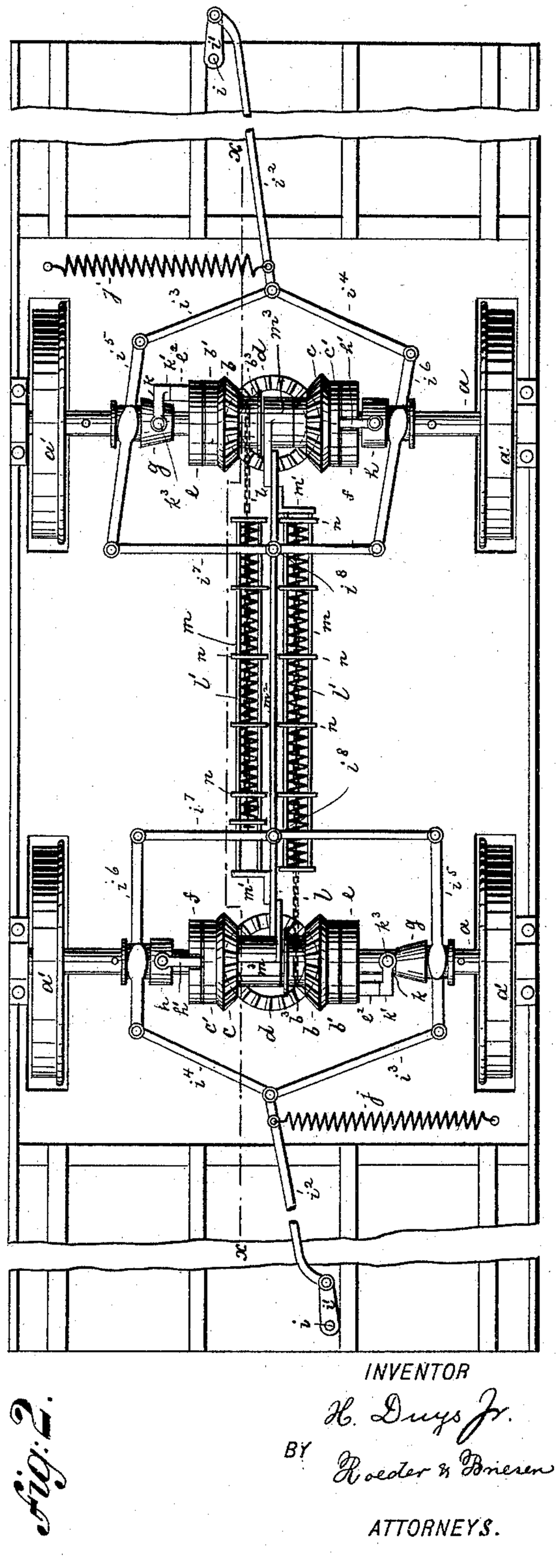

Fig. 2.

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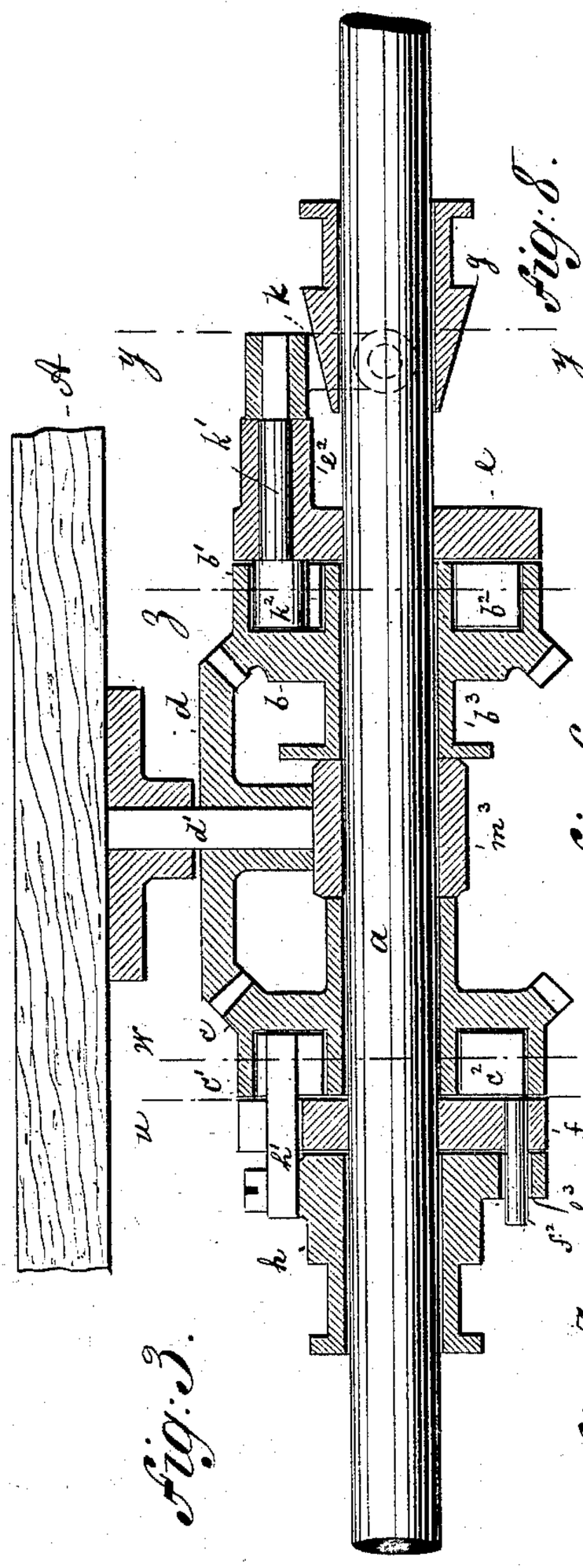

Fig. 3.

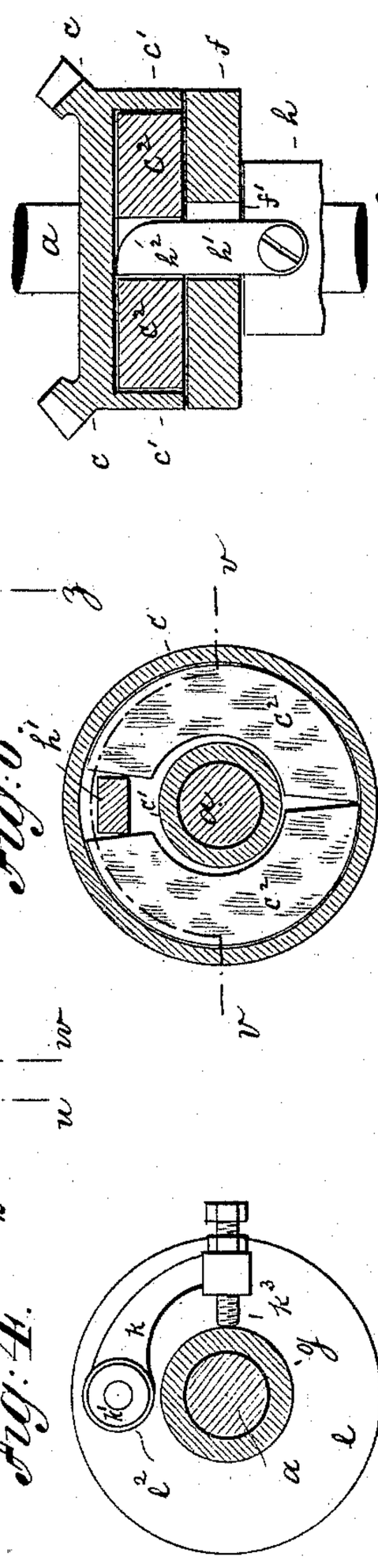

Fig. 4.

Fig. 6.

Fig. 8.

Fig. 9.

Fig. 7.

Fig. 5.

WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY DUYS, JR., OF NEW YORK, N. Y.

CAR STARTER AND BRAKE.

SPECIFICATION forming part of Letters Patent No. 495,725, dated April 18, 1893.

Application filed June 30, 1892. Serial No. 438,501. (No model.)

To all whom it may concern:

Be it known that I, HENRY DUYS, Jr., of New York city, New York, have invented an Improved Car Starter and Brake, of which the following is a specification.

This invention relates to an improved car starter and brake of the kind in which the power is stored in stopping the car to be utilized in starting.

The invention consists in the various features of improvement more fully pointed out in the claim.

In the accompanying drawings: Figure 1 is a longitudinal section on line x, x, Fig. 2; Fig. 2 a bottom view of a car provided with my improvement; Fig. 3 a section through one of the axles; Fig. 4 a section on line y, y, Fig. 3; Fig. 5 a section on line z, z, Fig. 3; Fig. 6 a section on line w, w, Fig. 3; Fig. 7 a section on line u, u, Fig. 3. Figs. 8 and 9 are sections on line v, v, Fig. 6 showing the clutch in different positions.

The letters a', a', represent the wheels of the car, fast on the axles a, as usual.

The braking and starting mechanism is duplicated for each axle and is as follows: Upon each axle a, there are free to revolve two bevel cog wheels b, c, meshing into a joint bevel cog wheel d, the shaft d', of which depends downwardly from the car bottom A. Upon each axle there are furthermore keyed two disks e, f, the disk e, being placed against the outer face of cog wheel b, and the disk f, against the outer face of cog wheel c. The disk e, is adapted to be locked to the bevel wheel b, by means of a friction clutch situated within a drum shaped extension b', of the bevel wheel and operated by means of a slide g, freely moving on shaft a. The disk f, is adapted to be locked to the bevel wheel c, by means of a friction clutch situated within a drum shaped extension c', of the bevel wheel and operated by means of a slide h, freely moving on shaft a. The slide h, is prevented from revolving independently of disk f, by means of a pin f^2, on the disk entering a perforation h^3, on the slide. The two slides g, h, are simultaneously moved in or out by the revolution of the ordinary brake rod i, provided at its lower end with a laterally extending arm i', to the free end of which is pivoted bar i^2, provided with links i^3, i^4. These links are connected to the forked arm i^5, i^6, engaging the slides g, h, respectively, and connected at their rear ends to the opposite ends of a lever i^7, pivoted at i^8, to a fixed support. When the brake rod i, is revolved to draw the bar i^2, forward (right hand end Fig. 2) the two slides will be moved inward, but when the brake rod i, is revolved one hundred and eighty degrees to reverse the position of arm i', and to push the bar i^2, backward (left hand end Fig. 2) the two slides will be moved outward. A spring j, facilitates the latter movement of the brake.

The slide g, is made in the form of a cone, which when moved inward, (to stop the car) engages and tilts a bent arm k, of a rock shaft k'. This rock shaft passes through a perforated sleeve or bearing e^2, of disk e, and is provided at its inner end with a cam k^2, entering the drum b'. Within this drum there are contained the two sliding segments b^2, of a friction brake (Fig. 5). It is evident that when the segments are spread or crowded against the rim of the drum b', by the cam k^2, the drum will be tightly clutched to the slide g. But this slide is held to the axle by the bent arm k, and thus all these parts will revolve with the axle.

To the hub b^3, of the wheel b, is attached one end of the power chain l, the other end of which is attached to the power spring l', and thus the chain is wound upon the hub and the spring is compressed to brake the car. During the winding up of this chain, the wheel b, will revolve wheel d, and the latter will in turn revolve wheel c, in an opposite direction. As long as the brake is put on (right hand side Fig. 1) the spring will remain wound up because the cam k^2, keeps the segments b^2, spread and thus prevents the gear wheel from revolving backward. But as soon as the brake is released (to start the car) the conical slide g, is moved outward from under the arm k, and thus the rock shaft k', and cam k^2, will resume their normal position and no longer spread the segments b^2. In this way the gear wheel b, is released from frictional contact with shaft a, and the power

chain l, exerting a continuous pull upon the wheel, will now unwind and revolve it backward. The wheel b, will by wheel d, revolve wheel c, forward. Within the drum c', of this wheel, are contained the two segments c^2, of a friction brake. Between these segments enters a finger h', pivotally secured to the slide h, and having a rounded end h^2. This finger passes through a notch f', of the disk f, and thus when it enters fully between the segments c^2, it crowds the same against the rim of drum c', and clutches the wheel c, to the disk f. Thus as the wheel c, is revolved forward it takes the disk f (and consequently the axle a) with it to start the car. The engagement of the wheel c, with the disk f, takes place at the moment the brake is released and while the slide h, is still in proximity to the disk f, (right hand side Figs. 1 and 8.) As the revolution of the brake rod i is completed and the slide h, is thereby moved outward the finger h', is partly withdrawn from between the segments c^2, (left hand side Figs. 1 and 9) so as to no longer cause the segments to bear against the rim of the drum c', and disengage the disk f, from wheel c. This is of course necessary so that the wheel c, can turn independently of and in opposite direction to the disk f, at the next braking of the car.

In order to permit the tension of the brake to be regulated, the bent arm k, is provided with a set screw k^3, which bears against the conical slide g, and constitutes the surface against which the slide g, acts to tilt the rock shaft k'. By turning this screw in either direction, to change the distance between its lower point and the conical sleeve, the power of the brake may be readily adjusted to adapt it for lighter or heavier loads. The power springs l', are placed between guide rods m, attached by angle irons m', to a central supporting bar m^2. This bar is provided at its ends with collars m^3, that embrace the axles a. Upon the rods m, move the perforated slides n, and to the last of the slides n, the power chain is attached. Thus as the power chain is wound upon the hub b^3, the spring is contracted and the slides are crowded together. The release of the power chain causes the spring to expand and to resume its normal position.

It will be seen that my improved brake is operated by a semi-revolution of the brake rod i, to revolve the arm i', through one half of a circle.

What I claim is—

1. The combination of axle a, with intergeared cog wheels b, c, turning thereon and provided with clutches, a pair of fixed disks and a pair of slides operated by the brake rod and adapted to lock the cog wheels to the axle, substantially as specified.

2. The combination of axle a, with intergeared cog wheels b, c, turning thereon and provided with clutches, a pair of fixed disks e, f, a conical slide g, a rock shaft k', having arm k, engaged thereby and provided with cam k^2, engaging the clutches of wheel b, substantially as specified.

3. The combination of axle a, with intergeared cog wheel b, c, turning thereon and provided with clutches, a pair of fixed disks e, f, a conical slide g, and a slide h, having a finger h', adapted to engage clutches of wheel c, substantially as specified.

4. The combination of axle a, with intergeared cog wheels b, c, provided with clutches, a pair of fixed disks, a pair of slides g, h, a rock shaft operated by slide g, and engaging the clutches of wheel b, and a finger h', on slide h, engaging clutches of wheel c, substantially as specified.

5. The combination of axle a, with intergeared cog-wheels b, c, provided with clutches, a pair of fixed disks e, f, a pair of slides g, h, adapted to operate the clutches, and a pair of arms i^5, i^6, and a brake rod connected thereto for operating the slides, substantially as specified.

6. The combination of axle a, with cog wheels b, c, having drum shaped extension b', c', segments b^2, c^2, within said extensions, a pair of fixed disks e, f, a cam k^2, and a finger h', entering between the segments, a conical slide g, arm k, and rock shaft k', for operating cam k^2, and a slide h, for operating finger h', substantially as specified.

7. The combination of axle a, with cog wheels b, c, fixed disk e, f, slides g, h, arm k, rock shaft k', and cam k^2, segments b^2, engaged by the cam and with a set screw k^3, on arm k, and adapted to make adjustable contact with slide g, substantially as specified.

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Witnesses:
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