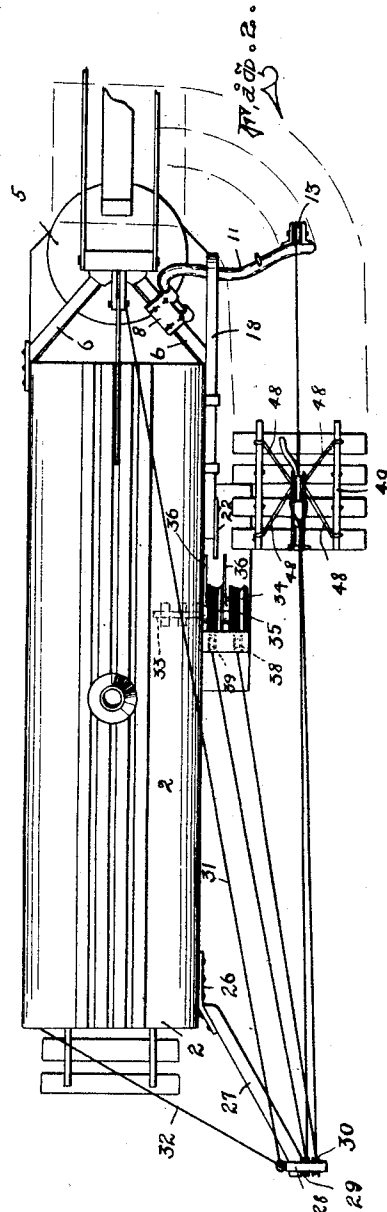


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Fig. 1

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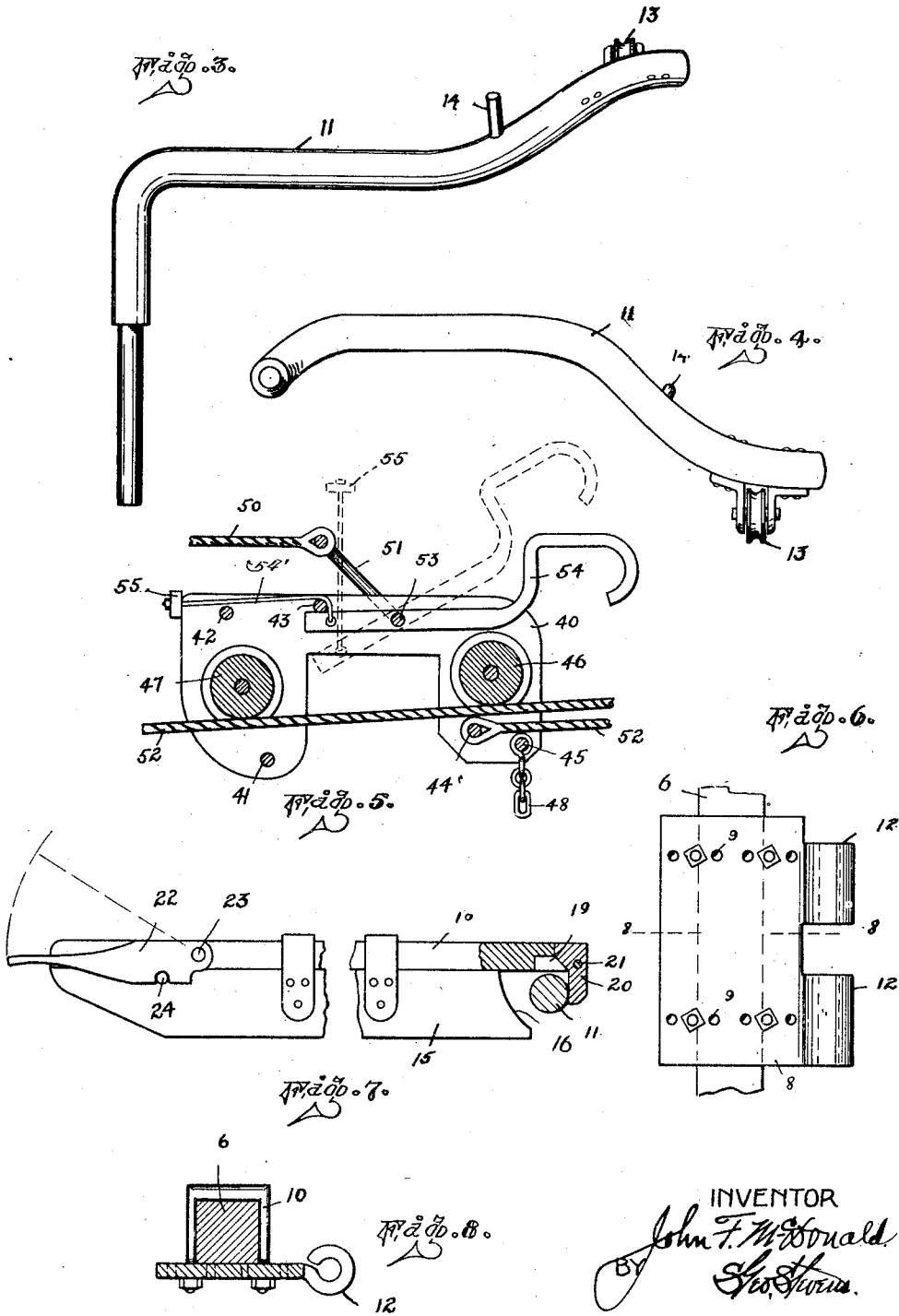
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TRACK CARRIER.
APPLICATION FILED JULY 9, 1920.

1,364,883.

Patented Jan. 11, 1921.
2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JOHN FRANK McDONALD, OF HIBBING, MINNESOTA.

TRACK-CARRIER.

1,364,883.

Specification of Letters Patent. Patented Jan. 11, 1921.

Application filed July 9, 1920. Serial No. 394,891.

To all whom it may concern:

Be it known that I, JOHN FRANK McDONALD, a citizen of the United States, residing at Hibbing, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Track-Carriers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to portable steam shovels and has special reference to an auxiliary track laying attachment for such shovels.

The particular kind of shovel to which the present embodiment of my invention is applied is that commonly used in mining operations, such as open pit iron mines or the like, or, in fact, any similar class of work in which the larger sized steam shovels are employed, and wherein it becomes necessary to continue the laying of track in front of the shovel as the latter advances in its work.

It is known to those versed in the art of steam shovel operations that the laying of track in front of the shovel is a very arduous and expensive operation. The object of my present invention is to eliminate the difficulty of this feature as much as possible, and to provide a simple and efficient track laying attachment to the present form of shovel with as little additional expense as possible.

Other objects and advantages of the invention will appear in the further description thereof.

In the accompanying drawings forming part of this application and in which like reference characters indicate like parts:

Figure 1 is a side elevation of a steam shovel equipped with my improved track laying device,

Fig. 2 is a top plan view of a portion of Fig. 1, showing the section of track being moved in a somewhat different position.

Fig. 3 is an enlarged view of the track carrying arm,

Fig. 4 is a plan view of Fig. 3, upside down,

Fig. 5 is a longitudinal sectional view through the track carrying trolley,

Fig. 6 is an elevation of the track carrying arm bracket,

Fig. 7 is a side elevation, partly in sec-

tion of the track carrying arm returning device, and

Fig. 8 is a sectional view on the line 8—8, Fig. 6.

The representation, shown in Figs. 1 and 2, is of an ordinary large type of steam shovel, the sills of the car body being shown at 1, the house at 2, the boom at 3, the dipper at 4, the swinging circle at 5, and the A-frame at 6. The track upon which such shovel is operated is usually composed of a plurality of sections such as illustrated at 7, they being ordinarily about six feet in length, and, while the shovel is advanced upon a track composed of a plurality of these sections, the one left at the rear of the car as it passes thereover, is taken forwardly and placed in alinement with those beneath the car, and this process is carried on successively as the shovel advances.

To perform this operation of track laying in the most economical manner possible I provide the following:

To the right leg of the A-frame 6 is adjustably fastened the bracket 8 which is composed of a single piece of flat metal having a series of holes 9 adjacent each end thereof for engagement by the staples 10 which surround the leg of the A-frame and which are drawn up tightly thereabout for holding the bracket securely to the A-frame, the object of a series of such holes being to permit of changing the angle of the bracket on the leg of the A-frame to govern the swinging of the track carrying arm 11 which is journaled within the trunnion 12 formed upon one edge of the bracket for pivotally supporting said arm. The arm 11 is of general L-shape though somewhat crooked in its outer extremity for the more convenient suspension of the track section carried thereupon and is preferably reduced in size in that portion which is engaged in the trunnions 12 of the bracket to insure its proper positioning and free action. Adjacent the outer end of the arm 11 is pivotally mounted a forwardly extending sheave 13 and spaced inwardly from said sheave and at approximately right angles thereto and also at right angles to the main portion of the arm 11, is a rigidly fixed pin 14, the office of both of which sheave and pin will be described later. This arm is so positioned and spaced that when swung out-

wardly away from the center of the shovel it will extend approximately at right angles thereto and horizontally out of the way of the free swinging of the boom 3 and dipper 4 of the shovel while when released and allowed to swing downwardly in front of the shovel the free end thereof will be practically directly over the center line of the shovel track.

As the arm 11 is pivotally supported in the bracket 8 on the forwardly inclined leg of the A-frame, it is evident that the normal position of the arm is that of being swung forwardly in front of the shovel, as it will assume such position by gravity, and, as a means for retaining the arm in its outwardly swung position, as shown in the drawings, I provide an inclined brace 15, fastened to the forward end of the house 2 of the shovel, the outer end of which brace is concaved in form, as at 16, for the reception of the arm 11, while the lower end of the brace 15 extends to a point conveniently accessible from the platform 17 upon which the operator of the track laying device may stand. Slidably attached in any desired manner upon the brace 15 is a reciprocable rod 18 the upper and forward end of which is bifurcated as at 19 and pivotally carries therein a dog or catch 20, as at 21, and which catch, when the arm 11 is swung upwardly and struck thereby, will yield and freely allow the arm to pass into the partial closure formed by the concaved end of the brace 15 and the lower lip of the catch. When such position of the arm 11 is assumed, the catch 20 will fall by gravity in front of the arm and retain same in the position shown, particularly in Fig. 7 of the drawings. The rod 18 is held downwardly in locked or holding position, as respects the arm, by the handle 22, pivotally mounted thereupon as at 23, being hooked over the pin 24 fixed in the side of the lower end of the brace 15. When it is desired to release the arm 11 and allow it to swing downwardly and around in front of the shovel, all that is necessary to do is to raise upwardly on the handle or lever 22 until freed from the pin 24 when the gravity stress upon the rod 18 will slide it upwardly until the arm 11 is freed therefrom due to the weight of the arm 11 pushing forwardly and downwardly against the catch 20 on the upper end of said rod. Any time after this is accomplished the rod 18 may be drawn downwardly to its original position and then held by means of the lever 22 engaging the pin 24, as previously described.

Upon the after right corner of the shovel, and securely attached to the main sills of the car body, in any desired manner, as at 25, is an upwardly extending bracket plate 26, to the upper end of which is fixed an inclined mast or boom 27, the latter extending

backwardly and laterally from the rear corner of the house of the shovel. To the upper end of the boom 27 is attached a laterally extending bracket 28, carrying therein two sheaves 29 and 30. A suitable guy line 31 is installed intermediate of the upper end of the A-frame and the extreme upper end of the boom 27 for supporting same, and a similar line 32 is installed between the far opposite corner of the shovel house and the upper end of the boom 27 for a like purpose.

I have indicated in dotted lines at 33, Fig. 2, the approximate position of one of the principal shafts of the shovel, which is directly associated with the hoisting mechanism of the shovel and is ordinarily in rotative motion. Directly opposite the end of this shaft and suitably mounted upon the platform 17 are two winding drums 34 and 35, they being intermittently operated and controlled in any desired manner common to such devices from the shaft 33, but I have not shown such mechanism as it does not form part of my present invention; however, I have shown suitable levers as at 36 for controlling said winding drums. Extending upwardly from close proximity to the drums is a suitable upright mast or brace 37 in which are mounted two sheaves 38 and 39 through which the hoisting lines, hereinafter described, pass.

The track carrying trolley comprises two spaced metal side members 40 held together by suitable through bolts indicated at 41, 42, 43, 44, and 45. Within this chassis are mounted two sheaves 46 and 47 upon which the trolley traverses. The grappling chains or ropes 48, of which there are four in number, are attached to the through bolt 45 in the forward lowermost corner of the trolley and these grappling chains or ropes may be fastened in any desired manner to the rails 49 of the section being moved, the essential feature of their connection being that the section of track being moved is held as nearly level as possible when being suspended from the trolley. The line 50 which assists in the manipulation of the trolley is attached at one end of the bail 51 which is pivotally mounted approximately centrally transverse the trolley. This line leads from the trolley over the sheave 30 in the upper end of the boom 27 and thence to and over the sheave 38 in the mast 37 and from there down and around the winding drum 34 by which latter it is controlled. The other operating line 52 is permanently fixed about the through bolt 44 in the forward lower end of the trolley and from thence passes to and around the sheave 13 carried on the free end of the arm 11 from where it passes back through the trolley under both of the sheaves or sheave wheels 46 and 47, from whence it leads to the sheave 29 at the end of the boom 27 and from there to and

over the sheave 39 in the mast 37 to the winding drum 35 by which it is controlled.

By this arrangement of lines it is evident that a pulling stress toward the drum 35 upon the line 52 will draw the trolley toward the forward end of the shovel and that by a similar stress on the line 50 the trolley may be drawn toward the after end of the boom 27 as shown in Fig. 1 of the drawings, and that by careful manipulation of the lines 50 and 52 any desired vertical or horizontal position of the trolley may be readily had depending entirely upon the relative manipulation of the winding drums 34 and 35. In the trolley and pivotally mounted upon the bail support 53 is mounted a strong goose-necked hook 54 which extends upwardly and beyond the forward end of the trolley, the opposite end of said hook extending rearwardly and having attached thereto a short line 54' carrying on the end thereof a short cross piece or block 55 which may be drawn manually down over the corner of the trolley and there remain for the purpose of holding the hook 54 in rigid horizontal relation to the trolley, the line 54' passing over the through bolt 43 as clearly shown in Fig. 5 of the drawings. This hook is for the purpose of engaging the end of the arm 11 intermediate of the sheave 13 and the pin 14 when the trolley is drawn with its burden of track section to a point in close juxtaposition to said arm. It will be noted that the point of support of the load carried by the trolley is forward of the sheave wheel 46 and that the line 52, being intermediate of the sheave wheel 47 and the through bolt 45, will assist in keeping the trolley in proper alinement for the engagement of the hook 54 over one end of the arm 11 when the trolley is drawn to such position. Thus when this positioning of the trolley with its load occurs, and the hook 54 engaged over one end of the arm 11, both lines 50 and 52 may be slacked off and the arm will then wholly support the trolley with its burden, and the holding device means, previously described comprising the brace 15 and the rod 18, will perform their office of maintaining the arm in such position.

Now when it is desired to swing the section of track thus suspended around in front of the shovel, the dipper and its supporting boom is preferably swung away to the opposite side of the shovel out of the road when the operator on the platform 17 will raise the lever 22 for releasing the rod 18 and thereby allow the arm 11 to drop by gravity with its load around in front of the shovel, such action being usually controlled by the slacking off or holding of the drums 34 and 35 as desired. When the section of track indicated at 56 is thus positioned an operator will slip the block 55 up from the

corner of the trolley chassis which will release the inner end of the hook 54 and allow it to assume the position shown in dotted lines Fig. 5 which is desired to permit sufficient slack to allow the track section to rest upon the ground. The advantage of this final adjustment being in the hands of those directly engaged in positioning the section, is obvious as no additional slacking off or adjusting of the drums is required. When a section of track is thus placed, the grappling lines or chains are unhooked, the cross piece 55 drawn back to position over the corner of the trolley chassis and the arm 11 with the trolley swung back out of the way of the dipper and shovel boom to its automatic engagement with the holding means comprising the brace 15 and the rod 18 which latter will have been properly positioned and locked by the operator on the platform 17, when the device is again ready for subsequent engagement with another piece of track.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. The combination with a portable shovel of the character described, of means carried upon one side of the chassis suspended from and operated by a line, whereby a section of track may be transferred from one end of the shovel to the other.
2. The combination with a portable shovel of the class described, operative upon a track, of means carried upon one side of the shovel suspended from and operated by a line for transferring sections of the track from one end of the shovel to the other.
3. The combination with a portable shovel of the class described operative upon a track, of means flexibly suspended from the side of the shovel for transferring sections of the track from one end of the shovel to the other.
4. The combination with a portable shovel of the class described, of a trolley swingingly suspended on a line from two corners of the shovel and reciprocally operative along one side thereof for transferring objects from one end of the shovel to the other.
5. The combination with a portable shovel of the class described, of an arm pivotally mounted upon one forward corner of the shovel, a boom mounted upon the rear corner of the shovel and on the same side as the arm, a trolley swingingly suspended intermediate of the end of the boom and the arm and hoisting drums carried by the shovel for operating the trolley for the purpose described.
6. The combination with a portable shovel of the class described operative upon a track, of an arm pivotally mounted upon one forward corner of the shovel, a mast

mounted upon the after corner of the shovel and on the same side as the arm, trolley supporting lines operative intermediate of and supported by the arm and mast, a trolley carried by said line and means intermediate of the arm and mast for controlling the lines and trolley.

7. The combination with a portable shovel of the class described having an inclined A-frame upon the forward end thereof and means for conveying objects from one end of the shovel to the other, of an arm pivot-

ally attached to the A-frame coöperatively engaged with the conveying means and means whereby said arm may conclude the conveying operation and deposit the object at its final resting place substantially as described. 15

In testimony whereof I hereunto affix my signature in the presence of two witnesses. 20

JOHN FRANK McDONALD.

Witnesses:

CHAS. A. PARKS,
J. H. McNIVEN.