June 20, 1933. H. W. KAKASKA 1,914,692

POWER SHOVEL, CRANE, DRAGLINE, AND THE LIKE

Filed Feb. 6, 1932 3 Sheets-Sheet 1

Fig. 1.

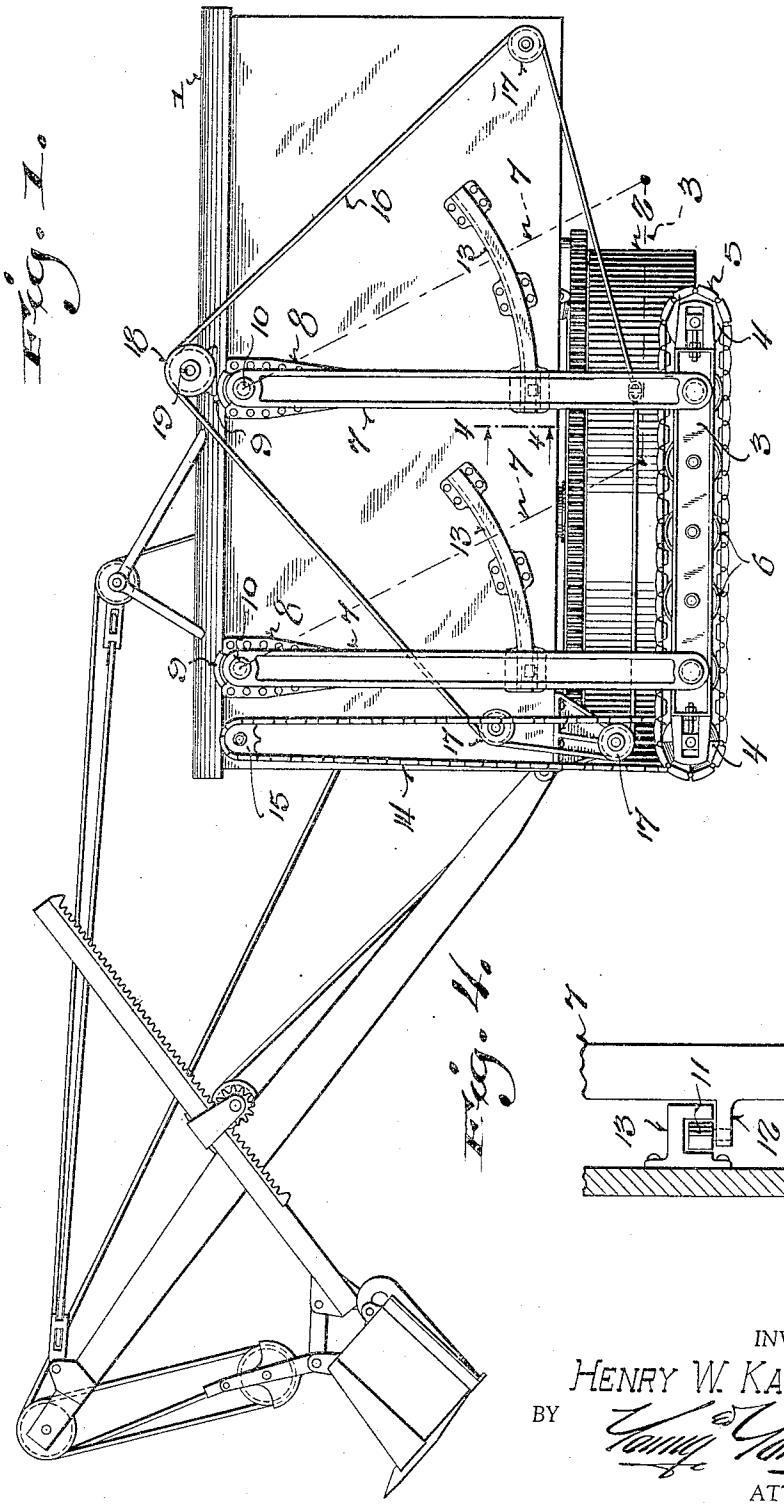


Fig. 4.

INVENTOR.
HENRY W. KAKASKA
BY
ATTORNEY

June 20, 1933. H. W. KAKASKA 1,914,692

POWER SHOVEL, CRANE, DRAGLINE, AND THE LIKE

Filed Feb. 6, 1932 3 Sheets-Sheet 2

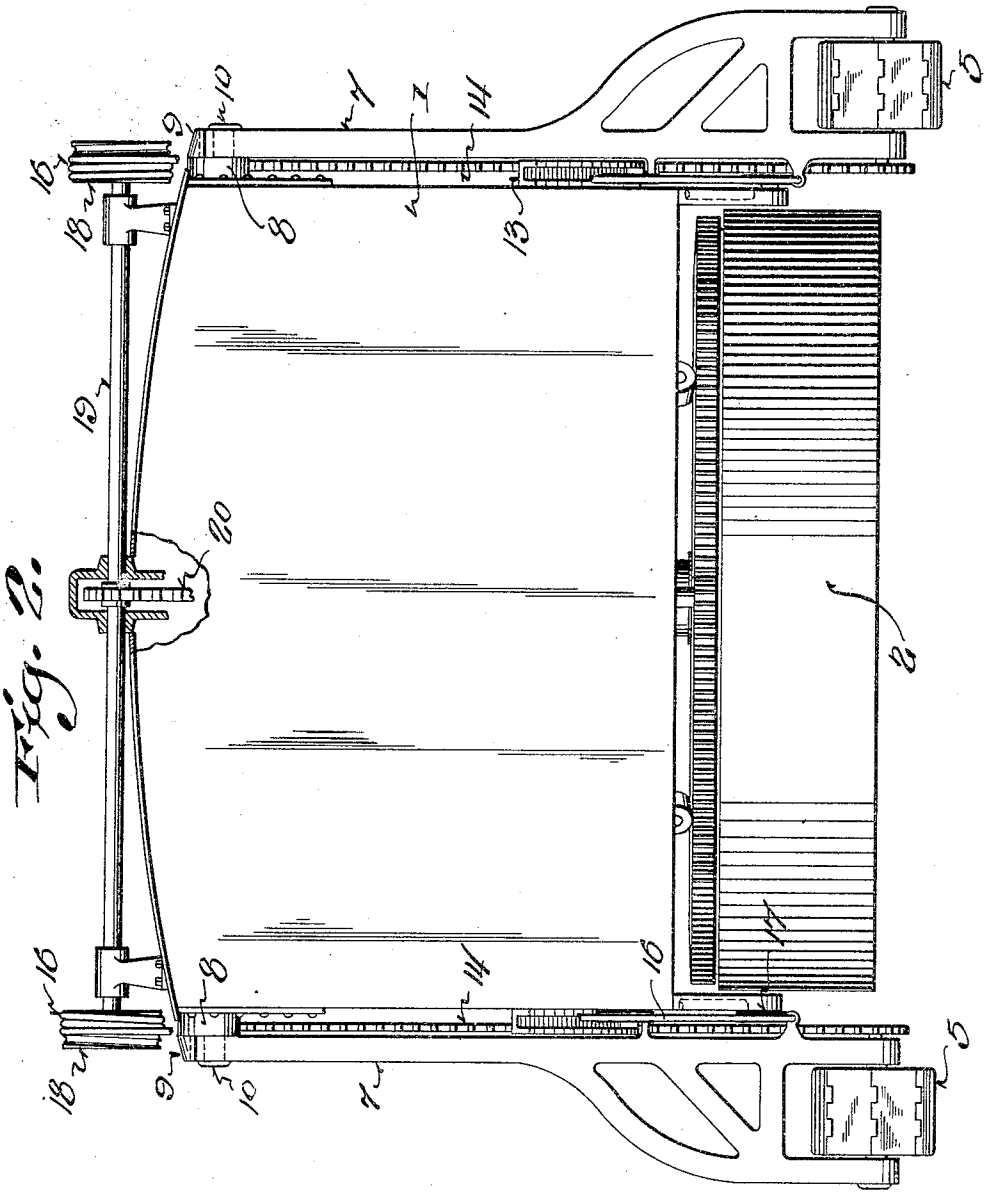


Fig. 2.

INVENTOR.
HENRY W. KAKASKA
BY
ATTORNEY.

June 20, 1933. H. W. KAKASKA 1,914,692

POWER SHOVEL, CRANE, DRAGLINE, AND THE LIKE

Filed Feb. 6, 1932 3 Sheets-Sheet 3

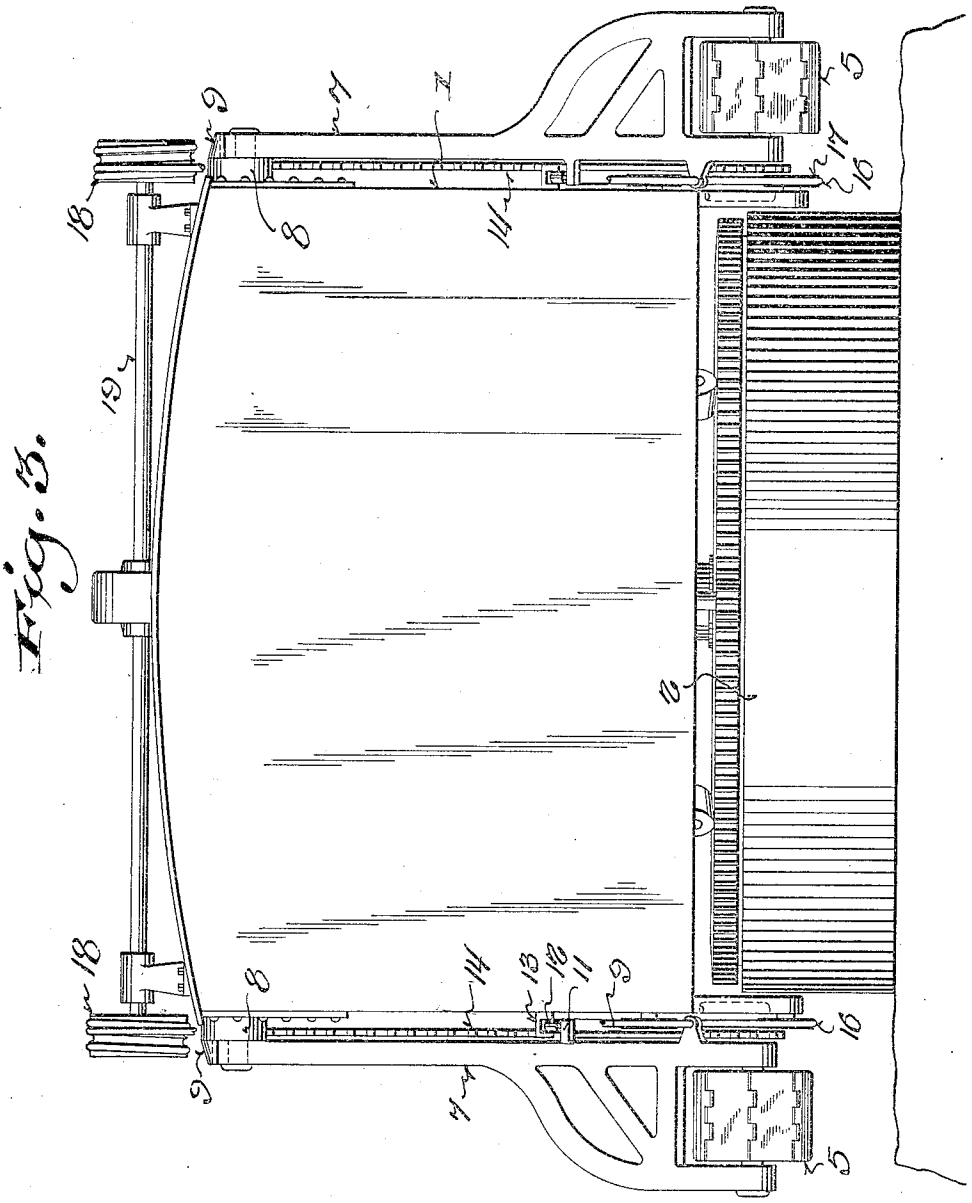


Fig. 5.

INVENTOR.
HENRY W. KAKASKA
BY
ATTORNEY.

Patented June 20, 1933 1,914,692

UNITED STATES PATENT OFFICE

HENRY W. KAKASKA, OF SOUTH MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-HALF TO FRANK HOLT, OF MILWAUKEE, WISCONSIN

POWER SHOVEL, CRANE, DRAGLINE, AND THE LIKE

Application filed February 6, 1932. Serial No. 591,330.

This invention pertains to shovels, cranes, draglines, and the like, and more particularly to the mounting of the traction or propulsion means.

At the present time practically all apparatus of the foregoing type is provided with continuous tracks as a means of propulsion, and because of the weight of the apparatus, and severe strain to which the track shoes are subjected during operation, the maintenance cost is excessive.

Also, another objection resides in the fact that considerable space is required for turning.

In addition to the foregoing, machinery of the class described is designed to provide the most desirable center of gravity under operative conditions, and, therefore, when being propelled up or down steep inclinations, the center of gravity is shifted, which frequently results in tilting.

The present invention, therefore, has primarily for its object to overcome the foregoing objections by the provision of means for shifting the tracks with relation to the body or cab of the apparatus, either into or out of engagement with the ground during operation of the apparatus, or forwardly or rearwardly during transportation of the same, whereby the apparatus is supported upon its base during operation and in turning the cab and tracks to change the direction of travel, and to vary the center of gravity during transportation up and down steep inclinations.

Incidental to the foregoing, a more specific object of the invention resides in supporting the apparatus by means of parallel links connected with the track frames.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the novel construction, combination and arrangement of parts, substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the herein disclosed invention may be made as come within the scope of the claims.

In the accompanying drawings is illustrated one complete example of the physical embodiment of the present invention constructed according to the best mode so far devised for the practical application of the principles thereof.

In the drawings:—

Figure 1 represents a side elevation constructed in accordance with the present invention.

Figure 2 is a rear elevation.

Figure 3 is a similar view illustrating the tracks in raised position, and

Figure 4 is a fragmentary detailed section taken on the line 4—4 of Figure 1.

Referring now more particularly to the accompanying drawings, wherein the invention is shown illustrated in connection with a conventional type of power operated shovel, it is to be understood that the same is equally applicable to other types of industrial self-propelled equipment, where excessive load is imposed upon the apparatus during operation.

In the drawings, the numeral 1 designates a cab which houses the usual power mechanism required to actuate and propel the apparatus, and comprising either a steam, gasoline, or electric motor. The cab 1 is rotatively mounted upon a base 2, and provided with the customary turntable to permit rotation of the same with relation to the base. As a means of propulsion, the apparatus is provided with a conventional continuous track mechanism, comprising a frame or girder 3 positioned upon each side of the cab, and having journalled in its ends a pair of sprockets 4, over which the track 5, consisting of a plurality of linked shoes, is trained. The usual intermediate idler rollers 6 are also journalled in the girders or frame 3.

A pair of parallel links 7 are pivotally connected to each track frame 3 adjacent its forward and rearward ends, and in turn the links 7 are pivotally secured to brackets 8 attached to the cab 1, and provided with arcuate hoods 9 adapted to engage the rounded upper ends of the links 7 to relieve a portion of the strain from the pintles 10. Secured to each link 7 is a roller 11 carried by an offset arm 12, and engaged in an arcuate channelled track or

guide 13, secured to the side of the cab, whereby the links 7 are held against lateral movement with relation to the cab.

Driving of the continuous track 5 may be accomplished in numerous ways, as for instance through either chains or gearing. However, for the purpose of simplicity a chain drive is illustrated, in which the chain 14 connects a driving sprocket 15 with the front sprocket 4, and inasmuch as the shaft of sprocket 15, and the pintles 10, are all positioned upon a common horizontal plane, the tracks can be driven in any adjusted position.

Shifting of the tracks may be accomplished in numerous ways, as for instance by links, worm screw levers, and the like. However, for the purpose of simplicity, cables 16 are shown having their ends connected to one of the links 7, and after being trained over idlers 17, carried by the cab adjacent its front and rearward ends, the cables are run over power-driven drums 18 mounted upon a driven shaft 19 carried by the cab. The shaft 19 may be driven in any suitable way, as through gearing 20 suitably connected with the source of power contained within the cab.

In operation the track frames 3, which are positioned upon opposite sides of the cab 1, are normally held in their lowermost position to engage the ground, as shown in Figure 1, thus permitting the apparatus to be propelled over the ground in the usual manner. When it is desired to operate the apparatus, as for instance in digging, or other classes of work, where excessive weight and strain are to be exerted upon the same, the parallel links 7 are oscillated upwardly to the position indicated by dotted lines in Figure 1, which raises the tracks and permits the apparatus to rest upon its base 2, thus eliminating all strain and wear upon the track shoes during operation. Lowering the tracks and raising of the apparatus are readily accomplished by rotating the power actuated drum 18 in the opposite direction.

From the foregoing explanation, taken in connection with the accompanying drawings, it will be readily seen that comparatively simple, inexpensive and efficient means has been provided for shifting the propulsion tracks into or out of engagement with the ground, eliminating all strain and wear upon the tracks when the apparatus is in operation, and at the same time providing for a slight longitudinal shifting of the tracks to change the center of gravity of the apparatus as the same is being propelled up or down steep inclines.

A further highly important advantage of the present structure resides in the fact that when it is desired to change the direction of travel of the apparatus, the same can be accomplished in an exceedingly small space, in that it is merely necessary to raise the tracks, after which the cab can be swung in the direction desired, whereupon the tracks are again lowered for transportation.

Obviously, other types of equipment will require modifications in the structure shown, and also other changes are contemplated for effecting the operation and results obtained, in that the essential feature of the invention resides in suspending the tracks from a rotatably mounted cab, together with the provision of means for raising and lowering the tracks.

I claim:—

1. In combination with an apparatus of the class described, including a base and a cab rotatably mounted thereon; a frame positioned upon each side of the cab and provided with a continuous track, parallel swinging links connecting each frame with said cab, a cable connected with said links, a power driven drum for actuating said cable, a swinging driving connection between said cab and tracks, and an arcuate guide carried by said cab for each of said links.

2. In combination with an apparatus of the class described, including a base and a cab rotatably mounted thereon; a frame positioned upon each side of the cab and provided with a continuous track, parallel swinging links connecting each frame with each set of said cab, a cable connected with said links, a power-driven drum for actuating each of said cables, a swinging driving connection between said cab and tracks, and an arcuate channel guide carried by said cab for each of said links.

3. In combination with an apparatus of the class described, including a base and a cab rotatably mounted thereon; a frame positioned upon each side of the cab and provided with a continuous track, parallel swinging links connecting each frame with said cab, a cable connected with each set of said links, a power-driven drum for actuating each of said cables, swinging driving connecting between said cab and tracks, an arcuate channel guide carried by said cab for each of said links, and rollers carried by said links for engagement in said channel guides.

4. In combination with an apparatus of the class described including a base and a cab rotatably mounted thereon; a frame positioned upon each side of the cab and provided with a continuous track, parallel swinging links connecting each link with said cab, means for actuating said links to raise and lower said tracks, driving connection between said cab and tracks, and an arcuate guide carried by said cab for each of said links.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wisconsin.

HENRY W. KAKASKA.