June 30, 1959 E. G. PRUCKNER 2,892,252

DRAFT GEAR COMPRESSOR

Filed April 11, 1955 2 Sheets-Sheet 1

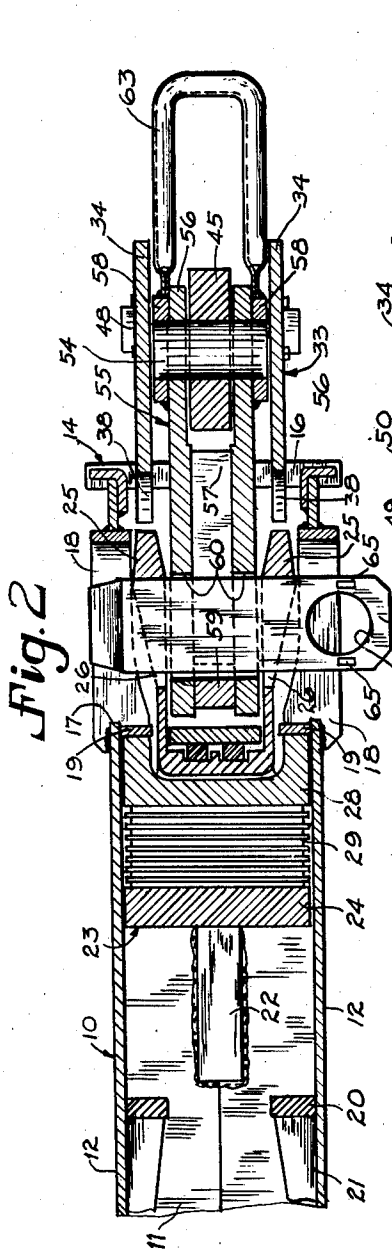


Fig. 2

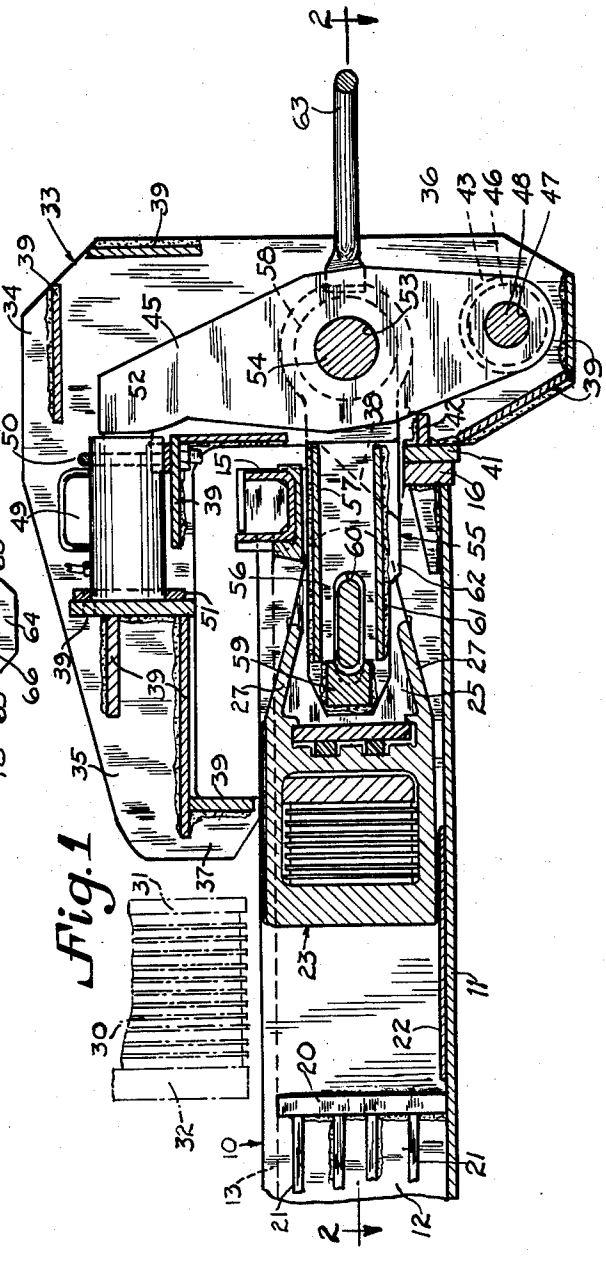


Fig. 1

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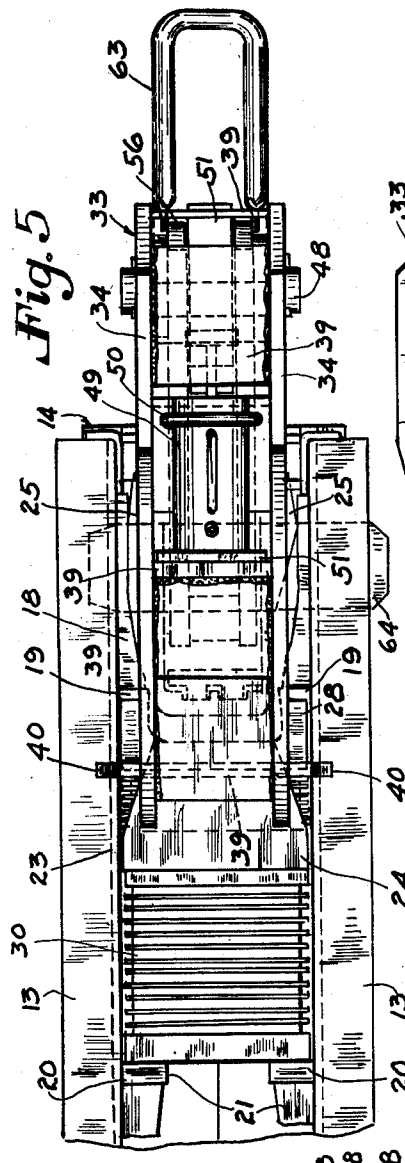


Fig. 5

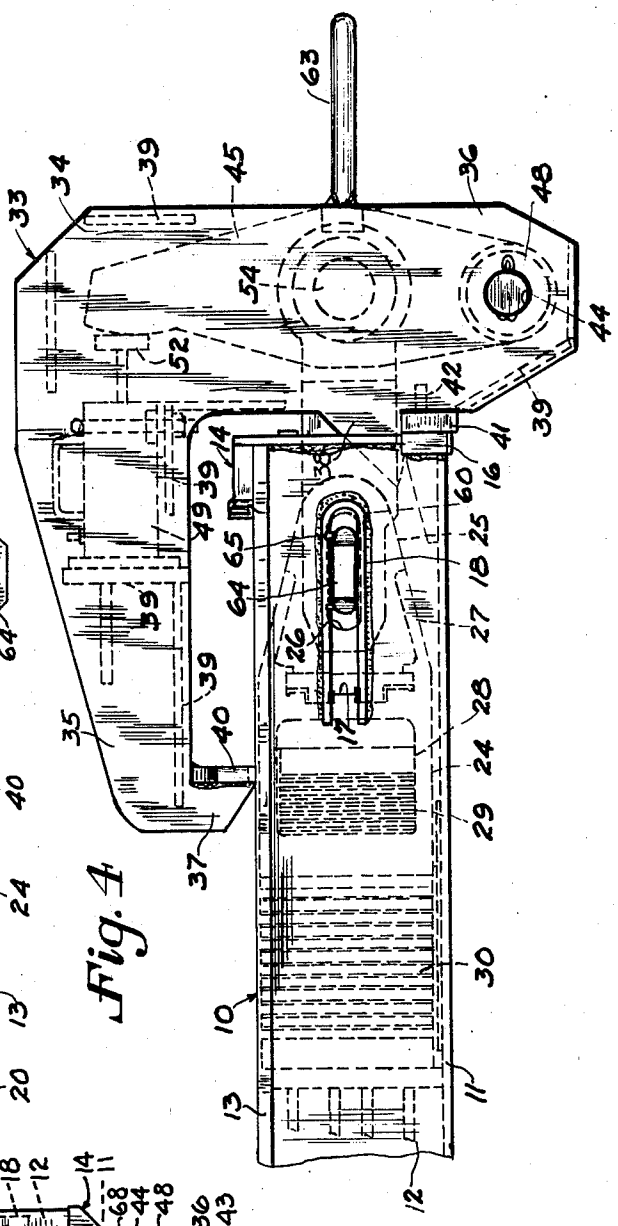


Fig. 4

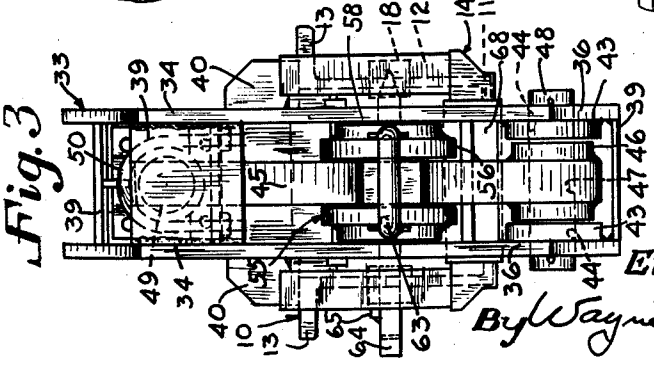


Fig. 3

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DRAFT GEAR COMPRESSOR

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Application April 11, 1955, Serial No. 500,489

3 Claims. (Cl. 29—225)

The present invention relates to draft gear compressors for application of draft gears to railway car center sills, and more particularly to a fluid-operated compressor for this purpose.

In the use of draft gears in railway cars, it is common to employ two resilient or cushioning draft gear means arranged in tandem in a pocket provided therefor in the car center sill, one acting primarily in draft and the other in buff, so that both pulling and pushing forces will be properly cushioned to reduce the resulting stresses on the car. In application of such means to the draft gear pocket of the car center sill, they are placed under a predetermined initial compression, occupying substantially all of the pocket except for the space required by the draft gear yoke. Therefore, in applying the draft gears, after one draft gear has been inserted in the pocket, it is necessary to compress either that gear or the second gear, or both, in order to insert the second gear. Ordinarily it is preferable to compress the first-inserted draft gear to provide space for insertion of the second. Heretofore, such compression has been accomplished by cumbersome devices of various kinds, awkward to operate and requiring considerable time for completion of the application of the draft gear means. The present invention provides a relatively simple compressor which operates easily and quickly to accomplish this purpose and is readily positioned and removed.

A principal object of this invention is to provide a novel and efficient draft gear compressor for facilitating the application of cushioning draft gears in tandem in a railway car draft gear pocket.

Another object is the provision of a device for compressing one of two draft gears which has been placed in a draft gear pocket so as to provide sufficient space in the pocket for the ready insertion of the other draft gear.

It is another object to provide a draft gear compressor readily connectible to a draft gear yoke in a draft gear pocket for moving the yoke to compress a draft gear in the yoke and provide space in the pocket for insertion of another draft gear in tandem relation with the first draft gear.

Another object is the provision of a draft gear compressor readily applied to and removed from a railway car center sill having a member for connection to a draft yoke in the center sill draft pocket which is self-guided to connecting position relative to the yoke upon application of the compressor to the sill.

It is also an object to provide a draft gear compressor which requires no securement to the center sill and is readily connected to and disconnected from a draft yoke in the draft gear pocket of the sill so as to reduce to a minimum the time and labor required in applying draft gears.

Other and further objects, advantages, and features of the invention will be apparent from the following description in conjunction with the accompanying drawings, in which:

Fig. 1 is a vertical longitudinal section through the draft gear compressor and an end portion of a railway car center sill to which it is applied, with the compressor shown in idle position;

Fig. 2 is a horizontal sectional view through the compressor and center sill, taken substantially as indicated by the line 2—2 of Fig. 1;

Fig. 3 is an end elevational view of the compressor;

Fig. 4 is a side elevational view of the compressor applied to the center sill, with the parts in operating position; and

Fig. 5 is a plan view of the compressor as shown in Fig. 4.

Referring to the drawings, there is shown one end of railway car center sill **10** of that section having a top wall **11**, side walls **12**, and outturned flanges **13** at its open bottom, which may be formed in a well-known manner from two Z-members. A welded striker **14** is provided on the end of the center sill, including a coupler carrier **15** with a wear plate thereon and an upper portion **16**. Rearwardly of the striker, that is, in the direction toward the middle of the center sill, the sill side walls **12** are formed with draft key slots **17** each of which has a U-shaped liner **18** extending over its upper and lower and forward end edges. At the rear ends of the slots **17**, front draft lugs **19** are secured to the inner faces of the walls **12** and the ends of the liners **18**, and spaced rearwardly of the lugs **19** are rear draft lugs **20** secured to the center sill side walls and each braced by a plurality of vertically spaced horizontal ribs **21** on the adjacent wall **12** extending rearwardly. A wear plate **22** extending between the front and rear draft lugs is secured to the inner or lower face of the center sill top wall **11**. The interior of the center sill between the front and rear draft lugs constitutes a draft gear pocket. In this pocket is disposed a draft yoke **23** comprising a transversely apertured body **24** for the reception of a draft gear and a pair of vertical forwardly extending arms **25** having horizontal slots **26** therein for the reception of the draft key. The slots **26** substantially register with but are shorter than the center sill draft key slots **17**. The rear portions of the upper and lower edges of the draft yoke arms **25** are connected by webs **27** extending from the forward portion of the yoke body **24**. A follower **28** is disposed extending transversely through the forward portion of the aperture in the yoke body, and is formed to engage the rear faces of the front draft lugs **19**. A draft gear **29** is disposed between the follower **28** and the rear wall of the yoke body, and another draft gear **30** is provided to extend between the rear end of the yoke **23** and the rear draft lugs **20**, suitable front and rear follower plates **31** and **32** being employed at the opposite ends of the gear to bear against the yoke and the rear draft lugs. The draft gears **29** and **30** are shown as of the well-known resilient mat type, in which rubber is compressed and deformed between plates. With the yoke **23** in its initial position in the draft gear pocket, the space available for the draft gear **30**, that is, the distance between the yoke and rear draft lugs, is less than the length of the draft gear with its follower plates, as indicated in Fig. 1. Thus, one or both of the draft gears **29** and **30** must be compressed in order to insert the gear **30**. Compression of the second draft gear **30** involves the use of clamp means or the like, making insertion in the pocket difficult.

The present invention provides the draft gear compressor **33** for moving the yoke forwardly against the resistance of the draft gear **29** to enlarge the space available in the draft gear pocket for the reception of the draft gear **30** to such an extent that the gear may be inserted in substantially uncompressed condition, making the insertion operation simple, easy, and quick. The com-

pressor comprises a generally L-shaped frame provided by a pair of correspondingly shaped plates 34 each having legs 35 and 36 at substantially right angles to each other. The legs 35, which in use of the device extend horizontally, have depending projections 37 at their ends, and the legs 36, which in use extend vertically downwardly from the legs 35, have support lips 38 projecting therefrom in the same direction as the legs 35. The lips have horizontal bottom surfaces for bearing on a part of the center sill as hereinafter described, and are disposed intermediate the ends of the legs 36 and their junctures with legs 35. The plates 34 are held in parallel spaced relation by suitable means such as a plurality of tie plates 39 welded or otherwise secured thereto at locations appropriate for structural strength and stability. A vertically disposed one of these tie plates 39 is located flush with the forward edges of the depending projections 37 of the legs 35 of the frame plates, and preferably in alignment with this tie plate a pair of bearing plates 40 are secured one on the outer face of each of the frame plates 34, as by welding, with their lower edges substantially flush with the bottom edges of the projections 37. A transverse bearing bar 41 is horizontally secured on the rear edges of the legs 36 just below the lips 38, backed by a brace bar 42 extending between the legs.

A boss 43 is provided on the inner face of each leg 36 adjacent its lower end, as by a disk welded thereto, and coaxial apertures 44 are formed through the legs and bosses. A plate-like lever 45 is disposed between and parallel to the legs 36, with its lower end adjacent the ends of the legs and its upper end extending adjacent the legs 35. A hub 46 is formed on the lower end of the lever, as by disks welded on its opposite faces, through which extends an aperture 47, and a pin 48 projects through the aligned apertures 44 and 47 to pivot the lever on the legs 36. Rearwardly of the upper end of the lever 45 there is mounted a forwardly extensible jack 49, shown as of the cylinder and piston type, which is supported at its forward end on a horizontally disposed tie plate 39 extending between the legs 35 with a jack rest interposed between the plate and jack, a U-bolt 50 securing the jack on the plate. The rear end of the jack 49 is received in an apertured vertical support plate 51 secured to a vertically disposed tie plate 39 between the legs 35. The jack 49 is disposed in alignment with the lever 45 for engagement with the upper end of the lever, which may have a curved edge portion for engaging a suitable head 52 on the jack (Fig. 4). One of the tie plates 39 may be located to limit the forward swinging of the lever. At its central portion, the lever 45 has an aperture 53 through which projects a pivot pin 54 by which a rearwardly extending tension or pulling member 55 is connected to the lever. The pulling member 55 comprises a pair of spaced parallel arms 56 lying in vertical planes and connected together at intermediate portions by horizontal plates 57 adjacent their upper and lower edges. At their forward ends, the arms 56 are formed with coaxially apertured bosses 58 which may be provided in any suitable manner, as by disks welded to the outer faces thereof, and are disposed with the apertures aligned with the aperture 53 of the lever to receive the pin 54. The rear ends of the arms are tapered and are connected by a block 59 which has a groove in its forward face the surface of which registers with the rear ends of horizontal slots 60 formed in the arms 56 in position to register substantially with the slots 26 of the yoke arms 25 when the pulling member 55 projects into the yoke recess defined by the arms 25 and webs 27. A rear portion 61 of the lower edge of each pulling member arm 56 is offset upwardly relative to the forward portion 62, an inclined edge portion extending between these edge portions. A suitable handle 63 is secured to the forward ends of the arms 56 to project forwardly of the legs 36 of the compressor frame, by which the pulling member 55 may be brought to a desired position upon application of the compressor 33 to the center sill 10.

In applying the compressor for use, the center sill 10 is disposed open side up, with the draft yoke 23 and the draft gear 29 disposed therein. The compressor is then brought to position on the end of the center sill with the horizontal legs 35 extending longitudinally over the sill and the bearing plates 40 engaging on the respective sill flanges 13. The support lips 38 extend over and rest on the surface of the upper striker portion 16, with the bearing bar 41 engaging the outer face of that portion. The pulling member 55 extends through the striker 14 into the recess at the forward portion of the draft yoke 23 formed by the yoke arms 25 and the webs 27, with the pulling member slots 60 substantially aligned with the yoke arm slots 26 and the draft key slots 17. The pulling member guides itself to this position by means of the tapered ends and offset lower edge arrangement of the arms 56. As the compressor 33 is moved rearwardly in application to the center sill 10, the handle 63 is manually operated to swing the pulling member 55 about its connection with the lever 45, and if necessary to swing the lever also, to bring the rear end of the pulling member over the upper striker portion 16, or in other words within the opening defined by the striker 14, and may then be released, the lower edges of the arms 56 resting on the striker portion 16. Continued rearward movement of the compressor to its applied position causes the rear upwardly offset portions 61 of the lower edges of arms 56 to ride over the upturned surface of the striker portion 16 until the rear end of the pulling member is adjacent the recess in the yoke, when the rear end is swung upwardly by movement of the inclined portions of the arm edges over the striker portion and maintained at the higher level by the forward portions 62 of the edges riding over the striker portion, the tapered rear ends of the arms 56 riding between the edges of the webs 27 into the yoke recess so that the pulling member assumes the position already described. Thus no manipulation of the pulling member other than required for its initial positioning within the striker 14 is required, and the compressor 33 is easily and quickly applied to the center sill, seating thereon in what may be termed saddling relation without requiring positive securement thereto, the compressor being stable in such seated condition because its center of gravity is located rearwardly of the end of the center sill. A suitable bail or other means (not shown) may be provided on the compressor frame, preferably vertically aligned with the center of gravity, to facilitate application of the compressor to the center sill by mechanical means.

With the parts in the position described, a key 64 somewhat similar to a conventional draft key is inserted through the slots 17, 26, and 60. The entering end of the key is tapered so as to allow for slight misalignment of the slots which may result from variations of the parts within manufacturing tolerances, dimensioning of the parts for clearance, or the like, any such misalignment being remedied by the insertion of the key. At the other end of the key, stop lugs 65 are provided, between which an aperture 66 may be provided to facilitate insertion and removal of the key. The draft yoke 23 is thus connected to the pulling member 55 of the compressor so that it may be moved thereby.

Upon connection of the pulling member to the yoke, the jack 49 is actuated or extended so that the head 52 swings the lever 45 forwardly, as shown in Fig. 4, thus drawing the pulling member 55 forwardly to move the yoke 23 in the draft gear pocket, against the increasing resistance of the draft gear 29 as it is compressed between the follower 28 and the rear wall of the yoke body 24. This forward movement of the yoke is sufficient to provide a space rearwardly thereof long enough to receive the draft gear 30 and its follower plates 31 and 32 without requiring compression thereof, so that the gear is

readily insertable in the pocket merely by lowering thereof into the center sill. It will be noted that the pocket is not blocked by the compressor and thus is open for reception of the gear. After the draft gear **30** has been inserted, as shown in Fig. 4, the jack **49** is retracted, the head **52** moving rearwardly to release the lever **45**. The pulling member **55** swings the lever rearwardly as the draft gear **29** expands and the gear **30** is compressed, until the yoke **23** comes to its normal position as the pressures of the oppositely-acting draft gears become equalized or balanced. The key **64** is then withdrawn to disconnect the pulling member from the draft yoke, and the compressor **33** is unseated and withdrawn from the center sill **10**. The jack may be actuated by power from any suitable source and through any appropriate means. It will be apparent that the reaction to the force exerted by the jack is at the points of the center sill engaged by the compressor frame, which as shown in Figs. 2, 3, and 5 is preferably of less width than the sill. As already indicated, the compressor requires no positive attachment or securement for its retention on the center sill, affording a considerable saving of time in use, its connection to the draft yoke being necessary only for the desired movement of the yoke.

While the invention is disclosed as employed for the insertion of draft gear means in a center sill draft gear pocket, it is obvious that the disclosed embodiment may just as readily be used in the removal of draft gear means held under compression in the pocket, and it will further be evident that the invention may be utilized in either applying or removing draft gears to or from a center sill in its normal position with its bottom or open side down. In such latter use, the position of a compressor according to the invention relative to the center sill may be reversed from that specifically disclosed herein, or may be the same as illustrated in connection with the exemplary embodiment, as for example in application to a center sill incorporated in a railway car structure.

What is claimed is:

1. A draft gear compressor for use in applying and removing tandem draft gears in the draft gear pocket of a railway car center sill provided with slots and a yoke engaging certain of the draft gears and provided with slots, the draft gear compressor comprising a generally L-shaped frame having a pair of legs extending substantially perpendicular to each other, a projection intermediate the length of one of the legs extending in the same direction as the other of the legs to engage in bearing relation within the end of the center sill, a bearing projection at the end of the other leg to engage the outer surface of the center sill, a lever pivoted adjacent the end of said one leg and extending adjacent the other leg, extensible means mounted on the other leg engaging with said lever for swinging thereof in the direction opposite said other leg direction, a rigid pulling member pivotally connected to the lever intermediate the pivot axis and point of engagement with said extensible means of the lever to extend interiorly of the sill and provided with a slot adjacent its free end, means on said member for self-alignment thereof in connectible relation to said certain

of the draft gears upon movement of the member in said other leg direction, said self-alignment means comprising a plurality of progressively stepped portions of the member extending longitudinally from the free end thereof to ride on a portion of the center sill in said movement, and a key projecting through the slots in the center sill and the slots in the yoke and the slot in the member to connect the member to said certain of the draft gears.

2. A draft gear compressor adapted to seat on a railway car center sill having openings and a draft gear in the sill and means engaging the draft gear and provided with an opening, the draft gear compressor comprising a frame having spaced means to bear on the center sill, a lever pivoted on said frame extending past the end of the center sill upon disposition of the frame thereon, extensible means mounted on the frame engaging with the lever for swinging thereof in a direction outwardly of the center sill end, a rigid pulling member pivoted on the lever extending in the direction opposite said direction of swing and provided with an opening, means on said member automatically positioning the member in connectible relation with the draft gear upon movement of the member in said opposite direction, said positioning means including a taper on the free end of the pulling member and a plurality of progressively stepped portions extending longitudinally thereof from the tapered end and a key projecting through the openings in the center sill and the opening in the first named means and the opening in the member to connect the member to the draft gear.

3. A draft gear compressor adapted to seat on a railway car center sill having openings and a draft gear in the sill and means engaging the draft gear and provided with an opening, the draft gear compressor comprising a frame having spaced means to bear on the center sill, a lever pivoted on said frame extending past the end of the center sill upon disposition of the frame thereon, extensible means mounted on the frame engaging with the lever for swinging thereof in one direction, a rigid pulling member pivoted on the lever extending in the direction opposite said one direction and provided with an opening, means on said member automatically positioning the member in connectible relation with the draft gear upon movement of the member in said opposite direction, said positioning means including a plurality of progressively stepped portions on said member extending longitudinally thereof, and a key projecting through the openings in the center sill and the opening in the first named means and the opening in the member to connect the member to the draft gear.

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