

(No Model.)

2 Sheets—Sheet 1.

S. R. HEIDELBERG.
LOCOMOTIVE PILOT COUPLING.

No. 553,340.

Patented Jan. 21, 1896.

Fig. 1.

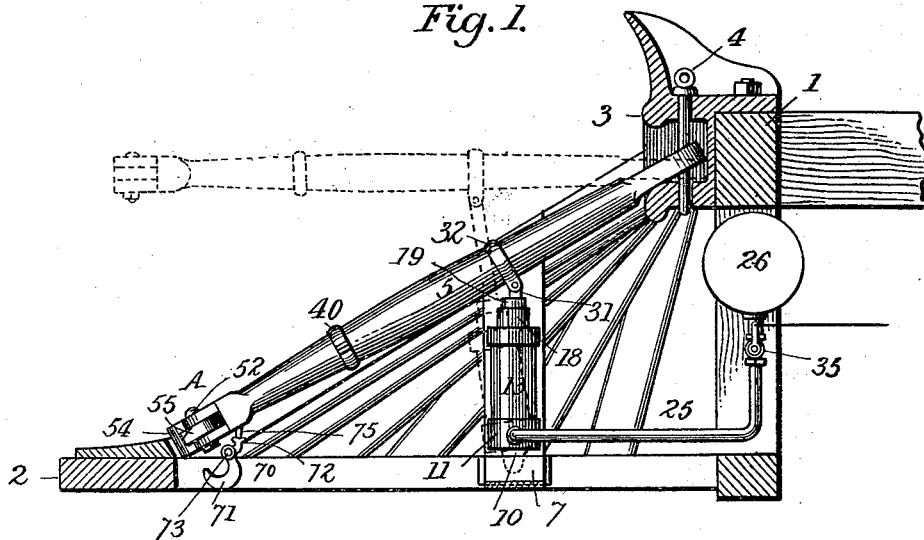
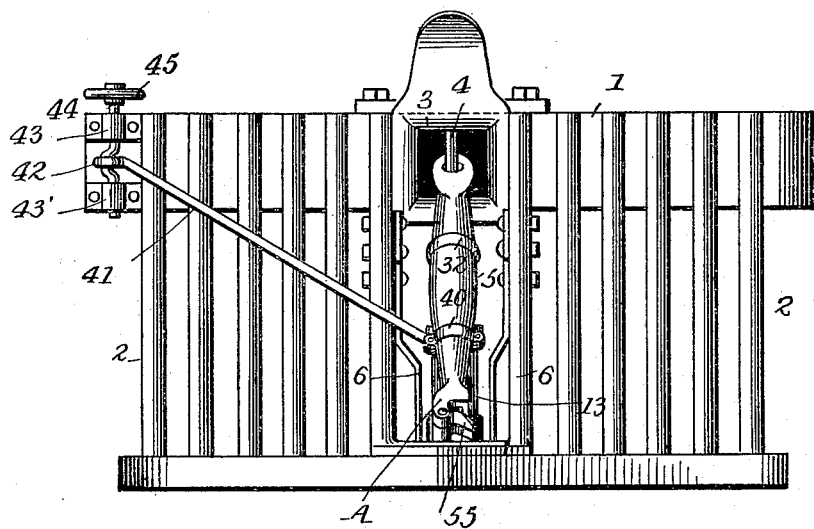


Fig. 2.



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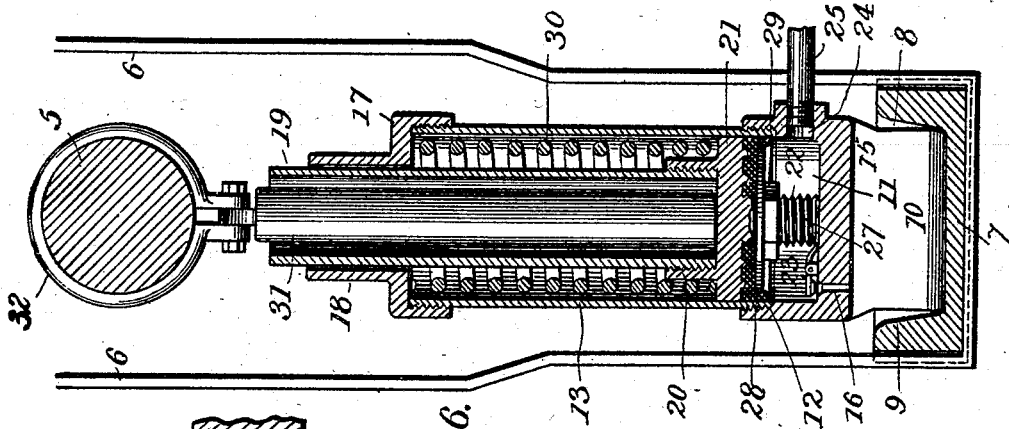


Fig. 6.

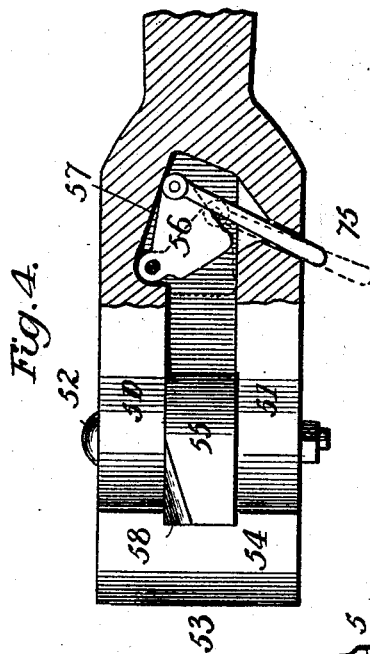


Fig. 4.

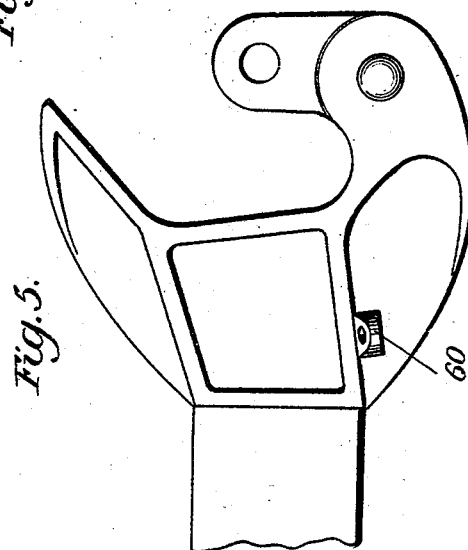


Fig. 5.

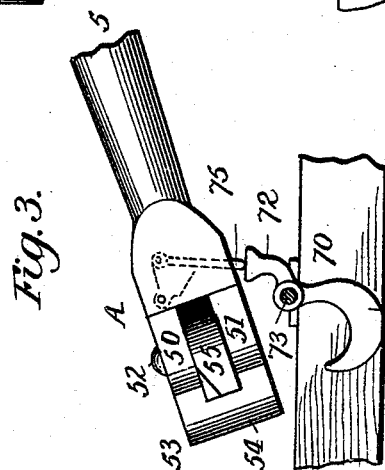


Fig. 3.

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UNITED STATES PATENT OFFICE.

SAMUEL R. HEIDELBERG, OF PALESTINE, ASSIGNOR OF ONE-HALF TO H. H. ROWLAND, OF TYLER, TEXAS.

LOCOMOTIVE-PILOT COUPLING.

SPECIFICATION forming part of Letters Patent No. 553,340, dated January 21, 1896.

Application filed September 19, 1895. Serial No. 563,038. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL R. HEIDELBERG, a citizen of the United States, residing at Palestine, in the county of Anderson and State of Texas, have invented certain new and useful Improvements in Locomotive-Pilot Couplings, of which the following is a specification.

This invention relates to certain new and useful improvements in locomotive-pilot couplings; and it consists substantially in such features of construction, arrangement, and combinations of parts as will hereinafter be more particularly described.

The invention has reference more particularly to the means by which the bar is elevated or raised to a position for coupling, and it has for its object to simplify such means and to render the same much more reliable and effective than heretofore.

A further object is the conformability of the lifting devices or mechanism to the lateral or swinging movements of the bar in the rounding of curves or sharp bends, and also to prevent shock and undue strain upon the devices in the application of the motive power to operate the same.

A still further object of the invention is the more secure coupling of the pilot or draw bar with a car or other vehicle, as well as the easy and ready aligning of the bar whenever a coupling thereof is being made upon curves or bends in the track, and, finally, the invention has for its object the automatic release of the jaw of the coupler-head of the bar so as to bring the same to an open position each time the bar is lowered upon the pilot.

The above objects I attain by the means illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation in part section representing my improved lifting mechanism as located and arranged with respect to the pilot of a locomotive, the dotted lines representing the pilot-bar in its raised or elevated position. Fig. 2 is a front elevation representing the means by which the bar is turned or swung to one side for effecting alignment thereof with a coupler-section on a car or other vehicle. Fig. 3 is an enlarged view in detail representing the means for automatically releasing and opening the jaw of the coupler-

section of the draw-bar whenever the latter is lowered into position upon the pilot. Fig. 4 is an enlarged view in part section of the coupler-section of the draw-bar. Fig. 5 is a plan view of a coupler-section of the ordinary Janney type. Fig. 6 is an enlarged vertical sectional elevation of the devices or mechanism by which the lifting of the draw-bar is effected on the admission of a suitable motor fluid.

In the practice of my invention I employ in connection with the pilot or draw bar a suitable lifting-rod that is actuated by a piston on admission to the piston-cylinder of the motor fluid, and while various constructions could be resorted to for the purpose I prefer the general construction and arrangement of devices herein shown, and as will hereinafter be more particularly described. The devices are under the control of the engineer or other operator in the cab of the engine, and while I may use either steam or air as the motor fluid I prefer the latter in a compressed state, and which, instead of being supplied from the same source as that which supplies the air-brakes, is stored up in a separate tank or reservoir located beneath the locomotive or other convenient point. I furthermore resort to the use of a peculiar form of coupler-section designed to operate in connection with any of the ordinary sections of the Janney type, and in order to enable lateral turning of the bar for the purposes of alignment I employ suitable hand-operated devices, also more specifically described hereinafter.

Referring to the accompanying drawings, 1 represents the front cross-piece of an ordinary locomotive, and 2 the pilot or cow-catcher, which is of ordinary form and which is supported or held in position in any suitable manner. Centrally of the said cross-piece 1 is arranged an ordinary draw-head 3, in which is held or supported loosely by means of a pin 4 the pilot or draw bar 5, which is of the usual or well-known form. To effect the raising or lifting of the said bar to a horizontal position I employ beneath the pilot and in suitable supports therefor the devices which are under the control of the engineer in the cab of the engine, and which are set into motion on the admission of air or other suitable

motor fluid. These devices consist principally of a plunger or piston and a lifting-bar in movable connection with the draw-bar, and while various forms could be resorted to I
 5 prefer in practice the construction shown and about to be described. In a suitable frame or support 6, constructed and arranged beneath the pilot or cow-catcher, is located a
 10 socket 7, which is preferably of cast-iron or other suitable material, and which is formed or provided with a recess 8, the sides of which are flaring or beveled at 9. The said socket is for the reception and support of the elongated base portion 10 of a motor-fluid cham-
 15 ber 11, which latter is screw-threaded interiorly at 12 to receive the correspondingly screw-threaded lower end of the plunger-cylinder 13, as shown. Other constructions could be resorted to for uniting the cylinder
 20 with said chamber in both a steam and air tight manner, and if desired a suitable packing might be used.

The elongated base portion 10 is straight-sided for a distance equal to the depth of the
 25 recess in the socket, and it is the purpose to have such base portion comparatively heavy in order that there will be no tendency of the plunger or piston to lift the cylinder and chamber from the socket, and also that the
 30 said cylinder and other adjuncts to the lifting devices will be properly supported in position. By reason of the construction shown the lifting mechanism is permitted to turn or yield in any direction and thereby be self-
 35 conforming to lateral movements of the pilot or draw bar.

The motor-fluid chamber 11 is beveled on its outer side at 15, and leading from the interior of the chamber is a passage 16 for per-
 40 mitting the escape of the motor fluid when the pilot or draw bar is lowered upon the pilot. The lower end of the cylinder fits within the upper part of the chamber 11, as explained, while fitting the upper end of said cylinder
 45 is a cap 17, which is elongated at 18 to furnish an increased bearing for the hollow piston or plunger rod 19. Said rod screws into a screw-threaded portion 20 of a plunger or
 50 piston 21, and the said plunger or piston is formed or provided on its under side with an extension 22 which rests upon the bottom of the fluid-chamber when the pilot-bar is down, and which also operates a valve 23, which
 55 closes the inner end of the passage 16 whenever the piston is raised by the action of the motor fluid. The fluid-inlet passage or opening is indicated at 24, and leading from which is a pipe 25, which extends to a tank or reser-
 60 voir 26 located at any convenient part of the locomotive. In order to permit of the universal movement of the piston-rod and cylinder in the manner herein explained, the said fluid-supply pipe 25 may of itself be a flexible pipe or else a metal pipe the ends of
 65 which are provided with flexible tube connections both with the lower part of the cylinder and the tank from which the fluid is supplied.

In this way the said pipe will be permitted to conform to any movement of the cylinder within its socket. 70

The extension 22 of the piston is preferably screw-threaded, as shown at 27, and beneath the piston is a packing-ring of leather or other suitable material that is held in place by means of a washer 28 and a nut 29 screwing
 75 onto the extension. Surrounding the hollow piston-rod 19 is a spring 30, which rests upon the piston and normally exerts a slight pressure between said piston and the cap 17 of the cylinder, and whenever the piston is acted
 80 upon by the motor fluid said spring assists in imparting a yielding action and prevents undue shocks and strain. Extending into the hollow piston-rod for its whole length and resting by its lower end upon the upper
 85 surface of the piston is a lifting-rod 31, which at its upper end is in movable connection with a clamp or yoke 32 which embraces or surrounds the pilot or draw bar, and it is
 90 through the direct medium of said lifting-rod that the draw-bar is raised.

From the foregoing it will be seen that in order to lift or elevate the draw-bar it is simply necessary to turn the valve or cock 35
 95 to admit the motor fluid to the chamber 11, whereupon the pressure of such fluid will cause the piston and rod to rise, and from the described connection between the lifting-rod and the draw-bar the latter will be elevated to the proper height and position. Whenever
 100 the pressure of the motor fluid upon the piston is relieved, the spring 30 tends to force said piston downwardly, and the parts are restored as before. As soon as the extension on the under side of the piston leaves the stem
 105 of the valve in the fluid-chamber, the pressure of the fluid entering the chamber at once closes the valve to prevent escape of such fluid. When the piston descends, however, the said extension again lifts the valve and
 110 permits escape of the fluid or condensations thereof if steam is employed. From the construction of the socket, together with the base of the fluid-chamber, it is evident that the cylinder and lifting devices as a whole will
 115 readily conform to any lateral or sidewise swinging of the pilot-bar due to the motion of the locomotive in travel.

It has been found in practice that in addition to the lateral tilting of the cylinder, which
 120 is effected by the swinging movement of the draw-bar in the rounding of curves, there is a tendency of the cylinder to turn or partially rotate, as on a longitudinal axis, and this partial movement is greatly hindered by the use
 125 of supporting-trunnions on the sides of the cylinder, as heretofore practiced, because of the binding action produced between the trunnions and their supports, which latter permit ready conformability only of the cyl-
 130 indier in two directions at right angles to each other. By my construction a ready conformability of the cylinder is had in all directions, and particularly to the movement which is

necessarily imparted thereto when the point of attachment of the piston-rod to the draw-bar is made to turn in or describe an arc of a circle of any considerable extent.

5 For the purpose of enabling the pilot-coupling to be swung to one side whenever it is desired to effect a coupling thereof—as, for instance, with a car or other vehicle when both the locomotive and car are situated upon a bend or curve in the track—I connect with
10 said bar by means of a ring or clamp 40 one end of a guiding-rod 41, the other end of which is provided with an eye 42 fitting around a crank-shaft 43, that is supported or
15 held in bearings 43' of a bracket 44, secured in any suitable manner to the front of the frame of the locomotive at one side of the pilot. (See Fig. 2.) The said crank-shaft is provided with a hand-wheel 45, and it is evident that by grasping said wheel and turning the same in the proper direction the outer end of the connecting-rod will be carried outwardly and the draw-bar correspondingly turned to one side. Other means could be
25 employed for shifting or turning the said draw-bar to one side in the manner explained, but the construction shown and described has been found exceedingly simple and effective, and is therefore preferred.

30 While any suitable form of coupling device may be employed in connection with the bar I preferably adapt the same to almost any of the well-known coupler-sections of the Janney type, and therefore have devised a
35 special form of coupler-section which is secured to the end of the bar in any suitable manner. The said coupler-section is represented as a whole at A, and is provided with the rigid jaws 50 51, between which is loosely
40 held, by means of a pivot 52, a pivoted or swinging jaw 53, which is provided with the portion 54 for interlocking with a similar jaw of some other coupler-section, and a tailpiece 55, which is engaged by a latch or similar
45 locking device for maintaining the said swinging jaw in coupled relation. While various forms of locking devices could be employed in connection with the jaw I prefer a gravity-catch 56, which is pivoted in a recess 57 in
50 the coupler-section, and whenever the swinging jaw is brought into coupled relation said catch drops before the end of the tail-piece and holds the jaw securely. The upper inner edge of the tailpiece of the swinging jaw
55 is tapered or beveled at 58, and when the jaw is open the gravity-catch 56 is elevated and rests thereon, it being the movement of the tailpiece from beneath the catch that causes the latter to drop. The coupler-section on the car or other vehicle may be of any of the usual forms—such, for instance, as shown in Fig. 5—and wherein the locking device for the jaw is released by the operator on the car through the medium of a chain or lever 60.
65 Thus when it is desired to release or disengage the coupler-section on the car from the draw-bar coupler-section it is simply neces-

sary to operate the chain or lever on the car, and in this way the operator is not exposed to any danger. While the car or other vehicle
70 is thus separated or disconnected it is evident that the jaw of the coupler-section of the draw-bar is still in its locked position, and in order that such jaw may be opened and brought into position for effecting a coupling
75 when the bar is next raised for that purpose I employ suitable means for raising the catch automatically and pushing the jaw outwardly. Various means for performing this result could be resorted to, and while I have herein
80 represented certain preferred means or devices it will be understood that I am not limited thereto in any particular. These preferred devices consist of a swinging lever 70 constructed in the shape of a curved hook 71,
85 having an offset 72, and being pivoted at 73 to the side of the central bars of the pilot. (See Fig. 3.) The gravity-catch is formed at an angle of about forty-five degrees, and is designed to come into contact with the
90 offset or projection 72 of the lever. Thus it will be seen that when the draw-bar is lowered upon the pilot the push-pin 75 strikes the offset, thereby elevating the gravity-catch and releasing the jaw of the coupler-section and
95 the lever 70 is at the same time swung upwardly and by riding beneath or striking the tailpiece 55 of said jaw the latter is opened or carried outwardly. The action is entirely automatic, and when the jaw is turned outwardly the gravity-catch is of course held
100 upward in readiness to again fall when next a coupling is made.

From the foregoing description taken in connection with the accompanying illustrations it is thought the construction and operation of my invention will be fully understood, and, as before stated, I am not limited to the particular devices which have herein
110 been selected as the forms which are preferred in practice.

I claim—

1. In means for lifting or elevating locomotive pilot or draw-bars, a cylinder freely seated to turn in all directions in conformity
115 to the movements of the bar, and connected with a motor fluid supply, a piston working in the cylinder, and a movable connection between the piston and bar, substantially as described.
120

2. In means for lifting or elevating locomotive pilot or draw-bars, a socket located beneath the pilot, a cylinder freely seated in said socket to turn in all directions in conformity to the movements of the bar, and connected
125 with a motor fluid supply, a piston working in the cylinder, and a movable connection between the piston rod and bar, substantially as described.

3. In means for lifting or elevating locomotive pilot or draw-bars, a socket having beveled sides, a cylinder having a straight sided bottom extension fitting in said socket, a motor fluid supply connecting with said cylinder

der, a piston working in the cylinder, and an operative connection between said piston and the bar, substantially as described.

4. In means for lifting or elevating locomotive pilot or draw-bars, a socket, a motor fluid chamber having a bottom extension loosely fitting within said socket, and provided with a motor fluid supply, and a discharge passage controlled by a valve, a cylinder fitting said chamber, a piston having an extension resting upon the bottom of said chamber and normally maintaining the valve in an open position, a hollow piston rod fitted to the piston, a spring tending to lower the piston, and a lifting rod operated by the piston and in movable connection with the pilot-bar, substantially as described.

5. In means for lifting or elevating locomotive pilot or draw-bars, a socket having beveled sides, a motor fluid chamber having a bottom extension loosely fitting within said socket, and provided with a motor fluid supply, and a passage controlled by a valve, a cylinder fitting in said chamber, a piston having a screw threaded extension resting on the bottom of said chamber and normally maintaining the valve in an open position, a packing ring and washer beneath the piston and a nut securing them in place, a hollow piston-rod, a spring surrounding said rod, and a lifting bar operated by the piston and in movable connection with the draw-bar, substantially as described.

6. In means for operating locomotive pilot or draw-bars, the combination with the bar, and means for lifting the same, of a swinging rod connected at one end to said bar, and at the other end to a crank supported at one side of the pilot, and means for operating said crank, substantially as described.

7. The combination with the draw-bar, of

the coupler-section provided with the swinging jaw having the beveled tail-piece, a gravity catch for locking said jaw in coupled relation with a jaw of another section, and means located in part upon the pilot for automatically elevating said catch and forcing the jaw outwardly when the draw-bar is lowered, substantially as described.

8. The combination with the draw-bar, of the coupler-section having the swinging-jaw, the gravity catch having a tail-piece projecting through the coupler-section, and the pivoted curved lever on the pilot, the same having the offset which is struck by the tail piece when the bar is lowered upon the pilot, substantially in the manner shown and for the purpose described.

9. The combination with the draw-bar, of the coupler-section provided with the swinging jaw, a catch for locking said jaw in coupled relation with a jaw of another section, and means located in part upon the pilot for releasing said catch and forcing the jaw outward when the draw-bar is lowered, substantially as described.

10. The combination with the draw-bar, of the coupler-section having the swinging jaw provided with the beveled edge, the gravity catch having a tail piece projecting through the coupler section, and means on the pilot automatically releasing said catch by engagement with the tail-piece, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL R. HEIDELBERG.

Witnesses:

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S. W. LITTLEJOHN.