J. F. WEBB, Jr.

BRAKE SETTING MECHANISM.

APPLICATION FILED JULY 8, 1911.

1,034,376.

Patented July 30, 1912

2 SHEETS—SHEET 1.

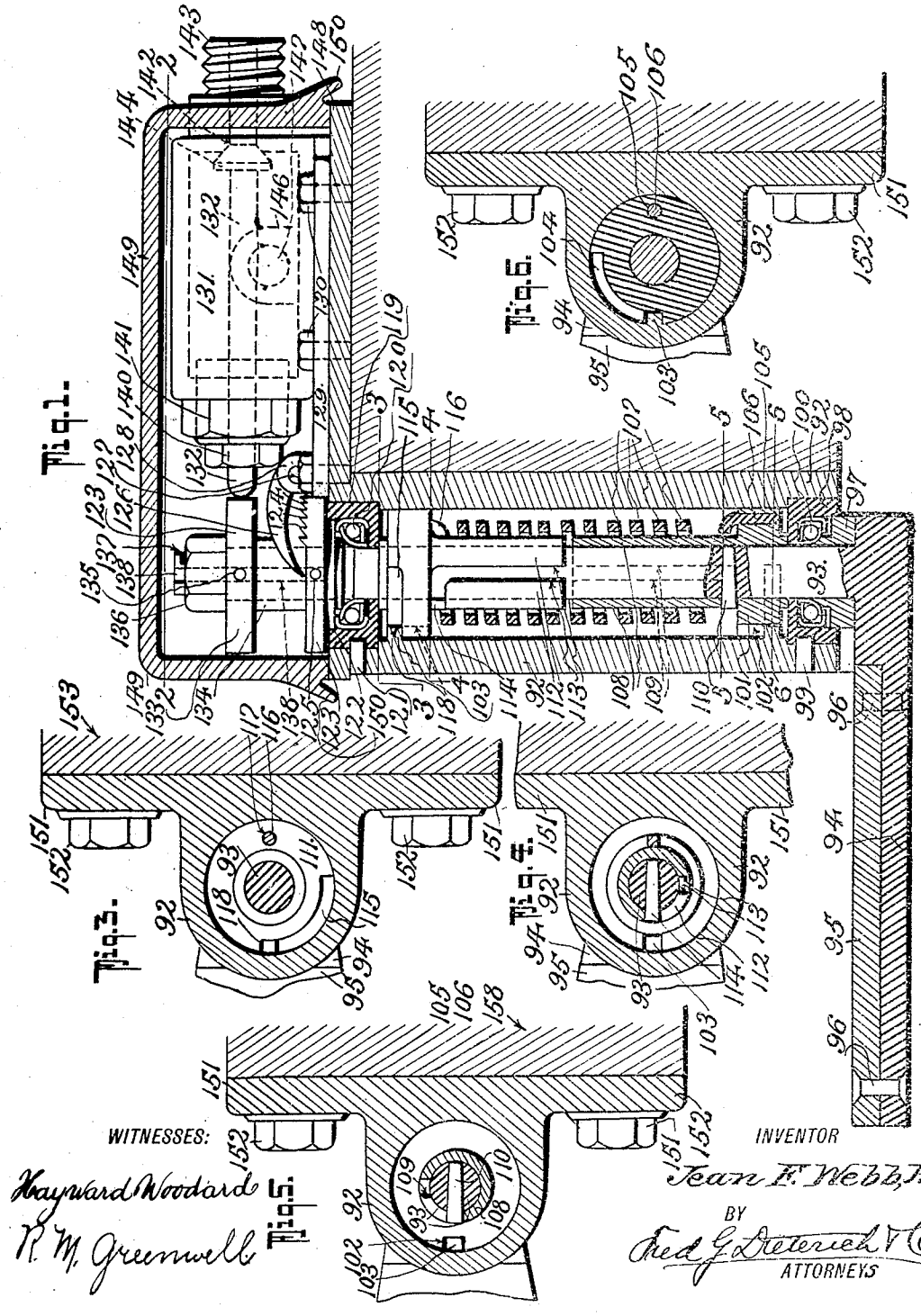


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

WITNESSES:

Maynard Woodard

R. M. Greenwell

INVENTOR

Jean F. Webb, Jr.

BY

Fred G. Dieterich & Co

ATTORNEYS

J. F. WEBB, Jr.

BRAKE SETTING MECHANISM.

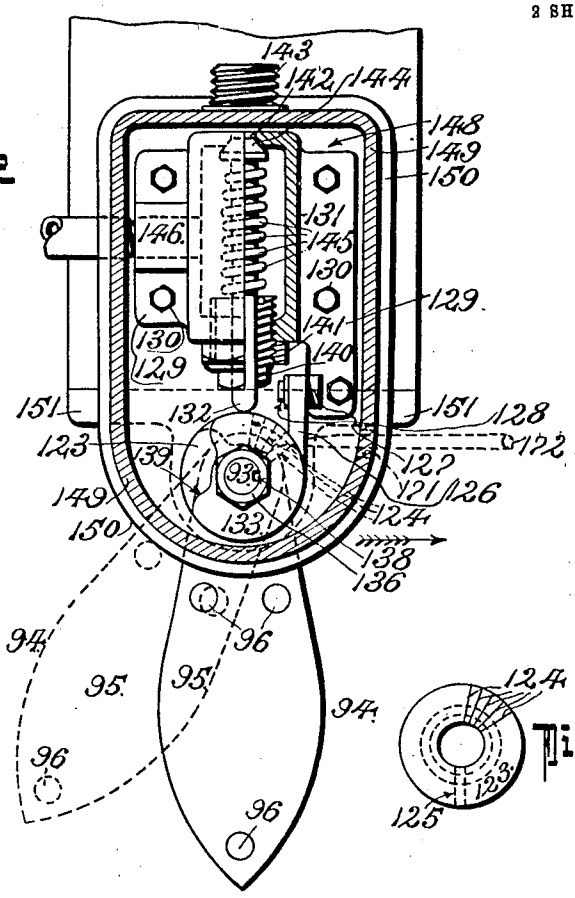
APPLICATION FILED JULY 8, 1911.

1,034,376.

Patented July 30, 1912.

2 SHEETS—SHEET 2.

Fig. 2



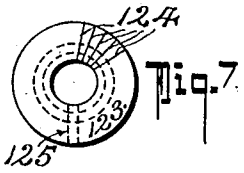
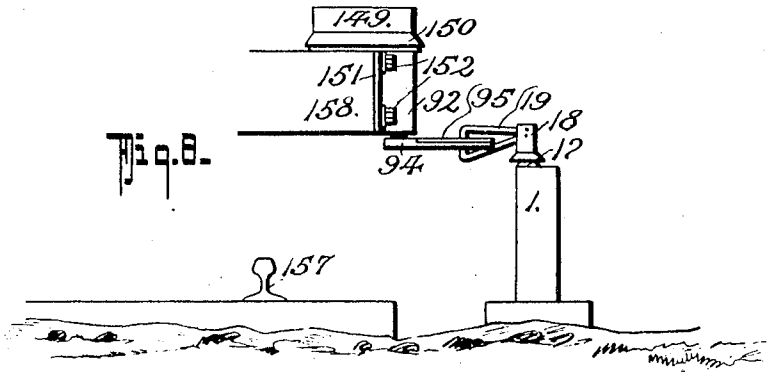


Fig. 7

Fig. 8.



WITNESSES:

Haynard Woodard

R. M. Greenwell

INVENTOR

Jean F. Webb, Jr.

BY

Fred G. Peterson & Co.

ATTORNEYS

UNITED STATES PATENT OFFICE.

JEAN F. WEBB, JR., OF NEW YORK, N. Y.

BRAKE-SETTING MECHANISM.

1,034,376. Specification of Letters Patent. Patented July 30, 1912.

Original application filed May 6, 1911, Serial No. 625,522. Divided and this application filed July 8, 1911. Serial No. 637,432.

To all whom it may concern:

Be it known that I, JEAN F. WEBB, JR., residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Brake-Setting Mechanism, of which the following is a specification.

This invention has for its object to provide a device in which a service stop may be given to the train, rather than an emergency stop, although the device may be used equally as well to give an emergency stop, by simply modifying the mechanical design of the air valve mechanism.

The invention also has for its object to provide a device so constructed, that the removal or failure of any essential part will cause the application of the train brakes, and which is so constructed as to prevent the release of the brakes after an application has been made, until the train has been brought to a stop.

The invention also includes those novel details of construction, combination and arrangement of parts, all of which will be first fully described and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which:

Figure 1 is a central, vertical, longitudinal section and part elevation of the invention. Fig. 2 is a horizontal section on the line 2—2 of Fig. 1. Figs. 3, 4, 5 and 6 are horizontal sections taken respectively on the lines 3—3, 4—4, 5—5 and 6—6 of Fig. 1. Fig. 7 is a detail plan view of the rack disk. Fig. 8 is a diagrammatic elevation showing the preferred operative position of the apparatus with relation to the clearance diagram and the track stop.

By reference to the drawings in which like numerals and letters of reference indicate like parts in all of the figures, it will be seen that 92 designates a cylindrical casing, the ends of which receive bearing plugs 98 and 119 respectively, each of which is provided with anti-friction bearings 100 and 120 respectively. Projecting through the bearings 100 and 120 and through the casing 92 is a shaft 93 which carries at its lower end a shoe plate 94 to which a wearing section 95 is riveted as at 96.

97 is a bearing cone on the lower end of the shaft 93 to engage the bearing 100. The bearing plugs 98 and 119 respectively are pinned into position by pins 99 and 121 respectively to be held immovable.

Mounted within the casing 92 on the shaft 93 are two collars 101 and 111 both of which have longitudinal peripheral slots 102 and 118 respectively, and horizontal grooves 104 and 115 respectively to thereby define bayonet slots 102—104 and 118—115 respectively to receive the upper and lower lugs 103—103 on the inner wall of the casing 92. The lower collar 101 has a longitudinal hole 105 to receive one end, 106, of a torsion spring 107, whose other end, 116, projects into a hole 117 in the upper collar 111. Each of the collars 101 and 111 are provided with sleeves 108 and 112 respectively and each of the sleeves is provided with a bayonet slot 109 and 113 respectively.

110 and 114 are pins carried by the shaft 93 to operate in the slots 109 and 113 respectively at times.

Mounted near the upper end of the shaft 93 to coöperate with the bearing 120 is a cone 122 that is formed on and forms a part of the rack disk 123. The disk 123 is pinned at 125 to the shaft 93, the pin 125 fitting into the slot 138 in the upper end of the shaft. The disk 123 has a set of radially disposed rack teeth 124 to be engaged by the pawl 126 when the shoe 94 has been moved to one side by the track stop arm 19. The pawl 126 is pivoted at 127 to a lug 128 on the base 129 of the air valve casing 131. The base 129 is bolted at 130 to the plate 148 that is formed with the upper end of the casing 92.

The air valve mechanism includes the valve stem 132 which engages a mutilated disk 133 pinned at 135 to the shaft 93 and held spaced from the rack disk 123 by a sleeve 134 on the shaft 93. The upper end of the shaft 93 is reduced and threaded as at 137 to receive the nut 136 that holds the shaft 93 and its carried parts in position. The disk 133 is mutilated or cut away as at 139 to permit the valve stem 132 to enter therein when the shoe 94 is in the dotted line position indicated in Fig. 2.

140 designates a bearing plug threaded into the casing 131 and secured by a jam nut 141.

142 designates the valve port that communicates through the threaded connection 143 with the train pipe of an air brake system (not shown). The port 142 is closed

by the valve 144 on the stem 132 and is held closed by the disk 133 when in its normal position. It is also assisted to its closed position by a coil spring 145, whose tension may be adjusted by adjusting the position of the bearing plug 140 so that when the air pressure in the train pipe is reduced to a predetermined point, the spring 145 will suffice to move the valve 144 to close the port 142 and thus not exhaust the air reservoirs. This is particularly advantageous when it is desired to give service stop rather than emergency stop. It may be well to here note, that when it is desired to use the apparatus to give an emergency stop to the train, the tension of the spring 145 may be reduced to zero, or the spring entirely omitted.

147 is the exhaust pipe which may lead to a whistle (not shown) or other indicator if desired, and the pipe 147 is tapped into the outlet 146 from the valve casing 131.

149 is the cover which is fitted over the plate 148 to hold the mechanism mounted thereover, and the cover may be held in place in any desired way. In order to shed water, I prefer to provide the cover 149 with a petticoat 150 as best indicated in Fig. 8.

The casing 92 may be provided with lateral flanges 151 by means of which and bolts 152, it may be secured to a beam or projection 158 from a moving part of the rolling stock of a train, preferably the engine.

Operation: The parts are normally positioned as indicated in full lines in Figs. 1 and 2. The parts shown in these figures are for the right hand train side and we will assume that the train is moving in the direction of the arrow in Fig. 2, the train pipe of the air brake system being connected to 143. When the train approaches a track stop 1 whose arm 19 is in the danger position (see Fig. 8), the shoe 94 will engage the arm 19 and be moved from the full line toward the dotted line position shown in Fig. 2, it being understood that the inertia of the track stop weight (not shown) is sufficient to hold the arm 19 and retard its movement until the shoe 94 has been swung over to turn the shaft 93 against the tension of the torsion spring 107. As the shoe is moved from the full line to the dotted line position in Fig. 2, the rack 132 will come under the pawl 126 and the spring 107 will be prevented from returning the shoe to its normal position, thus locking the shoe 94 in its valve releasing position. As the shoe is turned from the position shown in full lines in Fig. 2 to the position shown in dotted lines in such figure, the mutilated portion 139 of the disk 133 will be brought into alinement with the valve stem 132 to release the same and permit the train pipe air pressure to unseat the valve 144 and pass out through the exhaust pipe 147, thereby disturbing the equilibrium of air pressure in the train pipe and causing a setting of the brakes. As soon as the air pressure has become reduced to the predetermined amount for a service stop, the spring 145 will again seat the valve 144 so as not to exhaust the air reservoirs of the air brake system. The shoe 94 being now locked to its valve releasing position by the pawl 26 it is impossible for the valve 144 to be held shut should the train pipe pressure again exceed the predetermined minimum. This makes it necessary for the engineer to first release the pawl 126, before the torsion spring 107 can restore the shoe 94 to its normal position. In order to release the pawl 26 the engineer may remove the cap 149, or he may insert an instrument 172 through a hole 171 provided for that purpose in the cap as indicated in dotted lines in Fig. 2 of the drawings. By means of this instrument he may lift the pawl 126 to release the disk 123 and permit the spring 107 to restore the shoe to its normal position. Should the train back in a section, say at a siding, and the arm 19 of the track stop be set to danger, the air valve 144 will not be released, as the shoe 94 can turn from the full line position in Fig. 2 to a position directly opposite the dotted line position in Fig. 2, without releasing the valve, and without locking the shaft 93 as the pawl 126 will ride on the smooth upper face portion of the disk 123, and the valve stem 132 will ride on the unmutilated periphery of the disk 133 so that, as soon as the shoe has passed the obstruction, in backing, the spring 107 will restore it to its normal position.

While I have shown and particularly described but a single train carried mechanism, yet in practice it will probably be found advisable for the engine to carry both a right hand and a left hand mechanism, so that should the engine be running backwardly with regard to its own design, the left hand shoe will be engaged by the track stops in the direction of movement of the engine and thus alternately stop the engine if desired.

It will be seen that by reason of the construction shown particularly in Fig. 1 when the shoe 94 turns the shaft 93 from the full line position to the dotted line position in Fig. 2 the lug 103 will hold the collar 101 from turning while the pin 114 will cause the collar 111 to turn with the shaft and thus increase the torsional tension of the spring 107 proportionately so that it will tend to restore the shoe 94 to the normal or balanced position. Conversely, should the shoe 94 move from the full line position shown in Fig. 2, to a position opposite the

dotted line position in such figure the lug 118 will hold the collar 111 stationary, while the pin 110 will cause the collar 101 to turn with the shaft 93 and apply the necessary torsional tension to the spring 107 that will restore the shoe 94 to its normal position when the shoe is released. Should the train be running at a predetermined minimum speed, the force with which the shoe 94 contacts the arm 19 will be sufficiently slow acting to cause, in connection with the tension of the spring 107, the arm 19 to turn toward a position at right angles to that shown in Fig. 8 and yield enough to avoid turning the shoe 94 a sufficient amount to release the air valve. This operation occurs, say when the train is running less than five miles an hour. If it is desired, however, that the system should stop the train absolutely, the relative power of the spring 107 and inertia of the track stop weight, will be so designed, that the arm 19 will not give until the shoe 94 has been turned, regardless of the speed of the train.

From the foregoing, it will be perceived that I have provided a very effective construction of apparatus in which the parts are strongly constructed and so designed as to require the minimum maintenance attention and expense.

From the foregoing description taken in connection with the accompanying drawings, it is thought the complete construction, operation and advantages of the invention will be clearly apparent to those skilled in the art.

This application is a division of my copending application filed May 6, 1911, Ser. #625522.

What I claim is:—

1. A train carried mechanism including a casing, a shaft mounted in said casing and carrying a shoe, yielding means for balancing said shoe in a normal position, an air valve connectible to the train pipe, of an air brake system and including a stem, means on said shaft engaging said stem for holding said valve closed against the air pressure when in its normal position and for releasing said valve stem when said shoe is moved a predetermined distance out of its normal position.

2. A train carried mechanism including a casing, a shaft mounted in said casing and carrying a shoe, yielding means for balancing said shoe in a normal position, an air valve connectible to the train pipe of an air brake system and including a stem, means on said shaft engaging said stem for holding said valve closed against the air pressure when in its normal position and for releasing said valve stem when said shoe is moved a predetermined distance out of its normal position and means for locking said shoe out of its normal position when it has been moved out of the normal position.

3. In a train stopping system, a train carried mechanism including a pair of spaced bearing members, a shaft rotatably mounted in said bearing members, means mounted on said shaft for balancing said shaft in a normal position, a shoe carried by said shaft and projecting in a plane normal thereto, said shoe adapted to be engaged by an obstruction to turn said shaft, and means for locking said shaft when turned to a predetermined position.

4. In a train stopping system, a train carried mechanism including a pair of spaced bearing members, a shaft rotatably mounted in said bearing members, means mounted on said shaft for balancing said shaft in a normal position, a shoe carried by said shaft and projecting in a plane normal thereto, said shoe adapted to be engaged by an obstruction to turn said shaft, and means for locking said shaft when turned in one direction to a predetermined position and leaving said shaft free to turn in the opposite direction without locking.

5. In a train stopping system, a train carried mechanism including a pair of spaced bearing members, a shaft rotatably mounted in said bearing members, means mounted on said shaft for balancing said shaft in a normal position, a shoe carried by said shaft and projecting in a plane normal thereto, said shoe adapted to be engaged by an obstruction to turn said shaft, and means for locking said shaft when turned to a predetermined position, an air brake valve having a stem, a mutilated disk on said shaft and engaging said stem to hold said valve closed until said shaft is turned to said predetermined position and then permit said stem to enter said mutilated portion and said valve to open.

6. In a train stopping system, a train carried mechanism including a pair of spaced bearing members, a shaft rotatably mounted in said bearing members, means mounted on said shaft for balancing said shaft in a normal position, a shoe carried by said shaft and projecting in a plane normal thereto, said shoe adapted to be engaged by an obstruction to turn said shaft, and means for locking said shaft when turned in one direction to a predetermined position and leaving said shaft free to turn in the opposite direction without locking, an air brake valve having a stem, a mutilated disk on said shaft and engaging said stem to hold said valve closed until said shaft is turned to said predetermined position and then permit said stem to enter said mutilated portion and said valve to open.

7. In a train carried valve operating mechanism for train stopping systems, a support including a pair of spaced bearings,

a shaft mounted in said bearings a torsional spring mounted on said shaft between said bearings, coöperative connections between said spring and said shaft for applying a balanced force to said shaft to retain it in a normal position, said shaft being free to be turned in either direction, means through which said shaft may be turned, and means for locking said shaft when turned out of its normal position into a predetermined position.

8. In a train carried valve operating mechanism for train stopping systems, a support including a pair of spaced bearings, a shaft mounted in said bearings, a torsional spring mounted on said shaft between said bearings, coöperative connections between said spring and said shaft for applying a balanced force to said shaft to retain it in a normal position, said shaft being free to be turned in either direction, means through which said shaft may be turned, and means for locking said shaft when turned out of its normal position into a predetermined position, said locking means including a rack disk on said shaft, and a relatively fixed pawl to engage said disk.

9. In a train carried valve operating mechanism for train stopping systems, a support including a pair of spaced bearings, a shaft mounted in said bearings, a torsional spring mounted on said shaft between said bearings, coöperative connections between said spring and said shaft for applying a balanced force to said shaft to retain it in a normal position, said shaft being free to be turned in either direction, means through which said shaft may be turned, and means for locking said shaft when turned out of its normal position into a predetermined position, said locking means including a rack disk on said shaft and a relatively fixed pawl to engage said disk, an air brake valve having a stem, a mutilated disk on said shaft to engage said stem and hold said valve seated until said shaft is turned to its locked position and the mutilated portion of said disk is brought into alinement with said valve stem.

10. In a valve operating device, a casing, a pair of bearing plugs mounted in said casing and spaced apart, a shaft projecting through said casing and bearing plugs, a pair of collars having sleeves mounted on said shaft and spaced apart, means permitting said collars and sleeves to turn a limited distance in said casing with said shaft, a torsion spring mounted on said sleeves and having its ends engaging said collars to hold said shaft in a balanced position in said casing, means by virtue of which said shaft may be turned, an air brake valve having a stem, means carried by said shaft for engaging said stem while said shaft is in its balanced position to hold said valve closed, said shaft carried means having provisions for releasing said valve stem when said shaft is turned to a predetermined position.

11. In a valve operating device, a casing, a pair of bearing plugs mounted in said casing and spaced apart, a shaft projecting through said casing and bearing plugs, a pair of collars having sleeves mounted on said shaft and spaced apart, said collars and sleeves being adapted to turn a limited distance in said casing with said shaft, a torsion spring mounted on said sleeves and having its ends engaging said collars to hold said shaft in a balanced position in said casing, means by virtue of which said shaft may be turned, an air brake valve having a stem, means carried by said shaft for engaging said stem while said shaft is in its balanced position to hold said valve closed, said shaft carried means having provisions for releasing said valve stem when said shaft is turned to a predetermined position, and means for locking said shaft in said predetermined position.

12. In combination with an air brake valve that includes a casing, a valve and a valve stem and means for holding said valve against a predetermined air pressure, of a shaft, a disk on said shaft to engage said stem to hold said valve closed independent of said first mentioned valve holding means, means continuously tending to move said shaft to its normal position, means by virtue of which said shaft may be moved out of its normal position to a predetermined position, said disk having provisions for releasing said valve stem when said shaft is at said predetermined position.

13. In combination with an air brake valve that includes a casing, a valve and a valve stem and means for holding said valve against a predetermined air pressure, of a shaft, a disk on said shaft to engage said stem to hold said valve closed independent of said first mentioned valve holding means, means continuously tending to move said shaft to its normal position, means by virtue of which said shaft may be moved out of its normal position to a predetermined position, said disk having provisions for releasing said valve stem when said shaft is at said predetermined position, and means for locking said shaft when it reaches said predetermined position.

JEAN F. WEBB, JR.

Witnesses:
JEAN F. WEBB, Sr.,
H. R. FLOOD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."