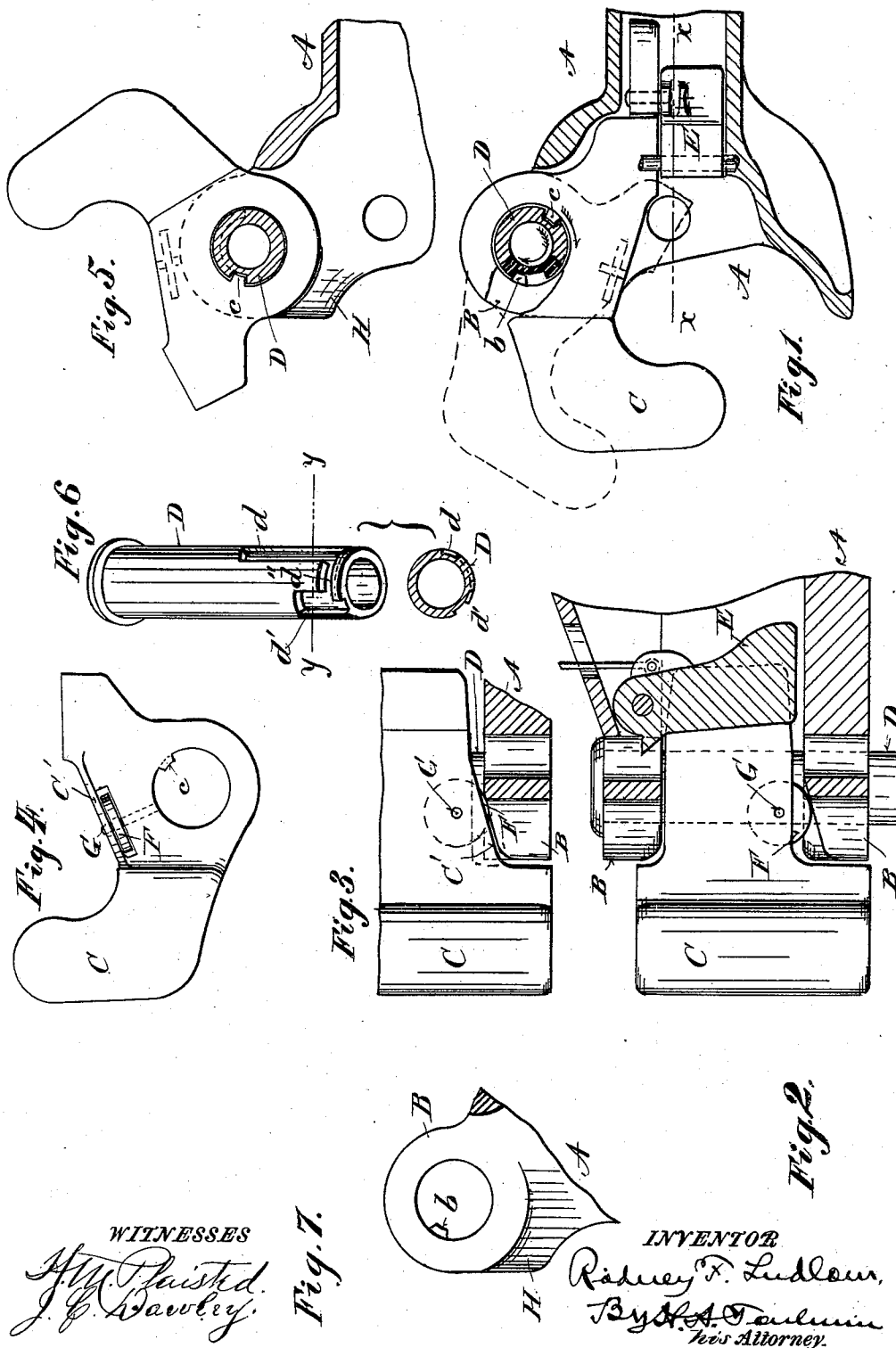


R. F. LUDLOW
CAR COUPLING.

Patented July 5, 1892.



UNITED STATES PATENT OFFICE.

RODNEY F. LUDLOW, OF SPRINGFIELD, OHIO.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 478,446, dated July 5, 1892.

Application filed September 28, 1891. Serial No. 407,023. (No model.)

To all whom it may concern:

Be it known that I, RODNEY F. LUDLOW, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Car-Couplers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in car-couplers.

My improvements have reference to a wheel and an inclined ledge for said wheel to travel on, and thus automatically effect the outward swing of the knuckle, the wheel being mounted in one member and the ledge forming part of the other member; have reference to a pivot for the knuckle and connections between the knuckle and draw-head, consisting of projections and grooves adapted to match and interlock therewith, the projections being supported by one member or members and the grooves formed in the other member or members to limit the swing of the knuckle at predetermined points, and have reference to other points and peculiarities hereinafter pointed out and claimed.

In the accompanying drawings, on which like reference-letters indicate corresponding parts, Figure 1 represents a plan view of the knuckle and adjacent parts of the draw-head, the top plate of which has been removed; Fig. 2, a vertical sectional view on the line $x x$, Fig. 1, looking toward the knuckle; Fig. 3, a similar view showing an inclined rib guarding the wheel; Fig. 4, a reversed view of the knuckle itself detached; Fig. 5, a plan view of the knuckle in its extreme outward position and adjacent portion of the draw-head; Fig. 6, a perspective view of the knuckle-pivot and a cross-section thereof on the line $y y$; and Fig. 7, a plan of the lower ear or lip of the draw-head, showing the inclined ledge and projection from the lip, being one manner of placing the same.

The letter A designates the draw-head chosen to illustrate my improvements and provided with ears or lips B, between which is mounted a knuckle C on a pivot D through the said ears and knuckle.

A locking-pawl E and adjunctive devices are adapted to lock the knuckle in its inner position. Other locking means may be employed.

The knuckle C is provided with a wheel F, mounted on a bearing-pin G and adapted to roll upon an inclined ledge or surface H, formed in a circular part concentric with the pivot D. This ledge is open at the side, top, and bottom in the preferred form of construction, whereby any grit, dirt, or other obstructing particles may freely pass off from the same without obstructing the action of the wheel thereon.

As will be seen from Fig. 2, the knuckle C has its shank formed to allow of the vertical movement necessary in this gravitating action of the knuckle as it swings outward, and the wheel bears on the ledge at its periphery and supports the knuckle by its axial pin G. The wheel preferably travels with and at the same speed as the knuckle, and the difference of the bearing-surfaces from the center of the wheel due to the different diameters of the wheel and its axle effects a ready rotation thereof and opening of the knuckle.

Fig. 2 plainly shows the wheel F extending below the knuckle. Fig. 3 shows a rib or web portion C', carried by the knuckle and matching the draw-head, so as not to interfere with the same, yet protect the wheel from damage.

Any particular form of pivot may be used with the before-described improvements; but I will now describe a special form and point out the advantages thereof. The knuckle-pivot and draw-head are connected together by operative devices adapted to allow a sufficient rotation of the knuckle in coupling and its swing to the extreme outer position and to lock the knuckle in said position. This is done by suitable projections and grooves interconnecting the knuckle-pivot and draw-head, and I have illustrated the same herewith with the projections formed on the draw-head and knuckle and the grooves in the pivot. The projection c on the knuckle is adapted to fit in the groove d , Fig. 6, and one of the pivots, and effect the rotation of the pivot simultaneously with the knuckle. When the knuckle moves, the pivot also rotates. A projection b on one ear of the draw-head (the lower ear by preference) is adapted to fit in the groove d' of the pivot, Figs. 1 and 6, which groove is wider than the projection, and thus allow a certain rotation of the pivot before the wall of the groove d' brings up like a stop against the projection b of the ear. This movement

is sufficient to allow the knuckle to swing outward to the dotted position shown in Fig. 1, the knuckle being broken away to show a portion of the lower ear, the projection *b*, and groove *d'*. This amount of rotation is caused by the wheel *F* rolling down the inclined ledge *H*, which is sufficiently long for this purpose. To allow a farther outward swing of the knuckle, the grooves *d d'* are connected by a circular groove *d''*, Fig. 6, and the projection *b* will fit within said groove when the pivot is raised within the draw-head to bring the groove opposite the projection. The pivot and knuckle will rotate to the extreme outward position, Fig. 5, till the groove *d* is brought directly over the projection *b*, when a downward movement of the pivot will then cause the projection *b* to be held in the groove *d* and lock the knuckle outward. In this position the projections *c* and *b* are directly over each other and both within the groove *d*. In order to swing the knuckle inward again, the pivot must be raised to bring the groove *d''* opposite the projection *b*, when it will travel past the same to the other groove *d'*, at which point the pivot resumes its lower position by gravity. The grooves *d d' d''* may extend more or less through the walls of the pivot *D*, as desired, and, as before mentioned, the projections and grooves may be formed on either the knuckle and ear and pivot, respectively, or vice versa, to effect the above-described rotary interlocking and vertical actions.

Referring to Fig. 6, it will be seen that the groove *d* is longer than the groove or recess *d'*. This is because the projection *c* fits within the former groove and, being mounted on the knuckle, is above the projection *b*, carried by the lower ear. A portion of the pivot below the grooves is cut away to give entrance to the projections when the parts are assembled by slipping the pivot within the openings in the draw-head and the knuckle and turning the pivot till the projections reach their proper grooves or recesses. The grooves may be otherwise formed as long as the above-described action is secured, as I do not wish to limit myself to the exact form shown and described herewith.

Referring again to the path for the wheel, it will be seen that the surface *H* is shown as a plane inclined to the horizontal, open on the ends, without any retaining-walls liable to allow the accumulation of ice, grit, or other clogging particles and thus obstruct the action of the wheel as it travels in an arc about the axis of the knuckle.

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

1. In a car-coupler, the combination, with a draw-head and a knuckle pivoted therein, of a wheel and its axle mounted in said knuckle, and thus adapted to rotate at the same fixed point relatively to the knuckle, the draw-head being provided with an inclined ledge or surface concentric with the knuckle-pivot to serve

as a path of travel for said wheel, whereby the outward swing of the knuckle is effected automatically.

2. In a car-coupler, the combination, with a draw-head and a knuckle pivoted therein, one member having an inclined ledge or plane surface concentric with the axis of the knuckle-pivot, of a wheel rotatably mounted in fixed bearings in the other member, so as to preserve its constant relative position in said latter member and to rotate in contact with said ledge or surface on the other member.

3. In a car-coupler, the combination, with a draw-head and a pivoted knuckle therefor, of a wheel mounted on an axle in said knuckle and adapted to travel on an inclined ledge or surface on the draw-head concentric with the axis and open at the ends and outside to discharge clogging particles therefrom and means to check the rotation of said knuckle at predetermined points of its swing.

4. In a car-coupler, the combination, with a draw-head and a pivoted knuckle therein adapted to swing outward automatically, of a movable pivot for said knuckle having an interlocking and sliding engagement with both the knuckle and the draw-head by interconnecting projections and grooves between the respective members.

5. In a car-coupler, the combination, with a draw-head and a knuckle pivoted therein, of a pivot for said knuckle having grooves or recesses formed lengthwise and around the same, the knuckle and draw-head being provided with projections matching said grooves, whereby the said pivot may be rotated and moved vertically and an interlocking engagement of all the members effected.

6. The combination of a draw-head, a knuckle, and a rotatable and slidable pivot therefor, the latter having a circular groove and also a vertical groove or recess at each end of said groove and the knuckle and draw-head having projections respectively entering said grooves or recesses to allow a slight opening of the knuckle and adapted to allow a further opening when one of said projections is operated in said circular groove.

7. In a car-coupler, a pivot adapted to slide and to rotate in its bearings and having circular and longitudinal grooves or shoulders formed thereon adapted to match corresponding parts of its bearings to effect an interlocking engagement of the pivot therewith.

8. In a car-coupler, a pivot having a recess at one side of its axis, a vertical groove or recess at substantially the opposite side, and a circular groove connecting said oppositely-located grooves or recesses, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

RODNEY F. LUDLOW.

Witnesses:

ALBERT H. KUNKLE,
W. H. LINN.