(No Model.)

R. M. GALBRAITH.

PILOT COUPLING.

No. 595,383. Patented Dec. 14, 1897.

Fig. 1.

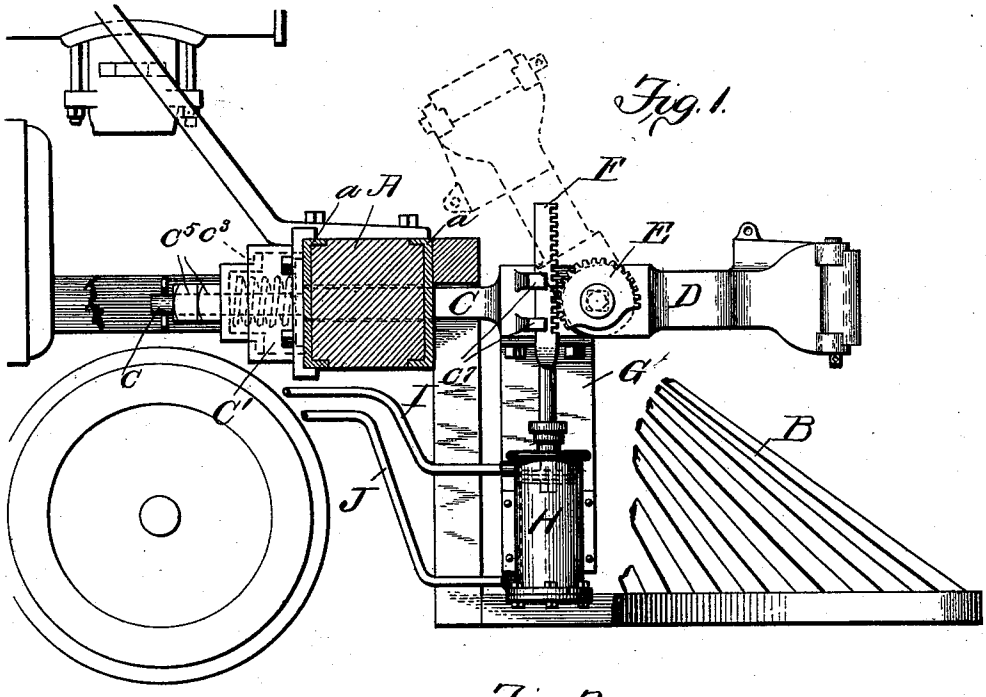


Fig. 2.

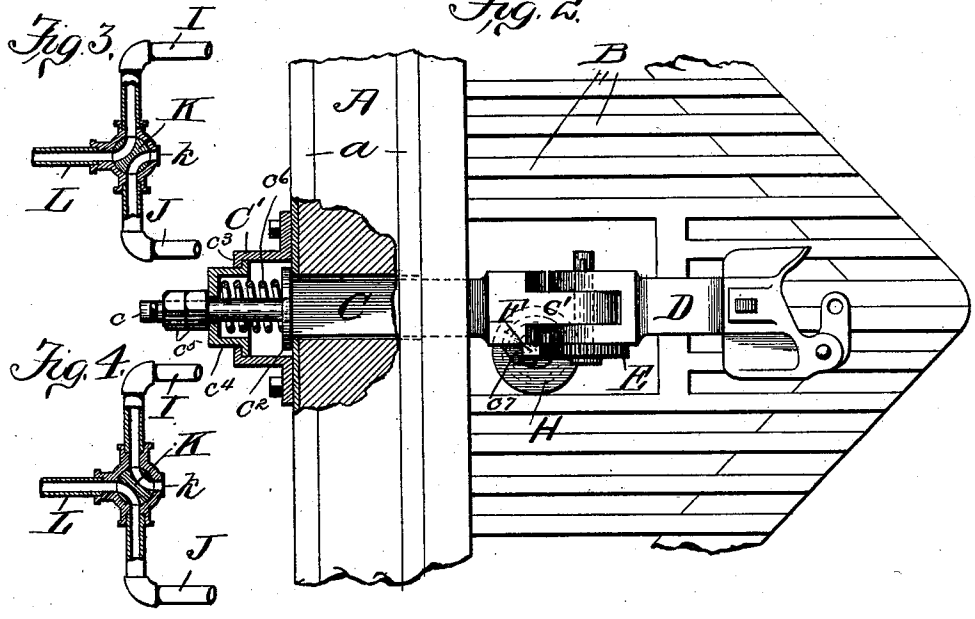


Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

ROBERT M. GALBRAITH, OF PINE BLUFF, ARKANSAS.

PILOT-COUPLING.

SPECIFICATION forming part of Letters Patent No. 595,383, dated December 14, 1897.

Application filed September 27, 1897. Serial No. 653,190. (No model.)

To all whom it may concern:

Be it known that I, ROBERT M. GALBRAITH, a citizen of the United States, residing at Pine Bluff, in the county of Jefferson and State of Arkansas, have made a certain new and useful Improvement in Pilot-Couplers, of which the following is a full, clear, and exact description, 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 drawings, forming part of this specification, in which—

Figure 1 is a side elevational view, partly in cross-section, with a portion of the front end of a locomotive, showing my improved pilot-coupler in position. Fig. 2 is a top plan view of the pilot-coupler. Fig. 3 is a detailed view of the valve movement in the cabin; and Fig. 4 is a similar view of the valve movement, showing a different position of the valve.

This invention relates to a new and useful improvement in pilot-couplers, the object being to pivotally mount the coupler on a suitable support, whereby it may be thrown back out of operative position when not in use, and when it is desired to use said coupler the means are in the control of the engineer to throw the coupler into an operative position.

With this object in view the invention consists, generally stated, in the combination of a pivotally-mounted pilot-coupler and of means for raising and lowering the same, said means being under the control of the engineer; in the combination, with a pilot-coupler, of a gear-wheel or segment meshing with a rack which is attached to a piston in a cylinder and controlling the motive fluid to each end of said cylinder by a valve located in the engineer's cabin, whereby said pilot-coupler may be raised or lowered, as desired; and, finally, the invention consists in the construction, arrangement, and combination of the several parts, all as will hereinafter be described and afterward pointed out in the claims.

In the drawings, A indicates a buffer-timber which is arranged at the front end of the locomotive, which is preferably faced with channel-beams *a*.

B indicates what is known as the "pilot," which is of any ordinary or improved construction.

C indicates a draw-bar, which is preferably rectangular in cross-section at the point where it passes through timber A, and is provided with a tail-pin *c* at its rear end and with a nose *c'* at its front end, to which nose the coupler draw-bar D is pivotally mounted.

c^2 indicates a follower strung on the tail-pin and resting against the shoulder formed by the rectangular portion of the draw-bar C.

C' indicates a cap or housing bolted to the rear face of timber A and formed with an inturned flange c^3 at its rear end, which coöperates with a flange on a follower c^4, strung on the tail-pin, as shown more clearly in Fig. 2. The tail-pin is preferably threaded at its rear end to receive nuts c^5, which tend to compress a buffer-spring c^6, arranged around the tail-bolt and between the followers c^2 and c^4. By this construction it will be seen that any shock or jar communicated to the draw-bar will be taken up by the buffer-spring c^6, a movement in one direction, to the rear of the draw-bar C, causing the follower c^2 to compress the buffer-spring, while a movement in the other direction, forward, will be taken up by the follower c^4 compressing the buffer-spring, the shoulder on the draw-bar C leaving the follower c^2, which is arrested by contacting with the rear face of the timber A.

The pivot-pin of the coupler draw-bar D is preferably arranged with a square portion near one of its ends, on which is strung a gear-wheel or segment E, which is thereby fixed to said coupler draw-bar.

F indicates a rack meshing with said segment E, said rack being held to the segment by lugs c^7 on the draw-bar C.

G indicates a bracket secured to the under side of the draw-bar C and moving therewith, said bracket supporting a cylinder H, which cylinder carries a plunger or piston, of which the rack F forms the piston-rod.

Pipes I and J lead from the ends of the cylinder H to a valve K, located in the engineer's cabin, to which valve K also leads a pipe L from some source of pressure-supply either in the form of compressed air or steam, as the case may be. Valve K may, as is obvious, in certain of its positions shut off communication between pipe L and either end of the cylinder H. This is such a common expedient that I have not deemed it necessary to illustrate the same in the drawings.

When it is desired to throw the coupler out

of operative position, the valve K is turned so as to open communication between pipes L and I, as shown in Fig. 3, which admits pressure above the piston in cylinder H, causing the same to descend and move the pilot-coupler back to its rear position, as shown by dotted lines in Fig. 1. At the same time any pressure which may have been beneath the piston in cylinder H is forced back through pipe J and out through the exhaust-opening *k* in the casing of valve K, as shown in Fig. 3. When it is desired to place the coupler in an operative position from the position shown in dotted lines in Fig. 1, valve K is turned so as to exhaust the pressure above the piston in cylinder H, as shown in Fig. 4, and establish communication between pipes L and J, when the piston in cylinder H will be forced upward, throwing the pilot-coupler into an operative position. Of course it is to be understood that when the coupler is in either of its two positions the valve K may be turned so as to shut off communication from pipe L, and thus save the waste of pressure.

By the use of my improved pilot-coupler it is obvious that when the same is thrown back out of operative position there is less liability of accidents from striking stock or other obstructions on track than when the coupler is in a horizontal position. Furthermore, the engineer is the only person who can control the movement of the pilot-coupler, thus saving one's strength in lifting the same up or otherwise placing it in operative position, as is obvious.

I am aware that many minor changes in the arrangement, construction, and combination of the several parts of my coupler can be made and substituted for those herein shown and described without in the least departing from the nature and principle of the invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a pivoted pilot-coupler, of a gear-wheel or segment fixed thereto, a cylinder, and a rack which is actuated by said cylinder to throw said coupler into and out of its operative position; substantially as described.

2. The combination with a pivoted pilot-coupler, of a gear-wheel or segment fixed thereto, of a cylinder, a rack which is actuated by said cylinder, said rack being in mesh with said gear-wheel or segment, pressure-pipes leading to the ends of said cylinder, and a valve for admitting pressure through said pipes to either end of said cylinder; substantially as described.

3. The combination with a pivoted pilot-coupler, of a gear-wheel or segment fixed thereto, of a cylinder, a rack which is actuated by said cylinder, said rack being in mesh with said gear-wheel or segment, pressure-pipes leading to the ends of said cylinder, and a valve for admitting pressure through said pipes to either end of said cylinder, said valve exhausting the pressure from the end opposite that in which pressure is admitted; substantially as described.

4. The combination with a suitable source of pressure-supply, of a valve for directing the same into a plurality of pipes if desired, a cylinder to which said pipes lead, a plunger arranged in said cylinder, a rack which is connected to said plunger, a gear-wheel or segment in mesh with the rack, and a pivoted pilot-coupler which is actuated by said gear-wheel or segment; substantially as described.

5. The combination with the draw-bar C, of a suitable buffer spring or springs therefor, a pilot draw-bar pivoted to the forward end of said draw-bar C, a cylinder carried on said draw-bar C, a plunger in said cylinder, and means for controlling the positions of said pivoted pilot-coupler actuated by said plunger; substantially as described.

6. The combination with the draw-bar C, of a buffer spring or springs therefor, a cylinder carried by the forward end of said draw-bar, pressure-pipes leading to the ends of said cylinder, a plunger arranged within said cylinder, a rack which forms part of said plunger, a pilot-coupler draw-bar pivoted to the forward end of said draw-bar C, and a gear-wheel or segment fixed to the end of said pivoted draw-bar and meshing with said fluid-actuated rack; substantially as described.

7. The combination with the draw-bar C, of a tail-pin on its rear end, a follower c^2 strung on said tail-pin, and normally resting against the shoulder formed at the enlarged portion of the draw-bar, a follower c^4 strung on the tail-pin and normally impinging against nuts threaded on the rear end of said tail-pin, a compression-spring arranged between said followers, and a housing for said spring, said housing coöperating with the follower c^4; substantially as described.

8. The combination with the draw-bar C, which is rectangular in cross-section, of a tail-bolt *c* arranged on its rear end, a follower c^2 which coöperates with the shoulder on the draw-bar and a timber through which said draw-bar passes, a housing c' formed with an inturned flange c^3, a follower c^4 strung on the tail-bolt, nuts c^5 which are threaded on the rear end of the tail-bolt, and which normally impinge against the follower c^4, and a buffer-spring c^6 arranged around the tail-bolt and between the followers c^2 and c^4; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 21st day of September, 1897.

ROBERT M. GALBRAITH.

Witnesses:
J. E. BOYCE,
THOS. F. OURY.