

April 18, 1944.

M. E. DATON

2,347,033

COUPLER

Filed July 19, 1941

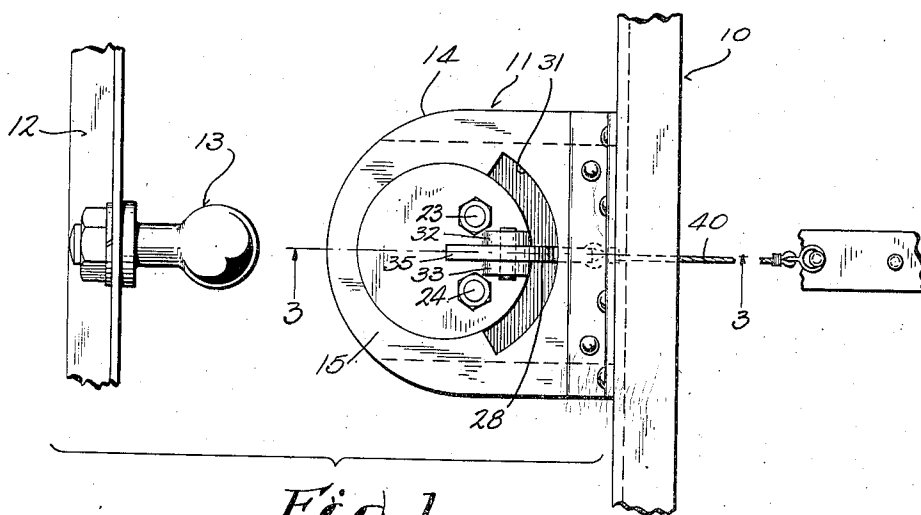


Fig. 1.

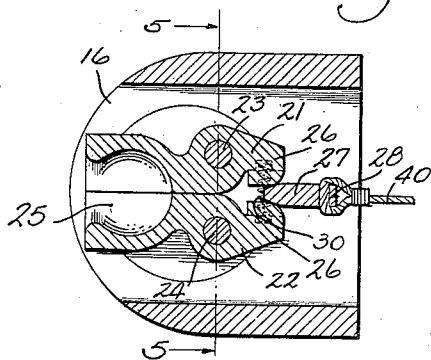


Fig. 2.

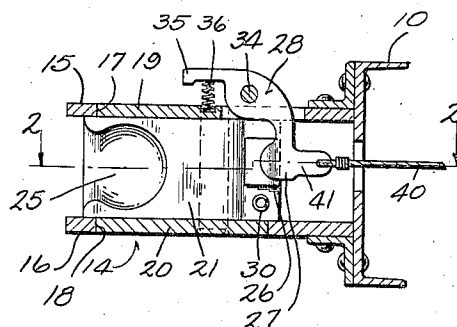


Fig. 3.

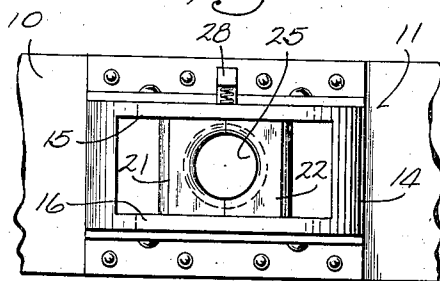


Fig. 4.

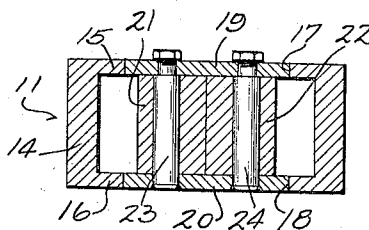


Fig. 5.

INVENTOR
MAX E. DATON

BY
Wheeler, Wheeler & Wheeler
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,347,033

COUPLER

Max E. Dayton, Rockford, Ill., assignor of one-half
to Bay St. John, Rockford, Ill.

Application July 19, 1941, Serial No. 403,215

7 Claims. (Cl. 280—33.17)

My invention relates to improvements in couplers.

The object of my invention is to provide a coupler wherein the parts subject to the greatest stresses are concentrated in a turntable unit subject to ready and safe control by an operator.

Another object of my invention is to mount my coupler jaws between plates which may either move with said jaws as a unit, or may serve as bearing supports for the individual jaw members.

Further objects of my invention will be apparent from the following description.

In the drawing:

Figure 1 is a plan of my coupler receiver and a ball type connector for said receiver, the ball being in a position to be received in the receiver.

Figure 2 is a section on line 2—2 of Figure 3.

Figure 3 is a section on line 3—3 of Figure 1.

Figure 4 is an elevation of the receiving end of my coupler receiver.

Figure 5 is a section on line 5—5 of Figure 2.

Like parts are designated by the same reference characters throughout the several views.

In the drawing I have shown my coupler as a ball and socket construction, but it will be understood that any shape of male and female connector for coupler purposes is contemplated in accord with my invention.

A portion of a tractor is shown fragmentarily at 10. It is provided with the receiver 11 of my coupler and the trailer device shown fragmentarily at 12 is provided with a ball connector 13. It will be seen from the drawing that I have provided a somewhat box-shaped frame 14 for my receiver 11, the top and bottom walls 15 and 16 of which are circularly apertured at 17 and 18 to receive upper and lower jaw plates 19 and 20 between which unit with said plates I provide socket forming jaws 21 and 22 mounted on jaw pins 23 and 24. It is to these parts including the jaw plates, jaw pins, and the jaws themselves, as an oscillatable unit, that I have applied the term "turntable." Figures 1, 3 and 5 especially show how I form my top and bottom walls 15 and 16 with a generally circular aperture in which the plates 19 and 20 are mounted in the same plane with the material forming said walls. and since the plates 19 and 20 are shaped for free oscillation with their margins bearing upon the margins of the apertures in the walls, it will be seen from the following description that the plates when spaced by the socket forming jaws cannot escape from position in their respective planes, respectively coincident with the planes of the said walls.

The shape of my socket forming jaws is shown most clearly in Figure 2. They are complementary, and each is bored intermediate its ends to receive its jaw pin. Their outermost portions, visible through the open side of the frame 14, form the socket 25 to receive the ball 13. Their innermost portions provide tailpieces 26 which are shaped to receive between them a wedge block 27 of control latch 28, thus preventing the socket forming portions of the jaws from separating. A spring 30 constantly urges the socket forming portions of the jaws together. Because the socket forming jaws are of greater extent than the plates 19 and 20, radially of the plates, the socket forming jaws bear against the inside surfaces of the walls 15 and 16 and prevent dislocation of the plates out of the plane of the walls. Of course, jaw pins 23 and 24, which are properly shouldered as shown clearly in Figure 5, hold the plates 19 and 20 so as to prevent vertical movement with respect to the frame.

The upper wall 15 of the receiver 11 is arcuately slotted at 31 about a portion of the periphery of the plate 19 so that the latch 28 may extend through such slot with its wedge-shaped member 27 in position for effective application between the tailpieces 26 of the jaw members. The upper portion of the latch extends over the plate 19 and between ears 32 and 33 where it is carried upon latch pivot 34. The latch handle 35, therefore, lies over the plate 19, and is biased therefrom by a latch spring 36. It will thus be apparent, as clearly shown in Figure 3, that when the latch handle 35 is depressed against the spring pressure 36, the wedge 27 is withdrawn from between the tailpieces 26 of the jaws, and the jaws may open to receive or release ball 13.

The operator of the tractor 10 may be given control of my receiver 11 by provision of a cable 40 extending to the latch at 41, and a pull upon the cable 40 will withdraw the wedge 27 without necessity for the operator to take a position adjacent the receiver 11.

From the above description, it will be seen that by reason of the provision of jaw plates 19 and 20 and the concentration of the jaws, the jaw pins and the latch mechanism in a turntable construction, the stresses incident to coupler operation are distributed in easily controllable parts. The plates 19 and 20 are sufficiently large and their peripheral bearing surfaces provide such wide distribution of stresses that under heavy pull the entire unit may swing as the trailer unit 12 moves from side to side or at an angle with reference to the tractor 10, and the latch mech-

anism carried unitarily with the turntable construction provides positive means for holding the jaws about the ball 13 and holding the ball positively against release. Furthermore, the operating parts of my coupler are so housed within the box-like receiver 11 that the possibility of accident is reduced to a minimum. The only control necessary to an attachment of a tractor and trailer involves the pivotal movement of the latch 23, either by pressure upon the handle 35, or by draft upon the cable 40. There is no requirement for placing the fingers in dangerous positions.

My socket 25 for the reception of the ball is normally in closed position, but by reason of the shape of the parts is ready for the ready reception of the ball merely upon presentation of the ball against the tapered funnel-like opening of the socket while the wedge is retracted from its position between the tailpieces. When the ball is in position in the socket, the jaws automatically close about it and the wedge may insert itself between the tailpieces to positively lock the ball in the socket.

Because the two plates with the jaws between them turn as a unitary turntable and the jaw pins are positioned adjacent the periphery of the turntable unit whereby to dispose the socket forming portions of the jaws at the other side of the turntable opposite said pins, the draft upon the ball in the socket automatically aligns the parts forming the turntable so that the pins and the socket forming parts of the ball are aligned with the line of draft.

I claim:

1. In a device of the character described, spaced jaw plates providing jaw bearings, jaw members mounted on said bearings between the plates, said jaw members having tailpieces, one of said plates having a latch adjustably secured thereto for alternative reception between said tailpieces whereby to prevent the movement of said jaws on said bearings, and said plates being mounted for oscillation about an axis eccentric to the jaw portions of the jaw members.

2. The combination with upper and lower apertured plate-like frame members, of a jaw plate oscillatable in the aperture in each said frame member in the plane of its respective frame member, jaw pins spanning the space between said plates and each having a jaw thereon, said jaws extending beyond the plates, whereby to bear against the inside of said frame members, two of said jaws being complementary to form a socket and a pair of tailpieces, said tailpieces being positioned with respect to the pins whereby to approach one another in the opening of the jaws, and a latch receivable between the tailpieces to prevent the jaws from opening.

3. In a device of the character described, a turntable including a plate, jaw pins mounted adjacent one another and adjacent the periphery of the plate, a socket forming jaw mounted upon each of said pins and disposed across the plate and extending therebeyond, said jaw having socket forming portions disposed across the turntable from the pins, and a trailer ball receivable in the socket forming portions of the jaws whereby in turntable movement the line of trailer draft may be automatically aligned through said ball and across the center of said turntable to said pins.

4. In a coupler, the combination with a frame provided with upper and lower co-axial circular bearings, of a turntable unit having upper and

lower bearing elements co-axially swivelled in the upper and lower bearings of the frame, jaw pintles extending in laterally spaced relationship vertically between the upper and lower elements of the turntable, and socket forming jaws mounted for oscillation on the respective pintles between the upper and lower bearing elements of the turntable for oscillatory movement unitarily with the turntable and as a part thereof, the respective jaws having complementary recesses between said elements and at least largely disposed within the bearings provided by the frame and between the common axis of said bearings and the peripheries of said elements, said recesses opening away from said axis.

5. In a coupler, the combination with a frame provided with upper and lower co-axial circular bearings, of a turntable unit having upper and lower bearing elements co-axially swivelled in the upper and lower bearings of the frame, jaw pintles extending in laterally spaced relationship vertically between the upper and lower elements of the turntable, and socket forming jaws mounted for oscillation on the respective pintles between the upper and lower bearing elements of the turntable for oscillatory movement unitarily with the turntable and as a part thereof, the respective jaws having complementary recesses between said elements and at least largely disposed within the bearings provided by the frame and between the common axis of said bearings and the peripheries of said elements, said recesses opening away from said axis, together with a latch having a wedge portion movable toward and from the axis of said bearings in a plane intermediate the respective jaw pintles, and means mounting said latch for such movement, the respective jaws having tail pieces extending rearwardly beyond their respective pintles and divergent to receive said latch, whereby the movement of said latch toward the axis of said bearings will close the jaws toward each other and maintain them in closed position subject to release upon withdrawal of said latch.

6. The device of claim 5, in which the means mounting the latch for such movement comprises a pintle disposed transversely on one of the bearing elements of the turntable, said frame having an opening through which said latch extends into operative proximity to the tail pieces of said jaws.

7. In a coupling, a device to receive and releasably retain a headed shank, said device comprising a frame including upper and lower plates having co-axial bearing openings, a turntable mounted in said frame and comprising disks flush with the respective plates, said frame having a cavity between said plates opening at one side of said turntable to receive the headed shank aforesaid, jaw pins spanning the space between said disks at either side of the common axis thereof and beyond said axis from the opening of said frame, jaws pivotally mounted on the respective pins for oscillatory movement to and from each other, said jaws having complementary recesses adapted in the closed positions of the jaws to constitute a socket and a throat opening toward the open side of the frame, tail pieces on the jaws extending away from the open side of the frame beyond the jaw pins, said jaws and their respective tail pieces being in bearing contact with the plates and spanning the bearing openings in the respective plates of said frame, a latch lever provided with a pintle disposed transversely on one of said disks, the plate in which the last mentioned disk is mounted being provided

with an opening through which said latch lever extends, means on the last mentioned disk biasing said lever for oscillation about its pintle in a direction to urge toward the axis of said disks the end of the lever projecting through said plate, 5 the lever end so urged toward the axis being wedge-shaped and the tail pieces of the respective jaws having divergent cam surfaces between which the said lever end is urged to act on said jaws in a direction tending to close said jaws and to maintain them closed pending withdrawal of said latch lever end against said bias.

MAX E. DAYTON.