F. Z. HUNT.

DREDGE BUCKET.

APPLICATION FILED DEC. 28, 1910.

1,090,478.

Patented Mar. 17, 1914.

2 SHEETS—SHEET 1.

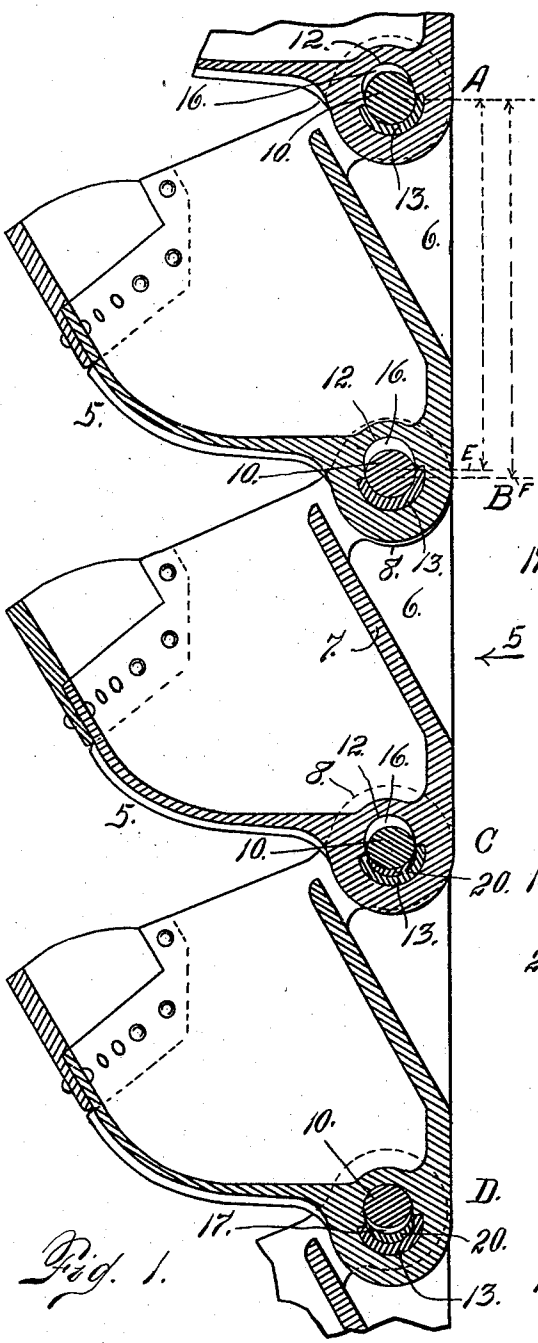


Fig. 1.

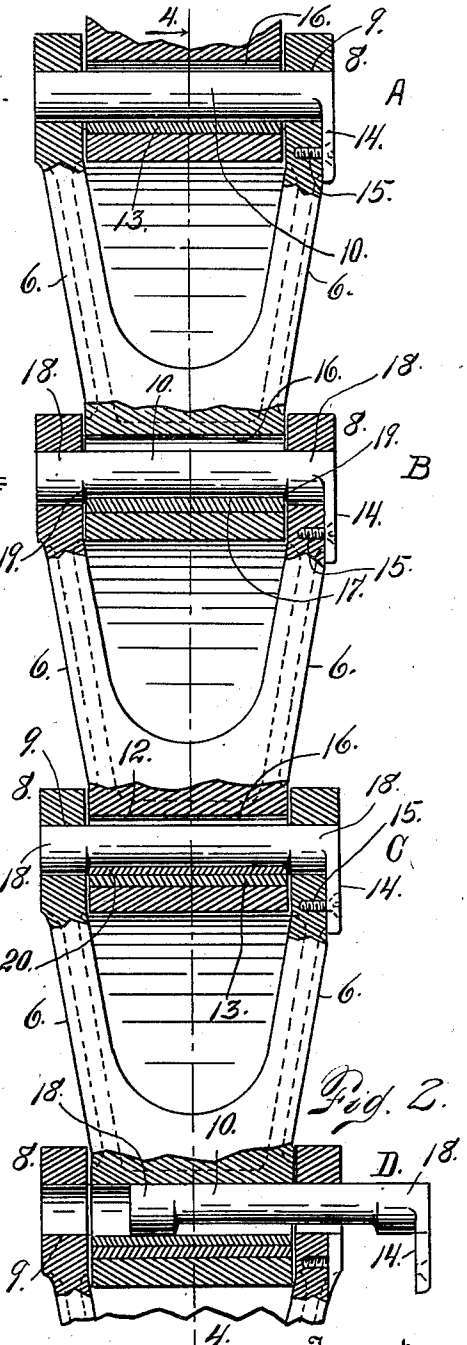


Fig. 2.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

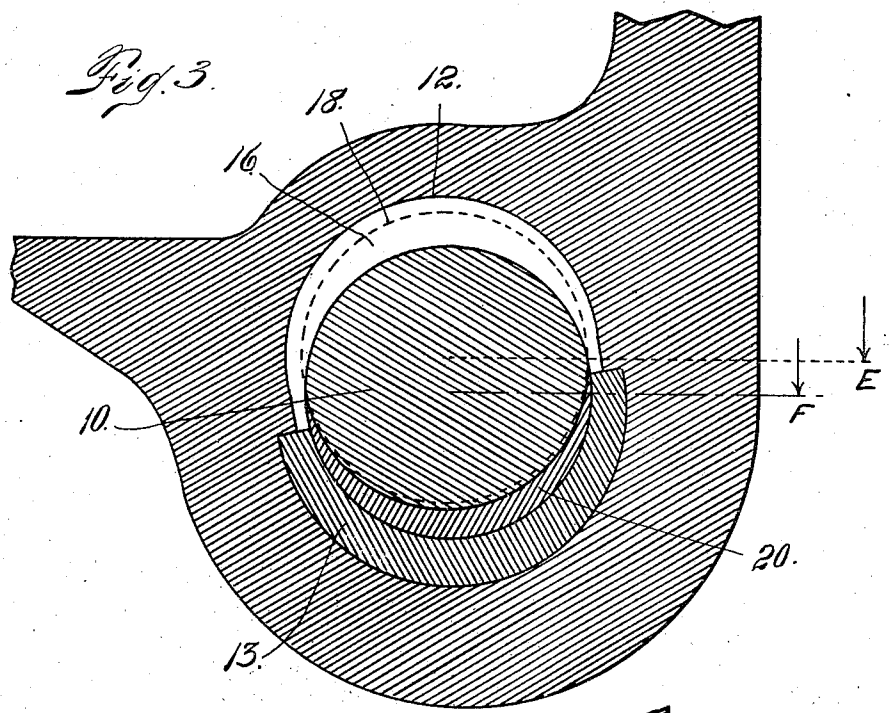
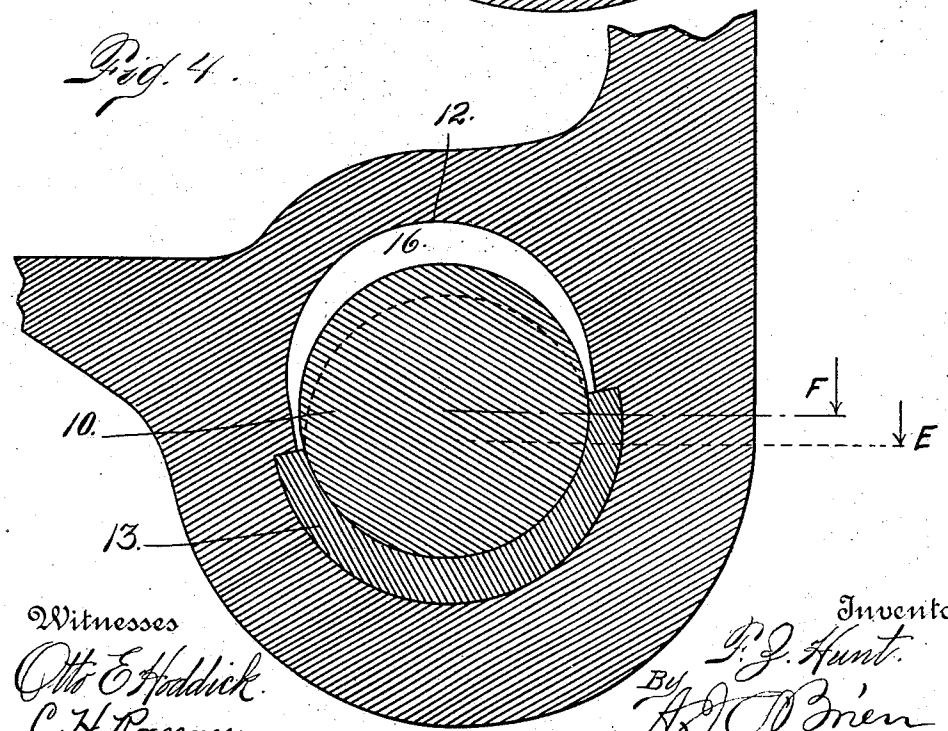


Fig. 4.



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DREDGE-BUCKET.

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To all whom it may concern:

Be it known that I, FRANK Z. HUNT, a citizen of the United States, residing at Breckenridge, county of Summit, and State of Colorado, have invented certain new and useful Improvements in Dredge-Buckets; 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, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in dredge buckets of the character employed to form an endless chain, the buckets being directly connected with each other by means of pins passing through eyes with which the buckets are respectively provided.

Heretofore it has been common to form dredge buckets of three pieces; that is to say, a bottom casing, a hood or bowl member of relatively thin material, and a forwardly located member applied to the hood and reinforcing the same, the said reinforcing member extending entirely around the mouth of the hood and being riveted to the casing below. In this form of construction a relatively small portion of the reinforcing member is subjected to great wear, and when this is worn out in order to renew it, the entire reinforcing member must be discarded, with the result that there is great waste of material.

Another form of construction that is old in the art consists in removing a relatively small portion of the reinforcing member at the place where the latter is subjected to the most wear and substituting therefor a hardened steel lip which is removable and may be renewed when sufficiently worn to require it. While this is somewhat of an improvement over the previously described construction, it is still defective from the fact that the bucket is then composed of four pieces, greatly increasing the cost of construction..

In my present improvement I form the body of the bucket of an integral casing the hood portion being made relatively heavy and adapted to form a firm and durable support for a removable lip which is applied to the hood at the location where the bucket is subjected to the greatest wear, this lip being comparatively small and when removed practically results in no waste of material. The lip is preferably formed of manganese steel, making it exceedingly hard and durable.

Another feature of my improved construction consists in elongating the eyes at the rear ends of the buckets through which the connecting pins pass to form the endless chain of buckets.

By elongating the eyes in the direction of the line of travel, it becomes practicable to maintain the same distance between the centers of the connecting pins after the latter have become worn sufficiently to lengthen this distance.

It is important that the distance between the centers of the connecting pins of the bucket chain should be constant in order that the bottoms of the buckets which engage the tumblers or rotary members at the opposite extremities of the bucket chain may fit the faces of the tumblers, otherwise the buckets slip upon the tumblers and wear out very fast.

In my improved construction the eyes of the buckets are originally considerably elongated so that the cylindrical pins do not fit the openings. These elongated openings are originally bushed at their rearward extremities where they are engaged by the pins during the dredging operation. As the pins wear, however, the distance between the centers of the pins of two adjacent buckets increases in length.

Attention is called to the fact that the pins do not rotate. Hence the wear is all upon one side of the pin, being that which engages the bushing of the elongated opening formed in the rear extremity of each bucket member. The pins are made fast in eyes formed in separated lugs with which the forward extremity of each bucket is equipped, the intermediate portion of the pin passing through an elongated eye formed in the solid rearward extremity of the adjacent bucket.

Attention is called to the fact that the extremities of the pins fit the separated eyes in the rear extremity of one bucket, the said eyes or openings being cylindrical for the purpose. The cylindrical pins, however, do not fit the elongated eyes formed in the rearward extremities of the buckets. Hence the wear on the pins is all on the portions thereof between the separated lugs in which the pins fit and when this wear has become suf-

ficient to require repairs, the pins are removed and an additional bushing added to compensate for the wear on the pins, and in order to reinsert the pins in the opening which has been rebushed to compensate for wear, it is necessary that the openings after rebushing shall be large enough to allow the cylindrical unworn end of the pin to pass therethrough, which could not be done if the bushed openings originally fitted the pins.

Having briefly outlined my improved construction, I will proceed to describe the same in detail, reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing: Figure 1 is a central longitudinal section taken through a number of connected buckets. This section is taken on the line 4—4, Fig. 2. Fig. 2 is a view looking in the direction of arrow 5, Fig. 1, the portions of the bucket, however, through which the pins pass, being sectioned. Fig. 3 is a fragmentary section taken through an eye formed in the rear extremity of a bucket together with the connecting pin passing therethrough, the eye being shown rebushed to compensate for the wear upon the pin intermediate the extremities which engage the separated eyes of the adjacent buckets, the parts being shown on a larger scale. Fig. 4 is a similar view showing the pin and bushed eye in their original condition, a dotted line, however, being struck to indicate the position of the pin after it has become sufficiently worn to require that the elongated eye be rebushed in order to restore the normal distance between the pin centers of adjacent buckets. This view is on the same scale as Fig. 3.

The same reference characters indicate the same parts in all the views.

Each bucket 5 is provided at its bottom with two arms 6 and an intermediate struck-up member 7. These arms terminate at their forward extremities in lugs 8 having cylindrical openings 9 adapted to receive pins 10 which also pass through elongated eyes 12 formed in the adjacent rear extremity of each adjacent bucket. Each elongated eye 12 is provided at its rear extremity with a bushing 13 which when the chain of buckets is in use, is engaged by one side of the pin, the latter being secured in the lugs 8 by means of an arm 14 projecting from one extremity of the pin and perforated to receive a fastening screw 15, whereby the pin is prevented from turning in the lugs 8, thus preventing any wear on the extremities of the pins engaging the openings 9 of the lugs.

At the upper extremity of Figs. 1 and 2 the pin is shown full-sized or cylindrical throughout its length, it being assumed that the pin is new and has not been worn by use, the construction of the connected buckets being in harmony therewith. Under these circumstances there is a space 16 at the forward extremity of the eye which is unoccupied. This construction at the upper extremity of Figs. 1 and 2 may be termed position A. Below the position A the parts are shown in position B, the central portion 17 of the pin between its cylindrical extremities 18 being worn away as indicated by the shoulders 19. Under these circumstances the space 16 between the pin and the forward extremity of the eye 12 is increased in width, due to the wear on the pin, this increase being shown by the distance between the two dotted lines E and F (see Fig. 1), indicating the change in the position of the center of the worn pin due to the wear shown at 17.

The next or third position designated C shows that the elongated opening has been rebushed by a crescent-shaped bushing member 20 to restore the center of the pin to its normal position.

Attention is called to the fact that if the opening 12 for the pin had been cylindrical originally, the wear being all on the pin, the opening could not be rebushed without reducing its size, and in this event the cylindrical extremity of the pin could not be reinserted in the opening after the bushing.

The position D illustrates the arrangement during the insertion of the worn pin after the elongated opening has been provided with the auxiliary bushing 20. It will be observed that during the insertion of the cylindrical end of the pin the body of the pin must be crowded back to the forward extremity of the opening until the cylindrical extremity passes beyond the bushed opening 12, but as soon as this occurs and the cylindrical extremities 18 of the pin enter the cylindrical openings 9 of the ears 8, the worn part of the pin will move rearwardly in the opening as shown at position C.

In explanation of Figs. 1 and 2 of the drawing, it must be stated that these views do not illustrate a section of the bucket chain as it would appear in use, since when the buckets are in use the pins of all the buckets would be worn to substantially the same extent. That is to say, when the construction is new, the pins of all the buckets as well as the connected parts, would be as illustrated at position A; while after the wearing of the pins all of the pins and the connected parts would be as illustrated at position B. However, in making the drawing a bucket chain section requiring four pins has been employed to illustrate the condition of the pin and the connected parts originally, the condition of the same parts when worn, the condition of the same parts after the opening has been rebushed and the pin inserted, and also the condition of the same parts after

the elongated opening has been rebushed and the worn pin is in process of insertion.

Having thus described my invention, what I claim is:

An endless chain, one extremity of each link of which has an elongated eye, and the other extremity of each link of which has separated perforated lugs occupying positions at the opposite extremities of the elongated eye of the next link, pins passed through the elongated eyes and fitting in the adjacent perforations of the said lugs, means for preventing rotation of said pins in the lugs, bushings applied to the outer extremities of the elongated eyes to compensate for the wear on the pins, said eyes being elongated in the direction of the length of the chain in order to permit the passage therethrough of the unworn ends of the pins regardless of the amount of bushing employed.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK Z. HUNT.

Witnesses:

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C. W. BURNHEIMER.