

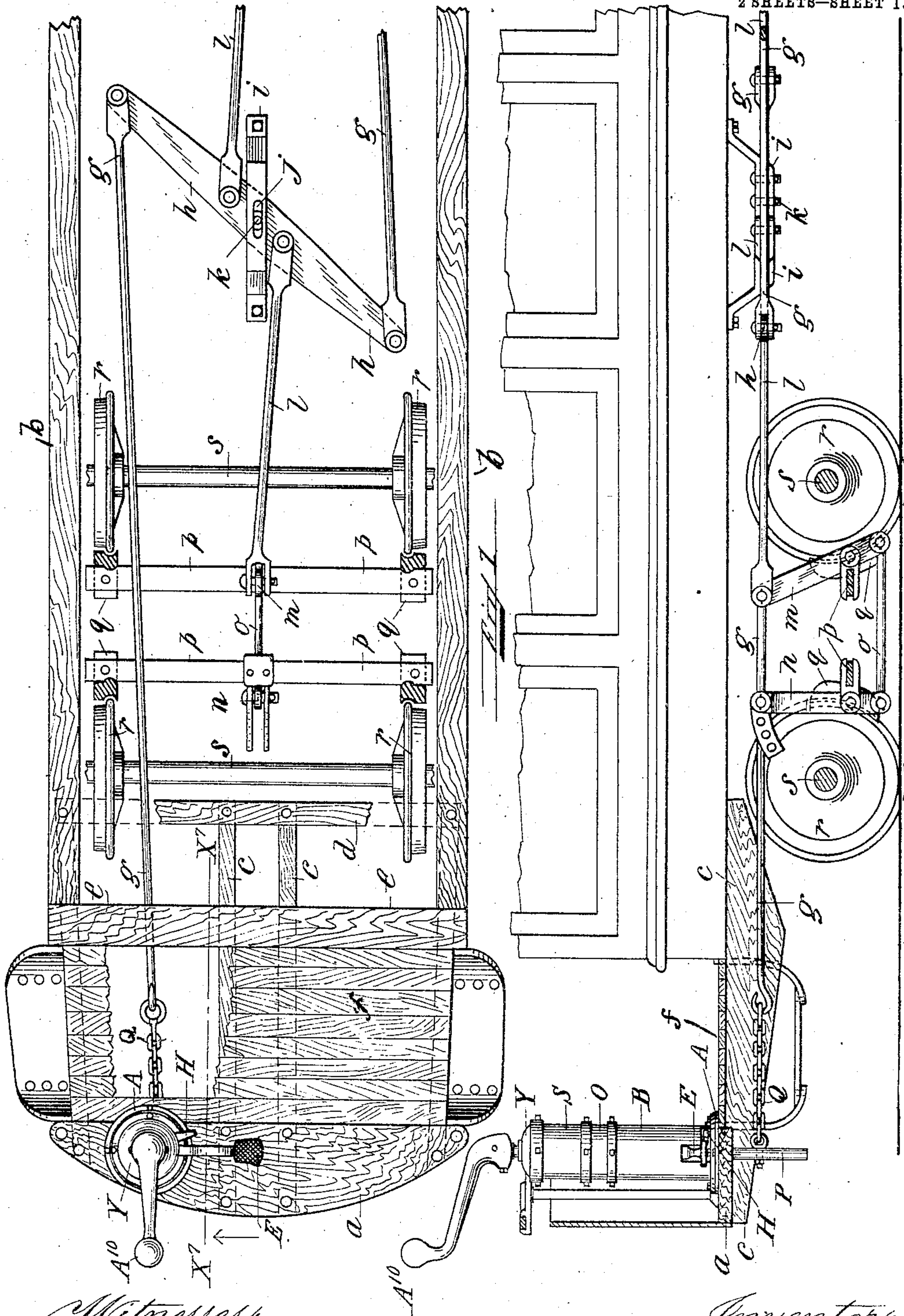
No. 786,378.

PATENTED APR. 4, 1905.

L. PFINGST.  
MECHANICAL POWER BRAKE.

APPLICATION FILED JAN. 23, 1904.

2 SHEETS—SHEET 1.



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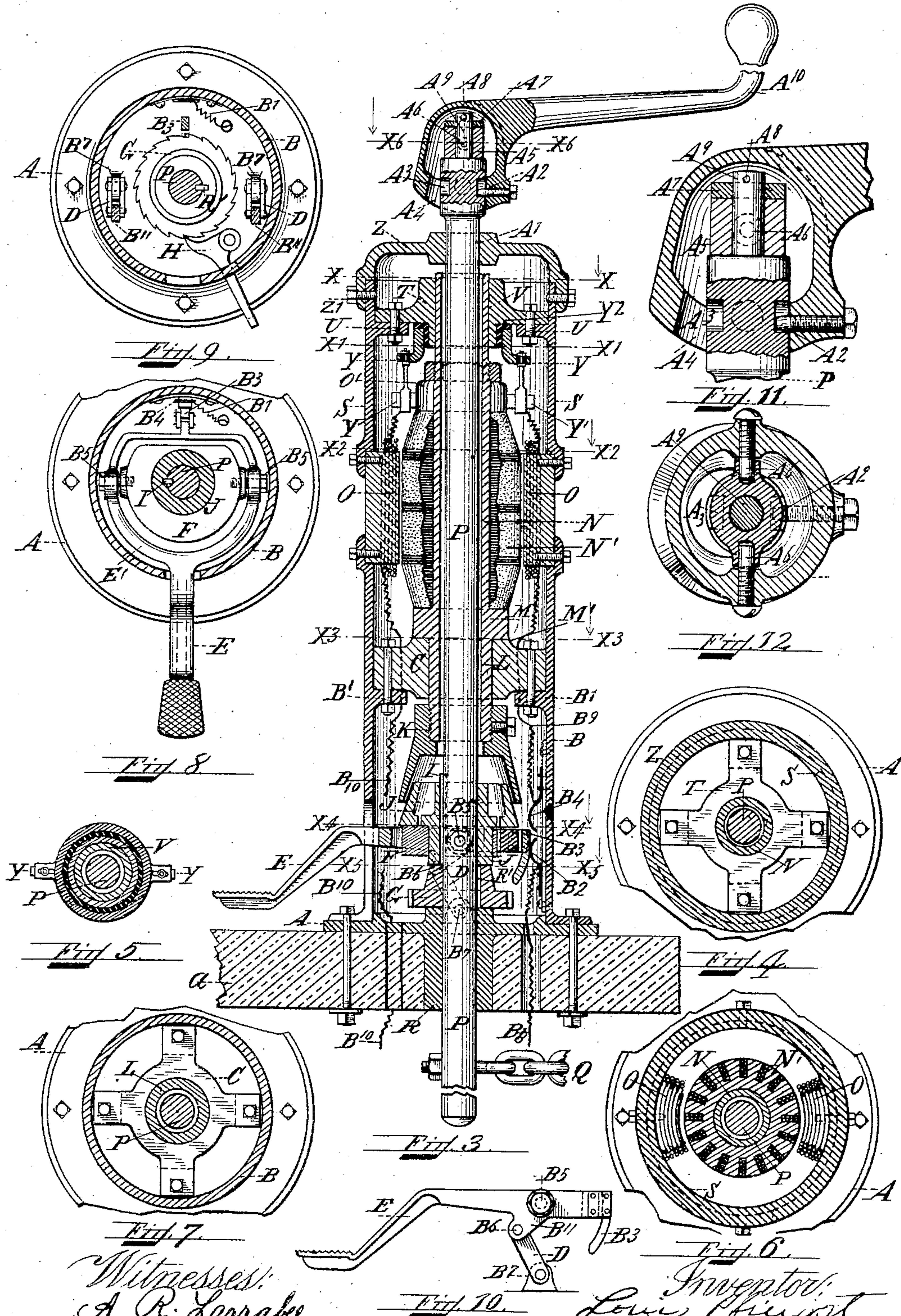
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# UNITED STATES PATENT OFFICE.

LOUIS PFINGST, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO PFINGST ELECTRIC MANUFACTURING COMPANY, OF KITTERY, MAINE, A CORPORATION OF MAINE.

## MECHANICAL-POWER BRAKE.

SPECIFICATION forming part of Letters Patent No. 786,378, dated April 4, 1905.

Application filed January 23, 1904. Serial No. 190,300.

*To all whom it may concern:*

Be it known that I, LOUIS PFINGST, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Mechanical-Power Brakes, of which the following is a specification.

My invention relates to new and useful improvements in hand or power driven brake-spindles; and the object of my invention is to apply the brake mechanism of the car by power or hand.

My invention consists of certain novel features hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, which illustrate a construction embodying my invention, Figure 1 is a plan view of the bottom framing of the car and platform, showing the location of the motor and power-driven brake-spindle with the usual arrangement of center brake-levers, truck, brake-beams, brake-shoes, and truck-brake levers on one end of the car. Fig. 2 is a side elevation of part of the car and operating devices with the platform in vertical section. Fig. 3 is a vertical sectional view of the apparatus with the spindle in full lines. Fig. 4 is a transverse sectional view on the line  $x-x$ , Fig. 3, of the bearing for the hollow motor armature-shaft and carrying the brush-holder arms. Fig. 5 is a transverse section on the line  $x'-x'$ , Fig. 3, showing the brush-holding-arm ring in cross-section. Fig. 6 is a transverse section on the line  $x''-x''$ , Fig. 3, showing the pole-piece armature and hollow armature-shaft in cross-section. Fig. 7 is a transverse sectional view on the line  $x'''-x'''$ , Fig. 3, and showing the lower armature-journal with the bearing and motor-frame in section and the lever and ring in full lines. Fig. 8 is a transverse section on the line  $x^4-x^4$ , Fig. 3, showing the driving clutch member in cross-section with the operating-levers and ring in full lines. Fig. 9 is a transverse sectional view on the line  $x^5-x^5$ , Fig. 3, showing the ratchet-wheel attached to the spindle and the pawl to the bed-plate, the spindle and motor-frame being in cross-

section. Fig. 10 is a detail view, in side elevation, of the clutch-lever and current-controller. Fig. 11 is an enlarged detail view in section of the oscillating ratchet-brake handle and showing its connection to the spindle. Fig. 12 is a transverse sectional view on the line  $x^6-x^6$ , Fig. 3, through the spindle and brake-handle.

Like letters of reference refer to like parts throughout the several views.

The bed-plate A is bolted to the platform-buffer timber  $a$  of the car, and secured to said bed-plate A by suitable bolts is the frame or support B. The bridging C is bolted to the lugs B', which are part of the base-frame or support B and forms, by means of the step M' on the bridging C and the circular flange M, a bearing for the journal L of the hollow armature-shaft N, thereby supporting the motor-armature N' in its upright position, Fig. 3. Secured around the armature N' are the pole-pieces O of usual construction and supported on and secured to the base-frame B. Secured to the upper ends of said pole-piece frame O is the extension motor-frame S, and to the upper end of said extension-frame is secured the upper bridging T to lugs U of said frame, and on the extreme upper end of said extension motor-frame S is a cap or covering Z, whose lower circular end Z' is secured, by means of suitable bolts, to the extension-frame S. In the upper end of said cap Z is a suitable bearing A' for the upper end of the spindle or shaft P. The bridging T has a central opening, which forms a bearing for the journal V on the upper end of the hollow armature-shaft N and also supporting brush-holding brackets Y, on which are mounted suitable brushes Y'. These brush-holding brackets are suitably insulated by insulating material Y<sup>2</sup> from the upper bridging T. The electric current passes in through the in-wire B<sup>8</sup> and is connected to the contact-plate B<sup>2</sup>, and when the circuit is closed, as hereinafter described, the current will pass, by means of the contact B<sup>4</sup>, to the wire B<sup>9</sup> through the pole-fields of the motor, thence to the brushes Y', passing through the armature, thence through



the commutator O', thence through the opposite brush Y, thence out through the wire B<sup>10</sup>, as is usual.

Secured on the lower end of the journal L of the hollow armature-shaft N is the clutch member K, which rotates with the armature N' and armature-shaft N. The other member, J, of the clutch is adapted to be raised to engage with the rotating upper member K, which will rotate the member J, which transmits its rotating motion through the aid of the spline or key I to the spindle P, as shown in Fig. 8, causing the rotation of said spindle P to wind up the chain Q. The lower member J is raised by means of the clutch-lever E, provided with a ring-lever E', pivoted at B<sup>5</sup> to the loose clutch-ring F. On opposite sides of said right lever E' are two depending arms B<sup>11</sup>, pivoted at B<sup>6</sup> to the links D, Fig. 9, which are also pivoted to the lugs B<sup>7</sup> on the base-plate A, the arrangement of the arm B<sup>11</sup> and links D forming a toggle-joint, so that when the foot of the operator is placed on the lever E the arms B<sup>11</sup> and links D move to a vertical line, raising the loose clutch-ring F in contact with the clutch member J, forcing it up to engage with the upper clutch member K and at the same time closing the circuit through the contact-springs B<sup>2</sup> B<sup>4</sup> by means of the insulating metallic finger B<sup>3</sup>, which comes in contact with both contact-springs B<sup>2</sup> B<sup>4</sup> by this movement. Surrounding and attached to the spindle P is the ratchet-wheel G by means of the spline R' to hold the spindle P when the brakes are set by means of the pawl H, which is moved by the foot of the operator to engage or disengage. This ratchet-wheel G rests upon the circular boss R<sup>2</sup>, which is part of the bed-plate A, as is also the boss R, which forms a bearing for the lower end of the spindle P.

On the upper end of the spindle P there is arranged an oscillating clutch-handle A<sup>10</sup>, and its object is to allow the rotation of the spindle P by electric-motor power without turning the handle A<sup>10</sup> either when winding or unwinding the brake-chain Q. This is accomplished by disengaging the clutch-pin A<sup>2</sup> from the orifices A<sup>3</sup>, arranged at intervals around the upper end of the spindle, by lifting up the outer end of the handle A<sup>10</sup>, which causes the handle to oscillate on the pivots A<sup>6</sup> by means of the slot A<sup>4</sup>. The collar A<sup>5</sup> is the support for the handle A<sup>10</sup>, which is pivotally connected by the pins A<sup>6</sup> and rotates with said handle; but when the handle is disengaged from the spindle the upper end of said spindle rotates within said collar A<sup>5</sup>. Above and resting on said collar A<sup>5</sup> is a washer A<sup>7</sup>, and above said collar is a pin A<sup>8</sup>, driven into the upper end of the reduced spindle A<sup>9</sup> to hold the parts in place. The purpose of the handle is to rotate the spindle P when the power is not in operation. This is accomplished by allowing the clutch-pin A<sup>2</sup> to fit in the orifices A<sup>3</sup>, that are located at intervals around the

operating-spindle P. By this means the chain can be wound and the brakes set in a manner similar to that obtained when the current is on. During this operation without the use of the motor it is not necessary to engage the clutch members, as the spindle can be turned entirely by the handle without operating any of the motor mechanism. The same ratchet-wheel G can be used and hold the brakes whether the spindle is operated by the motor or by the handle.

As shown in Figs. 1 and 2, the platform construction consists of buffer-timber *a*, with a platform-flooring *f*. *c* is the supporting-timber fastened to the body of the car and supporting the flooring *f* and the buffer-timbers *a*. *d* is the bottom-frame cross-timber, which is fastened to the side sill *b* and is used for the purpose of supporting the car-flooring. *e* is the end sill, which is fastened at the extreme end of the side sills *b*, and to the end sills *e* the end frame of the car is secured in the usual manner of car-building. *g* is the main brake-rod, and at one end said rod is connected to the brake-chain Q and the other end is pivotally connected to the center brake-lever *h*. The main or center brake-lever *h* is supported by the bracket *i*, secured to the bottom of the car, and has a loose motion in the slot *j*, and said brake-lever *h* is held in place by the pin *k*. Pivotally connected to the main brake-lever *h* is the secondary brake-rod *l*, pivoted at its opposite end to the truck brake-lever *m*, which is pivoted on the brake-beam *p*. At the lower end of the brake-lever *m* is pivotally connected the brake-rod *o*, which at its opposite end is connected to the truck-adjusting arm *n*. On the ends of the brake-beam *p* is fastened the brake-shoes *q*, which come in contact with the periphery of the wheels *r*, mounted on the axles *s*. The brake-rod *g* and the secondary brake-rod *l* (shown on the right of Figs. 1 and 2) extend forward and are connected to similar mechanism at the right-hand end of the car.

The operation of this mechanism is as follows: By the rotating of the spindle P, winding up the chain Q, the brake-rod *g* will be pulled forward, actuating the brake-lever *h*. This will pull in the opposite direction the secondary rod *l*, and by this operation the secondary rod *l* will pull the truck-lever *m* toward the center of the car, pressing out the bottom end toward the end of the car, thereby causing the brake-beams *p* to travel in opposite directions and apply the brake-shoes to the wheels. By the arrangement of the spindle with the brake-handle, as hereinbefore described, the spindle can be revolved in either direction without rotating the handle, or the handle can be rotated in either direction without rotating the spindle or motor, or, if desired, the handle can rotate the spindle with the motor, or both can be operated at the same time. To operate the motor without the cur-



rent, the clutch member J is raised up into engagement with the clutch member K by the lever E, so that by the rotation of the handle when in engagement with the spindle both the spindle and the motor can be rotated. The mode of operating the brake-spindle by power to set the brakes is as follows: First, start the motor running. Second, to apply the brake the operator puts pressure on the clutch-lever E, bringing the clutch members J and K in contact with each other. This will rotate the spindle P. During this operation the operator holds by hand the loose or oscillating clutch-brake handle A<sup>10</sup> disengaged from the spindle P. This will allow the rotating of the spindle P and the winding up of the chain Q, thereby pulling the brake-rod g, actuating the brake-lever h, thence pulling the rods l and actuating the truck-levers m, and thereby setting the brake. When the brake is sufficiently set, the motor clutch members J and K are disengaged, thereby cutting out all motor-power, after which the brake is held when set either by the brake-handle A<sup>10</sup> or the ratchet-wheel G and pawl H by engaging with the spindle P. To release the brake, the ratchet-wheel G and pawl are disengaged. During this operation the operator has hold of the brake-handle A<sup>10</sup>. Now to further complete the releasing of the brake the operator can disengage the pin A<sup>2</sup> of the handle A<sup>10</sup> from the orifices A<sup>3</sup> on the spindle P, thereby permitting the spindle P to rotate in the other direction without rotating the handle A<sup>10</sup> or motor-armature N' by the brake-spring pull or chain Q and unwinding itself from the spindle P, or the operator might release the handle A<sup>10</sup>, allowing it to rotate with the spindle P. By either method the brake can be fully released. It does not follow that the motor must run continuously. It can be started to rotate before the clutch members J and K are engaged. When operating the clutch-lever E, the circuit can be closed by the finger B<sup>3</sup> coming in contact with the plate B<sup>4</sup>, thereby starting the flow of current to the motor, which will rotate said motor prior to the engagement of the clutch members J and K.

Having thus described the nature of my invention and set forth a construction embodying the same, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In an apparatus of the character described, a brake-spindle capable of being operated by power through actuating clutch mechanism and by hand-power and spindle mechanism independent of any motor mechanism.

2. In an apparatus of the character described, a brake spindle or shaft capable of being operated by electric motor for the winding of the brake-chain and provided with hand-power mechanism independent of said motor mechanism for operating said spindle.

3. In an apparatus of the character de-

scribed, a brake-spindle which can be rotated by hand-power mechanism or motor mechanism, each independent of the other.

4. In an apparatus of the character described, an upright electric motor with hollow armature-shaft and extended journals surrounding and upright brake-spindle for winding the chain, the upper end of spindle fitted with loose brake-handle, and intermediately a ratchet-wheel fitted to spindle, lower end of spindle equipped with brake-chain to be wound around the spindle for the applying of the car-brakes.

5. In an apparatus of the character described, an upright electric motor with rotating hollow armature-shaft and extended journals, said shaft provided with a clutch member, all surrounding an upright spindle, said spindle provided with another clutch member, and means for engaging the one on motor-shaft to rotate spindle for engaging or disengaging clutch members for releasing the brakes.

6. In an apparatus of the character described, a combined hand or power driven brake-spindle passing through a hollow shaft of electric-motor armature extending above and below the armature capable of being operated free therein and provided with guide-bearings above and below armature-shaft, the upper end fitted with hand-power mechanism, the lower end at or near its bottom with a brake-chain to be wound or unwound around the spindle for the applying or releasing of the car-brake mechanism.

7. In an apparatus of the character described, a combined hand or power driven brake-spindle or chain-winding drum passing through a hollow shaft of the electric-motor armature and extending above and below the armature-shaft and capable of being operated freely therein and provided with guide-bearings above and below the armature-shaft, the upper end fitted with a loose handle, and the lower end at or near its bottom fitted with a brake-chain to be wound or unwound around the spindle for the applying or releasing of car-brake mechanism.

8. In an apparatus of the character described, a hand-power brake-spindle capable of being rotated by motor or hand-power mechanism, the mechanism of the motor supported independently of the hand-power brake-spindle, and adapted for the motor and hand power to simultaneously rotate the spindle or the spindle can independently be rotated by hand-power without rotating any motor mechanism to wind or unwound the brake-chain for actuating the brake-chain mechanism.

9. In an apparatus of the character described, a hand-power brake-spindle equipped with motor clutch mechanism, a motor to supply intermittently power to clutch mechanism and spindle provided with hand-power mechanism for holding during intermissions that which



had been taken up when the power had been applied intermittently, or can be released without stopping motor by disengaging the members of clutch mechanism from the motor and spindle, also disengaging the clutch from handle and spindle allowing the spindle to rotate and unwind chain from brake-spindle.

10. In an apparatus of the character described, a brake-spindle for applying or releasing car-brakes, and equipped with a clutch-brake handle capable of being held by the operator in any position while the revolving motor is transmitting rotating power to the spindle, and clutch mechanism for connecting the motor shaft and spindle to wind up the brake-chain and holding by the handle that which is taken up while the clutch is disengaged from the spindle and motor-shaft, cutting off all source of power.

11. In an apparatus of the character described, a power-driven brake-spindle adapted to wind up chain and to let off chain, or to hold what has been taken up—a motor transmitting its power by the aid of clutch mechanism to the spindle, for operating said spindle, and an oscillating clutch-brake handle for applying or releasing car-brakes.

12. In an apparatus of the character described, a hand-power brake-spindle adapted to wind up chain and let off or to hold what has been taken up, a motor in motion, and mechanical means for transmitting its motion to said spindle for winding up the chain to apply the brake mechanism, and a loose brake-handle.

13. In an apparatus of the character described, a hand or power driven brake-spindle for applying or releasing brake mechanism, a constant rotatable electric-motor armature with hollow shaft incasing loosely a spindle, and means for transmitting power from a constantly-running motor for operating said spindle, and a handle for said spindle.

14. In an apparatus of the character described, a power-driven brake-spindle, a constant rotatable electric-motor armature with hollow shaft incasing loosely a spindle, means for transmitting power from a constantly-running motor for operating said spindle, and an oscillating pivotally-arranged handle for said spindle.

15. In an apparatus of the character described, a power-driven brake-spindle, hand-power mechanism for said spindle and a motor located below said hand-power mechanism, and means to intermittently supply power to said spindle from a running motor for applying or releasing the brakes.

16. In an apparatus of the character described, a chain-winding brake-spindle capable of being revolved by a revoluble motor supported independently of the brake-spindle, and means for transmitting its rotating power to the spindle for applying the brakes.

17. In an apparatus of the character described, a brake-spindle capable of being revolved, a revoluble motor, and means for transmitting its motion to said spindle, and a handle for said spindle for applying or releasing the brakes.

18. In an apparatus of the character described, a power-driven brake-spindle capable of being revolved, a revoluble motor, means for transmitting its motion to an unrevolving spindle, in combination with equalizing brake mechanism for applying or releasing the brakes.

19. In an apparatus of the character described, a power-driven brake spindle or shaft operated by actuating clutch mechanism from the power of a revoluble motor for applying the brakes and loosely surrounded by the armature of said motor.

20. In an apparatus of the character described, an upright brake-spindle for applying or releasing the brakes provided with guide-bearings on the top and bottom of motor-frame, an upright electric motor for operating said spindle through the actuating-clutch, an electric-motor frame for said motor, and bearings for motor-shaft located in and supported by the motor-frame.

21. In an apparatus of the character described, a brake-spindle, surrounded by an electric motor, for applying or releasing the car-brakes, said motor capable of being rotated without rotating the spindle, and hand-power mechanism for said spindle.

22. In an apparatus of the character described, a hand-power-driven brake-spindle loosely and independently surrounded by an electric motor and capable of being operated by said motor for applying the brakes.

23. In an apparatus of the character described, a hand-power-driven brake-spindle or chain-winding drum for applying or releasing the brakes, said spindle and hand-power mechanism independent of motor mechanism, and motor mechanism being independent of spindle or hand-power mechanism, and a removable handle for said spindle or shaft.

24. In an apparatus of the character described, a revoluble power-driven upright brake-spindle, a revoluble motor, actuated clutch mechanism interposed between said revolving motor and revoluble spindle located and supported on a platform of a car with a part of said spindle projecting below the platform and the other part above the platform, a take-up chain attached to said spindle for applying or releasing the car-brakes, ratchet-wheel and pawl coöperating with said spindle for holding the brake when set.

25. In an apparatus of the character described, a revoluble power-driven brake-spindle, hand-power mechanism for said spindle, a source of power located below said hand-power mechanism, and means for transmitting



rotating motion from a revoluble motor for operating said revoluble spindle for applying the brakes.

26. In an apparatus of the character described, a revoluble brake-spindle, a revolving motor, means for operating said spindle by said motor, a loose handle for said spindle in combination with equalizing brake mechanism for applying or releasing the brakes.

27. In an apparatus of the character described, a revoluble brake-spindle, a revolving-motor clutch mechanism, loose hand-power mechanism capable of being held by the operator in any position when the revolving motor transmits its motion through clutch mechanism to the spindle for winding up the chain, and a pawl and ratchet for holding taken-up chain with the motor-clutch disengaged and motor running for applying the car-brakes.

28. In an apparatus of the character described, an upright brake-spindle for applying or releasing car-brakes and capable of being driven by hand or motor fitted and equipped with a brake-chain, ratchet-wheel, pivoted pawl, a clutch member and a combined clutch-lever with a circuit-closing contact, hand-power mechanism, an electric-motor armature loosely surrounding said spindle by its hollow shaft, extended journals of the hollow shaft, one end of the hollow shaft provided with a clutch member, bearings for extended journals of hollow shaft, brush-holding brackets, a bed-plate forming lower spindle-bearing guides, a pedestal-frame supporting the journal armature-bearings, pole-pieces, extension-frames supporting the upper journal-bearing, and a cover supported from the extension-frame forming an upper guide for the spindle.

29. In an apparatus of the character described, a hand-power chain-winding brake-spindle, a power-driven motor, and means for transmitting rotating power to the spindle simultaneously by the motor and hand power mechanism or for rotating the spindle independently of each other's mechanism for operating the brake mechanism.

30. In an apparatus of the character described, a brake-spindle capable of being rotated by motor-power, a handle for said spindle fitted with clutch mechanism interposed between handle and spindle, means for disengaging the clutch mechanism allowing handle to revolve in either direction without rotating spindle or motor mechanism, thereby allowing spindle to wind up chain when driven by power, rotating hand-power mechanism for the applying or releasing of car-brakes.

31. In an apparatus of the character described, a brake-spindle, a spindle-clutch, a source of power, means for operating the rotating clutch mechanism for transmitting power to rotate spindle to apply car-brakes.

32. In an apparatus of the character described, a brake-spindle surrounded by a hol-

low shaft of revoluble electric-motor armature, clutch mechanism interposed to transmit the revolving motion to the spindle for the application of car-brake mechanism.

33. In an apparatus of the character described, a brake-spindle located on a vehicle or car, a motor, clutch members for rotating said spindle, a ratchet-wheel fitted to said spindle, a pivoted pawl to engage ratchet-wheel for the holding of wound-up chain when the motor clutch members are disengaged cutting out source of power which rotates said spindle.

34. In an apparatus of the character described, an upright brake-spindle, a source of mechanical power, clutch mechanism interposed between the source of power and the spindle to transmit power to rotate spindle, thereby winding up chain and applying the brakes of a vehicle or car.

35. In an apparatus of the character described, an electric motor supplied with a base-frame and supporting electric-field pole-pieces supported on the platform of a car surrounding and supporting an electric armature with extended journals and hollow shaft, bearings for same surrounding an upright spindle, clutch mechanism interposed between the armature-shaft and spindle to transmit power to rotate spindle to wind up chain and set brake of a car.

36. In an apparatus of the character described, a brake-spindle, clutch mechanism, means for operating said clutch mechanism and close the circuit of the source of power at the same time starting the motor to run idle before the clutch members are fully engaged to rotate spindle for the application of car-brakes.

37. In an apparatus of the character described, a combination hand or power driven brake-spindle in combination with car-truck brake-shoes, brake beams and rods, a motor for operating said spindle, actuating clutch mechanism interposed between the motor and spindle to transmit rotating motion to spindle to wind up the chain for applying the car-brake shoes.

38. In an apparatus of the character described, a power-driven brake-spindle, and a motor located adjacent to said spindle, and means for intermittently supplying power to said spindle from a revolving motor for applying or releasing the car-brakes.

39. In an apparatus of the character described, a spindle, a motor, clutch mechanism interposed between motor and chain-winding spindle, means for engaging the clutch mechanism to transmit power from the motor to the spindle or chain-winding drum for applying the brakes.

40. In an apparatus of the character described, an electric motor with hollow shaft and extended journals surrounding a spindle, a ratchet-wheel fitted to spindle to hold brakes when set.



41. In an apparatus of the character described, a brake-spindle for applying or releasing the car-brakes capable of being supplied intermittently with power, a motor for  
 5 supplying power, pawl-and-ratchet-wheel mechanism for holding, during the intermission, the chain that has been taken up when the power has been applied intermittently or  
 10 by disengaging the pawl from the ratchet-wheel allowing the chain to unwind itself by the brake-spring pull.

42. In an apparatus of the character described, a chain-winding brake-spindle, hand-  
 15 power mechanism for rotating said spindle, a motor located below said hand-power mechanism, and means for intermittently transmitting power to said spindle from a running motor for applying or releasing the brakes.

20 43. In an apparatus of the character described, revoluble power-driven brake-spindle capable of being rotated through the aid of clutch mechanism from the power of a revolving motor for the applying of the car-  
 25 brakes and loosely surrounded by the armature of said motor.

44. In an apparatus of the character described, a revoluble spindle, upper end equipped with hand-power mechanism, a rev-  
 30 oluble motor, actuating clutch mechanism interposed between the revoluble motor and revoluble spindle to take up chain attached to said spindle for applying the car-brakes, a ratchet fixed to said spindle, a pawl coöperat-  
 35 ing with ratchet-wheel for holding brakes when set.

45 45. In an apparatus of the character described, a revoluble car-brake spindle equipped with hand-power mechanism, a rev-  
 40 oluble electric-power-driven motor, means to transmit mechanical power from the motor to the spindle and adapted to be operated independently of said hand-power mechanism for applying or releasing the car-brakes.

46. In an apparatus of the character de-  
 45 scribed, a revoluble hand or power driven brake-spindle, hand rotating mechanism for said spindle, clutch mechanism for said spindle, a source of power, a revolving electric  
 50 motor, hollow armature-shaft with extended journals for said motor, clutch mechanism for said motor-armature, means for engaging the spindle and motor-clutch mechanism and at the same time close the circuit of the source  
 55 of power starting the motor to run idle before the clutch mechanism is fully engaged to rotate the spindle for the application of the brakes.

47. In an apparatus of the character de-  
 60 scribed, a brake-spindle, means to operate said spindle and control same by hand-power mechanism, a source of power, a motor, rotating-motor clutch mechanism interposed be-  
 65 tween motor and spindle part of said clutch attached to said rotating motor and part on

spindle, means for engaging the clutch mem-  
 bers and thereby transmitting rotary motion to the spindle or chain-winding drum for the application of the car-brakes.

48. In an apparatus of the character de- 70  
 scribed, a brake-spindle for applying or releasing the brakes, said spindle fitted with hand-power mechanism or other power, mechanical means to take up slack chain and  
 75 loose play in the entire brake mechanism without turning the hand-power mechanism for the final application of the brake hand-power mechanism.

49. In an apparatus of the character de-  
 scribed, a hand-power-driven brake-spindle, a 80  
 brake-handle for said spindle, a motor located adjacent to said spindle, and means for supplying power other than hand-power to said spindle from a revolving motor for the apply-  
 85 ing of the car-brakes.

50. In an apparatus of the character de-  
 scribed, a hand-power-driven brake-spindle, a  
 handle for said spindle, a motor for rotating  
 said spindle, clutch mechanism interposed be-  
 90 tween motor and chain-winding spindle, means for engaging the clutch mechanism to transmit power intermittently from a revolving motor to the spindle for the applying or re-  
 leasing of brakes.

51. In an apparatus of the character de- 95  
 scribed, a hand-power-driven brake-spindle for the applying or releasing of car-brakes and provided with hand-power mechanism and capable of being operated by a motor whose  
 100 mechanism is independent of spindle or hand-power mechanism.

52. In an apparatus of the character de-  
 scribed, a brake-spindle provided with hand-  
 power mechanism, a motor independent of  
 spindle and hand-power mechanism, clutch 105  
 mechanism interposed between motor and spindle, a lever to engage clutch mechanism which rotates said spindle for the winding of the brake-chain to apply the car-brakes.

53. In an apparatus of the character de- 110  
 scribed, an upright brake-spindle, and an upright revoluble motor adapted to transmit its motion to the spindle in the same direc-  
 tion.

54. In an apparatus of the character de- 115  
 scribed, a chain-winding brake-spindle, a source of mechanical power, clutch mechanism interposed between the source of power and the spindle to transmit power to rotate spin-  
 120 dle thereby winding up chain and applying brakes of a vehicle or car.

55. In an apparatus of the character de-  
 scribed, a hand-power chain-winding brake-  
 spindle, a source of mechanical power, and  
 clutch mechanism interposed between the 125  
 source of power and the spindle to transmit power to rotate spindle thereby winding up chain for applying the brakes of a vehicle or car.

56. In an apparatus of the character de- 130



scribed, a hand-power-driven chain-winding brake-spindle and a motor located adjacent to said spindle, and means for intermittently applying power to said spindle from a revolving motor for applying or releasing the car-brakes.

57. In an apparatus of the character described, a hand-power chain-winding brake-spindle, a motor, clutch mechanism interposed between the motor and chain-winding spindle, and means for engaging the clutch mechanism to transmit power from the motor to the spindle or chain-winding drum for applying the brakes of a car.

58. In an apparatus of the character described, a hand-power brake-spindle equipped with clutch member, a continuous-current electric motor, the armature of said motor being provided with extending shafts, a clutch member fitted to motor-shaft, means for engaging the clutch members thereby transmitting rotating power from motor-shaft to brake-spindle to wind or unwind brake-chain for the applying and releasing of car-brakes.

59. In an apparatus of the character described, a continuous one-piece hand-power chain-winding brake-spindle provided with handle, a power-driven motor and means for transmitting its rotating power to the spindle for applying the brakes.

60. In an apparatus of the character described, a hand-power chain-winding brake-spindle for applying or releasing the brakes, capable of being supplied intermittently with power, a motor for supplying power, pawl-and-ratchet-wheel mechanism for holding dur-

ing the intermissions the chain that had been taken up when the power is applied intermittently or can be released without stopping the motor by disengaging the pawl from the ratchet-wheel allowing the chain to unwind itself by the brake-spring pull.

61. In an apparatus of the character described, a brake-spindle for applying or releasing car-brakes capable of being driven by hand or motor power, the spindle and motor-shaft being independent of one another, power-transmitting clutch members interposed between the spindle and the motor-shaft, a clutch-lever mechanism with an electric-current switch attached to said lever, the switch capable of being closed previous to engaging the clutch members by clutch-lever and to hold both in engagement when transmitting rotating power by clutch members to the spindle thereby winding up chain for the applying of the car-brakes.

62. In an apparatus of the character described, a power-driven brake spindle or shaft operated by actuating clutch mechanism from the power of a rotating electric motor for applying the brakes and loosely surrounded by the armature of said motor, spindle-shaft and motor-shaft occupying the same shaft-centers.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 19th day of January, A. D. 1904.

LOUIS PFINGST.

Witnesses:

A. L. MESSER,  
J. E. MARONEY.