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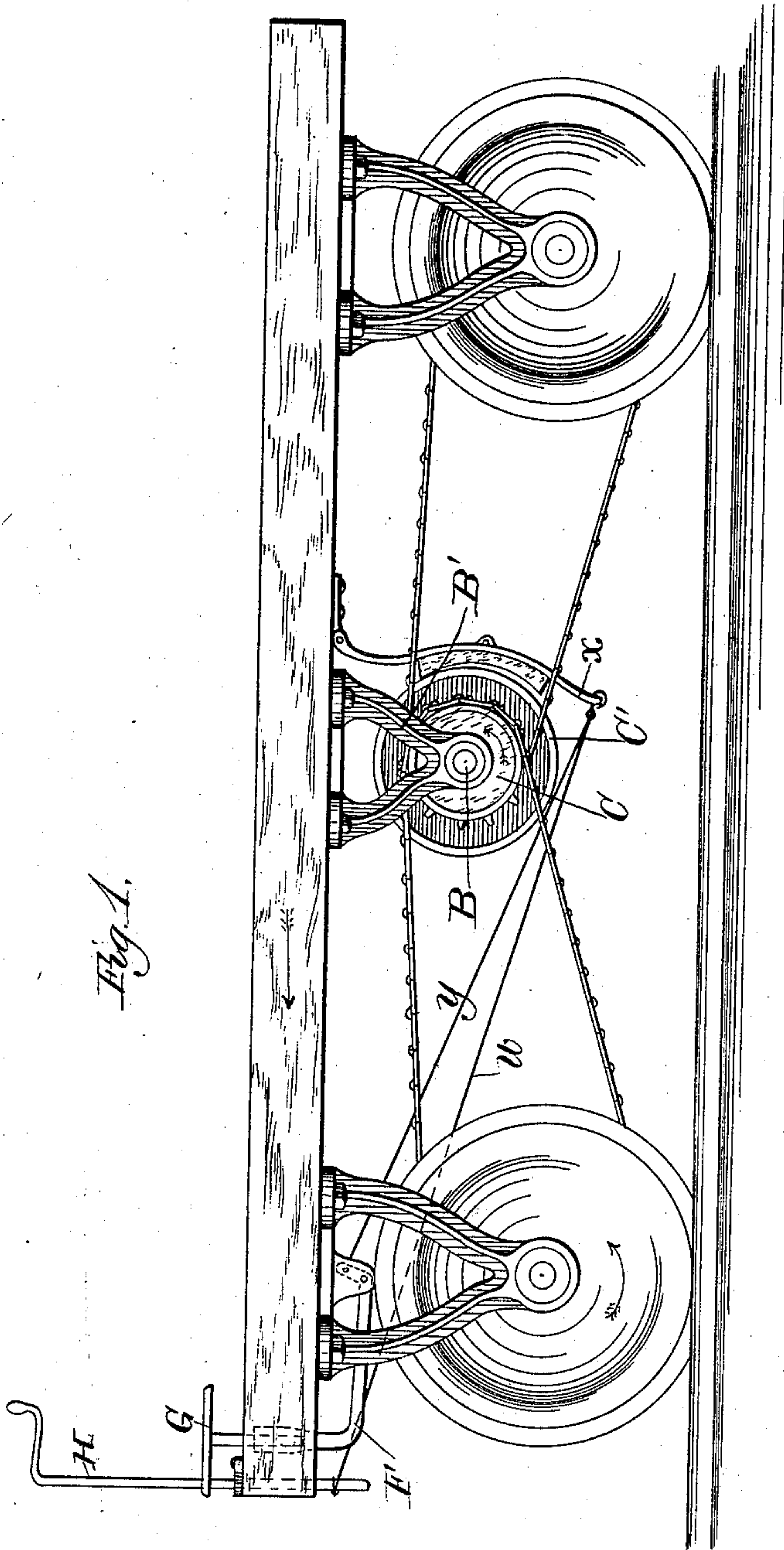
3 Sheets—Sheet 1.

C. T. BROWN.

CAR STARTER AND BRAKE.

No. 277,863.

Patented May 15, 1883.



Witnesses:

C. E. Gaylord.

R. C. Dyrenforth

Inventor:

Charles T. Brown

(No Model.)

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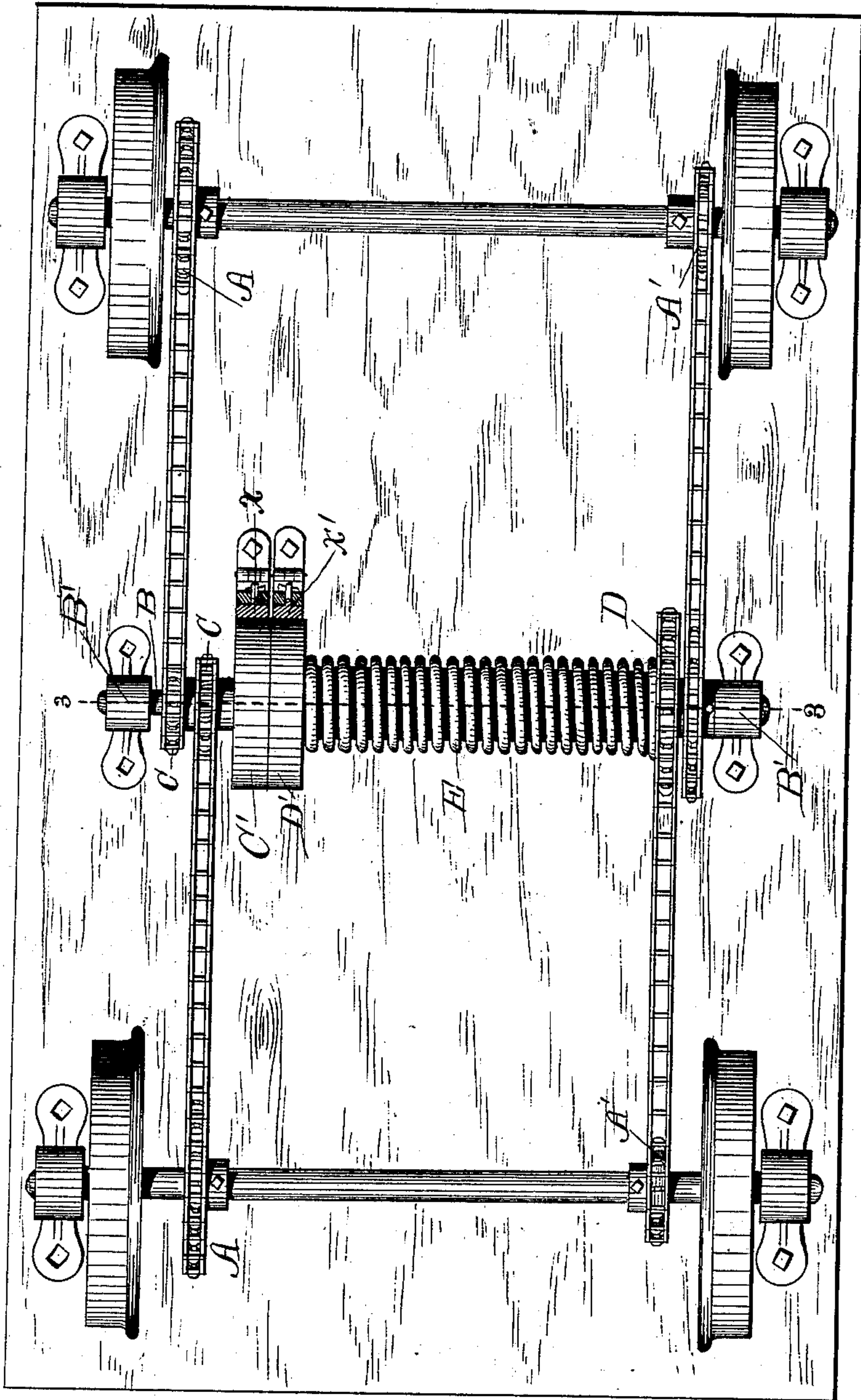


Fig. 2.

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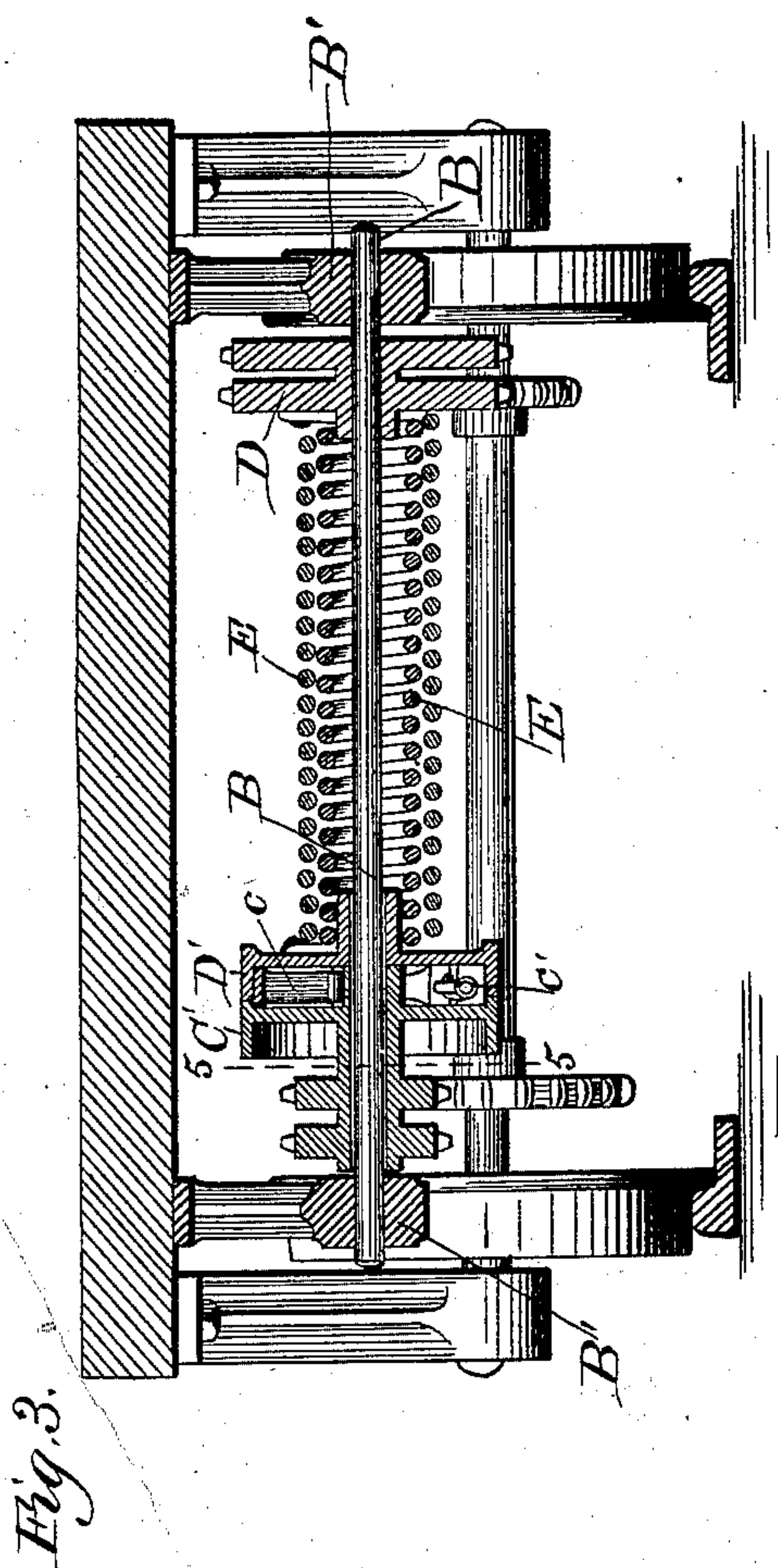


Fig. 5.

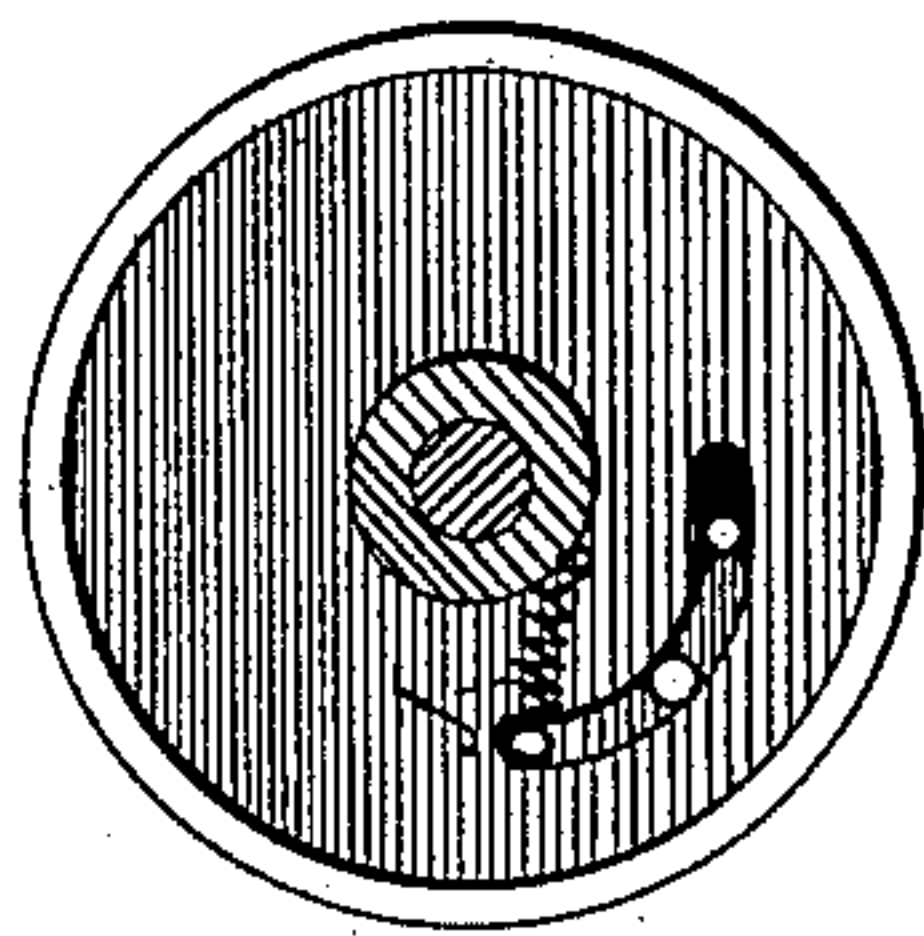


Fig. 6.

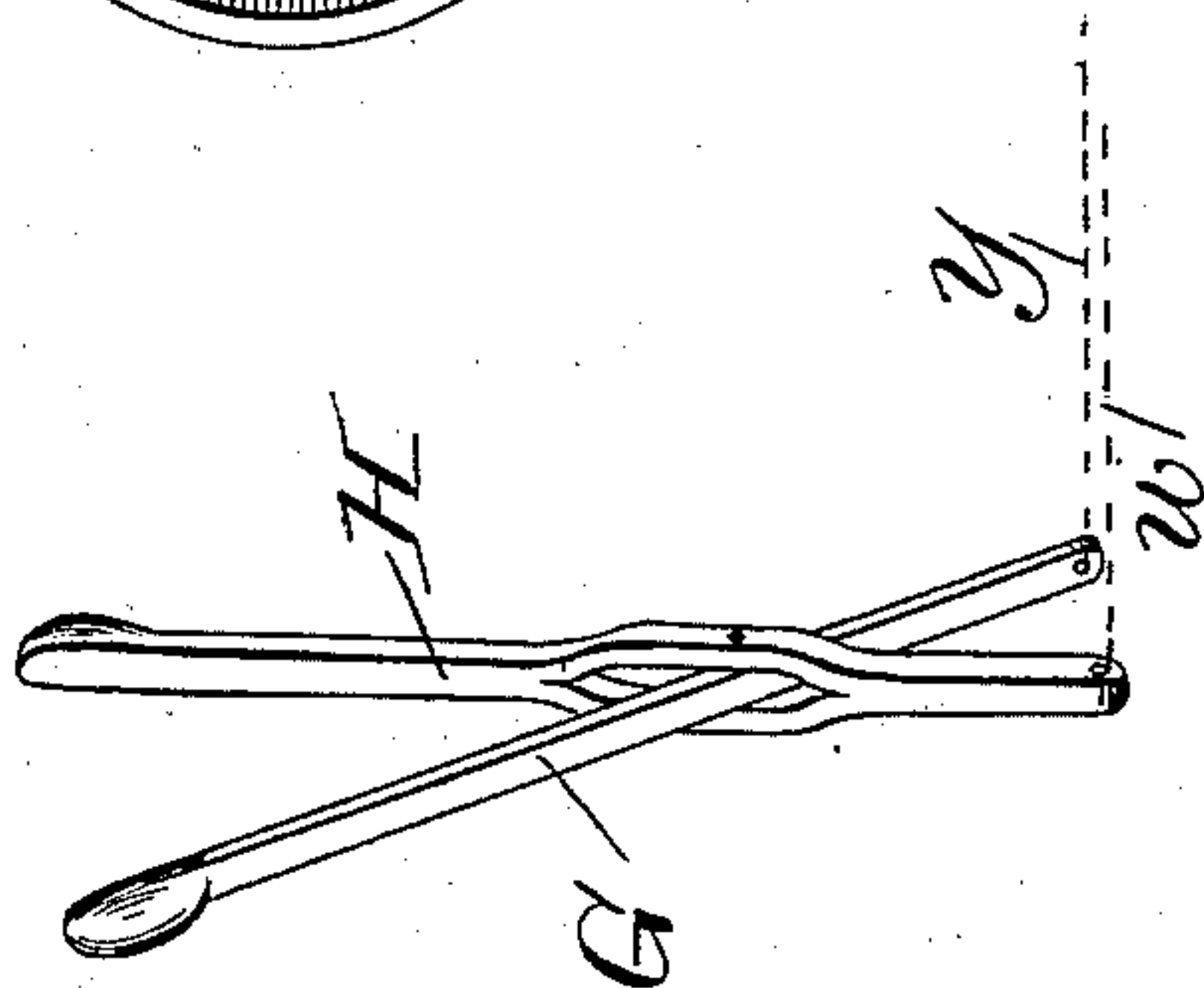
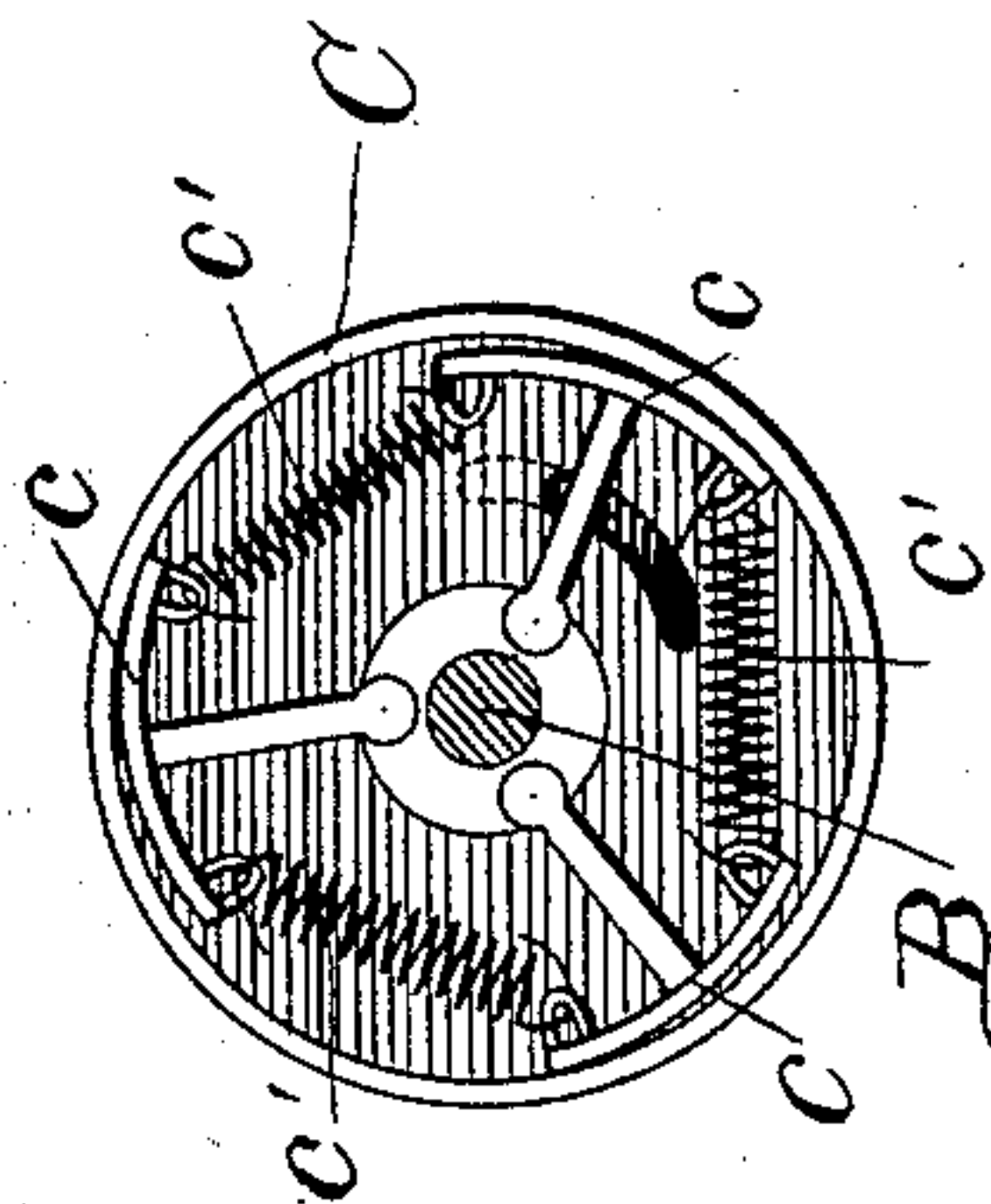


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES T. BROWN, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF
TO FLORA L. BROWN, OF SAME PLACE.

CAR STARTER AND BRAKE.

SPECIFICATION forming part of Letters Patent No. 277,863, dated May 15, 1883.

Application filed March 1, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. BROWN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car Starters and Brakes, to be used in connection with street-cars drawn by horses, cable, &c., of which the following is a specification.

I am aware that there have been a large number of patents granted for car-starters, and car starters and brakes, and that a large number of attempts have been made to produce a car starter and brake; but as far as I am able to learn, and I have made diligent search concerning the same, no car-starter or car starter and brake has been heretofore made by any person or persons which involves the principle upon which my invention is founded, and all car-starters heretofore invented have been so complicated in their construction as to be liable to frequent accidents and breakage, and require so much machinery as to add very materially to the power required to haul the car upon which the same is placed, and have required so much care and skill in the operation of the same that they could not be practically used. For these reasons and many others, among all the car-starters or car starters and brakes that have been heretofore made and patented, no one has been invented, found, or discovered which was sufficiently simple, economical, safe, durable, noiseless, and easy of operation and easy running to insure its adoption into practical use.

The object of my invention is to furnish a car starter and brake simple in its construction, having but few parts, and those easily adjusted and put together and not liable to get out of order; durable, with no parts or pieces subject to rapid wear or liable to breakage, and those parts or pieces that sustain the slight wear necessarily required so adjusted and operated as to improve in their manner of working and safety by such wear, and these parts or pieces also being so arranged and placed as to be at all times protected from the dirt and dust of the street; safe, being automatic in its working and requiring no care, skill, or attention on the part of the operator

or driver above that required by an ordinary brake, and no instructions concerning the manner in which the same shall be applied; noiseless, causing no annoyance to persons riding in said cars or persons in the street; rapid and sure in its application, and by means of which the car can be stopped at once, if desired, (in case of an accident or liability to an accident from obstructions in the street,) and which shall hold the car and its stopping at all times under the complete control and management of the driver; safe and sure, being at all times in gear ready to operate, thus enabling the driver to use it at any moment; easy running, and thus not adding in any material degree to the draft required to haul the car; self-locking, in order to prevent the car from moving backward; automatic in all its parts, and easily adjusted to allow the car to run in an opposite direction.

I have illustrated my invention by the drawings accompanying this specification, and forming a part thereof, in which—

Figure I is an elevation, showing my invention attached to the bottom of a car. Fig. II is a bottom view of my invention attached to the bottom of a car. Fig. III is a cross-section on line 3 3 of Fig. II. Fig. IV is an interior view of the brake wheel or drum that revolves slowly, showing the reversible levers or dogs, and showing also the hub of the brake wheel or drum that revolves rapidly. Fig. V is a section on line 5 5 of Fig. III, showing the brake wheel or drum that revolves rapidly, and the manner of reversing the reversible levers or dogs. Fig. VI shows a different manner of operating brakes X X' by means of a split or double lever.

Like letters refer to like parts throughout the several views.

A A' are two wheels placed on and firmly attached to the axle of the car, revolving at all times in unison with said axle.

B is a shaft attached or suspended from the body of the car by means of hangers B' B' or suitable journals.

C D are two wheels, placed one upon each end of shaft B. Wheels C D may both revolve loosely on shaft B. One of the wheels C D must revolve loosely upon said shaft B. Wheels

A A' C D are of different sizes, and must necessarily be so arranged that the rotation of the axle of the car, with wheels A A' placed thereon, shall produce different rates of speed in the revolution of wheels C D. Wheels A A' C D are connected by means of belt, gearing, or chain in the manner shown in the drawings. I prefer to use sprocket-wheels and chain, as here shown.

C' is a brake wheel or drum attached to and forming a part of wheel C.

c c c are reversible levers or dogs placed on or let into the hub of said brake wheel or drum C'. These reversible levers or dogs are attached together by means of springs c' c' c', so as to work or move in unison with each other.

D' is a brake wheel or drum revolving loosely on shaft B by the side of and in contact with brake wheel or drum C'. The reversible levers or dogs c c c are in contact with the inner surface of brake wheel or drum D'.

E is a coiled or spiral spring, attached at one end to brake wheel or drum D' and at the other end to wheel D. Spring E is composed of two, four, or more coils of wire, one inside of the other, each alternate coil being wound in the opposite direction from the other, in order to allow sprocket-wheel D and brake wheel or drum D' to rotate or twist in either direction from the other on shaft B, and to be brought back to their normal condition by the action of said spring E.

X X' are brakes pressing against brake wheels or drums C' D'.

F is a lever connected to brake X (or X', if preferred) by rod or chain Y.

G is a movable platform placed on lever F, and to be transferred or placed by the driver on the end of the car on which he is driving.

H is the ordinary brake rod or handle now in use, and is connected to brake X' (or to brake X, if preferred) by rod or chain W.

J is a spring controlling the reversible levers or dogs.

X X' are brakes operating against brake wheels or drums C' D'.

I prefer that wheel C and brake wheel or drum C' shall revolve from two to eight times as fast as wheel D, spring E, and brake wheel or drum D' when the car is moving and no brakes applied, although if wheel C and brake wheel or drum C' revolve any faster than wheel D, spring E, and brake wheel or drum D', the principle of my invention is involved. An inspection of Fig. IV shows in what manner the reversible levers or dogs attached to or placed in the hub of brake wheel or drum C', and pressing against the inner surface of brake wheel or drum D', will allow of this rapid rotation of said brake wheel or drum C' in either direction, as is desired, (controlled by the position of said levers or dogs c c c.) These levers are held in their proper position by spring J.

The manner of operation of my invention is

as follows: The car is supposed to be moving in the direction shown by the arrow on Fig. I. Sprocket-wheels A A' on the axle of the car revolve or rotate in the direction shown by the arrow in Fig. I. Wheels C and D revolve in the same direction. For the purpose of this description I will suppose or assume wheel A' and wheel C to be six inches in diameter and wheels A and D to be twelve inches in diameter. If wheels A A' and the axle of the car revolve two times, wheel C will revolve four times and wheel D will revolve once. Wheel D in its revolution will carry with it spring E and brake wheel or drum D'. Brake wheel or drum C' revolves in unison with sprocket-wheel C, to which it is attached or of which it forms a part, as above described. Thus, ordinarily, while the car is in motion, the two brake wheels or drums C' and D' revolve side by side, brake wheel or drum D' revolving once while brake wheel or drum C' revolves four times, the reversible levers or dogs c c c being adjusted before the trip is commenced, to allow of these different rates of speed in said brake wheels or drums.

To stop the car, rod or chain W, by means of rod or handle H, is wound around said rod, and brake X' is pressed firmly against brake wheel or drum D', thereby preventing said brake wheel or drum from revolving, and thus the rotation of the car-axle necessarily winds spring E, the power required to wind this spring E stopping the car. Assuming that brake X' has been held sufficiently firm against brake wheel or drum D' to completely prevent it from revolving, and that the axle of the car has revolved twice, sprocket-wheel D has turned around once, carrying with it the end of spring E, to which it is attached, and the car has stopped. As soon as the car comes to a full stop the spring E has a tendency to unwind and carry sprocket-wheel D backward; but the slightest movement backward of said sprocket-wheel necessarily causes the same backward movement in sprocket-wheel C and brake wheel or drum C', attached thereto. This backward movement of said brake wheel or drum C' is prevented by the reversible levers or dogs c c c, which are thus brought into a position, firmly locking the two brake wheels or drums together. Therefore the car cannot go backward, and will remain stationary as long as brake X' is thus pressed, as described, against brake wheel or drum D'.

To start the car, brake X' is released by releasing rod or handle H. Spring E has a tendency to unwind or untwist or revolve at both ends, the end attached to sprocket-wheel D tending to turn in a direction contrary to that in which it turned while the car was stopping, and the end attached to brake wheel or drum D' having a tendency to turn in the same direction in which sprocket-wheel D turned while the car was stopping. It is evident that brake wheel or drum D' may turn in unison with brake wheel or drum C', and one revolution of

these brake wheels or drums causes the axle of the car to turn one-half around, and at the same time causes sprocket-wheel C to turn one-fourth around. The spring E is now three-fourths unwound. Brake wheel or drum D' continues to revolve in unison with brake wheel or drum C' until the spring E is entirely unwound by reason of the different rates of speed of brake wheel or drum D' and sprocket-wheel D, or, as I term it, by reason of the differential motion produced by the arrangement of wheels A, A', C, and D, as before described. Three levers or dogs, *c c c*, are used and placed, as described and shown in the drawings, on the hub of brake wheel or drum C', and, coming in contact with the inner surface of brake wheel or drum D', in order to relieve the shaft B from all friction and wear in the locking together of the two brake wheels or drums, (and but one lever or dog may be used, if preferred,) the levers or dogs are placed inside of the brake wheels or drums, in order to keep the wearing-surfaces free from dirt and dust, and all the said surfaces are made smooth, so that the wear to which they are subjected may not interfere with or prevent the perfect and immediate locking of the said brake wheels or drums together; but, on the contrary, the wear to which these parts are subjected will increase the speed and safety with which the said dogs or levers shall act in locking the two brake wheels or drums together. Another object in placing the said dogs or levers as before described is to prevent any or all possible noise being heard from their action.

Brake X and connecting-lever F, with platform G, are intended to be used in case of accident or liability to an accident from an obstruction in the street, when it may be necessary that the car be stopped suddenly by a direct and positive action, without the intervention of the spring E, or in conjunction with the spring E, thus deriving whatever advantage may be had from the spring. Brake X may also be used if the car-starter should break or become injured in any of its parts.

I do not consider the arrangement of brake-rod H and lever F with platform G a necessary part of my invention, as the brakes X X' may be operated by means of a split or double lever, as shown in Fig. VI, or by any other suit-

able means; and, further, any form of brake desired may be used in place of the precise form shown in X X'.

Having thus described my invention and its method of operation, what I claim, and desire to secure by Letters Patent, is—

1. In a car starter and brake, the combination of wheels placed on the axle of the car and fastened firmly thereto, a shaft parallel to said axle, having placed thereon a spring attached at one end to a brake wheel or drum, and attached at the other end to a wheel turned by one of said axle-wheels, a second brake wheel or drum alternately turning or turned by the other of said axle-wheels in the same direction but at a greater rate of speed than first-named brake wheel or drum, arranged in such manner that when the brake wheel or drum attached to one end of the spring is prevented from revolving in unison with the wheel attached to the other end of the spring the spring shall be wound by said wheel, and when said brake wheel or drum is released it may revolve more rapidly than said wheel, and in the same direction as said wheel, by the unwinding of said spring, thereby moving the car forward through the medium of said second brake wheel or drum, the whole arranged, operated, and controlled substantially as described, and for the purpose specified.

2. The combination of two hollow brake wheels or drums with reversible levers or dogs placed in the inside thereof, arranged to lock against the hub of one of said hollow brake wheels or drums and against the inner surface of the other of said hollow brake wheels or drums, said reversible levers or dogs being connected together by springs and acting in unison with each other, and in such manner that the reversing of one of said arms or levers shall reverse all of said arms or levers, while the shaft upon which said brake wheels or drums are placed is relieved of any and all strain or friction by such locking, all arranged, operated, and controlled substantially as described, and for the purpose specified.

CHARLES T. BROWN.

Witnesses:

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ADELBERT HAMILTON.