

No. 660,026.

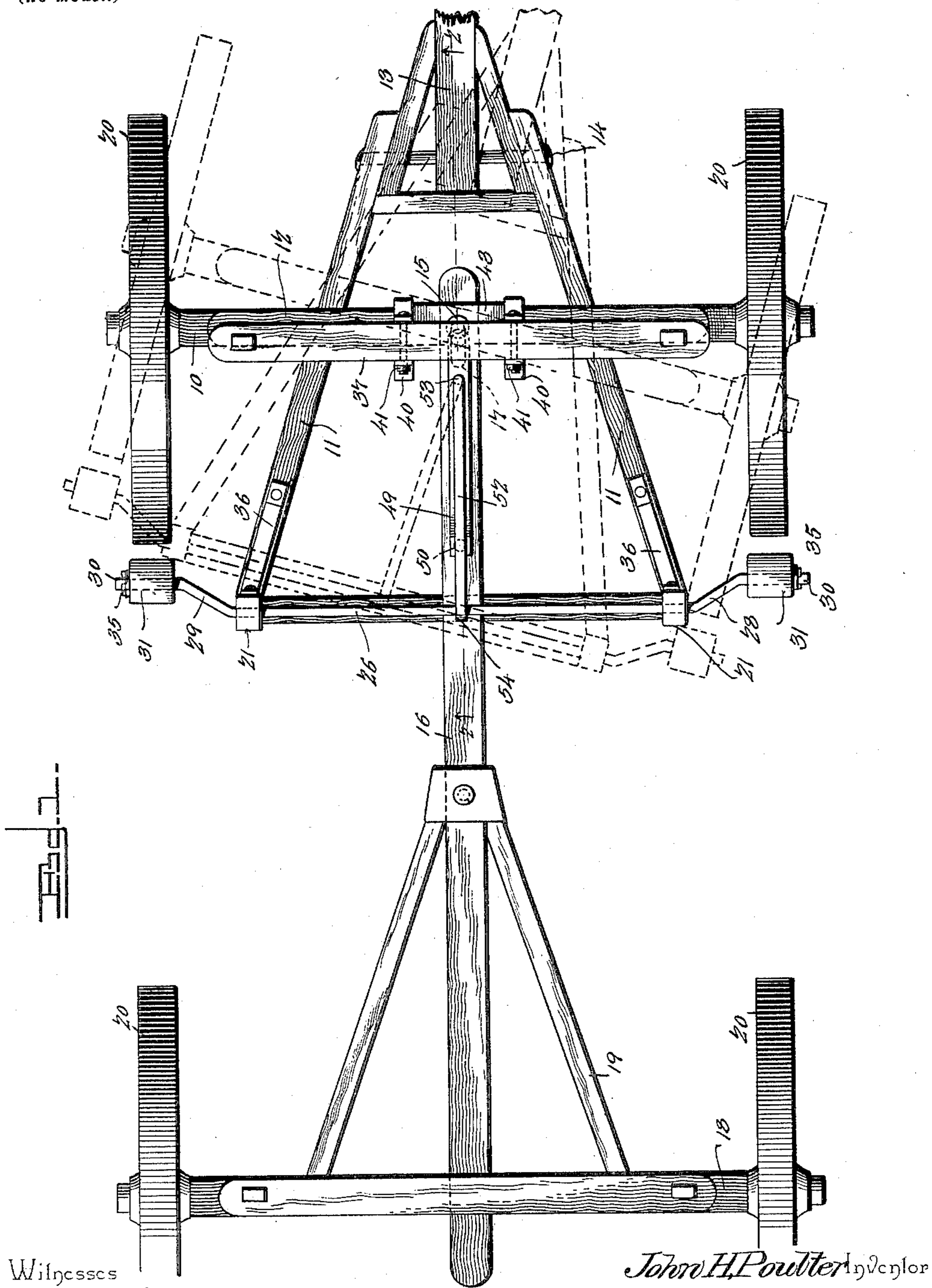
Patented Oct. 16, 1900.

J. H. POULTER.
AUTOMATIC WAGON BRAKE.

(Application filed Oct. 5, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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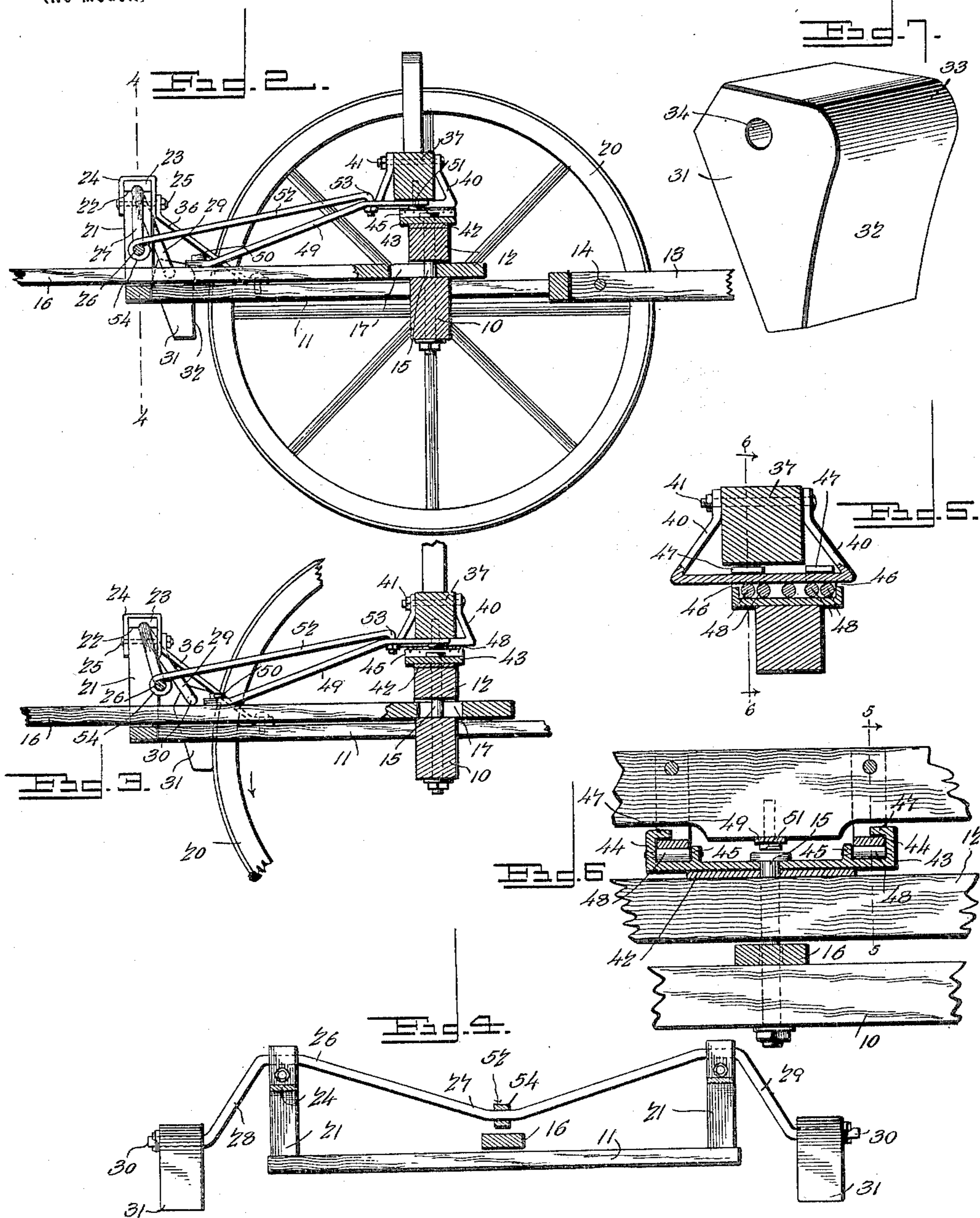
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2 Sheets—Sheet 2.



Witnesses
B. F. Stewart
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By His Attorneys.

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UNITED STATES PATENT OFFICE.

JOHN H. POULTER, OF NEWMAN, ILLINOIS.

AUTOMATIC WAGON-BRAKE.

SPECIFICATION forming part of Letters Patent No. 660,026, dated October 16, 1900.

Application filed October 5, 1899. Serial No. 732,677. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. POULTER, a citizen of the United States, residing at Newman, in the county of Douglas and State of Illinois, have invented a new and useful Automatic Wagon-Brake, of which the following is a specification.

My invention relates to automatic wagon-brakes of that class wherein the gravity of the load or the inclination of a declivity operates to apply the brake mechanism.

One object of the invention is to provide an improved connection between the pivoted bolster and the sand-board of the front axle by which the bolster is slidably connected with the front part of the running-gear, so that the bolster and the coupling-pole may be shifted under the weight of the load to apply the brake and without disconnecting the several parts, said bolster having a slidable travel, accompanied by a minimum of friction and wear on the parts, and also permitting the axle and the hounds to turn freely in a horizontal plane.

A further object is to provide an improved construction of brake-shaft adapted to carry the brake-shoes and to apply the latter with increased pressure against the front wheels, said brake-shoes being fashioned and hung to be automatically thrown out of contact with said wheels in backing the vehicle and said shoes also presenting a broad surface to frictional engagement with the wheels on the operation of the brake.

With these ends in view the invention consists in the novel construction, arrangement, and combination of parts, which will be hereinafter fully described and claimed.

To enable others to understand the invention, I have illustrated the same in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a plan view of a vehicle running-gear equipped with a brake mechanism constructed in accordance with my invention, the dotted lines illustrating an adjustment of the front axle and the hounds without throwing the parts of the brake mechanism out of operative condition. Fig. 2 is a vertical longitudinal sectional elevation in the plane indicated by the dotted line 2 2 of Fig. 1, illustrating the brake shaft and shoe in the nor-

mal positions assumed thereby, with the brake-shoes free from engagement with the front wheels. Fig. 3 is a sectional elevation similar to Fig. 2, showing the parts of the brake reversed to apply the shoes into frictional engagement with the front wheels. Fig. 4 is a vertical transverse section taken in the plane indicated by the dotted line 4 4 of Fig. 2. Fig. 5 is an enlarged detail sectional view of a portion of the slide-bearing between the pivotal bolster and the sand-board, the plane of the section being indicated by the dotted line 5 5 of Fig. 6 looking in the direction indicated by the arrow. Fig. 6 is a sectional elevation taken in the plane indicated by the dotted line 6 6 of Fig. 5 looking in the direction indicated by the arrow. Fig. 7 is an enlarged perspective view of one of the brake-shoes removed from its journal on the brake-shaft.

The same numerals of reference are used to indicate like and corresponding parts in each of the several figures of the drawings.

10 designates the front axle, which is provided with the hounds 11, of ordinary construction. A sand-board 12 is made fast with the hounds to leave a space between the upper side of the axle and the under side of said board, as shown clearly by Fig. 2. The draft-tongue 13 has pivotal connection at 14 in an ordinary way with the hounds. The king-bolt 15 passes through the axle and the sand-board, so as to span the space therebetween, and the coupling pole or reach 16 is fitted loosely in the space between the axle and the sand-board, said coupling-pole having a longitudinal slot 17, through which passes a king-bolt 15, whereby the coupling reach or pole is capable of a limited endwise movement, is confined against displacement by the king-bolt in connection with the sand-board and the axle, and is capable of a limited turning movement on the king-bolt. This coupling-pole is united or fitted to the rear axle 18 and is equipped with the rear hounds 19. Ordinary wheels 20 are fitted on the axles. As thus far described the running-gear, with the exception of the slot in the coupling-reach, is ordinary in the art; but to adapt the running-gear for the purposes of an automatic brake in accordance with my invention I find it desirable to have the king-bolt terminate short

of the front bolster and to provide additional appliances, which I will now proceed to describe.

The front hounds carry the upright posts 21, which are secured firmly to said hounds, each post having its upper end formed with a half-bearing 22. A cap 23 fits to the half-bearing of the post in order to complete the journal-bearing for the accommodation of the brake beam or shaft, said cap on each post being held in place by means of a strap 24, which embraces three sides of said cap and overlaps the post for its ends to receive the clamping-bolt 25, (see Figs. 2 and 3,) whereby the cap is secured firmly in place.

The brake beam or shaft is mounted in the posts 21, so as to be sustained thereby in a position elevated above the hounds, and that part of the brake-shaft between said posts is bent, as indicated at 27, or the middle part of said brake-shaft 26 may be formed with a crank. The bent middle portion of the brake-shaft 26 is clearly shown by Fig. 4 of the drawings, and this bent portion of said shaft serves to confine a connecting-link against displacement endwise on the shaft. The end portions of the brake-shaft 26 are provided with crank-arms 28 29, which arms may be formed by bending the portions of the shaft or by securing the arms rigidly to said shaft. One of the essential features of this brake-shaft is the forward and downward inclination of the crank-arms 28 29 under all conditions in the service of the automatic brake—that is to say, the arms of the brake-shaft are inclined downward and forward from the posts when the brake-shoes are free from the front wheels, as shown by Fig. 2; but when the brake-shoes are applied by rocking the shaft in its bearings the crank-arms thereof still remain in their forward and downward inclination with respect to the posts, as shown by Fig. 3. The cranked arms of the brake-shaft are bent to form the journals 30, on which are loosely hung the brake-shoes 31. Each brake-shoe of my invention is of a peculiar contour. (Indicated more clearly by Fig. 7 of the drawings.) The brake-shoe is nearly in the form of an elongated wedge—that is to say, the shoe is considerably thicker at its upper part than at its lower part, so that it tapers longitudinally. One face of the brake-shoe is segmental to conform to the wheel, so as to produce an elongated friction-surface 32; but the upper part of this shoe on its working surface is curved to provide an abrupt receding face 33, which joins or merges into the top edge of the shoe and the friction-surface 32 thereof. The upper thickened portion of the shoe has a transverse opening 34, which loosely receives the journal on one end of the brake-shaft, whereby the shoe is loosely hung on the shaft, so as to depend from and swing freely on the cranked arm of the brake-shaft. The shoe is prevented from movement in one direction by the crank-arm, and it is confined against dis-

placement on the journal by a suitable stop, such as a pin 35, or a nut may be substituted for the pin. Each standard 21 is stayed in place by suitable braces, one of said braces being indicated by the numeral 36 as having its upper end made fast to the post by the bolt 25, which secures the strap in place, while the other end of the brace is fastened to one of the hounds.

The front bolster 37 has a pair of slide-straps secured rigidly thereto, said straps being spaced apart to lie on opposite sides of the vertical plane of the king-bolt. The straps are formed with upwardly-extending arms 40, (see Figs. 2, 3, and 5,) which arms receive the transverse bolts 41, that pass through the bolster, so as to secure the straps thereto. The horizontal lengths of these straps lie a short distance below the under face of the bolster, and said slide-straps are arranged parallel one with the other. A wear-plate 42 is fitted on the top side of the sand-board, and upon this wear-plate is seated a bolster-bearing plate 43, the upper end of the king-bolt 15 extending through said plates 42 43, but terminating short of the bolster, so as to pivotally connect the bearing-plate to the sand-board, whereby the bearing-plate is adapted to turn freely in a horizontal plane, and thereby conform to the position of the bolster, which is slidably mounted thereon. The side edges of the pivoted bearing-plate have the upwardly-extending flanges 44, and within these flanges the plate is furthermore provided with the flanges 45, the latter being arranged parallel to the flanges 44, so as to form a straight guideway between each pair of adjacent flanges, said guideway being indicated by the numeral 46. Each outer flange 44, forming one wall of the guideway, has an inwardly-extending lip 47 arranged to overhang the guideway, and within this guideway is arranged a series of bearing-rolls 48, the same being properly spaced apart, as shown by Fig. 5, and journaled for free rotation in the flanges forming the guideway. The slide-straps on the bolster are fitted in the guideways on the pivoted bearing-plate, so as to rest upon the series of rolls therein, and these slide-straps are engaged by the overhanging lips 47, whereby the slide-straps are adapted to travel freely in the roller-bearings on the pivoted bearing-plate and the lips 47 retain the slide-straps and the bolster from accidental separation from the bearing-plate.

A draft-link 49 is arranged between the slotted reach and the bolster, the rear end of said link having a pivotal connection at 50 with the reach and the front end of the link being pivoted at 51 to the under side of the bolster, the pivot 51 between the bolster and the link being normally in the vertical plane of the king-bolt 15. This bolster or the draft-link 49 is connected operatively with the bent part 27 of the brake-beam through the medium of a connecting-link 52, the rear end of this link 52 having an eye 54, which fits said

bent part of the brake-beam, while the front end of said link is pivotally connected at 53 to the draft-link 49 at a point in rear of the pivotal connection between the draft-link 5 and the bolster.

The draft of the team pulls the front axle and hounds, so that the king-bolt lies at the forward extremity of the slot in the coupling reach or pole, and the front bolster is thus drawn to position by the link 49, in which position the pivot 51 of the link lies a little to the rear of the king-bolt, while the slide-straps extend from the rear side of the roller-bearings on the bearing-plate. (See Fig. 2.) The connecting-link 52 holds the brake-shaft 26 for the brake-shoes to be free from the front wheels. In this position of the parts the front axle and hounds, together with all the parts of the brake mechanism, are free to turn on the king-bolt, so that in one position these parts may assume the relation to the coupling-reach indicated by dotted lines in Fig. 1. On descending a hill or declivity the weight of the load on the rear part of the vehicle-body and the pulling back of the team on the front axle cause the reach to slide in a forward direction on the king-bolt. This forward sliding motion of the reach is communicated by the draft-link 49 to the bolster, and the slide-straps of said bolster are thus caused to move in the guideways and upon the roller-bearings of the bearing-plate, thus effecting the forward motion of the bolster with minimum friction and wear. The forward motion of the bolster, the coupling-pole, and the draft-link pulls on the connecting-link 52, so as to turn the shaft 26, which is journaled in bearings on the hounds, which do not move forward with the coupling-reach or the bolster, and thus the brake-shaft is turned in a direction to throw the forwardly and downwardly inclined crank-arms in an upward and forward direction from the position shown by Fig. 2 to the position shown by Fig. 3. As the front wheels of the vehicle turn in the direction of the arrow indicated by Fig. 3 and as the brake-shoes are pressed in an upward and forward direction by the cranked arms of the brake-shaft these shoes are held in contact with the front wheels under great pressure, depending upon the weight of the load and the inclination of the hill. Assuming that the vehicle is on inclined ground, with the brake applied to the front wheels, a reverse movement or backing of the vehicle will cause the wheels to ride against the curved surfaces 33 of the shoes, thus easing the pressure of said shoes on the wheels. When the vehicle reaches level ground and the team pulls on the draft-tongue, the front axle and hounds are moved to the positions indicated in Fig. 2 and the parts of the brake are restored to their normal positions.

I attach especial importance to the contour and arrangement of the shoes on the cranked arms of the brake-shaft, these shoes being so

arranged that they will be carried downward by the friction of the wheels when backing the vehicle, so that the shoes are ineffective. With the brake applied and the vehicle moving in a forward direction the brake-shoes are moved in an upward direction, which tends to bind said shoes against the wheels under a pressure varying with the weight of the load on the vehicle and the inclination of the hill.

Another peculiarity of my brake mechanism is the forward and downward inclination of the crank-arms on the brake-shaft under all conditions in the service of the brake. The crank-arms on the application of the brake-shoes move the latter in an upward and forward direction in opposition to the direction of rotation of the wheel, and thus the brake-shoes have a tendency to bind against the wheels in an upward direction, whereby the brake-shaft, in connection with the peculiar form of shoes, operates with great efficiency and power to retard or check the movement of the vehicle.

Changes may be made in the form and proportion of some of the parts, while their essential features are retained and the spirit of the invention embodied. Hence I do not desire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom.

Having thus described the invention, what I claim is—

1. In an automatic wagon-brake, the combination with an axle, a coupling-pole and a brake-shaft, of a pivoted bearing-plate provided with roller-bearings, a bolster, slides fast with the bolster and confined in guides on the bearing-plate to ride upon the roller-bearings and turn with said bearing-plate, and connections between the coupling-pole, the bolster and the brake-shaft, substantially as described.

2. In an automatic wagon-brake, the combination with a front axle, a coupling-pole, and a brake-shaft, of a bearing-plate having the flanges forming the guideways and the bearing-rollers in said guideways, each guideway provided with an overhanging flange, a bolster, slide-straps secured to the bolster and fitted in the guideways to ride upon the rollers and retained by the overhanging flanges, and connections between the coupling-pole, the bolster and the brake-shaft, substantially as described.

3. In an automatic wagon-brake, the combination with an axle, a coupling-pole, and a brake-shaft, of a bolster mounted slidably upon said axle, a draft-link pivoted to the coupling-pole and the bolster, and another link pivoted to the draft-link and connected with the brake-shaft, substantially as described.

4. In an automatic wagon-brake, the combination with a front axle, and a brake-shaft, of a king-bolt, a slotted coupling-pole fitted slidably on the king-bolt, a bearing-plate piv-

oted on said king-bolt, a bolster having slides fitted to said bearing-plate, a draft-link between the pole and bolster, and connections from the bolster to the brake-shaft, as set forth.

5 5. In an automatic vehicle-brake, the combination with an axle, and a coupling-pole, of a brake-shaft, a bolster slidably mounted on the axle, and a pair of links connected
10 with the bolster and extending rearward

therefrom to the brake-shaft and to the coupling-pole, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN H. POULTER.

Witnesses:

CHAS. O. TAYLOR,

A. A. TAYLOR.