

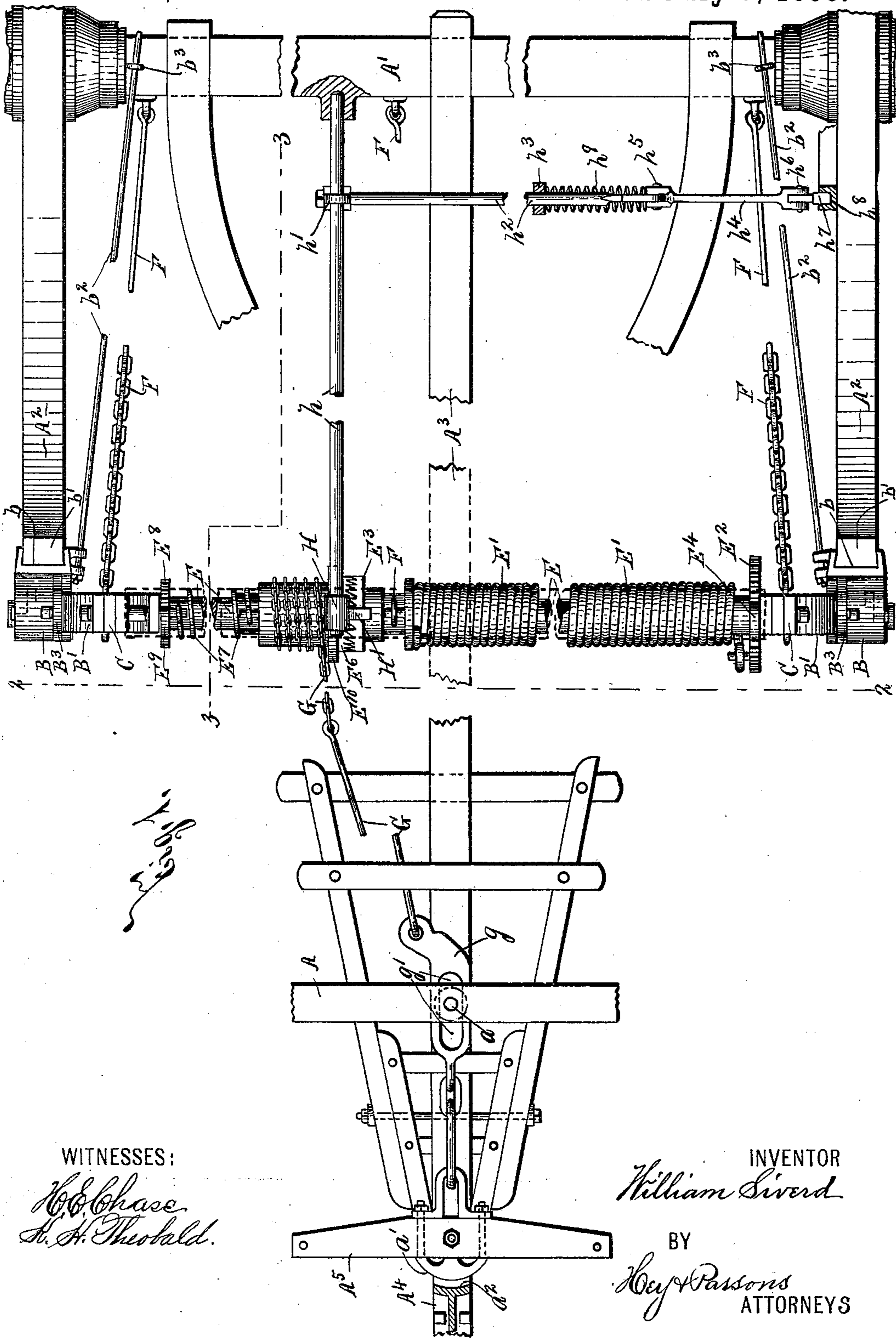
(No Model.)

3 Sheets—Sheet 1.

W. SIVERD.
WAGON BRAKE.

No. 542,397.

Patented July 9, 1895.



WITNESSES:

H. Chase
H. H. Thorbald

INVENTOR

William Siverd

BY

Hay & Parsons
ATTORNEYS

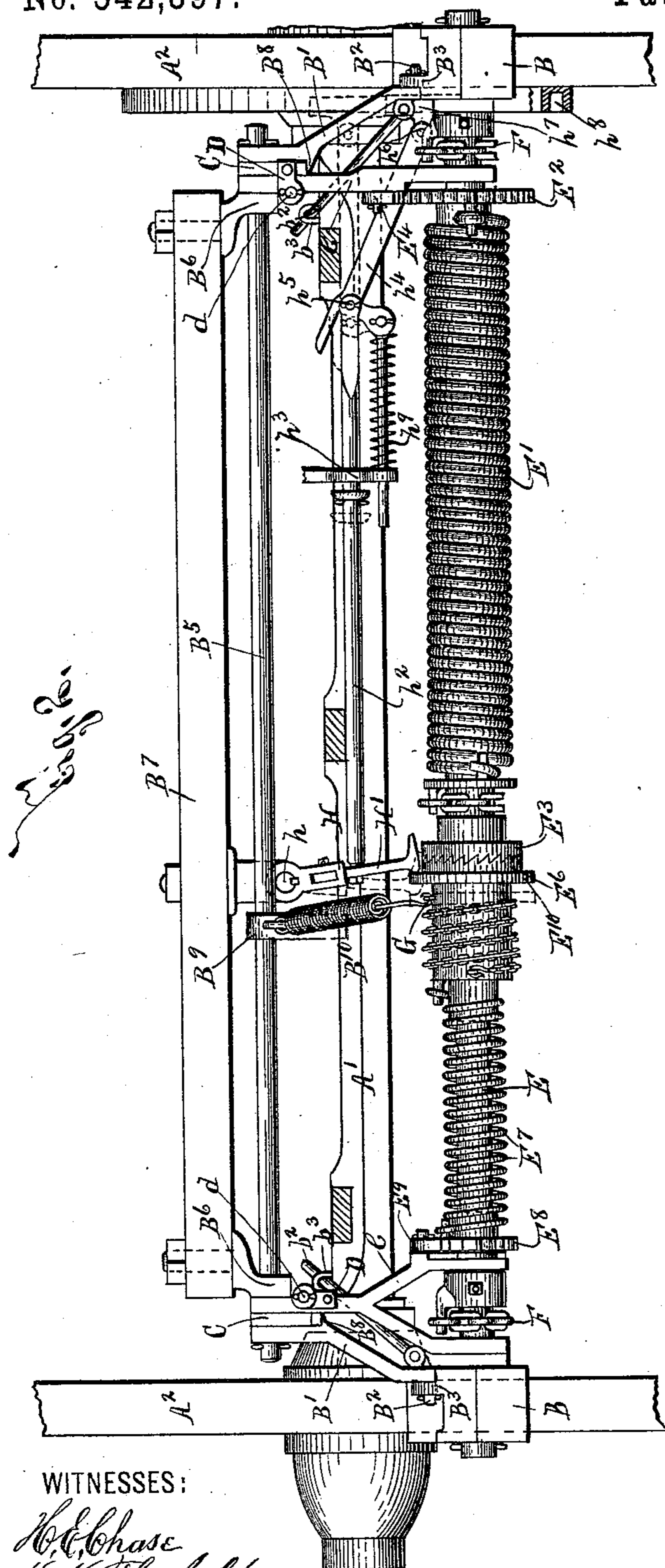
(No Model.)

3 Sheets—Sheet 2.

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No. 542,397.

Patented July 9, 1895.



WITNESSES:

H. C. Chase
H. H. Theobald.

INVENTOR

INVENTOR
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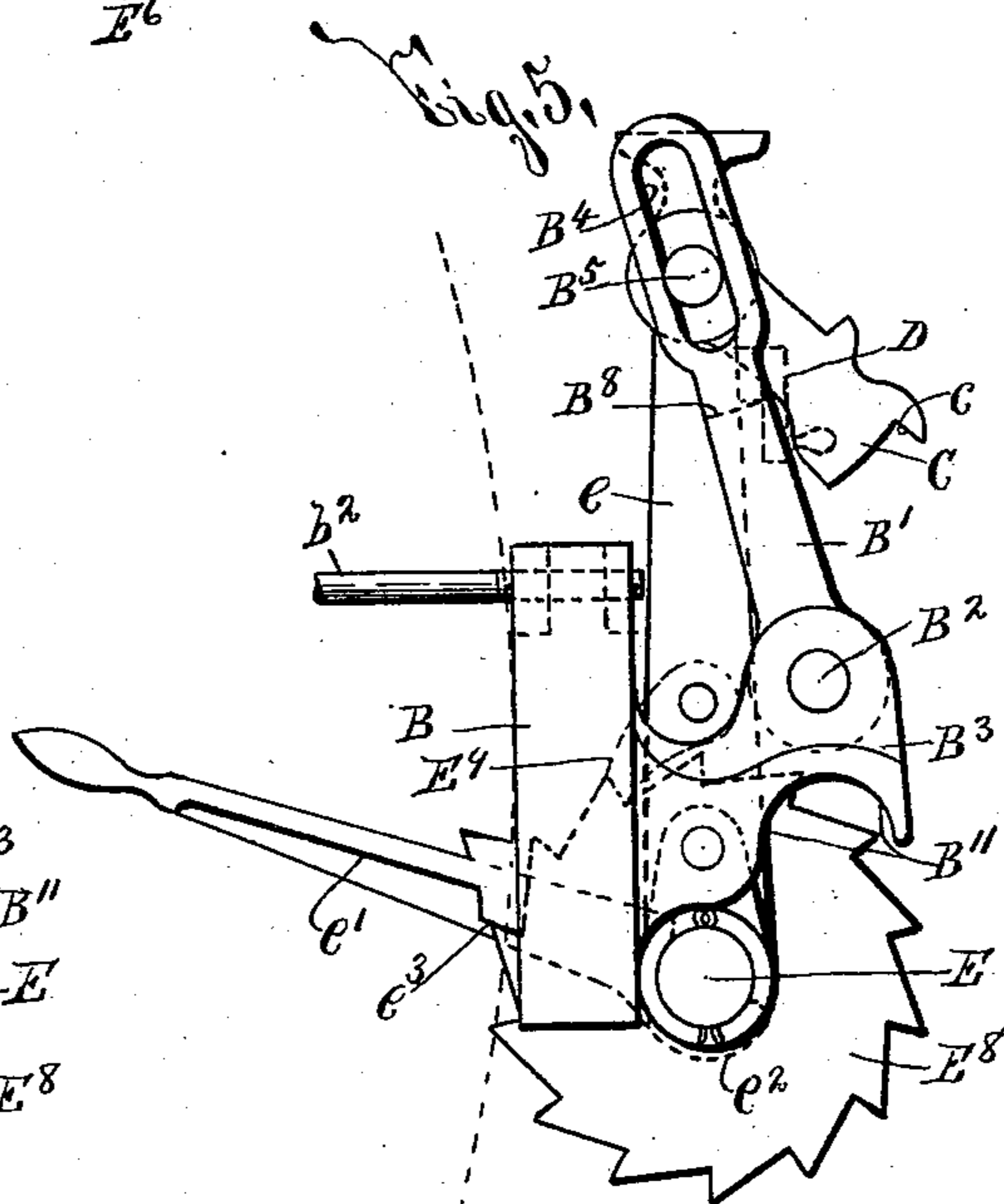
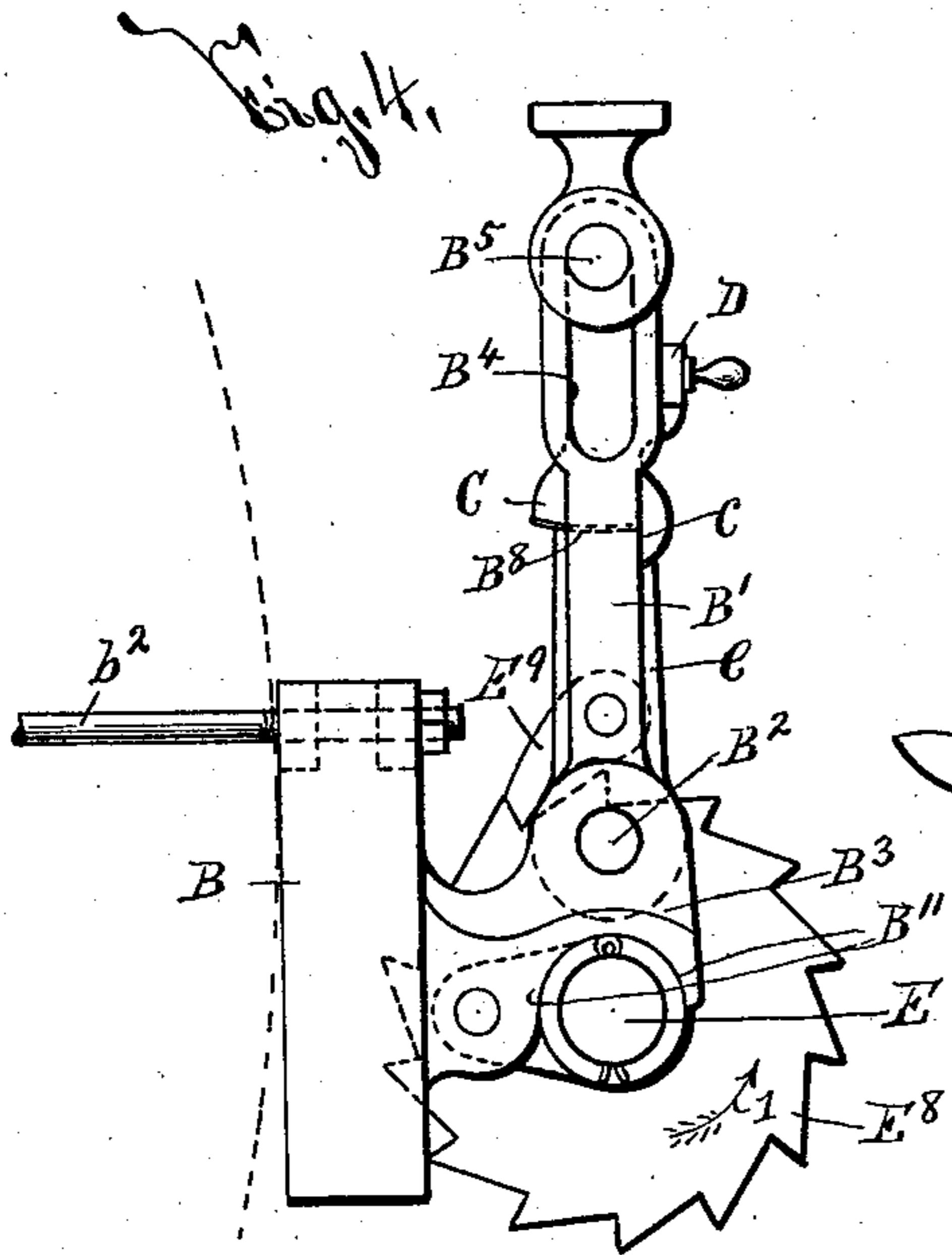
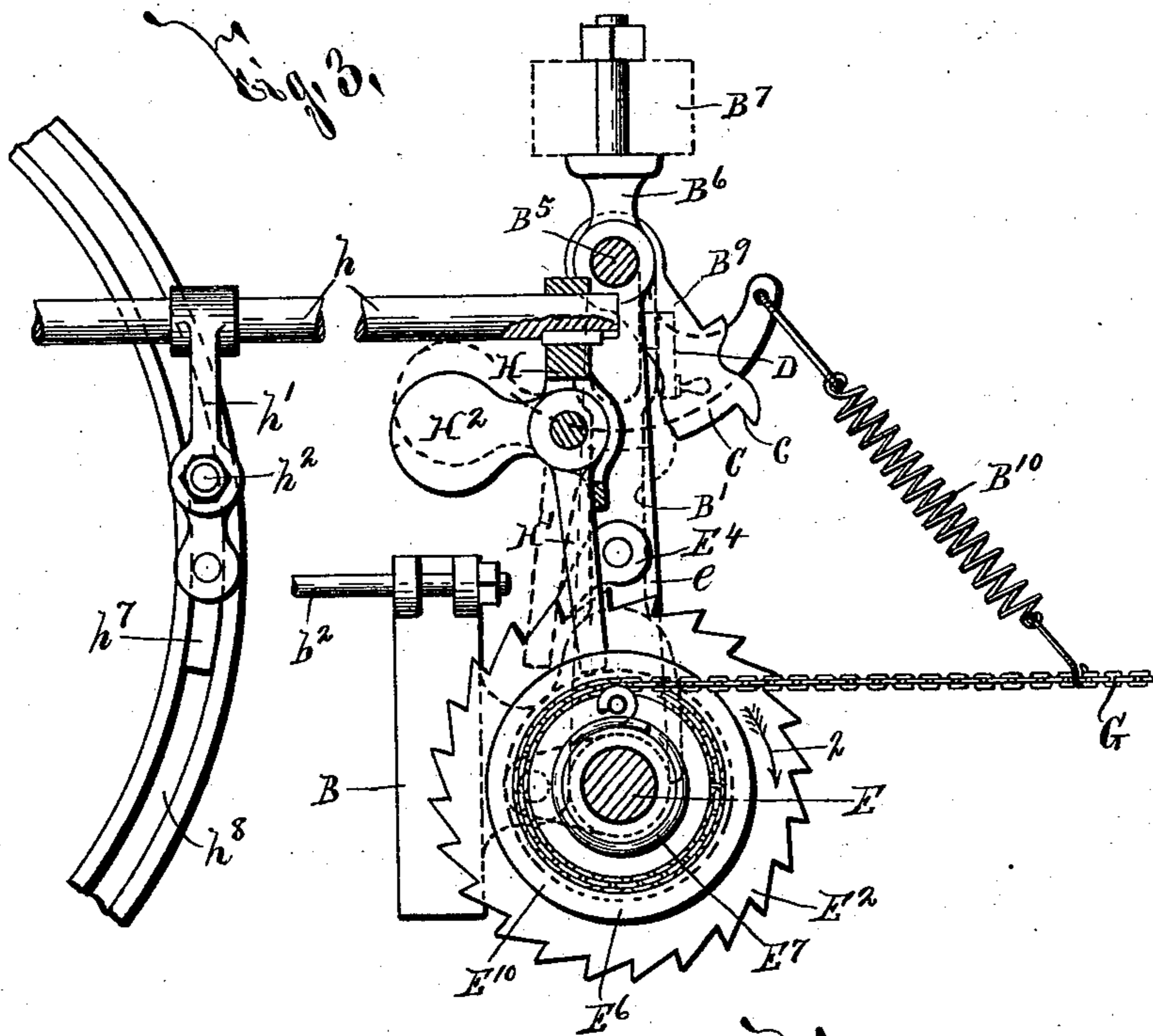
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3 Sheets—Sheet 3.

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WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM SIVERD, OF PORTAGEVILLE, NEW YORK.

WAGON-BRAKE.

SPECIFICATION forming part of Letters Patent No. 542,397, dated July 9, 1895.

Application filed December 6, 1894. Serial No. 530,962. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SIVERD, of Portageville, in the county of Wyoming, in the State of New York, have invented new and useful Improvements in Brakes, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in brakes, and has for its object the production of a practical device, which efficiently holds the vehicle to which it is applied, either when ascending or descending a hill, and does not retard the backward movement of the vehicle when on level ground; and to this end it consists, essentially, in the general construction and arrangement of the component parts of the brake, all as hereinafter more particularly described, and pointed out in the claims.

In describing this invention reference is had to the accompanying drawings, forming a part of this specification, in which like letters indicate corresponding parts in all the views.

Figure 1 is a top plan view of my improved brake, shown as operatively secured to detached parts of a vehicle, the supporting cross-bar above the spring for actuating the brake being shown by dotted lines for permitting a clear illustration of the underlying parts. Fig. 2 is a transverse vertical sectional view taken on line 2 2, Fig. 1. Fig. 3 is a detail sectional view taken on line 3 3, Fig. 1; and Figs. 4 and 5 are detail side elevations of the brake-shoes, the shaft for actuating the brake-shoes, and the supports for said parts, the brake-shoe being shown in its operative position at Fig. 4 and in its inoperative position at Fig. 5.

My improved brake may obviously be used with any desired form of vehicle, and I have here shown the same as operatively secured to detached parts of the running-gear of a vehicle—viz., front and rear axles A A', rear wheels A² A², a reach A³, a tongue A⁴, and a doubletree or equalizing-bar A⁵. The brake-shoes B B are of suitable form and construction and are arranged in the usual position in proximity to the front faces of the rear wheels A² A², and suitable grooves or guides b b are formed in their rear faces for receiving wearing-strips b' b' of wood or other simi-

lar material. The brake-shoes B B are guided in their movement by rods b² b², having their front ends suitably secured to said shoes and their rear ends movable in guides b³ b³, secured to a substantially-fixed part of the vehicle, as the rear axle A'.

B' B' are upright supports movable up and down and having their upper extremities hinged and their lower extremities pivoted at B² B² to arms B³ B³ projecting from the front sides of the shoes B B. The upper extremities of the supports B' B' are preferably provided with lengthwise slots B⁴ B⁴ for receiving the opposite ends of a rocking spindle or shaft B⁵, which is mounted in bearings B⁶ B⁶, secured to a suitable cross-bar B⁷, supported beneath the vehicle-box. (Not necessary to herein illustrate.) The upper extremities of the supports B' B' are thus free to move up and down and to swing upon the opposite ends of the rocking spindle or shaft B⁵, and it will be obvious that said shaft may be otherwise supported beneath the vehicle-box, especially if a low-down vehicle-box is used. It is unnecessary, however, to illustrate or describe any additional means of supporting said spindle or shaft, as the same forms no part of my present invention.

C C are stops for normally preventing the upward movement of the supports B B, and when said supports are in their normal position, as clearly indicated at Figs. 1, 2, 3, and 4, their lower extremities engage shoulders B⁸ B⁸ upon the inner sides of the supports B' B' and are provided with shoulders c c for engaging the front faces of the shoulders B⁸ B⁸. The upper ends of the stops C C are fixed to the rocking spindle or shaft B⁵, and a suitable counterweight B⁹ is secured to said spindle or shaft for normally forcing the same from its operative position, so that the stops C C do not prevent upward movement of the supports B B. The upper extremity of a suitable spring B¹⁰ is connected to the counterweight B⁹ for rocking the same from its operative position, so that the supports B B are prevented from upward movement, and the lower extremity of said spring is secured to a connection G, presently described. I also provide additional stops D D for holding the stops C C in their normal position, and, as clearly seen at Fig. 2, corresponding extremi-

ties of the stops D D are mounted upon pivots $d d$, secured to supports $e e$, presently described, and the free extremities of said stops are movable in front of the stops C C, as clearly seen at Figs. 2 and 4.

In the practical use of my brake the forward movement of the vehicle causes a downward movement of the front faces of the rear wheels, and there is no liability whatever of the elevation of the brake-shoes. On the contrary, when the vehicle is moved backwardly on a level surface, the reverse movement of the front faces of the rear wheels tends to elevate the brake-shoes, and the peculiar construction of their supports permits of upward and forward movement thereof, and there is no liability of retardment of such backward movement of the vehicle by the brake-shoes, which, as presently stated, are normally in operative engagement with the adjacent vehicle-wheels.

The stops D D; for preventing the automatic movement of the stops C C and the consequent movement of the brake-shoes B B from their operative position, are only used when the vehicle is about to descend a hill having an icy or slippery surface, as experience has demonstrated that when the rear vehicle-wheels strike such a surface the brake-shoes immediately tend to assume an inoperative position and cannot be returned to their normal position until the vehicle is at the foot of the hill. This undesirable result is thought to be due either to an acceleration of the momentum of the vehicle or a sudden decrease in the strain upon the parts produced by the operative engagement of the brake-shoes with the rear vehicle-wheels, since, as presently described, the brake-shoes are always engaged with the vehicle-wheels when the horses or other draft animals are not pulling forwardly with sufficient force to separate said shoes from the adjacent wheels.

E is a shaft arranged beneath the plane of the rear axle A' and having its opposite extremities journaled in supports $e e$, depending from the opposite extremities of the spindle or shaft B⁵ and arranged at the inner sides of the stops C C. A suitable spring E', of considerable tension, encircles one extremity of the shaft E, and one end thereof is secured to a tightening-wheel E² and its opposite end to a clutch-section E³, fixed to the shaft E. A stop-dog E⁴ engages the tightening-wheel E² for holding the same in its adjusted position. The spring E' is tensioned by a lever e' , having one end e^2 detachably engaged with the shaft E and its immediate portion formed with a shoulder e^3 for engaging the teeth of the wheel E² and revolving said wheel in the direction indicated by arrow 1 at Fig. 4. A clutch-section E⁶, loosely mounted on the shaft E, is arranged at one side of the clutch-section E³, and is normally engaged therewith by an open spiral spring E⁷, which also operates to rotate the clutch-section E⁶ upon the shaft E until said clutch-section assumes its

normal position. A suitable tightening-wheel E⁸ and a stop-dog E⁹ are used for producing and maintaining the desired tension of the spring E⁷. Suitable sleeves, not necessary to herein illustrate, may encircle the springs E' E⁷ for protecting the same from mud.

F F are connections, having their rear ends secured to a substantially-fixed part of the vehicle, as its rear axle A', and having flexible front ends movable around the shaft E as the same is revolved. The arms B³ B³ of the brake-shoes B B are formed with front and rear shoulders B'', arranged on opposite sides of the opposite extremities of the shaft E, and as the flexible ends of the connections F F are wound around said shaft the brake-shoes are forcibly drawn toward the rear wheels and their wearing-strips are positively engaged therewith.

The spring E' constantly tends to unwind itself and to wind the flexible ends of the connections F F upon the shaft E, and consequently said spring operates to constantly force the brake-shoes into operative position. The brake-shoes are, however, drawn away from their operative position whenever the vehicle is moving forwardly by means of a suitable connection G, connected to the clutch-section E⁶ for rotating the same in the direction shown by arrow 2 at Fig. 3 or in a reverse direction to that indicated by arrow 1 at Fig. 4. The rear extremity of the connection G is preferably wound upon the hub of the clutch-section E⁶, and its front extremity is connected to the doubletree A⁵ in any suitable manner, and said doubletree is so supported that it has a slight forward movement lengthwise of the tongue for permitting the withdrawal of the brake-shoes from operative position before the vehicle is moved forwardly. A sufficient length of the connection G is wound upon the hub of the clutch-section to permit the desired adjustment of the length of the wagon-reach in the usual manner, and it will be obvious that if the reach is shortened a greater amount of the rear end of the connection G is wound upon said hub.

At Fig. 1 one of the links g of the connection G is formed with a slot g' , extending in a plane substantially parallel with the line of draft, and the king-bolt a of the vehicle is passed through said slot and forms a guide for the connection G. The doubletree A⁵ is suitably guided in its movement and is connected to the front link of the connection G, and the front face of the doubletree is provided with a rounding bearing-face a' , which is movable lengthwise of the tongue A⁴ into engagement with a corresponding face or stop a^2 upon said tongue. When the vehicle is about to start the doubletree is drawn forwardly a sufficient distance to withdraw the brake-shoes from their operative position and then engages the face a^2 upon the tongue A⁴ and the vehicle commences its forward movement.

It is frequently desirable to engage the

brake-shoes with the vehicle-wheels when the vehicle is ascending a hill in order to rest the horses, and this result is also readily produced by my improved construction of brake. The lower extremity of a lever H engages a flange E¹⁰ upon the inner face of the clutch-section E⁶, and the upper extremity of said lever is mounted upon a rocking shaft h, and said shaft is provided with a depending lever h', which is connected to one extremity of a reciprocating bar h², mounted in any suitable bearing, as h³, secured to the end of the vehicle-box or to any other desired support. (Not illustrated.) The inner extremity of a lever h⁴ is hinged at h⁵ to the opposite end of the rod h², and the outer end of the lever h⁴ is arranged beneath the rod h² and is hinged at h⁶ to a shoe h⁷, movable in a circular guide h⁸, secured to one of the rear wheels A². A suitable guard, not necessary to herein illustrate, may be used for protecting the shoe h⁷ from mud.

The forward movement of the rear wheel tends to depress the shoe h⁷, and a suitable spring h⁹ forces the lever h⁴ toward the wheel A² and holds the same in its guide h⁸. As the rear wheel is moved in a reverse direction by slightly backing the vehicle when ascending a hill, the shoe h⁷ is elevated to its position indicated by dotted lines at Fig. 2, and the outer end of the lever h⁴ is also elevated, and by means of the rod h² forces the lever H to its position seen by dotted lines at Fig. 2, thereby disengaging the clutch-sections E³ E⁶ and permitting the spring E⁷ to force the brake-shoes to their operative position.

When the horses are backed slightly, after the brake-shoes have assumed their normal position, the spring E⁷ retracts the clutch-section E⁶, the connection G, and the double-tree A⁵. The lower extremity of the lever H is formed with a pivoted extremity H', the lower end of which engages the inner face of a flange E¹⁰ provided upon the clutch-section E⁶, and is held in said position by a counterweight H². During the reverse movement of the clutch-section E⁶ the lower end of the pivoted extremity of the lever H, which frictionally engages the flange E¹⁰ of said clutch, is forced rearwardly against the action of the counterweight H² and assumes the position shown by dotted lines at Fig. 3. The clutch-section E⁶ is then free to move into engagement with the clutch-section E³, and the spring E⁷ produces such movement thereof.

As will be readily understood upon reference to the foregoing description and the accompanying drawings, the brake-shoes of my improved brake are normally in engagement with the vehicle-wheels, but are withdrawn from their operative position as soon as the vehicle commences its forward movement. The brake-shoes are so supported that backward movement of the vehicle on a level plane is unretarded thereby, and when descending a hill said brake-shoes are normally forced to their operative position and are held from

undue disengagement, even when the vehicle is passing over icy or slippery surfaces. When the vehicle is ascending a hill, the brake-shoes readily assume their operative position upon slightly backing the vehicle so as to move its rear wheels reversely, and by a slight backing of the horses, after the brake-shoes have assumed their operative position and the vehicle is held thereby, the parts of the brake assume their normal position, and when again ascending the hill the brake-shoes are withdrawn from operative position.

The exact detail, construction, and arrangement of the parts of my brake may be considerably varied without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft and a spring for actuating the shaft, substantially as and for the purpose described.

2. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft, and a connection to the spring for forcing the same to its inoperative position, substantially as and for the purpose specified.

3. A wagon brake comprising a brake-shoe provided with a projecting arm, a guide for the arm, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, and a connection between said substantially fixed part and the shaft substantially as and for the purpose set forth.

4. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle arranged at the rear of the brake-shoe, a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft provided with a flexible extremity movable around the shaft, and a spring for rotating the shaft, substantially as and for the purpose described.

5. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft provided with a clutch section, and a second clutch section detachably engaging the former section for moving the same against the action of the spring and permitting independent movement thereof, substantially as and for the purpose specified.

6. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its

operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft provided with a clutch section, a second clutch detachably engaging the former section for moving the same against the action of the spring and permitting independent movement thereof, and a connection to the latter clutch section for forcing the same from its normal position, substantially as and for the purpose described.

7. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft provided with a clutch section, a second clutch section detachably engaging the former section for moving the same against the action of the spring and permitting independent movement thereof, and a spring for forcing the latter clutch section to its normal position, substantially as and for the purpose set forth.

8. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft provided with a clutch section, a second clutch section detachably engaging the former section for moving the same against the action of the spring and permitting independent movement thereof, a connection to the latter clutch section for forcing the same from its normal position, and a spring for forcing the latter clutch section to its normal position, substantially as and for the purpose specified.

9. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft provided with a clutch section, a second clutch section detachably engaging the former section for moving the same against the action of the spring and permitting independent movement thereof, and means for disengaging the clutch sections, substantially as and for the purpose described.

10. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft provided with a clutch section, a second clutch section detachably engaging the former section for moving the same against the action of the spring and permitting independent movement thereof, a guide connected to the rear wheel, a lever for disengaging the clutch sections, and a shoe movable in said guide and connected to the lever for actuating the same, substantially as and for the purpose set forth.

11. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a rev-

oluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft provided with a clutch section, a second clutch section detachably engaging the former section for moving the same against the action of the spring and permitting independent movement thereof, a guide connected to the rear wheel, a lever for disengaging the clutch sections, a rectilinearly movable rod for actuating the lever, a shoe movable in the guide, and a lever having one extremity pivoted to the rod and its opposite extremity normally depressed beneath its former extremity and pivoted to the shoe, substantially as and for the purpose described.

12. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft provided with a clutch section, a second clutch section detachably engaging the former section for moving the same against the action of the spring and permitting independent movement thereof, a guide connected to the rear wheel, a lever for disengaging the clutch sections, a rectilinearly movable rod for actuating the lever, a shoe movable in the guide, a lever having one extremity pivoted to the rod and its opposite extremity normally depressed beneath its former extremity and pivoted to the shoe, and a spring for forcing the latter lever to its normal position, substantially as and for the purpose specified.

13. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft, a connection to the spring for forcing the same to its inoperative position, and a doubletree movable lengthwise of the line of draft and connected to said connection for actuating the same, substantially as and for the purpose set forth.

14. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft, a connection to the spring for forcing the same to its inoperative position, a doubletree movable lengthwise of the line of draft and connected to said connection for actuating the same, and a stop for limiting the movement of the doubletree, substantially as and for the purpose described.

15. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft provided with a clutch section, a second clutch section detachably engaging the former section for moving the

same against the action of the spring and permitting independent movement thereof, a connection to the latter clutch section for forcing the same from its normal position, and a doubletree movable lengthwise of the line of draft and connected to said connection for actuating the same, substantially as and for the purpose set forth.

16. The combination with a vehicle having a king bolt; of a wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft provided with a clutch section, a second clutch section detachably engaging the former section for moving the same against the action of the spring and permitting independent movement thereof, a connection to the latter clutch section for partially rotating the same having a slot registered with the king bolt, a doubletree movable lengthwise of the line of draft and connected to said connection for actuating the same, and a stop for limiting the movement of the doubletree, substantially as and for the purpose specified.

17. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft, a support for the brake-shoe movable up and down and having its upper extremity hinged and its opposite extremity hinged to the front side of the brake-shoe, substantially as and for the purpose set forth.

18. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft, a support for the brake-shoe movable up and down and having

its upper extremity hinged and its opposite extremity hinged to the front side of the brake-shoe, and a stop for preventing movement of said support, substantially as and for the purpose described.

19. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft, a supporting spindle, a support for the brake-shoe movable up and down and having its upper extremity hinged to said spindle and its opposite extremity hinged to the front side of the brake-shoe, a stop for preventing movement of said support, and a counterbalance for automatically forcing the stop from operative position, substantially as and for the purpose specified.

20. A wagon brake comprising a brake-shoe, a substantially fixed part of the vehicle a revoluble shaft for forcing the brake-shoe to its operative position, a connection between said substantially fixed part and the shaft a spring for actuating the shaft, a supporting spindle, a support for the brake-shoe movable up and down and having its upper extremity hinged to said spindle and its opposite extremity hinged to the front side of the brake-shoe, a stop for preventing movement of said support, a counterbalance for automatically forcing the stop from operative position, and a second stop for preventing operation of the counterbalance, substantially as and for the purpose described.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Nunda, in the county of Livingston, in the State of New York, this 20th day of November, 1894.

WILLIAM SIVERD.

Witnesses:

JOHN C. ROBERTS,
DAVID M. ROBERTS.