

May 25, 1943.

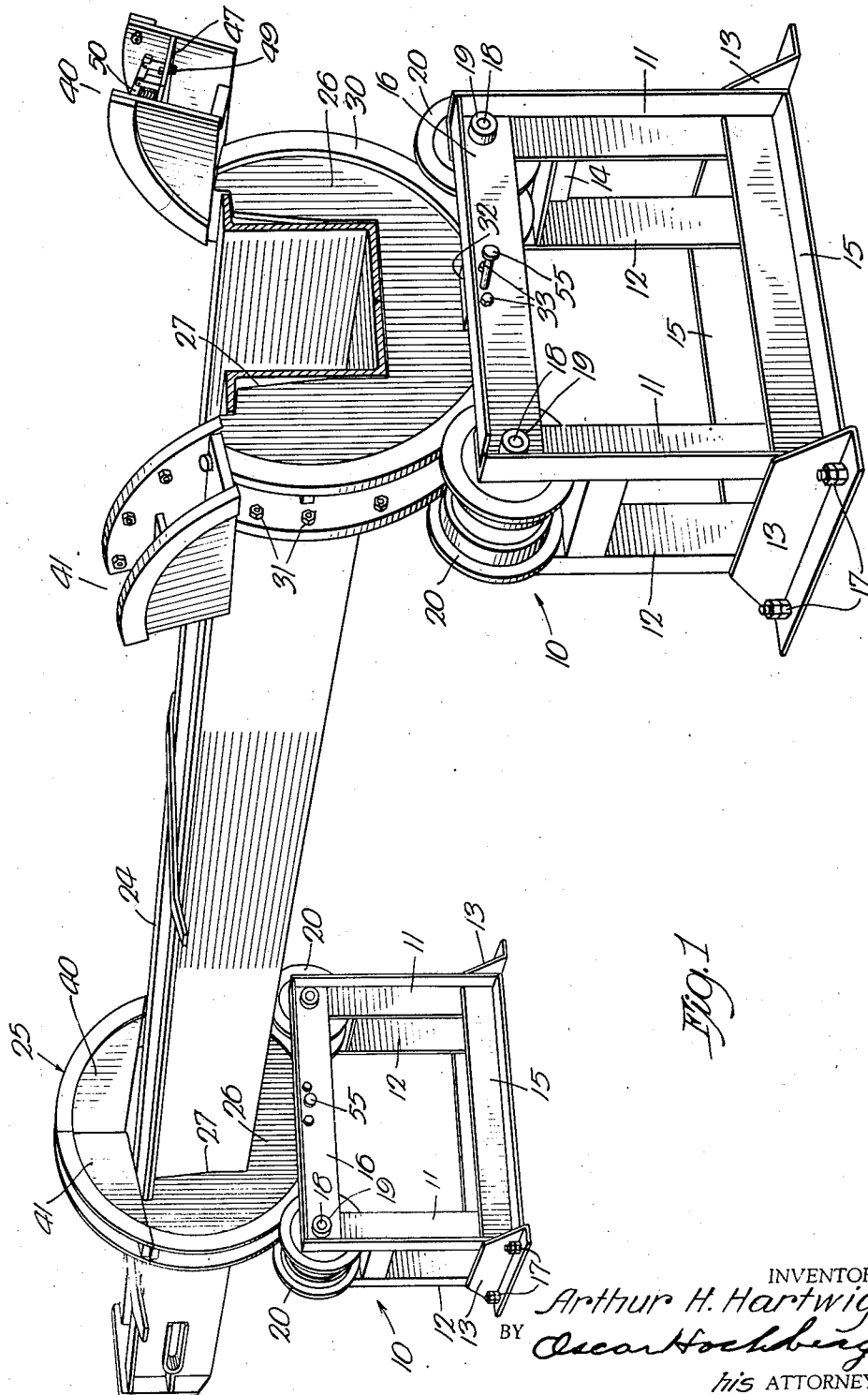
A. H. HARTWIG

2,320,079

CENTER SILL TURN-OVER FIXTURE

Filed Aug. 1, 1940

4 Sheets-Sheet 1



INVENTOR.

INVENTOR
Arthur H. Hartwig

BY

Oscar Hochberg

his ATTORNEY

May 25, 1943.

A. H. HARTWIG

2,320,079

CENTER SILL TURN-OVER FIXTURE

Filed Aug. 1, 1940

4 Sheets-Sheet 2

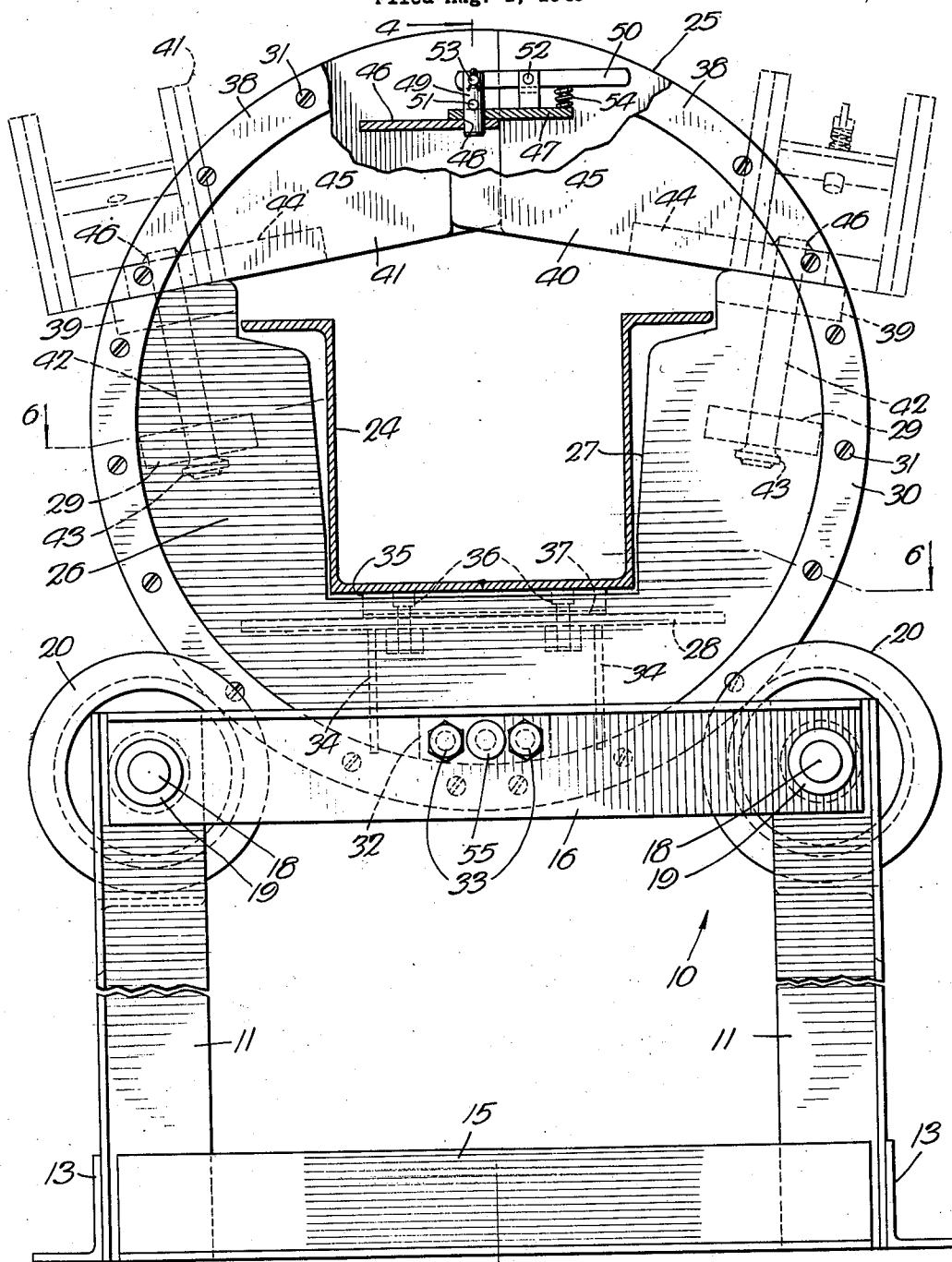


Fig. 2

INVENTOR.
Arthur H. Hartwig
BY Oscar Hochberg
his ATTORNEY.

May 25, 1943.

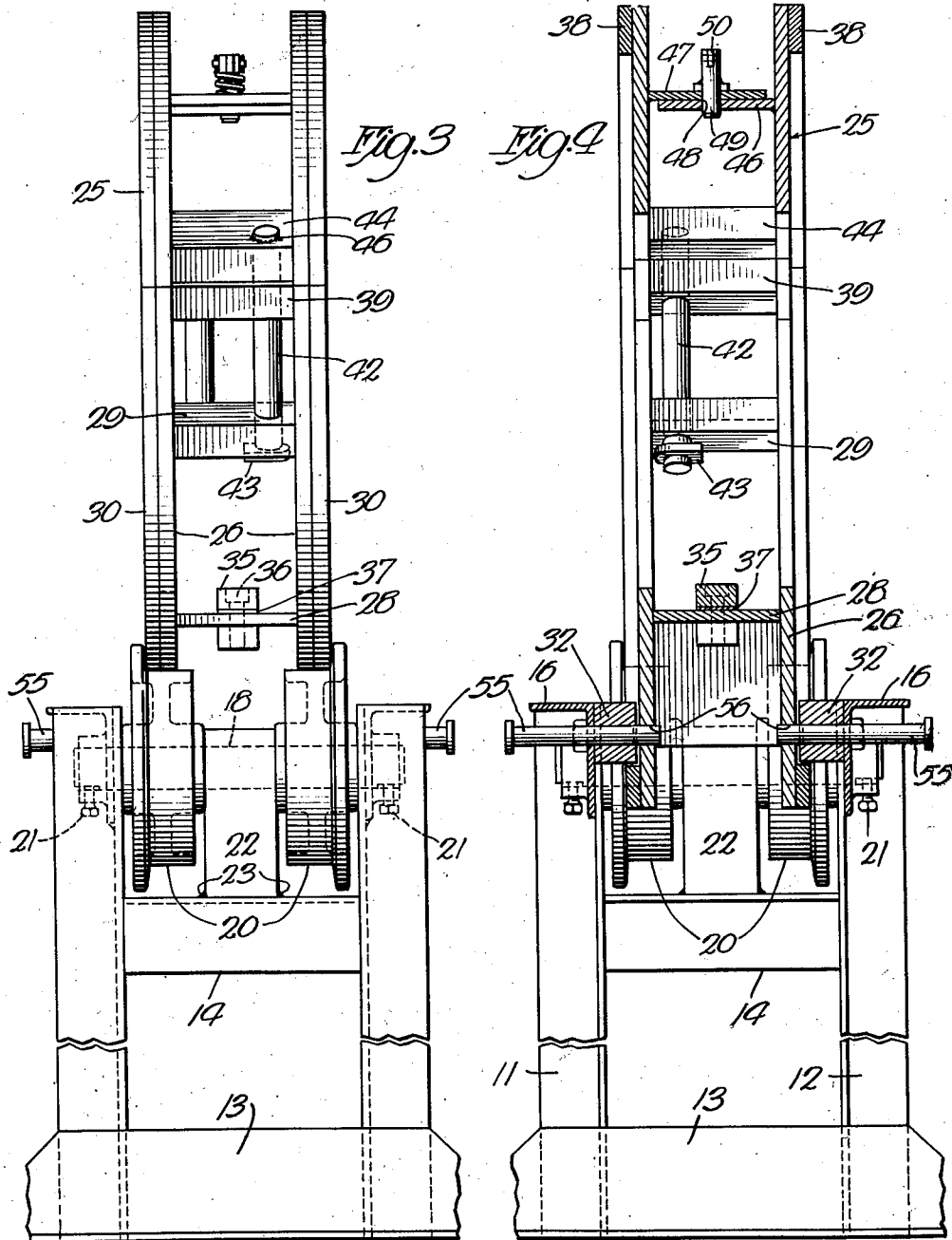
A. H. HARTWIG

2,320,079

CENTER SILL TURN-OVER FIXTURE

Filed Aug. 1, 1940

4 Sheets-Sheet 3



INVENTOR.
Arthur H. Hartwig
BY Oscar Hochberg.
his ATTORNEY.

May 25, 1943.

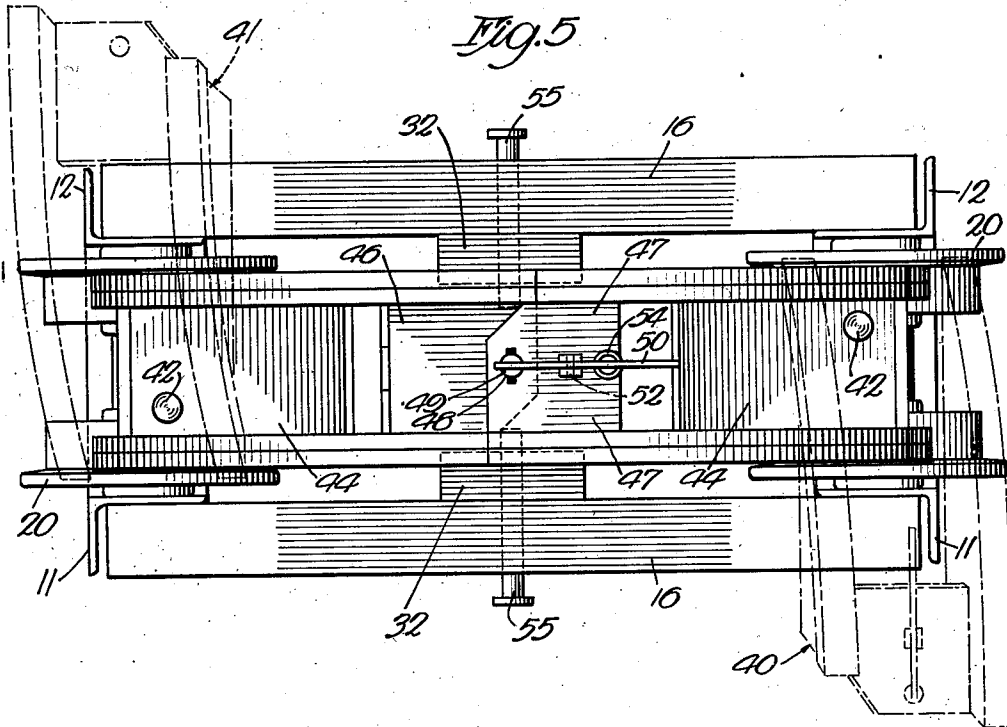
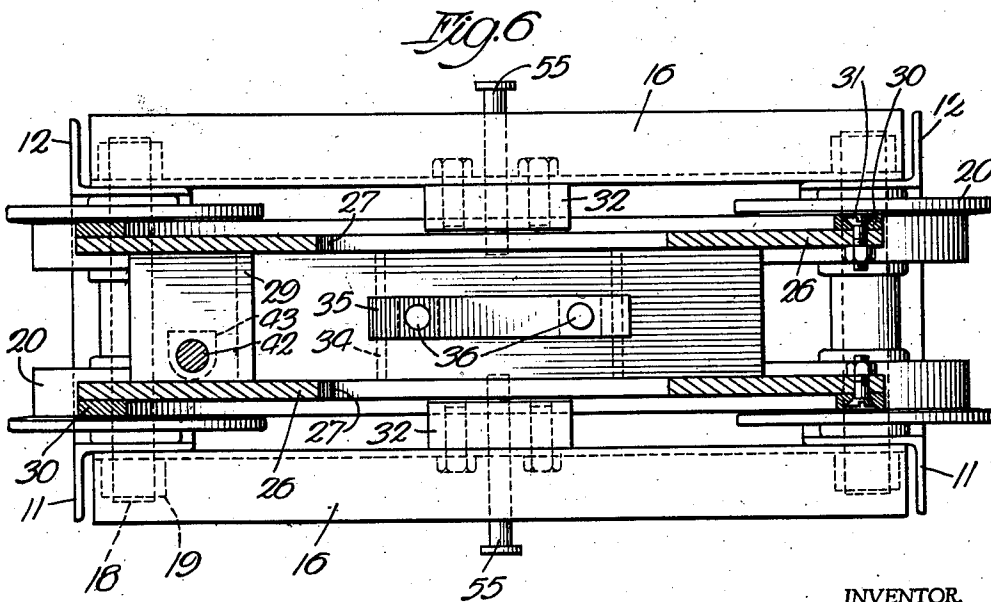
A. H. HARTWIG

2,320,079

CENTER SILL TURN-OVER FIXTURE

Filed Aug. 1, 1940

4 Sheets-Sheet 4



INVENTOR.
Arthur H. Hartwig
BY *Oscar Hochberg.*
his ATTORNEY.

UNITED STATES PATENT OFFICE

2,320,079

CENTER SILL TURNOVER FIXTURE

Arthur H. Hartwig, Michigan City, Ind., assignor
to Pullman-Standard Car Manufacturing Com-
pany, Chicago, Ill., a corporation of Delaware

Application August 1, 1940, Serial No. 349,059

4 Claims. (Cl. 28—89)

This invention relates to a turnover fixture for the center sills of railway car underframes for use during the operation of assembling various parts thereon by welding.

The invention contemplates a center sill turnover fixture used for welding center sills in the final assembly operation, arranged with manipulating rolls having fixed tread portions which contact pairs of supporting rollers arranged on spaced supporting stands adjacent the respective bolster positions of the sill to provide for rotation of the fixture with the sill mounted therewithin to facilitate the various steps in the welding operations.

An object of the invention is the provision of a turnover fixture having a manipulating roll adapted to receive a center sill and provided with a pair of locking gates which, when closed, constitute a part of the fixed tread portion of the roll which contacts pairs of supporting rollers adapted to provide for rotation of the fixture with the center sill mounted therein.

The foregoing and other objects of the invention are attained by the mechanism illustrated in the accompanying drawings, in which;

Fig. 1 is a general perspective view of a pair of turnover fixtures in accordance with this invention with the center sill mounted therein and showing the locking gates on one manipulating roll in closed position and the gates on the other roll in full-open position;

Fig. 2 is an elevational view of a supporting stand and turnover fixture with a center sill mounted therein, and having parts broken away better to illustrate the mechanism for locking the closing gates;

Fig. 3 is a side elevational view of a supporting stand and manipulating roll;

Fig. 4 is a sectional view through the manipulating roll and supporting stand taken on the line 4—4 of Fig. 2, illustrating the interlocking nature of the manipulating roll with the supporting stand and showing the index pins for holding the roll in fixed position for loading;

Fig. 5 is a plan view of the manipulating roll and supporting stand showing the locking gates in closed position in full lines, and diagrammatically illustrated in their full-open position in broken lines; and

Fig. 6 is a sectional plan view taken on the line 6—6 of Fig. 2 showing the supporting seat between the webs of the manipulating roll for receiving a center sill.

The present invention has to do with the provision of a turnover fixture designed for ready

handling of the center sill of a railway car underframe during construction and intended primarily to provide means for enabling the center sill to be disposed in the various positions necessary to the proper placement of the sill to the best advantage for the attachment of various parts thereto by welding.

In the drawings, 10 represents a turnover fixture including a supporting stand constructed of angle members welded together and comprising pairs of vertical supporting angle members 11 and 12 at each side of the stand connected at their base by anchor members 13 and adjacent the upper portion thereof by angle members 14 and disposed at each side of the supporting stand and connected from side to side at the bottom by angle members 15, and at the top by members 16 to provide a unitary frame adapted to be secured to a supporting surface as at 17. The top connecting members 16 afford means for receiving spaced axles 18 for supporting rollers 20 hereinafter to be described. The axles 18 are carried in trunnions 19, secured on the angle members 16 by welding, and having set screws 21 adapted securely to hold the axles in fixed position. The axles 18, are supported in the trunnions 21 at their opposite ends, and bearing blocks 22 support the axles intermediate their ends and serve to maintain the rollers 20 in proper spaced relation for the reception and guidance of a manipulating roll hereinafter referred to and are supported from and secured to the angle members 14 by welding, as at 23. All of the various parts of the supporting stands are preferably fabricated by means of welding, but may be constructed in any manner desired to carry the supporting rollers 20 as shown and fabricated by any preferred method.

The supporting rollers 20, are adapted to rotate upon the fixed axles 18, and are disposed in position at the four upper corners of the supporting stand to provide spaced pairs of supporting rollers having their respective tread portions in alignment across the stand and adapted to receive a manipulating roll 25 which is wholly supported thereby and in rotative relation thereto. The manipulating roll 25, comprises spaced webs 26, having aligned cut-out portions 27 therein, to the general contour of center sill 24 and held in spaced relation by means of a center sill supporting web 28 and by hinge plates 29 and 39 welded therebetween at the upper extremities of the web plates. The web plates 26, at their perimeter, are provided with supplemental tread portions 30 secured thereto on their

respective outer sides by means of bolts 31 having countersunk heads. The tread portions 30 of the manipulating roll are adapted to engage the treads of the supporting rollers 20, and are maintained in proper position with respect to the rollers by the guiding flanges thereon. Approximately at the center of the supporting stand the treads 30 are each adapted to interlock with a safety lug 32 secured to the top angle members 16 of the supporting stand at respectively opposite sides of the manipulating rolls 25 by means of bolts 33 in position to overlie the inner surfaces of the respective tread members and prevent displacement of the roll by forces due to possible longitudinal thrusts by the center sill. The center sill supporting web 28 is reinforced by gusset plates 34 disposed therebeneath and is provided on its upper surface with a member 35 providing a seat for the center sill and secured to the web 28 by means of bolts 36. The seat member 35 is adapted to be adjustably mounted on the web 28 by means of shims 37, which provide for the disposition of the center sill 24 in the exact center of the manipulating roll in order that a balanced assembly might be afforded. The spaced web plates 26 of the manipulating roll, due to the opening 27 for the center sill, provide a member of somewhat U-shape and comprises merely a segmental portion of a circle, which is completed by means of locking gates 40 and 41 hinged to the web plates. The hinges for the locking gates comprise hinge pins 42 secured to the respective gates and of sufficient length to pass through both of the spaced hinge plates 29 and 39 at each side of the center sill opening 27. Stop washers 43 are disposed on the lowermost ends of the hinge pins beneath the hinge plates 29 to insure their retention therein and secured thereto by welding. The stop washers are also adapted to provide limiting stops in the full-open position of the gates at 90° from the closed position thereof by engagement with the respectively adjacent webs 26 and for this purpose it will be noted that the washers are not round but provided with extensions adapted to engage the webs of the manipulating roll to prevent further rotation of the hinge pins as best shown in Fig. 3.

The hinge pins 42 penetrate the lowermost supporting web 44 of the respective locking gates and are secured therein by means of weld 46 disposed on the upper side of each web. The gates 40 and 41 have web plates 45 disposed in the same plane with the respective web plates 26 and are maintained in proper spaced relation for co-operation with the web plates 26 by the supporting webs 44, and locking web plates 46 and 47. Tread portions 38 adapted to form continuations of the tread portions 30 are secured on the locking gates, also by means of bolts 31 having countersunk heads, and are adapted to provide means for continuous rotation of the manipulating roll 25 through 360°. The side webs 45 of the locking gates, at their meeting edges in the closed position of the gates, are disposed in offset relationship as best shown in Fig. 5, thereby to provide abutments, one to the other, affording means to insure parallelism of the gates 40 and 41 and complete alignment thereof with the web plates 26. Since the locking gates 40 and 41 are adapted to rotate 90° from the closed position in respectively opposite directions it will be seen that the offset relationship of their meeting edges provides a positive limit of movement in predetermined association each with the other and with the webs 26.

In the closed position of the gates 40 and 41 the locking webs 46 and 47 are disposed in overlapping relation and are adapted each to engage the inner side of the outside web 45 of the respectively opposite member as best shown in Fig. 5. In their overlapped area, the webs 46 and 47 are provided with aligned perforations 48 adapted to receive a locking pin 49 which maintains the locking gates in closed position to hold the center sill 24 in place within opening 27 in the manipulating roll 25. A stop 51, on the locking pin acts as a limit of movement therefor. The locking pin is operated by means of a handle 50 fulcrumed on the web 47 by means of an upstanding bifurcated lug 52 in which the handle is pivoted, and which has pivotal connection with the locking pin 49 at 53. The pin 49 is maintained in locking position by means of a coil spring 54, engaging the handle 50 at the opposite side of the fulcrum 52 from the locking pin, to exert a force thereon urging the pin 49 to its fully engaged position with the limit stop 51 in engagement with the web 47. The supporting web 44 for the respective locking gates, and the webs 39 through which the hinge pins 42 project, are so disposed as to provide bearings upon which the gates are adapted to rotate.

The manipulating roll 25 with its supporting stand is adapted to be used in pairs for supporting a center sill and preferably disposed adjacent to the respective bolster positions of the sill for the proper support and ready manipulation thereof, during the various steps in the operation of welding different parts thereon. The axes of the respective manipulating rolls and, of course, of the supporting rollers, are disposed in absolute longitudinal alignment for full realization of the anti-friction qualities and other possibilities of the arrangement and while the supporting stands, disposed in spaced relation, have no direct connection therebetween, the connections 17 to the common supporting surface maintain the assemblies rigidly in alignment to provide for ready operation of the manipulating rolls due to their uniaxial relation with a center sill functioning as a shaft between the rolls but carried thereby. When it is desired to insert the center sill 24 in the spaced manipulating rolls 25, the rolls are arranged in upright relation with the openings 27 disposed upwardly, and the locking gates 40 and 41 are then swung to their full-open position as indicated in broken lines in Fig. 5, whereupon the center sill may be lowered into the openings 27, and the gates then closed and secured in that position by the locking mechanism. With the center sill thus secured, it will be seen that it may readily be rotated to any position desired for working thereon, without any restrictions whatever. During the open position of the gates 40 and 41, while the center sill 24 is being loaded into position, the rolls 25 are maintained in fixed, upright position by means of retractile index pins 55 mounted in the safety lugs 32 and adapted to be engaged through co-operating openings 56 in the respective webs 26 to align the openings 27 in upright relation and maintain the rolls in fixed position to receive the center sill. The manipulating rolls may be operated by means of a suitable motor or other power source (not shown), if desired.

From the foregoing, it will be seen that there has been provided a turnover fixture comprising spaced manipulating rolls in uniaxial relation supported in rollers for coincidental rotation with a car underframe part mounted therein.

What is claimed is:

1. A turnover fixture comprising spaced supporting rollers, a manipulating roll supported in said rollers and having a fixed tread portion in engagement therewith adapted to provide for rotation of said roll, an opening in the roll for receiving a part to be turned, and a pivoted gate for closing said opening which, when closed, constitutes a part of said fixed tread portion.

2. A turnover fixture comprising spaced supporting rollers, a manipulating roll supported in said rollers and having a fixed tread portion in engagement therewith adapted to provide for rotation of said roll, an opening in the roll for receiving a part to be turned, and a pair of gates hingedly mounted on the manipulating roll for closing said opening which, when closed, constitute part of said fixed tread portion.

3. A center sill turnover fixture comprising a supporting stand, supporting rollers disposed in pairs and rotatively carried by the stand and provided with tread portions having outwardly disposed guiding flanges, a manipulating roll

5 supported in said rollers having fixed tread portions in engagement with the tread portions of the rollers and disposed between said guiding flanges, an opening in the manipulating roll for receiving a center sill rotatively supported therein, a pair of closing gates in the manipulating roll hingedly mounted with respect thereto for securing said center sill therein, said gates, when closed, constituting part of the fixed tread portions of the manipulating roll.

10 4. A center sill turnover fixture comprising a supporting stand, supporting rollers carried by the stand and provided with tread portions, a manipulating roll supported in said rollers having fixed tread portions in engagement with the tread portions of the rollers, an opening in the manipulating roll for receiving a center sill rotatively supported therein, a pair of closing gates in the manipulating roll hingedly mounted with respect thereto for securing said center sill therein, said gates, when closed, constituting part of the fixed tread portions of the manipulating roll.

ARTHUR H. HARTWIG.