

No. 738,005.

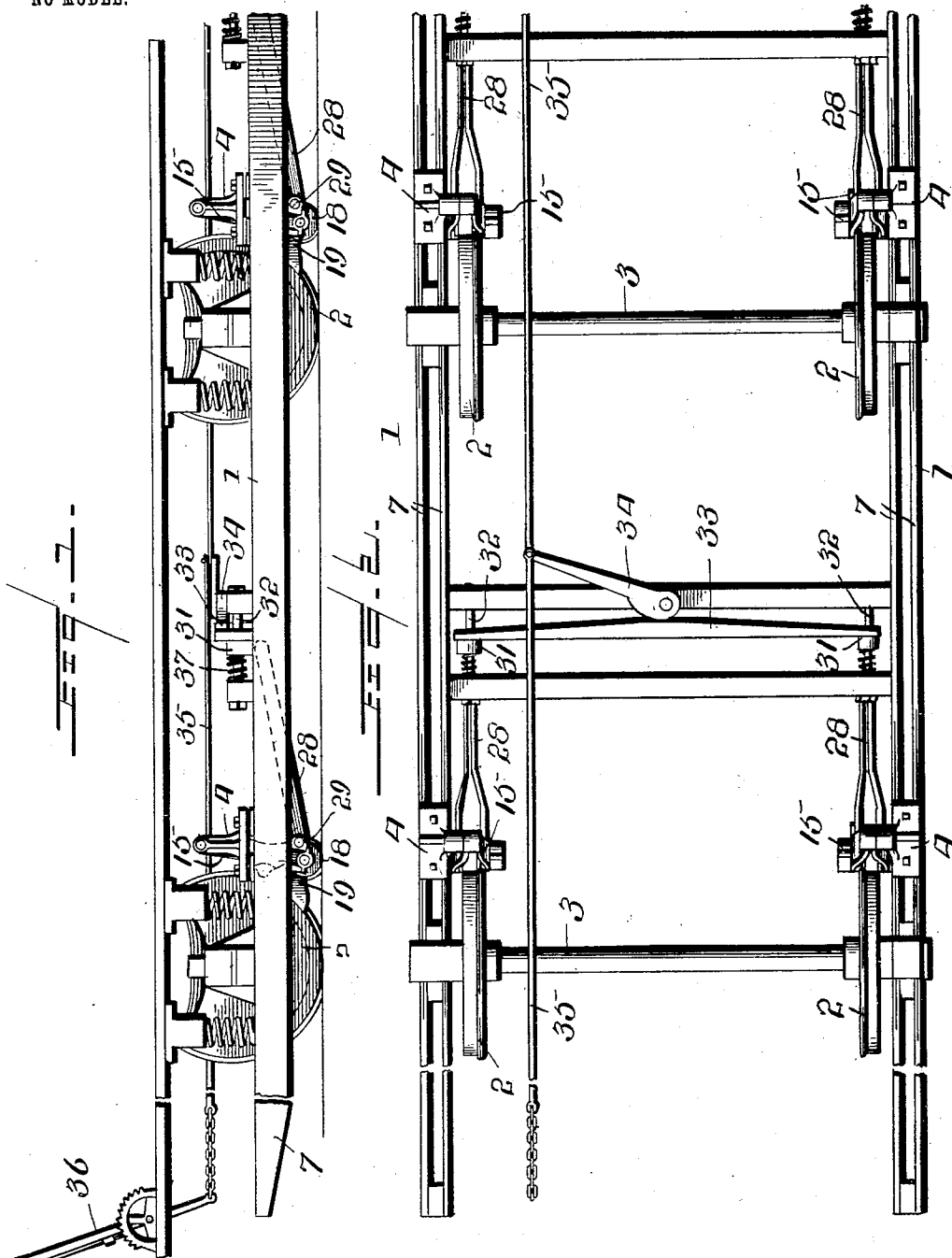
PATENTED SEPT. 1, 1903.

D. W. DAVIS.
RAILWAY BRAKE.

APPLICATION FILED MAR. 11, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES:

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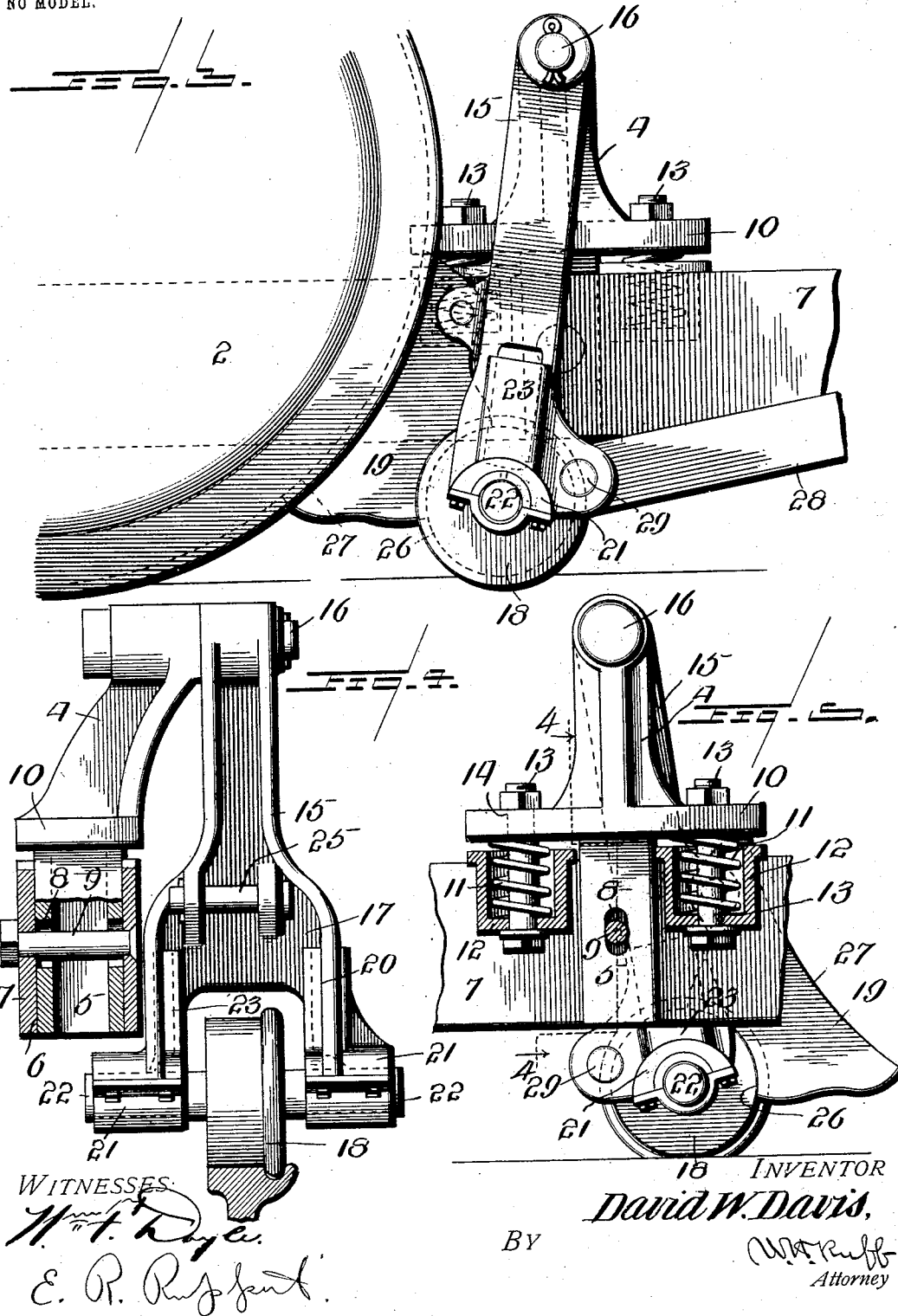
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3 SHEETS—SHEET 2.

NO MODEL.



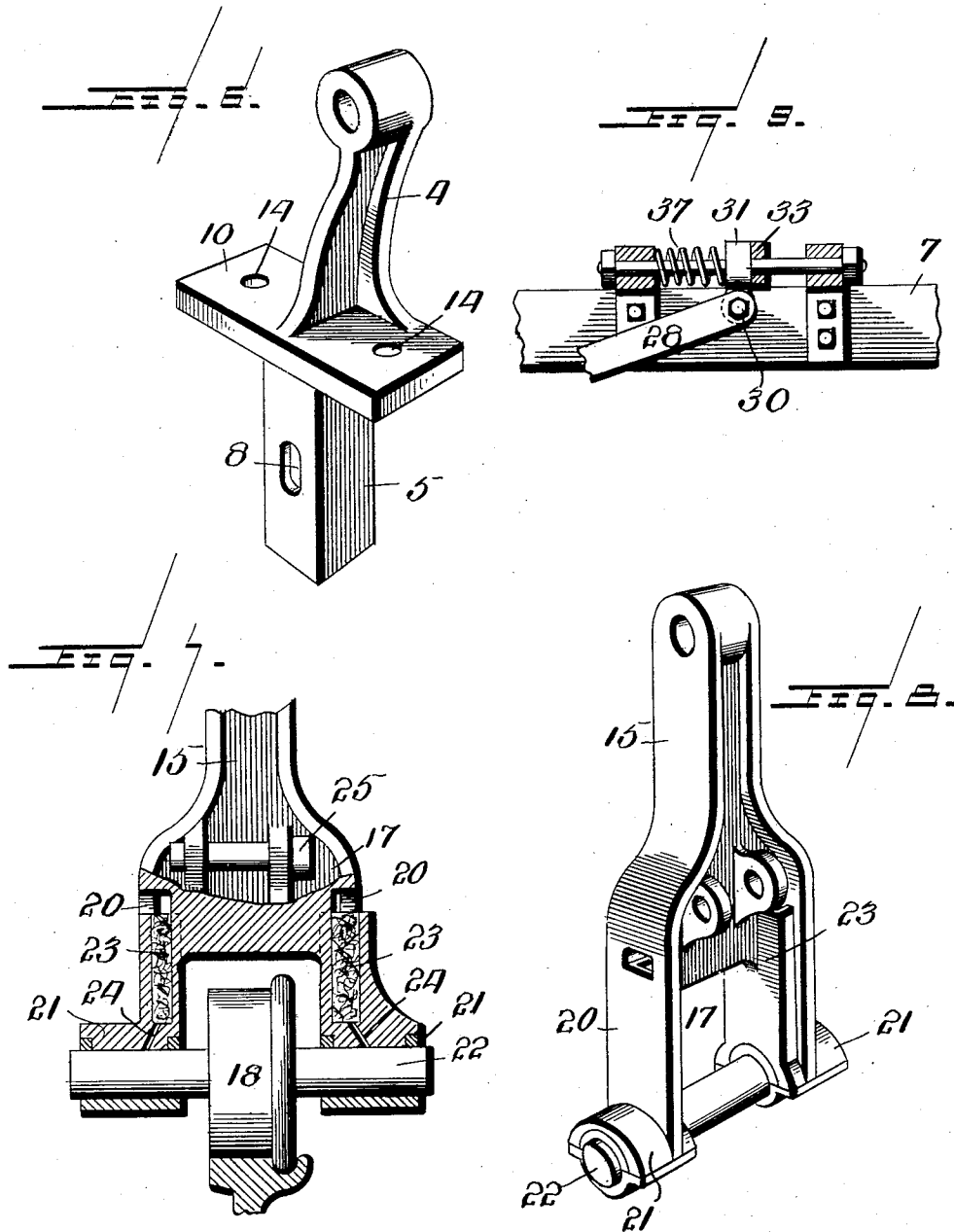
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3 SHEETS—SHEET 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

DAVID W. DAVIS, OF DETROIT, MICHIGAN, ASSIGNOR TO ROBERT R. HOWARD, TRUSTEE, OF DETROIT, MICHIGAN.

RAILWAY-BRAKE.

SPECIFICATION forming part of Letters Patent No. 738,005, dated September 1, 1903.

Application filed March 11, 1903. Serial No. 147,290. (No model.)

To all whom it may concern:

Be it known that I, DAVID W. DAVIS, a citizen of the United States, residing at No. 43 Madison avenue, Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Railway-Brakes, of which the following is a specification.

This invention relates to brakes of the railway type particularly designed for arresting the motion of railway-cars of any character and possessing special utility as a braking appliance for street-cars which make frequent stops and are usually brought to rest at short distances from comparatively high speeds.

To this end the invention contemplates a simple, practical, and effective brake mechanism embodying means for exerting a powerful braking action upon the car-wheels with a minimum effort on the part of the operator or with a minimum power applied to the brake-operating devices. In this connection the invention also has in view a construction wherein a double braking action will be provided for against the rails as well as against the wheels, while at the same time obviating to a large extent the skidding of the wheels after the pressure of the brakes has been applied thereto.

A further object of the invention is to provide a construction embodying a rolling fulcrum constituting an auxiliary braking-wheel, while at the same time coöperating with the brake-shoe to secure the application thereof to the car-wheel.

With these and many other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts, which will be hereinafter more fully described, illustrated, and claimed.

The essential feature of the invention, involved in the novel relation between the brake-shoe, the car-wheel, and the auxiliary braking-wheel constituting the rolling fulcrum, is susceptible to embodiment in a variety of structural modifications without departing from the scope of the invention; but the pre-

ferred embodiment of the latter is shown in the accompanying drawings, in which—

Figure 1 is a side view of a railway-car truck equipped with a braking appliance constructed in accordance with the present invention. Fig. 2 is a plan view thereof. Fig. 3 is an enlarged elevation of one of the individual brakes associated with each car-wheel. Fig. 4 is a vertical sectional view on the line 4 4 of Fig. 5. Fig. 5 is a detail elevation from the opposite side to that shown in Fig. 3 and illustrating in section the yielding supports for the brake-supporting bracket. Fig. 6 is a detail in perspective of one of the brake-supporting brackets with which each individual brake appliance is associated. Fig. 7 is a detail view, partly in section, of the swinging brake-hanger carrying the auxiliary braking-wheel and main brake-shoe. Fig. 8 is a detail in perspective of one of said brake-hangers. Fig. 9 is a detail sectional view showing more clearly the operative relation between the adjusting link or element for each brake appliance and the pressure or brake beam associated with the operating device therefor.

Like reference-numerals designate corresponding parts throughout the several figures of the drawings.

In carrying out the invention no change is required in the ordinary construction of the car-truck, and various forms of brake-operating devices may be associated with the individual brake appliance or brakes coöperating with each of the car-wheels; but for illustrative purposes a practical construction and arrangement of parts is shown in the drawings, so particular reference will be made thereto.

In the drawings, the numeral 1 designates the car-truck, of any approved type, supported upon the usual car-wheels 2, carried with the axles 3 and traveling upon the track-rails. The present invention contemplates the equipment of the car-truck with any number of individual brakes or brake appliances, according to the number of pairs of wheels with which it is desired to directly associate a brake; but as the individual brakes

or brake appliances are duplicates in construction a description of one will suffice for the others, as the essence of the present invention deals with the novel mounting and relation of the braking element.

Each of the individual brake appliances cooperating with one of the car-wheels 2 includes a main brake-supporting bracket 4, which is designed to have a mounting upon a member of the car-truck contiguous to the adjacent car-wheel. It is preferable in the carrying forward of the invention to have a yielding mounting for the brake-supporting bracket 4, so that the entire brake appliance will adapt itself to the vibrations of the truck, and to secure this result the said bracket 4 is usually formed with a lower holding-stem 5, working in a socket 6 provided in the truck beam or member 7 and having a limited vertical play therein by reason of being provided with vertically-disposed slots 8, receiving a retaining-bolt 9, fitted in the beam or member 7. In addition to the vertically-movable holding-stem 5 the bracket 4 is provided with a cross-plate 10, beneath which is arranged a pair of cushion-springs 11, arranged in the housings 12, fitted to the beam or member 7, and encircling the guiding-bolts 13, mounted in the bases of the housings 12 and extending through openings 14 in the opposite end portions of the plate 10.

The brake-supporting bracket 4 constitutes a vertically-yielding pivot-support for a horizontally-swinging brake-hanger 15. The horizontally-swinging brake-hanger 15 usually consists of a single-arm casting whose upper extremity has a pivotal mounting on a pivot-bolt 16, fitted in the upper end of the brake-supporting bracket 4, and the lower end of the arm constituting the hanger 15 is constructed to form a bearing-fork 17 for the auxiliary flanged braking-wheel 18, which constitutes a rolling fulcrum member for the main brake-shoe 19. The said bearing-fork 17 has the opposite side legs 20 thereof provided with the bearing-boxes 21, receiving the axle extensions 22 of the axle, which carries the auxiliary braking-wheel 18, and said bearing-boxes are formed with the oil-well chambers 23, in communication with the oil-ducts 25, which facilitate the oiling of the axle journals or extensions 22 in the bearings 21 therefor. By reason of the axle extensions 22 the wheel 18 is permitted lateral play within the fork 17, so that it will readily adjust itself to curves and other positions which the car-wheel itself is caused to assume when traveling on the track.

In the preferable construction of the invention the main brake-shoe 19 is also carried by the swinging brake-hanger 15, said shoe having a pivotal support 25 upon a hanger-bolt carried at one side of the arm constituting the swinging brake-hanger 15. The main brake-shoe 19 is interposed between the opposing adjacent surfaces of the car-wheel 2 and the auxiliary braking-wheel

18 and normally loosely hangs in this interval with no braking contact with either of said wheels. To provide for proper braking-contact with the two wheels, the shoe 19 is formed with the curved contact-faces 26 and 27, respectively, which are struck on arcs with radii of different lengths to adapt them to the relatively small and large wheels 18 and 2.

A simple form of operating device for the brake is shown in the drawings and includes for each brake appliance an adjusting-link 28, having a pivotal connection 29 at one end with the lower end portion of the swinging brake-hanger 15 and whose other end has a similar connection 30 with a collar 31, sliding on a guide-rod 32 at one side of one end of a pressure-beam 33, which cooperates with the brake appliance at the directly-opposite side of the truck. This pressure-beam 33 may be operated in any suitable manner—such, for instance, as by a cam-lever 34, pivotally mounted upon the truck and having pull connections 35 with the brake-lever 36 or other device for operating the brake. A readjusting-spring 37 is preferably arranged on the rod 32 at one side of the collar 31 to readjust the parts of the brake appliance to inactive positions when the pressure-beam 33 is relieved therefrom.

From the construction described it will be obvious that when pressure is applied to the brakes through the medium of the connections described the swinging brake-hanger of each appliance is moved toward the adjacent car-wheel, with the result of crowding the brake-shoe 19 against the car-wheel, while at the same time the auxiliary braking-wheel is itself crowded into one of the contact-faces of the brake-shoe and against the rail, with the consequence of producing a most powerful braking action. In this action the wheel 18 necessarily acts in the capacity of a rolling fulcrum for the brake-shoe.

It will be understood that changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent, is—

1. In a brake of the class described, a movable brake-hanger carrying an auxiliary braking-wheel, a brake-shoe interposed in the interval between the auxiliary wheel and the adjacent car-wheel, and means for moving the auxiliary wheel against the brake-shoe.

2. In a brake of the class described, the combination with the car-wheel, of a movable brake-hanger carrying an auxiliary wheel traveling on the rail, a brake-shoe interposed in the interval between the auxiliary wheel and the car-wheel and having contact-faces for both, and means for moving the auxiliary wheel, under pressure, against the brake-shoe and also the rail.

3. In a brake of the class described, the combination with the car-wheel, of a brake-shoe supported adjacent to the wheel, and a movable hanger carrying an auxiliary braking-wheel arranged to constitute a rolling fulcrum for the shoe and movable in a direction for having a braking contact with the shoe and also with the rail.

4. In a brake of the class described, the combination with the car-wheel, of a movable hanger carrying an auxiliary braking-wheel and also carrying a brake-shoe suspended in the interval between said wheel and the car-wheel.

5. In a brake of the class described, the combination with the car-wheel, of a movable brake-hanger carrying an auxiliary flanged braking-wheel for travel upon the rail, and also carrying a pivotally-hung brake-shoe suspended in the interval between the two wheels and having separate contact-faces for engagement respectively therewith.

6. In a brake of the class described, the combination with the car-wheel and a support, of a horizontally-swinging brake-hanger pivotally suspended from said support and provided at its lower end portion with a bearing-fork having oppositely-located bearings, an auxiliary braking-wheel having axle extensions loosely mounted in the bearings of the fork and having a lateral play within the fork, and a brake-shoe pivotally suspended

from one side of the brake-hanger and interposed in the interval between the auxiliary wheel and the car-wheel.

7. In a brake of the class described, the combination with the car-wheel and a support, of a horizontally-swinging brake-hanger pivotally suspended from said support and carrying an auxiliary braking-wheel and a brake-shoe interposed between the latter and the car-wheel, a suitably-arranged guide-rod, a collar slidable upon said rod, a spring arranged at one side of said collar, a pressure-beam movable against the opposite side of the collar, and an adjusting-link having a pivotal connection respectively with said collar and the said swinging brake-hanger.

8. In a brake of the class described, the combination with the car-truck, of a brake-supporting bracket having a limited vertical play upon the truck and provided with a cross member, cushioning springs arranged beneath the cross member to provide a yielding base or support for the bracket, and a brake-hanger carrying the braking elements and pivotally suspended from said bracket.

In testimony whereof I have affixed my signature in presence of two witnesses.

DAVID W. DAVIS.

Witnesses:

FRANK D. ANDRUS,
THOS. T. LEETE, Jr.