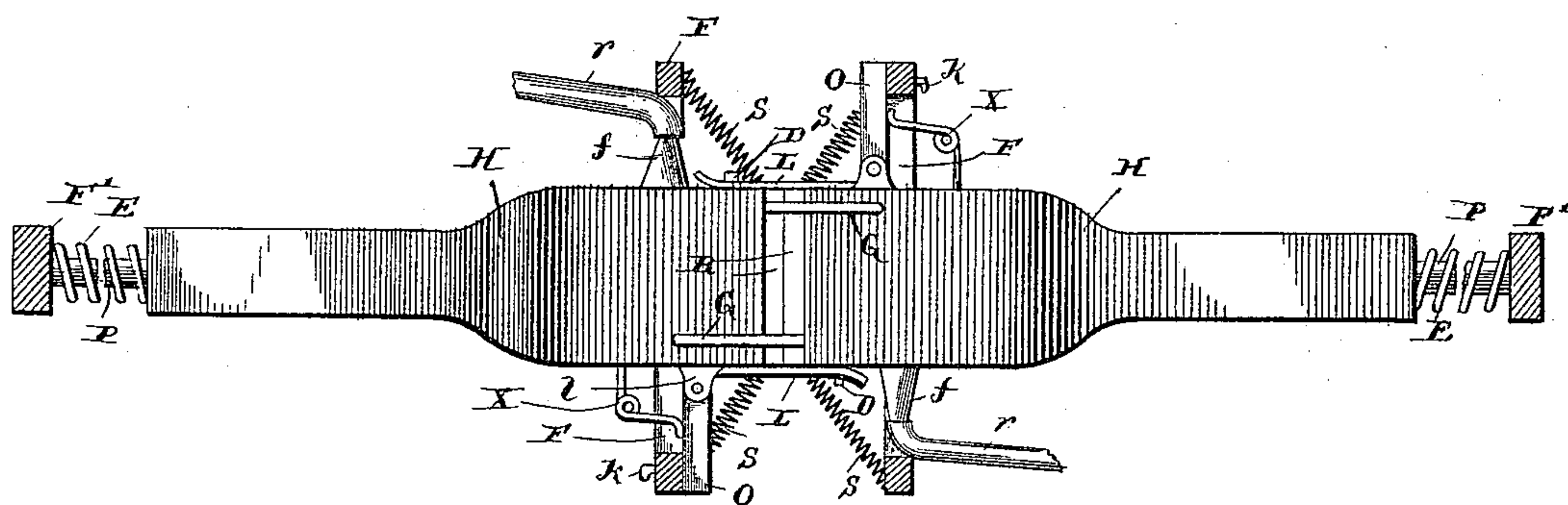
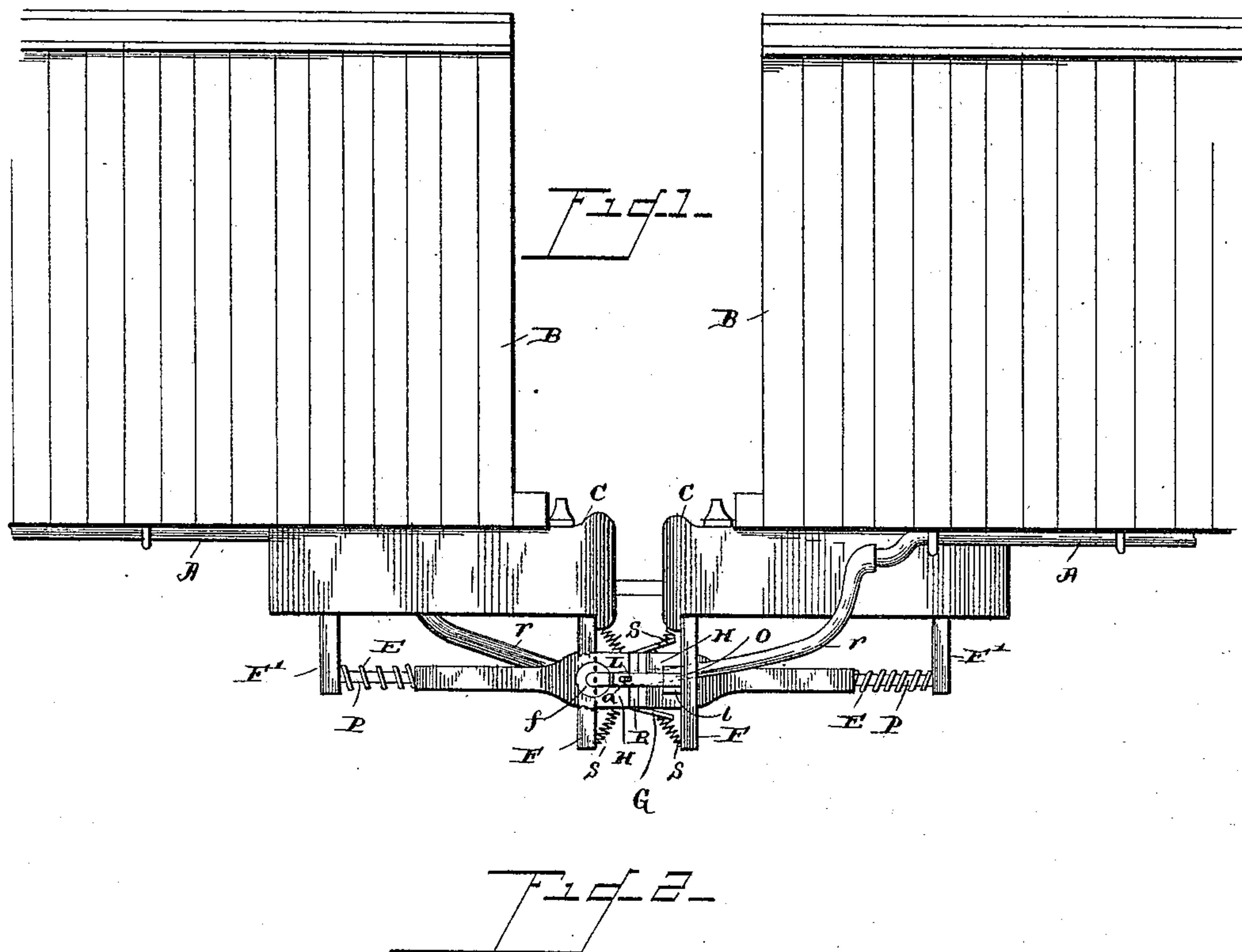


2 Sheets—Sheet 1.

## AIR BRAKE COUPLING.

Patented Dec. 16, 1890.



Geo. E. Trech

M. L. Gollamer.

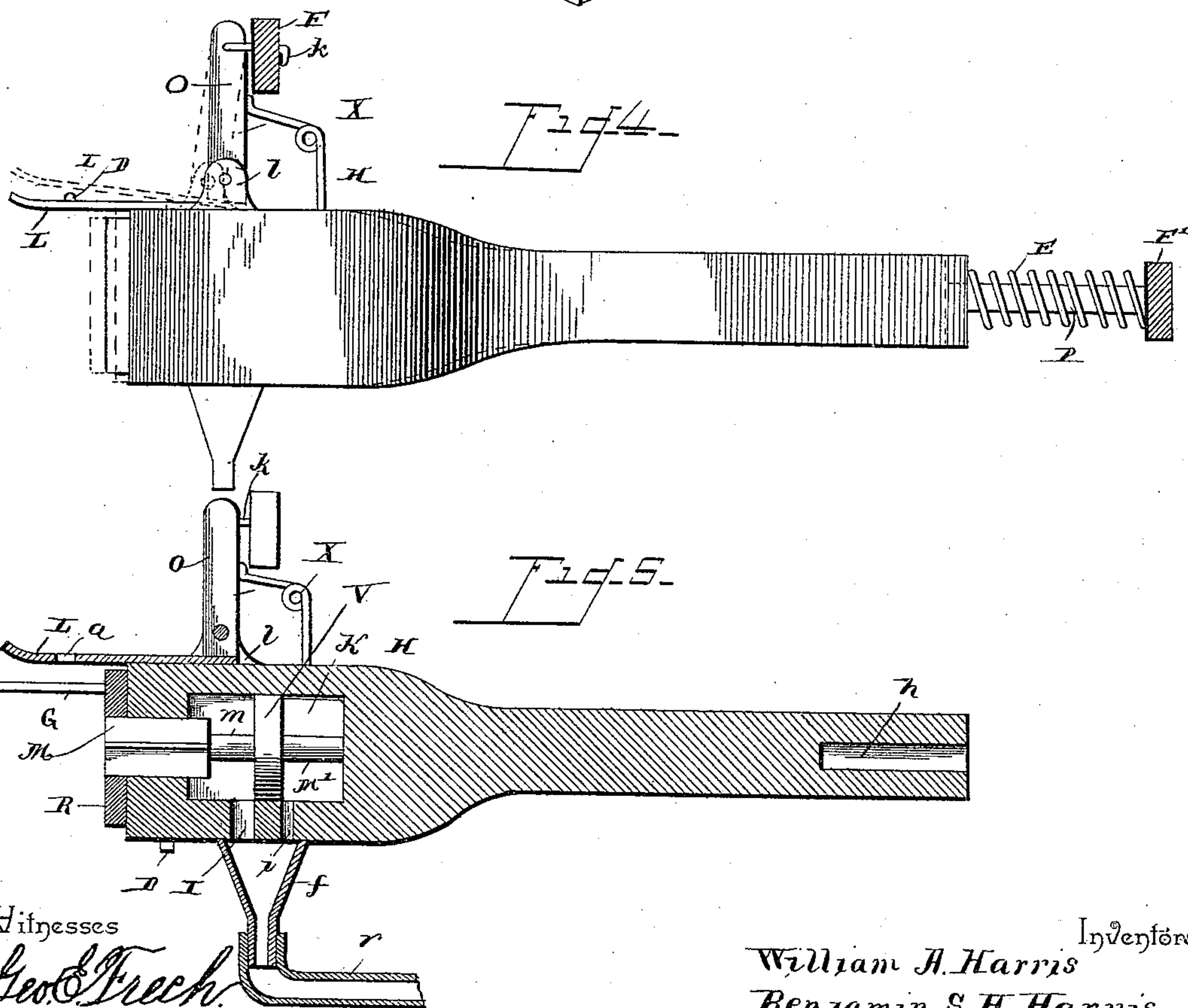
Inventors  
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Chowder

2 Sheets—Sheet 2.

Patented Dec. 16, 1890.



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# UNITED STATES PATENT OFFICE.

WILLIAM A. HARRIS AND BENJAMIN S. H. HARRIS, OF PELZER, SOUTH CAROLINA.

## AIR-BRAKE COUPLING.

SPECIFICATION forming part of Letters Patent No. 442,621, dated December 16, 1890.

Application filed May 8, 1890. Serial No. 351,006. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM A. HARRIS and BENJAMIN S. H. HARRIS, citizens of the United States, residing at Pelzer, in the county of Anderson and State of South Carolina, have invented a new and useful Air-Brake Coupling, of which the following is a specification.

This invention relates to railway-cars, and more especially to the couplings for the air-brakes thereof.

The invention consists of a head carried below the draw-head and having an automatically-closing valve adapted to be opened when the head is coupled with the companion head and devices carried by said head for automatically coupling it to and uncoupling it from the companion head simultaneously with the coupling and uncoupling of the cars, all as hereinafter more fully described, and illustrated in the drawings, in which—

Figure 1 is a side elevation showing two car ends connected by the couplings and by air-brake couplings of our improved construction. Fig. 2 is a plan view of the air-brake couplings, also connected. Fig. 3 is an enlarged perspective view of one of our coupling-heads and connections. Fig. 4 is a plan view of one of the heads and its uncoupling devices, showing the latter in full lines as in their coupled position and in dotted lines in their uncoupled position. Fig. 5 is a longitudinal section through the center of one of the coupling-heads.

Referring to the said drawings, the letter B designates the body of the car, carrying an ordinary or any preferred car-coupling C, by which it is connected to an adjacent car. Below the car-coupling is a frame-work F, within which is mounted loosely the head H of our improved air-brake coupling, which head has a hole *h* in its rear end. A pin P, carried by an extension F' from the car-body, fits loosely in this hole, and a coiled expansion-spring E surrounds the pin between the extension and the rear end of the head, whereby the latter is pressed normally forward. The front end of the head is flexibly sustained at about the center of the frame-work F by means of a number of springs S, which connect the corners or sides of the frame-work with the head, and by means of which the latter is allowed

to move transversely to and longitudinally of its length to a limited degree. The front end of the head is provided with a buffer or cushion of soft rubber R.

Within the head H, at its front end, is a socket K, having its mouth slightly reduced, and in this socket is seated a valve V, whose head is of a size to fit within the body of the socket, but to close said reduced mouth by coming against the inner side thereof, and the stem M of this valve projects outwardly, as best seen in Fig. 3. Through the side of the head is formed a large inlet-opening I, located in such position that when the valve is in its inmost position, with the inner end M' of its stem resting against the inner end of its socket K, the head V of the valve will stand just inside said inlet-opening, and the air may pass in through the opening around the cylindrical portion *m* of the stem in front of the head, between the several wings of the stem proper M, outwardly through the reduced mouth of the socket, and through the hole in the center of the rubber cushion R, and so on to the next car. Slightly in rear of the large inlet-opening I is a smaller opening *i*, which is so located that it will open in rear of the head V when the valve is in its inmost position. A funnel *f* covers both these inlet-openings and connects at its outer end with the air-brake pipes A, which extend below the car, as is well understood, a short piece of rubber or flexible pipe *r* being inserted between the ends of the pipes A and the outer end of the funnel, in order that the head may be permitted to have the movements above described.

Between lugs *l* on the side of the head H is pivoted an outwardly-extending arm O, and to the inner end of this arm is connected a leaf-spring L, which projects forwardly along the side and beyond the end of the head, being curved slightly outward at its free end and provided with a hole *a* through its body near such curved end, and the opposite side of the head carries a pin or stud D, with which the hole *a* of the companion spring L is adapted to engage. The outer end of the arm O is connected by a link *k* with the frame-work F, as shown. At suitable points around its front end the head is provided with outward-



ly-inclined guide-arms G, by means of which two heads will be thrown into alignment when two cars come together.

With the above-described construction of parts the operation of this improved air-brake coupling is as follows: As the cars come together and are coupled the rounded ends of the leaf-springs L ride over the studs D, and the holes *a* engage said studs, whereby the two heads H are locked together. In this position the rubber cushions R are pressed tightly against each other by the expansion of the springs E, the valves V are both pressed inwardly by the abutting of the outer ends of their two stems M, and the air has a free passage through the coupling in a manner which will be understood. If now the cars be uncoupled and are separated, each head H will be drawn forwardly through its connection with the other head and will move outwardly within the frame-work. When the head H has moved outwardly to a considerable extent, the outer end of the arm O, which is connected by the link with the frame-work, will have thrown the outer end of the leaf-spring L off the stud D, and the two heads will thus be uncoupled. The guides G assist in aligning the two heads when they are brought together, as will be understood. As soon as the heads are uncoupled the pressure of the air within the car which is connected with the locomotive passes through the smaller inlet-opening *i*, behind the valve V, and forces the same outwardly, thereby closing the end of the coupling and preventing the escape of the compressed air. It will thus be seen that the operation of the device is automatic, and that the engineer has control of the brakes on all the cars which are coupled with the engine.

Where the link *k* is a chain, a construction we may sometimes prefer, whereby the outer end of the arm O will not be forced forward and the spring L will not be forced inward when the head H recedes from its normal position, we insert a spring X between the outer end of the arm O and the side of the head, which spring holds said arm normally forward and the leaf-spring L normally in operative position. It is not always desirable to use the expansion-spring E, especially when the springs S are strong enough to hold the head

H centered in the frame-work, and we do not, therefore, limit ourselves thereto.

What we claim is—

1. The herein-described coupling for air-brakes, the same comprising a head flexibly centered within a frame-work, a stud at one side of the head, lugs at the other side thereof, an outwardly-extending bar pivoted between said lugs and flexibly connected at its outer end to said frame-work, a leaf-spring connected to the inner end of said arm, projecting beyond the front end of the head, curved outwardly at its free end, and provided with a hole, and a valve and connections within the head, all adapted to operate substantially as specified.

2. The herein-described coupling for air-brakes, the same comprising a head, a stud at one side thereof, lugs at the other side thereof, an outwardly-extending bar pivoted between said lugs, a link between its outer end and the fixed part of the car-body, a spring pressing said arm normally forward, a leaf-spring connected to the inner end of said arm, projecting beyond the front end of the head and provided with a hole, and a valve and connections within the head, all adapted to operate substantially as specified.

3. In an air-brake coupling, the head H, having the socket K, with a reduced mouth, and also having the large and small inlet-openings I and *i* in its side, the funnel *f*, covering said openings and connected with the air-brake pipes, the valve V, loosely fitting said socket, and a stem through said valve, the rear portion M' of which rests against the inner end of the socket when the head of the valve stands between said openings, the cylindrical portion *m* of which then stands opposite the larger opening, and the winged portion M of which stands forward of the cylindrical portion with its front end in and flush with said reduced mouth, the whole operating substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

WILLIAM A. HARRIS.

BENJAMIN S. H. HARRIS.

Witnesses:

C. D. SMITH,

W. S. RAMSEY.