

Aug. 2, 1938.

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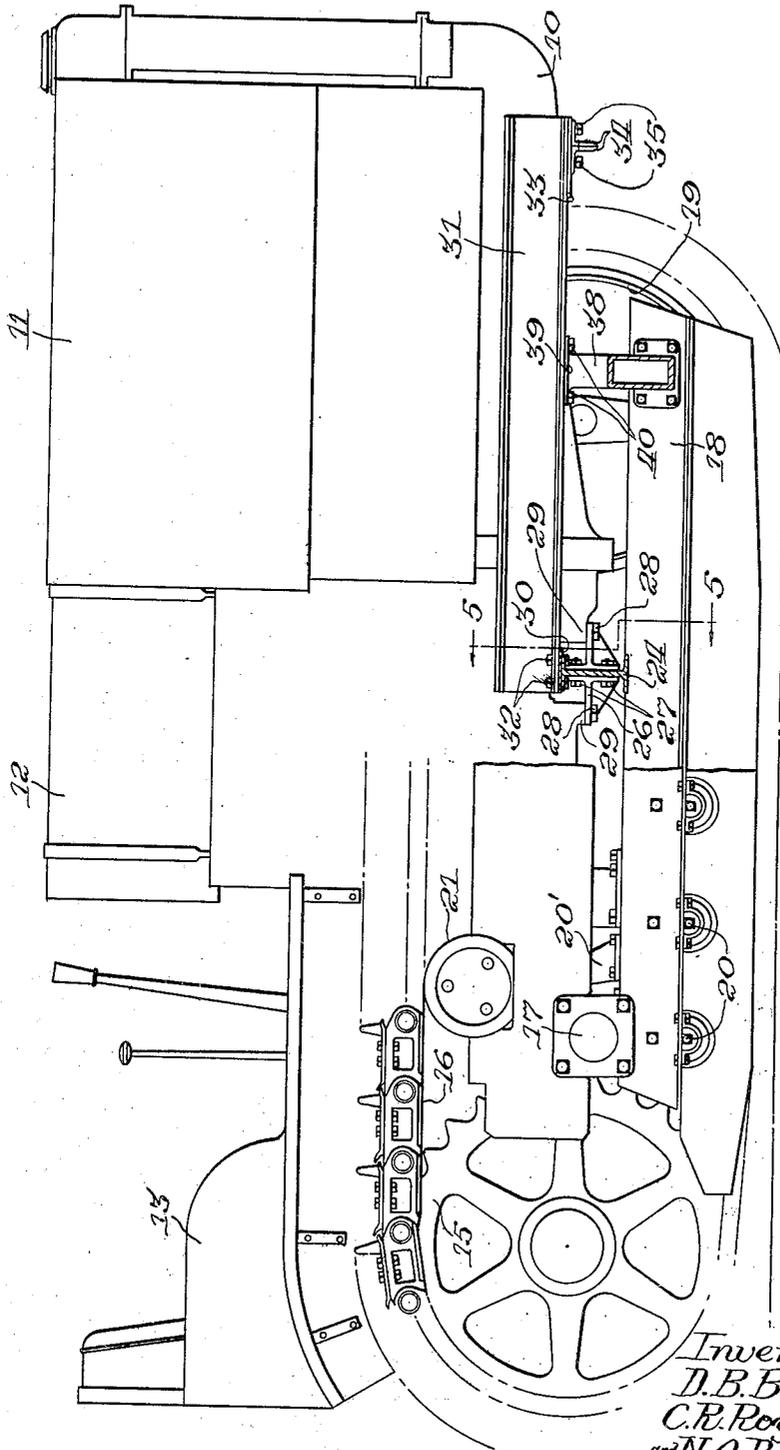
2,125,327

CRAWLER TRACTOR WITH RIGID TRACK FRAMES

Filed Feb. 29, 1936

3 Sheets-Sheet 1

Fig. 1.



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3 Sheets-Sheet 2

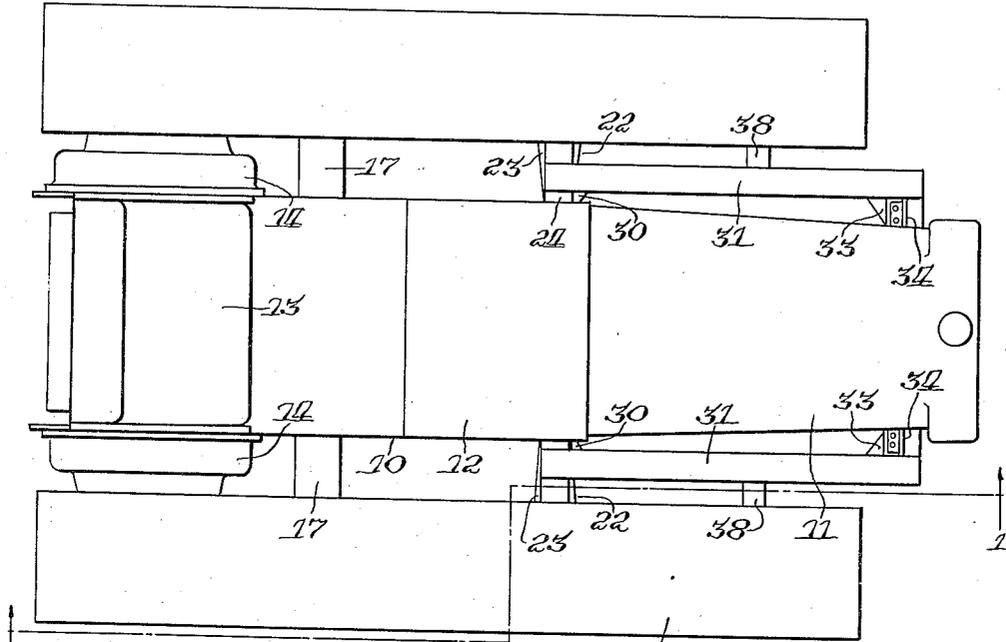


Fig. 2.

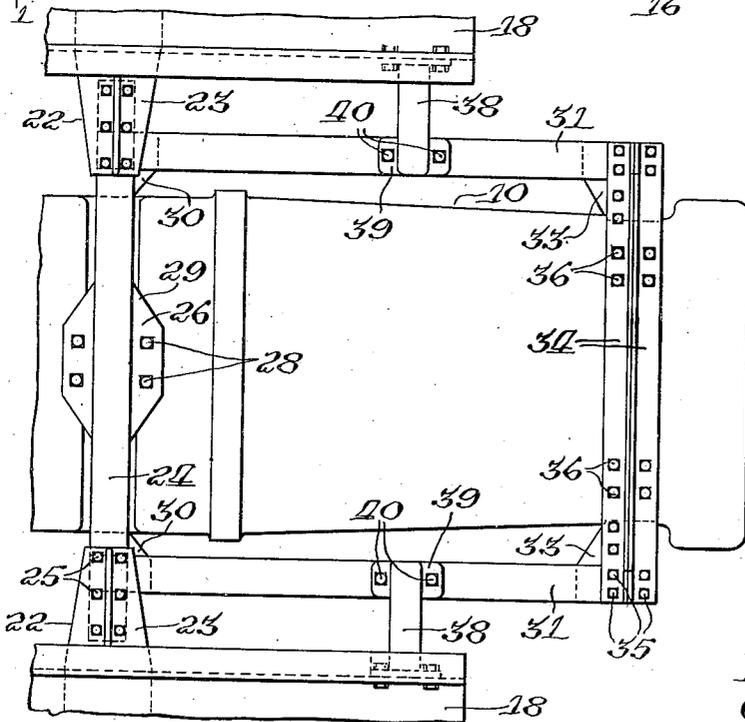


Fig. 3.

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3 Sheets-Sheet 3

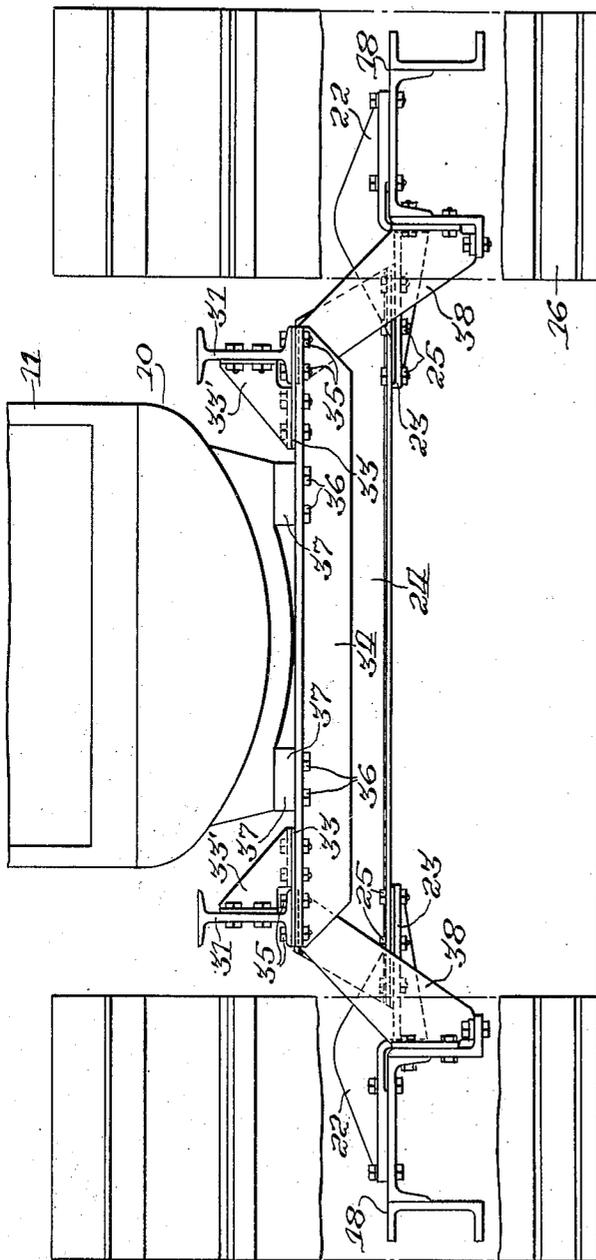


Fig. 4.

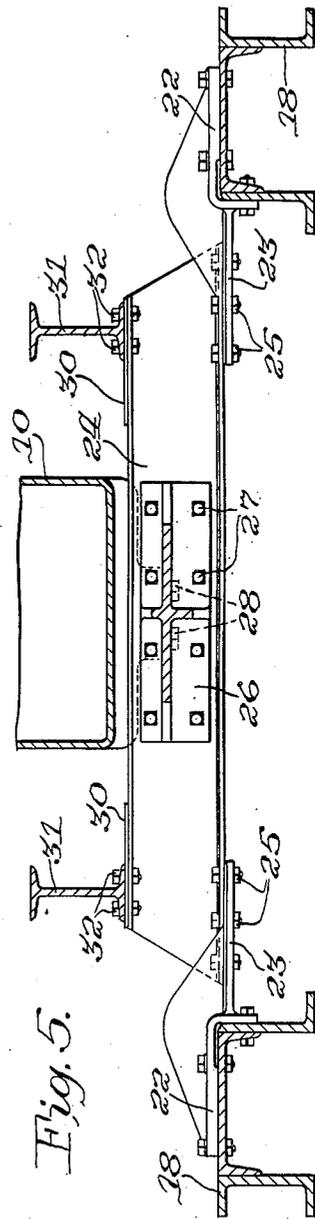


Fig. 5.

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# UNITED STATES PATENT OFFICE

2,125,327

## CRAWLER TRACTOR WITH RIGID TRACK FRAMES

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16 Claims. (Cl. 305—9)

The invention relates to crawler tractors.

These tractors comprise a central longitudinal main frame or body containing the power plant for driving side sprocket wheels disposed one on each side of the body. At the sprocket centers, or adjacent thereto, are pivotally connected at their rear ends, the usual, opposite, side crawler frames lying parallel with the sides of the body and extending forwardly of their pivots therealong. Thus, the weight of the rear end of the body is transmitted to these side frames at two rear points. Across the forward ends of the side frames is usually disposed a transverse equalizer bar to carry, from a front third point of load support, the weight of the front end of the body. The side frames include track rollers serving to transmit this weight to the ground stretch of endless tracks enveloping the side frames with each track driven from a side sprocket wheel. An idler wheel carried at the front end of each track frame carries the forward loop of each endless track. This structure provides in the three point mounting the usual flexibility desired as the track frames pivot in vertical planes over uneven ground, to prevent twisting of the main frame or body.

In some conditions of use, such flexibility and free movement of the side frames is undesirable. For instance, when mounting a mast and boom structure on the side frames at their front ends, it is important to provide a broad, rigid base to support such superstructure. To this end it is necessary to prevent oscillating movement of the side frames, so that, when the tractor travels or stands still, a rigid support for the superstructure is maintained.

More particularly, the invention, therefore, relates to an improved rigid track frame mounting for crawler tractors to facilitate the stable mounting of an auxiliary superstructure.

The main object of the invention is to provide a simple and effective means for tying the front ends of the side frames rigidly together and to the body to make their pivotal connection with the body inoperative, thereby resulting in a broad stable foundation for any suitable superstructure.

Another object is to provide such rigid connector in lieu of the usual equalizer, which is not used when the side frames are made rigid.

Another object is to include in this rigid frame bolster structure opposite side rails, one on each side of the tractor body to serve as convenient mountings for winches or the like usable in con-

nection with the auxiliary superstructure attachment.

Still another object is to provide such parts for making the side frames rigid, which can be applied conveniently to standard crawler tractors without materially altering their construction.

Other important objects of the invention will become apparent to those skilled in this art as the disclosure is more fully made.

These desirable objects are achieved by the structure herein to be illustrated and described, in which generally a rigid cross-bolster has its ends respectively secured to adjacent side frames with the bolster extending transversely under the tractor body and secured thereto at a point near the rear end of the motor. Under the front end of the body and forwardly of the front ends of the side frames is a transverse plate secured to the underside of the body with the ends thereof carrying longitudinal sills with one disposed on each side of the body and with their rear ends carried on the bolster mentioned. An intermediate portion of each sill is carried by an outwardly extending bracket securely attached to the inner face of an adjacent side track frame.

The preferred example of the structure of the invention is shown in detail in the accompanying sheets of drawings, wherein:

Figure 1 is a general side elevational view of the rigid side frame crawler tractor, partly in section, taken along the line 1—1 of Figure 2, looking in the direction of the arrows;

Figure 2 is a general plan view of the tractor;

Figure 3 is a detail, bottom plan view of the front end of the tractor;

Figure 4 is a general, front elevational view of the tractor; and,

Figure 5 is a detail, fragmentary sectional view through the tractor, taken along the line 5—5 of Figure 1, looking in the direction of the arrows.

The tractor shown embodies a central, longitudinal main frame or body 10, which at its front end carries a hood 11 for a motor, not shown, with a fuel tank 12 at the rear thereof. Behind this tank the body carries a driver's compartment including a seat 13 at the rear of the body. The rear end of the body in any usual way carries opposite, side housings 14, at the outsides of which are carried the usual rear drive sprocket wheels 15, which respectively carry and drive the rear loops of a pair of oppositely disposed, endless track shoe belts 16.

Forwardly of each sprocket wheel 15, opposite

sides of the body carry transverse pivot shafts 17, to which are pivotally connected at their rear ends, the side track roller frames 18, which include track rollers, not shown, running on the ground stretches of the respective track belts 16. The forward end of each frame 18 carries an idler wheel 19, around which are respectively guided the forward loops of the belts 16. The track roller centers are shown at 20 and, using their spacings as a scale, it will be seen that the track frames 18 are longer by two or three track rollers than are the standard or usual side frames utilized in crawler tractors. Thus, the frames 18 at their front ends extend forwardly a substantial distance alongside and toward the forward end of the motor. These frames 18 are thus elongated to provide a longer track base for supporting the weight of the tractor and the auxiliary parts to be mounted on the side frames. The rear end of each frame 18 carries an upright bracket 20' for mounting an idler roller 21 to support the upper run of the track 16. The weight of the rear end of the tractor is suspended on the frames 18 at the two points of load transmission numbered 17. From these points, this weight is transmitted to the track rollers in the usual manner well understood in this art.

The weight of the forward end of the body is carried on the front ends of the track frames 18 by means of the rigid bolster structure which is the subject matter of this invention. This structure will now be described.

As shown in Figure 5, each side frame 18 on its top side has securely bolted thereto a bracket 22, and each bracket includes a flat horizontal shelf portion 23 extending inwardly, as shown. Resting at its ends on these portions 23 is a sturdy, transverse I-beam bolster 24 running horizontally underneath the body 10. Said bolster at its ends is secured by bolts 25 to the shelves 23.

As appears in Figures 1, 3, and 5, opposite faces of the I-beam bolster 24, between its ends, carry T-plates 26 securely connected to the bolster 24 by bolts 27. Each T-plate presents a horizontal flange. These flanges are respectively connected securely by bolts 28 to ledge portions 29 included in the underside structure of the body 10 of the tractor.

Each end of the bolster 24 on its top side, as shown in Figures 4 and 5, carries a plate 30, and on each plate 30 is carried the rear end of a longitudinal I-beam sill 31. Bolts 32 pass through the sills 31, plates 30, and into the bolster 24 to secure these parts rigidly together. It will thus be seen that a sill 31 is disposed on each side of the body 10 and that the sills are in parallelism with each other, with the forward ends of said sills projecting forwardly beyond the front ends of the side frames 18, and substantially to the front end of the tractor.

The front end of each sill 31 on its bottom face carries a horizontal bed plate 33 and, between each plate 33 and the inside vertical face of an adjacent sill 31 is a corner bracket 33' for connecting the parts rigidly. Connected to the underside of the bed plates 33 and the underside of the sills 31 are a pair of back-to-back, transverse angle bars 34 with bolts 35 connecting the ends of these bars 34 with the plates 33 and sills 31. Other bolts 36 secure these bars into pad blocks 37 carried on the top face of the bars 34 and upon which the front end of the body 10 of the tractor is carried. By means of the front cross-bars 34 then, the front ends of the sills 31 are securely cross-connected, said bars 34 also

servicing to carry the extreme front end of the body 10, as shown.

As shown best in Figures 3 and 4, the inner side of each side frame 18, at its front end, carries an inwardly and upwardly extending rigid bracket 36. Each bracket 36, at its upper end, is formed with a flat horizontal ledge 39 securely attached by bolts 40 to the under face of the adjacent side sill 31. These brackets 36 are located substantially midway between the front and rear ends of the sills 31. This completes the detailed description of the improved and simplified, rigid, front end mounting for the crawler tractor.

In use, when the tractor moves, the front end rigid mounting eliminates all flexibility of the side crawlers since the pivots 17 therefor are made ineffective. Consequently any superstructure parts mounted on the side frames 18 and sills 31 are firmly and rigidly mounted on a broad, stable foundation, as desired in accordance with the purposes of the invention. The side rails 31 serve a useful purpose in conveniently providing mounts for auxiliary apparatus, such as winches, used with the superstructure carried on the side frames 18.

It is the intention to cover all changes and modifications of the practicable example of the invention herein disclosed, which do not in material respects constitute departures from the spirit and scope of the invention as defined in the appended claims.

What is claimed is:

1. The combination with a track-type tractor having a central longitudinal body and opposite parallel side track frames longitudinally disposed alongside the body with their rear ends connected in load supporting relation to the rear end of the body, of means to support the front end of the body on the forward ends of the side track frames comprising a transverse bolster extending under the body and having its ends anchored respectively to the track frames, means connecting the bolster to the underside of the body, a longitudinal sill disposed on each side of the body with the rear ends thereof respectively resting on and secured to the ends of the bolster, a cross-plate carried by the body and secured thereto at the front end of the tractor in advance of the bolster, the front ends of the sills being carried by and secured to the ends of said cross-plate, and means supporting the sills intermediate their ends, said means being respectively carried on the adjacent side track frames.

2. The combination with a track-type tractor having a central longitudinal body and opposite parallel side track frames longitudinally disposed alongside the body with their rear ends connected in load supporting relation to the rear end of the body, of means to support the front end of the body on the forward ends of the side track frames comprising brackets respectively mounted in transverse alignment on the track frames rearwardly of their front ends, a transverse bolster extending under the body and having its ends anchored respectively to the brackets, means connecting the bolster to the underside of the body, a longitudinal sill disposed on each side of the body with the rear ends thereof respectively resting on and secured to the ends of the bolster, a cross-plate carried by the body and secured thereto at the front end of the tractor in advance of the bolster, the front ends of the sills being carried by and secured to the ends of said cross-plate, and brackets connected to the sills inter-

mediate their ends and carried on the adjacent side track frames.

3. The combination with a track-type tractor having a central longitudinal body and opposite parallel side track frames longitudinally disposed alongside the body with their rear ends connected in load supporting relation to the rear end of the body, of means to support the front end of the body on the forward ends of the side track frames comprising brackets respectively mounted in transverse alignment on the track frames rearwardly of their front ends, each bracket including an inwardly extending shelf, a transverse bolster extending under the body and having its ends anchored respectively to the shelves, means connecting a mid-portion of the bolster to the underside of the body, a longitudinal sill disposed on each side of the body with the rear ends thereof respectively resting on and secured to the ends of the bolster, a cross-plate structure carried by the body and secured thereto at the front end of the tractor in advance of the bolster, the front ends of the sills being carried by and secured to the ends of said cross-plate structure, and brackets connected to the sills intermediate their ends and carried on the adjacent side track frames.

4. The combination with a track-type tractor having a central longitudinal body and opposite parallel side track frames longitudinally disposed alongside the body with their rear ends connected in load supporting relation to the rear end of the body, of means to support the front end of the body on the forward ends of the side track frames comprising brackets respectively mounted in transverse alignment on the track frames rearwardly of their front ends, each bracket including an inwardly extending shelf, a transverse I-beam bolster extending under the body and having its ends anchored respectively to the shelves, means connecting a mid-portion of the bolster to the underside of the body, a longitudinal sill disposed on each side of the body with the rear ends thereof respectively resting on and secured to the ends of the bolster, a cross-plate structure carried by the body and secured thereto at the front end of the tractor in advance of the bolster, the front ends of the sills being carried by and secured to the ends of said cross-plate structure, and brackets connected to the sills intermediate their ends and extending outwardly and downwardly therefrom with the brackets respectively carried on the adjacent side track frames.

5. The combination with a track-type tractor having a central longitudinal body and opposite parallel side track frames longitudinally disposed alongside the body with their rear ends connected in load supporting relation to the rear end of the body, of means to support the front end of the body on the forward ends of the side track frames comprising brackets respectively mounted in transverse alignment on the track frames rearwardly of their front ends, a transverse horizontal I-beam bolster extending under the body and having its ends anchored respectively to the brackets, means connecting a mid-portion of the bolster to the underside of the body, a longitudinal horizontal sill disposed on each side of the body with the rear ends thereof respectively resting on and secured to the ends of the bolster, a cross-plate structure carried by the body and secured thereto at the front end of the tractor in advance of the bolster, the front ends of the sills being carried by and secured to the ends of said cross-plate structure, and brackets con-

nected to the sills intermediate their ends and extending outwardly therefrom with the brackets respectively carried on the adjacent side track frames.

6. The combination with a track-type tractor having a central longitudinal body and opposite parallel side track frames longitudinally disposed alongside the body with their rear ends connected in load supporting relation to the rear end of the body, of means to support the front end of the body on the forward ends of the side track frames comprising a transverse bolster extending under the body and having its ends anchored respectively to the side track frames, means connecting the bolster to the underside of the body, a longitudinal sill disposed on each side of the body with the rear ends thereof respectively resting on and secured to the ends of the bolster, a cross-plate structure carried by the body and secured thereto at the front end of the tractor in advance of the bolster, the front ends of the sills being carried by and secured to the ends of said cross-plate structure, and means connecting adjacent sills and side track frames.

7. The combination with a track-type tractor having a central longitudinal body and opposite parallel side track frames longitudinally disposed alongside the body with their rear ends connected in load supporting relation to the rear end of the body, of means to support the front end of the body on the forward ends of the side track frames comprising brackets respectively mounted in transverse alignment on the track frames rearwardly of their front ends, a transverse bolster extending under the body and having its ends anchored respectively to the brackets, means connecting a mid-portion of the bolster to the underside of the body, a longitudinal sill disposed on each side of the body with the rear ends thereof respectively resting on and secured to the ends of the bolster, a cross-plate carried by the body and secured thereto at the front end of the tractor in advance of the bolster, the front ends of the sills being carried by and secured to the ends of said cross-plate, and means rigidly connecting adjacent sills and side track frames.

8. The combination with a track-type tractor having a central longitudinal body and opposite parallel side track frames longitudinally disposed alongside the body with their rear ends connected in load supporting relation to the rear end of the body, of means to support the front end of the body on the forward ends of the side track frames comprising brackets respectively mounted in transverse alignment on the track frames rearwardly of their front ends, each bracket including an inwardly extending shelf, a transverse bolster extending under the body and having its ends anchored respectively to the shelves, means connecting a mid-portion of the bolster to the under side of the body, a longitudinal sill disposed on each side of the body with the rear ends thereof respectively resting on and secured to the ends of the bolster, a cross-plate carried by the body and secured thereto at the front end of the tractor in advance of the bolster, the front ends of the sills being carried by and secured to the ends of said cross-plate, and means rigidly connecting adjacent sills and side track frames.

9. The combination with a track-type tractor having a central longitudinal body and opposite parallel side track frames longitudinally disposed alongside the body with their rear ends connected in load supporting relation to the rear end of the body, of means to support the front

end of the body on the forward ends of the side track frames comprising brackets respectively mounted in transverse alignment on the track frames rearwardly of their front ends, a transverse I-beam bolster extending under the body and having its ends anchored respectively to the brackets, means connecting a mid-portion of the bolster to the underside of the body, a longitudinal I-beam sill disposed on each side of the body with the rear ends thereof respectively resting on and secured to the ends of the bolster, a cross-plate structure carried by the body and secured thereto at the front end of the tractor in advance of the bolster, the front ends of the sills being carried by and secured to the ends of said cross-plate structure, and means rigidly connecting adjacent sills and side track frames.

10. The combination with a track-type tractor having a central longitudinal body and opposite parallel side track frames longitudinally disposed alongside the body with their rear ends connected in load supporting relation to the rear end of the body, of means to support the front end of the body on the forward ends of the side track frames comprising brackets respectively mounted in transverse alignment on the track frames rearwardly of their front ends, each bracket including an inwardly extending shelf, a transverse I-beam bolster extending under the body and having its ends anchored respectively to the shelves, means connecting a mid-portion of the bolster to the under side of the body, a longitudinal I-beam sill disposed on each side of the body with the rear ends thereof respectively resting on and secured to the ends of the bolster, a cross-plate carried by the body and secured thereto at the front end of the tractor in advance of the bolster, the front ends of the sills being carried by and secured to the ends of said cross-plate, and means respectively connecting each sill to the adjacent side track frame.

11. The combination with a track-type tractor having a central longitudinal body and opposite parallel side track frames longitudinally disposed alongside the body with their rear ends connected in load supporting relation to the rear end of the body, of means to support the front end of the body on the forward ends of the side track frames comprising brackets respectively mounted in transverse alignment on the track frames rearwardly of their front ends, each bracket including a shelf, a transverse bolster extending under the body and having its ends anchored respectively to the shelves, means connecting a mid-portion of the bolster to the under side of the body, a longitudinal I-beam sill disposed on each side of the body with the rear ends thereof respectively resting on and secured to the ends of the bolster, a cross-plate carried by the body and secured thereto at the front end of the tractor in advance of the bolster, the front ends of the sills being carried by and secured to the ends of said cross-plate, and means respectively and rigidly connecting each sill to an adjacent side track frame.

12. The combination with a track-type tractor having a central longitudinal body and opposite parallel side track frames longitudinally disposed alongside the body with their rear ends connected in load supporting relation to the rear end of the body, of means to support the front end of the body on the forward ends of the side track frames comprising brackets respectively mounted in transverse alignment on the track frames rearwardly of their front ends, each

bracket including an inwardly extending shelf, a transverse bolster extending under the body and having its ends anchored respectively to the shelves, means connecting the bolster to the under side of the body, a longitudinal I-beam sill disposed on each side of the body with the rear ends thereof respectively resting on and secured to the ends of the bolster, a cross-plate carried by the body and secured thereto at the front end of the tractor in advance of the bolster, the front ends of the sills being carried by and secured to the ends of said cross-plate, and brackets connected to the sills intermediate their ends and extending outwardly and downwardly therefrom with the brackets respectively carried on the adjacent side track frames.

13. The combination with a track-type tractor having a central longitudinal body and opposite parallel side track frames longitudinally disposed alongside the body with their rear end portions connected in load-supporting relation to a rearward portion of the body, of means for supporting a forward portion of the body on the track frames ahead of the load-supporting connection, a longitudinal sill disposed at each side of the body and having a rear portion supported by said body supporting means, means for securing forward portions of the sills to a forward portion of the body in spaced relation to the body supporting means, and means for supporting the sills on the track frames.

14. The combination with a track-type tractor having a central longitudinal body and opposite parallel side track frames longitudinally disposed alongside the body with their rear end portions connected in load-supporting relation to the body, of means for supporting the body on the track frames forwardly of the aforesaid load-supporting connection, a longitudinal sill disposed at each side of the body substantially parallel to and between the body and each track frame and having a rear portion supported by said body supporting means, a transverse member cross-connecting the sills for securing forward portions thereof to a forward portion of the body, and supporting means for connecting the sills to the track frames.

15. The combination with a track-type tractor having a central longitudinal body and opposite parallel side track frames longitudinally disposed alongside the body with their rear end portions connected in load-supporting relation to the body, of a frame structure for rigidly supporting the tractor body on the track frames, said frame structure including the track frames and comprising a substantially transverse member cross-connecting said track frames and secured to the body forwardly of the load-supporting connection, a second transverse member secured to the body forwardly of the first transverse member, a longitudinal member at each side of the body and connected at opposite end portions to the transverse members, and means rigidly connecting the longitudinal members to the track frames.

16. The combination with a track-type tractor having a central longitudinal body and opposite parallel side track frames longitudinally disposed alongside the body with their rear end portions connected in load-supporting relation to the body, of a frame structure for rigidly supporting the tractor body on the track frames, said frame structure including the track frames and comprising a substantially transverse member cross-connecting said track frames and secured to the body forwardly of the load-supporting connection

tion, a second transverse member secured to the body forwardly of the first transverse member, a longitudinal member at each side of the body between the body and each track frame and connected at opposite end portions to the transverse members, and a bracket secured to each longitudinal member and extending diagonally out-

wardly and connected to each track frame for rigidly supporting the longitudinal members on the track frame.

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