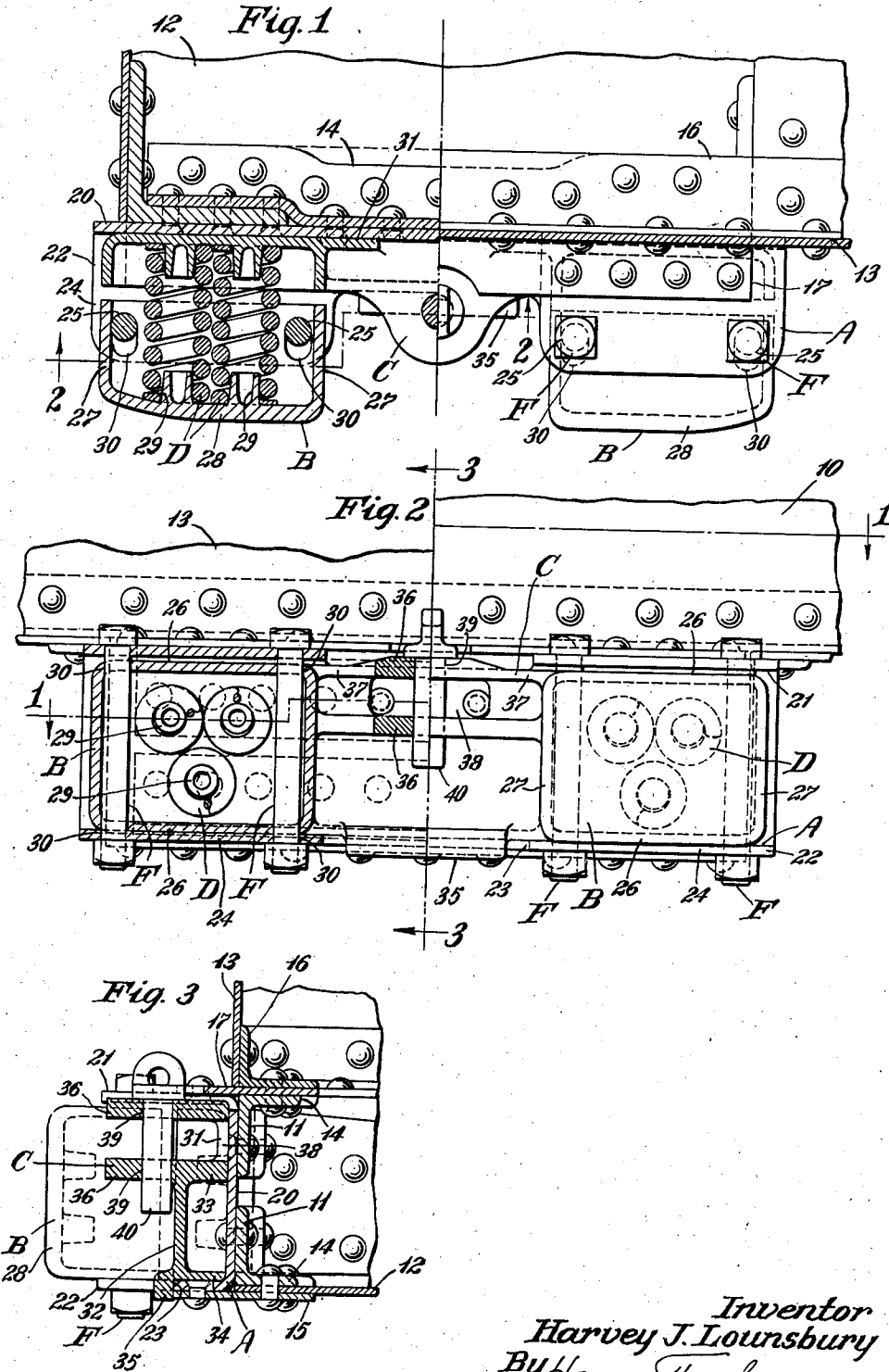


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H. J. LOUNSBURY
DRAFT AND BUFFER GEAR

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DRAFT AND BUFFER GEAR

Harvey J. Lounsbury, Glen Ellyn, Ill., assignor to
W. H. Miner, Inc., Chicago, Ill., a corporation
of Delaware

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

One object of the invention is to provide a combined draft and buffer gear comprising a pair of buffer heads and a draft member, both cushioned by the same shock absorbing means, wherein the draft member is arranged to be bodily rocked to compress the shock absorbing means of both buffer heads.

A more specific object of the invention is to provide a mechanism as set forth in the preceding paragraph, wherein the rocking draft member is in the form of a transverse beam having its opposite end portions cooperating with the shock absorbing means and pivoted to rock in a vertical plane, whereby the strain on said beam, in draft action of the mechanism, is advantageously distributed to resist distortion and breakage of said beam which might otherwise occur due to bending strains imparted thereto by the pulling element of the coupling connection.

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 a horizontal sectional view, partly broken away, of one end of a mine car, illustrating my improvements in connection therewith, the section corresponding substantially to the line 1—1 of Figure 2. Figure 2 is a part end elevational and part vertical sectional view of the mechanism shown in Figure 1, the section corresponding substantially to the line 2—2 of Figure 1. Figure 3 is a vertical sectional view, corresponding substantially to the line 3—3 of Figure 2.

In said drawing, 10 designates the end portion of a mine car to which my improved combined draft and buffing gear is attached. As shown, the mine car is provided with the usual end sill structure 11, a bottom wall 12, and a vertical end wall 13. The end sill member comprises top and bottom angle beams 14—14 extending transversely of the end of the car, the bottom beam being secured to the bottom wall 12. The bottom wall 12 has a bottom plate 15 secured thereto, said plate projecting outwardly beyond said bottom wall and the end sill 11, as clearly shown in Figure 3. The bottom angle beam 14, the bottom wall 12, and the bottom plate 15 are preferably secured together by rivets extending through the horizontal flange of the beam 14 and through the bottom wall 12 and said plate 15. An angle bar 16 is secured to the inner side of the end wall 13, and a plate 17

is interposed between the horizontal flanges of said angle bar 16 and the top angle beam 14 and secured thereto. As shown in Figures 1 and 3, the plate 17 projects outwardly beyond the end wall 13.

My improved draft and buffer gear comprises broadly a supporting member A; a pair of buffer heads or caps B—B; a rocking draft member C; two sets of cushioning springs D—D; and retaining and limiting stop bolts F—F and F—F.

The support A is in the form of a channel shaped member extending transversely of the end of the car. The support A has a vertical back wall 20 and top and bottom horizontal flanges 21 and 22 extending forwardly from said wall. The top and bottom flanges are embraced by the plates 17 and 15 and the back wall 20 abuts the vertical flanges of the members 14—14 of the end sill 11. The support A is fixed to the car by having the flanges 21 and 22 thereof fixed respectively to the plates 17 and 15 and the back wall fixed to the vertical flanges of the members 14—14 of the end sill 11. The bottom flange 22 of the support A is cut away at the center, as indicated at 23, thereby providing relatively wide supporting flange sections 24—24 at opposite sides of the member A. The cut away section 23 of the flange 22 serves as a fulcrum support for the draft member C, as hereinafter more fully pointed out. The top flange 21 of the member A comprises two laterally spaced sections which are directly above the flange sections 24—24 at the bottom of the member A and project outwardly to the same extent as said bottom flange sections. The top and bottom flanges of the support A are provided with pairs of aligned openings 25—25 and 25—25 adapted to accommodate the stop bolts F—F and F—F, which serve to limit outward movement of the buffing heads or caps B—B and hold the same assembled with the other parts of the mechanism.

The buffing caps B—B, which are disposed at opposite sides of the end of the car, are of similar design. Each buffing cap B comprises spaced, horizontally disposed, top and bottom walls 26—26, spaced, vertical, side walls 27—27, and a transverse, vertical, front wall 28. The front wall 28 presents an outer buffing face or surface which cooperates with the buffing face of a similar buffing member of another car. Each buffing cap has three spring centering bosses 29—29—29 projecting from the inner side of the front wall thereof. Each buffing cap is also provided with vertically aligned slots 30—30 and 30—30 in the top and bottom walls thereof to accommodate

the bolts F—F. As shown most clearly in Figures 1 and 2, the bolts F—F of each buffing cap B are fixed to the top and bottom flanges of the support A and extend through the slots 30—30 and 30—30 of the cap, thereby guiding the cap for inward movement and limiting the outward displacement thereof.

The draft member C is in the form of a beam which is disposed transversely of the mechanism and is interposed between the buffing heads B—B and the vertical back wall 20 of the supporting member A. The draft member C comprises a vertical web section 31, which has the central lower part thereof forwardly offset, as indicated at 32. The offset portion 32 has rearwardly projecting, top and bottom ribs 33 and 34, which have their inner ends normally abutting the back wall 20 of the supporting member A. The offset section 32 of the beam C also has a relatively wide, depending lip 35 thereon, which, as shown in Figures 2 and 3, bears on the fulcrum portion 23 of the flange 22 of the supporting member A. At the top of the central portion of the draft beam member C, spaced, forwardly projecting, upper and lower arms 36—36 are provided, which are adapted to accommodate the usual coupling link member therebetween. The rib 33 of the draft beam member C is in alignment with the lower arm 36 and forms a continuation thereof. The top arm 36 merges at its inner end with a top rib 37 projecting forwardly from the vertical web 31 of the draft beam. As shown in Figure 2, the web 31 of the draft beam has an opening 38 between the top and bottom arms 36—36 to provide clearance for the inner end of the coupling link. The arms 36—36 are further provided with vertically aligned openings 39—39 adapted to receive the usual coupling pin, which is indicated by 40. At the opposite ends of the draft member C, seats are provided for the cushioning springs D—D. Each seat is defined by spaced, horizontal, top and bottom walls and spaced, vertical side walls. Each seat portion of the draft beam member C is provided with three spring centering bosses projecting forwardly from the web 31 and disposed in alignment respectively with the three bosses 29—29—29 of the corresponding buffer cap B.

Each set of spring cushioning members D preferably comprises three horizontally disposed coil springs comprising two upper springs and a single lower coil centered between the upper coils. The front and rear ends of the springs of each set bear on the inner side of the corresponding buffer cap B and the front of the web 31 at the corresponding end of the draft beam C. As will be evident, these springs are held in properly centered position by centering bosses on the buffing caps B—B and the draft member C, respectively.

In the operation of my improved draft and buffer gear, the buffing heads or caps B—B are forced inwardly against the springs D—D by coming into engagement with the buffing means of an adjacent car. The springs are thus compressed against the transverse draft beam C, which is held against inward movement by engagement with the vertical back wall of the supporting member A. The buffing shocks are thus absorbed by the springs of the mechanism. In a draft action, a pulling force is applied to the draft member C through the usual coupling link, which is connected to the coupling pin 40. Due to the pulling action exerted on the draft member C, the same is rocked on the fulcrum portion of the bottom wall of the housing A, thereby compressing the springs D—D against the buffing heads B—B,

which are held stationary at this time by the stop bolts F—F and F—F. Inasmuch as the draft member or beam C is rocked outwardly away from the end of the car, the coils of the springs D—D, which are uppermost, will be compressed to a greater extent than the bottom coils. By arranging the coils of the springs D so that two top and one bottom coils are provided, the maximum capacity for such springs is obtained, the combined top coils offering greater resistance than the single bottom coil.

From the preceding description taken in connection with the drawing, it will be evident that I have provided a simple and efficient combined draft and buffer gear of rugged design, wherein the forces applied to the transverse draft beam are distributed so that the strains produced in this member will prevent bending of the same with consequent damage thereto.

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 support; of a transversely disposed draft beam pivoted on said support for outward rocking movement about a transverse axis; laterally spaced buffer heads at opposite ends of said beam; cushioning means interposed between each buffer head and the corresponding end of the beam, each cushioning means comprising a pair of upper spring coils and a single lower coil, said cushioning means being disposed above the pivot of said beam; and a draft connection on said beam above said lower coil springs and interposed between said pairs of upper coil springs in horizontal alignment with said upper coil springs.

2. In a combined draft and buffer gear for cars, the combination with a support; of a transversely disposed draft beam pivoted on said support for outward rocking movement about its bottom end portion on a transverse axis; a pulling element connected to the upper portion of said draft beam between the ends thereof; laterally spaced buffer heads at opposite ends of said beam; and laterally spaced cushioning means at opposite sides of said pulling element, one of said cushioning means being interposed between each buffer head and the corresponding end of the beam, each of said cushioning means including top spring elements in transverse horizontal alignment with said pulling element.

3. In a combined draft and buffer gear for cars, the combination with a transversely disposed draft beam pivoted at its lower edge for rocking movement in a plane at right angles to its length; of a pair of laterally spaced buffing heads, said heads being at opposite ends of said draft beam; a pulling element connected to said draft beam at the top portion thereof midway between the ends of the same; and means engaging with each head for yieldingly opposing relative movement of said draft beam and buffer heads, said yielding means bearing on said beam throughout a zone extending substantially from the top to the bottom of said beam, said yielding means including upper coil spring elements at opposite sides of said pulling element in substantially horizontal alignment therewith.

4. In a combined draft and buffer gear for cars, the combination with a transversely dis-

posed draft beam pivoted at its bottom edge for rocking movement in a plane at right angles to its length; of a pair of laterally spaced buffer heads, said heads being at opposite ends of said draft beam; cushioning means interposed between each buffer head and the draft beam, said cushioning means including springs at opposite ends of the beam adjacent to the top thereof, said cushioning means opposing inward movement of the buffer heads and outward movement of the draft beam; and a pulling connection on said beam midway between the ends thereof in horizontal alignment with said springs.

5. In a combined draft and buffer gear for cars, the combination with a horizontally disposed, transversely extending draft beam at the end of the car; of a pair of laterally spaced buffer heads at opposite ends of said beam; means supporting and holding the lower edge of said beam against inward displacement, said means providing a fulcrum support for the lower edge of the beam; yielding means at opposite ends of said beam interposed between each head and said beam yieldingly opposing outward movement of the draft beam and inward movement of the buffer heads, said spring means including upper and lower spring coils bearing respectively on the top and bottom portions of said beam; and a draft connection on said beam between the ends of the same in transverse horizontal alignment with said upper coils and disposed in the space between

said yielding means, said lower coil springs yieldingly pressing the lower end portion of said beam inwardly against the fulcrum support to effect rocking movement of said beam in a vertical plane away from the end of the car when a pulling force is applied to said draft connection.

6. In a combined draft and buffer gear for cars, the combination with a transverse, horizontally extending, supporting shelf at the end of the car; of a horizontally disposed, transversely extending draft beam at the end of the car resting on said shelf, said beam having a centrally disposed, depending lip overhanging the outer edge of said shelf to provide a fulcrum for said beam, said beam having a draft connection at the top central portion thereof and spring seats at opposite sides of said draft connection; a pair of laterally spaced buffer heads at opposite ends of said beam in alignment with the spring seats thereof; and cushioning springs at opposite sides of the draft connection of said beam interposed between said buffer heads and spring seats of the beam and opposing relative movement of said heads and beam, said cushioning means including upper members in transverse horizontal alignment with the draft connection, and lower members bearing on the lower portions of said spring seats and yieldingly pressing the bottom portion of said beam inwardly to hold the lip in fulcrum-engagement with said shelf.

HARVEY J. LOUNSBURY.