May 2, 1944. G. E. DATH 2,347,890

DRAFT AND BUFFER GEAR

Filed Sept. 14, 1942

Fig. 1

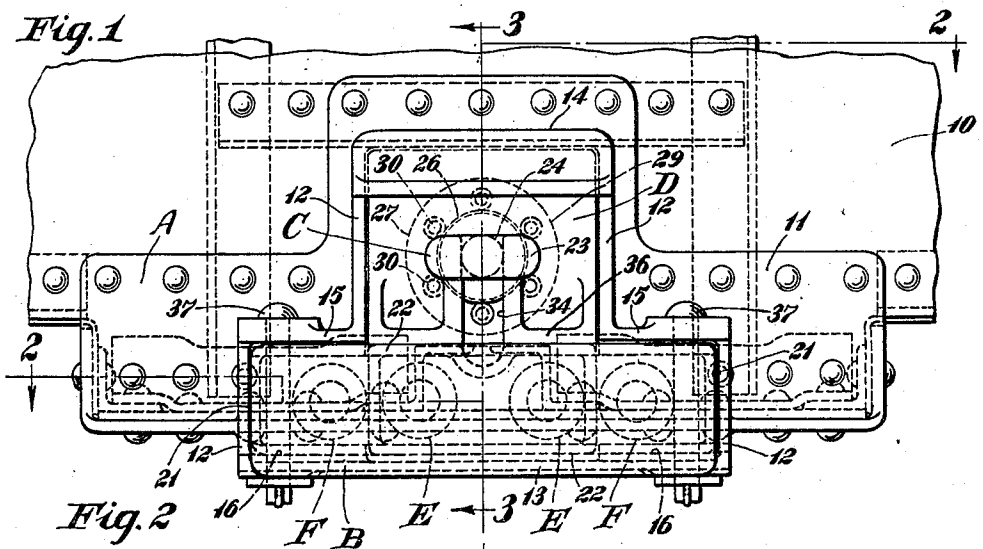


Fig. 2

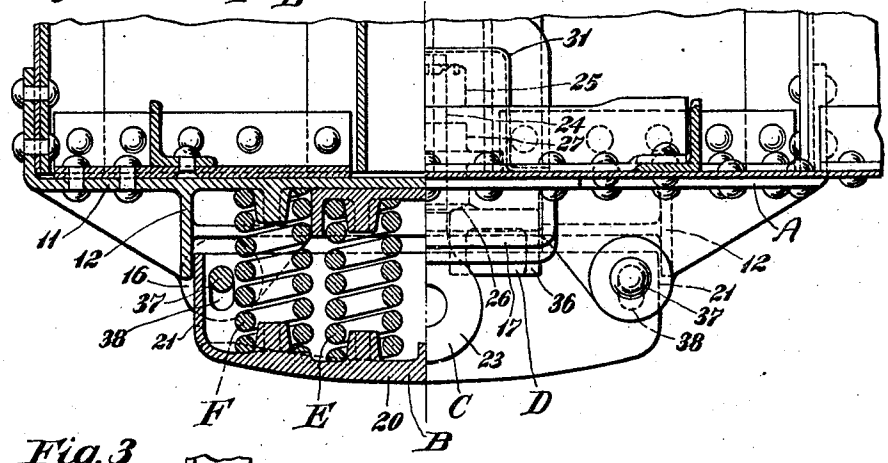
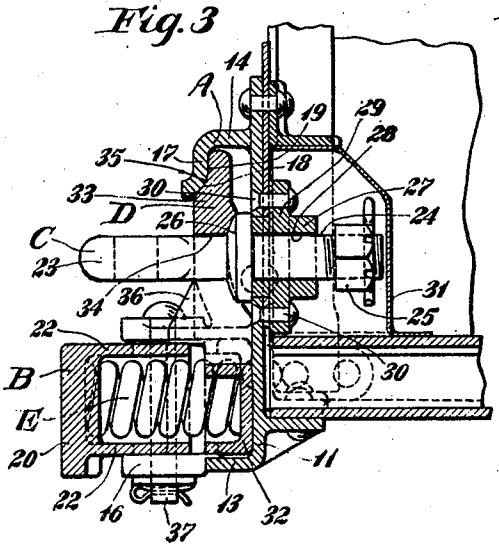


Fig. 3



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DRAFT AND BUFFER GEAR

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5 Claims. (Cl. 213—9)

This invention relates to improvements in draft and buffer gears especially adapted for mine cars.

One object of the invention is to provide a simple and efficient combined draft and buffer gear for mine cars, wherein means is employed for absorbing shocks, and this means is so arranged as to receive the actuating force directly from a buffing head and against which head the shock absorbing means is compressed in draft through a lever mechanism connected to the coupling means of the car, the connection between the coupling means and lever being swiveled to permit the car to be turned upside down to be dumped without the necessity of uncoupling the same.

Other objects of the invention will more clearly appear from the description and claims hereinafter following.

In the drawing, forming a part of this specification, Figure 1 is an elevational view, partly broken away, of one end of a mine car, illustrating my improvements in connection therewith. Figure 2 is a part plan view and part horizontal sectional view of Figure 1, the section being taken on the line 2—2 of Figure 1. Figure 3 is a vertical sectional view, corresponding substantially to the line 3—3 of Figure 1.

In said drawing, 10 indicates the end sill member of a mine car, which carries my improved draft and buffer gear.

My improved gear comprises broadly a support A; a buffing head B; a drawbar C; a lever D for transmitting the draft forces from the drawbar C to the shock absorbing means of the gear; a pair of shock absorbing springs E—E cushioning both the draft and buffing forces; and a pair of buffing springs F—F.

The support A, which is preferably a casting, forms a housing for the other parts of the gear. The support A may be in the form of a separate member attached to the end sill of the car, or may be formed as a part of the end sill structure 10, as illustrated in the drawing. The support A has a vertical rear wall 11. The wall 11 is provided with forwardly projecting, spaced side walls 12—12, a horizontal bottom wall 13, and a top wall 14. At the bottom portion of the support A, the side walls 12—12 are outwardly offset with respect to the upper sections of said walls, as clearly shown in Figure 1, thereby providing intermediate horizontal wall sections 15—15. The lower portions of the side walls 12—12, the bottom wall 13, and the wall sections 15—15 project forwardly beyond the upper sections of the side walls 12—12, as shown in Figure 3. The bottom wall 13 of the support A is reduced in thickness between its ends, thereby presenting relatively thickened portions 16—16 at opposite sides of the support A. The thickened portions 16—16 present top flat guide surfaces for slidingly supporting the buffing head B. The top wall 14 of the support A has a downturned front section 17 forming a relatively short front wall which is rounded at the inner lower corner, as indicated at 18 in Figure 3. Beyond the rounded section 18, the wall 17 projects outwardly of the upper sections of the side walls 12—12, as clearly shown in Figure 3. The front wall section 17, the top wall 14, and the upper end portion of the rear wall 11 together define a pocket or bearing seat 19 for the upper end of the lever D.

The buffing head B is in the form of a casting having a vertical front wall 20, spaced vertical side walls 21—21, and spaced top and bottom walls 22—22. The outer surface of the wall 20 is rounded, as shown in Figure 2, and presents a buffing surface which directly cooperates with the buffing head of the adjacent car. The head B has the inner end thereof telescoped within the housing between the bottom wall 13 and the wall sections 15—15. The head B is thus mounted for inward sliding movement on the support A.

The drawbar C has a coupling eye 23 at its forward end adapted to receive the usual coupling pin for connecting the same to another car. The shank of the drawbar C, which is indicated by 24, extends rearwardly from the eye and is of cylindrical cross section. At the rear end the shank 24 is threaded, as shown, to receive a retaining nut 25. To the rear of the eye 23 and spaced therefrom the shank 24 is provided with an outstanding collar 26 having a rounded or convex front face. The shank 24 of the drawbar C is guided for sliding movement in a bearing sleeve 27 secured to the wall 11 of the housing A. The wall 11 and the vertical wall of the end sill 10 are provided with openings 28 therethrough within which the front end of the sleeve 27 is seated. Between its ends the sleeve is provided with a circular securing flange 29 which bears on the inner surface of the vertical wall of the end sill 10. The sleeve 27 is securely fixed to the housing A and the end sill 10 by rivets or similar securing elements 30—30 extending through the wall 11, the vertical wall of the sill 10, and the flange 29 of the sleeve 27. In order to prevent interference with the sliding operation of the shank of the drawbar C and also to protect the same from damage by the lading in the car, a

housing 31 of sheet metal is provided on the inside of the car enclosing the same.

The lever D, which transmits the draft forces from the drawbar C to the shock absorbing means of the gear is in the form of a casting having a pocketed follower 32 at the lower end thereof and a heavy platelike upper section 33 integral with the follower. The platelike section 33 is vertically slotted, as indicated at 34, to accommodate the shank of the drawbar C. The upper end of the lever D is rounded, as clearly shown in Figure 3, to permit pivotal movement in the pocket 19 of the support A. The front face of the extreme upper end portion of the section 33 of the lever is cut away and curved, as indicated at 35, to fit the curvature of the rounded portion 18 of the downturned section 17 forming the front wall of the pocket 19. The lever D is thus mounted for pivotal or swinging movement about its upper end on the wall 17 of the supporting housing A. The back of the plate portion 33 of the lever D is hollowed out around the upper end of the slot 34 to correspond with the curvature of the front face of the collar 26 of the drawbar C and forms a swiveling seat for said collar. The lever D is directly supported on the buffer head B, being provided with forwardly projecting flanges 36—36, which bear directly on the top wall 22 of the head B.

The shock absorbing springs E—E are arranged centrally of the mechanism and are interposed between the front wall 20 of the buffer head B and the rear wall of the follower member 32 of the lever D and bear directly on these walls.

The pair of buffer springs F—F are disposed at opposite sides of the springs E—E and bear at their front ends on the front wall 20 of the buffer head B and at their rear ends directly on the rear wall 11 of the support A. Outward movement of the buffing head B is limited by stop pins or bolts 37—37 extending through aligned slots 38—38 in the top and bottom walls 22—22 of the buffer head B and aligned openings in the bottom wall 13 and the intermediate wall sections 15—15 of the support A.

The operation of my improved draft and buffer gear is as follows: Upon a pulling action being applied to the drawbar C, the latter is moved outwardly way from the end of the car, thereby rocking the lever about its upper end in the pocket 19 of the support A. The bottom end of the lever D is thus pulled forwardly, compressing the springs E—E against the buffing head B, which at this time is held stationary by the stop pins 37—37. During its swinging movement, the lever D is directly supported on the buffing head B and rocks about its pivoted upper end on the walls 14 and 17 and the rounded section 18 of the wall 17, thereby providing a smooth easy action during the operation of the device.

Upon a buffing force being applied to the head B, both pairs of springs E—E and F—F will be compressed. The springs E—E are compressed against the follower member 32 of the lever D, the lever at this time being held stationary by engagement of the rear face of the follower member 32 with the rear wall 11 of the support A. The springs F—F are directly compressed against the rear wall 11.

As will be evident, the nut 25 of the rear end of the shank of the drawbar C positively limits outward movement of the latter by engagement with the inner end of the sleeve 27. It should also be noted that the outward movement of the drawbar may be accurately adjusted by means of the nut 25.

From the preceding description taken in connection with the drawing, it will be evident that I have provided a simple, strong, and efficient drawbar connection which permits of rotation of the car about the longitudinal axis of the drawbar to allow the car to be turned upside down for dumping while the car is coupled to others. This rotation of the car about the axis of the drawbar is made possible by the particular design of the drawbar shank and the sleeve in which it is carried, the shank 24 being of cylindrical cross section is freely rotatable in the sleeve 27, the bore of which is also cylindrical.

I have herein shown and described what I now consider the preferred manner of carrying out my invention, but the same is merely illustrative and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. In a combined draft and buffer gear for cars, the combination with a buffer head at the end of the car slidingly supported for movement inwardly toward said end of the car; of a shock absorbing means opposing inward movement of said head; a lever movably supported on said buffing head, said lever being pivotally supported at its upper end and having the lower end thereof engaging said shock absorbing means; a drawbar having a coupling pin-receiving eye and a shank extending from said eye, said shank extending through said lever at a point between the ends of the latter, the shank of said drawbar being swiveled to the car for rotation about the longitudinal axis of said shank; and a collar on said shank rearwardly of said eye engageable with the rear side of the lever to engage and actuate the latter as the drawbar is pulled outwardly in draft.

2. In a combined draft and buffer gear for cars, the combination with a buffer head at the end of the car slidingly supported for movement inwardly toward said end of the car; of a shock absorbing means opposing inward movement of said head; a lever movably supported on said buffing head, said lever being pivotally supported at its upper end and having the lower end thereof engaging said shock absorbing means; a bearing fixed to the end of the car, said bearing having a horizontally disposed, cylindrical bearing opening; a drawbar having a cylindrical shank, said shank extending through said lever and through the opening of said bearing, said shank being rotatable and slidable in said opening; a nut threaded on the inner end of said shank, said nut limiting outward movement of said drawbar by shouldered engagement with said bearing; and a collar on said shank outwardly of said bearing adapted to engage the rear side of said lever to actuate the same when said drawbar is pulled outwardly in draft.

3. In a combined draft and buffer gear, the combination with a support secured to the end of the car; of a buffer head movable inwardly toward the car in said support; a shock absorbing means opposing inward movement of said head; an upright swinging lever, said lever being rounded at its upper end and having a concave bearing surface near said upper end on the front side of the lever, said support having an upward extension provided with a downwardly opening pocket into which the upper end of said lever ex-

tends, said pocket having a rearwardly and inwardly facing convex bearing surface fitting and engaged by said concave surface of the lever; and a horizontally disposed drawbar connected to said lever between the top and bottom ends of the latter, said lever having the lower end thereof engaging in back of said shock absorbing means to compress the same in draft as the lever is pulled forwardly by outward movement of said drawbar.

4. In a combined draft and buffer gear for cars, the combination with a buffer head at the end of the car supported for movement inwardly toward the car; of shock absorbing means opposing inward movement of said head; an upright lever swingingly mounted at its upper end, said lever having the opposite end portion thereof engaging the shock absorbing means to compress the same during outward movement of the lever, said lever having an opening therethrough located between the ends thereof; a bearing sleeve mounted on the car rearwardly of said lever and in alignment with the opening thereof; a drawbar longitudinally slidable and rotatable about its longitudinal axis in said bearing sleeve, said drawbar extending through the opening of the lever and having a coupling eye outwardly of the lever; and a collar on said drawbar between the bearing and said lever, said collar engaging the rear side of the lever to swing said lever outwardly in draft, said bearing serving as a stop for said collar to limit inward movement of the drawbar and lever.

5. In a combined draft and buffer gear for cars, the combination with a bearing at the end of the car; of a horizontally disposed drawbar having coupling means at the forward end thereof and a cylindrical shank extending rearwardly from said coupling means, the shank of said drawbar being rotatable in said bearing member and also being slidable lengthwise therein for in and out movement; a shoulder on the shank of said drawbar outwardly of said bearing and rearwardly of the coupling means; a housing mounted on the end of the car, said housing having a downwardly opening bearing seat at the top thereof; a lever member having a platelike upper portion and a relatively wider follower portion at the lower end thereof, the upper end of said platelike portion extending into said bearing seat and having pivotal movement therein, said lever being disposed between said shoulders and the coupling means of said drawbar and having an opening therethrough accommodating the portion of the shank of said drawbar between said shoulder and coupling means, said shoulder engaging the plate portion of the lever to swing the latter outwardly as the drawbar is pulled outwardly in draft; a buffer head slidably mounted for in and out movement in said housing; and shock absorbing spring means between said follower portion of the lever and the inner side of the buffer head to oppose relative movement of the buffer head and the lever toward each other.

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