(No Model.) 2 Sheets—Sheet 1.

J. W. JAMES.

APPARATUS FOR PREVENTING COLLISIONS OF RAILWAY TRAINS.

No. 386,403. Patented July 17, 1888.

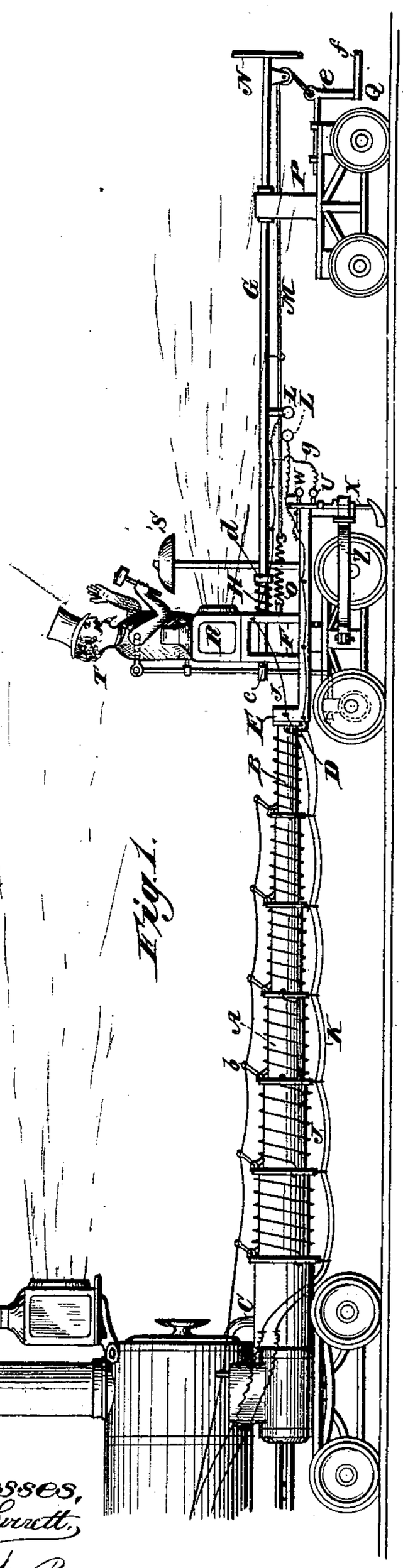

Fig. 1.

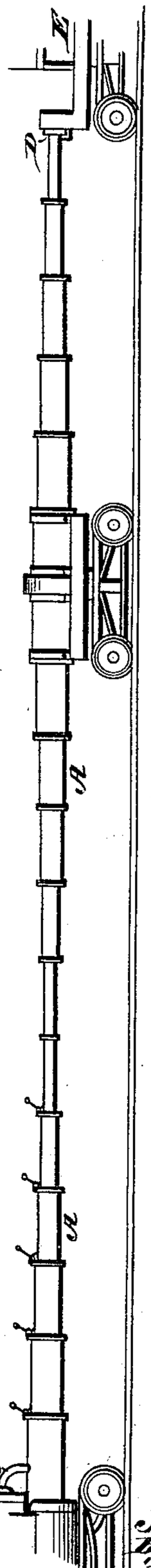

Fig. 2.

Fig. 3.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

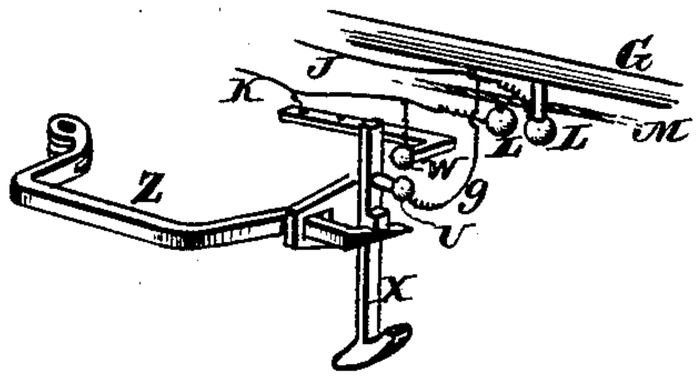


Fig. 5.

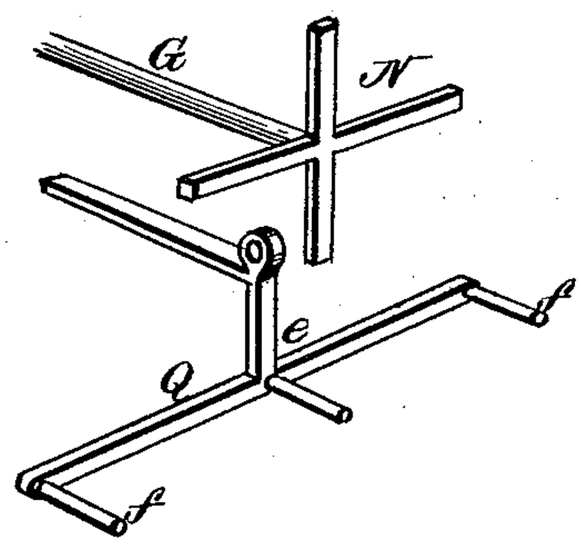


Fig. 6.

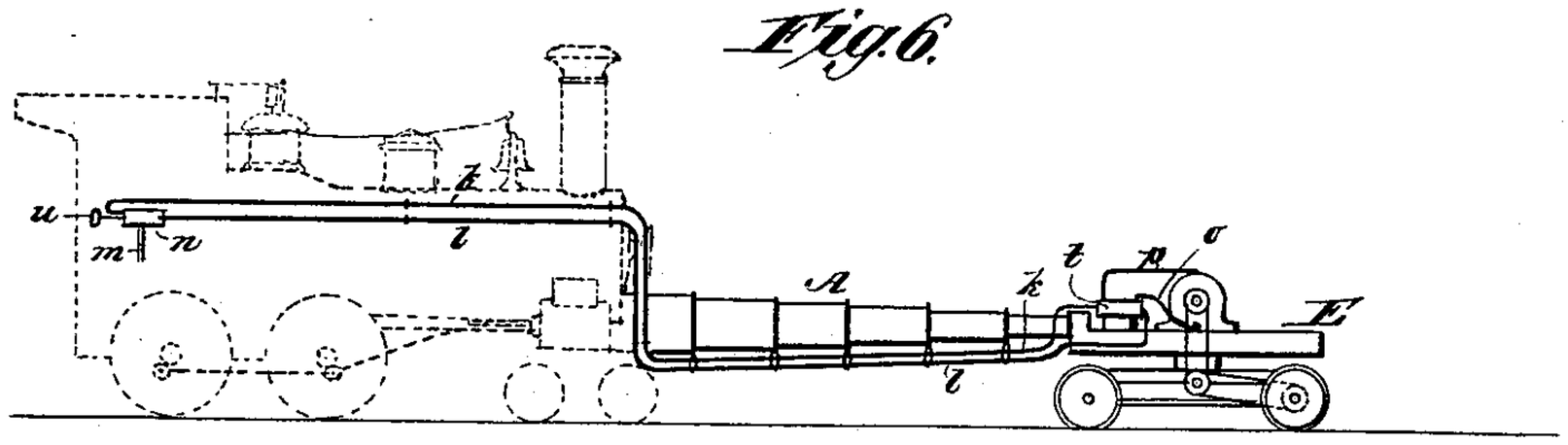
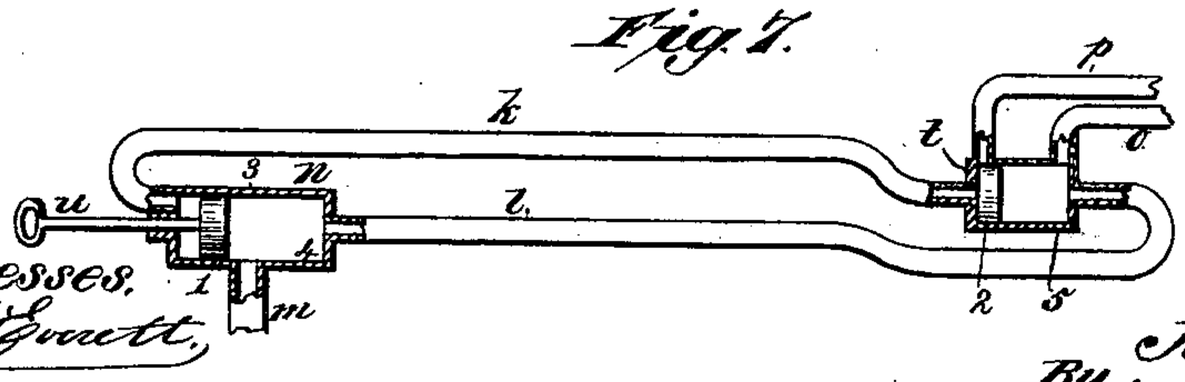


Fig. 7.



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Inventor:
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UNITED STATES PATENT OFFICE.

JACK WILLIAM JAMES, OF CUBA, TENNESSEE.

APPARATUS FOR PREVENTING COLLISIONS OF RAILWAY-TRAINS.

SPECIFICATION forming part of Letters Patent No. 386,403, dated July 17, 1888.

Application filed March 15, 1888. Serial No. 267,253. (No model.)

To all whom it may concern:

Be it known that I, JACK WILLIAM JAMES, a citizen of the United States, residing at Cuba, in the county of Shelby and State of Tennessee, have invented new and useful Improvements in Apparatus for Preventing Collisions of Railway-Trains, of which the following is a specification.

The object of my invention is to provide an apparatus, which I term an "electric pilot," to be propelled in advance of a railway-train, to prevent collisions and other accidents by automatically applying the brakes, reversing the engine, and thus bringing the train to a stop; and to this end the invention consists in the combination of devices as hereinafter more fully described and claimed.

In the annexed drawings, Figure 1 is a side elevation of my improved piloting apparatus connected with a locomotive. Fig. 2 illustrates a modification in the arrangement of the telescopic tubes employed for connecting the locomotive and pilot. Figs. 3, 4, and 5 are detail views. Figs. 6 and 7 illustrate a modification in the mechanism for operating the pilot-car by compressed air.

In carrying my invention into effect I attach to the front of a locomotive a connected series of telescopic tubes, A, composed of metal or other suitable material and projecting forward in a horizontal line. These telescopic tubes or sections are suitably connected and provided with packing to form air-tight joints, whereby they are adapted to be expanded or extended to any desired length by means of compressed air. When not containing compressed air, they are automatically contracted or closed one within another by means of spiral springs B, placed around each section. These springs B are stretched or extended when the telescopic tubes are opened out, and so are sufficiently tense to retract the tubes when the compressed air is withdrawn or allowed to escape. The telescopic tubes are also constructed and connected in such a manner as to allow sufficient lateral movement of the tubes or sections to properly go around curves in the track.

The compressed air for extending the telescopic tubes is admitted from a suitable reservoir or compressor (not shown) through a pipe, C, having suitable valves which are under the control of the engineer. An ordinary spring-catch, *a*, may be placed on each of the telescopic tubes to hold them in an extended position, and these catches may be released by a cord attached to levers *b* and under the control of the engineer.

The forward end, D, of the telescopic device is securely attached to the rear end of the small flat or platform car E, and the telescopic tubes may also be supported at intervals by suitable trucks.

On the platform-car or flat E are securely mounted two transverse uprights, F F, which are perforated for the passage of a horizontal forward-projecting rod or pole, G, that will slide readily to and fro through the uprights. Through the rear end of the pole G is passed a stop-pin, *c*, to limit its forward movement, and in front of the forward upright, F, the pole G is provided with a shoulder or collar, *d*, to afford a bearing for the forward end of a spiral spring, H, which is placed around the pole to keep it pressed forward.

The telescopic tubes A and flat car E support insulated wires J J and K K, which are connected with an electric battery in the engine-cab. These wires terminate at their forward ends in balls L L, and one wire, as J, is attached to the pole G, and the other wire, as K, to a cord, M, which extends from a spring, O, on the car E to the forward end of the pole G, and thence downward to a truck, P, which runs on the track and is suspended from the forward end of said pole.

To the forward end of the pole G are attached cross-rods N, which on coming in contact with an object on the road will force the pole G backward and cause the balls L L to come in contact with each other, and thus complete an electrical circuit, which by any suitable and well-known arrangement of devices may be made to apply the air-brakes to the train, reverse the engine, and at the same time release the compressed air in the telescopic tubes and enable the spiral springs B to contract or close said tubes, so as to cause the flat car E to move rapidly backward toward the engine.

An iron rod, Q, having hooked ends *f* and a central projection or arm, *e*, is supported on the truck P in such a manner that one or both of its ends will project in front of the

truck and hook against an object—such as the body of a man or a log of wood lying across the track—and thus cause the projection *e* to engage and pull on the cord M, thereby bringing the balls L L together and stopping the train, as already described. If there is an open bridge in front of the train, the truck P, by falling into it, will draw on the cord M, so as to bring the balls L L together and establish an electrical circuit to stop the train.

On the flat car E is a lantern, R, a gong, S, and a dummy, T, representing the figure of a man, that by any convenient devices operated from one of the truck-axles will be made to throw up both hands at each revolution of the wheel and strike the gong with a hammer for the purpose of frightening cattle from the track and to announce the approach of a train. A watchman may be placed on the flat car E and communicate with the train by telephone. A branch wire, *g*, connects with the wire J and terminates in a ball or knob at U. If the flat E should jump the track and run along over the ties, a rod, X, arranged for that purpose, will push the knob U up into connection with a knob, W, on the wire K, thus making an electrical connection or circuit and thereby apply the brakes and stop the train in the manner already described. If the flat E should jump the track and turn over on its side, a lever, Z, will raise the knob U into contact with the knob W and stop the train.

By having a revolving drum on the locomotive, (and under the control of the engineer,) with a rope attached to it which passes along the telescopic tubes and is fastened to the flat car E, the spiral springs B may be dispensed with.

The telescopic connection or tubes may be put together in pairs, as shown in Fig. 2, by which means the flat E can be more conveniently run out to a great distance. If desired, a second series of telescopic tubes may project in front of the flat E and connect with a similar flat in front. When the telescopic tubes are closed or contracted, the wires and cords attached thereto will hang in loops on each side until the telescope is again extended.

By means of this pilot apparatus operated by compressed air, electricity, and mechanism, as described, the danger of collisions and other accidents from obstructions, &c., on the road can be avoided to a great extent.

The compressed air in the inside of the telescopic tubes and the spiral springs B on the outside may be dispensed with by placing a small compressed-air engine on the flat E to operate the flat to and fro and be under control of the engineer. This is done by admitting compressed air to the engine on the flat through two flexible pipes, *k* and *l*, as shown in Fig. 7. These flexible pipes *k* and *l* convey the compressed air from the compressed-air tank on the locomotive to the compressed-air engine on the flat E. The pipes *k* and *l* are sustained by being attached at intervals along the telescopic tubes. Compressed air is admitted into the flexible pipes *k l* through the pipe *m* and chamber *n*, and admitted into the compressed-air engine through the pipes *o p* and chamber *t*. The chambers *n* and *t* have slide-valves on the inside, and the rod *u* communicates with the valve inside of the chamber *n*, and when located at the point 1 admits air into the pipe *l* and moves the valve in chamber *t* to the point 2, which cuts off the air from communicating with pipe *p* and admits it into pipe *o*, which causes the compressed-air engine on the flat E to run the flat forward. On sliding the rod *u* forward to the point 3 communication of air is cut off from pipe *m*, and, moved forward to the point 4, air is cut off from pipe *l* and passes through pipe *k*, and moves the valve in chamber *t* back to the point 5, which lets the air through the pipe *p* into the compressed-air engine and runs the flat backward. The chamber *n* is conveniently located in the cab, thus being under control of the engineer, and the electrical arrangement described above may be modified to suit.

What I claim is—

1. The combination, with a locomotive and a pilot-car, of a series of telescopic tubes forming a connection between said locomotive and pilot-car, and an electrical circuit between the pilot-car and locomotive to apply the brakes and reverse the engine when the pilot-car is in collision or thrown from the track, substantially as described.

2. The combination of a locomotive, a pilot-car, a telescopic connection extensible by compressed air and connecting said locomotive and pilot-car, a longitudinally-movable pole projecting in front of the pilot-car, a truck connected with the forward end of said pole, and an electrical connection or circuit between the locomotive and pilot devices, substantially as described.

3. The combination, with a locomotive, of the telescopic tubes A, extensible by compressed air and projecting from the forward end of the locomotive, the flat car E, secured to the forward telescopic tube, the longitudinally-movable pole G, carried by the flat car E, the truck P, connected to the forward end of said pole, the spring H on the pole, the electric wires J K *g*, the spring O, and cord M, substantially as described.

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

JACK WILLIAM JAMES.

Witnesses:
THOS. WENFORD,
C. A. MAURY.