Dec. 1, 1925.

1,563,550

E. D. BROWN

AUTOMATIC TRAIN STOPPING APPARATUS

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Fig. 1.

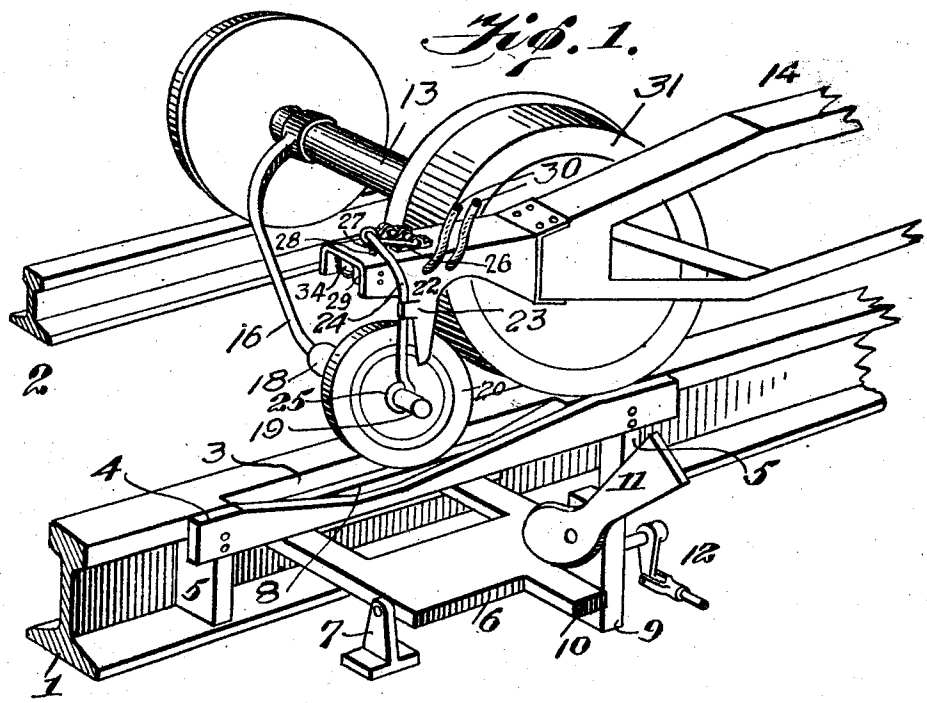
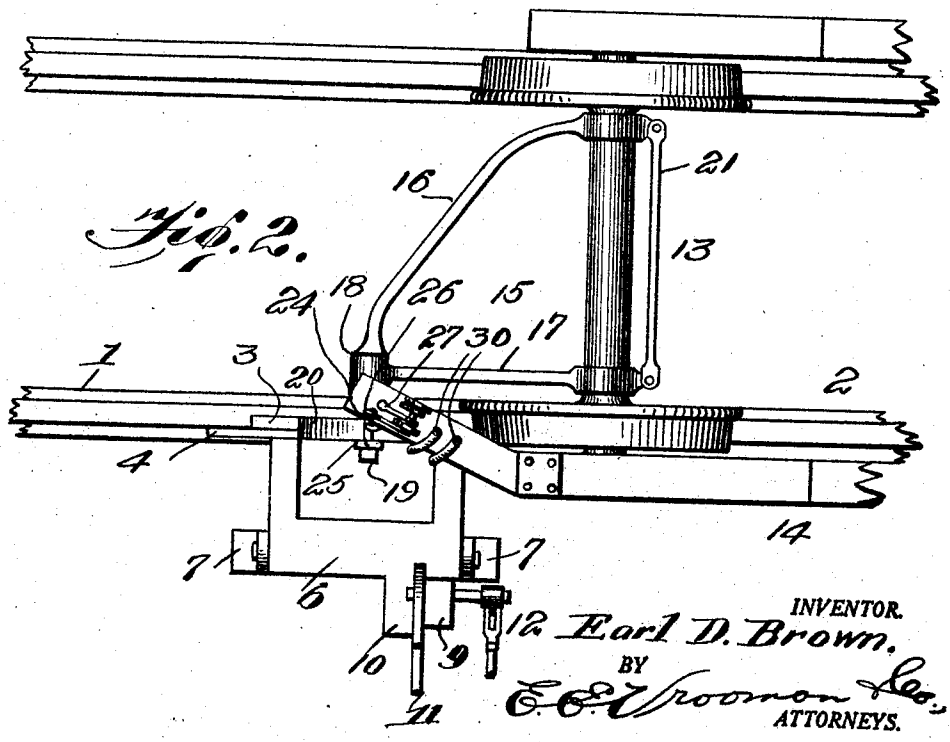


Fig. 2.



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Fig. 3.

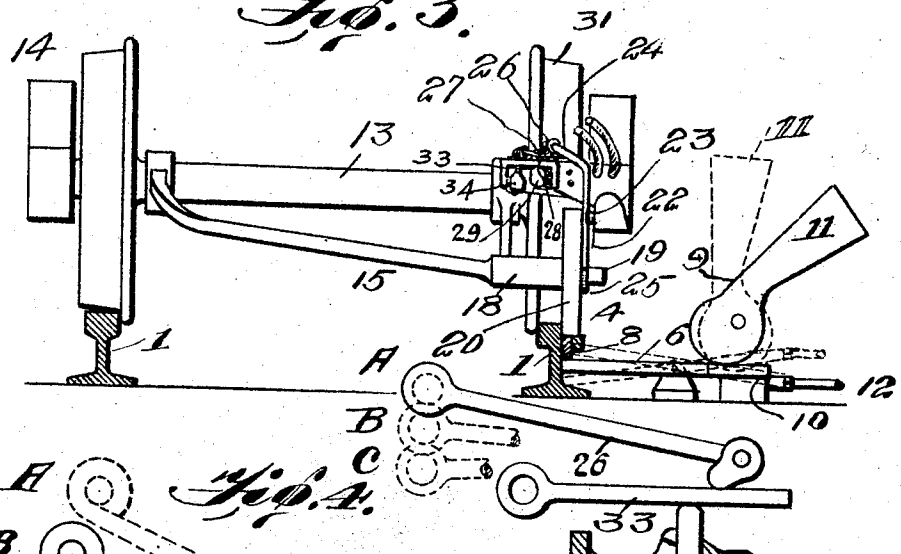


Fig. 4.

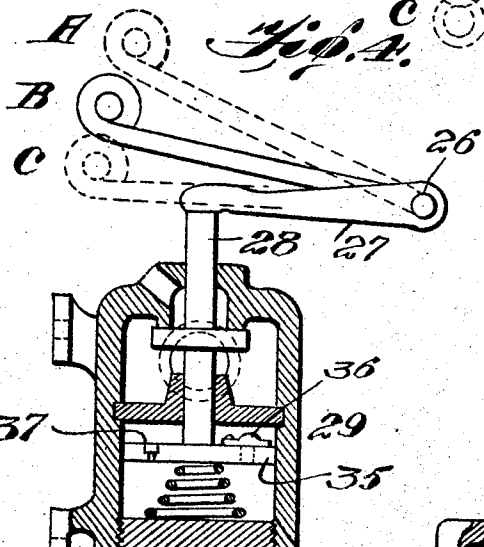


Fig. 5.

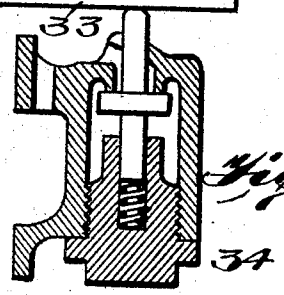


Fig. 6.

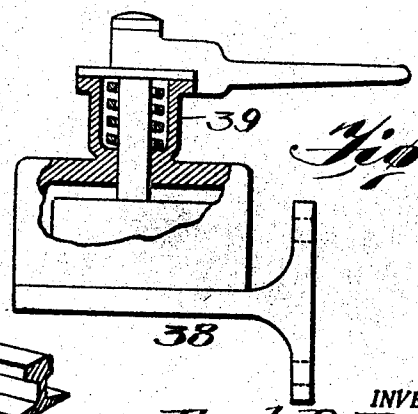
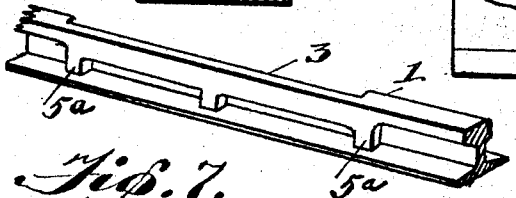


Fig. 7.



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AUTOMATIC TRAIN STOPPING APPARATUS

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Fig. 8.

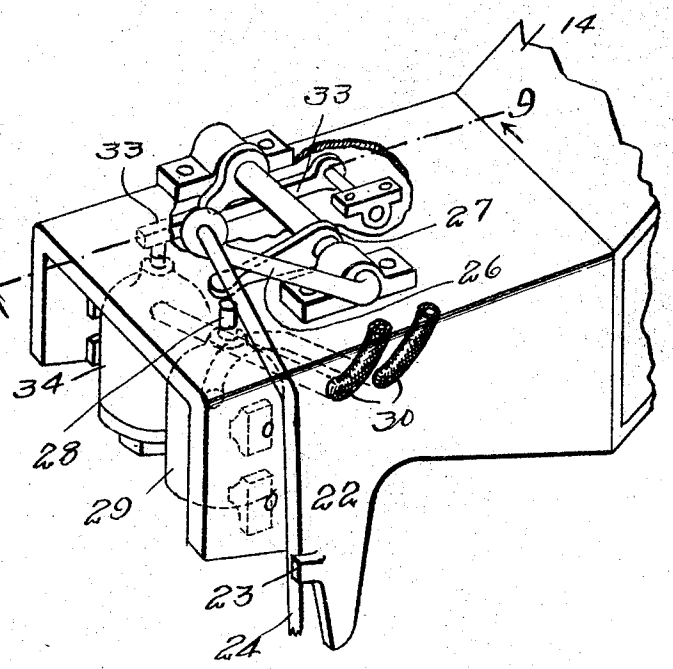
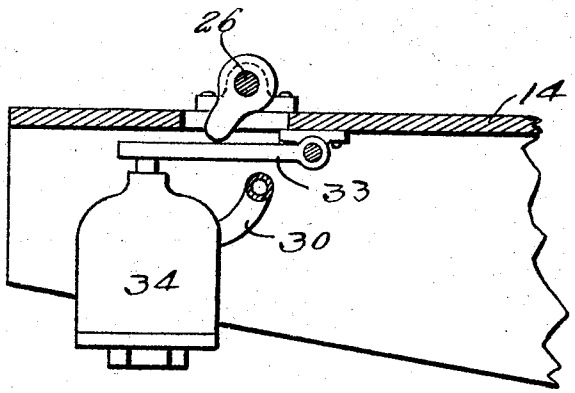


Fig. 9.



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UNITED STATES PATENT OFFICE.

EARL D. BROWN, OF RIVERBANK, CALIFORNIA.

AUTOMATIC TRAIN-STOPPING APPARATUS.

Application filed September 4, 1924. Serial No. 735,881.

To all whom it may concern:

Be it known that I, EARL D. BROWN, a citizen of the United States, residing at Riverbank, in the county of Stanislaus and State of California, have invented certain new and useful Improvements in Automatic Train-Stopping Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an automatic train stopping apparatus, and has for its object the slowing down, or the entire stopping of a train, when unfavorable conditions arise while the train is in motion.

Another object of this invention is to provide a method wherein the rail is reinforced and remodeled to carry the weight of a train on the inner portion of the head of the rail; an outer portion being removed for the introduction of elements to effect the operation of mechanism carried by the locomotive. Said elements to affect mechanism either magnetically, electrically or by mechanical means, and are themselves affected by positions of the wayside signals placed to affect the movement of the train.

With the foregoing and other objects in view, my invention comprises certain novel combinations, constructions and arrangements of parts as will be hereinafter described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

In the drawings:

Figure 1 is a perspective view of my apparatus, while

Figure 2 is a top plan view of the same.

Figure 3 is a view in front elevation of the same.

Figure 4 is a vertical sectional view of the vent valve for the brake pipes.

Figure 5 is a vertical sectional view of the vent valve for the signal line.

Figure 6 is a view, partly in side elevation and partly in vertical section, of the engineer's cut-out valve.

Figure 7 shows a reverse side of the rail with head remodeled and reinforced.

Figure 8 is an enlarged fragmentary perspective view of the apparatus.

Figure 9 is a vertical sectional view taken on line 9—9, Figure 8.

Referring to the drawings by numerals, rail 1, of the main track 2, has its tread cut away at 3, and bridging this cutaway portion 3 is carrier plate 4; this carrier plate 4 is fastened to blocks 5, against rail 1; on the other side (see Fig. 7) the rail is reinforced at 5^a.

A lever frame 6 is pivotally mounted upon brackets 7. Secured to the top of the inner end of frame 6 is a block 8; block 8 is slidably mounted in cutaway portion 3.

A standard 9 is placed close to tongue 10. A cam 11 is pivotally mounted on standard 9 above tongue 10, and said cam 11 presses upon tongue 10 to cause the block 8 to move to different positions within the cutaway portion 3, for the purpose hereinafter described. A "wayside" signal operates with cam 11 to "set" block 8, within the cutaway portion 3.

Pivotally mounted upon axle 13 of the truck 14 is a wheel-carrying frame 15; this frame 15 comprises a primary arm 16 and an auxiliary arm 17. These arms 16 and 17 are integrally connected by hub portion 18 from which extends a stub axle 19; on this axle 19 is wheel 20. The inner ends of arms 16 and 17 surround axle 13, and are held apart by connecting rod 21.

On the truck 14 is a depending lip 22 from which extends horizontal guide bracket 23; behind bracket 23 is mounted link 24. Link 24 has an eye 25 surrounding axle 19, and the upper end of link 24 is connected to lever 26. Lever 26 is fastened to finger 27, so that movement of lever 26 will cause finger 27 to press upon the top of valve stem 28 of vent valve 29 when movement of 26 is carried beyond "B." Valve 29 is connected to brake pipes 30.

The loose wheel 20 is lined up so it is approximately one and one-half inches outside of flange of wheel 31, thus bringing said wheel 20 on the outer one-third of head of rail 1. At each "wayside" signal (see connection 12) the wheel 20 is over the apparatus.

If the way is unobstructed, the signal will be "clear," thus keeping the top surface of the block 8 flush with the top surface of head of rail 1, thus allowing no downward movement of wheel 20.

If the way is obstructed at considerable distance, the signal will be at "caution," thus allowing block 8 to drop one-half down. The wheel 20 coming to this point is allowed to roll down runway plate 4 the distance the block 8 is dropped. This downward movement of wheel 20 operates lever 26 (Fig. 5) and finger 33, (by suitable con-

necting means, not shown) opening vent valve 34 in signal line causing the signal whistle to blow.

In "caution" position the valve 29 is not operated; this valve 29 is only operated on extreme movement of wheel 20, which is caused by the setting of the "wayside" signal 11ª and cam 11.

When the way is obstructed and the signal in "stop" position, then the block 8 is dropped to extreme position, allowing wheel 20 to make extreme downward movement opening both vent valves 29 and 34, to brake pipe and signal line, respectively. The vent valve 34 to signal line closes immediately on being released, but the vent valve 29, to the brake pipe (line) is held open by a dash pot arrangement (see Fig. 4) whereby on depression liquid below piston head 35 flows upward through valve 36 which seats as downward movement is concluded, only allowing the seating of air valve when the liquid is able to return through a restricted opening 37 to its former position.

Referring to Figure 6: In the air line (not shown) between the vent valve and the brake pipe line and convenient to the reach of the engineer is a cut-out valve 38. This valve 38 has a spring returning device 39 whereby it is held in open position unless held closed by the engineer. A minute by-pass opening (not shown) furnishes air from one side of this valve—when it is held closed—to the other side, to replenish the air exhausted when the vent valve is opened and finally closes on passing a stop signal. This is to allow passing a "stop" position signal when the engineer is "on the job" and also when moving in a reverse direction.

Referring to Figures 4 and 5: "A" is the running position of the levers 26 and 32. "B" is the "caution" position, while "C" is the "stop" position.

While I have described the preferred embodiment of my invention, and have illustrated the same in the accompanying drawings, certain minor changes or alterations may appear to one skilled in the art to which this invention relates, during the extensive manufacture of the same and I, therefore, reserve the right to make such alterations or changes as shall fairly fall within the scope of the appended claims.

What I claim is:

1. In an apparatus of the class described, the combination with a rail provided with a cutaway portion, of a plate bridging said cutaway portion, a lever frame contiguous to said rail, a block on said lever frame and slidably mounted in said cutaway portion behind said plate, means for setting said lever frame in different positions, and a signal actuating wheel adapted to pass over said block.

2. In an apparatus of the class described, the combination with a rail provided with a cutaway portion in its head, of blocks against said rail at the ends of said cutaway portion, a plate bridging said cutaway portion and fastened at its ends to said blocks, brackets near said rail, a lever frame pivotally mounted on said brackets and having its inner end extending under said plate and cutaway portion, a block in said cutaway portion and fastened to said inner end of said lever frame, a cam at the outer end of said lever frame for holding it in set positions, and a signal actuating wheel adapted to pass over said block.

3. In an apparatus of the class described, the combination with a truck provided with an axle, of a valve carried by said truck, a lever provided with a finger carried by said truck, said finger adapted to operate said valve, a link attached to said lever, a wheel carrying frame on said axle and provided with a stub axle, a wheel on said stub axle, said link connected with said stub axle, and track means for actuating said wheel whereby said valve will be operated.

4. In an apparatus of the class described, the combination with a truck provided with an axle, of a valve carried by said truck, a wheel carrying frame movably mounted on said axle, said frame comprising a pair of arms integrally connected at their outer ends by a hub portion, a stub axle extending from said hub portion, a wheel on said axle, said arms provided with means surrounding said first-mentioned axle, a rod connecting the inner ends of said arms, and means for operating said valve connected with said stub axle.

5. In an apparatus of the class described, the combination of a truck provided with an axle, a valve means carried by said truck, a wheel carrying frame movably mounted upon said axle, and means co-operating with said valve means and connected with said wheel carrying frame for operating said valve means.

In testimony whereof I hereunto affix my signature.

EARL D. BROWN.