April 2, 1940. H. M. BIRD 2,195,404

DREDGE BUCKET

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Fig. 1.

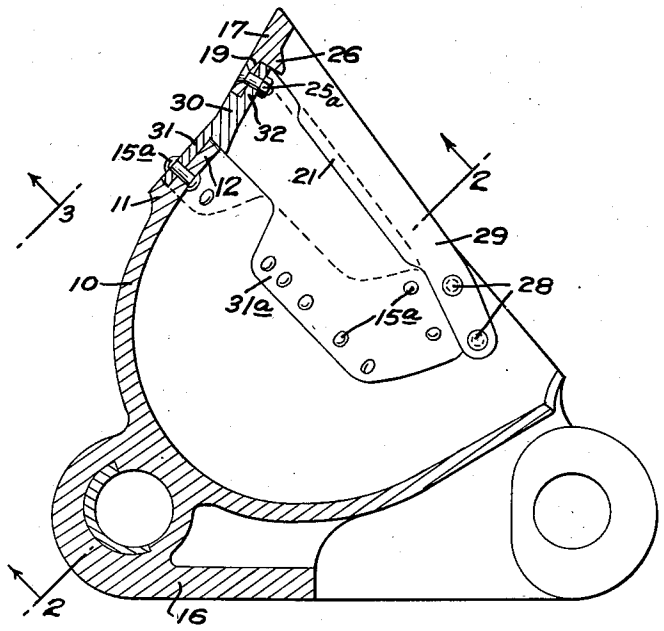
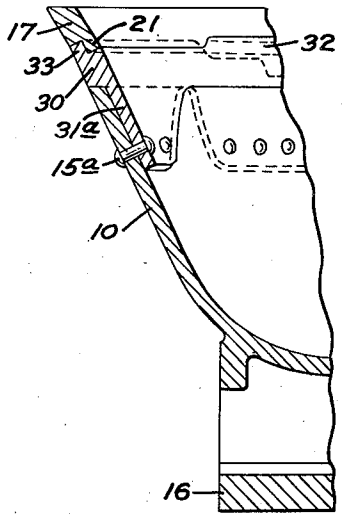


Fig. 2.



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Fig. 3.

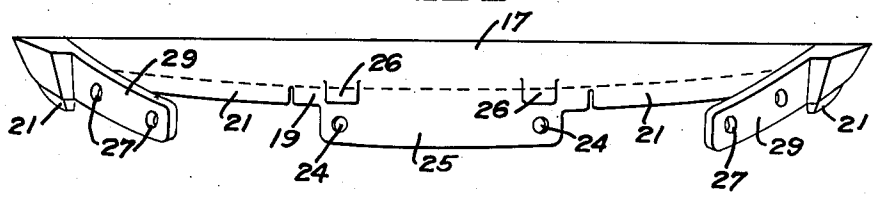


Fig. 4.

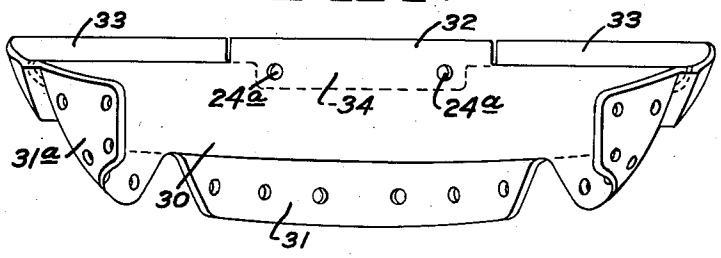
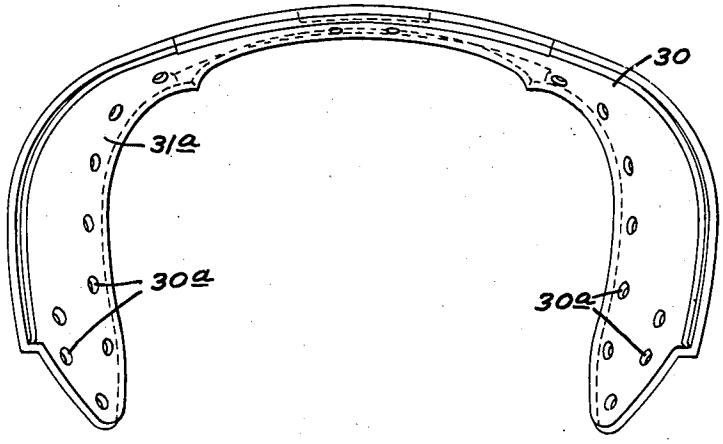


Fig. 5.



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UNITED STATES PATENT OFFICE

2,195,404

DREDGE BUCKET

Hobart M. Bird, Portland, Oreg.

Application April 19, 1937, Serial No. 137,746

4 Claims. (Cl. 37—141)

This invention relates to the dredge bucket art, and in particular to those used in placer mining, where a series of such buckets are joined together to form an endless chain suspended on the ladder of the dredge or other machine. More specifically this invention relates to buckets with removable lips and an adapter therefor.

Heretofore the dredging practice has been to operate a line of buckets, equipped with a set of removable lips, having a wear content of from five to ten inches, for as long a time as possible, depending upon the rate of wear on the lips. Usually, when the lips were worn down to the point where they were to be discarded, the entire operations were shut down to provide an opportunity for changing lips on the entire bucket chain. At this time, each of the twenty to sixty rivets holding each of the large lips in place on the bucket had to be trimmed off with a cutting torch and then again quite as many rivets were required to hold the new lips in place for the next digging operation. When this is multiplied by the number of buckets in the chain, which normally contains from fifty to eighty, the tremendous effort involved becomes obvious as well as the necessity for large and expensive equipment for doing the work on the dredging location, no matter where it might be, or how remote. It is apparent that the time required to do this job involves an interruption of production and the expense incurred increases the operating costs by just that much.

It is an object of this invention to provide an adapter for a bucket now in use in dredge operations of this kind in order to enable operators to use a smaller lip and obtain the many advantages which are found in its use. Among the advantages of the little lip, which is comparatively smaller in size and much less in weight, is its facility in being put on and taken off, and the fact that it requires very few bolts or rivets to hold it in place, thus enabling the operator, if he so desires, to use methods which will entirely eliminate the necessity for periodic shut-downs.

Another advantage of the little lip of which advantage may be taken by using the buckets now in operation with the aid of the adapter of the present invention, is the saving in scrap metal usually accompanying the discard of worn lips. It is common in the use of large lips on dredge buckets, even after they have served their useful life, to have as much as fifty to sixty-five per cent scrap which is frequently a total loss because of the remoteness of locations. The small lip has only thirty to forty per cent scrap, depending on the nature of the digging.

Still another advantage is the increased average bucket capacity gained by the employment of the adapter and the little lip on buckets of the prior practice. Obviously, as the little lip has a maximum wear capacity of approximately three inches, the minimum bucket capacity will not drop in the digging operations to the extent where a wear of five to ten inches is required before change.

Further, the use of small lips gives to the buckets of the practice heretofore, by means of the adapter, the capability of being used in the newer commercial methods which answer three of the main objectives of the industry by providing a substantially constant bucket capacity, a lowering of the percentage of scrap involved, and a quick easy change from worn lips to new ones; also, what may be considered a more important advantage, a wholly different technique of dredge operation whereby both new and worn lips may be used in the same operating bucket line in accordance with a plan for maintaining a substantially constant bucket capacity.

A further object of this invention is the provision of an adapter for rejuvenating buckets of the old practice, which is simple in construction and use and economical in cost.

This invention contemplates such other advantages, capabilities and benefits as may be shown as the description proceeds and as are inherently possessed thereby. In the accomplishment of these objects, there is used by way of example only the construction shown in preferred form in the drawings. Similar parts are designated by the same reference characters in the several views.

Referring now to the drawings:

Fig. 1 is a vertical section of the typical bucket of conventional design having installed thereupon an adapter and a lip incorporating the principles of my invention.

Fig. 2 is a fragmentary transverse section taken on the line 2—2 of Fig. 1 and looking in the direction of the arrows;

Fig. 3 is a perspective view of a small lip looking from the rear; and

Fig. 4 is a rear perspective view of the adapter; and

Fig. 5 is a top plan view of the adapter.

Referring now to Fig. 1, the typical bucket 10, which is commonly spheroidal in shape, is mounted at the back on a link 16, which, when joined to the next buckets and so on, makes the endless

chain of the dredger. At the front of the bucket and part way back on the sides thereof is an integral shear pad 11, which, together with the upper portion of the bucket 12, provides a seat for skirt 30 of the lip 31 on the external face of the adapter 30, shown with the little lip 17 in operative position. The adapter 30 has an intermediate skirt 31 which seats on the upper portion 12 of the bucket and the shear pad 11, and on the external face of the bucket, a portion 31*a* of skirt 31, at either side seats against the internal face of the bucket, 10. The adapter 30 is held securely on the bucket by rivets 15*a*, or any other suitable means. The adapter 30 is provided with holes 30*a* which register with the holes in the bucket 10. Once in place, the adapter need not ordinarily be removed during the life of the bucket to which it is attached, but, of course, may be so removed if desired. Figs. 4 and 5 show the adapter in more detail and separated from the structures to which it is meant to attach.

Also in Figs. 1 and 2, the little lip is shown in operative position on a bucket typical of the practice heretofore by means of the adapter. It will be observed that the lip 17 is short as compared to lips known in the art, and is seated on the adapter in an outside-inside manner similar to the seating of the adapter on the rim of the conventional bucket. The lip 17 is constructed with an intermediate flange 19 which is adapted to seat on the external face of the adapter 30 at the front portion thereof with a complementary flange 32, and also with flanges 21 which are adapted to seat on the internal face of the adapter 30 at the sides thereof, with complementary flanges 33. Further, the lip 17 may have constructed integral with the intermediate flange 19, a tongue portion 25 adapted to seat in a correspondingly shaped depression in the front of the face of the adapter 30. The provision of this tongue portion secures fastening means of the lip to the adapter on the bucket at the front, and, among other things, prevents lateral movement of the lip on the bucket. This fastening is accomplished by nuts and bolts 25*a* which pass through the openings 24 of the lip 19 which are in register with corresponding opening 24*a* in the adapter 30. Only two bolts are usually required. The lip may also be provided with protecting lugs 26 which protect the nuts and bolts from wear in the digging operations.

In addition, the small lip 17 is fastened directly to the bucket 10. The extremities 29 of the lip are provided with openings 27 which register with corresponding openings in the bucket and nuts and bolts 28 hold it securely to the bucket. Usually a pair on each side suffices.

It is believed that the manner of using the adapter is apparent from the foregoing description, but it is to be remembered that the little lip 17 is not a repair piece and is not a patch for larger lips, but rather a complete and individual lip. The adapter is not a lip but rather makes possible the use and advantages of the little lip on buckets of the practice heretofore without great economic loss.

I claim:

1. A dredge bucket assembly comprising in combination with a bucket an adapter which seats on said bucket in an inside-outside manner and is removably attached thereto, and a comparatively small removable lip which seats on said adapter in an inside-outside manner and is separately detachably secured both to the adapter and to the bucket, said lip being centrally secured to said adapter and terminally to said bucket.

2. A dredge bucket assembly comprising in combination with a dredge bucket, an adapter which seats on the rim of said bucket in an inside-outside manner and is removably secured thereto and a comparatively small complete removable lip which seats on the rim of said adapter in an inside-outside manner and is keyed to said adapter and is removably attached separately to both said bucket and said adapter, said lip being centrally secured to said adapter and terminally secured to said bucket.

3. In combination, a dredge bucket, an adapter comprising a member adapted to be seated on the rim of said bucket in an inside-outside manner and provided with flanges adapted to seat and hold a removable lip, and a comparatively small removable lip adapted to be removably secured at the front to said adapter and at the extremities to the said bucket.

4. A dredge bucket assembly comprising in combination with a dredge bucket, an adapter, and a comparatively small removable lip attached separately both to the adapter and to the bucket, said lip being centrally riveted to said adapter and terminally riveted to said bucket.

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