June 3, 1930. D. W. COE 1,761,778

GRAB BUCKET

Filed Jan. 24, 1927

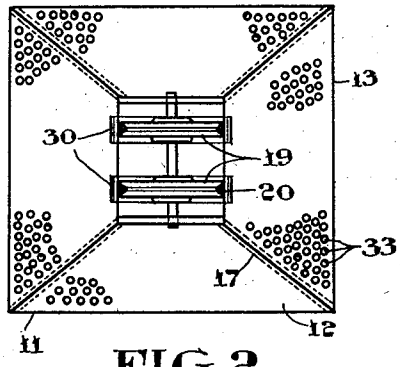



FIG. 2

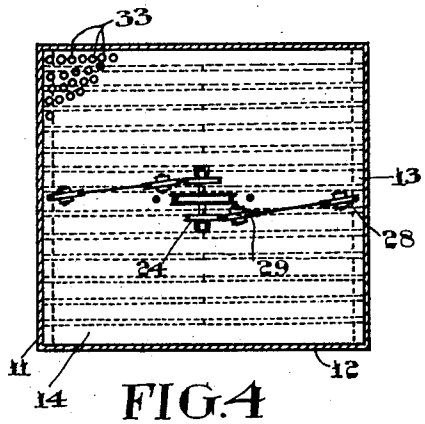



FIG. 4

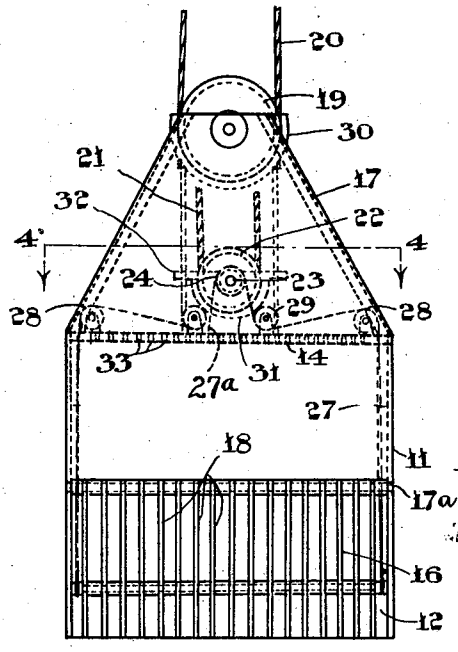



FIG. 1

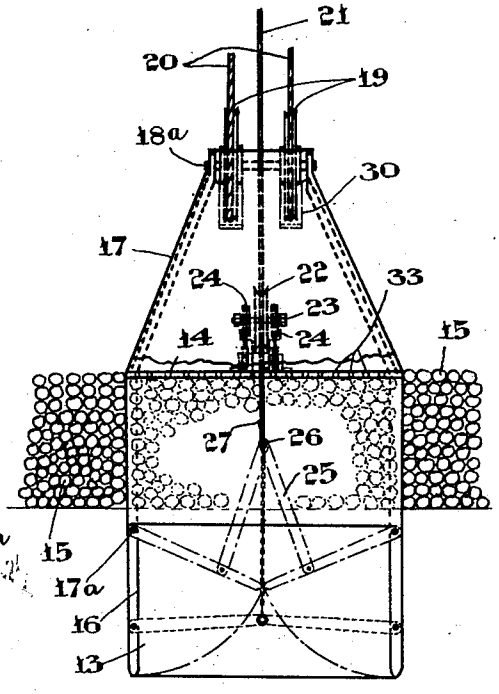



FIG. 3

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# UNITED STATES PATENT OFFICE

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## GRAB BUCKET

Application filed January 24, 1927. Serial No. 163,256.

This invention relates to improvements in grab-buckets and more particularly to a type of grab-bucket adapted for use in loading pulp wood from a wet basin on to vessels or carriers. The principal object of the invention is to provide a device which will handle the pulp wood in bulk, that is in quantities of approximately a cord, more or less, instead of handling the logs by individual pieces.

According to my invention, I provide a grab-bucket of open-mouthed box or caisson form, but adapted to be closed at the bottom by means of hinged sides or doors. The structure is preferably of rectangular form and is suspended from the top by the usual hoisting mechanism. The ends of the bucket are formed of plates, and the sides of spaced bars or tines, pivoted or hinged in such a manner that they may operate as doors to close under the load after it has been trapped within the bucket. The structure is adapted to be lowered into a wet basin, with its sides or jaws open, so that the end walls and pivoted side walls of the bucket are substantially vertical. The weight of the structure is sufficient so that the comparatively thin end and side walls displace even a concentrated body of wood floating in a basin or reservoir, and trap within the body of the bucket, a quantity of wood, which, when the jaws are closed under the water beneath the load, may be lifted in bulk and transferred to any vessel which it is desired to load.

In the drawings, Figure 1 is a side elevation of the grab-bucket.

Figure 2 is a plan view of same.

Figure 3 is an end view.

Figure 4 is a sectional plan taken on the line 4—4 Figure 1.

Referring more particularly to the drawings, 11 designates a grab-bucket of rectangular box form, having the ends 12, sides 13, and top 14, preferably built of thin plates suitably connected together at their adjacent edges. The lower edges are so constructed that they lie in substantially the same horizontal plane when the bucket is in the open position, so that when it is lowered into the basin, as shown in Figure 3, it will force its way by gravity, between the logs 15 with its sides and ends vertically disposed. The sides are built in two sections, the upper sections being secured to the top and ends, while the lower sections 16 are pivotally attached to pins 17ª extending from end to end of the bucket. Each lower section may consist of a plurality of spaced bars 18, so connected that they move in unison. This construction forms a strong support for the logs, as the edges of the bars contact with the load. Extending upwardly from the top 14, is the frame 17 which may also be built of thin plates suitably secured and braced together to form a guard for the grab opening and closing mechanism hereinafter described. The frame is secured to the lower portion of the bucket. Extending from side to side of the frame and near the top thereof, is the pin 18ª, and rotatably mounted thereon are the holding pulleys 19, around which the hoisting ropes 20 pass to a suitable hoisting unit. The closing rope 21 passes between the pulleys 19 and around a pulley 22, which is mounted on a pin 23. The closing of the bucket is controlled by the upward movement of the pulley 22 towards the holding pulleys. Mounted one on each side of the pulley 22 and on the pin 23, are the side closing link operating pulleys 24. Secured to each movable section of the sides and near the lower ends thereof, are the closing links 25, and each pair of links are pivotally connected together by means of the pins 26, each of which may be attached to one end of the link operating ropes 27. Each of the ropes pass around pulleys 28 and one of the pulleys 24, and is secured to the framing of the bucket as indicated at 27ª. The pulleys 28 and 29 are rotatably secured by any suitable means to the frame. Guards 30 and 31 may be placed around the pulleys to hold the ropes thereon and suitable guide rods passing through lugs 32 in the guard 31 may be provided to hold the pulley 22 in position. The guards 30 and 31 are vertically movable with respect to the grab-bucket and serve as bearings for the pin 23 of pulley 22. All plates forming part of the bucket may be provided with perforations 33.

The closing mechanism herein detailed, is

only illustrative of one type of side closing mechanism which may be used, and many modifications may be made therein. In the drawing, I have shown the grab-bucket with the two sides hinged, but it will be readily understood that one of the sides may be hinged and the other stationary, so that when brought into contact they will form a bottom which is angularly disposed to the horizontal and to the vertically disposed side sections of the bucket.

In operation the bucket is opened, and then lowered into a wet basin in which pulp wood logs have been stored, in concentrated form. The lower edges of the bucket being of thin plates, displace the logs in proximity thereto and trap the logs within the area of the bucket. The bucket is lowered until the hinged portions of the sides are below the lowermost edges of the logs. The trapped logs are held in suspension by the water and the hinged portions of the sides are brought together with the least resistance, to form a closure or bottom for the bucket. The closing of the bucket is accomplished by pulling the closing rope and bringing the closing pulley nearer to the holding pulleys. The movement of the closing pulley exerts a pull on the link operating ropes to pull the links into the position shown in chain dotted line in Figure 3. The bucket in its closed position is then pulled upwardly and the logs are brought into rolling contact with the angularly disposed sections of the sides and tend to arrange themselves with their longitudinal axes parallel to the contacting edges of the sides of the bucket.

It will be seen that when the logs are released, or discharged, from the bucket, they are in a semi-arranged condition which facilitates the piling of the logs by manual labour. All parts of the bucket mechanism are prevented from coming in contact with the logs and owing to the sloping sides of the frame, no logs can be carried on the outer surfaces of the bucket. The sloping sides of the frame also facilitate the withdrawal of the bucket from the basin, by spreading the logs during the hoisting movement of the bucket.

Having thus described my invention, what I claim:—

1. A hoisting bucket having top and side walls and bottom closures hinged to certain of said side walls, a sheave disposed above the top wall of the bucket and free to move vertically with respect thereto, a sheaf hoisting cable trained around said sheave, pulleys carried at opposite sides of said sheave and movable vertically therewith, guide members carried by the top wall of the bucket, flexible elements trained around the pulleys and guide members, each of said flexible elements having one end secured to one of said bottom closures and the other end secured to the body portion of the bucket, the arrangement being such that the bottom closures swing to and from operative position as the sheave and pulleys are raised and lowered with respect to the top wall of the bucket.

2. A hoisting bucket having top and side walls and a pair of bottom walls hingedly connected to the lower edges of certain of said side walls, a casing rising from the top wall of the bucket and open at the top, a pin journalled in the top portion of said casing, pulleys carried by said pin, bucket hoisting ropes trained around said pulleys, a vertically movable sheave mounted in the casing and normally positioned below said pulleys, a sheave lifting cable trained around said sheave and operable to move the sheave vertically with respect to the bucket and casing, and connections between said sheave and the bottom closures designed to effect swinging movement of the latter to and from operative position as the sheave is raised and lowered.

In witness whereof, I have hereunto set my hand.

DANIEL W. COE.