C. E. STAHL.
MULTIPEDAL TRACTION MECHANISM.
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1,402,186. Patented Jan. 3, 1922.
4 SHEETS—SHEET 2.
To all whom it may concern:

Be it known that I, CHARLES E. STAHL, a citizen of the United States of America, and a resident of Winthrop Harbor, Illinois, have invented a certain new and useful Improvement in Multipedal Traction Mechanism, of which the following is a specification.

This invention relates to traction mechanism of that character which employs an endless belt which travels on the ground, and wheels that rest on the belt, this construction being frequently termed a multipedal tractor.

Generally stated, the object of the invention is to provide a novel and improved construction and arrangement of the mechanism to permit a limited tilting action thereof as the belt travels over uneven ground, about a transverse axis, so that the tractor may adjust or accommodate itself to the surface of the ground, and whereby the load weight is supported on the mechanism in a way which tends to insure a strong and substantial construction.

It is also an object-to provide certain details and features of construction tending to increase the general efficiency and serviceability of a multi-pedal traction construction of this particular character.

To these and other useful ends the invention consists in matters hereinafter set forth and claimed.

In the accompanying drawings—

Fig. 1 is a side elevation of a multi-pedal traction mechanism embodying the principles of the invention.

Fig. 2 is a horizontal section on line 2-2 in Fig. 1.

Fig. 3 is a vertical section on line 3-3 in Fig. 1.

Fig. 4 is a plan of two of the traction devices connected together by the bolster which supports the load weight, the middle portion of said bolster being broken away for convenience of illustration.

Fig. 5 is a vertical section on line 5-5 in Fig. 3.

As thus illustrated, the invention comprises a pair of side members which are spaced apart and rigidly connected together by a transverse beam 2 near the center, and by top plates 3, thereby to form a rigid frame. The load-carrying bolster comprises the transversely arranged beams 4 which are spaced apart and provided at their ends with castings 5 which form the heads of the bolster. These castings are bored to receive the transversely arranged driving shaft 6, and the bore 7 is provided with extensions 8 which form trunnions. The side members 1 are provided with split bearings 9 which incline the trunnions 8, whereby the latter support the load weight imposed upon the bolster, it being understood that the latter supports the body of the excavator or trenching machine or other body frame. Sprocket wheels 10 and 11 are suitably supported in bearings 12 adjustable mounted on the front and rear ends of the frame composed of the side members 1, and flanged wheels 13 are also disposed between the two side members and supported in bearings 14 thereon, these wheels 13 being substantially wider than the sprocket wheels. A roller 15 has its end portions or journals 16 mounted in notches 17 formed in the upstanding portions 18 on the castings 5, this construction being duplicated at opposite ends of the bolster.

The endless traveling belts comprise a centrally arranged sprocket belt 19, which is of a width to fit between the beveled flanges of the wheels 13 (see Fig. 3), and which is constructed to engage the sprocket wheels 10 and 11, being also arranged to rest upon the roller 15 above, whereby the bottom portion of the ground belt is flat, while the upper portion is inclined in opposite directions from the center. The slats 20 are disposed transversely of the belt, a suitable distance apart, to provide the treads for the traction belt thus formed. Relatively narrow sprocket chains 21 are spaced a distance from the sides of the sprocket belt 19, and suitably secured to the slats 20, whereby these three belts, 19, 21, and 21, are connected together by said slats.

The end of the shaft 6 is provided with a sprocket wheel 22, and the end of the shaft 23 of the sprocket wheel 11 is provided with a sprocket wheel 24, the latter being connected by a sprocket chain 25 with said sprocket wheel 22, whereby rotation of the shaft 6 serves to drive the traction belt.

Referring to Figs. 3 and 4, it will be seen that the opposite ends of the bolster extend into the endless traction belt, and over the tilting frames of the two traction devices thus provided, so that each multi-pedal trac-
tion mechanism has a limited tilting motion about the shaft 6, the plates 3 engaging the bolster at each side of the latter to limit the tilting motion. In this way, sufficient tilting or oscillating movement is insured for each multi-pedal mechanism, while traveling over uneven surfaces, to insure proper traction and guard against breakage or straining of the parts, but at the same time, neither mechanism can turn clear around or tip over. The bolster communicates the entire load weight to the multi-pedal mechanism, so that no weight is imposed upon the transverse shaft 6, the trunnions 8 and their bearings 9 constituting the oscillatory or pivotal or rocking connection between the bolster and the frame of each traction device and the shaft 6 being thereby free to rotate smoothly and without any undue friction.

It will be seen that the shaft 6 forms the axle of the traction mechanism, but that with the provision of the bolster having the trunnions 8, which latter form the swivels or pivots for the mechanism, the said axle is what may be called a live axle, as there is no weight on it, so that it runs freely and without undue friction, as previously explained. In other words, this shaft or axle 6 could be removed, and still the bolster and traction belts would support the load weight, inasmuch as said shaft or axle serves only to drive the mechanism, and merely serves as a power-transmitting connection between the power plant on the excavator or other heavy body, and the driving connection 25 through which the traction belt is driven at each side of the machine.

What I claim as my invention is:

1. In a multi-pedal traction mechanism, a longitudinally disposed truck frame, a transversely arranged load-carrying bolster composed of duplicated beams extending over the top of said frame, bearings to support the bolster on said frame, with clearance between the top of each of said beams to permit the frame to tilt freely up and down at the front and rear ends thereof, an endless traction belt extending around said frame and over said bolster, and means on the frame to support the load on the belt.

2. A structure as specified in claim 1, said bearings comprising trunnions on the bolster, split bearings on the frame to inclose said trunnions, a shaft in said trunnions, a driving connection between said shaft and the belt, means on the bolster to support the upper portion of said belt, and means on the frame to engage the bolster and thereby limit the tilting motion of the frame while the belt travels over an uneven ground surface.

3. A structure as specified in claim 1, said frame being under one end portion of the bolster, and a similarly organized frame and belt for the other end portion of the bolster.

4. In a multi-pedal traction mechanism, a truck frame, sprocket wheels on the front and rear ends of said frame, a sprocket belt extending around said sprocket wheels, means to support the frame on the lower portion of said belt, means to support the load weight on said frame, a pair of sprocket chains disposed at opposite sides of and extending around said belt, transverse slats connecting said sprocket belt and chains together to form the treads of an endless traction belt, means for driving one of said sprocket wheels, and a support for the upper portion of said sprocket belt, the two sprocket chains being arranged to travel free of engagement.

5. In a multi-pedal traction mechanism, a truck frame, means including an endless belt to support the frame on the ground, and a load-carrying bolster composed of duplicated beams extending over and supported upon the top of said frame, with clearance between the top of the frame and the bottom of each of said beams to permit the frame to tilt freely up and down at the front and rear ends thereof.

6. A structure as specified in claim 5, a transverse driving shaft carried by the bolster, and means whereby the frame tilts about said shaft.

7. In a multi-pedal traction mechanism, the combination of an endless traction belt, a truck frame disposed within the belt, means on the frame to support the load weight on the belt, inner and outer trunnions forming a swivel connection, means between said trunnions to support the load weight thereon and thereby on said frame, whereby to permit tilting motion of the frame and belt about a transverse axis, and a shaft rotatable about said axis and forming a live axle free from load weight and connected to drive said belt.

8. A structure as specified in claim 7, said trunnion forming a bearing for said shaft, and said frame having a split bearing for the trunnion.

9. In a multi-pedal traction mechanism, the combination of a truck frame comprising trunnions on the bolster, split bearings on the frame to inclose said trunnions, a shaft in said trunnions, a driving connection between said shaft and the belt, means on the bolster to support the upper portion of said belt, and means on the frame to engage the bolster and thereby limit the tilting motion of the frame while the belt travels over an uneven ground surface.

10. A structure as specified in claim 1, said frame being under one end portion of the bolster, and a similarly organized frame and belt for the other end portion of the bolster.
frame is free to tilt while the belt is traveling over uneven ground.

10. A structure as specified in claim 9, said bolster extending under the upper portion of said belt, and having means on said head to support said belt.

11. A structure as specified in claim 9, in combination with a drive shaft extending through said trunnions, and a driving connection from said shaft to said belt.

12. In a multi-pedal traction mechanism, traction devices including an endless belt formed of connected slats at each side of the machine, means for driving said belts, means including an axle extending from one traction device to the other for transmitting power to said driving means, bearings for said axle, and tilting load-sustaining means comprising connected duplicated beams extending between said traction devices, and means for imposing the load upon said bearings and relieving said axle of any of the weight of said load.

CHARLES E. STAHLE