

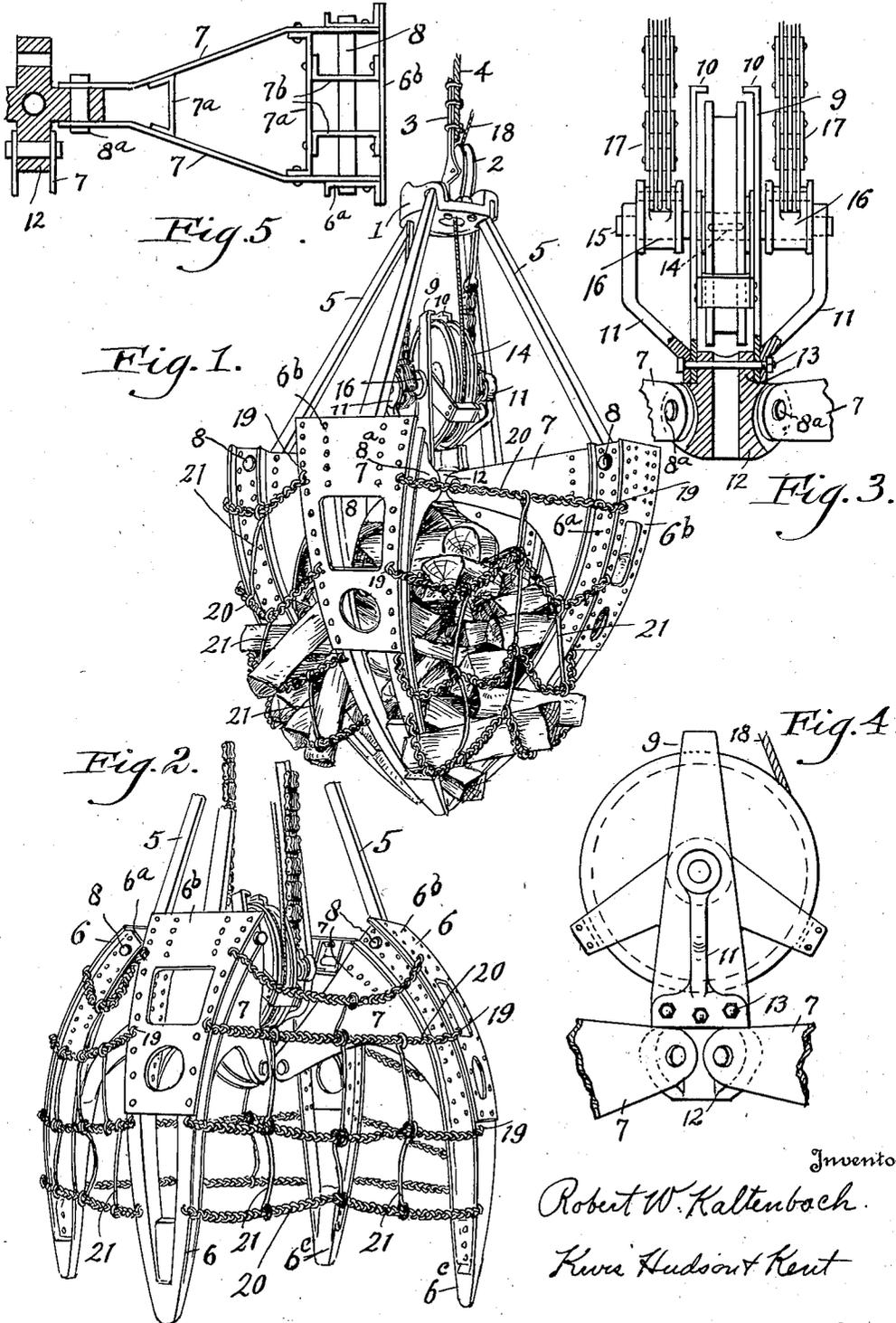
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GRAB BUCKET

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GRAB BUCKET

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This invention relates to a grab bucket or grab adapted particularly for handling bulk articles of fairly large size such as pulp wood.

5 As is well known in the art, grab buckets are generally of the clam shell type or of the orange peel type. As the names indicate, grab buckets of the clam shell type are made in two cooperating meeting sections adapted to be opened and closed, while those of the orange peel type are formed of a number of separate sector-like sections whose edges converge and meet at their lower ends when the bucket is closed. It is with regard to 10 the last named type of grab bucket that the present invention has particular reference.

The principal object of the present invention is to provide a grapple in the nature of the orange peel type of bucket, which may be used to hoist a quantity of separated articles of irregular dimensions as, for example, pulp wood, cord wood, or other similar articles.

Other objects and advantages will become 25 apparent hereinafter.

An embodiment of the invention is illustrated in the accompanying drawings, wherein,

Figure 1 is an elevational view of the bucket showing the jaws in closed position.

Figure 2 is also an elevational view of the bucket showing the jaws open.

Figure 3 is an end elevation of the power wheel operating mechanism of the bucket, 35 portions being shown in section.

Figure 4 is a side elevational view of the power wheel operating mechanism of the bucket shown in Figure 3, the lifting chains being omitted, and

40 Figure 5 is a detail view, showing the jaws in top plan.

As illustrated, the bucket comprises the usual head 1 carrying the frame which supports guides including the sheave 2 for the closing cable. The frame for the sheave 2 also forms a suitable attachment 3 for the holding cable 4. The head 1 has side walls which are cut away at desired points to form openings within which the connecting rods 5 extend. It is understood that these rods

may be pivoted to the head in any suitable way, since the portion of the bucket so far described is conventional.

The jaws or grapple arms 6 are adapted to be pivoted to the lower ends of the connecting rods 5. These jaws or arms each comprises curved spaced oppositely facing channel bars 6^a, which converge toward their lower ends. Riveted or otherwise secured to the outer flanges of the channels 6^a is a curved web or tie plate 6^b having openings formed therein, if desirable, for the purpose of lessening the weight of the structure. This plate does not need to extend the full length of the bars 6^a and preferably extends from the upper end approximately half way down the arm. A grapple tooth 6^c is riveted or otherwise secured between the lower ends of the channel bars 6^a of each jaw or grapple arm. Extending inwardly from the upper end of each jaw 6 are spaced arms 7, one of which is attached to the inner side of the web of each channel bar 6^a. The upper edges of the arms are straight, while the outer edges are curved in accordance with the curvature of the bars 6^a, and these curved edges engage the plate 6^b and the lower edges are so formed that the arms will diminish toward their inner ends. Channeled bracing members 7^a are arranged between the arms at intervals to reinforce the same and tie the inner end portions together. There are also provided a plurality of channel bracing members 7^b tying in the outermost brace 7^a with the plate 6^b. A pin 8, extending through the bars 6^a, the arms 7, braces 7^b, and connecting rods 5, forms the pivotal connection between the jaws and the rods 5, the lower ends of the latter being arranged between the braces 7^b. The inner ends of the arms 7 are pivotally connected to the jaw operating mechanism, as will be described in detail.

Arranged intermediate the head 1 and the inner end of the arms 7 is a power wheel supporting frame, indicated generally in Fig. 1 by the number 9. This supporting frame comprises an inner part 10 formed of spaced parallel arms and an outer part 11 formed of spaced outwardly divergent arms. The part 11 is connected at its lower end to the

lower end of the arms 10 and extends upwardly and outwardly therefrom and then parallel thereto. The lower ends of both the inner part and the outer part are not only joined together but to the upper end of a supporting member 12 for the inner ends of the arms 7. This supporting member has a part 13 which extends between the sides of the inner portion 10 of the supporting bracket. The inner ends of the arms 7 embrace and are pivotally connected to portions of the supporting member 12. The power wheel 14 is keyed to a shaft 15 which extends through the power wheel supporting bracket 9, being journaled intermediate the ends of the inner part 10 and at the upper ends of the outer part 11. Also arranged on this shaft and adapted to rotate therewith are chain attaching cams 16 having lifting chains 17 secured thereto and extending upwardly toward the head, to which they are connected in any suitable manner. A jaw operating cable 18 is guided over the sheave 2 through an opening in the head 1 and attached with several turns to the power wheel 14.

The operation of the bucket will be briefly described. When the jaw operating cable 18 is slacked off the power wheel supporting bracket and associated elements will tend to ride downwardly by gravity due to its weight, and, hence, force the inner ends of the arms 7 in a similar direction. This will cause the jaws to rock outwardly about their pivotal connections to the connecting rods 5 thus opening the same. The bucket may then be lowered by means of the hoisting cable 4 to a proper position to engage the material to be lifted. The operating cable 18 upon being drawn in raises the power wheel supporting bracket, which in turn will cause the chains 17 to wind up on the cams to which they are attached. This upward movement of the power wheel supporting bracket will cause the jaws 6 to pivot inwardly about their connections to the connecting rod 5 and bring the same into closed position.

The present invention contemplates using in connection with the grab bucket just described, the additional elements now to be set forth. Adjacent to each edge of the jaws 6 suitable securing elements, such as staples 19, are arranged. The number of these elements may vary according to the nature of the work to be done by the bucket. Horizontally extending chains 20 connect the corresponding staples of the adjacent edges of adjacent jaws. Near the upper end of the jaws these chains are relatively taut, when the jaws are in closed position, while near the lower end thereof the chains are slack. Vertically extending rods or other suitable members 21 connect the different horizontal chains. The number of these vertical members as well as the number of horizontal chains may be varied in accordance with the

proposed use to which the bucket is to be applied. As shown there are four horizontal chains 20 between each pair of jaws. The three lower chains are connected by three vertically extending cables, while the upper chain is connected to its adjacent chain by only one cable. The cables may be of any desired form and connected to the chains in any suitable manner. The cables are shown as being connected to the chains by integral eyes.

It is quite obvious that a grab bucket thus provided with the horizontal chains and the vertically extending members therebetween may be used to hoist a large quantity of articles of irregular shape and dimensions as, for example, pulp wood, or it may be used for other purposes. Of course, it is apparent that instead of permanently attaching the chains to the jaws of the bucket that they may be detachably connected thereto by the use of snap fastening means of a suitable character.

Although a preferred embodiment of the invention has been illustrated, the invention should not be understood as limited thereto, since it may include such modifications and adaptations as fall within the scope of the appended claims, and it should also be understood that although the drawings show a grab having four jaws, there may be any number from three up to as many as may be found necessary or desirable.

Having thus described my invention, what I claim is:

1. A grab having grapple jaws, and means extending between and connected to adjacent jaws for the purpose of retaining therein articles smaller in dimensions than the spaces between the jaws.

2. A grab having grapple jaws, horizontally and vertically extending separated means secured to adjacent jaws and arranged in the spaces therebetween for forming a retaining network, whereby the bucket may be utilized for materials of irregular dimensions.

3. A grab bucket having spaced separated jaw sections, a plurality of flexible members connecting the adjacent jaws, and flexible members joining the first mentioned flexible members for forming a retaining network, whereby the bucket may be used to hoist articles of irregular dimensions.

4. A grab bucket having spaced separated jaw sections adapted to be opened and closed, a plurality of substantially horizontally extending vertically spaced members connecting the adjacent edges of adjacent jaws, and a plurality of substantially vertically extending horizontally spaced members connecting adjacent horizontally extending members.

5. A grab bucket comprising separate pivotally mounted jaws, said jaws being formed of spaced oppositely facing curved channel members connected by a plate secured to the outer wall of each channel, an inwardly ex-

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tending arm connected to the web of each channel, braces arranged between the arms connected to associated channel members, and a common member to which the inner ends of the arms are pivoted.

5 In testimony whereof, I hereunto affix my signature.

ROBERT W. KALTENBACH.

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