No. 655,055. Patented July 31, 1900.

G. W. BUTCHER.

LOCOMOTIVE PILOT COUPLING.

(Application filed Feb. 8, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

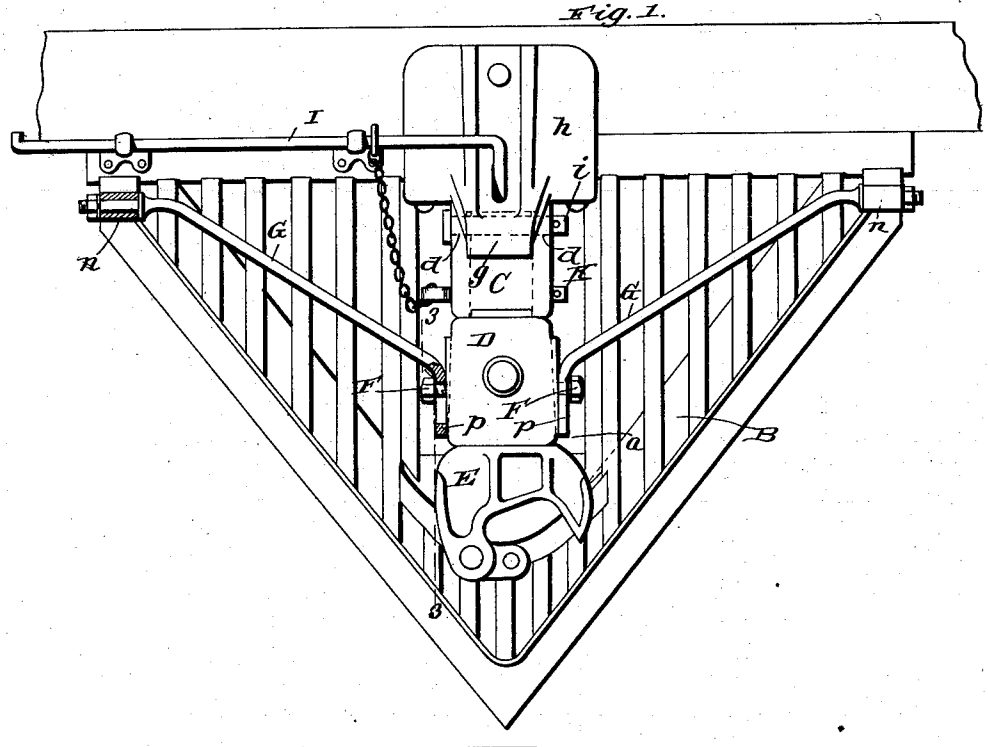


Fig. 2.

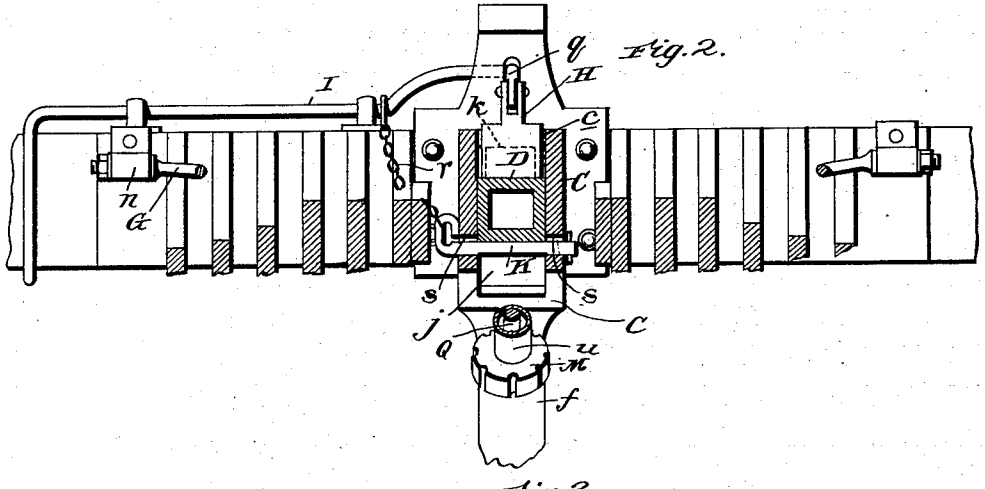
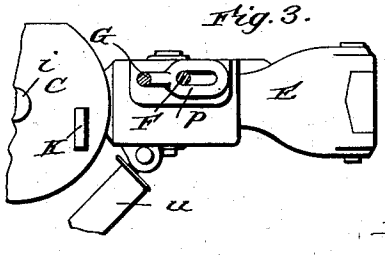


Fig. 3.



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Fig. 4.

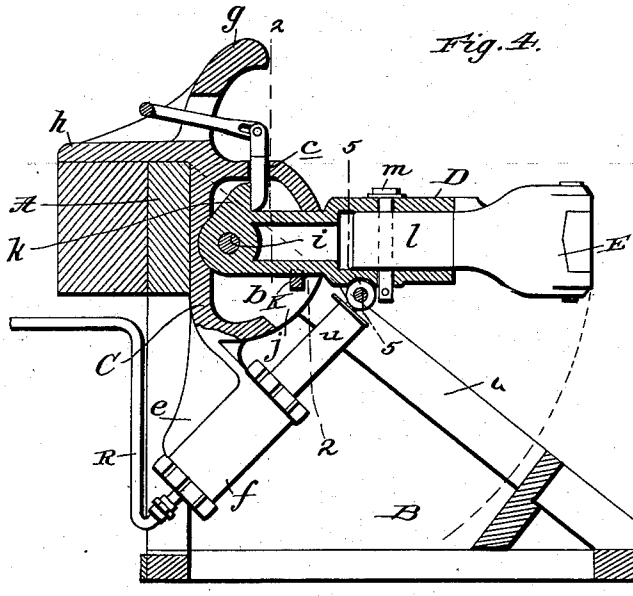


Fig. 5.

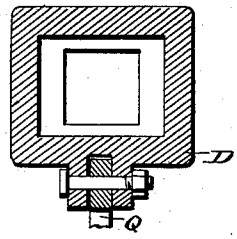
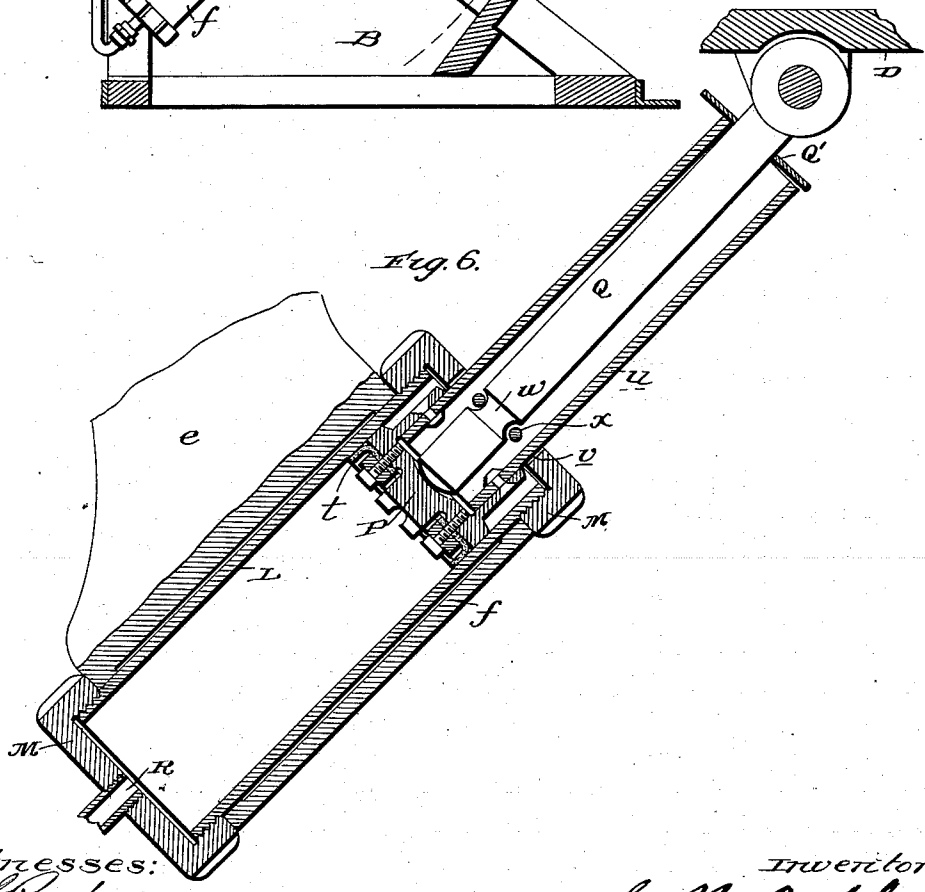


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE W. BUTCHER, OF SAN ANTONIO, TEXAS.

LOCOMOTIVE-PILOT COUPLING.

SPECIFICATION forming part of Letters Patent No. 655,055, dated July 31, 1900.

Application filed February 8, 1900. Serial No. 4,520. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. BUTCHER, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented new and useful Improvements in Locomotive-Pilot Couplings, of which the following is a specification.

My invention relates to locomotive-pilot couplings, and contemplates the provision of a simple and inexpensive drop-coupling adapted to be operated by means of fluid-pressure and one which is reliable in practice and is calculated to withstand the shocks and strains to which such devices are ordinarily subjected.

With the foregoing in mind the invention will be fully understood from the following description and claims when taken in conjunction with the accompanying drawings, in which—

Figure 1 is a top plan view, partly in elevation, illustrating a locomotive-pilot equipped with my improved drop-coupling. Fig. 2 is a transverse section taken on the broken line 2 2 of Fig. 4. Fig. 3 is a detail longitudinal section taken in the plane indicated by the broken line 3 3 of Fig. 1. Fig. 4 is a longitudinal central section of the pilot and coupling thereon. Fig. 5 is an enlarged transverse section taken in the plane indicated by the broken line 5 5 of Fig. 4. Fig. 6 is an enlarged detail section illustrating the fluid-pressure cylinder, the piston therein, and the connection between said piston and the vertically-swinging draw-bar of the coupling.

Referring by letter to the said drawings, A is the front cross-bar of a locomotive.

B is the locomotive-pilot, provided in its longitudinal center with a space *a* to receive the vertically-swinging portion of my improved coupling when same is in its lower position, and C is the draw-head or body of the coupling, which is cast in one piece and is centrally located upon and secured by bolts or other means to the cross-bar A. The said draw-head is chambered at *b* and is provided in the upper wall of said chamber with a slot *c* and in the opposite side walls thereof with coincident apertures *d*. It is also provided below its chambered portion with a depending arm *e* and an obliquely-disposed tube *f*, while above said chambered portion it is preferably equipped with an upwardly-reaching apertured arm *g* and a rearwardly-extending flange *h*, the latter being adapted to bear on the bar A of the locomotive after the manner shown.

D is the draw-bar of the coupling, which is pivotally connected to the draw-head by a pintle *i*, extending through the apertures *d*, and is designed to freely swing up and down in the vertically-elongated mouth *j* of chamber *b* and be held against lateral movement by the side walls thereof. The said draw-bar is cast hollow as far as practicable for the sake of lightness and is provided at its rear end with an upwardly-extending lug *k*, beveled at its rear side, as shown. It also has the interior of its forward portion tapered or gradually increased in width toward its forward end to receive the shank *l* of a coupler E, which is pivotally secured in the draw-bar by a pin *m*, as shown.

The coupler E is preferably of the Master Car-Builders' type, although it may be of any other construction, if desired, and its shank is arranged in the tapered mouth of the draw-bar in the manner stated in order to enable it to freely swing in a lateral direction, as is necessary.

F F are bolts screwed into the sides of the draw-bar, and G G are brace-rods for said draw-bar and the coupler carried thereby. The said rods are disposed at either side of the draw-bar and have their outer ends journaled in long bearings *n*, connected to the cross-bar A, so as to enable them to freely swing in a vertical direction. At their inner ends they have loops *p*, disposed parallel to the draw-bar and receiving the bolts F, whereby it will be seen that they are enabled, when the draw-bar and coupler are in their elevated operative position, to substantially brace the coupler without interfering with the necessary free lateral motion thereof.

H is a gravitating latch arranged in the slot *c* of the draw-head and adapted to engage the lug *k* of the draw-bar, after the manner shown in Fig. 1, to hold said draw-bar in its raised position. This latch is loosely connected to an arm *q* of a rock-shaft I, journaled in suitable bearings on and extending to one side of

the locomotive, and is adapted to be raised, through the medium of said rock-shaft, to release the draw-bar and permit the same to drop to its lower inoperative position in the space *a* of the pilot. Said latch is also adapted to be raised by the lug *k* when the draw-bar is elevated and subsequently assume a position in front of the lug, so as to automatically secure the draw-bar and coupler in the elevated position. The automatic latch H may be depended upon to hold the draw-bar and coupler in their proper operative positions; but as an additional means of security I prefer to employ the transverse pin K. This auxiliary pin K is connected by a chain *r* to the shaft I and extends through apertures *s* in the side walls of the draw-head, the said apertures being of a slightly-greater height than the pin, as shown in Fig. 2, so that in the event of the draw-head being worn a pin of slightly-greater height than pin K may be substituted therefor to support the draw-bar and coupler at the proper height.

L is a piece of tubing which is arranged in the tubular portion *f* of the draw-head casting, and M M are heads which are screwed on the ends of the piece of tubing at opposite ends of the tubular portion *f* and serve in conjunction with the said piece of tubing to form the fluid-pressure cylinder of my improvements.

P is a piston-head provided with suitable packing *t* and also with a tubular extension *u*, which extends loosely through an aperture *v* in the cylinder-head M, and Q is a wrought-iron piston-rod which is pivotally connected to the under side of the draw-bar D, as far as possible from the center of movement thereof, and extends down into the tubular extension *u* of the head P, as shown. The said rod is grooved at *w* to receive cross-pins *x*, this connection being provided in order to enable free movement of the outer end of the rod and at the same time hold the piston head and rod together, so as to prevent the piston's striking against and being damaged by the rod in the event of a sudden application of fluid-pressure. A washer Q', of leather or other suitable material, is preferably placed around the rod Q and over the outer end of the tubular extension *u*, as shown, in order to prevent gravel, dirt, and the like from entering said tubular extension and interfering with the movements of the piston.

R is a pipe through the medium of which fluid-pressure is supplied to the cylinder. I prefer in practice to use compressed air as the means for raising the draw-bar and coupler to their operative position, and to this end contemplate carrying the pipe R back to the locomotive-cab and connecting it therein with a valve or cock the plug of which is provided with a minute port for establishing communication between the pipe R and a source of compressed air and communication between the pipe R and an exhaust, alternately, the said minute port being advantageous because it prevents forcible raising of the draw-bar and coupler and also prevents a sudden fall of the same.

In practice when the engineer desires to raise the draw-bar D and coupler E to their operative position he has but to turn the above-mentioned valve so as to establish communication between the source of supply and the pipe R, when compressed air will pass into the fluid-pressure cylinder, and acting against the piston-head P will slowly raise the draw-bar and coupler to the position shown in Fig. 1, in which position they will be automatically secured by the gravity-latch engaging the lug *k*. Then, if deemed necessary, the trainman may place the pin K below the draw-bar, as shown in Fig. 2, for the purpose before described. When it is desired to lower the draw-bar and coupler to their inoperative position in the space *a* of the pilot, it is first necessary to disengage the latch H and pin K from the draw-bar and then turn the valve to a position establishing communication between the pipe R and the exhaust. With this done air will pass slowly out of the cylinder, and by so doing will cushion the piston-head P in its descent, and thereby cause the draw-bar and coupler to drop gently into the space *a*, where they will be out of the way.

It will be appreciated from the foregoing that the fluid-pressure cylinder is held in and fixed with respect to the draw-head casting, and therefore all liability of the cylinder changing its position and causing a failure in the operation of the device is removed. It will also be appreciated that the draw-head or main casting of my improvements is ready for use as it comes from the foundry, no machine-work being necessary thereon, so that the draw-bar casting is also ready for use when delivered from the foundry, with the single exception that screw-tapped apertures have to be formed therein for the reception of bolts F. From this it follows that the draw-head or main casting and the draw-bar may be produced very cheaply, which materially lessens the cost of the coupler as a whole without detracting in any way from its strength and durability.

I have entered into a specific description of the construction and relative arrangement of the parts embraced in the present embodiment of the invention in order to impart a full, clear, and exact understanding of the same. I do not, however, desire to be understood as confining myself to such specific construction and arrangement of parts, as such changes or modifications may be made in practice as fairly fall within the scope of my invention.

Having thus described my invention, what I claim is—

1. In means for raising locomotive-pilot draw-bars, a draw-head, a cylinder held in a

portion of and fixed with respect to the draw-head and connected with a fluid-pressure supply, a piston working in the cylinder, and a connection between the piston and bar.

2. In means for raising locomotive-pilot draw-bars, a draw-head or main casting, a vertically-swinging draw-bar connected thereto, a cylinder held in and fixed to the draw-head or main casting and connected with a fluid-pressure supply, a piston working in the cylinder, and a connection between the piston and bar.

3. In means for raising locomotive-pilot draw-bars, a draw-head or main casting having a tubular portion, a cylinder secured in said tubular portion and connected with a source of fluid-pressure supply, a vertically-swinging draw-bar connected to the draw-head, a piston working in the cylinder, and a connection between the piston and the draw-bar, substantially as specified.

4. In a locomotive-pilot coupling, a draw-head, a fluid-pressure cylinder, a draw-bar pivotally connected to the draw-head, a piston working in the cylinder, a connection between the piston and draw-bar, and a latch for automatically engaging and holding the draw-bar in its raised position, substantially as specified.

5. In a locomotive-pilot coupling, a draw-head, a fluid-pressure cylinder, a draw-bar pivoted in the draw-head and having an upwardly-extending beveled lug, a piston working in the cylinder and connected with the draw-bar, and a gravity-latch arranged to be raised by the lug of the draw-bar and adapted to drop in front of the same, substantially as specified.

6. In a locomotive-pilot coupling, a draw-head, a fluid-pressure cylinder, a draw-bar pivoted in the draw-head and having an upwardly-extending beveled lug, a piston working in the cylinder, a gravity-latch arranged to be raised by the lug of the draw-bar and adapted to drop in front of the same, and a transverse rock-shaft having an arm connected with said latch, substantially as specified.

7. In a locomotive-pilot coupling, a draw-head or main casting having a tubular portion, a fluid-pressure cylinder secured in said tubular portion, a draw-bar pivoted in the draw-head and having an upwardly-extending beveled lug, a piston working in the cylinder and connected with the draw-bar, and a gravity-latch arranged in a vertical aperture in the draw-head and adapted to be raised by the lug of the draw-bar and drop in front of the same.

8. In a locomotive-pilot coupling, the combination of a chambered draw-head having coincident angular apertures in its side walls and an aperture in its top wall, a draw-bar pivoted in said draw-head and having an upwardly-extending beveled lug, a fluid-pressure cylinder, a piston working in said cylinder and connected with the draw-bar, a gravity-latch movable in the aperture in the top wall of the draw-head and adapted to automatically engage the lug of the draw-bar, and an auxiliary draw-bar support consisting of a transverse pin of angular form in cross-section removably arranged in the coincident apertures in the side walls of the draw-head, substantially as specified.

9. In a locomotive-pilot coupling, the combination of a draw-head or main casting, a cylinder held in and fixed thereto and connected to a source of fluid-pressure supply, a piston working in said cylinder, and a piston-rod connected in a swiveled manner to the piston and also connected to the draw-bar, substantially as specified.

10. In a locomotive-pilot coupling, the combination of a draw-head or main casting having a tubular portion, a draw-bar pivotally connected to the draw-head, a fluid-pressure cylinder comprising a tube arranged in the tubular portion of the draw-head or main casting, and heads secured on said tube at opposite ends of the tubular portion of the casting, a piston working in the cylinder, and a connection between the piston and draw-bar.

11. In a locomotive-pilot coupling, the combination of a draw-head, a fluid-pressure cylinder, a draw-bar pivoted in the draw-head, a piston working in the cylinder and having a tubular extension passed through one of the heads thereof, a piston-rod swiveled in the tubular extension of the piston and connected to the draw-bar, and a suitable closure for the outer end of the tubular extension, substantially as specified.

12. In a locomotive-pilot coupling, the combination of a draw-head or main casting having a tubular portion, a draw-bar pivotally connected to the draw-head, a fluid-pressure cylinder comprising a tube arranged in the tubular portion of the draw-head or main casting, and heads secured on said tube at opposite ends of the tubular portion of the casting, a piston working in the cylinder and having a tubular extension passed through one of the heads thereof, a piston-rod swiveled in the tubular extension of the piston and connected to the draw-bar, and a suitable closure for the outer end of the tubular extension, substantially as specified.

13. In a locomotive-pilot coupling, the combination of a draw-head, a fluid-pressure cylinder, a draw-bar pivoted in the draw-head, a piston working in the cylinder and having a tubular extension passed through one of the heads thereof, a piston-rod interposed between the piston and draw-bar and connected to the latter and having a groove in its portion within the tubular extension, and cross-bars connected to said tubular extension and resting in the groove of the rod, substantially as specified.

14. In a locomotive-pilot coupling, the combination of a locomotive, a draw-head, a draw-

bar pivoted in said draw-head so as to swing vertically, and brace-rods journaled at their outer ends in bearings and having slotted portions at their inner ends arranged parallel to and receiving lateral projections on the draw-bar, substantially as specified.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEORGE W. BUTCHER.

Witnesses:
R. J. BOYLE,
H. E. AIKEN.