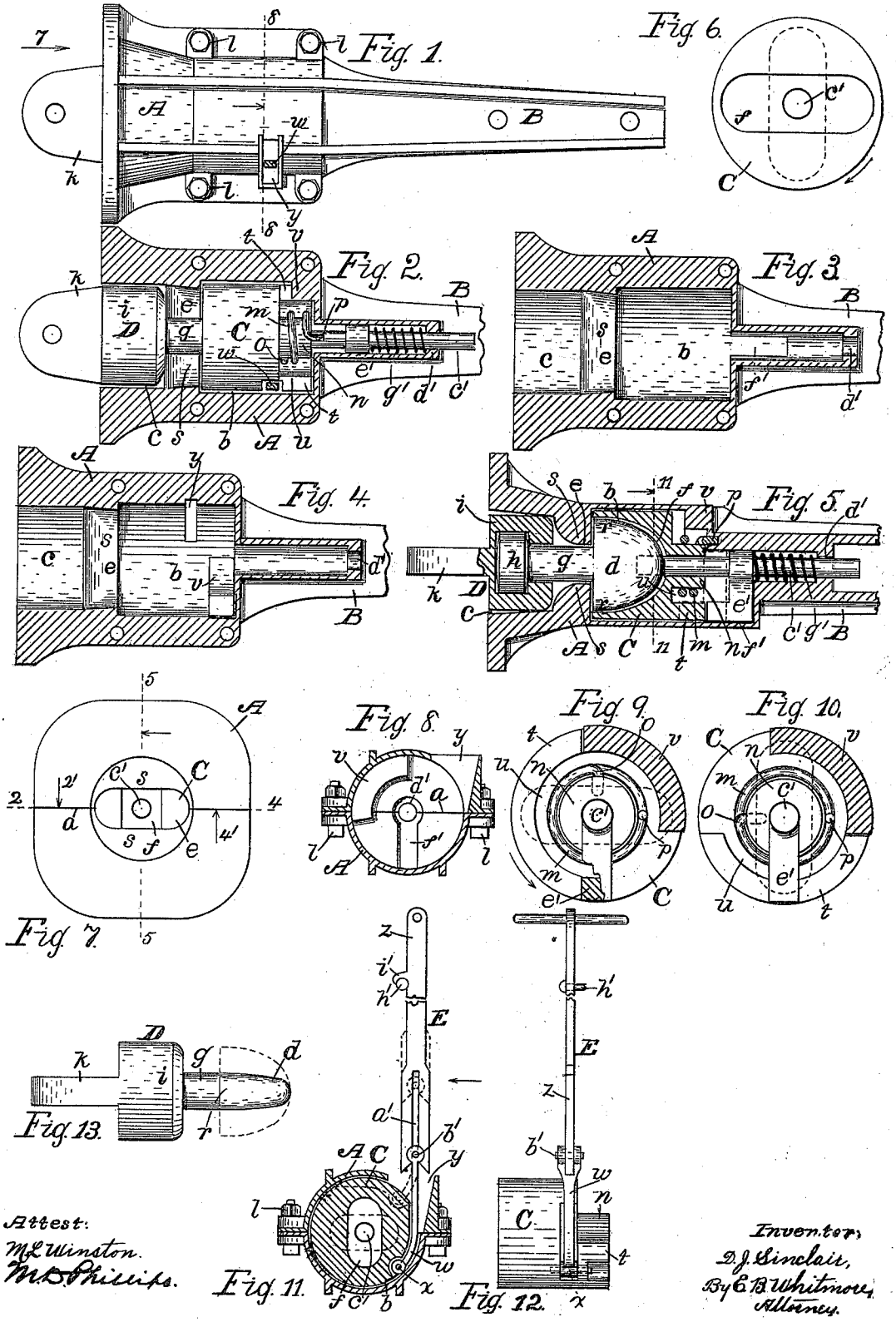
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D. J. SINCLAIR.

COUPLING FOR VEHICLES.

(No Model.) (Application filed May 28, 1898.)



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UNITED STATES PATENT OFFICE.

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COUPLING FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 617,196, dated January 3, 1899.

Application filed May 28, 1898. Serial No. 682,008. (No model.)

To all whom it may concern:

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

My invention relates to coupling devices for vehicles generally and is, in part, an improvement on the car-coupler shown and described in Letters Patent No. 533,239, granted to me January 29, 1895.

One object of my present invention is to conceal or cover the trip-rod for the coupling-tumbler, so that said rod will be out of the way and not readily tripped by accident or through carelessness or be tampered with by mischievous or designing persons.

A further object of the invention is to provide improved means for operating the coupling-tumbler.

A further object of the invention is to provide an improved coupling-link to coact with the other improved parts.

These objects I attain by the mechanism herein shown and described, in which—

Figure 1 is a plan or top view of the coupling device. Fig. 2 shows the lower half of the draw-head, with contained parts, sectioned on the dotted line 2 4 in Fig. 7, the view being indicated by arrow 2′. Fig. 3 shows the interior of the lower half of the draw-head with internal parts omitted. Fig. 4 is an interior view of the upper half of the draw-head sectioned on the dotted line 2 4 in Fig. 7, the view being indicated by arrow 4′. Fig. 5 is a vertical axial section of the draw-head and some internal parts on the dotted line 5 5 in Fig. 7, parts being broken away. Fig. 6 is a front end view of the tumbler, shown in two positions by full and dotted lines. Fig. 7 is a front end elevation of the draw-head, seen as indicated by arrow 7 in Fig. 1, the link being omitted. Fig. 8 is a transverse section of the draw-head, taken on the dotted line 8 8 in Fig. 1. Fig. 9 is a rear end view of the coupling-tumbler set ready for coupling, parts being sectioned and broken away. Fig. 10 is a view of the rear end of the tumbler after being sprung. Fig. 11 is a cross-section of the draw-head and the tumbler, taken on the dotted line 11 11 in Fig. 5, showing the manipulator for the tumbler in two positions by full and dotted lines, parts being broken out. Fig. 12 is a side elevation of the tumbler and associated parts, seen as indicated by arrow in Fig. 11. Fig. 13 is a side elevation of the coupling-link with a part shown in two positions by full and dotted lines. Figs. 6, 9, and 10 are drawn to a scale larger than that of the other figures.

Referring to the drawings, A is the draw-head or body of the coupling device, which is of metal and made hollow to receive internal parts. The draw-head is made up of an upper half and a lower half divided longitudinally at the line *a*, Figs. 6 and 8, and held together by bolts *l*. A shank B extends backward from the body of the coupler, the shape of which shank depending upon the use to which the coupler is to be put. If, for example, the device is intended for use in coupling railroad-cars, the shank and the whole body of the draw-head are made strong and heavy, the shank being shaped to adapt it to the car to which it is to be attached, or if the coupler is designed to be used with lighter vehicles, as traction-engines, threshing-machines, and the like the whole device is made lighter and the shank shaped or formed accordingly.

The draw-head is formed with an outer end chamber *c*, Figs. 4 and 5, and an inner chamber *b*, both preferably cylindrical in form and arranged longitudinally and concentrically within the draw-head, a narrow horizontal passage or opening *e* communicating between said chambers. Within the chamber *b* is placed a cylindrical coupling-tumbler C, hollowed at its forward end for the purpose of receiving the projecting end or tongue *d* of a coupling-link D. The axis of the tumbler corresponds with the axis of the draw-head, the tumbler being adapted to turn on its axis in the body. The tongue *d* is of oval cross-section, thick and flat, or spade shape, and the passage *e* is formed to allow the tongue to pass freely through when in a horizontal position. The cavity *f* of the tumbler, Figs. 5 and 6, corresponds in form with the tongue *d* and is adapted to receive the latter after it passes through the opening *e*.

The tongue *d* is formed with a short cylindrical stem *g*, terminating in an enlarged part or head *h*, inclosed or confined within the cylindrical body *i* of the link, so as to have a swivel motion therein. The outer end or part *k* of the link is given a form adapted to the use to which it is intended. When used as a car-coupler, a second tongue, like *d*, is substituted for the flat part *k*, the body *i* being doubled in length—that is to say, the link is alike at both ends, having two swivel-tongues *d*. In using with a traction-engine or other similar vehicle the part *k* in some modified form is used with the swivel-tongue *d*.

The tumbler is controlled by a spring *m*, coiled upon a reduced part *n* at the rear end of the tumbler. This spring is secured at one end, *o*, to the tumbler and at the other end, *p*, to the body A, as shown. The spring acts to keep the tumbler normally in such position that the flat cavity *f* is vertical, as shown in Figs. 5 and 11 and by dotted lines in Figs. 6 and 10. In this position of the tumbler the tongue *d* is held so as to stand vertically or crosswise of the horizontal flat passage *e* in the draw-head, the shoulders *r r* of the tongue encountering the cross-ribs *s s* of the body when the tongue is pulled in a direction outward from the body.

The tumbler C is formed with a rear circular part *t*, concentric with the part *n*, inclosing a circular space *u* between them occupied by the spring *m*. This part *t* is ring shape, something less than one-half a complete circle in extent, and the body A is formed with an internal circular part *v*, concentric with and projecting into the chamber *b* in position to be encountered by the part *t* end to end when the tumbler is turned. The relative normal positions of the parts *t* and *v* when the tumbler is set are shown in Fig. 9, being in contact at the upper part of the figure, in which position of the part *t* the cavity *f* of the tumbler is vertical, as above stated. To turn the tumbler in the opposite direction against the action of the spring *m*, there is employed a pull-up device E, Figs. 11 and 12, consisting of a link *w*, pivotally connected at *x* with the side of the tumbler, and a slotted handle-bar *z*. The draw-head is formed with an opening *y*, Figs. 1, 4, 8, and 11, up through which the pull-up extends, as shown, the distance to which the pull-up extends upward depending upon the use to which the coupler is applied. By pulling upward upon the pull-up the tumbler will be turned against the action of the spring *m*, as indicated by the dotted position in Fig. 11. This operation of the handle-bar turns the tumbler through a one-fourth revolution, which changes the cavity *f* in the tumbler from a vertical to a horizontal position. The positions of the parts shown in full lines in Fig. 11 correspond with the positions of the like parts shown in Fig. 10, the dotted positions of the parts in the former figure corresponding with the positions of the parts shown in Fig. 9. An axial trip-rod *c'* is provided, resting at its forward end in the rear part of the tumbler and at its rear end in a bearing *d'* in the draw-head. This rod is adapted to slide longitudinally in its bearings and it is provided with a catch arm or holder *e'*, extending downward into a longitudinal cavity *f'*, which is a rearward extension of the chamber *b*. This catch-arm is bent forward at its lower end in position to be encountered by one end of the circular part *t* of the tumbler. The trip-rod is provided with a coiled spring *g'*, confined between the bearing *b'* and the catch-arm, the tendency of the spring being to force the trip-rod forward or normally to the position shown by dotted lines in Fig. 5. In this position of the rod the catch-arm engages the end of the part *t* and so holds the tumbler from turning on account of the action of the spring *m*—that is to say, when the pull-up E is pulled upward, as above described, it will turn the tumbler and allow the catch-arm to move forward and hold the tumbler from returning, the arm passing in back of the end of the part *t*, as appears in Fig. 9 and in dotted position in Fig. 5. The forward end of the trip-rod extends through the rear wall of the tumbler into the cavity *f* in position to be encountered by the tongue *d* of the coupling-link when the latter is carried into the draw-head in the act of coupling cars or vehicles together. The tongue encountering the trip-rod pushes the latter backward sufficiently to release the tumbler from the catch-arm, which trips the tumbler and allows the spring *m* to turn it back to its normal position in which the coupling of the vehicles is complete. To uncouple the vehicles, the handle-bar is pulled upward, as above described, which turns the cavity *f* in the tumbler to a horizontal position, allowing the tongue to be drawn out of the tumbler. The length of the part or stop *v* of the draw-head is such that it acts to stop the tumbler when turned through a one-fourth revolution in either direction, as already stated.

The handle-bar *z* is formed with a longitudinal slit *a'*, adapted to traverse a cross-pin *b'* in the head of the link *w*. Now when said bar is drawn upward to "set" the tumbler it is allowed to descend again to the extent of the length of the slit and held in that position by some simple means, as a stud or pin *h'* engaging a tooth *i'* of the handle-bar. Now the parts being in these relative positions, when the tumbler is tripped or sprung by an approaching coupling-link, as above stated, the spring *m* will have to move only the light part *w* of the pull-up, the pin *b'* traversing freely the slit *a'*. As the spring *m* turns the tumbler with a quick motion it is desirable to have as little weight of material as possible moved by it to prevent an undesirable jerking of the parts. By means of this construction that part of the pull-up above the part *w* is not moved by the spring and the latter is consequently relieved of that

much weight of material when moving the tumbler to its coupled position.

It is not essential that the outer cavity *c* of the draw-head should be truly cylindrical, for it may be slightly conical or flaring in form, as shown in Fig. 5, if found convenient. When the coupling-link is in place in the draw-head, the body *i* of the link occupies the outer cavity *c*, as shown.

What I claim as my invention is—

1. A coupler for vehicles, comprising a draw-head having a plurality of chambers and an intermediate partition provided with a diametrical opening, a rotary tumbler in the inner chamber having a diametrically-disposed cavity, a coupling-link supported at one end within the outer chamber and having an independently-rotary head within the inner chamber, and designed to be received in the cavity in the tumbler, substantially as specified.

2. A coupler for vehicles comprising a draw-head having an outer and an inner chamber and an intermediate diametrically-apertured partition, a rotary tumbler within the inner chamber provided with a diametrically-disposed cavity, and automatically-operated tumbler actuating and locking mechanism within the draw-head, substantially as specified.

3. A coupler for vehicles comprising a draw-head, a rotary tumbler and automatically-operated tumbler-actuating, locking and tripping mechanism entirely within the draw-head, substantially as specified.

4. A coupler for vehicles comprising a draw-head having a diametrical opening, a tumbler within the draw-head behind the opening and provided with a diametrically-disposed cavity, tumbler-actuating mechanism and tumbler-locking mechanism within the draw-head, and tumbler-tripping mechanism operatively connected with the locking mechanism and extending into the cavity in the tumbler, substantially as specified.

5. A coupler for vehicles comprising a hollow draw-head provided with a diametrically-apertured partition defining outer and inner chambers, a coupling-link supported at one end within the outer chamber and provided with an independently-rotary diametrically-extended head within the inner chamber, a spring-actuated rotary tumbler within the inner chamber provided with a cavity for the reception of the link-head, a trip-rod carried by the draw-head and extending through the rear wall of the tumbler into its cavity and coöperating locking mechanism carried by the trip-rod and tumbler respectively, substantially as specified.

6. A coupler for vehicles comprising a draw-head, a spring-actuated rotary tumbler therein, mechanism upon the exterior of the draw-head for actuating the tumbler in opposition to the spring, and automatically-operated tumbler locking and tripping mechanism entirely within the draw-head, substantially as specified.

7. A coupler comprising a draw-head and rotary tumbler therein, means for rotating the tumbler in one direction, and mechanism for rotating said tumbler in the opposite direction consisting of a link hinged to the periphery of the tumbler and extending through one wall of the draw-head, and a handle having a loose connection with the opposite end of the link, substantially as specified.

8. A coupler comprising a hollow draw-head provided with a diametrically-apertured partition, a spring-actuated rotary tumbler within the draw-head behind the partition and provided with a diametrically-disposed cavity, coöperating segmental stops within the draw-head and upon the tumbler, a spring-actuated axial trip-rod extending into the tumbler-cavity, a catch-arm upon the trip-rod designed to be moved into the path of the stop upon the tumbler, means upon the exterior of the draw-head for actuating the tumbler in opposition to its spring, and a coupling-link having an independently-rotary head designed to be received in the tumbler-cavity, substantially as specified.

9. A vehicle-coupling device having a hollow draw-head, and a hollow movable coupling-tumbler therein, with means to actuate the tumbler, the latter having an opening at its rear end, and a trip-rod for controlling the tumbler occupying said opening and extending into the cavity in the tumbler, the latter having a projecting part *t*, and the trip-rod having a catch-arm to engage said part *t*, substantially as shown.

10. A device of the kind described having a hollow draw-head with a side opening, and a movable cylindrical coupling-tumbler in the draw-head, a pull-up device for actuating the tumbler pivotally secured at one side thereof and extending through said side opening in the draw-head, substantially as described.

11. A device of the kind described, comprising a hollow draw-head with an opening through its side, and a movable cylindrical coupling-tumbler in the draw-head, a link pivotally secured at one side of the tumbler and extending out through said side opening in the draw-head, and a slotted handle-bar connected with said link, substantially as and for the purpose specified.

In witness whereof I have hereunto set my hand, this 24th day of May, 1898, in presence of two subscribing witnesses.

DUNCAN J. SINCLAIR.

Witnesses:
LOUIS GOODMAN,
J. R. CLINE.