May 3, 1927. 1,627,137

M. E. BARR

VARIABLE PRESSURE TRACK BRAKE

Filed Aug. 21, 1925 2 Sheets-Sheet 1

Fig. 1.

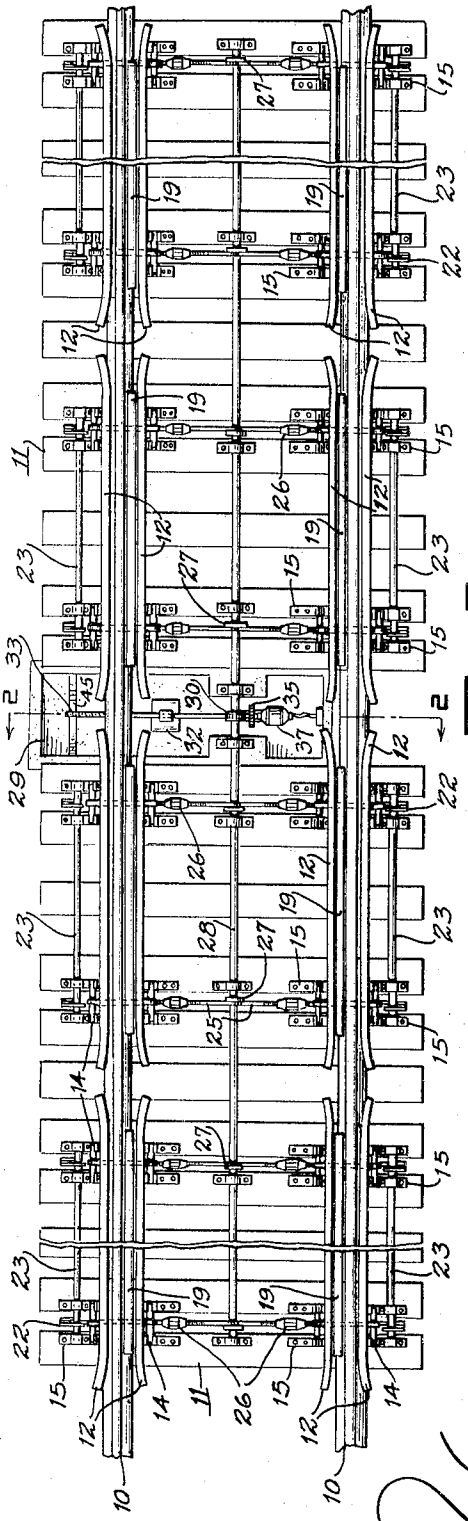
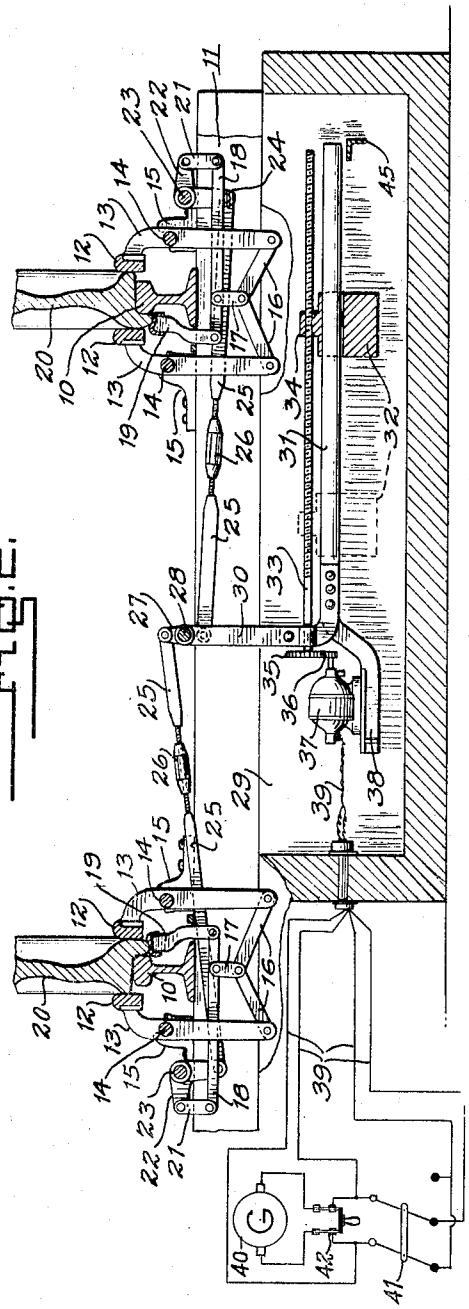


Fig. 2.



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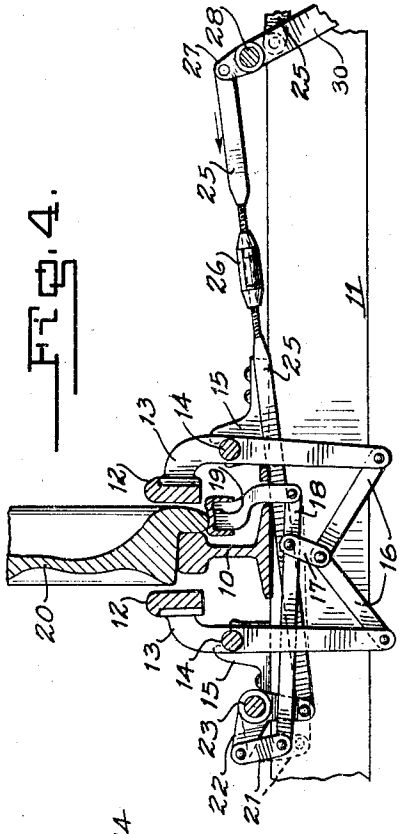


Fig. 4.

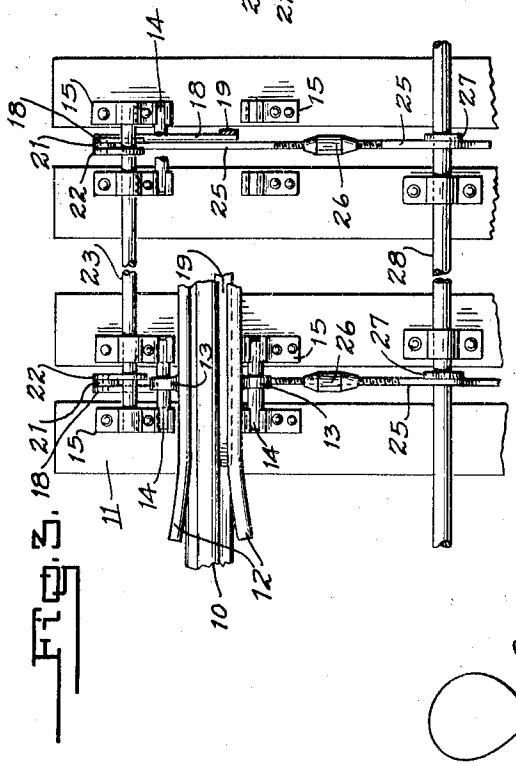


Fig. 3.

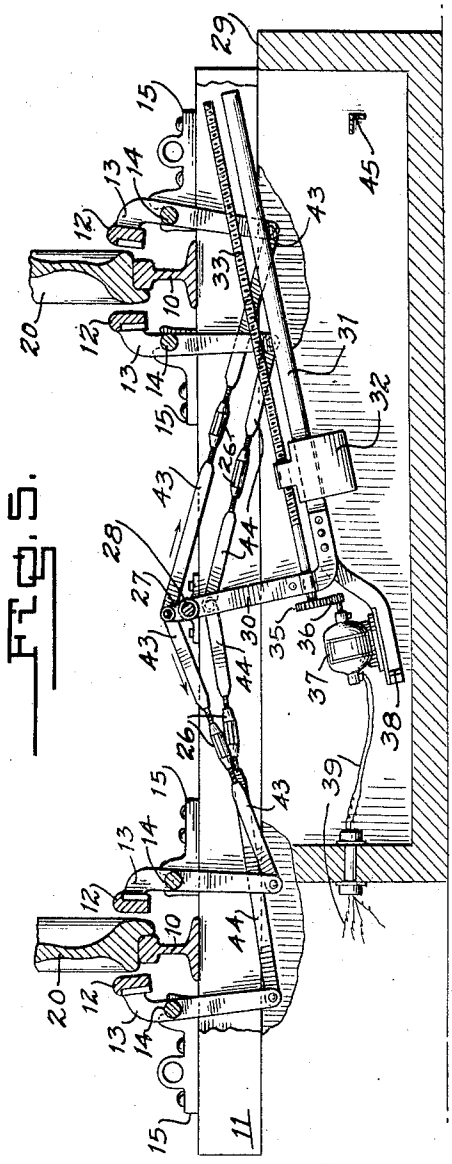


Fig. 5.

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UNITED STATES PATENT OFFICE.

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VARIABLE-PRESSURE TRACK BRAKE.

Application filed August 21, 1925. Serial No. 51,643.

The present invention relates to brakes and more particularly to track brakes for application to the wheel of rolling stock passing over the track.

An object of the present invention is to provide a track brake for application to the wheels of a car or other rolling stock when cut off and coasting, the brake being applied by the weight of the rolling stock and proportionately checking the movement of the same.

Another object of the invention is to provide an automatic track brake of this character with electrically controlled means for varying the effective pressure of the brake with respect to the weight of the rolling stock.

A further object is to provide a track brake of this character which is automatic and provided with a mechanism which may be, for the most part, protected and housed against the elements and against freezing so as to eliminate mechanism required for operating the brake at a distance remote from the track.

The invention also embraces certain other detail improvements in the construction of brake disclosed in my prior application filed September 27, 1924, Serial No. 740,327.

The above and various other objects and advantages of this invention will in part be described in, and in part be understood from, the following detailed description of the present preferred embodiment, the same being illustrated in the accompanying drawings, wherein:

Fig. 1 is a top plan view of a section of a railroad track equipped with an automatic brake mechanism constructed according to the present invention.

Fig. 2 is an enlarged transverse section taken through the same substantially on the line 2—2 of Fig. 1, showing the gripper rails in section and wheels in position on the track between the gripper rails.

Fig. 3 is a fragmentary enlarged top plan view of a portion of the track with the adjacent parts of the brake mechanism.

Fig. 4 is a fragmentary enlarged section of one side of the track as shown in Fig. 2 but with the brake released, and

Fig. 5 is an enlarged view of a modification of this device taken substantially on the line 2—2 of Fig. 1 with the brake released.

Referring to the drawings 10 designates the rails of a track of approved form and mounted upon cross ties 11. Each rail 10 has disposed at its opposite sides a pair of gripping rails 12 which are operated in pairs for movement toward and from each other, and any desired number of pairs may be placed along the rail 10, and the gripping rails 12 may be of any desired length.

Each gripper rail 12 is mounted upon the upper ends of a pair of arms 13 disposed near the opposite ends of the rail and provided with a cross pin 14 near the upper end of each arm 13, the cross pin having bearing at opposite ends in a pair of bearing blocks 15 which are secured upon the upper sides of adjacent ties 11. The lower ends of opposed arms 13 are connected together by toggle links 16 which buckle upwardly and are connected to a common short link 17 which is pivotally connected to a supporting lever 18 near one end of the latter. The short end of the supporting lever 18 pivotally carries a ramp or depressible rail 19 which extends upwardly at one side of the track rail 10 in position to be traversed by the flange of a car wheel 20.

The supporting lever 18 at its long end is connected by a link 21 to a rocker arm 22 on a shaft 23 which has bearing in the outer bearing block 15 and which extends lengthwise of the track to the adjacent pair of arms 13 of the respective gripper rails 12.

At suitable points, preferably adjacent each pair of arms 13, the shaft 23 is provided with a depending arm 24 pivoted to one end of a connecting bar 25 which is adjustable as to length by an interposed turn buckle 26. The connecting bar 25 is pivoted to one end of a normally vertically disposed rocker arm 27 carried upon a longitudinal shaft 28. The other end of the rocker arm 27 is connected to a similar connecting bar 25 which extends to the opposite side of the track and is connected to a similar gripper rail mechanism.

As shown in Fig. 1, the shaft 28 is connected to a balancing mechanism arranged preferably between the track rails 10 and intermediate the pairs of supporting arms 13, the shaft 28 extending throughout the series of gripper rails.

The balancing mechanism is arranged in a trough or housing 29 and comprises a depending arm 30 fixed to the shaft 28 and provided at its lower end with a laterally

extending weight arm 31 which projects beneath one of the track rails 10 and provided with a shiftable weight 32 of sufficient size to effectively balance and overbalance the various devices connected to the main shaft and so as to hold the supporting levers 18 at the desired angle on their respective toggle connections and support the ramps 19 at the desired height. The height of the ramps control the pressure of the gripper rails 12 against the opposite sides of the wheels 20, dependent of course upon the weight imposed by the wheels upon the ramps 19.

The weight 32 may be shifted along the weight arm 31 in any suitable manner, but preferably by electrical means as shown so that the position of the weight may be controlled from a point remote from the track. In the present instance a threaded rod 33 is swivelled in the depending arm 30 immediately above the weight arm 31, the threaded rod 33 extends along in parallelism with the weight arm 31 and has threaded engagement in a lug 34 which projects upwardly from the weight 32. A gear wheel 35 is mounted upon the inner end of the threaded rod 33 and meshes with a pinion 36 carried upon the shaft of an electric motor 37. The motor 37 is supported upon a platform or bracket 38 which is connected to the inner end of the weight arm 31 and extends oppositely therefrom beyond the depending arm 30.

The motor is connected by a cable 39 with a generator 40, or other suitable source of electric energy, and the wiring of the cable includes a polarity changing switch 41 by means of which the motor 37 may be reversed in its direction of operation, and a cut out switch 42 of any approved type for breaking the circuit.

The modification illustrated in Fig. 5 eliminates the use of the ramps 19, and the gripper rails 12 are controlled wholly by the weight 32 and the counterbalancing motor 37. In this instance one inner gripper rail 12 and an opposite outer gripper rail 12 are connected, through the lower ends of their arms 13, by adjustable connecting bars 43 with the upper end of the rocker arm 27, while the lower end of the rocker arm 27 is connected by adjustable connecting bars 44 with the respective inner and outer arms 13 of the opposite inner and outer gripper rails 12.

In operating this modified form the motor is turned in one direction to draw the weight 32 inwardly of the weight arm 31 so that the motor 37 will overbalance the weight 32 and swing the depending arm 30 into the position shown in Fig. 5. In this position the gripper rails 12 are spread apart so that the wheels 20 may pass freely over the track rails 10 and without applying the braking action. When the motor 37 is operated in a reverse direction the weight 32 is moved outwardly on the weight arm 31 and the weight 32 overbalances the motor 37 and swings the arm 30 into an opposite position, contracting the gripper rails 12 against the opposite sides of the wheels 20 and causing the brake to be applied.

In both the preferred and in the modified forms of the invention the housing 29 is provided with a stop or rest 45 for receiving the free end of the weight arm 31 when lowered.

In the operation of the preferred form the weight 32 is extended along the weight arm 31 to operate the shaft 28 in a direction to swing the side shaft 23 and lift the outer end of the supporting lever to maintain the ramp 13 at the desired height for engagement with the flange of the wheel 20. When the wheel 20 strikes and depresses the ramp 19, the operating lever 18 is swung downwardly about its pivotal connection with the link 21 and spreads the toggle links 16, moving the lower ends of the arms 13 apart and contracting the gripper rails 12 against the opposite sides of the wheel 20. The motor 37 is controlled from a remote point to position the weight 32 on its arm 31 so as to effect the desired tension of the supporting lever 18 upon the toggle joint. The greater the effect of the weight 32, upon its arm 31, the less effect will be had upon the toggle joint so that the gripper rails 12 may be proportionately clamped against the opposite sides of the wheel 20.

It is therefore evident that the wheels 20 automatically set the brakes and that the effectively braking action may be controlled electrically from a point which is remote from the brake mechanism. It is also apparent that the weight 32 may be regulated as to position on its arm 31 to correspond with the weight of the rolling stock so as to impart the desired pressure of the gripper rails 12 to bring the rolling stock to a standstill at the desired point.

It is of course understood that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention, without departing from the spirit thereof, and being restricted only by the scope of the following claims.

What is claimed is:

1. In a track brake structure, gripper rails spaced at opposite sides of the track rail, spreading and contracting mechanism connected to the gripper rails, an adjustable weight connected to the mechanism, and remotely controlled means for shifting the weight to control the operation of said mechanism.

2. In a track brake structure, gripper rails, mechanism connected to the rails for applying and releasing the same, a brake arm connected to the mechanism, a weight on said

arm, electrical means connected to the weight for adjusting the same along said arm to control the operation of said mechanism, and remote means connected to the electrical means for actuating the latter.

3. In a track brake structure, a pair of gripper rails, a swinging arm connected to said rails for controlling the operation of the same, a weight arm on the first arm, a weight on the weight arm, a motor mounted on the first arm at the side thereof opposite the weight arm to counterbalance the same, a connection between the motor and the weight for adjusting the latter along the weight arm to vary the effect of the weight on the first arm, and remote control means for the motor to actuate the same.

4. In a track brake structure, pairs of gripper rails, connecting bars arranged in pairs at the opposite sides of the track rails, said connecting bars connecting the gripper rails in pairs for operation against the opposite sides of wheels on the track rails, a swinging arm pivoted to the connecting bars for actuating the same, an adjustable weight attached to said arm, and remotely controlled means connected to the weight for adjusting the same with respect to said arm.

5. In a track brake structure, a pair of gripper rails, means for pivotally supporting the gripper rails at opposite sides of a track rail, a toggle lever connected to said means, a ramp connected to the toggle lever with contact with a wheel on the track rail to contract the gripper rails, and a variable weight controlled mechanism arranged between the ramp and the toggle lever for varying the effective pressure of the ramp on the toggle lever.

6. In a track brake structure, a pair of gripper rails, pivotally supported arms carrying said rails, a toggle lever between said arms, a supporting lever pivotally connected intermediately to the toggle lever, a ramp connected to one end of the supporting lever, and variable weight means connected to the other end of the supporting lever for adjusting the same and effecting a variable pressure of the ramp upon the toggle lever.

7. In a track brake structure, a gripper rail, a toggle lever connected to the rail, a supporting lever connected to the toggle lever, a ramp mounted on the supporting lever for engagement with a wheel, supporting means for the supporting lever, and a variable weight mechanism connected to the supporting means for raising and lowering one end of the supporting lever to vary the effective pressure of the ramp upon the toggle lever.

8. In a track brake structure, opposed pairs of gripping rails, a toggle lever between each pair of gripper rails, a supporting lever pivoted intermediately to each toggle lever, rocker arms connected to the free ends of the supporting levers, a main shaft, a rocker arm on the shaft, connecting bars between the rocker arm on the shaft and the rocker arms on said supporting levers, and an adjustable weight connected to the main shaft for urging the same to turn in one direction and vary the effective pressure of the supporting arms on the toggle levers.

9. In a track brake structure, pairs of opposed gripper rails, pivoted supporting arms for said rails, a toggle lever connected between each pair of supporting arms, a supporting lever pivoted intermediately upon each toggle lever, a ramp mounted on one end of each supporting lever, means for yieldably supporting the other end of each supporting lever, and adjustable weight means connected to said yieldable supporting means to vary the effective pressure of the supporting levers on the toggle joints.

10. In a track brake structure, pairs of opposed gripper rails, pivoted arms supporting said rails, toggle levers arranged between each pair of supporting arms, a supporting lever pivoted to each toggle lever, a ramp connected to each supporting lever, a rocker arm connected to each supporting lever, a swinging arm, connecting bars between the swinging arm and the rocker arms, a weight arm extending from one side of the swinging arm, a weight slidably mounted on the weight arm, electrical means carried by the arms for moving the weight along the weight arm to vary the position of the supporting levers and the effective pressure of the ramps on the toggle levers, and remotely operated means connected to the electrical means to adjust the weight.

11. In a track brake structure, pairs of opposed gripper rails, pivoted supporting arms extending downwardly from the gripper rails, toggle levers connected between the lower ends of each pair of arms, supporting levers pivoted intermediately upon the toggle levers, ramps mounted on one end of the supporting levers, rocker arms supporting the opposite ends of the supporting levers, a swinging arm, connecting bars between the rocker arms and the swinging arm, a weight arm mounted on the swinging arm, an adjustable weight on the weight arm, and electric means carried by the swinging arm and connected to the weight for adjusting the same.

12. In a track brake structure, a pair of gripper rails, means for supporting the gripper rails in spaced relation to a track, an independent ramp arranged between one of said gripper rails and the track, and connecting means for joining the ramp and said gripper rails.

13. In a track brake structure, a pair of gripper rails, means for supporting the gripper rails in spaced relation to and at opposite sides of a track, and independent actuating

means connected to the gripper rails and between the track and one of said gripper rails for moving the gripper rails against a wheel.

14. In a track brake structure, a pair of spaced gripper rails, means for supporting the gripper rails at opposite sides of a track and in spaced relation thereto, actuating means mounted between one of said gripper rails and the track and independent thereof, and connecting means for connecting said gripper rails and said actuating means.

15. In a track brake structure, a pair of gripper rails mounted at opposite sides of a track and in spaced relation thereto, independent automatic means connected to said gripper rails for moving the latter toward the track upon the passage of a wheel over the track, and adjustable means for regulating the pressure of the gripper rails upon the wheel.

16. In a track brake structure, a gripper rail, automatic means connected to the gripper rail for actuation by rolling stock moving over the track to advance the gripping rail against the rolling stock, variable pressure means interposed between the automatic means and the gripper rail for varying the effective pressure of the gripping rail, and remote control means for said variable pressure means to regulate the same from a distance from the track.

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