June 11, 1935. L. B. SCHAUER 2,004,637

BUCKET

Filed Oct. 23, 1933 2 Sheets-Sheet 1

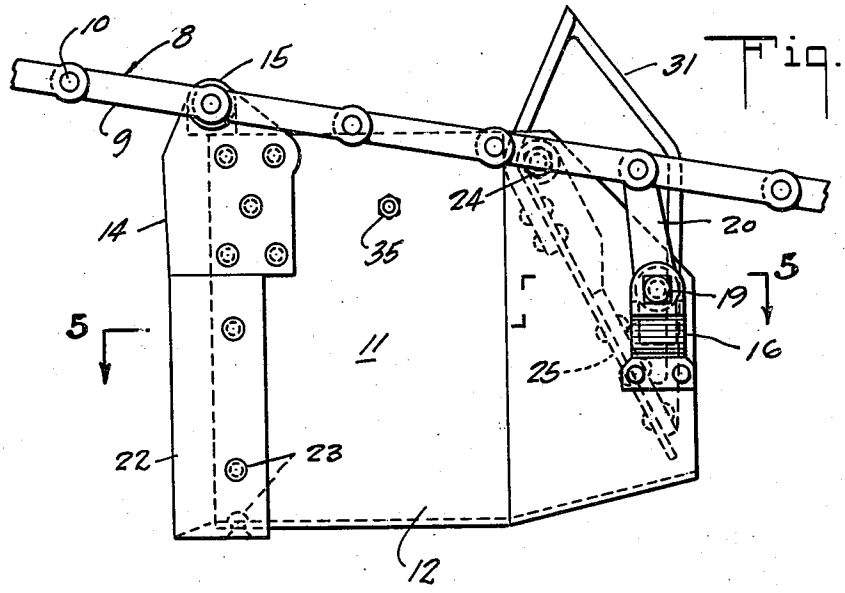


Fig. 1

Fig. 3

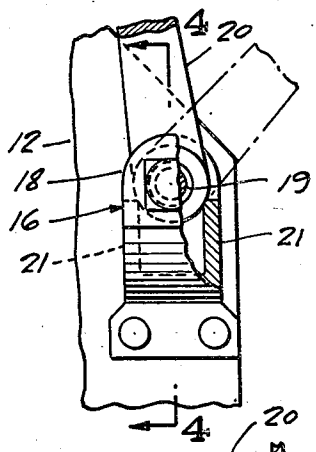


Fig. 2

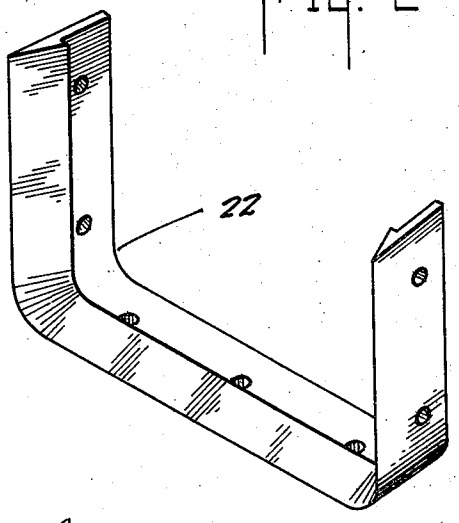
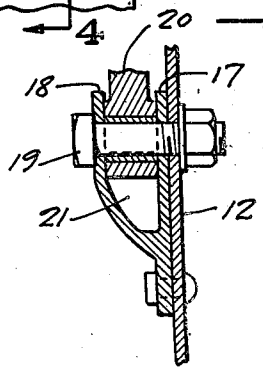


Fig. 4



INVENTOR
Lawrence B. Schauer
BY John Flam
ATTORNEY

June 11, 1935. L. B. SCHAUER 2,004,637

BUCKET

Filed Oct. 23, 1933 2 Sheets-Sheet 2

Fig. 5

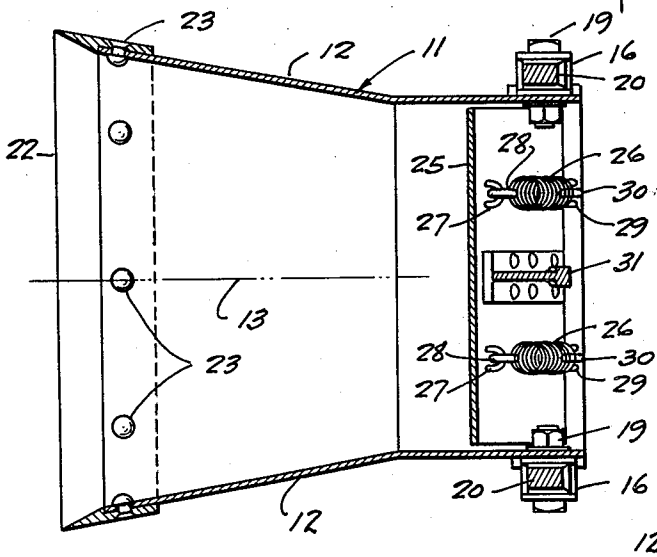


Fig. 7

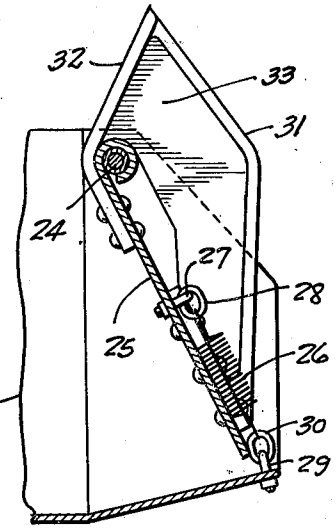
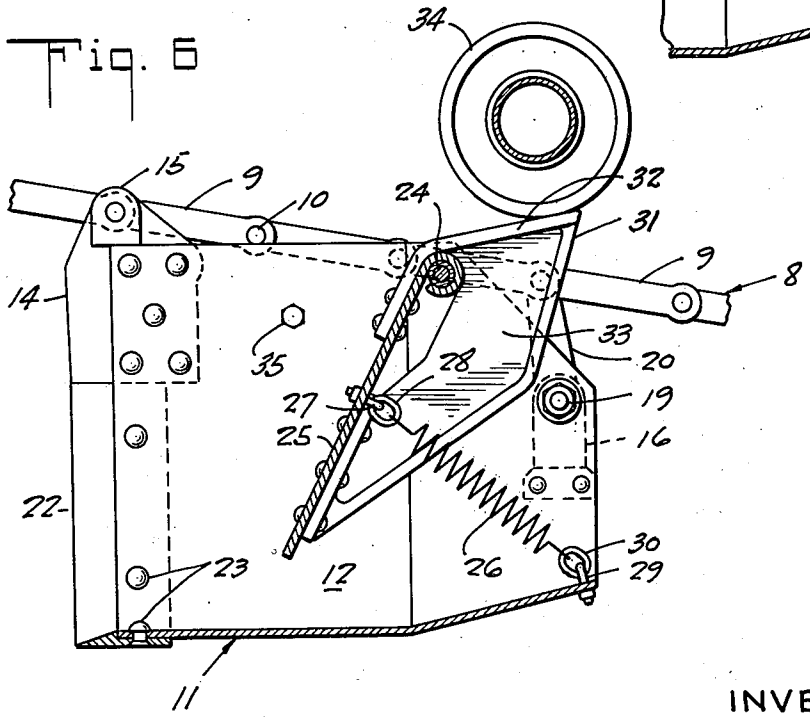


Fig. 6



INVENTOR
Lawrence B. Schauer
BY John F. Lamm
ATTORNEY

Patented June 11, 1935 2,004,637

UNITED STATES PATENT OFFICE

2,004,637

BUCKET

Lawrence B. Schauer, Huntington Park, Calif., assignor to Ruth Dredger Manufacturing Corporation, Ltd., Los Angeles, Calif., a corporation of California

Application October 23, 1933, Serial No. 694,700

2 Claims. (Cl. 198—140)

This invention relates to new and useful improvements in buckets for dredging machines, and has as its principal object to improve the construction and increase the durability of such buckets.

Another object is to provide a renewable wear resisting lip to protect the entire digging edge of the bucket from abrasion by the material in which the dredge is operating.

Another object is to provide an improved attachment means for the bucket hangers; still another object is the provision of the novel spring mechanism for closing the bucket door.

This invention possesses many other advantages, and has other objects which may be made more easily apparent from a consideration of one embodiment of the invention. For this purpose there is shown a form in the drawings accompanying and forming part of the present specification. This form shall now be described in detail, which illustrates the general principles of the invention; but it is to be understood that this detailed description is not to be taken in a limiting sense, since the scope of the invention is best defined by the appended claims.

Figure 1 is a side elevation of a dredger bucket incorporating my improvements, and shown in conjunction with a supporting conveyor chain;

Fig. 2 is an isometric view of the wear resisting lip;

Fig. 3 is a fragmentary elevation on an enlarged scale of the side of the bucket, showing the bracket for the rear bucket hangers;

Fig. 4 is a section taken along plane 4—4 of Fig. 3;

Fig. 5 is a transverse section taken along plane 5—5 of Fig. 1;

Fig. 6 is a longitudinal section of the bucket showing the door in discharging position; and

Fig. 7 is a fragmentary section similar to Fig. 6, showing the door in normal, or closed position.

A common type of digging machine or dredger includes a pair of parallel endless chains, suitably supported as by pulleys or sheave wheels, having a plurality of buckets or scoops suspended from them. One end of each of these chains is suspended close to the material it is desired to excavate. These chains are driven so as to cause the scoops or buckets to enter the material, pick up a load as they pass through it, and carry this load to a predetermined point, where they are dumped, after which they return for another load and the cycle is repeated. It is to buckets for this type of dredger that these improvements are directed.

Referring more particularly to the drawings, the supporting chains 8 each consist of links 9, secured by bolts or pins 10. A bucket is indicated by 11, and is preferably formed from a single piece of steel plate or other equivalent material, cut and bent to the desired shape, being welded where deemed advisable. By referring to Fig. 5 it will be noted that the sides 12 diverge or flare toward the front and are symmetrical about the center line 13. This is to permit either edge of the bucket, as well as the bottom to dig, so that the bucket may traverse as well as advance, and in either right or left hand direction.

Secured at the forward upper corner of each of sides 12, as by rivets, is a casting 14 with an upwardly projecting ear 15 adapted to receive one of the bolts 10 used for securing the chain links 9 together. At the rear of each of the side plates is another casting 16, also secured by rivets and of novel form. It includes a wall 17 (Fig. 4) arranged to lie against the side plate 12 and a second wall 18 spaced therefrom, but joining it near its lower end. Walls 17 and 18 have coaxial bores adapted to receive a bolt or pin 19 upon which is pivoted an arm or link 20. This link serves as a conformable support between the chains 8 and the rear part of the bucket. In this way, as bucket 11 passes around any supporting sheave or pulley, the distance between the front and rear supports (ears 14 and links 20) can be shortened to correspond to the chord of the arc formed by chains 8. Preferably, the hanger or link 20 is made as short as practicable. By referring to Fig. 4 it will be evident that wall 18 serves to support the outer end of bolt 19 and to keep the latter from being bent due to any forces which may be transmitted by link 20. Walls 17 and 18 are connected by web walls 21 (Fig. 3), for the purpose of limiting the motion of arm 20 about pin 19. Thus if the bucket 11 is supported as by resting on the bottom of the excavation, or if chains 8 become slack for any reason, the chains 8 will tend to drop from the position shown in Figs. 1 and 6, which would cause arms 20 to turn about pins 19. The amount of this turning will be limited by one edge of arm 20 striking wall 21 as shown by broken lines in Fig. 3. In this way, since hangers 20 are short, and since stops are provided for limiting the rotation of the hangers, there is never any danger that the bucket 11 will ever be urged to a position on the wrong side of the chains 8.

Immediately below casting 14 and extending

to the bottom of the bucket, across the bottom and up the other side to the corresponding casting 14 is a wear resistant U-shaped lip 22 (Figs. 1, 2, 5 and 6). This may be a casting of manganese steel or other suitable alloy, and is secured in place by rivets 23, so as to be renewable when necessary. The forward edge may be reduced in thickness and substantially sharp, so that less force will be required to force the bucket through the material to be excavated, and to render it possible to cut through roots and similar obstructions which may be encountered therein.

At the upper edge of side plates 12 near their rear is a bolt 24 (Figs. 1, 6 and 7), extending between them, and upon which is mounted a swinging plate 25. This forms the back of the bucket. It is normally held resiliently in closed position (Figs. 1, 5 and 7) as by a pair of tension springs 26.

The manner in which these springs are attached will now be described. Intermediate the lower edge of plate 25 and supporting bolt 24 are a pair of U-bolts 27, in each of which is a chain link 28. Through the link 28, the upper end of spring 26 is hooked. Similar U-bolts 29 are fastened at the back edge of the bottom, and are also provided with links 30 through which the lower ends of springs 26 are hooked. These lower U-bolts also serve as stops to limit the backward swing of plate 25. The interposition of links 28 and 30 between the ends of spring 26 and the U-bolts is for the purpose of keeping the spring from wearing, due to the swinging of the back. By comparing Fig. 6 with Fig. 7 it will be noticed that there is practically no slippage of the spring ends upon the links, the entire movement being between the latter and the U-bolts. The links are obviously better adapted for wear than the spring, and are much more easily replaced if necessary.

Secured to plate 25 as by rivets is a rhomboidal shaped cam casting 31, having a flange 32 and a web 33. This member 31 is designed to coact with a roller 34 (Fig. 6) and thereby to swing plate 25 inwardly when it is desired to empty the bucket. This roller can be appropriately supported on the conveyor system to cause the bucket to be emptied as it reaches a place on the conveyor system where the bucket assumes a downward tilt. Plate 25 thus acts to push the material outwardly of the bucket, when the cam member 31 is actuated by roller 34. A pin or bolt 35 is secured in each side for the purpose of limiting the swing of plate 25.

I claim:

1. In combination, an excavator bucket adapted to be connected to conveyor chains, means for pivotally connecting the bucket adjacent its front and rear to the chains, including hangers for the rear of the bucket, and stops on the bucket for limiting rotation of the hangers.

2. In combination an excavator bucket adapted to be connected to conveyor chains, means for pivotally connecting the bucket adjacent its front and rear to the chains, including hangers for the rear of the bucket, and ears fastened to the sides of the bucket for the hangers, said ears having limiting surfaces for the motion of the hangers for preventing improper motion of the bucket with respect to the chains.

LAWRENCE B. SCHAUER.