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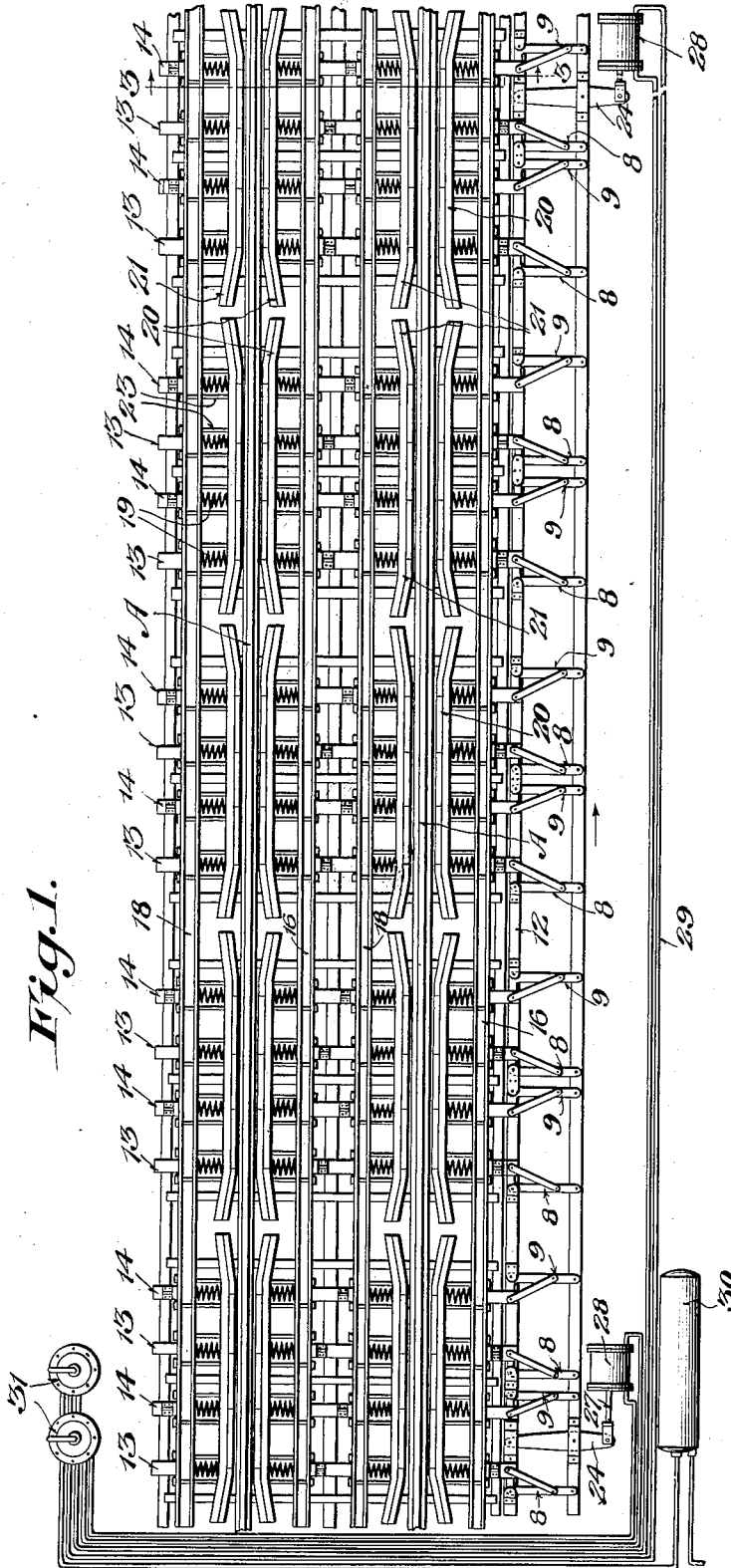
G. HANNAUER ET AL

1,612,865

TRACK BRAKE

Filed Dec. 24, 1923

3 Sheets-Sheet 1



Inventors
George Hannauer,
Edgar M. Wilcox,
by Royal E. Burnham,
Attorney

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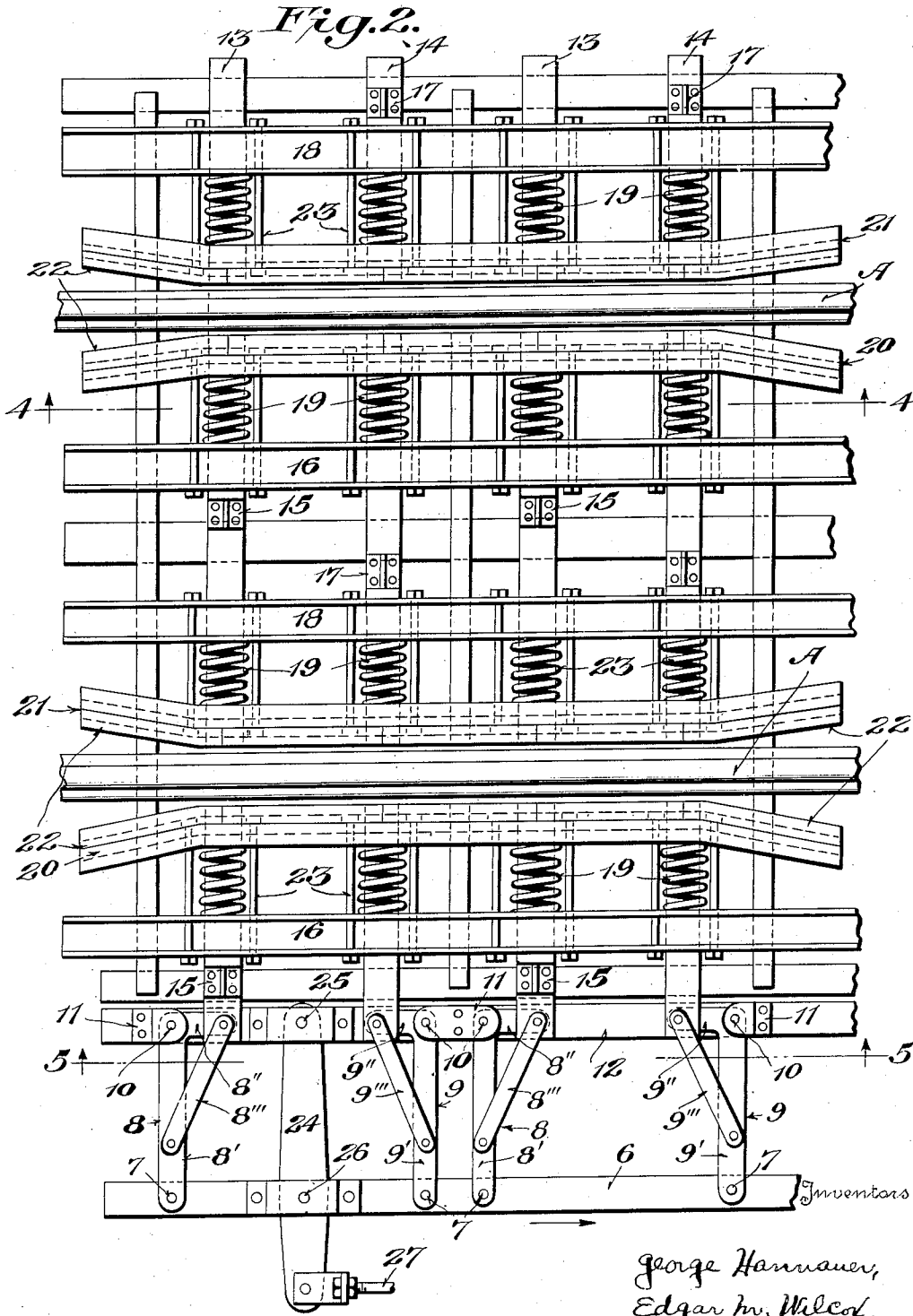
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TRACK BRAKE

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3 Sheets-Sheet 2



George Hannauer,
Edgar M. Wilcox,
by Royal E. Barnham,
Attorney

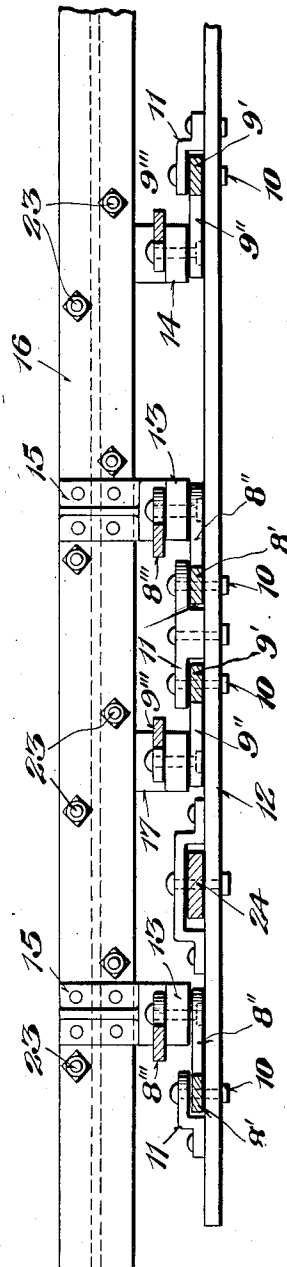
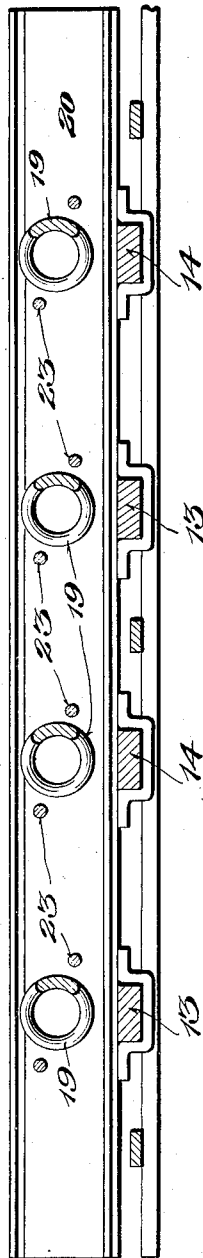
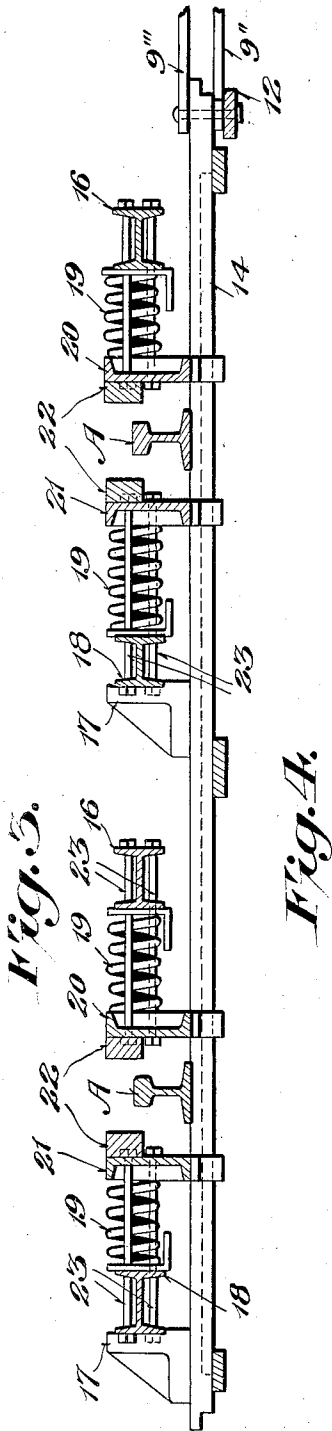
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TRACK BRAKE

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3 Sheets-Sheet 3



Inventors

George Hannauer,
Edgar M. Wilcox,
by Royal E. Burnham,

Attorney

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UNITED STATES PATENT OFFICE.

GEORGE HANNAUER, OF WEST HAMMOND, ILLINOIS, AND EDGAR M. WILCOX, OF HAMMOND, INDIANA, ASSIGNORS TO HANNAUER CAR RETARDER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

TRACK BRAKE.

Application filed December 24, 1923. Serial No. 682,581.

This invention relates to apparatus for controlling railway rolling stock while moving by gravity or momentum, as, for example, during switching and sorting operations.

The apparatus includes brake members disposed in pairs, the members of every pair being arranged on each side of a track-rail and to coact against opposite sides of wheels on the rails.

The invention provides an automatic flange and rim brake apparatus in which all brake members are caused to act simultaneously and with substantially equal pressure on wheels that may be between them.

Parts of the apparatus are arranged so that oppositely-exerted efforts and stresses imposed on brake members compensate one another in every set of brake members and throughout a plurality of sets of such members in the apparatus and on a member extending longitudinally of the apparatus to which are connected levers oppositely acting on brake members through interposed instrumentalities.

Further, the invention provides in the apparatus transversely-movable longitudinal members so arranged and actuated that they act with substantially uniform pressure on all of a plurality of brake members.

The invention generally provides improved details of construction and arrangement of parts, whereby there is afforded an apparatus of this character that is reliable, efficient, and economical of operation, and one that is capable of long service with comparatively small outlay for readjustment, repairs, and overhaul.

When considered in connection with the description herein, the characteristics of the invention are apparent from the accompanying drawings, forming part hereof, wherein an embodiment of the invention is disclosed, for purposes of illustration.

Although the disclosures herein exemplify what now is considered to be a preferable embodiment of the invention, it is to be understood that it is not the intention to be limited necessarily thereto in interpretation of the claims, as modifications and adaptations within the limits of the claims can be made without departing from the nature of the invention.

Like reference-characters refer to corre-

sponding parts in the views of the drawings, of which—

Fig. 1 is a plan view of the apparatus showing a plurality of sections arranged closely adjacent end to end;

Fig. 2 is a plan view of a section thereof;

Fig. 3 is a section on the line 3—3, Fig. 1;

Fig. 4 is a section on the line 4—4, Fig. 2; and

Fig. 5 is a section on the line 5—5, Fig. 2.

In the drawings, A designates rails arranged in a manner common to railway track installations.

At one side of the track there is a longitudinally-movable lever-operating member 6, which extends substantially parallel to the rails and substantially the length of the apparatus.

The member 6 is connected pivotally in any suitable manner at 7 to outer end portions of outwardly-extending operating-arms 8' and 9' of bell-crank levers 8 and 9. The levers have compression-arms 8'' and 9'', which are disposed substantially parallel to the rails. The two arms of every lever are connected by struts 8''' or 9''', as the case may be. The levers are fulcrumed at their angles on pivot members 10 mounted in brackets 11 and in a fulcrum member 12 extending longitudinally of the apparatus and substantially parallel to the rails, the brackets being mounted on member 12 and overlapping the levers. The arms 8'' extend from the fulcrums in a direction opposite to the arms 9''.

The levers are connected pivotally in the end portions of their arms 8'' and 9'' to members 13 and 14, respectively, which extend and are movable transversely of the track. The members 13 have mounted thereon uprights 15 facing in one direction with respect to the rails, and they bear against and are secured to elongated beams 16 extending substantially the length of the apparatus and substantially parallel to the rails at one side thereof; and the members 14 have mounted thereon uprights 17 facing in the opposite direction and bearing against and secured to elongated beams 18 disposed in a manner similar to beams 16 on the opposite sides of the rails.

Each of a pair of beams 16 and 18 disposed on opposite sides of each rail bears against springs 19, which in turn bear

against brake members 20 and 21 carrying removable shoes 22 arranged to contact with the sides of wheels on the rails. The brake members are mounted slidably on the transverse members 13 and 14, and they are connected with the beams by bolts 23, which are arranged to slide through the beams when the springs are compressed. The brake members of every pair are deflected outwardly in their end portions to facilitate entrance of wheels between them.

The number of members 13 and operating-levers 8 therefor is the same in each section, and throughout the apparatus, as the number of members 14 and operating-levers 9 therefor. Thus one-half of the movable transverse members are arranged to exert pressure, through the instrumentality of uprights 15, beams 16, and springs 19, against brake members 20 toward one side of the two rails, and the other half, through the instrumentality of uprights 17, beams 18, and springs 19, against brake members 21 toward the opposite side of the two rails.

Consequently, when the levers 8 and 9 are swung simultaneously and uniformly, and in view of the fact that the arms 8'' and 9'' extend in opposite directions from the lever-fulcrums, the brake members 20 and 21 of every pair are pressed toward each other, the two contact with opposite sides of wheels between them, and they exert braking or retarding action thereon, or their pressure on the wheels is reduced or released, dependent upon the direction in which the levers are swung.

Taking as an example a set of two levers 8 and two levers 9 associated with one set of brake members, as shown by Fig. 2, and assuming that the operating member 6 is moved in the direction indicated by the arrow, all of the levers from end to end of the apparatus are swung, the levers 8 will force the transverse members 13 away from that side of the track and the levers 9 will draw the members 14 toward that side, and the brake members of every pair will be forced toward each other and exert braking or retarding action on the wheels to an extent dependent upon the amount of movement of member 6; and, when member 6, is moved in the opposite direction, the braking or retarding action is reduced or released, dependent then also upon the amount of movement of the operating member.

As the number of levers exerting effort in one direction is the same as those exerting effort in the opposite direction, the stresses imposed on member 12 by action of levers in one direction are counteracted by substantially equal stresses imposed by action of levers in the opposite direction. Accordingly, the member 12 may be of a floating type and connected, through the levers 8 and 9, only to the members 13 and 14; and,

in view of this condition, the brake members and their associated parts automatically adjust themselves to inequalities of structure and of wheels on the rails to impose substantially equal braking action in each set on both sides of the wheels. The transverse ly arranged and movable members 13 and 14 pass under the rails A and thereby anchor the whole braking device.

The levers 8 are arranged alternately with respect to levers 9 in each section and throughout the apparatus; and, accordingly, the oppositely-exerted efforts resulting from their oppositely-extending arms 8'' and 9'' are distributed uniformly throughout the fulcrum member 12. As the transverse members 13 and 14 are arranged correspondingly with respect to the levers, the efforts and stresses imposed by them on the beams 16 and 18 also are distributed uniformly. As the beams are moved simultaneously and with substantial uniformity throughout their entire length by action of the uprights 15 and 17, there is substantially simultaneous, uniform, and compensatory action on the brake members throughout the apparatus. Transverse efforts imposed on brake members by any swaying or wobbling of rolling stock on the rails is cushioned by the springs 19; and, by reason of the floating condition of the member 12, the entire apparatus automatically adjusts itself to the particular positions the wheels may assume on the rails.

The member 6 may be operated in any suitable manner to swing the levers 8 and 9. An effective and satisfactory means of operating and controlling the apparatus is exemplified by the drawings. The operating-arms 24, one near each end of the apparatus, are fulcrumed at one end at 25 on the member 12, and between their ends they are connected pivotally at 26 to the member 6, so that, when the operating-arms are swung, the member 6 is moved longitudinally and the levers swung. Each arm 24 is connected at its outer end portion with and swung by a piston-rod 27 of a fluid-pressure device 28 operated by compressed air or other suitable fluid supplied through pipes 29 from a storage-reservoir 30, fluid flow and pressure being controlled by valves 31, and one set of pipes and one valve being provided for each device. The control-valves may be located at any place in which it is desirable to have the operator of the apparatus stationed, as, for example, in a switch-control tower. Thus the entire apparatus can be operated and controlled by a single operator, who by regulating the fluid pressure in the devices 28 may govern the position of the brake members with respect to the rails and their action on wheels on the rails, whereby rolling stock of which the wheels are a part may be retarded, stopped, and released at will.

When fluid-pressure devices are employed to control the apparatus, spreading apart of pairs of brake members not only is cushioned by the springs 19 and there is occurrence of automatic compensatory adjustment in the apparatus as a whole, but also the back stresses imposed on the levers 8 and 9 are cushioned by the compressible fluid in those devices.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a pair of track-rails, of brake members on each side of each rail arranged to contact with wheels thereon, a transverse member arranged to impart braking movement in one direction to brake members on one side of each of said rails, a transverse member arranged to impart braking movement in the opposite direction to brake members on the other side of each of said rails, and means whereby said transverse members are moved simultaneously in opposite directions for operating said brake members.

2. The combination, with a pair of track-rails, of brake members on each side of each rail arranged to contact with wheels thereon, longitudinal transversely-movable beams on each side of each rail connected to said brake members, a set of transverse members operatively connected with the beams on one side of said rails for operating said beams, a set of transverse members operatively connected to the beams on the other side of said rails for operating said beams, and means whereby said sets of transverse members are moved simultaneously in opposite directions for operating said brake members.

3. The combination, with a pair of track-rails, of a brake member on each side of each rail arranged to contact with wheels thereon, longitudinal transversely-movable beams on each side of each rail connected with said brake members, springs interposed between said brake members and beams for yieldably transmitting a braking pressure, a transverse member operatively connected with a beam on one side of each of said rails, a transverse member connected with a beam on the other side of each of said rails, and means whereby said transverse members are moved simultaneously in opposite directions for operating the braking members.

4. The combination, with a pair of track-rails, of brake members on each side of each rail arranged to contact with wheels thereon, longitudinal transversely-movable beams on each side of each rail, bolts connecting said brake members and beams, springs interposed between said brake members and beams for yieldably transmitting a braking pressure, a transverse member operatively connected with a beam on one side of each

of said rails, a transverse member operatively connected with a beam on the other side of each of said rails, and means whereby said transverse members are moved simultaneously in opposite directions for operating the brake members.

5. The combination, with a pair of track-rails, of two transverse members movable transversely of the track, brake members slidably mounted on said transverse members on each side of each rail arranged to contact with wheels thereon, members associated with one of said transverse members arranged to move a brake member on one side of each of said rails, members associated with the other of said transverse members arranged to move a brake member on the other side of each of said rails, and means whereby said transverse members are moved simultaneously in opposite directions for operating the brake members.

6. The combination, with a pair of track-rails, of a brake member on each side of each rail arranged to contact with wheels thereon, longitudinal transversely-movable beams on each side of each rail operatively connected to said brake members, two transverse members movable transversely of the track, uprights on one of said transverse members operatively connected with beams on one side of each of said rails, uprights on the other one of said transverse members operatively connected with the beams on the other side of each of said rails, and means whereby said transverse members are moved simultaneously in opposite directions for operating said brake members.

7. The combination, with a pair of track-rails, of a brake member on each side of each of said rails arranged to contact with wheels thereon, a transverse member movable transversely of the track operatively connected to a brake member on one side of each of said rails, a transverse member movable transversely of the track operatively connected to a brake member on the other side of each of said rails, a lever connected to one of said transverse members, another lever connected to the other of said transverse members, said levers being arranged when swung in one direction to move said transverse members in opposite directions, and an operating member connected to said levers for operating said brake members.

8. In a track-brake apparatus, brake members one on each side of each rail, two transverse members movable transversely of the apparatus, and each being operatively connected to two of said brake members on corresponding sides of said track rails, a lever connected to one of said transverse members, another lever connected to the other of said transverse members, said levers being arranged when swung in one direction to move said transverse members in

opposite directions, and an operating member operatively connected to said levers for operating said brake members.

9. In a track-brake apparatus, brake members, two transverse members movable transversely of the apparatus and each being operatively connected to some of said brake members, two fulcrumed levers comprising outwardly-extending operating-arms and compression-arms, the compression-arm of one of said levers extending in one direction from its fulcrum and being connected to one of transverse members, and the compression-arm of the other of said levers extending in the opposite direction and being connected to the other of said transverse members, and an operating member connected with the operating-arms of said levers for operating said brake members.

10. In a track-brake apparatus, brake members, two transverse members movable transversely of the apparatus and each set being operatively connected to some of said brake members, a fulcrum member disposed longitudinally of the apparatus, two levers fulcrumed on said fulcrum member and comprising operating-arms extending outwardly therefrom and compression-arms, the compression-arm of one of said levers extending in one direction from its fulcrum and being connected to one of said transverse members and the compression-arm of the other of said levers extending in the opposite direction and being connected to the other of said transverse members, and an operating member connected with the operating-arms of said levers for operating said brake members.

11. In a track-brake apparatus, brake members, two transverse members movable transversely of the apparatus and each set being connected operatively to some of said brake members, a fulcrum member disposed longitudinally of the apparatus, two levers fulcrumed on said fulcrum member and comprising operating-arms extending outwardly therefrom and compression-arms, the compression-arm of one of said levers extending in one direction from its fulcrum and being connected to one of said transverse members and the compression-arm of the other of said levers extending in the opposite direction and being connected to the other of said transverse members, an operating member connected to the operating-arms of said levers, an arm swingably connected to said fulcrum member and operatively connected to said operating members, and means whereby said arm is swung for operating said brake members.

12. A track-brake apparatus comprising a plurality of sections each of which includes a brake member on opposite sides of each rail and two sets of transverse members movable transversely of the apparatus and each

set being operatively connected to a plurality of said brake members, and means whereby said sets of transverse members on the same side of each rail are moved simultaneously in opposite directions in all sections for operating said brake members.

13. In combination with a pair of track-rails, a brake apparatus comprising a plurality of sections each of which includes brake members on each side of each rail arranged to contact with wheels thereon and two sets of transverse members movable transversely of the apparatus, longitudinal beams extending substantially the length of the apparatus operatively connected to one set of transverse members of each section and to brake members on one side of each of said rails, longitudinal beams extending substantially the length of the apparatus operatively connected to the other sets of transverse members and to brake members on the other side of each of said rails, and means whereby said sets of transverse members are moved simultaneously in opposite directions in all sections for operating said brake members.

14. In combination with a pair of track-rails, a brake apparatus comprising a plurality of sections each of which includes spring pressed brake members on each side of each rail, two sets of transverse members movable transversely of the apparatus, longitudinal beams extending substantially the length of the apparatus operatively connected to one set of said transverse members of each section and bearing against the springs of brake members on one side of each of said rails, longitudinal beams extending substantially the length of the apparatus operatively connected to the other sets of transverse members and bearing against the springs of brake members on the other side of each of said rails, and means whereby the sets of transverse members are moved simultaneously in opposite directions in all sections for operating said brake members.

15. A track-brake apparatus comprising a plurality of sections each of which includes brake members and two transverse members movable transversely of a track and each being operatively connected to a brake member on the same side of each rail, a lever connected to one of said transverse members of each section, another lever connected to the other of said transverse members of each section, said levers being arranged when swung in one direction to move said transverse members of each section in opposite directions, and an operating member connected to and arranged to swing all of said levers simultaneously for operating said brake members.

16. A track-brake apparatus comprising a plurality of sections each of which in-

cludes brake members and two sets of transverse members movable transversely of a track and each set being operatively connected to some of said brake members, a fulcrum member disposed longitudinally of the apparatus, two sets of levers fulcrumed on said fulcrum member and comprising operating-arms extending outwardly therefrom and compression-arms, the compression-arms of one set of levers extending in one direction from the fulcrums and being connected to corresponding sets of transverse members of the several sections, and the compression-arms of the other set of levers extending in the opposite direction and being connected to the other corresponding sets of transverse members of the several sections, and an operating member connected to and arranged to swing all of the operating-arms of said levers simultaneously to operate said brake members.

17. A track-brake apparatus comprising a plurality of sections each of which includes brake members and two sets of transverse members movable transversely of a track and each set being operatively connected to some of said brake members, a fulcrum member disposed longitudinally of the apparatus, two sets of levers fulcrumed on said fulcrum member and comprising operating-arms extending outwardly therefrom and compression-arms, the compression-arms of one set of levers extending in one direction from their fulcrums and being connected to corresponding sets of transverse members of the several sections and the compression-arms of the other set of levers extending in the opposite direction and being connected to the other corresponding sets of transverse members of the several sections, an operating member disposed longitudinally of the apparatus connected to the operating-arms of all of said levers, an arm swingably connected to said fulcrum member and operatively connected to said operating member, and means whereby said arm is swung for operating said brake members.

18. The combination, with a pair of track rails, of a transversely movable brake member on each side of each rail adapted to clasp a wheel for retarding movement of the latter, and transversely movable members extending from rail to rail and operatively connected to said brake members for actuating them.

19. The combination, with a pair of track rails, of a transversely movable brake member on each side of each rail adapted to clasp a wheel for retarding movement of the latter, and transversely movable members extending from rail to rail and operatively connected to said brake members for actuating them, said transversely movable members being mounted under the rails to anchor the brake device.

20. A track brake comprising, in combination, a track rail, a series of brake members closely spaced end to end on each side of said rail and arranged to press against a car wheel thereon, and means including a plurality of springs acting on each of said brake members at separated points lengthwise thereof for pressing said members of the series separately against the wheels of cars on the track, said series of brake members and the plurality of springs acting on each member producing substantially equal opposed pressures on the car wheels as they move along the track rails between said brake members.

21. In a track brake of the character described, brake members extending longitudinally of the track rails and disposed one on each side of each rail, two members extending transversely of the track, means for moving said members in opposite directions, and springs between each transverse member and the two of said brake members on corresponding sides of the track rails, said springs being aligned with said transverse members.

22. The combination, with a pair of track rails, of a transversely movable brake member on each side of each rail adapted to clasp a wheel for retarding movement of the latter, and means including members transversely movable and extending from rail to rail and operatively connected to said brake members for applying all of said brake members simultaneously at substantially the same pressure.

23. The combination, with a pair of track rails, of a transversely movable brake member on each side of each rail adapted to clasp a wheel for retarding movement of the latter, and transversely movable members extending from rail to rail and yieldably connected to said brake members for yieldably actuating them to compensate for irregular mechanical conditions and actions.

24. A track brake device of the type described comprising, in combination with track rails, brake members one on each side of each track rail and movable transversely of the track and mechanically connected for movement in opposite directions, a spring acting horizontally against each brake member substantially in line with the top of the track rails, and means attached to each of said transverse members and acting on the springs of the two brake members on corresponding sides of said track rails to press said brake members against the wheels of cars on said track rails.

25. The combination, with a pair of track rails, of a transversely movable brake member on each side of each rail adapted to clasp a wheel for retarding movement of the latter, and transversely movable members arranged alternately for simultaneous move-

ments in opposite directions and operatively connected to said brake members for equalizing the applied braking pressure.

26. The combination, with a track rail, of a brake member on each side of said rail arranged to contact with a wheel thereon, a longitudinal transversely-movable beam on each side of said rail, and spring means interposed between said beams and brake members for yieldably transmitting braking pressure to said brake members.

27. The combination, with a track rail, of a brake member on each side of said rail arranged to contact with a wheel thereon, a longitudinal transversely-movable beam on each side of said rail, spring means interposed between said beams and brake members for yieldably transmitting braking pressure to said brake members, a transverse member operatively connected to a beam on one side of said rail, a transverse member operatively connected to a beam on the other side of said rail, and means whereby said transverse members are moved simultaneously in opposite directions for operating said brake members.

28. A track brake apparatus comprising a plurality of sections, closely adjacent end to end, each of which includes a brake member on each side of each track rail, motion transmission members operatively connected to said brake members, and power means operatively connected to said motion transmission members for moving all of said brake members simultaneously to the same extent and thereby clasp the wheels with substantially the same pressure along the track.

29. In track brake apparatus comprising a plurality of sections closely adjacent end to end, each of which includes a spring pressed brake member on each side of each track rail, motion transmission means operatively connected to said brake members, and power means operatively connected to said motion transmission means for moving all of said brake members simultaneously to the same extent and thereby clasp the wheels with substantially the same pressure along the track.

30. In a track brake apparatus comprising a plurality of sections closely adjacent end to end, each of which includes a brake member on each side of a track rail, and power means operatively connected to said brake members for moving all of said brake members simultaneously to the same extent and thereby clasp the wheels at substantially the same pressure along the rail.

31. In sectional track brake apparatus, a section comprising a brake member on each side of each track rail, power means operatively connected to said brake members for applying all of said brake members simultaneously at substantially the same

pressure, and cushioning means interposed between said power means and brake members whereby braking pressures are yieldably transmitted to said brake members.

32. In sectional track brake apparatus, a section comprising a brake member on each side of each track rail, motion transmission means operatively connected to said brake members, and power means operatively connected to said motion transmission means for applying all of said brake members simultaneously at substantially the same pressure, said motion transmission means including a cushioning medium whereby the braking pressures are yieldably transmitted to said brake members.

33. A track brake apparatus for railroads comprising, in combination with a track rail, a brake member along each side of the track rail, said brake members being arranged to engage opposite faces of a car wheel on said rail, yieldable means acting against each of said brake members at a plurality of points throughout its length, and power means including transverse members in line with said yieldable means acting upon said yieldable means to press said brake members toward each other against the car wheel.

34. A track brake apparatus for railroads comprising, in combination with a track rail, a brake member on each side of said rail, yieldable means associated with each brake member and acting to move it toward the other member, and power means including transverse members in line with said yieldable means acting with substantially equal force against said yieldable means to press said brake members toward each other against a car wheel on the track rail.

35. Track brake apparatus of the character described comprising, a series of independently movable braking elements disposed closely together end to end along each side of a track rail, power means for simultaneously pressing said brake elements toward each other, and yieldable means interposed between said power means and said brake elements.

36. Track brake apparatus for railroads comprising, a series of braking elements arranged closely together end to end on each side of a track rail, a spring acting against each braking element to move it toward the other, and power means acting on said springs to move said braking elements simultaneously toward each other and press them against opposite faces of a car wheel on the track rail.

37. In car brake apparatus of the character described, in combination with a pair of track rails, a series of independently movable braking elements disposed closely together end to end along each side of each track rail, and power means for simultane-

ously moving said braking elements associated with each track rail toward each other with a yieldable pressure.

38. The combination with a pair of track rails of a transversely movable brake member on each side of each rail adapted to clasp a wheel for retarding movement of the latter, springs operable upon said brake members, and members movable transversely of the track rails and aligned with said springs for yieldably transmitting power through said springs to said brake members.

39. A track brake apparatus comprising a plurality of sections, each of which includes a brake member on each side of each track rail, springs operable upon said brake members, and members extending longitudinally of the rail and movable transversely thereof for transmitting a yieldable braking pressure through said springs to said braking members, each of said longitudinally extending members acting upon a plurality of said braking members on one side of the track rail.

40. Track brake apparatus for railroads comprising, in combination with a pair of track rails, braking members on each side of each track rail divided into a plurality of sections, said braking members of each section flared apart at one end to guide a car wheel into the space between the members of that section, yieldable means acting upon each section, and power means acting upon said yieldable means for causing said sections to press against opposite faces of car wheels on the corresponding track rail with substantially the same pressure.

41. A track brake comprising a series of brake members disposed close together end to end longitudinally along each side of each track rail, members extending transversely of the track, a spring interposed between each transverse member and the brake members on corresponding sides of the track rail, means supporting said brake members separately for horizontal movement toward and away from the track rails, said means restraining said brake members against upward and downward movement while in engagement with a car wheel, and

power means for simultaneously moving said transverse members to press the brake members against the car wheels.

42. In a track brake of the character described, a series of brake members arranged close together end to end along each side of each rail of a railroad track, means including members extending transversely of the track and springs interposed between said transverse members and said brake members for simultaneously moving said brake members toward and away from each other to clasp the wheels of cars on said track, longitudinal members extending lengthwise of the track for supporting said transverse members for horizontal movement but not vertical movement, an operating bar extending longitudinally of the track operatively connected to said transverse members, and power means for moving said operating bar endwise in opposite directions.

43. In a track brake, in combination, a pair of track rails, brake members one on each side of each track rail, a spring acting horizontally against each brake member to move it horizontally toward its corresponding track rail, means movable transversely of the track and acting on said springs, bolts between said transversely movable members and said brake members for limiting their relative movement in one direction, transversely extending and movable members for transmitting motion to said means, and power means for operating said transversely extending and movable members simultaneously.

44. A track brake comprising, in combination with a pair of track rails, a series of brake members arranged close together end to end along each side of each track rail, a separate brake shoe fastened to each of said brake members, and power means including a plurality of springs acting on each brake member for pressing said brake shoes against both faces of car wheels on said track.

In witness whereof we affix our signatures.

GEORGE HANNAUER.
EDGAR M. WILCOX.