

(No Model.)

3 Sheets—Sheet 1.

T. M. JENKS.
RAILWAY SIGNAL.

No. 381,247.

Patented Apr. 17, 1888.

Fig. 1.

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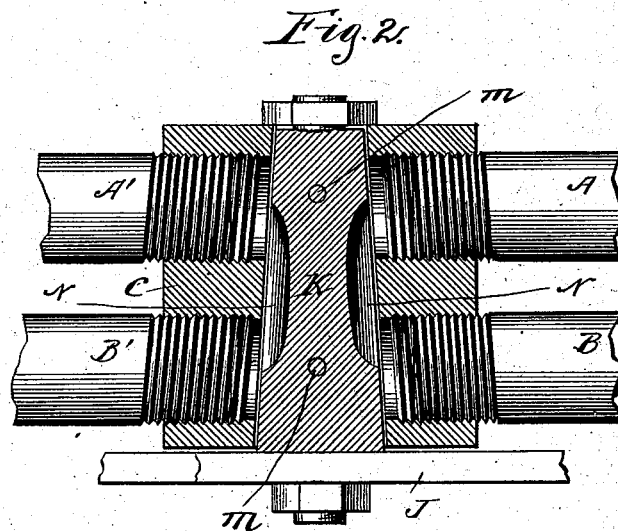
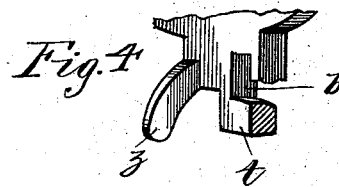
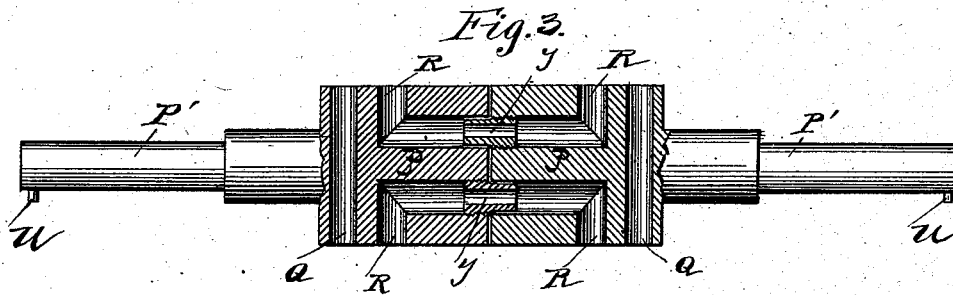
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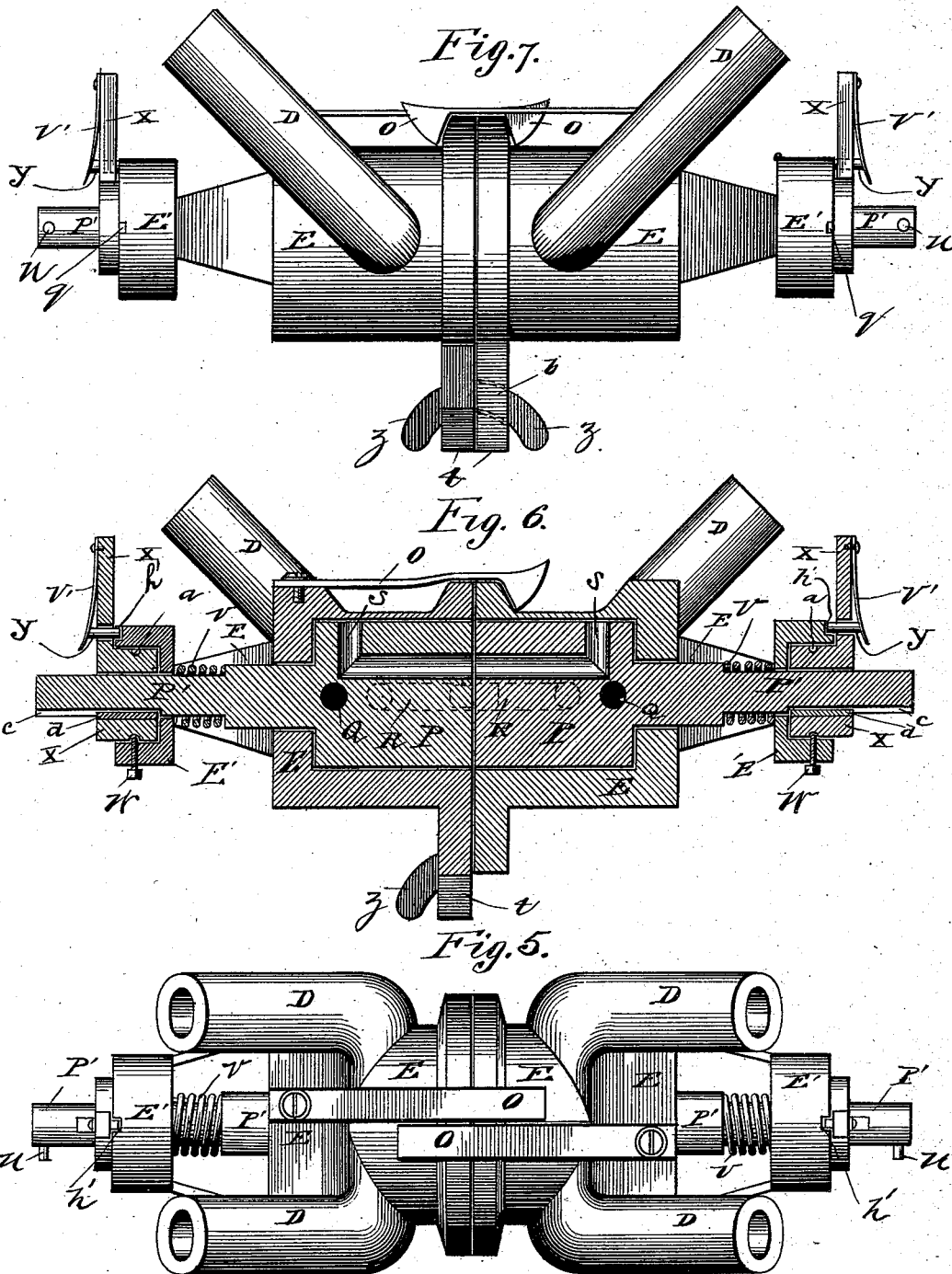
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UNITED STATES PATENT OFFICE.

THOMAS M. JENKS, OF CHICAGO, ILLINOIS.

RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 381,247, dated April 17, 1888.

Application filed October 15, 1887. Serial No. 252,484. (No model.)

To all whom it may concern:

Be it known that I, THOMAS M. JENKS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Railway-Signal, of which the following is a specification.

My invention relates to railway-signals operated by the use of compressed air; and its objects are to furnish a convenient means of communication between the conductor and the engineer of a railway passenger-train from each car of the train and of automatically notifying the engineer if the train breaks apart. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a passenger-car lying on one side and having the other side removed and showing the signaling machinery attached to each car. Fig. 2 represents the four-way cock and section of pipe. Fig. 3 shows the automatic cock in plan view, part in section. Fig. 4 shows the hinge-joint. Fig. 5 shows a plan view of the coupler and the mechanism designed to determine the action of the automatic cock. Fig. 6 represents a vertical section of the same. Fig. 7 represents a side view of the same.

The same letters refer to similar parts in the different figures.

Under each passenger-car are fastened the two pipes A and B. These pass at each end through the cock C, and at each end are continued by the short pipes A' and B'. A' and B' are connected, also, by the hose A'' and B'' with the short pipes D of the coupler E, (only half of which appears in Fig. 1.) Hose corresponding to A'' and B'' connects the pipes of the other half of the coupler E with pipes corresponding to A' and B' under the next car, and so connection is made at last with two pipes under the locomotive. These last two pipes open one into a compressed-air receiver under or on the locomotive, which is filled by an air-pump operated by the locomotive-engine, (or by any other suitable means,) the other into an air-chamber containing a piston which is fitted with appliances for ringing a gong in the cab of the locomotive when compressed air is let into the chamber.

F is the bell-cord of a passenger-car.

G is a bracket at the end of a passenger-car.

H H are rollers in the bracket G.

I is a cord having a hook on its upper end to catch on the bell-cord and fastened at its other end to J.

J is a lever fixed to the end of the key K in the cock C.

L is a spring fastened to the other end of the lever J and also to the floor of the car.

M M are holes at right angles through key K.

N N are grooves in two opposite sides of the key K.

E is a coupler.

O O are springs that fasten its parts together.

D D D are pipes through which communication is established between the hose A'' and B'' by the respective cocks P in the coupler E.

P is a four-way cock; P', its stem. Q is a hole through it at right angles to its axis.

R is a rectangular air-passage through the cock P. S is also a rectangular hole similar to the air-passage R.

T is a short tube designed to connect the air-passages R in the halves of the cock P when joined for operating.

U is a pin secured to the rod P', which is a continuation of the outer end of a half of the cock P.

V is a coiled spring secured at one end to the outer end of a half of the cock P and at the other to the annular enlargement E' of a half of the coupler E at its outer end. Said enlargement E' is recessed on its outer face to receive the boss of the handle X, and has an aperture for the rod P' to pass through, the lower and larger part of the handle X having a corresponding aperture for the same purpose.

X is a handle which turns the stem P' and the cock P around.

Z is a hinge on the coupler E, designed to pass into the aperture b in the coupler E.

a is a groove running around the handle X to receive the end of the screw W, and thus hold the handle X in position.

c is a groove in the stem P' and in the handle X, and d a key to connect these parts.

V' is a spring fastened to the handle X.

Y is a pin fastened to the spring V' and passing through the handle X into a hole in the coupler E.

The above-described mechanism is operated

as follows: The train being in motion, the air-pump fills with compressed air that one of the two lines of pipe and hose that is in communication with the pipe under the locomotive leading from the air-receiver and air-pump. When the conductor wants to sound the gong in the cab of the locomotive, he pulls the bell-cord F, which, passing down over the rollers H H in the bracket G and through the hook in the end of the cord I, draws it upward, and thus moves the lever J and turns the key K in the cock C. The key K is so set that when stationary the holes M M are in line, respectively, with the pipes A' and A and B' and B, and the cocks P P are so set when the sections of the coupler E are coupled that communication is established through the air-passages R T and the pipe B between the pipes A' and A and B' and B, respectively. The key K being turned partly around, the groove is brought opposite A' and B' and A and B, respectively, whereupon the compressed air rushes out of that line of pipe and hose that is in communication with the air-pump and through the groove N into and through the other line of pipe and hose until it passes into the air-chamber containing the piston, which is thus forced forward and made to sound the gong. When the bell-cord F is released, the spring L draws the lever J back into its original position.

The cocks P P are set before coupling, as follows: The stem P' is grooved at the line c and passes through the handle X, which is made with a key, d. This key fits in the groove so that the handle may turn the stem P' around. When the handle is in vertical position on the stem P', the pin Y fits in the notch h in E' the enlargement of the outer end of the coupler E. The axis of the groove h is in the same vertical plane with the longitudinal axis of the coupler E, and the longitudinal axes of the air-passages R are in the same plane with each other, and the latter plane is at right angles with the former; hence when the halves of the coupler E are coupled and the handle X is in the place designed for it in each half of the coupler E—that is, set with the pin Y in h—the air-passages R and R in each cock will be continuous, and the holes R will open into the pipe D, thus establishing communication between the sections of pipe and hose A' and A and B' and B, respectively.

Fig. 4 represents a hinge-joint, in which z is the hinge, t the lug, and b the aperture. The halves of the coupler E are united by the above hinge-joint and held together by the springs O O.

If a train of cars breaks apart, the spring V forces the stem P' toward the face of E till the pin U strikes against the handle X. The pin U has been placed on the stem P' at a distance from the handle X equal to the distance between the holes Q and R; hence communication is established continuous through the holes Q and the pipes T T in the respective

halves of the coupler E, and compressed air rushes out of the pipes and hose that contained it in the section of the train next the locomotive into the other pipes and hose in the same section, and thus the gong in the cab of the locomotive is sounded automatically.

In the half of the coupler E, at rear of the train, the handle X is turned one-quarter way around and the pin Y is set in the notch corresponding to the groove h. Thus the two openings of S in P are brought opposite to the pipes that do not contain compressed air, and thus a vent is established.

I am aware that prior to my invention above described compressed-air railway-signals have been invented. I therefore do not claim such an invention, broadly; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In a railway-signal mechanism, the four-way cock C, secured under the end of a passenger-car and furnishing communication between the pipes A and A' and B and B', respectively, and embracing the key K, fitted at one end with the lever J, said lever being combined at one end with the spring L, secured to the bottom of the car, and at the other end with the cord I, which passes up and is secured to the bell-cord F, drawn down over the rollers H H in the bracket G at the end of the car, substantially as and for the purposes specified.

2. In a railway-signal mechanism, the four-way cock C, containing the key K, pierced at right angles with the holes M M and having the grooves N N extending along a part of its opposite sides, in combination with the pipes A' and A and B' and B, extending lengthwise beneath a passenger-car, the said pipes A' and B' opening into the hose A'' and B'', which extend to and furnish communication with the pipes D D of the coupler E, and through this with corresponding pipes and hose communicating with any air-pump and suitable signaling apparatus of common construction on the locomotive of the train, substantially as and for the purposes stated.

3. In a railway-signal mechanism, the coupler E, consisting of two similar parts, each terminating in a plane face at one end and at the other end in the pipes D D and the annular enlargement E', which is recessed to receive the boss of the handle X and notched at the points h and g, forty-five degrees apart, to receive the pin Y, secured to the spring V', which is in turn secured to the upper end of the handle X, said parts containing the respective halves of the cock P and being combined with each other face to face by the springs O O, secured to them, and the hinge z on one part passing through the aperture b in the lug t on the other part, substantially as and for the purposes specified.

4. In a railway-signal mechanism, the four-way cock P, formed of two halves fitted in the coupler E, also formed of two halves and having the holes Q passing therethrough at right

angles near its outer ends, and the two holes
R R, parallel with its axis and opening at the
sides, and the tubes J J, connecting with cor-
responding holes in the halves of the cock, and
5 the hole S, opening at the side of said cock,
with the spiral springs V upon the rods P'
of the cock, said rods being longitudinally
grooved at c upon their periphery and having
the radial pins u near their ends, and the an-

nular enlargement E' of the coupler having the ro
screw W, the inner end of which engages with
a groove, a, in the handle X, carrying the key
d, substantially as and for the purpose de-
scribed.

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Witnesses:

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