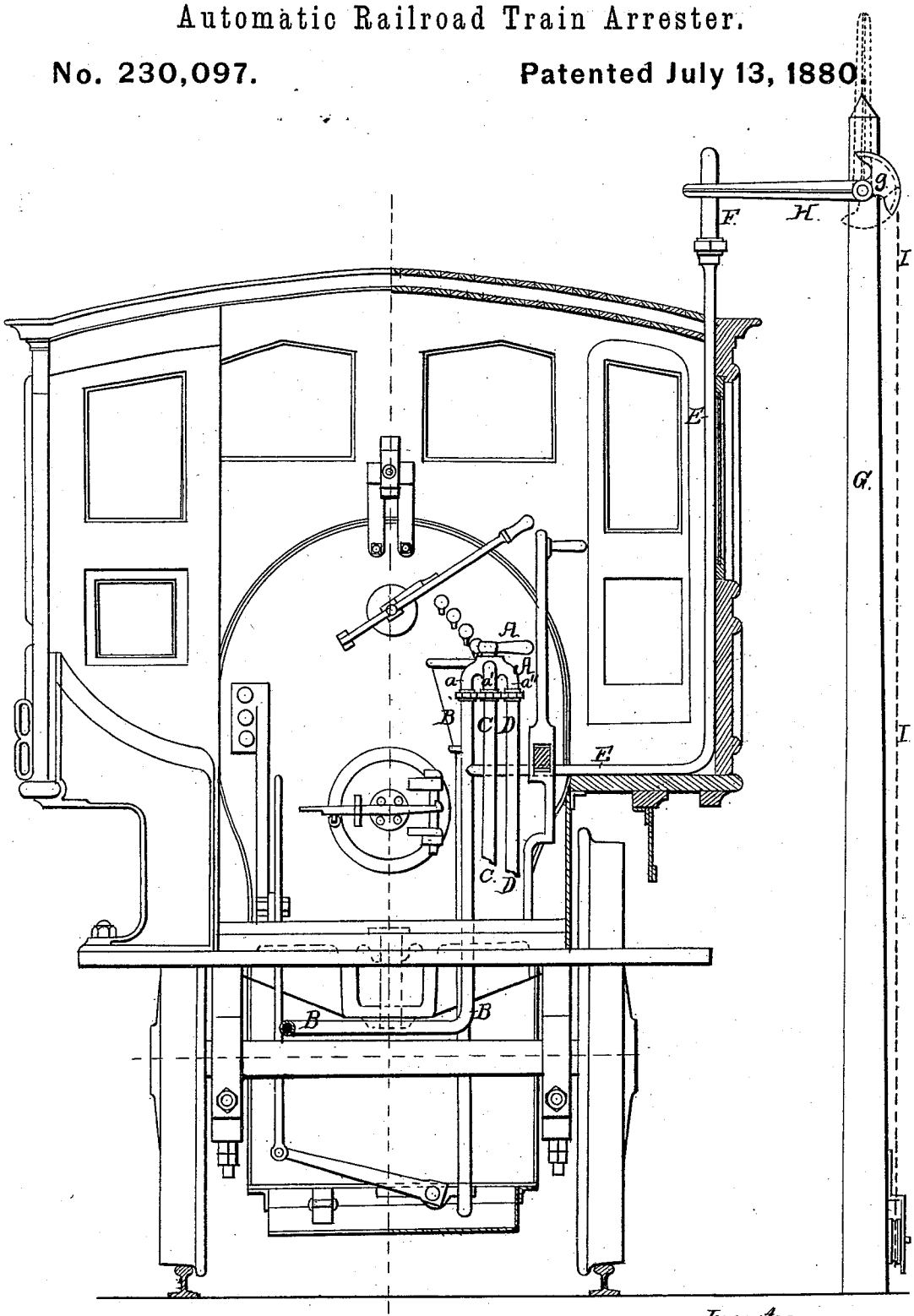
(No Model.)

J. WOOD.

Automatic Railroad Train Arrester.

No. 230,097. Patented July 13, 1880.



Attest:
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Inventor:
Joseph Wood,
by Hannay & Brock,
Atty's.

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UNITED STATES PATENT OFFICE.

JOSEPH WOOD, OF ALTOONA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO AXEL SAMUEL VOGT, OF SAME PLACE.

AUTOMATIC RAILROAD-TRAIN ARRESTER.

SPECIFICATION forming part of Letters Patent No. 230,097, dated July 13, 1880.

Application filed June 2, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH WOOD, a citizen of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Railroad-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, reference being had to the accompanying drawing, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to devices for automatically arresting and stopping the momentum of railroad-trains in cases of danger.

The object of my invention is to provide a steam, air, vacuum, or other pneumatic brake apparatus of a railroad-train with a device by means of which the speed of a train will be arrested automatically, independently of the control of the engineer, at any desired point along the route in the event of danger, such as the misplacement of a switch, danger at a railroad-crossing, draw-bridge, or other point.

For this purpose my present invention consists in providing the train or brake pipe or pipes of a steam, air, vacuum, or other pneumatic brake apparatus of a railroad-train with a glass or other suitable tube of brittle or frangible material, or its equivalent, such as a cock, valve, or lever operating a valve, projecting from the train, and which, coming in contact, in case of danger, with an adjustable arm arranged at the side of the track at the proper point, breaks the tube or operates the valve or lever, as the case may be, so as to establish free communication with the train-pipe of the brake apparatus, and thereby apply the brakes to the train.

It also consists in combining with the controlling-valve of a steam, air, or vacuum brake apparatus of a railroad-train, or with a valve or cock arranged in the train or brake pipe of the brake apparatus, a lever projecting from the train and adapted to be operated in cases of danger, and thereby apply the brakes to the train by coming into contact with a semaphore-arm put into position to be operated by being connected to a switch, signal, or locking-bolt, or worked directly from a signal cabin or tower.

It further consists in providing the train-pipe of a steam, air, vacuum, or other pneumatic brake apparatus of a railroad-train with a branch pipe leading therefrom, projecting from the train and provided with a glass or other suitable tube of brittle material, or its equivalent, as a cock or valve, or lever operating a valve, and adapted to be operated by coming in contact, in cases of danger, with a semaphore-arm put into position to be operated by being connected to a switch, signal, or locking-bolt, or worked directly from a signal cabin or tower.

The drawing represents a rear view of the caboose and the locomotive, partly in section, and shows a portion of an air-brake apparatus to which my improvements have been applied.

To enable others skilled in the art to make and use my invention, I will now proceed to describe it in detail, omitting a description of such parts of a brake apparatus as are well known and non-essential to a full understanding of my present invention.

In carrying out my invention, in this instance it is here shown applied to a compressed-air brake apparatus, in which the brakes are applied by a reduction of pressure in the train or brake pipes; but it is obvious that my improvements may be applied with equal effect to steam, vacuum, or other pneumatic brake apparatus.

In the accompanying drawing, A represents the controlling-valve of a compressed-air brake apparatus located within the caboose of the locomotive, so as to be within reach of the engineer. This valve A is a three-way cock, one branch, *a*, communicating with the train or operating pipe B, branch *a'* communicating with pipe C, leading to the main air-reservoir, located on the locomotive, and branch *a''* communicating with the exhaust-pipe D.

Train-pipe B is connected throughout the train between the cars by suitable flexible hose-couplings, in the usual manner.

In this special form of brake apparatus, to which my improvements are shown applied, the brakes are taken off by the pressure within the train-pipe and the pressure within the main reservoir upon the locomotive, and put

on or applied by the reduction of the pressure within the train or brake pipe B and the consequent pressure within the auxiliary reservoir exerted upon the pistons which apply the brakes. These auxiliary reservoirs are located on the several cars of the train.

When the three-way cock A is turned so as to open communication between the brake-pipe B and the exhaust-pipe D the brakes are put on by a reduction of the pressure within the brake-pipe, and when the valve or cock A is turned so as to establish communication between the pipe C, leading to the main reservoir, and the brake-pipe B, the pressure within the brake-pipe is again re-established and the brakes taken off.

To the train or brake pipe B, in any suitable and known way and at any desired point, either upon the locomotive or upon any one or the several cars of the train, is connected a branch pipe, E, having free communication therewith, and so arranged as to project from the train, for the purpose now to be described. The end of the pipe E so projecting is provided with a glass tube or bulb of any suitable size or shape; but any material other than glass, so that it possesses brittle qualities, may be employed; or the end of the pipe E may be provided with a suitable cock or valve; or the cock or valve may be located in the brake-pipe B and have a lever-rod connected thereto, projecting from the train, all to be operated in the manner hereinafter to be set forth.

G represents a post arranged at the side of the track, and is provided with a semaphore-arm, H, pivoted thereto in such a manner that when put in "danger" position it will project outwardly in the position shown by full lines in the drawing. The inner end of the semaphore-arm G is formed with a segment, *g*, to which is attached a rope or chain, I, passing over a pulley at the bottom of the post, whereby it may be connected to a switch, locking-bolt, or signal, so that upon the misplacement of any one of these the semaphore-arm may be caused to project outwardly, for the purpose shortly to be described; or the wire or rope I may be run into a signal cabin or tower and operated directly therefrom. When the semaphore-arm H is in the position shown by dotted lines it is in "safety" position.

The operation of my improvements is simple and easily understood, and is as follows: Upon a switch or draw-bridge, &c., being moved so as to leave it open or at "danger" position to a coming train, it will also operate the arm H by means of its connection with said arm through the wire or chain I, and cause the arm H to assume the position shown by full lines of the drawing. The semaphore-arm H, when in this position, projects sufficiently far so as to come in contact with tube F, or equivalent, of the moving train, thereby breaking the tube and causing a reduction of the pressure within the brake-pipe B, to which it freely communicates, thereby applying the brakes, and thus bringing the train to a stop before entering a misplaced switch, an open draw-bridge, or dangerous crossing.

In case of a valve being used instead of a brittle tube, the lever of the valve would be operated by the arm H, so as to open the valve, thus establishing free communication with the train or brake pipe B.

The posts G, with their attached semaphore-arms and connecting-chains, are located at the desired points along the route, at the side or between the track or otherwise, and are placed at a distance sufficiently far away from a switch, &c., as will enable the train to come to a stop after the brakes have been applied and before entering a switch, draw-bridge, railroad-crossing, &c.

Having described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A frangible tube or cock or valve or lever operating a valve connected with a brake-pipe of an air, steam, vacuum, or other pneumatic or power brake apparatus, and arranged so as to project from the train, whereby, in case of danger, the tube will be broken or the cock or valve handle or the operating-lever of valve shifted to an open position by an arm or arms arranged along the road-bed of the track, substantially as set forth.

2. A frangible tube connected by a branch pipe with a vacuum, steam, or compressed-air system of brakes, and arranged so as to be broken in cases of danger by an arm or projection arranged upon the road-bed of the track, substantially as specified.

3. A frangible tube or cock or valve or lever operating a valve connected with the brake-pipe of a vacuum, steam, or compressed-air system of brakes, and arranged so as to project from the train, whereby, in case of danger, the tube will be broken or the cock or valve handle or the operating-lever of valve shifted to an open position by an arm or arms put into position by being connected to a signal, switch, or locking-bolt, or worked directly from a signal cabin or tower, substantially as set forth.

4. The brake or operating pipe of a steam, air, vacuum, or other pneumatic brake apparatus, provided with a valve or cock communicating with the outer atmosphere, in combination with a lever for operating it, projecting from the train and adapted to be operated by a pivoted stationary arm put into position by being connected to a switch, signal, or locking-bolt, or worked directly from a signal cabin or tower, substantially as and for the purpose set forth.

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

JOSEPH WOOD.

Witnesses:
AXEL SAMUEL VOGT,
W. D. COUCH.