G. ANDERSON.

BUCKET HOIST.

APPLICATION FILED MAY 26, 1919.

1,332,192.

Patented Mar. 2, 1920.

2 SHEETS—SHEET 1.

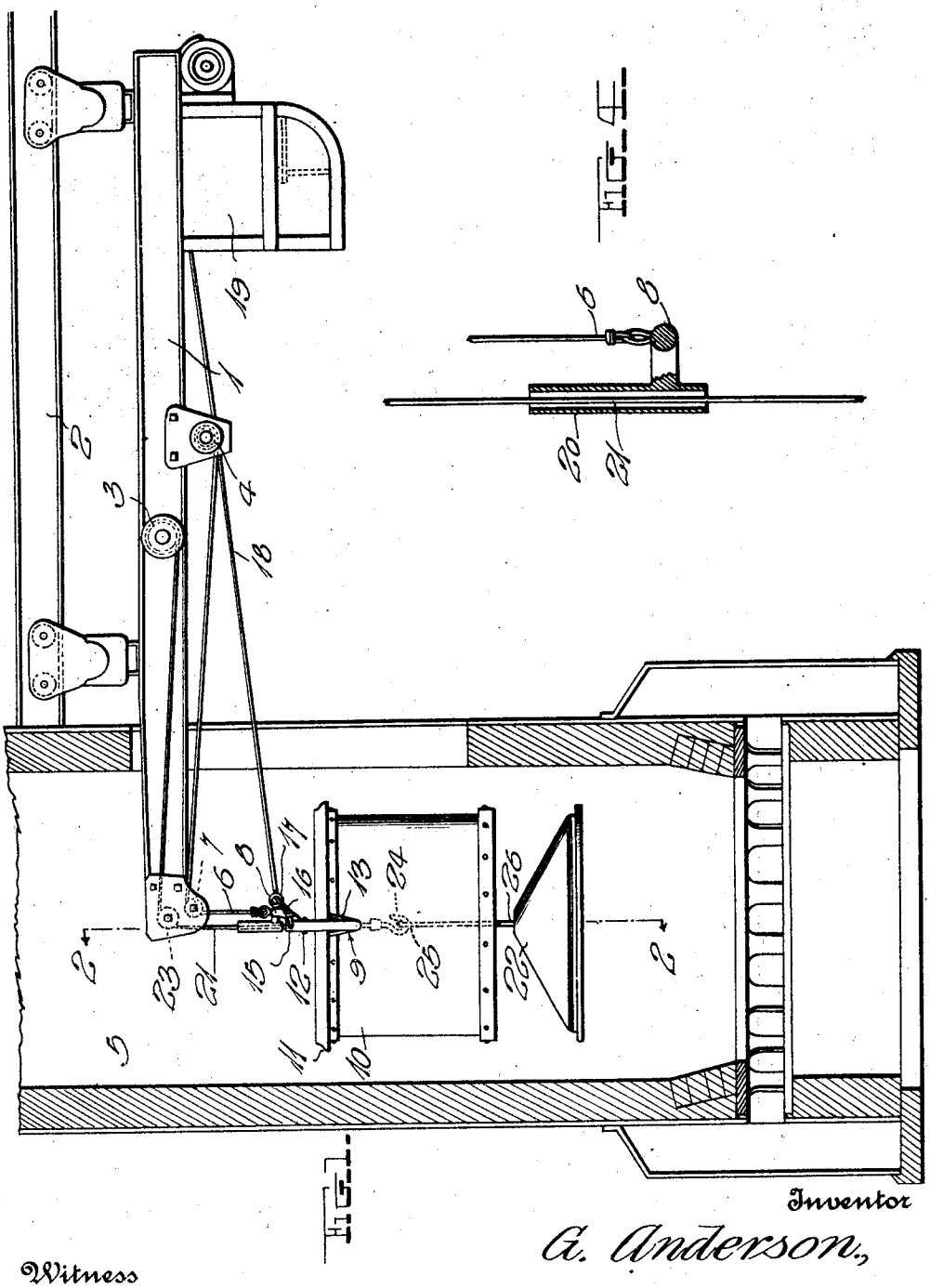


FIG. 4

FIG. 5

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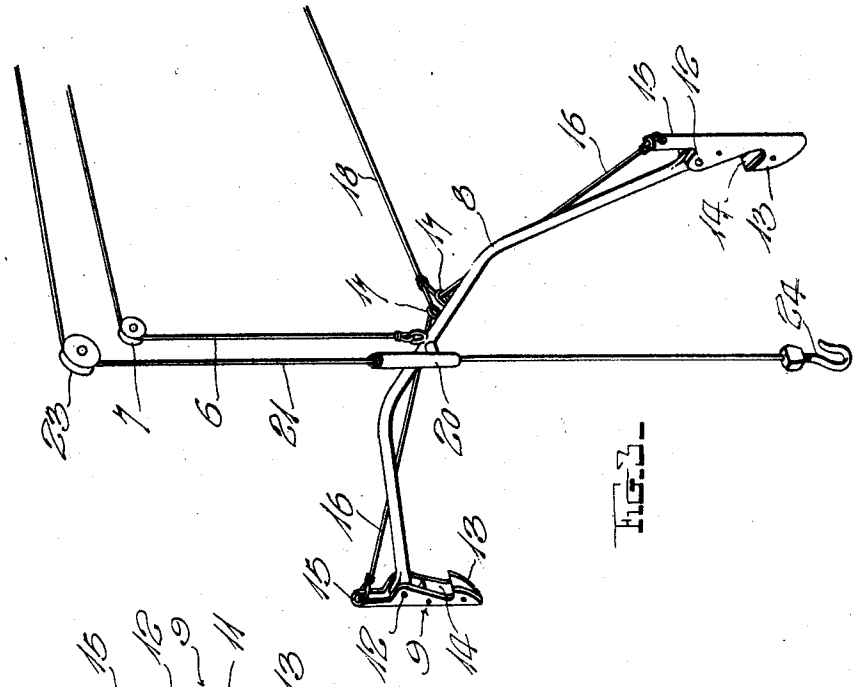


FIG. 1.

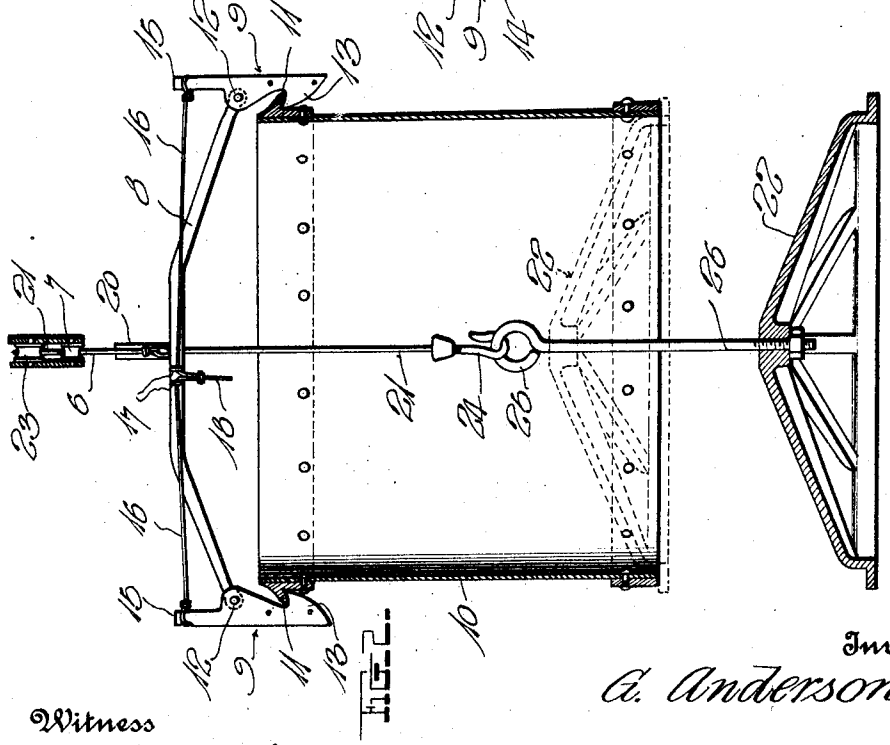


FIG. 2.

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UNITED STATES PATENT OFFICE.

GUSTAV ANDERSON, OF MANITOWOC, WISCONSIN.

BUCKET-HOIST.

1,332,192. Specification of Letters Patent. Patented Mar. 2, 1920.

Application filed May 26, 1919. Serial No. 299,882.

To all whom it may concern:

Be it known that I, GUSTAV ANDERSON, a citizen of the United States, residing at Manitowoc, in the county of Manitowoc and State of Wisconsin, have invented certain new and useful Improvements in Bucket-Hoists; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in bucket hoists in general, but more particularly to those used for charging cupolas of iron melting furnaces. In charging the cupolas, the ore is elevated in hoisting buckets and discharged into the furnaces, and since several buckets are necessary to charge a cupola, it is of great advantage to provide for a quick and easy interchange of buckets. One object of my invention is to meet this requirement in a simple and expeditious manner and make provision for easily coupling any bucket to the hoisting device, without the necessity of turning the bucket to a predetermined position.

A further object is to provide a hoisting yoke for the bucket which is detachably coupled thereto and entirely removed therefrom when loading the bucket. This not only expedites the loading operation, but the one yoke will serve for any number of buckets, thus greatly cutting down the expense of the hoisting system, which now commonly requires that each bucket be provided with a yoke.

With the foregoing in view, the invention resides in the novel construction and arrangement of parts hereinafter fully described and claimed, the descriptive matter being supplemented by the accompanying drawings which form a part of this application.

Figure 1 is a side elevation of a bucket hoist constructed in accordance with my invention, showing the same in position for discharging its load into a cupola.

Fig. 2 is a vertical section on the plane indicated by the line 2—2 of Fig. 1.

Fig. 3 is a perspective view of the hoisting yoke and associated parts.

Fig. 4 is a detail vertical section through the central cable guide of the yoke.

In the drawings above briefly described, I have shown an elevated carrier 1 mounted on a track 2 and carrying drums 3 and 4 for operating the hoisting and bucket bottom suspending cables, and these parts are shown operatively associated with a cupola 5. It will be understood however that these features form no part of my invention except in their general connection with the parts described below. Furthermore, the subject matter of this application may be used for hoisting and carrying of any character and is not therefore restricted to use in connection with smelting furnaces and the like. Furthermore, any adequate elevated support may be provided for the bucket and I am not therefore restricted to the exact carrier shown.

The hoisting cable 6 is shown passing over a sheave 7 on the carrier 1 and wound on the drum 4, the depending end of said cable being suitably secured to the center of a bucket carrying yoke 8 which is by preference arched into somewhat the form of a bail. The ends of the yoke 8 are provided with self-applying couplers 9 for detachably connecting said yoke with the bucket 10, the rim of the latter being provided with a continuous outstanding flange 11 with which the couplers 9 may coact at any two opposed points, thus making it unnecessary to turn the bucket to a predetermined position before coupling it to the yoke.

The couplers 9 will be of any suitable formation, but they are preferably in the form of vertically disposed latches pivoted at 12 to the ends of the yoke 8 and having weighted hooks 13 on the lower ends to engage the hook-like flange 11, the weights 14 of said latches serving to apply them to operative position by gravity. The upper ends of the latches extend above the pivots 12 as seen at 15 and branch trip cables 16 are connected therewith, said cables passing through suitable guides 17, on the yoke 8 and being joined to a main trip cable 18 which may lead to any preferred point. In the present showing, the cable 18 extends to the cab 19 on the carrier 1, said cab containing the necessary controls for operating the drums 3 and 4 and for controlling all other moveing parts of the apparatus, such as the means for propelling the carrier along the track

A suitable cable guide 20 is carried by the center of the yoke 8 and is preferably elongated vertically as shown, and said guide re-

ceives a suspending cable 21 for the drop bottom 22 with which the bucket 10 is provided. The cable 21 is shown passing over a sheave 23 on the carrier 1 and then to the drum 3, and on the lower end of said cable, I have shown a hook 24 coacting with an eye 25 in the upper end of a hanger rod 26, which rises from the bottom 22. The cable and bottom are thus detachably coupled together so that when an interchange of buckets is made, the cable may be disconnected from one bucket bottom and attached to another. Any suitable coupling means could of course be provided for this purpose, and the parts 24, 25 and 26 are merely shown for illustrative purposes.

The yoke 8 is lowered by the cable 6 and the couplers 9 to engage the flange 11 at any two diametrically opposite points, and when the cable 21 is lowered and coupled to the bottom 22, the apparatus is ready for hoisting the loaded bucket. This is accomplished by winding both cables 6 and 21 upon their respective drums, moving the carrier to the required point, for instance to lock the bucket 10 in the cupola 5 as seen in Fig. 1, and the cables may then be paid out to lower the bucket to the proper extent. This having been done, the movement of the bucket is arrested and its bottom is further lowered by the cable 21, thereby discharging the load. The bottom is now returned to the bucket and the latter is carried to the loading point, at which point the hook 24 and the couplers 9 are released and promptly engage with another loaded bucket. This interchange of buckets may be rapidly and easily accomplished, due principally to the fact that couplers 9 need not be positioned for engagement with the relatively small lugs or the like on the bucket, but may grip the flange 11 at any two opposed points.

Since probably the best results are obtainable from the details disclosed, they may well be followed, but within the scope of the invention as claimed, numerous changes in construction and use may be made.

I claim:

1. In a bucket hoist, an elevated carrier, a hoisting cable depending from said carrier, a yoke carried by said hoisting cable and having a central guide, a bucket having a drop bottom, coacting means on said bucket and yoke for detachably coupling them together, a second cable depending from said carrier through said guide and detachably coupled to said drop bottom, and means on said carrier for winding said cables.

2. In a bucket hoist, an elevated carrier, a hoisting cable depending from said carrier, a yoke carried by said cable and having a central guide, a bucket having a drop bottom, a continuous outstanding flange on the rim of said bucket, couplers on the ends of said yoke coacting with any two opposed points of said flange to detachably couple the yoke and bucket together, a second cable depending from said carrier through said guide and detachably coupled to said drop bottom, and means on said carrier for winding said cables.

3. In a bucket hoist, an elevated carrier, a hoisting cable depending from said carrier, a yoke carried by said cable and having a central guide, a bucket having a drop bottom, a continuous outstanding flange on the rim of said bucket, pivoted coupling latches on the ends of said yoke having weighted lower ends self-applicable to any two opposed points of said flange, the upper ends of said latches rising above their pivots, trip cables connected with said upper ends of the latches, guiding means on said yoke for said trip cables, a bottom suspending cable depending from said carrier through said guide and detachably coupled to said drop bottom, and means on said carrier for winding said hoisting cable and said bottom suspending cable.

In testimony whereof I have hereunto set my hand.

GUSTAV ANDERSON.