Feb. 26, 1946. A. R. BIEDESS 2,395,716

CAR COUPLING

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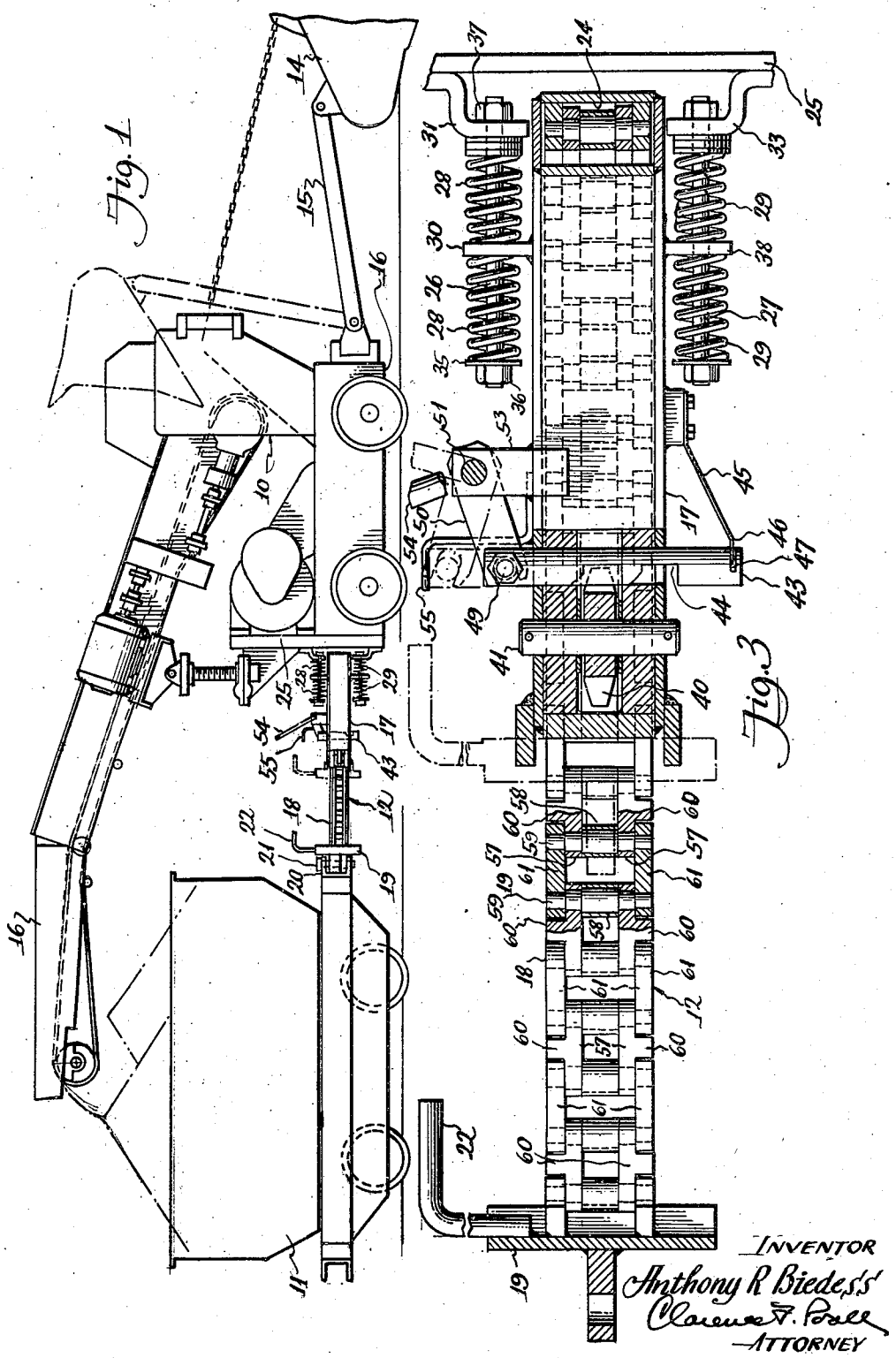

Fig. 1

Fig. 3

INVENTOR
Anthony R. Biedess
Clarence T. Poole
ATTORNEY

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Fig. 2

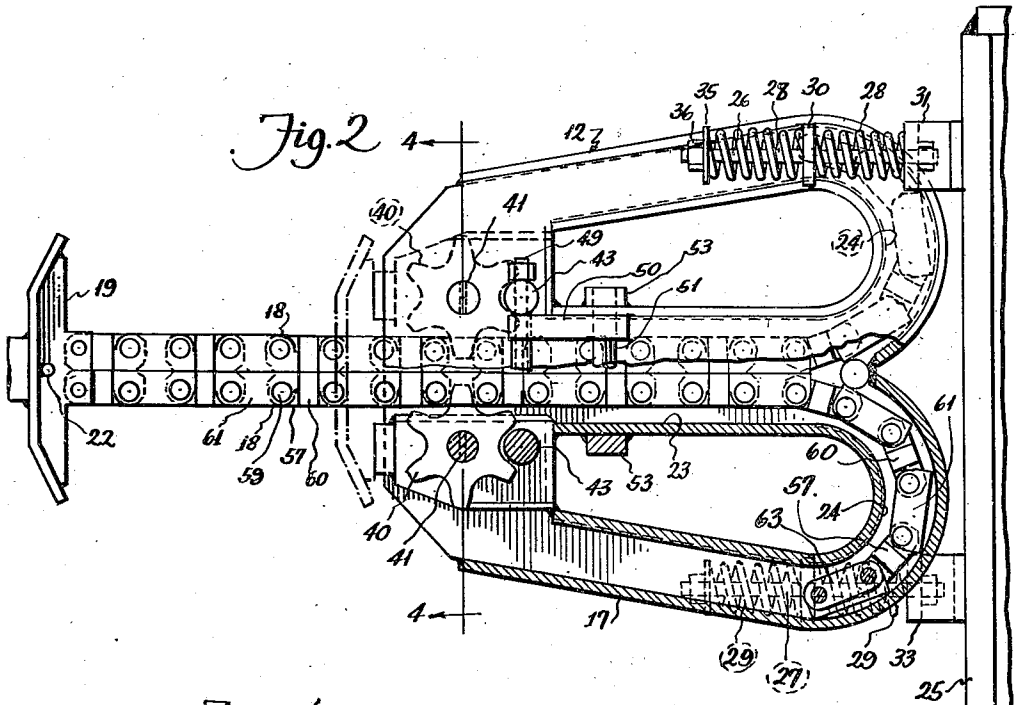


Fig. 4

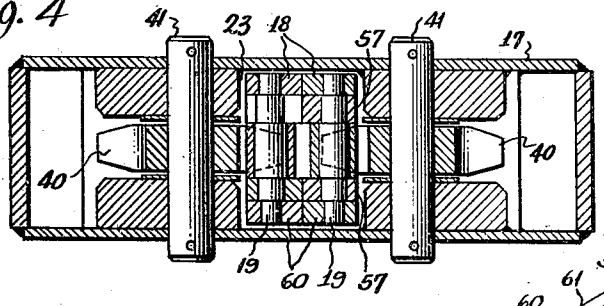


Fig. 5

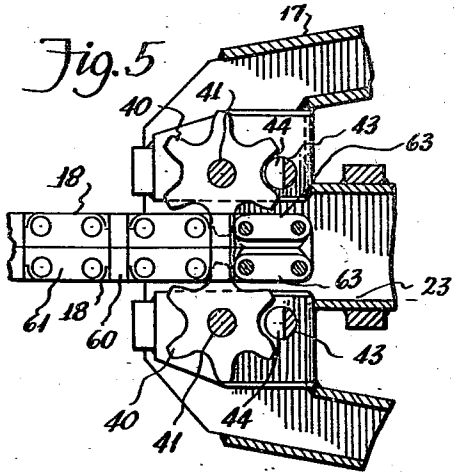
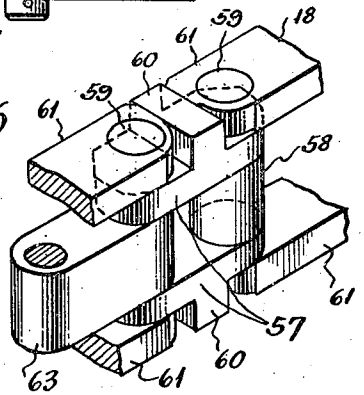


Fig. 6



INVENTOR
Anthony R. Biedess
Clarence F. Poole
ATTORNEY

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2,395,716

CAR COUPLING

Anthony R. Biedess, Chicago, Ill., assignor to Goodman Manufacturing Company, Chicago, Ill., a corporation of Illinois

Application February 14, 1944, Serial No. 522,227

6 Claims. (Cl. 213—75)

This invention relates to improvements in car couplings and more particularly relates to an improved form of extensible car coupling adapted to couple cars to loading machines of the type used in mines.

The principal objects of my invention are to provide a new and improved form of coupling permitting the car to be moved towards or away from the loading machine during the loading operation while still coupled to the machine, so the boom of the loading machine can trim the car without being disconnected therefrom.

Another object of my invention is to provide a new and improved form of coupling for extensibly connecting a car to a loading machine, which is so arranged as to permit movement of the loading machine with respect to the car during the loading operation while the car is still connected to the loading machine.

A further object of my invention is to provide an extensible coupling forming a rigid coupling member in all positions of extension thereof.

Other objects of my invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

Figure 1 is a view in side elevation of a loading machine of the mucking type, showing a car connected thereto by an extensible coupling device constructed in accordance with my invention;

Figure 2 is an enlarged fragmentary plan view of the coupling shown in Figure 1, with certain parts broken away and certain other parts shown in horizontal section;

Figure 3 is an enlarged fragmentary view in side elevation of the coupling, with certain parts thereof broken away and certain other parts shown in substantially longitudinal section;

Figure 4 is a fragmentary sectional view taken substantially along line 4—4 of Figure 2;

Figure 5 is a partial fragmentary detail plan view drawn to substantially the same scale as Figure 2, with parts broken away and certain other parts shown in horizontal section, showing the coupling in a fully extended position; and

Figure 6 is an enlarged detail isometric view showing certain details of one of the chains used to form the extensible coupling member.

In Figure 1 of the drawings a loading machine 10 of the mucking type is shown as being connected to a mine car 11 by means of an extensible coupling, indicated generally by reference character 12. The loading machine, as herein shown, is of the well known type wherein a scoop 14 on the end of a boom 15 is forced into the material it is desired to load, by movement of the loading machine along the track, and wherein said scoop discharges the material onto a conveyer 16 extending rearwardly beyond the rear end of the loading machine, for loading into the mine car 11. The details of construction of said loading machine are no part of my present invention and may be similar to those shown and described in my Patent No. 2,301,241, so are not herein shown or described in detail.

Referring now in particular to the details of the coupling 12, and certain novel features of my invention, said coupling as herein shown, includes a guide housing 17 having a pair of abutting chains 18, 18 guided therein, for extensible movement with respect thereto, and forming a storage place for said chains, when said coupling is in a retracted position. Said chains are pivotally connected at their forward ends to a drawhead 19 in longitudinally abutting relation with respect to each other. Said drawhead is adapted to be coupled to a coupling 20 of the mine car 11, by means of a coupling pin 21, in a manner well known to those skilled in the art. A handle 22 is secured to and projects upwardly from said drawhead, to aid in extending said chains from or retracting said chains within said housing.

The guide housing 17 is of a relatively wide construction and has a longitudinally extending central guide 23 formed therein which terminates into a pair of oppositely curved guides 24, 24 turning in opposite directions from said longitudinal central guide, and extending around the outer sides of said guide housing towards the entering end thereof, to receive and store the chain 18, when said chain is in a retracted position with respect to said housing.

The guide housing 17 is connected to an end sill 25 of the loading machine 10 by means of a pair of laterally spaced upper bolts 26, 26 and a similar pair of laterally spaced lower bolts 27, 27 having compression springs 28, 28 and 29, 29 encircling said upper and lower bolts, respectively. Said bolts 26, 26 extend through laterally spaced ears 30, 30 projecting upwardly from the top of said housing, adjacent opposite sides thereof. Said springs 28, 28 abut opposite sides of said ears, and said connecting bolts 26, 26 are mounted in connecting brackets 31, 31, which are secured to the rear side of the end sill 25, and are spaced outwardly therefrom. The lower connecting bolts 27, 27 are mounted in brackets 33, 33, spaced beneath the brackets 31, 31, and secured to the end sill 25 and spaced outwardly

therefrom. One compression spring 28 is interposed between the bracket 31 and the ear 30, while the other compression spring is interposed between the opposite side of said ear and a washer 35, held to said connecting bolt by means of a nut 36. A nut 37 threaded on the inner end of each bolt abuts the inner side of the ear 30, to hold said connecting bolts to said brackets. The lower connecting bolts 27, 27 extend through ears 38, 38 depending from the bottom of said guide housing, and the compression springs 29, 29 abut opposite sides of said ears, to permit yieldable movement of said guide housing along said ears. A yieldable support is thus formed for the coupling 12, to permit yieldable movement of said coupling with respect to the end sill 25 of the loading machine.

The chains 18, 18 mesh with a pair of laterally spaced sprockets 40, 40 mounted in said housing on vertical shafts 41, 41. The teeth of said sprockets engage the outer sides of the links of said chains and when held from rotation, positively lock said chains in a fixed position with respect to said housing, so said chains may form a rigid coupling member between the car and loading machine.

A separate locking pin 43 is provided for each sprocket 40, to selectively hold each of said sprockets from rotation. As herein shown, each of said pins is slidably mounted in the guide housing 17, for vertical movement with respect thereto, and is provided with a notch 44, formed therein, to permit rotation of its associated sprocket, when said pin is raised in position to permit the sprocket teeth to register with said notch. A leaf spring 45, secured to the bottom of the housing 17 and extending angularly downwardly therefrom towards the pin 43, has a substantially horizontal end 46 engaging a slot 47 formed in said pin, adjacent the lower end thereof, to limit downward movement of said pin with respect to said housing, and to urge said pin in a downwardly extended locking position with respect to said housing. The pins 43, 43 are connected together adjacent their upper ends by means of a transversely extending rod 49, and are vertically moved with respect to said housing to lock the sprockets 40, 40 from rotation, or to permit free rotation of said sprockets, by means of a pair of forked lever arms 50, 50, having slidable engagement with said rod at their free forked ends. Said lever arms are secured at their rear ends to a rocking shaft 51, extending parallel to the rod 49 and mounted on parallel spaced lugs 53, 53, extending upwardly from opposite outer sides of the longitudinal guide 23, formed in the central portion of the guide housing 17. A handle 54 is provided to rock said rock shaft. A stop 55, engageable with the upper end of one of the pins 43, is provided to limit vertical movement of said pins with respect to said housing and stop said pins when the notch 44 is in registry with the teeth of the sprockets 40, 40.

The chains 18, 18, as herein shown, are laterally flexible in one direction only, and are connected to the drawhead 19 in longitudinal abutting relation with respect to each other, so that said chains may flex in a direction away from each other and follow the oppositely curved guides 24, 24, when said chain is being retracted within said guide housing for storage within said housing. With this construction, when the chains are extended from the housing, lateral flexibility of said chain is restricted, and said chains form a relatively rigid connecting member between said drawhead and said housing. As herein shown, each of said chains includes a pair of parallel spaced links 57, 57 spaced from each other by bushings 58, 58 on pivotal pins 59, 59, which also form a pivotal connecting means for said links. Each of said links has a rectangularly formed lug 60 projecting outwardly therefrom, adapted to be abutted by the flat surfaces of links 61, 61 mounted on the ends of the pivotal pins 59, 59 and forming alternate links of said chain. Said flat surfaces of said links, abutting said lugs, thus form a means to restrain pivotal movement or lateral flexibility of said chains in a direction towards each other. The outer portions of the ends of said last mentioned links are of an arcuate form, to permit lateral flexibility of the chain in an outward direction.

The end links of said chain are herein shown as being in the form of solid blocks 63, 63, mounted on the pins 59, 59 between the links 57, 57. Said blocks are adapted to engage the teeth of the sprocket and prevent rotation thereof, and thus prevent the chains from being pulled out of the guide housing 17 during the loading operation, in cases where the locking pins 43, 43 might be in position to permit free rotation of the sprockets 40, 40. While said blocks 63, 63 are herein shown as being end links, they may be placed in any desired position in the chain, to limit the amount of extensibility thereof.

It should here be noted that the blocks 63, 63 make it possible for the loading machine to move relatively to the car during loading, if desired, but maintain the car in coupled relation with respect to the loading machine, so that the loading boom of the machine will not be moved beyond the end of the car when the sprockets 40, 40 are free to rotate with respect to each other.

It may also be seen that with the coupling just described, the loading machine may be extended with respect to the car by raising the locking pins 43, 43, to permit free rotation of the sprockets 40, 40 with respect to each other, and then lowering said locking pin when the loading machine is in the desired extended position with respect to the car.

While I have herein shown and described one form in which my invention may be embodied, it will be understood that the construction thereof and the arrangement of the various parts may be altered without departing from the spirit and scope thereof. Furthermore, I do not wish to be construed as limiting my invention to the specific embodiment illustrated, excepting as it may be limited in the appended claims.

I claim as my invention:

1. An extensible coupling including a housing, two chains slidably mounted in said housing for extensible and retractible movement with respect thereto, a drawhead connected to the outer ends of said chains, said chains being flexible in one direction only and being connected to said drawhead in opposing relation with respect to each other, so said chains will hold said drawhead from lateral movement with respect to said housing, and said housing having a guide formed therein so arranged as to guide said chains to double back along themselves upon retractible movement of said chains within said housing.

2. An extensible coupling including a housing, two chains slidably mounted in said housing for extensible and retractible movement with respect

thereto, a drawhead connected to the outer ends of said chains, said chains being flexible in one direction only and being connected to said drawhead in opposing relation with respect to each other, so said chains will hold said drawhead from lateral movement with respect to said housing, and said housing having a guide formed therein so arranged as to guide said chains to double back along themselves upon retractible movement of said chains within said housing, a sprocket mounted in said housing and meshing with one of said chains, and means selectively operable to engage and hold said sprocket from rotation, to hold said drawhead in fixed spaced relation with respect to said housing.

3. An extensible coupling including a housing, two chains slidably mounted in said housing for extensible and retractible movement with respect thereto, a drawhead connected to the outer ends of said chains, said chains being flexible in one direction only and said two chains being connected to said drawhead in opposing relation with respect to each other so as to hold said drawhead from lateral movement with respect to said housing, and said housing having a guide formed therein so arranged as to guide said chains to double back along themselves upon retractible movement of said chains, two sprockets mounted in said housing, each one of said sprockets meshing with one of said chains, and means selectively operable to hold said sprockets from rotation, to hold said drawhead in fixed spaced relation with respect to said housing.

4. An extensible coupling including a housing, a pair of chains slidably mounted in said housing for extensible and retractible movement with respect thereto, a drawhead connected to the outer ends of said chains, said chains being flexible in one direction only and being connected to said drawhead to extend in longitudinal abutting relation with respect to each other along their inner sides and flexing towards their outer sides, and said housing having a substantially Y-shaped guide formed therein, the ends of the branches of the Y of which turn back along the outer sides of the stem thereof, to permit said chains to double back along themselves within said housing and be stored within said housing when said drawhead is in a retracted position with respect to said housing.

5. An extensible coupling including a housing, a pair of chains slidably mounted in said housing for extensible and retractible movement with respect thereto, a drawhead connected to the outer ends of said chains, said chains being flexible in one direction only and being connected to said drawhead to extend in longitudinal abutting relation with respect to each other along their inner sides and flexing towards their outer sides, and said housing having a substantially Y-shaped guide formed therein, the ends of the branches of the Y of which turn back along the outer sides of the stem thereof, to permit said chains to double back along themselves and be stored within said housing when said drawhead is in a retracted position with respect to said housing, a sprocket mounted in said housing and meshing with one of said chains, and means selectively operable to engage and hold said sprocket from rotation to hold said drawhead in fixed spaced relation with respect to said housing.

6. An extensible coupling including a housing, a pair of chains slidably mounted in said housing for extensible and retractible movement with respect thereto, a drawhead connected to the outer ends of said chains, said chains being flexible in one direction only and being connected to said drawhead to extend in longitudinal abutting relation with respect to each other along their inner sides and flexing towards their outer sides, and said housing having a substantially Y-shaped guide formed therein, the ends of the branches of the Y of which turn back along the stem thereof to permit said chains to double back along themselves and be stored within said housing when said drawhead is in a retracted position with respect to said housing, two sprockets mounted in said housing, each one of said sprockets meshing with one of said chains, and means selectively operable to hold both of said sprockets from rotation, to hold said drawhead in fixed spaced relation with respect to said housing.

ANTHONY R. BIEDESS.