(No Model.)

D. J. SINCLAIR.

CAR COUPLING.

No. 533,239. Patented Jan. 29, 1895.

Fig. 1.

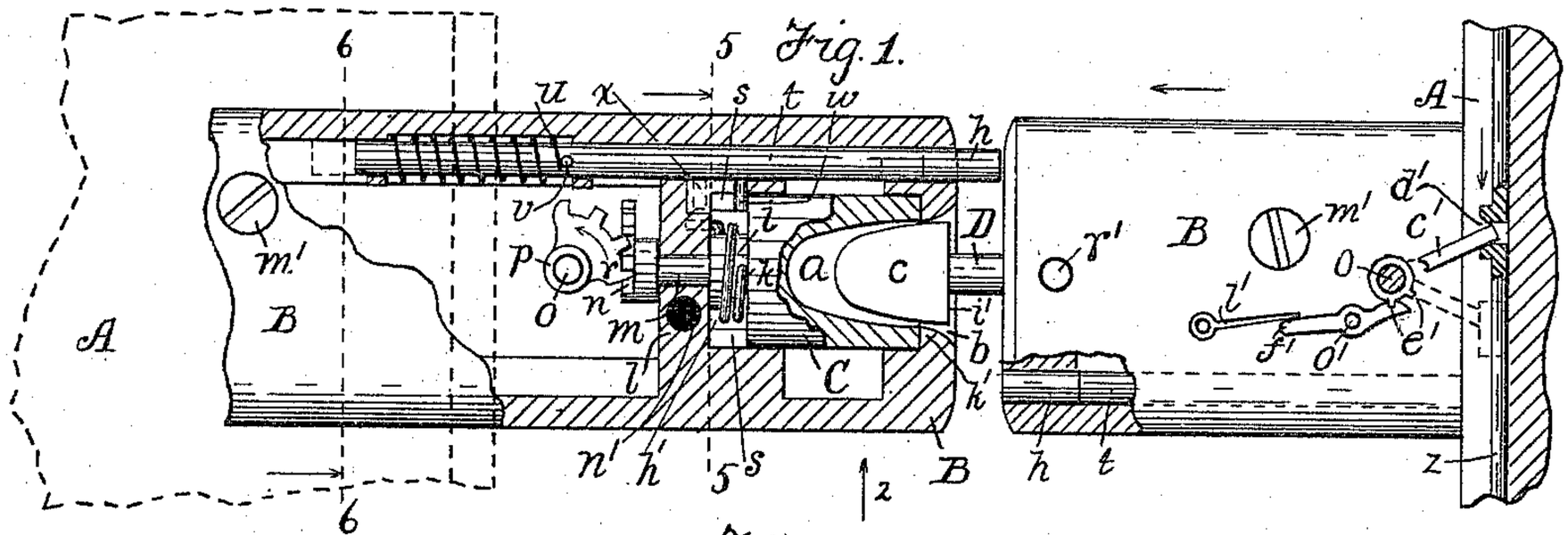


Fig. 2.

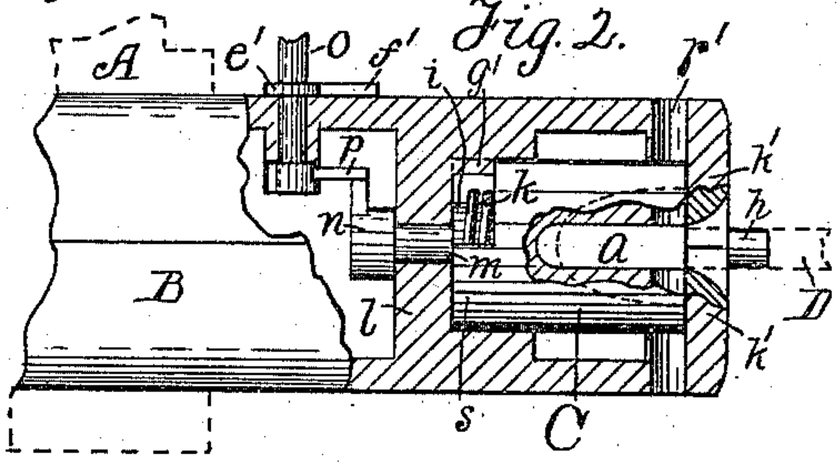


Fig. 3.

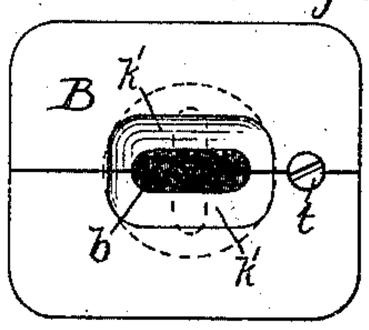


Fig. 4.

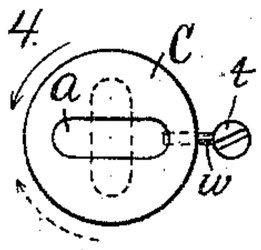


Fig. 5.

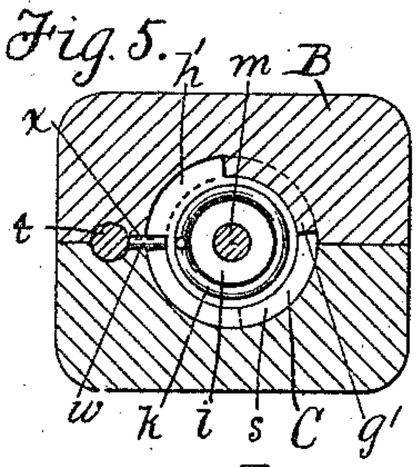


Fig. 6.

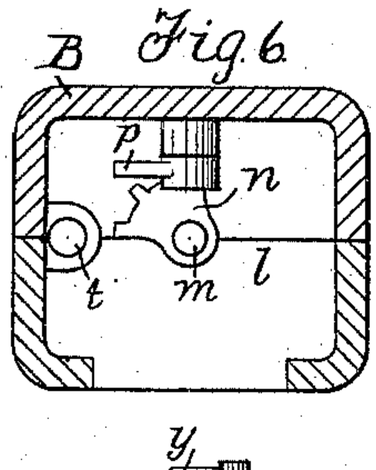
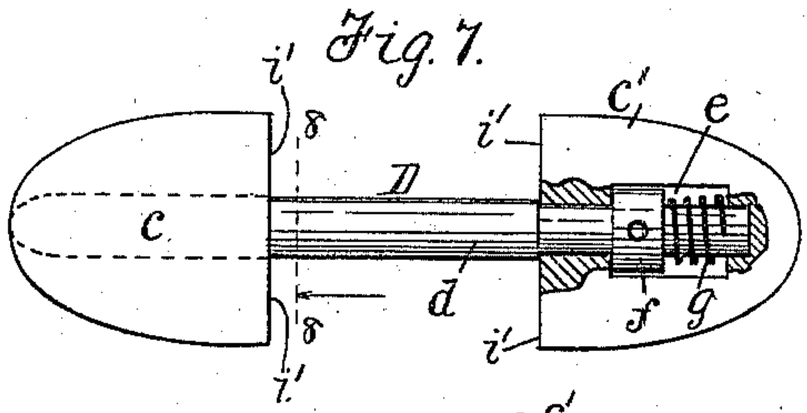


Fig. 7.



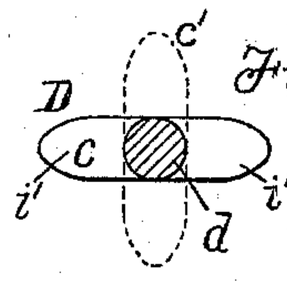


Fig. 8.

Fig. 10.

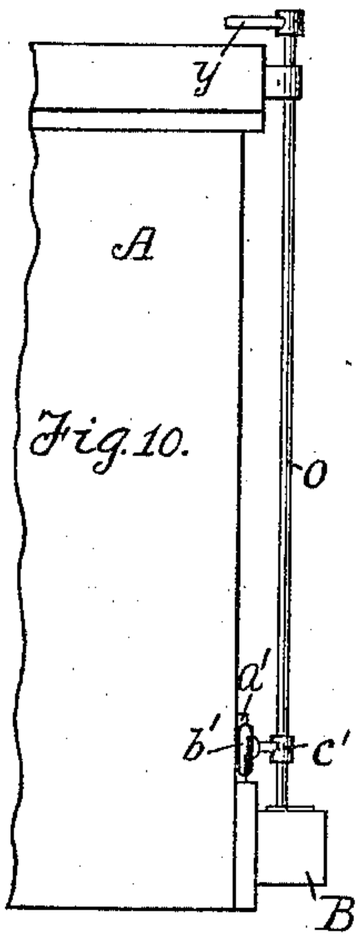


Fig. 11.

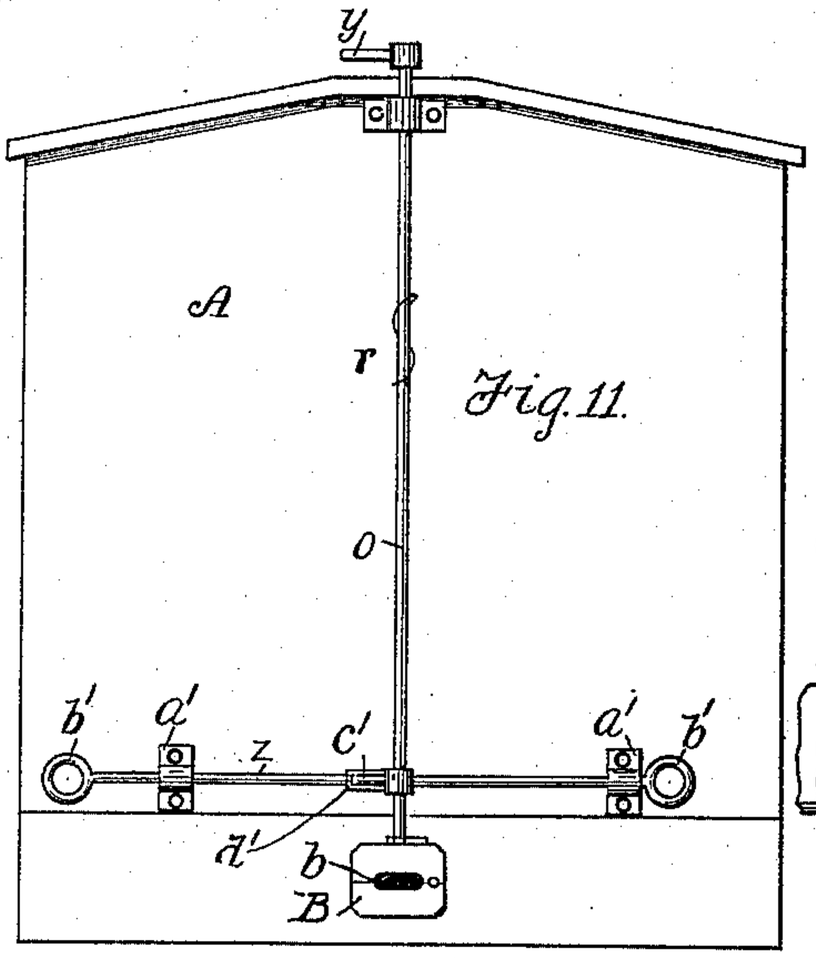


Fig. 13.

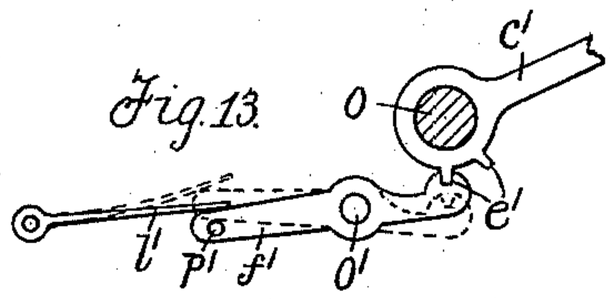


Fig. 12.

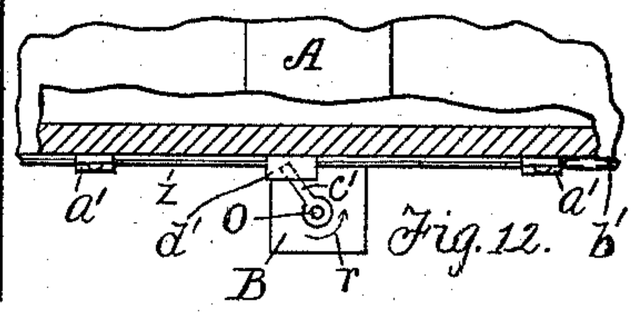
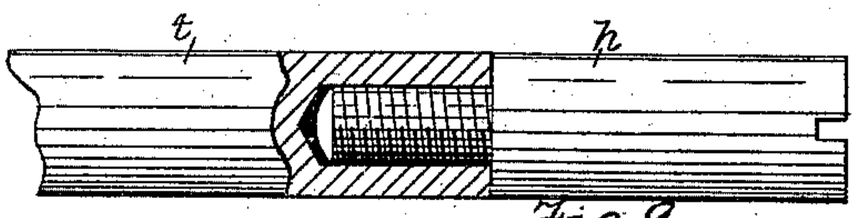


Fig. 9.



Attest:
M. L. Winston.
M. V. Bayly.

Inventor:
D. J. Sinclair
By C. B. Whitmore,
Atty.

UNITED STATES PATENT OFFICE.

DUNCAN J. SINCLAIR, OF CALEDONIA, NEW YORK.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 533,239, dated January 29, 1895.

Application filed October 4, 1894. Serial No. 624,860. (No model.)

To all whom it may concern:

Be it known that I, DUNCAN J. SINCLAIR, of Caledonia, in the county of Livingston and State of New York, have invented a new and useful Improvement in Car-Couplers, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

The object of my invention is to produce an improved automatic car coupler, the same consisting of suitable draw-heads with operating cylinders for the draw link and means to actuate and control the cylinders, the link being provided with a swivel head and tension spring, all of the parts of the invention being hereinafter fully described and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a plan of two co-acting draw-heads showing my invention, partly in horizontal section, parts being broken away. Fig. 2 is a side elevation of one of the draw-heads, seen as indicated by arrow 2 in Fig. 1, parts being vertically and centrally sectioned and other parts broken away. Fig. 3 is a front end view of a draw-head. Fig. 4 is a front end view of a cylinder and trip rod. Fig. 5 is a cross section of a draw-head taken on the dotted line 5 5 in Fig. 1 the cylinder being shown in two positions by full and dotted lines. Fig. 6 is a cross section on the dotted line 6 6 in Fig. 1. Fig. 7 is a plan of the link with parts longitudinally sectioned. Fig. 8 is a transverse section on the dotted line 8 8 in Fig. 7. Fig. 9 shows parts at the outer end of the trip rod, a part being longitudinally sectioned. Figs. 10, 11 and 12 show the adaptation of the device to a car and means to operate it from the sides or top of the car. Fig. 13 better shows means for controlling the cylinder. Figs. 7, 8, 9 and 13 are drawn to scales larger, and Figs. 10, 11 and 12 to a scale smaller, than that of the remaining figures.

Referring to the parts shown A is the body of a railway car of common construction and B B the draw-heads. These draw-heads are of iron and designed to be secured to the cars in the usual manner, and provided with ordinary tension springs under the cars for the usual purpose. The draw-heads, which are substantially prismatic in form, are hollow and preferably substantially rectangular in cross section, as shown in Fig. 6, and are open at the under side, though these particulars need not be strictly followed out in constructing the device. The draw-heads are also shown in two parts divided horizontally through the middle as a matter of convenience in putting in place the interior work, but this particular construction is not essential to the invention.

Bolts *m'* are employed to hold the two halves of the draw bar together, passing through the upper half into holes *n'* in the lower half.

Within the forward end of each draw-head is seated, longitudinally, a horizontal cylinder C provided with a flat axial or longitudinal cavity *a* in which to receive one end or head of the draw link, D. The draw-head is formed with a flat horizontal opening *b* through its outer end registering with the cavity *a* in the cylinder, through which the link passes in the act of coupling the cars.

The link is formed with two similar oval, flat heads *c c'*, Fig. 7, connected by a shaft *d* rigid with the head *c*. The head *c'* is constructed to turn upon a reduced part of the shaft so as to occupy a position parallel with, or at right angles to, the plane of the head *c* as occasion may require. This head *c'* is formed with a rectangular opening *e* in which is inserted a collar *f* upon the shaft and rigid therewith. A spiral spring *g* on the shaft in the opening, bearing at one end against the collar and at the other end against the head, tends to hold the head firmly against the collar and so create friction between said parts. This constitutes a tension, acting to hold the head with moderate force from turning upon the shaft, so that the head will maintain its position upon the shaft against being moved by the jarring or jolting of the cars. The extreme end of the shaft passes the outer end of the opening *e*, having a bearing in the point of the head, as shown.

The cylinder C is formed with a reduced part *i*, Figs. 1, 2 and 5, at its rear end upon which is placed an actuating spiral spring *k*. One end of this spring is secured to the cylinder while the other end has a bearing in a transverse bridge *l* of the draw-head. The spring is adapted to turn the cylinder in the direction indicated by the full-line arrow in

Fig. 4. The cylinder is formed with a short rear axial shaft *m* having a bearing in the bridge *l*, to the overhanging end of which is secured to a toothed hub *n*. A vertical rod *o* piercing the upper wall of the draw-head and having a bearing therein is provided at its lower end, within the draw-head, with a toothed hub *p* in position to engage the hub *n*, as shown, to control the cylinder. Now, by turning the rod *o* in the direction indicated by arrows *r*, Figs. 1, 11 and 12, the cylinder will be turned against the action of the spring *k* or in the direction indicated by dotted arrow in Fig. 4.

The cylinder is formed with a backwardly-extending semi-circular rib *s* having an external diameter equal with that of the cylinder, the spring *k* resting between said rib and the part *i*. A trip rod *t*, Figs. 1, 2, 5 and 6, rests horizontally in bearings in the draw-head, parallel with the cylinder C. This rod is provided with a spiral spring *u* acting at one end against a pin *v* rigid in the rod and at the other end against a part of the draw-head, the tendency of which spring being to push the trip rod endwise toward the outer end of the draw-head. The trip rod is provided with a short, rigid pin *w* in position to bear against one end or face of the rib *s* of the cylinder and hold the latter against the action of the spring *k*. A longitudinal cavity *x* is formed in the draw-head in which the pin *w* plays during longitudinal motions of the trip rod, which pin confined in said cavity prevents the trip rod from turning on its axis.

In the normal position of the trip rod the pin *v* presses against a part of the draw-head and the pin *w* bears against the rear end of the cylinder, in which position the trip rod acts as a detent for the cylinder. Now, if the trip rod occupy the position shown in dotted lines in the left-hand draw-head in Fig. 1, in which the cylinder is released from the pin *w*, said cylinder will be turned by the spring *k* so that the rear edge or face of the rib *s* will be presented to said pin, and the trip rod will have no control over the cylinder. If, now, the cylinder be turned back again, by means of the rod *o*, the trip rod will, as soon as the pin *w* is left free, assume its normal position, shown in full lines, from the action of the spring *u* in which position the spring *w* will be again presented to the longitudinal end or face of the rib and temporarily hold the cylinder from turning, as above stated.

When the link is held in one draw-head, as for instance the one at the right in Fig. 1, the head (*c'*, it may be) of the link in the draw-head will stand edgewise or in a vertical position, as indicated by dotted lines in Figs. 3 and 8, the other head of the link being turned by the attendant to a horizontal position, as shown in Fig. 1, to enter the opposite draw-head, at the left. Now, as the cars come together the right-hand draw-head will encounter the projecting end of the trip rod and push it inward against the action of the spring *u* to the dotted position shown, in which the pin *w* will release the cylinder and allow it to be turned by the spring *k*, as stated. This turns the head *c* of the link to a vertical position and the cars are coupled, both heads of the link now being vertical and standing across the respective openings *b* in the draw-head.

To uncouple either car the rod *o* is turned by the brakeman in the direction indicated by the arrows *r*, Figs. 1, 11 and 12, which brings the cavity *a* of the cylinder to a horizontal position and allows the link to be drawn out. The trip rod with its pin *w* in the meantime moves forward and again holds the cylinder from turning.

The cavities *a* in the opposing cylinders are made deeper longitudinally than the length of the heads of the draw link, the proportions being such that when the two draw-heads touch end to end there will be a free space in the cylinders at either end of the link so that the latter shall not bottom in both cavities at the same time—that is to say, the distance between the inner ends of the two cavities when the draw-heads touch is greater than the extreme length of the link. This is to prevent a longitudinal stress of compression being at any time brought upon the link when coupling the cars.

The rod *o* is extended vertically upward along the end of the car to the deck and provided thereat with a lever or handle *y*, Figs. 10 and 11, for the use of the brakeman on top of the car. Also a horizontal shiftable rod *z*, Figs. 1, 10 and 12, is employed by means of which the attendant on the ground may manipulate the cylinder from either side of the car without stepping upon the track. This rod rests in bearings *a'* rigid with the car body and is adapted to slide endwise therein, it being provided with a handle *b'* at either end to be grasped by the attendant when it is wished to turn the cylinder, the shaft being moved horizontally for the purpose. The rod *o* has upon it a rigid lever *c'* opposite the rod *z* the outer end of which lever enters a slot *d'* in the rod, by means of which when the latter is moved endwise, the rod *o* will be turned to operate the cylinder, as already described.

The cylinder is turned through only one-fourth of a revolution in the operation of coupling and uncoupling cars so that in one of its extreme positions the cavity *a* lies horizontally while in the other it stands vertical. A circular part *g'*, Figs. 2 and 5, of the draw-head projects into the space *h'*, Fig. 1, back of the cylinder in position to meet the longitudinal ends or faces of the rib *s* of the cylinder, as the latter is turned one way or the other, to constitute stops for the cylinder. This part, *g'*, extends through one-fourth of a circle and the rib through one-half of the same or corresponding circle, leaving between them a clear space of one-fourth of a circle to

which extent the cylinder is permitted to turn at each movement.

Two catch teeth e', Figs. 1 and 13, are provided, rigid with the rod o just above the draw-head and a pawl f', adapted to turn upon a pin o' rigid in the draw-head, is provided to catch either of said teeth when presented. These teeth are in such relative positions that when either is held by the pawl the cylinder will be in one of its extreme positions. A spring l' actuates the pawl and normally holds it in engagement with a tooth. This pawl is to be used only temporarily or as occasion requires, it being most of the time thrown out of action, in the dotted position shown in Fig. 13. When in this position a holding pin p' is inserted in a hole in the draw-head in position to hold the pawl in its position of inaction.

The trip rod t, which is in two parts, has a removable part h at its outer end, clearly shown in Fig. 9. This part is formed with a threaded stem adapted to enter a corresponding threaded socket in the main part of the rod. By removing the part h at any time the trip rod is shortened up so as to be out of the way of an approaching draw-head and cannot be affected by the latter to control the cylinder.

When, in any case, a cylinder is turned so that the cavity a stands in a vertical position the contained head of the draw link will stand vertically across the opening b in the draw-head, in which case the link cannot be pulled out; for when in this position the shoulders i' of the link meet the inner surface of the end-part k' of the draw-head.

The draw-heads and the cylinders are provided with vertical holes r' crossing the cavities a so as to be used with the ordinary link and pin, when necessary. In this use of the device the cylinders are held by the pawls f' in positions in which the cavities a are horizontal, and the parts h of the trip rods are removed; also, when a car is to be merely pushed along without being coupled, as, for instance, to run it upon a side track to be left, the pawl f' of said car is placed to hold the cylinder so that the cavity a will be horizontal. Then, when the train moves away from said car the draw link between it and the car will pull out of the latter and leave it standing. Furthermore, the pawl f' and the teeth e' are provided as a matter of precaution against the breaking of the spring k while out on the road. In case this accident occurs the cylinder may be turned by the brakeman by means of the rod o so that the pawl will engage the tooth corresponding with the vertical position of the cavity a. This will prevent the cars becoming uncoupled at that place in the train by accident. Were the cylinder not thus held the jarring of the train might turn it in a position to let the link escape.

When two cars are to be coupled neither of which has a draw link, both cylinders are turned so that the cavities a are horizontal and a draw link is placed in one of them with both heads c c' horizontal. Then the running together of the cars depresses both trip rods at once and both cylinders with the draw link turn simultaneously and the cars are coupled.

What I claim as my invention is—

1. In a car coupler a draw-head formed with a flat horizontal opening in its exposed end, in combination with a longitudinal rotatory cylinder in the draw-head formed with a flat longitudinal cavity co-acting with the opening in the draw-head, a spring to turn the cylinder, a vertical shaft or rod to control the cylinder, held by the draw-head, gearing connecting said rod with the cylinder, and means to turn the rod, and a detent for the cylinder, substantially as shown and described.

2. A car-coupling device comprising a draw-head having a horizontal longitudinal opening in its exposed end, in combination with a rotatory cylinder placed horizontally in the draw-head and formed with a flat longitudinal cavity opposite the opening in the draw-head, a spring to turn the cylinder, a vertical rod held by the draw-head to control the cylinder, gearing connecting said rod and the cylinder, and a detent or holder for the rod, substantially as shown and described.

3. A car-coupling device comprising a draw-head open at its outer end, in combination with a rotatory cylinder placed horizontally in the draw-head and formed with a flat longitudinal cavity opposite the opening in the draw-head, a spring to turn the cylinder, a vertical rod held by the draw-head to control the cylinder, gearing connecting said rod and the cylinder, and a trip rod constituting a detent for the cylinder, substantially as shown and described.

4. In a car-coupling device a draw-head formed with an opening b, a cylinder in the draw-head formed with a cavity opposite said opening, a spring to turn the cylinder, a rod held by the draw-head to control the cylinder, and gearing connecting said rod with the cylinder the latter being formed at its rear end with a semi-circular rib, in combination with a trip rod to control the cylinder and a stop for the latter, substantially as shown and described.

5. In a car-coupling device a draw-head formed with an end opening, a cylinder formed with a backward projection in the draw-head, having a cavity opposite said end opening, and means for controlling the cylinder, in combination with a two-part trip rod for the cylinder, in the draw-head, projecting forward of the latter, substantially as shown and described.

6. A car-coupling device comprising a draw-head having an end opening, a cylinder in the draw-head having a cavity opposite said end opening, a spring to turn the cylinder, a vertical rod and gearing held by the draw-head

to control the cylinder, in combination with a stop or detent for said rod, an arm or lever upon the rod and a horizontal shiftable rod upon the car for operating said lever, substantially as shown and described.

7. In a car coupler a draw-head open at its outer end, a cylinder in the draw-head having a cavity opposite said opening, a spring to turn the cylinder and a vertical rod and gearing held by the draw-head to control the cylinder, in combination with a spring-pressed pawl to control said rod, and a holding pin for said pawl, substantially as shown and described.

8. In a car coupler a draw-head open at its outer end and a cylinder in the draw-head having a flat longitudinal cavity opposite said opening, and means to control the cylinder, in combination with a draw link formed with flat heads at its ends to enter said cavity in the cylinder, the head being joined by a connecting shaft and one adapted to turn upon said shaft, substantially as shown and described.

In witness whereof I have hereunto set my hand, this 25th day of September, 1894, in the presence of two subscribing witnesses.

DUNCAN J. SINCLAIR.

Witnesses:
JOHN M. MATTESON,
ROBERT LYTTLE.