D. J. CAREY.

POWER SHOVEL OR THE LIKE.

APPLICATION FILED AUG. 24, 1916.

1,283,073.

Patented Oct. 29, 1918.

2 SHEETS—SHEET 1.

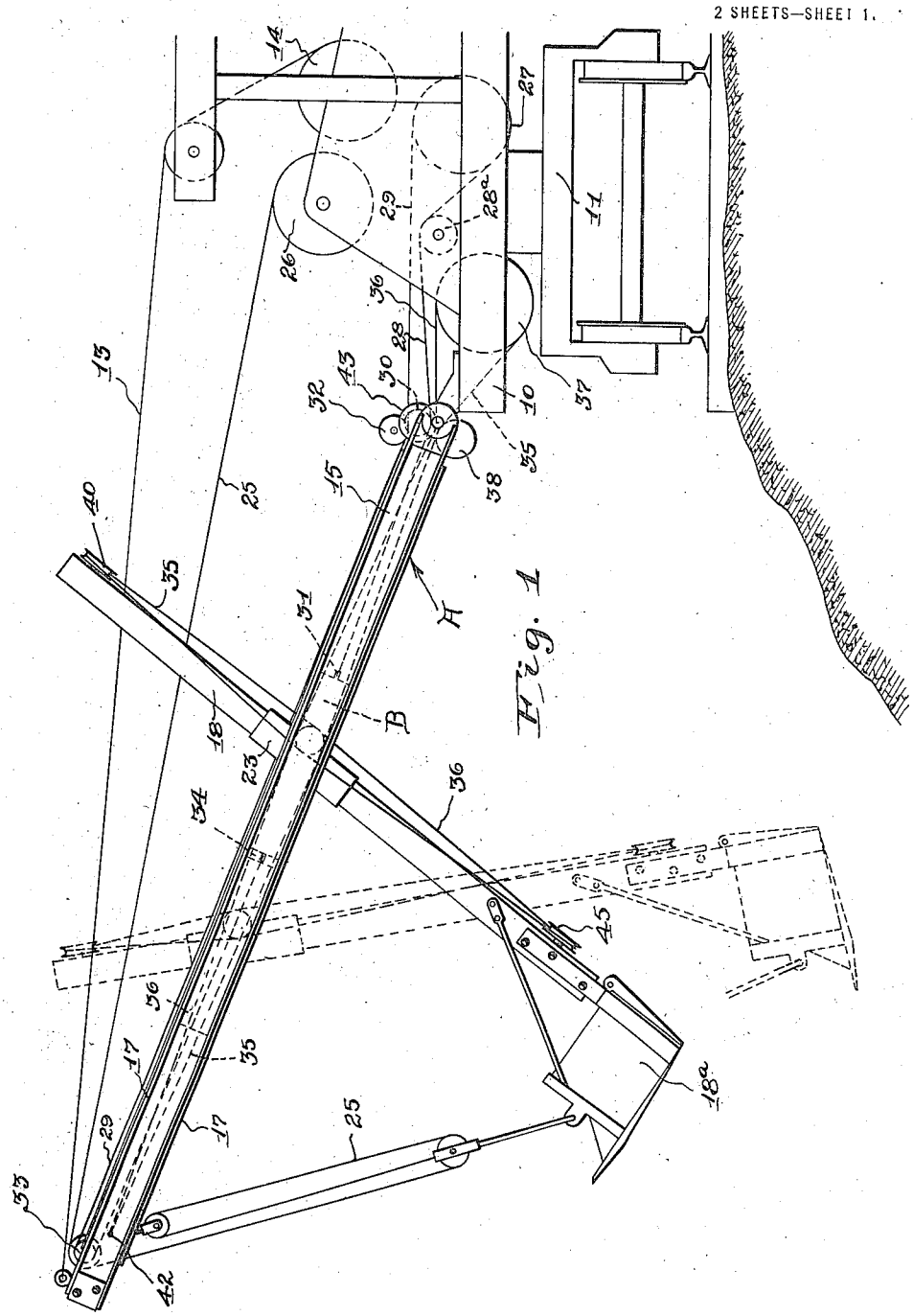


Fig. 1

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2 SHEETS—SHEET 2.

Fig. 3

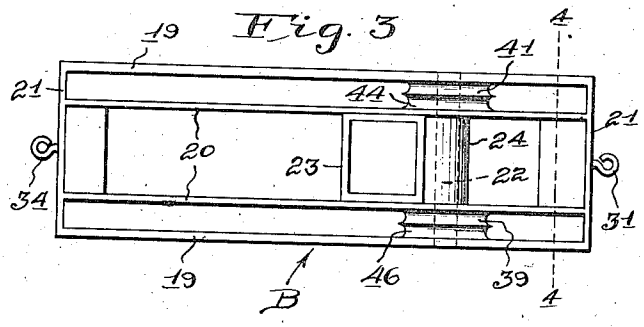


Fig. 4

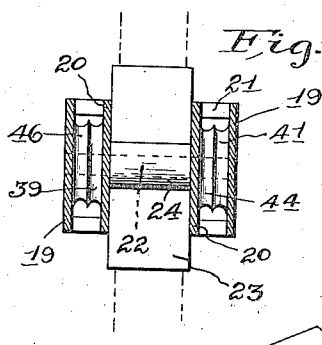
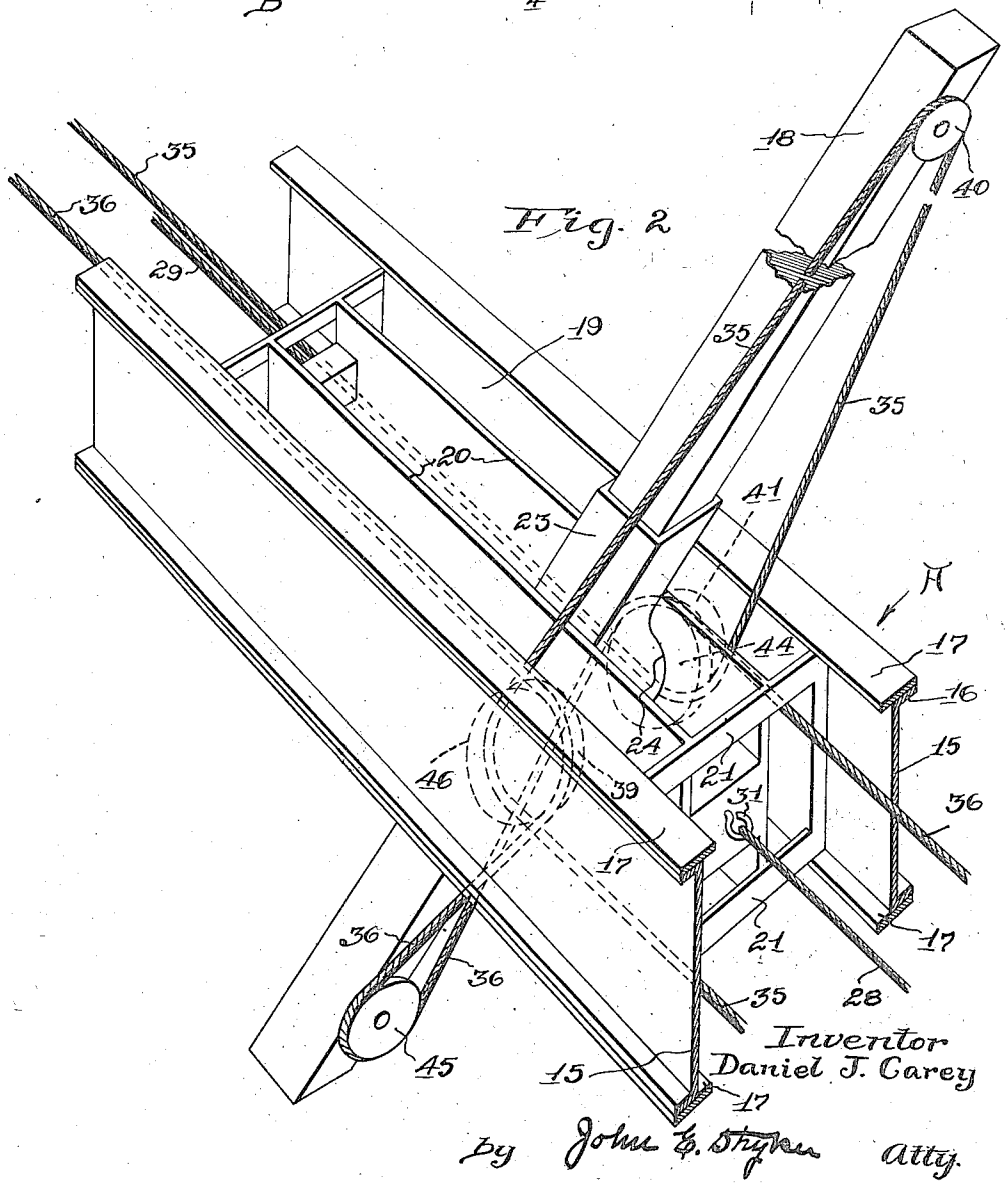


Fig. 2



Inventor
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UNITED STATES PATENT OFFICE.

DANIEL J. CAREY, OF EDSON, ALBERTA, CANADA.

POWER-SHOVEL OR THE LIKE

1,283,073. Specification of Letters Patent. Patented Oct. 29, 1918.

Application filed August 24, 1916. Serial No. 116,647.

To all whom it may concern:

Be it known that I, DANIEL J. CAREY, a subject of the King of Great Britain and Ireland, residing at Edson, in the Province of Alberta and Dominion of Canada, have invented new and useful Improvements in Power-Shovels or the like, of which the following is a specification.

In devices of this kind in common use, I am aware of none which employs an oscillating dipper arm, capable of adjustment lengthwise of the boom or support and also adapted to be shifted longitudinally in its oscillatory mounting on said support. My present invention embodies such a dipper arm and simple mechanism associated therewith, whereby the dipper may be operated quickly and easily.

The object of my invention is to provide means in devices of this kind whereby the range and capacity thereof are simply and economically increased.

More particularly, its object is to provide in a device of this nature a mounting for a dipper arm capable of longitudinal movement upon a support, and power operated means adapted to shift said dipper arm longitudinally to any position of its adjustment on said support.

In the drawings, Figure 1 is a side elevation of a power shovel embodying my invention; Fig. 2 is a perspective view showing in detail the construction of the boom, the dipper arm and carriage therefor and the arrangement of cables to shift said arm in said carriage; Fig. 3 is a detail plan view of the carriage; and Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3.

Referring to the drawings, I have used the reference numeral 10 to indicate the bed of the shovel, which may be mounted upon a truck 11 or other suitable device. A boom A, tiltably mounted upon the bed 10, is supplied with a supporting cable 13 wound upon a drum 14 on the bed 10. Said boom comprises two spaced channeled beams 15 arranged side by side and having the flanges 16 thereof turned outward. Guides 17 secured to and overlapping said flanges 16 slidably receive a carriage B upon which a dipper arm or handle 18 is mounted. Said carriage B is made up of spaced beams 19 and 20 joined at their ends by cross-pieces 21, the longitudinal edges of the outer beams 19 being adapted to slide upon the guides 17 of the boom A. A shaft 22 (dotted lines Figs. 3 and 4) passes transversely through the beams 19 and 20 of the carriage B. Between the inner beams 20 is a sleeve 23, square in cross-section, having a bearing 24 upon the shaft 22, to tiltably support said sleeve. The dipper arm 18 fits loosely in said sleeve 23 and is capable of longitudinal movement therein. A dipper, bucket or other receptacle 18^a is attached to the lower end of said dipper arm 18 and ordinary hoisting tackle for said dipper is provided, which may include a cable 25 and winding drum 26 therefor.

I supply suitable means for sliding the carriage B from one end of the boom A to the other and these means, as shown, consist of a winding drum 27 and two cables 28 and 29 wound in opposite directions on said drum. The cable 28 passes over an idler sheave 28^a, then under a second idler sheave 30 and is attached to an eye 31 on one end of the carriage, while the other cable 29 passes under an idler sheave 32, then over a second idler sheave 33 and is connected to a second eye 34 on the other end of said carriage.

I also provide means to move and secure the dipper arm 18 in the sleeve 23 in all positions of the carriage B, said means being adapted to compensate for the movement of the carriage. Two cables, 35 and 36, are wound in opposite directions upon a drum 37. The cable 35 passes from said drum over an idler sheave 38 near the pivotal mounting of the boom A, thence under a sheave 39 on the carriage B, thence upward over a sheave 40 on the upper end of the dipper arm 18, thence downward beneath a second sheave 41 on the carriage, thence to a point 42 at the outer end of the boom A, where it is securely attached. The second cable 36 passes from the drum 37 beneath an idler sheave 43, thence over a sheave 44 on the carriage, thence downward around a sheave 45 on the lower end of the dipper arm 18, thence upward over a second sheave 46 on said carriage and thence to said point 42 near the outer end of the boom A, where it is also secured. Rotation of the winding drum 37 in either direction takes up one of the cables 35 or 36 and pays out the other, thus causing the dipper arm 18 to slide longitudinally in its supporting sleeve 23. The sheaves 39, 41, 44 and 46 roll upon the cables 35 and 36 without altering the position of the dipper arm 18 when the carriage B is shifted upon the

boom A. Thus it will be seen that the longitudinal adjustment of the dipper arm need not be disturbed, when the carriage is moved, and that said arm can be shifted longitudinally by rotating the drum 37 in any position of the carriage B, whether the same is in motion or at rest. This longitudinal movement of the dipper arm 18 when in varying positions on the boom A often avoids or decreases the movement of the heavy boom and thus facilitates access to loading and discharging positions, and also the crowding of the dipper 24 into the work.

Having described my invention, what I claim as new and desire to protect by Letters Patent, is:

1. In a device of the class described, a boom or other support, a carriage slidable longitudinally on said support, a transverse shaft in said carriage, a sleeve pivotally mounted on said shaft, sheaves revoluble on said shaft and located upon opposite sides of said sleeve, a dipper arm slidable in the sleeve, a sheave at each end of said dipper arm, means to move the carriage on said support, a pair of cables, each of which is attached to the boom and extends over a sheave on said shaft and one of said sheaves on the dipper arm, and means to wind in and pay out said cables, whereby said dipper arm may be shifted longitudinally from any position of the carriage.

2. In a device of the class described, a boom or other support, a carriage slidable longitudinally on said support, a transverse shaft on said carriage, a sleeve pivotally mounted on said shaft, two pairs of sheaves revoluble on said shaft and located on opposite sides of said sleeve, a dipper arm slidable in the sleeve, a sheave at each end of said dipper arm, means to move the carriage on said support, a pair of cables, each cable being attached to the outer end of the boom and arranged to pass over one of the sheaves on said dipper arm and also over sheaves on opposite sides of said sleeve, and means to wind in and pay out said cables, whereby said dipper arm may be shifted longitudinally from any position of the carriage.

3. In a device of the class described, a boom, comprising a pair of parallel spaced members having guides thereon, a carriage slidable longitudinally within said boom and between said guides, said carriage consisting of a pair of inner beams and a pair of outer beams, said beams being spaced apart and rigidly connected at their ends, a shaft passing transversely through said beams, a sleeve pivoted upon said shaft and adapted to oscillate between the inner beams of the carriage, a pair of independently revoluble sheaves mounted on said shaft between each outer beam and the inner beam adjacent thereto, a dipper arm slidable in said sleeve, a sheave at each end of the dipper arm, means to move the carriage on said boom, a pair of cables, each cable being attached near the outer end of the boom and arranged to pass over one of the sheaves on said dipper arm and also over sheaves on opposite sides of said sleeve, and means to wind in and pay out said cables, whereby said dipper arm may be shifted longitudinally from any position of the carriage.

Whereof, I have hereunto subscribed my name to this specification.

DANIEL J. CAREY.