No. 661,279. Patented Nov. 6, 1900.

H. C. SEARS.

HANSOM CAB.

(Application filed Apr. 8, 1899.)

(No Model.)

4 Sheets—Sheet 1.

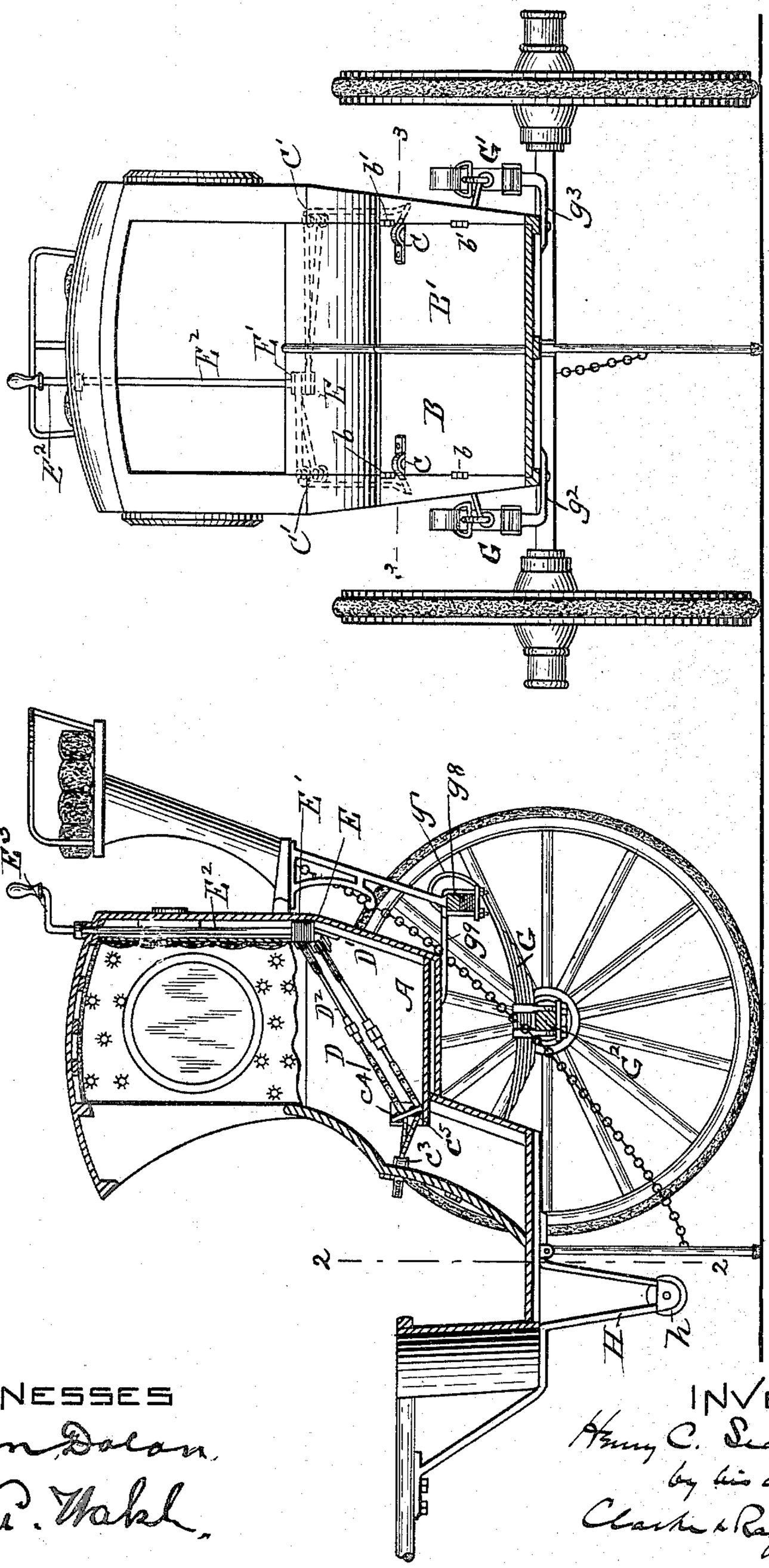

FIG. 1.

FIG. 2.

WITNESSES

J. M. Dolan.

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(No Model.) 4 Sheets—Sheet 2.

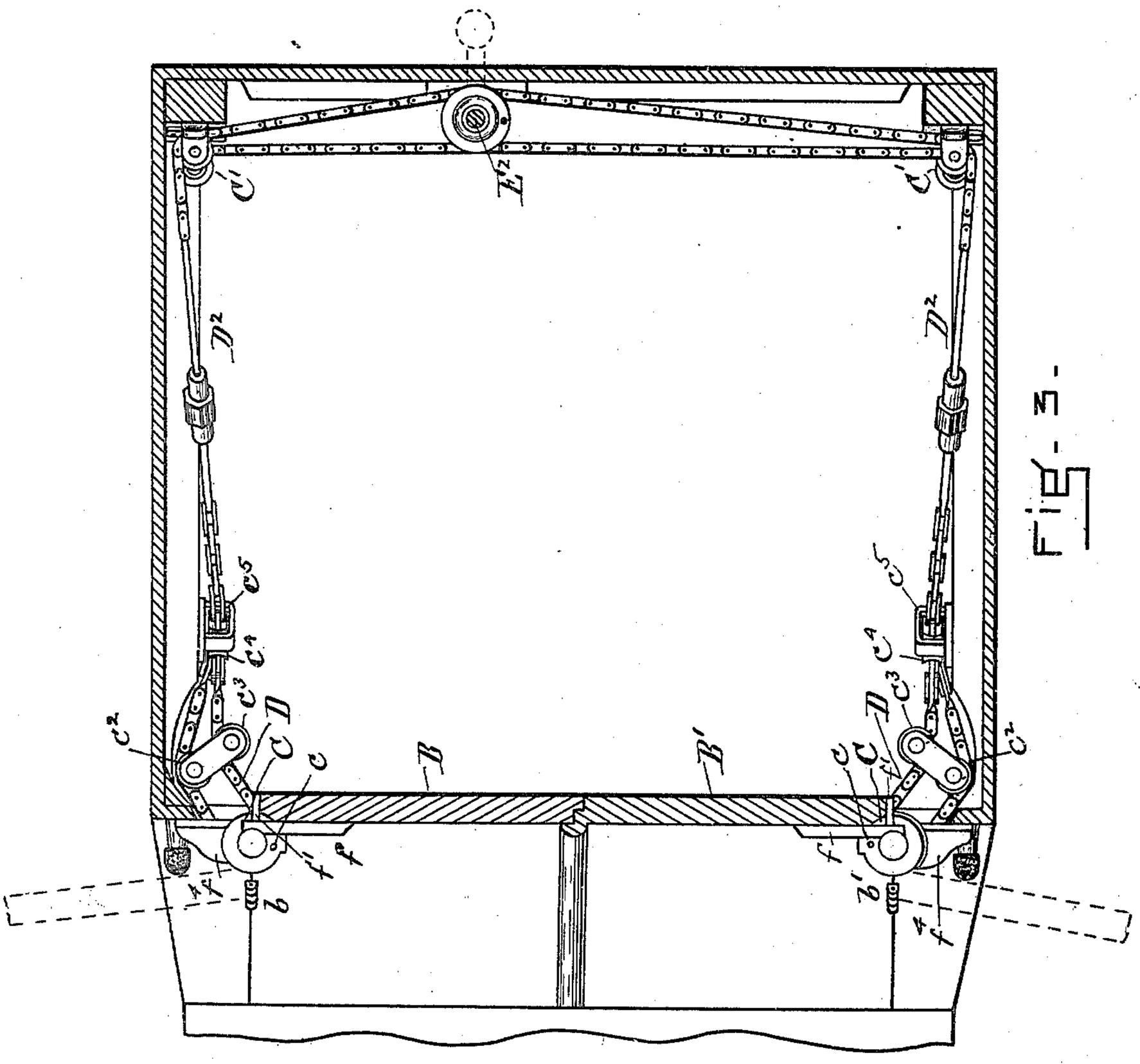

FIG. 3.

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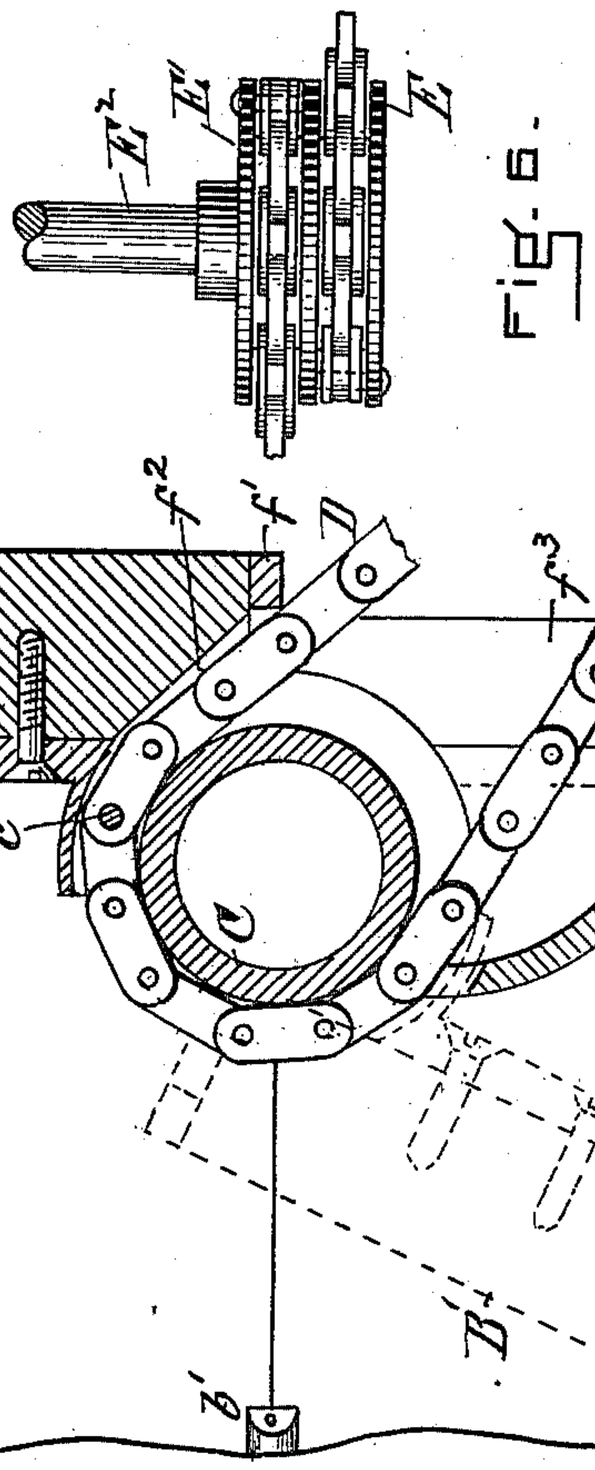

Fig. 5.

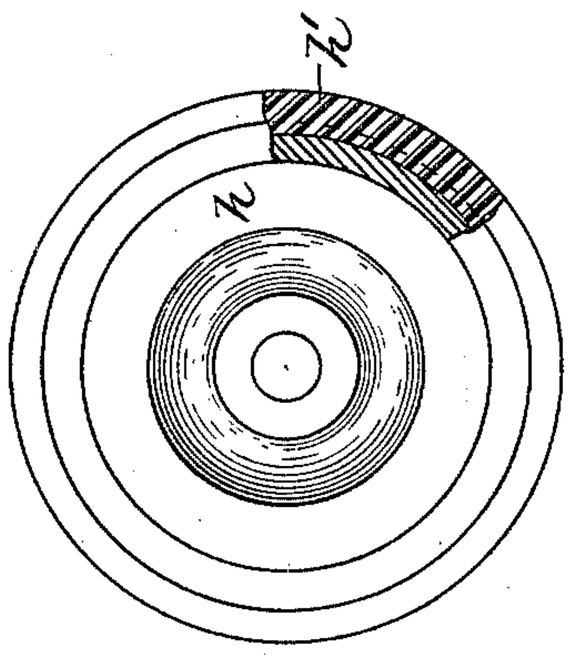

Fig. 4.

Fig. 6.

WITNESSES

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(Application filed Apr. 8, 1899.)

(No Model.) 4 Sheets—Sheet 4.

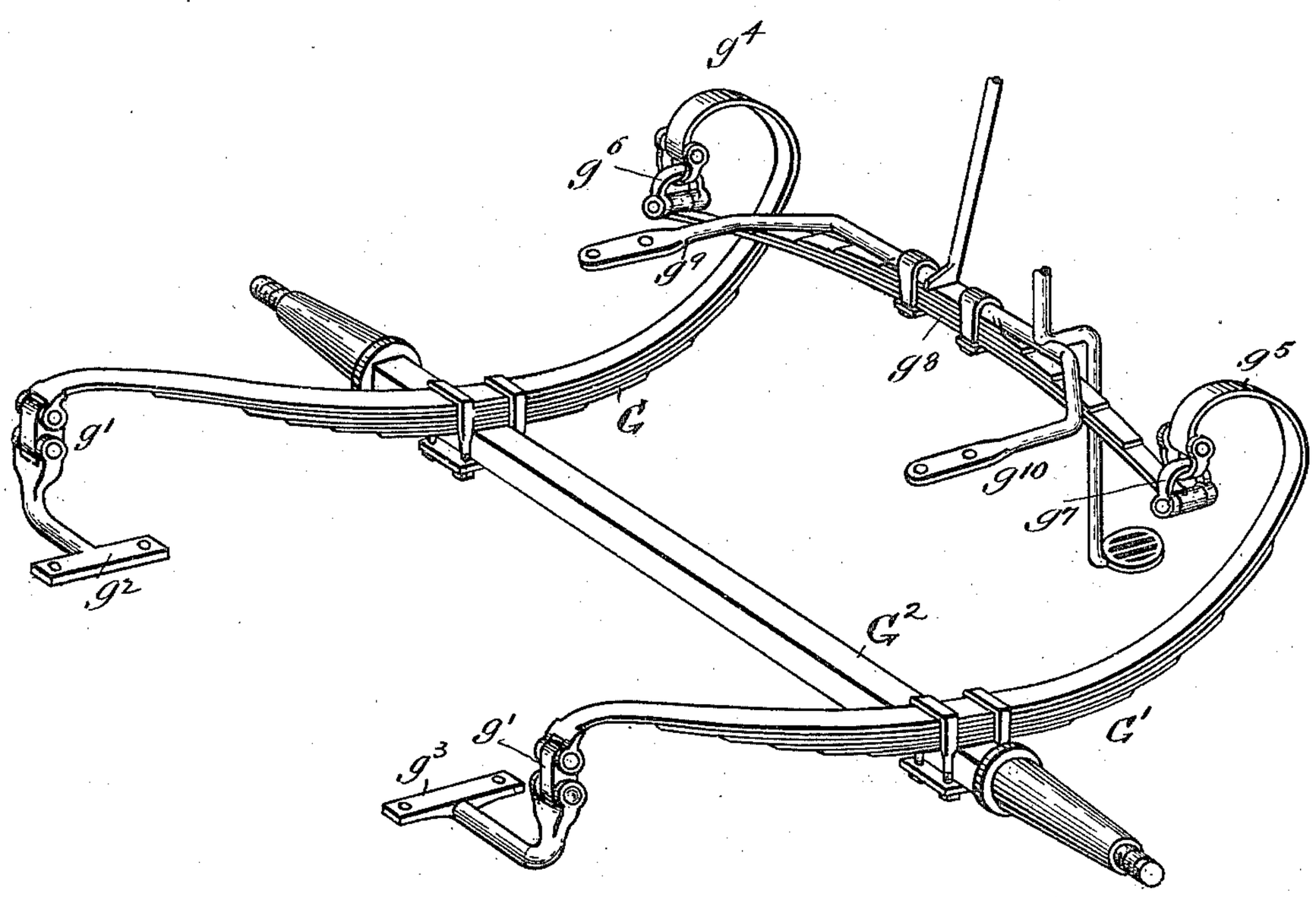

Fig. 7.

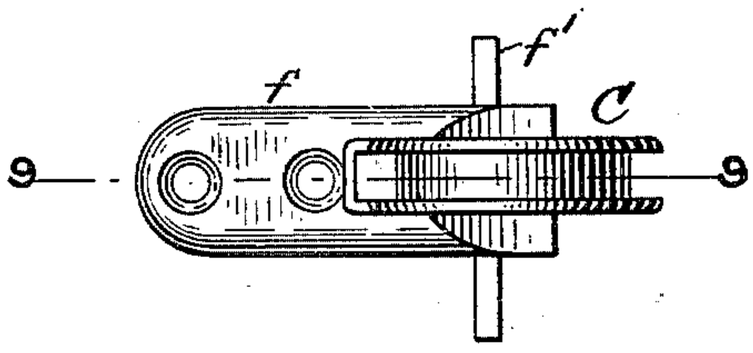

Fig. 8.

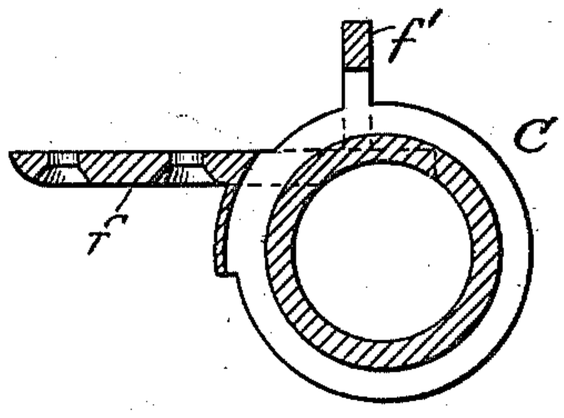

Fig. 9.

WITNESSES

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UNITED STATES PATENT OFFICE.

HENRY C. SEARS, OF BOSTON, MASSACHUSETTS.

HANSOM-CAB.

SPECIFICATION forming part of Letters Patent No. 661,279, dated November 6, 1900.

Application filed April 8, 1899. Serial No. 712,236. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. SEARS, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Devices for Opening and Closing the Doors of Hansom-Cabs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to the devices for opening and closing the doors of a hansom-cab, which are adapted to be operated from a point adjacent to the driver's seat.

In the drawings, Figure 1 is a view of the cab principally in vertical section from front to rear, showing the application of my invention to it. Fig. 2 is a view in front elevation of the cab back of the dotted line 2 2 of Fig. 1. Fig. 3 is a view of the cab, enlarged, in horizontal section upon the dotted line 3 3 of Fig. 2. Fig. 4 is a view, principally in elevation, of a safety-roll hereinafter described. Fig. 5 is a detail view, enlarged, in horizontal section and plan, representing in full and dotted outlines the closed and open positions of a portion of a door and in full line a drum or roll applied to it and also showing a portion of the front casing of the cab and the door-operating chain and a cover or casing for the chain. Fig. 6 is a view in elevation of the turning-drum, a portion of the two door-operating chains extending about it and the lower end of the turning rod or spindle. Fig. 7 is a view in perspective of the running-gear of the cab, to which reference will be hereinafter made. Fig. 8 is a view in plan of one of the door-turning drums or wheels removed from it, and Fig. 9 is a view in section of the same upon the dotted line 9 9 of Fig. 8.

A represents the body of the cab. This is of ordinary form and has the usual front opening, which is adapted to be closed in part by the doors B B′, pivoted or hinged to the front case of the body at *b b′*, respectively, and so that they may open and close in relation to each other and the body in the customary manner.

There is attached to each door at its hinged edge a drum or wheel C, attached to the door to turn therewith and to which is attached or pinned at *c* its operating or turning chain D. There are two of these chains—one for each door—and each is endless, passing around each of the door wheels or drums C, through a cavity in the sides of the body between the outer wall and lining, and about guiding-rolls C′ at the rear corners of the body to the turning-drums E E′ at the lower end of the vertical spindle or rod E^2. Each chain also passes from the door wheel or drum upon its respective door about the guiding-rolls C^2 C^3, (see Fig. 3,) all of which serve to direct the course of the chain from the door to the turning-drum and to hold it separated. The turning wheels or drums E E′ are preferably formed in one casting (see Figs. 4 and 6) and provided with deep grooves to receive the two chains. Each chain has in its length a section D^2, consisting of two screw-rods, to the outer ends of which chains are connected, and which screw-rods are connected by a turnbuckle, and this affords means by which the length and tautness of the chain may be varied.

The vertical spindle or rod E^2, to which the door-turning drums are secured, is at the back of the vehicle, between the lining and the outer casing, and it extends upward through the roof and has above the roof, at the right hand of the driver's seat, a crank E^3, by which it may be turned in one direction or the other, according as it is desired to open or close the doors. Upon turning the shaft or rod in one direction motion is communicated to the chains through their drums at the lower end of the rod and the chains caused to draw upon the doors, and thereby simultaneously open them or simultaneously close them, according to the direction in which the crank is turned, the chains exerting a drawing or turning action upon the wheels or drums C, attached to the doors. The chains are also so led from the turning-drums to the door-drums that the movements of the doors are either toward each other or away from each other. The device also serves to hold the doors opened or closed. The door drums or wheels are of such size and are so located as to provide each chain with a relatively large purchase upon the door it operates. Each door

drum or wheel is attached to its respective door by ears $f f'$, arranged at a right angle to each other, and which are fastened one to lap upon the inner edge and one upon the front of the door, (see Figs. 3, 8, and 9,) and they are fastened to the door by screws. Each edge has a hole f^2 extending through it at its junction with the wheel or drum to provide room for the chain in continuation of the groove in the drum or wheel.

The front wall of the cab adjacent to each door has a recess f^3, which is in line with the groove of the drum or wheel C, which also provides space for the chain, by which it is enabled to pass to the guiding and directing rolls c^4 c^5, and this recess may be covered by a housing f^4, (see Fig. 3,) fastened to the front wall of the cab. The operating devices are entirely protected and concealed both upon the sides and at the back by the lining of the body and its outer wall.

The weight of a hansom-cab loaded or unloaded should be borne entirely by the axle. Heretofore, however, this has not been the case, and as a consequence the downward stress has been thrown upon the shafts, and consequently on the horse, or an upward stress, according to the change in the center of gravity of the cab and its load, according as the load was increased or decreased. This has been due very largely to the manner of hanging the cab on the axle, whereby excess of load caused variation in the center of gravity. I have overcome this disposition of the center of gravity to shift by variations in load by means of the hanging-gear, (represented in Figs. 1, 2, and 7,) comprising the C-springs G G', attached to the axle G^2, having at their forward ends shackles g g', from which the forward end of the body is suspended by means of hanger-brackets g^2 g^3, attached to the bottom, and the rear ends g^4 g^5 of the springs describe a large upward and inward curve and suspend, by means of shackles g^6 g^7, the cross-spring g^8, which has forward-extending arms g^9 g^{10}, upon which the rear part of the body is mounted. With this construction compression of the springs G G' by additional weight does not vary the center of gravity of the loaded cab. This construction is of my invention and forms the subject of another application. The cab is also provided with a V-shaped hanger H, attached at its upper end to the forward part of the body-frame to project downward, and they have mounted between them at their lower ends a roll h, which is covered with a thick cushion h', of rubber. This roll is so located that upon the falling of the horse or breaking of the shafts it will prevent the body of the vehicle from dropping to the ground or falling forward sufficiently to cause accident to the occupant of the cab, and the roll being covered with rubber causes it to act as a buffer in mitigating the severity of a shock.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a hansom-cab or other vehicle swinging doors hinged near the front corners of the body of the vehicle and means for opening and closing them from behind the vehicle comprising a spindle located at the back of the vehicle and running vertically downward within its outer wall to a point considerably below the roof and carrying a double drum fast to its lower end, drums or wheels fixed to said doors near their hinged ends and endless draw chains or cords extending about said door-drums along the sides of the body of the vehicle to the back thereof and around said double drum as and for the purposes set forth.

2. In a hansom-cab or other vehicle swinging doors hinged near the front corners of the body of the vehicle and means for opening and closing them from behind the vehicle comprising a spindle located at the back of the vehicle running vertically downward within its outer wall to a point considerably below the roof and carrying a double drum fast to its lower end, drums or wheels fixed to said doors near their hinged ends and endless draw chains or cords extending about said door-drums along the sides of the body of the vehicle to the back thereof and around said double drums, each draw-chain being provided with an adjustable section by means of which its length may be adjusted as and for the purposes set forth.

3. In a hansom-cab or similar vehicle swinging doors hinged near the front corners of the body of the vehicle and means for opening and closing them from behind the vehicle comprising a spindle located at the back of the vehicle running vertically downward within its outer wall to a point considerably below the roof and carrying a double drum fast to its lower end, drums or wheels fixed to said doors each having ears arranged to project therefrom at a right angle with relation to each other and also having holes or recesses in continuation of the groove or runway thereof in combination with endless draw chains or cords extending about said door-drums along the sides of the body of the vehicle to the back thereof and around said double drums as and for the purposes set forth.

4. In a hansom-cab or similar vehicle the swinging doors B, B', the drums or wheels C each attached to the hinged edge of one of said doors outside the center of its hinges, endless chains attached to said drums or wheels and extending along the sides of the body of the vehicle, means for adjusting the length of said chains, the guiding and spacing rolls c^2, c^3, c^4 and c^5 in combination with the turning-spindle E^2 carrying the drums E, E' fast thereon and a crank or the like E^3, the said drums E, E' receiving said endless chains, said spindle E^2 and its drums E, E'

all lying within the body of the cab and in line with the guiding and spacing rolls whereby said endless chains will pass directly over said carrying-drums and said guiding and spacing rolls, all arranged together as set forth.

5. The wheel or drum C having ears *f*, *f'* arranged to project therefrom at a right angle with relation to each other and also having holes or recesses in continuation of the groove or runway of the wheel or drum as and for the purposes set forth.

HENRY C. SEARS.

In presence of—
J. M. DOLAN,
F. F. RAYMOND, 2d.