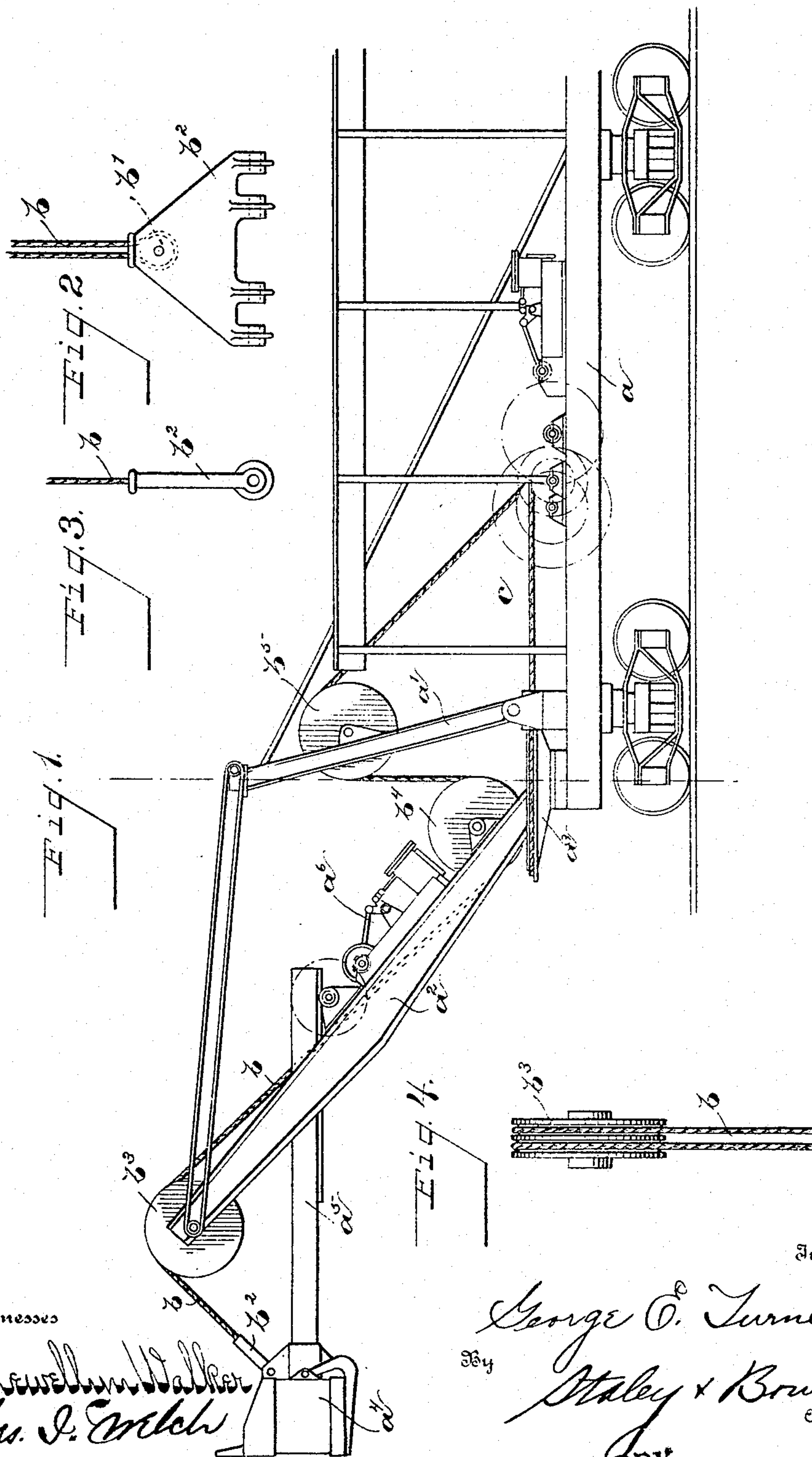


No. 812,244.

PATENTED FEB. 13, 1906.

G. E. TURNER.
STEAM SHOVEL AND DREDGE.
APPLICATION FILED FEB. 27, 1905.



Witnesses
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UNITED STATES PATENT OFFICE.

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STEAM SHOVEL AND DREDGE.

No. 812,244.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed February 27, 1905. Serial No. 247,424.

To all whom it may concern:

Be it known that I, GEORGE E. TURNER, a citizen of the United States, residing at Bellefontaine, in the county of Logan and State of Ohio, have invented certain new and useful Improvements in Steam Shovels and Dredges, of which the following is a specification.

My invention relates to improvements in steam shovels and dredges, and more particularly relates to the hoisting devices therefor.

The object of the invention is to so simplify the apparatus as to cheapen it in construction and render it more economical and more efficient in operation.

Heretofore it has been the practice in such constructions to use a chain rove three parts, for hoisting the bucket. It has been the usual custom to pass the lead over a sheave, over the foot of the boom, thence downward through the turn-table and about a comparatively small sheave below the car-floor, and then upward to the winding-drum. The use of a cable for this purpose has been impractical on account of the excessive wear incident to the use of sheaves of small diameter made necessary by the lack of room. In view of this a further object of the present invention is to so train the cable lead that the use of sheaves of large diameter will be possible.

A further object is to provide for the use of twin hoisting-cables and provide means for equalizing the strain thereon, and, further, to provide protective means for said twin cables at the point most subject to danger of abrasion by stones, grit, &c.

In the drawings, Figure 1 represents a side elevation of a steam-shovel embodying my invention. Fig. 2 is a detail view of the protective housing. Fig. 3 is a side view of same. Fig. 4 is a detail view of a cable-sheave, showing the double groove and twin cables.

In the drawings, a represents the main portion of the structure, which in the present instance is the car of a steam-shovel and corresponds to a boat-hull when the structure is in the form of a dredge. An A-frame a' is located on the forward end of said main portion adapted to support the boom a^2 , the lower end of which is supported upon the turn-table a^3 in the usual manner.

a^4 is the bucket or dipper having the handle a^5 and is adapted to be thrust forward or

retracted by the engine a^6 , located upon the boom.

The improved hoisting device consists of the single-lead twin cables b , the bight of which engages the sheave b' , located within the housing b^2 , secured to the bucket or dipper a^4 in lieu of the usual bail, thence over the sheave b^3 of large diameter located at the upper extremity of the boom a^2 , thence downward and under the sheave b^4 , also large in diameter, located at the foot of the boom a^2 , thence directly upward and over a large sheave b^5 , supported in the A-frame, and downward to the winding-drum. The respective sheaves b^3 , b^4 , and b^5 are double-grooved for the reception of the respective strands of the cable b , as shown in Fig. 4, while the sheave b' is of the single-groove type. The sheave b^4 at the foot of the boom a^2 and the sheave b^5 in the A-frame a' are arranged tangent to the axial line of the turn-table in such a manner that the portion of the cables intermediate the sheaves b^4 and b^5 will coincide with said axial line. By this arrangement the boom a^2 may be swung to its limit in either direction without disarranging the cable b . By use of the sheaves b' within the housing b^2 the strain upon each member of the twin cable will be equalized. The housing b^2 is adapted to prevent the entrance of grit between the sheave b' and the cable b , and thereby prevent the abrasion or wearing of the cable b at this point, to which there is a tendency through its proximity to the bank during the digging operation.

It is to be understood that the same hoisting speed and power resulting from the rove chain is secured through the multiplication of power by a series of gears at the winding-drum. As a matter of economy the cables b are such as to be adapted to use upon the swinging drum and turn-table, as indicated by c , when they have become too much worn for further use for hoisting purposes. By the use of a sheave of large diameter at the top of the boom a better digging angle is secured between the hoisting-cable and the dipper-handle when the latter is at its lowest point, where the power is usually least effective.

Having thus described my invention, I claim—

1. In a structure of the character described,

a main portion, a swinging boom, a dipper, a housing adjacent thereto, a sheave within said housing, a single-lead double hoisting-cable, the bight of which engages said sheave
5 and operating means for said hoisting-cable, substantially as and for the purpose specified.

2. In a structure as described, a main portion, a swinging boom, and a superstructure thereon, double-grooved sheaves arranged in
10 said boom and superstructure, a dipper, a housing adjacent thereto, a single-groove sheave within said housing, a double hoisting-cable, the bight of which engages with said

single-groove sheave, and which is led over the said double-grooved sheaves, and having 15 a portion of its lead substantially coincident with the axial line of the swinging boom, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand this 20th day of February, A. D. 20 1905.

GEORGE E. TURNER.

Witnesses:

R. F. TREMAIN,
P. E. CORY.