(No Model.)

H. F. CHAPIN.

STEAM AND AIR PIPE COUPLING.

No. 452,689. Patented May 19, 1891.

FIG. 1.

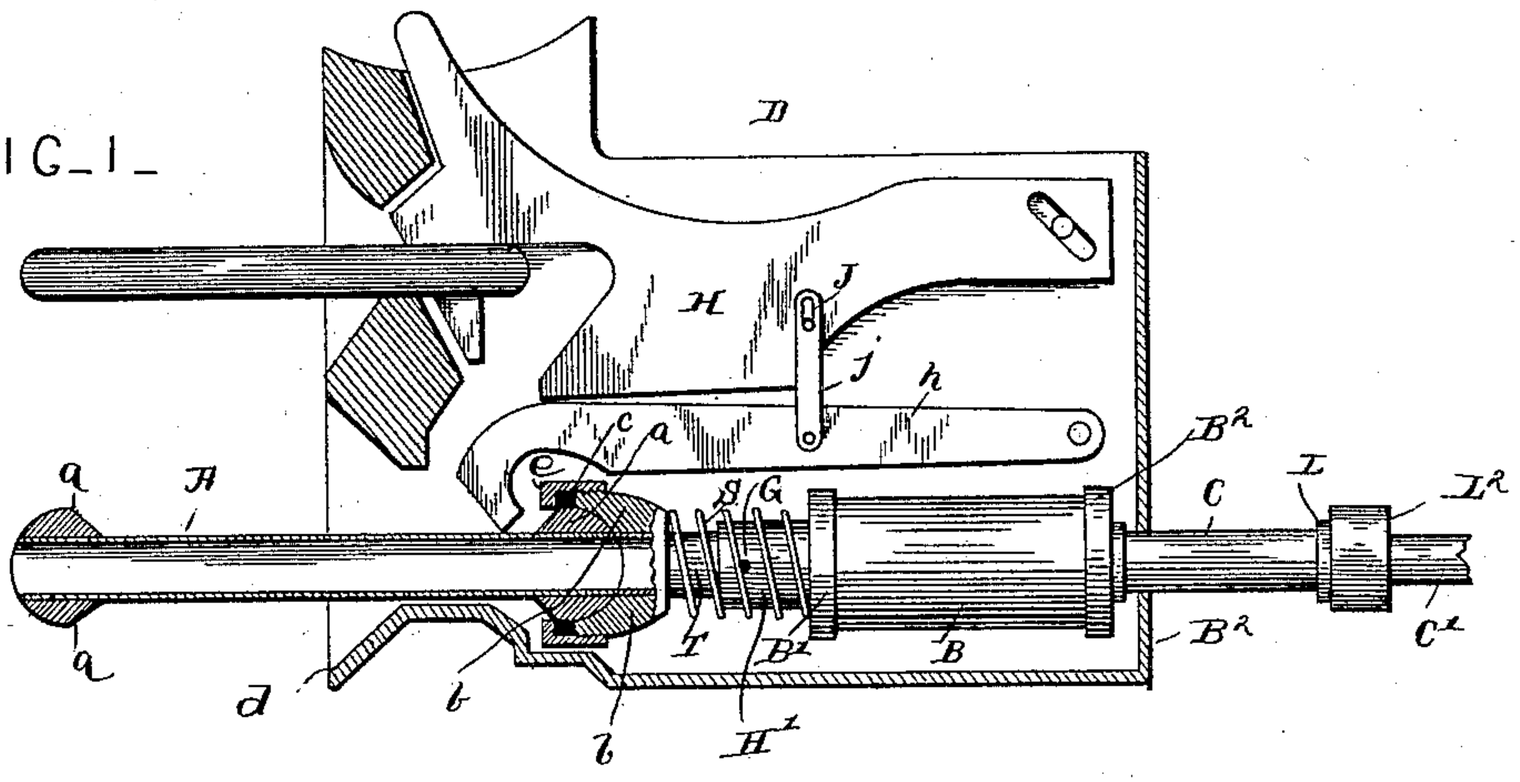


FIG. 2.

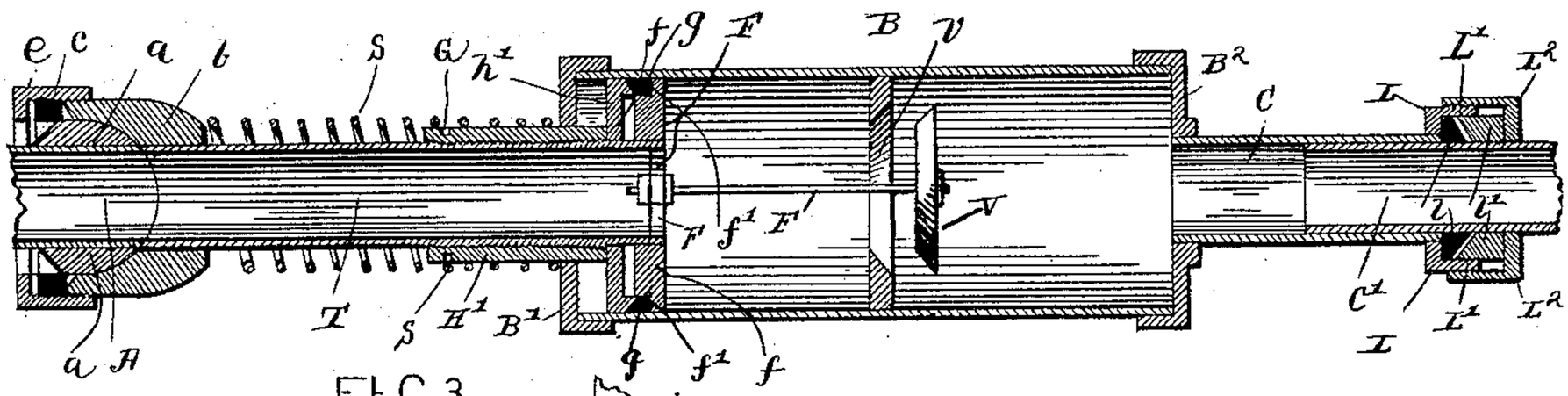
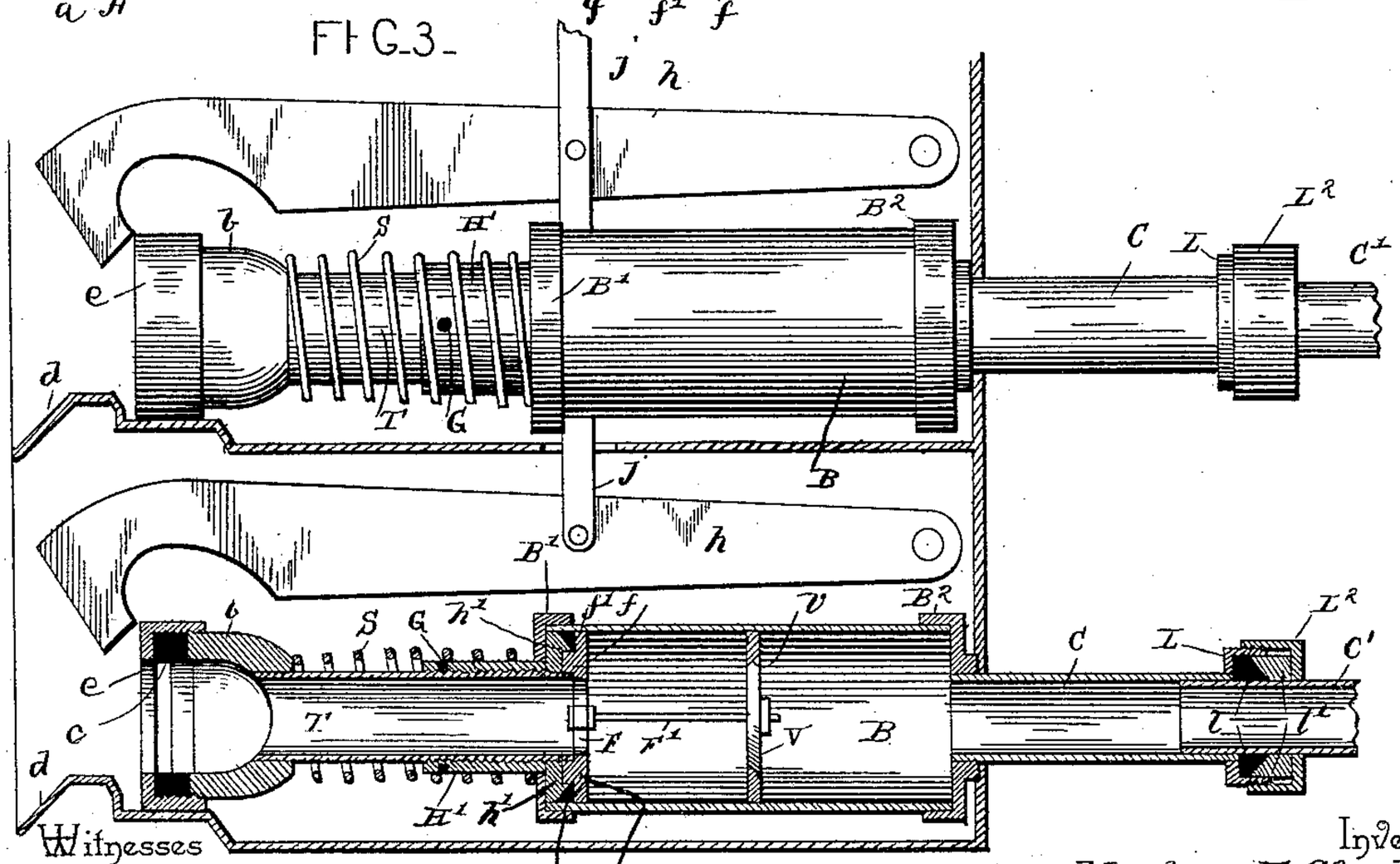


FIG. 3.



Witnesses

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HARLOW F. CHAPIN, OF BROCKPORT, NEW YORK.

STEAM AND AIR PIPE COUPLING.

SPECIFICATION forming part of Letters Patent No. 452,689, dated May 19, 1891.

Application filed February 10, 1891. Serial No. 380,910. (No model.)

To all whom it may concern:

Be it known that I, HARLOW F. CHAPIN, a citizen of the United States, residing at Brockport, in the county of Monroe and State of New York, have invented a new and useful Steam and Air Pipe Coupling, of which the following is a specification.

This invention relates to couplings for the steam and air pipes between the cars of a railway-train, which pipes are useful for applying the brakes and heating the cars; and the object of the same is to provide improved devices of this character adapted more especially for use in connection with the car-coupling for which United States Letters Patent No. 437,900 were issued to me October 7, 1890. Although it will be necessary in some cases to use the pipe-couplers in connection with other car-couplers now in use, more especially when used for passenger-service, and in that case the pipe-coupler will be attached to the platform of the car and the telescoping pipe will not be used.

To this end the invention consists in the details of construction hereinafter more fully described and claimed, and as illustrated on the sheet of drawings, wherein—

Figure 1 is a central vertical section through the draw-head of the two couplings. Fig. 2 is an enlarged central longitudinal section through the pipe-coupling alone. Fig. 3 is a side elevation of one and a section of another pipe-coupling arranged in vertical alignment.

Referring to the said drawings, the letter D designates a draw-head wherein is arranged near its upper side a car-coupling substantially of the construction shown and described in the said Letters Patent, and the sides of this draw-head are continued downwardly so as to form supplemental draw-heads below the car-coupling. In these draw-heads are arranged the couplings for the air-brake and steam or hot-air pipes, or, in the case of a freight-train, of the air-brake pipes only.

The pipe couplings and connections are constructed as follows: The coupler A is a straight piece of pipe having enlargements *a* at its ends, whereby they are rendered spherical. Within the draw-head D is a cylinder B, extending forward from which is a tube T, having a head *b*, adapted to receive the spherical head *a* of the coupler, making a ball-and-socket joint. Around the front of this mouth is screwed a ring *e*, whose inner edge compresses a packing-ring *c* against the front edge of the mouth when the ring *e* is screwed tight. The front of the draw-head D has a flaring mouth *d*, into which the coupler A will pass, and having passed through this mouth it passes into the head *b* of the tube T, and bears this tube to the rear in a manner hereinafter described. As it does so a hook *h*, pivoted within the draw-head, engages behind the enlargement *a* and holds the coupler coupled. *j* is a link pivotally connected at its lower end with the hook *h*, and having a slot J in its upper end loosely engaging a pin in the hook H of the car-coupling, and when said hook H is raised to disconnect the cars the hook *h* is raised thereby through the link *j*, and the coupler A is allowed to draw out of the draw-head, its other end being retained in the head *b* of the coupling on the other car. (Not shown.) The cylinder B is secured within the draw-head D by any suitable means, (not shown,) and within this cylinder is arranged a valve V, closing forwardly against a seat *v*. At the rear end of the tube T is a bar F across the same, which is connected by a rod F′ with the valve, and surrounding this tube is a ring *f*, which slides within the cylinder B and has a notch *f′* around its edge. Adjacent to this ring is another ring *h′*, having beveled edges engaging said notch *f′*, and between said edges and notch is packing *g*. A sleeve H′ is mounted in threads upon the exterior of the tube T and is adapted to be turned by an ordinary spanner engaging the holes G, and this sleeve passes through the end B′ of the cylinder and bears against the ring *h′*. By this means the sleeve can be tightened to compress the packing *g* and cause the combined ring *f h′*—*i. e.*, the piston—to more tightly fit within the cylinder B. An expansive coiled spring S surrounds the tube T, between its head *b* and the front end B′ of the cylinder, whereby the tube is pressed normally forward and the valve V

normally closed. The rear end B^2 of the cylinder B is reduced and is connected to a rearwardly-extending pipe C. This pipe may, and preferably does, have a telescoping-section C′ leading thereinto. Upon the end of the pipe C is a collar L, cut away on its inner face, as at L′, and extending beyond the end of the pipe. Within the annular space thus formed is a packing-ring *l*, adjacent to which is a bevel-faced ring *l′*, both these rings sliding upon the exterior of the pipe C′ and within the annular cut-away portion L′. A tightening collar L^2 of L-shaped cross-section screws upon the collar L, and its foot, when it is screwed home, presses the beveled-face ring *l′* against the packing-ring *l*, drives the latter into the annular space L′, and forces it more tightly upon the exterior of the pipe C′. All cars are provided with one of these pipe-couplings, which is connected with the air-brake, and some cars—such as passenger-cars—may be provided with another similar coupling arranged below the other and connected with the heating-pipes. In this manner the brakes can be applied in the usual way, and when necessary the cars can be heated.

The operation is as follows: As the cars are coupled in the manner described in the said Letters Patent, the coupler A is also guided through the mouth *d* into the head *b*, when the packing-ring within the same makes an air or steam tight joint around the same. The continued approach of the cars drives the tube T to the rear, sliding the piston *f h′* rearwardly within the cylinder B, and through the instrumentality of the rod opening the valve V. The air or steam then flows through the pipe C, the cylinder B, the tube T, and the coupler A. The motions of the draw-head are compensated for by the telescoping of the pipes C C′ when they are used. The length of the coupler A, with its connecting parts, is sufficient to keep the valve V in the cylinder B open so long as the cars are coupled by the draw-link and hook H, although the same may be drawn to the full extent. The diameter of cylinder B and piston *f h′* are large enough to give a greater pressure against the tube T, so long as the valve V is open, than there can be between the head *d* and the spherical head of the coupler A, so as to insure a steam or air tight fit between them so long as the cars are coupled. When the cars are uncoupled, the raising of the hooks H *h* disconnects the link and the coupler, and when the cars draw apart the spring S forces the tube forward and automatically closes the valve V.

What is claimed as new is—

1. The combination, with a car-coupling having a hooked catch, of an air-brake-pipe coupler located below the same, a latch pivoted on said coupler and having a hooked front end, a link connecting said latch and catch, and a tubular coupling having an enlarged head adapted to be engaged by the latch, substantially as described.

2. The combination, with the draw-head of a car-coupling, an air-brake-pipe coupler supported thereby and having a cup-shaped head, and a latch pivoted to said coupler and having a hook-shaped front end passing over said head, of a tubular coupling having enlarged ends detachably fitting said head, said ends having shoulders adapted to be engaged by the hooked end of the latch, substantially as described.

3. In an air-brake-pipe coupling, the combination, with the cup-shaped head *b* and the tube T extending rearwardly therefrom and having a piston at its rear end, of the cylinder B, surrounding said piston and having an inturned end sliding on said tube, a packing-ring in the edge of said piston, and a coiled spring S surrounding said tube between its head and the end of the cylinder, substantially as described.

4. In an air-brake-pipe coupling, the combination, with cup-shaped head *b*, the tube T, extending rearwardly therefrom and fitting within the cylinder B, a valve-seat *v* within said cylinder, and a coiled spring S upon the tube T between the head and the front end of the cylinder, of a bar F across the rear of said tube, a rod F′, rigidly connected to and extending from said bar through said valve-seat, and a valve V, carried by said rod, as and for the purpose set forth.

5. In an air-brake-pipe coupling, the combination, with the cylinder B, connected with the pipe C and having the end B′, of the tube T extending through said end, the ring *f* on the end of the tube within the cylinder, and having a notch *f′*, the sleeve H, screwing upon the tube T and also passing through said end, the ring *b′*, carried by said sleeve and having a beveled face engaging said notch, and a packing-ring *g* within the notch, as and for the purpose set forth.

6. In an air-brake-pipe coupling, the combination, with the coupler A, the tube T, having a cup-shaped head, the cylinder B, within which said tube moves, said cylinder being supported by the draw-head, and a valve V in the cylinder, connected with the tube and automatically opened thereby when the coupler is forced into said head, of the pipe C, leading rearwardly from said cylinder, the pipe C′, telescoping into said pipe C, and an adjacent packing surrounding the inner pipe at the end of the outer, as and for the purpose set forth.

7. In an air-brake and steam-pipe coupling, the combination, with the car-coupling draw-head, a cylinder B therein, and a pipe C, loosely connecting said cylinder with the pipes of the car, of a piston within said cylinder, a tube extending forwardly from said piston and having a cup-shaped head, a coup-

ler adapted to enter said head, a rod extending rearwardly from said piston, a valve at the rear end of said rod, and a valve-seat within said cylinder, against which said valve closes and opens when the tube is forced to the rear, as and for the purpose hereinbefore set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

HARLOW F. CHAPIN.

Witnesses:

CHARLES A. DAVIS,

CHARLES H. JENNER.