

(No Model.)

F. B. BROCK.
AUTOMATIC RAILWAY TRAIN ARRESTER.

No. 463,983.

Patented Nov. 24, 1891.

Fig. 1.

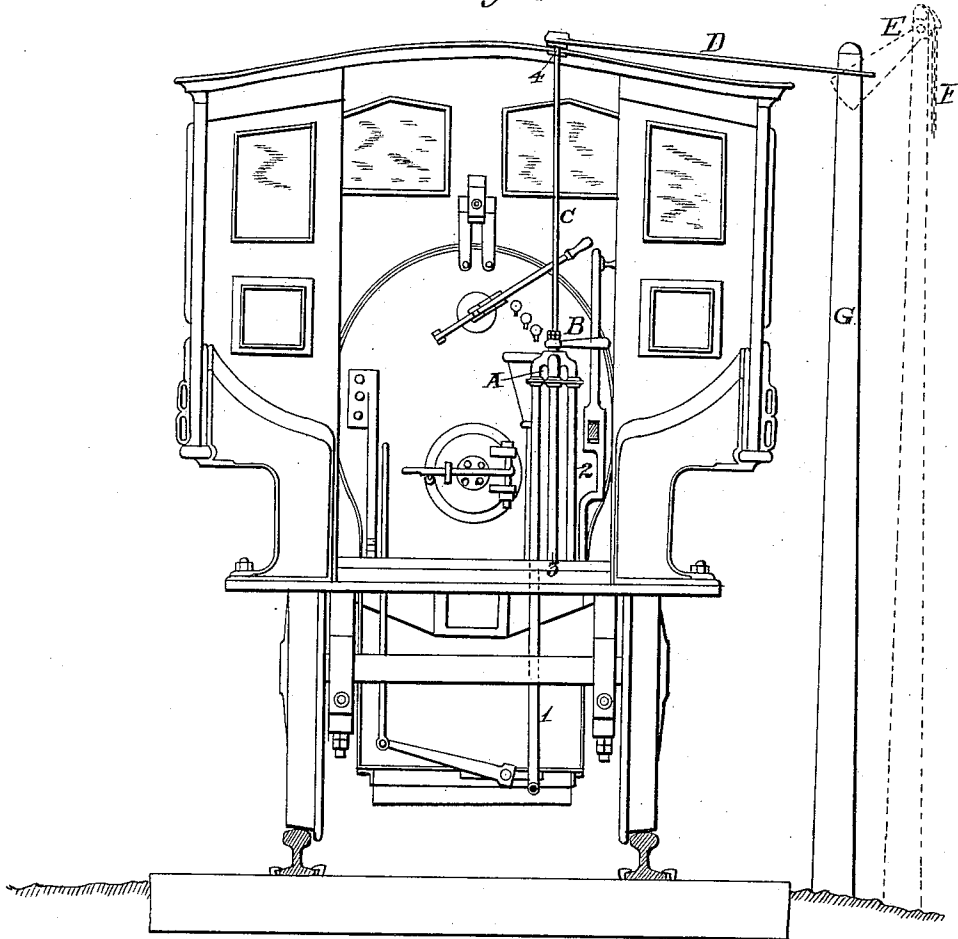
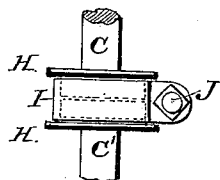


Fig. 2.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC RAILWAY-TRAIN ARRESTER.

SPECIFICATION forming part of Letters Patent No. 463,983, dated November 24, 1891.

Application filed May 13, 1891. Serial No. 392,581. (No model.)

To all whom it may concern:

Be it known that I, FENELON B. BROCK, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Automatic Railway-Train Arresters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Figure 1 represents an end elevation and partial section of a locomotive-caboose, with views of the track and semaphore-arm or signal-post by the road-bed. Fig. 2 is a detail view of the valve-stem clutch mechanism.

The object of my invention is to provide for the automatic setting of the air, steam, or vacuum brakes of a railroad-train at any dangerous point, such as a grade-crossing of two lines of railroad, or of the latter and a commod road, at a draw-bridge, depot, sharp curve, tunnel—in short, at any point where it is desired to slow up or stop a train within the "safety limit" of the point of danger.

For these purposes my invention consists in the following construction and combination of parts, which will first be fully described, and the points of novelty then set forth in the claim.

In the drawings, A represents the usual three-way valve of the Westinghouse type of air-brake.

1 is the branch pipe which leads to the several cars and brake apparatus throughout the train. 2 is the pipe leading to the air-pump. 3 is the pipe through which the air-exhaust is led. They all connect with the valve A in the usual way.

It will be understood that in the Westinghouse system a constant pressure is kept up in the main train-pipe, acting to keep the brake-shoes off the wheels; and that the brakes are applied by reducing the pressure by opening up an air-exhaust, thereby throwing upon the brakes pressures contained in auxiliary reservoirs under each car. Ordinarily, when the brakes are off, the three-way brake-valve A cuts off the exhaust-pipe and establishes a communication between the train-pipe and air-pump upon the engine. To apply the brakes by the engineer, the valve-handle B is

swung, causing the valve to cut off connection with the air-pump and opening up the main train-pipe with the exhaust-pipe 3 to the outer air, thereby reducing the pressure in the train-pipe and bringing into action the auxiliary reservoirs to put the brakes on. So far these devices form no part of my invention.

C is an extension of the valve-stem, which may be formed with the stem of valve A in one piece, or, as I prefer, provided with a clutch or spanner, which rigidly grasps the valve-stem and handle B at its lower end, its upper end extending up through the roof of the caboose.

4 are suitable bearings in which the rod C rotates or oscillates.

D is a lever rigidly connected to the rod C at one end, and its free end projecting laterally toward the side of the track. This lever D is free to vibrate within certain limits and in connection with rod C and valve A.

E represents the usual type of swinging pivoted semaphore-arm, which is set by a wire or rod F, connected with a draw-bridge, railroad-crossing, or other point to "danger" and to "safety," as is well known. I modify this semaphore in any suitable way, so that a strong arm is presented which will stand the impact of the brake-actuating mechanism. I contemplate using, also, a plain rigid stationary arm or post G, one of which is set, for instance, at the full safety limit at each end of a draw, grade-crossing, "slow-speed" point, or other desired place, arranged to lie in the path of the free end of the lever D when in its normal position in a manner similar to that of the pivoted semaphore. When the brakes are "off" on the train, the arm D is substantially at right angles to the track, or in such position that the arm projects above or beyond the side or top of the train and directly in the path or way of the semaphore E or permanent arm or post. Assuming that through inability, accident, or neglect the engineer fails to put on the brakes when the safety limit of a dangerous point is reached, the arm D is struck by the arm or post at the side of the track, causing it to swing inwardly, thereby oscillating the rod C, moving the valve A, opening up the exhaust-

pipe with the train-pipe, and cutting off the air-pump pipe, bringing the brakes instantly into action and stopping the train. Should, however, the engineer be attending to duty and apply the brakes operating the valve-handle B, he will at the same time swing in the arm D out of the path of the permanent post and out of the path of the semaphore E, if set to "danger."

10 The advantages of the permanent arms or posts are that they are ever-constant reminders at draws, crossings, stations, signal-blocks, "slow-up" points, &c., to the engine-driver that if he does not apply his brakes within 15 the prescribed limits of safety he will have them applied for him automatically and in such a noticeable manner that attention will be called to his failure to attend to his duty, resulting in an investigation and, if 20 the failure be attributable to his neglect, his speedy discharge. In the employment of the permanent post it acts to automatically brake the train whether the draw be closed or open, the crossing all right or blocked, or signal- 25 tower blocked or open. If the engineer attends to his duty by applying the brakes, the arm D is withdrawn from contact with the post; if not, the lever-arm D lies in the path thereof.

30 This invention is designed for use in connection with the usual code of signals in local use upon any road at the points where the automatic train-arrester is applied.

I may apply my invention to the ejector- 35 valve of a vacuum-brake apparatus in a similar manner or to any fluid-pressure-brake system or other brake apparatus. I also provide an automatic valve-operating apparatus for vertical-plunger brake-controlling valves 40 by providing a vertically-moving valve-stem extension, on the top of which I place a hinged arm adapted to be engaged by an arm at the side of the track. I may likewise change the location or arrangement of the several parts 45 and still come within the scope of my invention.

Fig. 2 shows a form of clutch connection be-

tween the valve-stem and extension-rod C. C' represents that part of the stem to which the controlling-valve A is directly attached. 50 Both rods or stems C C' have in this instance enlarged annular shouldered pieces or heads H H in juxtaposition to each other.

I is an annular strap surrounding both annular heads and having a bolt J for adjusting the tension upon the heads. The adjustment of this frictional clutch-strap J is such that under all ordinary circumstances the heads H H and stems or rods C C' will all oscillate together as one rod; but any excessive 60 strain upon the operating parts greater than is necessary to operate the valve, as before described, and liable to break the parts after the valve has been shifted will cause the rods or stems C C' to turn upon each other through 65 the friction-clutch.

By using a clutch connection between valve A and rod C, I am enabled to apply my invention to all locomotives now in use without interfering with or changing any parts of the 70 valve A. This clutch is of the friction or equivalent variety, which clutches the valve until the stem has turned sufficiently to fully apply the brakes, when the clutch is released, and the lever D and rod C swing idly in their 75 further movement. This construction prevents the breakage of any parts caused by the impact with the post or arm-semaphore at high speed.

I claim—

80 The combination, in a fluid or air pressure brake apparatus carried upon a car or train, of a valve in the brake-pipe, a valve-extension rod secured to the valve by a clutch mechanism and extending upwardly, and a vibrating 85 lever rigidly connected to said rod and projecting to one side of the car.

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

FENELON B. BROCK.

Witnesses:

GEO. L. CLARK,
ALF. J. MAY.