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MECHANICAL CLEANER FOR DRAGLINE BUCKETS AND THE LIKE

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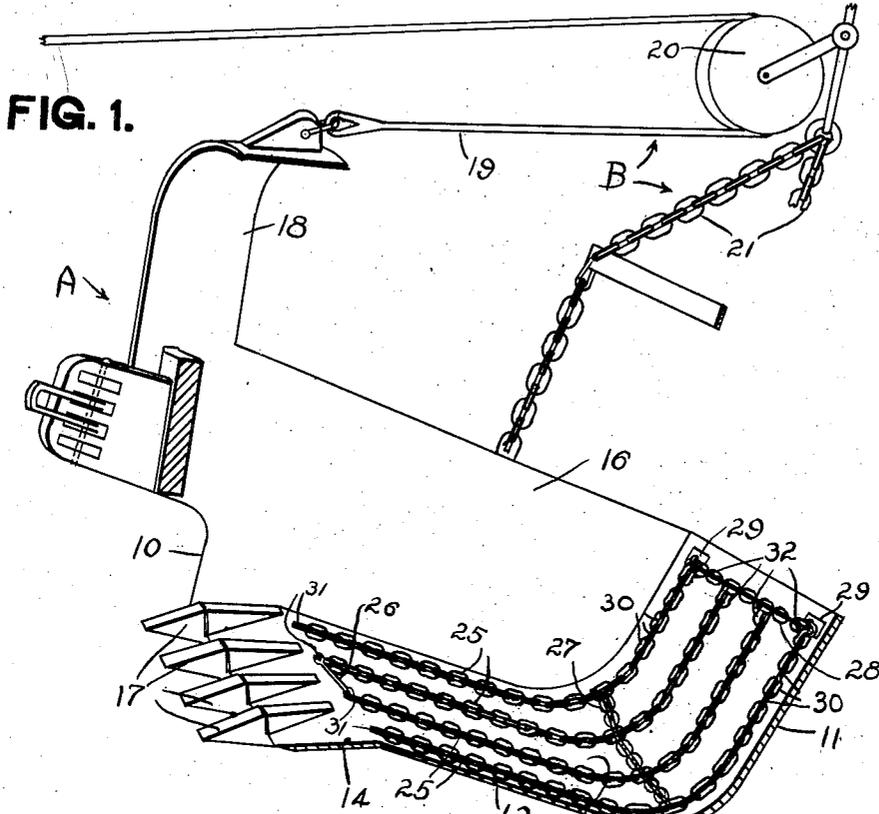


FIG. 1.

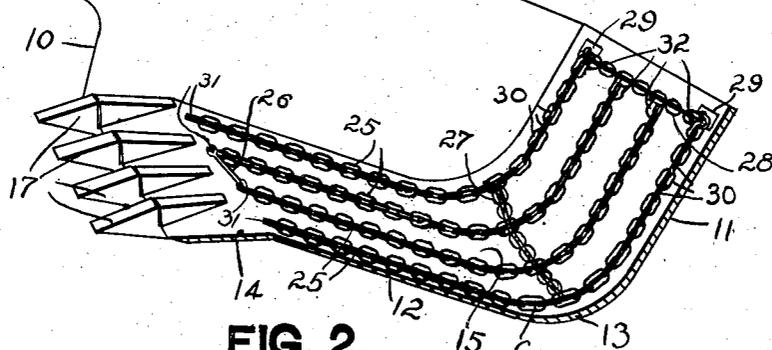


FIG. 2.

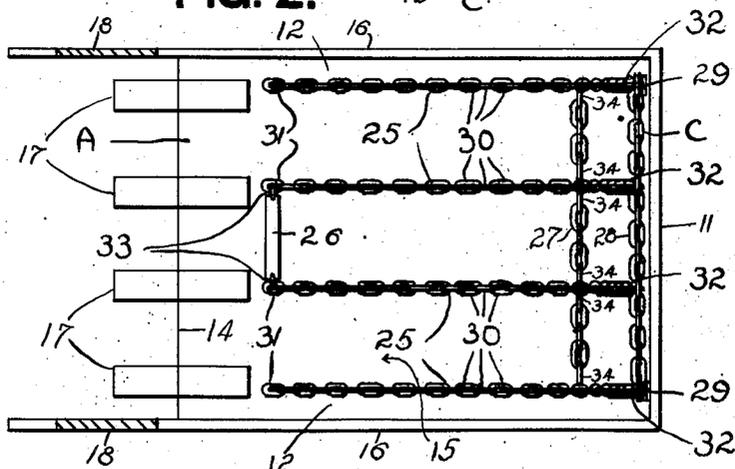
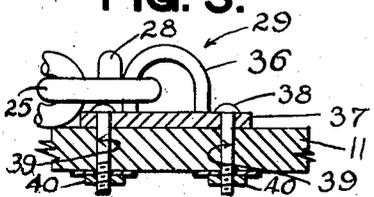


FIG. 3.



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## MECHANICAL CLEANER FOR DRAGLINE BUCKETS AND THE LIKE

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2 Claims. (Cl. 37-135)

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This invention relates to mechanical means for mechanically loosening material adhering to the scoops, buckets, shovels and the like of excavating and similar equipment and machinery. One example of equipment to which the invention is applicable is a dragline bucket.

An important object of the invention is to provide means for this purpose which will loosen adhering earth, clay and the like from the entire material-receiving surface of the bottom of a bucket, scoop, shovel or the like (which will hereafter be termed bucket to include all such devices), both during the scooping and just after the dumping movements of the bucket, and will also loosen such matter adhering to the material-receiving surface of the bucket, just subsequent to the dumping movement thereof.

Another important object is to provide such loosening means which functions in two ways with respect to the bottom or bowl of the bucket. That is, there is a scouring action during the scooping movement and a jarring action just subsequent to the dumping action. This compound movement is important, since mud and the like may freeze quickly, in cold weather, to the bucket, but such frozen mud will be readily jarred loose by the novel means disclosed.

Still another important object is to provide a dislodger of matter adhering to buckets which, while adapted to scour the material-receiving surfaces or faces of the bottom of buckets, will not be apt to wear any defined grooves in such faces, since the movements of the dislodger are so varied that there is no opportunity for regular, defined paths to be taken by the dislodger parts during their movements.

A major object is to provide a dislodger as described which is adapted to be attached to dragline buckets and similar devices, having bottom or material-receiving faces of various contours, and will conform to such contours during the scouring action.

Another major object is to provide such a dislodger which is readily attached to buckets, without any major alterations in the buckets.

Other objects and advantages of the invention will be apparent during the course of the following detailed description of the invention taken in connection with the accompanying drawing, forming a part of this specification and in which drawing

Figure 1 is a vertical section through a conventional dragline bucket with the novel dislodger attached thereto.

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Figure 2 is a top plan of the bucket of Figure 1 and of the dislodger.

Figure 3 is an elevation of a means for attaching the dislodger to a bucket or the like.

5 In the drawing, wherein for the purpose of illustration is shown a preferred embodiment of the invention and wherein similar reference characters designate corresponding parts throughout the several views the letter A designates a bucket, manipulated by means B, with the bucket A equipped with the dislodger C.

10 By way of example, the bucket A is shown as a conventional dragline bucket, having a body portion 10 including a normally upwardly and rearwardly inclined back wall 11, defining a rearward end of the body portion, a bottom wall 12 joined to the back wall 11 by a curved intermediate wall 13, and a downwardly inclined lip 14 at the forward end of the bottom wall 12, all defining the bucket bottom, having an upper or material-receiving face 15. The body portion 15 also includes substantially alike side walls 16 extending from and joined to the walls 11, 12 and 13 and lip 14. Forwardly of the lip 14 are a row of forwardly-projecting teeth 17. Extending upwardly from the forward end (being the end nearest the lip 14) of the side walls 16 is an inverted U-shaped bracket 18.

25 The means B for manipulating the device A includes a dump line or cable 19 which is secured to the bight of the bracket 18 and extends over the body portion 10, and rearwardly to a pulley 20, from which it extends to a convenient place for operation thereof. A pair of chains 21 tiltably support the body portion 10, being secured to the outer faces of the side walls 15 and are attached to a convenient portion of the apparatus (not shown) of which the device A forms a part. The connections of the chains 21 to the walls 16 are such that the body portion is normally inclined to tip forwardly with the teeth 17 downwardly, but the position of the body portion 10, is, of course, governed by the dump line 19, as is apparent and well known in the art.

30 As for the novel dislodger C this comprises a plurality of lengths 25 of flexible material, a rigid cross member or link 26 connecting certain of the lengths 25, a flexible cross member 27 connecting the lengths 25 intermediate their ends, a second flexible cross member 28 connecting the lengths at their rearward ends, and means 29 to secure the assembly 25-28 to the bucket A, in a specific way.

35 The lengths 25 of flexible material are, preferably, chains made up of a plurality of intercon-

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connected links 30, with each length 25 preferably of about the same overall length and each length 25 having a forward end 31 and rearward end 32. The lengths 25 are normally spaced apart and in substantial parallelism. Preferably the material of the links is iron, steel, or iron containing alloys.

Referring to the rigid cross member or link 26 it is, preferably, of metal, such as iron, steel, or suitable alloys and extends from one intermediate (or one of the two innermost) length 25 to the other intermediate (or other of the innermost) length 25 and may be connected thereto as by the eyes 33. It connects these specific lengths 25 preferably at their forward ends 31.

The flexible cross member 27 may be of chain, like that of the lengths 25 and is connected, in by certain of its links 34 to the adjacent links of the lengths 25. It is preferred to connect the member 27 with the lengths 25 intermediate their length at a location so that the member 27 will be disposed substantially as shown in Figure 1, i. e., in the vicinity of the curved intermediate wall 13.

It will be seen that the flexible cross member 28 is disposed at the ends 32 of the lengths 25 and secured thereto, as by certain of the links of the member 28.

A means 29 to secure the assembly 25—28 to the bucket A, is shown, by way of example, in Figure 3, and includes an eye 36 of inverted U-shape, with its legs secured to a perforated base plate 37, through the perforations of which and through perforations 39, which may be drilled in the wall 11 of the bucket A, extend screw threaded bolts, having suitable nuts 40, for detachably securing the assembly 36 and 37 to the wall 11. It will be noted in Figure 1 that the means 29 are positioned, preferably, closely adjacent the uppermost edge of the wall 11 and that the lengths 25 extend therefrom to the lip 14 of the bucket A.

The action of the novel dislodger C is as follows: At the start, as the bucket is about to be manipulated, as is well known in the art, to scoop up materials the dislodger C will be positioned substantially as in Figures 1 and 2 but, as the material begins to fill the bucket (moving from the forward edge thereof toward the back wall 11, the material will cause the lengths 25 together with the cross members 26 and 27 to move rearwardly. The paths taken by these lengths will be extremely varied, but their travel will tend to cause the links thereof to scrape over the inner or upper surface 15 of the bucket bottom and loosen the material adhering thereto. The cross members 26 and 27 will also tend to scrape this same surface, over various areas thereof.

As the bucket fills, the lengths 25 and cross members 26 and 27 come to rest, mainly upon the inner face of the rear wall 11. However, when the bucket is tilted, by the well known means 19, 20 and 21, the material will be discharged and the lengths 25, suddenly released, will tend to first fly or move outwardly of the walls 11, 12 and 13, straighten out and then, as their outward movement is overcome by gravity, will contact these walls with considerable force. At the same time, the cross member 28 will vibrate, due to the motions of the attached lengths 25, and tend to dislodge any material adhering to the uppermost end of the wall 11 of the bucket A.

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In fact, before the bucket A is again rightened for another scooping operation, the lengths 25 and cross members 26 and 27 will strike the walls 11, 12 and 13 several times, thus dislodging (by impact and vibration) material adhering to these walls (either the inner or upper surface 15 or to the lower or outer surface of the bucket bottom).

The cross member 26 not only prevents entangling of the innermost of the lengths 25 but it also prevents these lengths from becoming entangled with the dump line 19, as the lengths 25 fly upwardly.

The cross member 27 tends to prevent the lengths 25 from entangling, aids in scouring and tends to return the lengths 25 to parallelism.

Various changes may be made to the form of the invention herein shown and described without departing from the spirit of the invention or scope of the claims.

What is claimed is:

1. In an adhering material-dislodger for an excavating machine bucket having a material-receiving surface, a plurality of lengths of flexible material constructed and arranged to lie upon the material-receiving surface of said bucket and to normally extend, in substantial parallelism from the forward end to the rearward end of said bucket, a cross member of rigid material, connecting two of said lengths at their forward ends, said lengths at their forward ends and said cross member being free of attachment to said bucket, a cross member of flexible material connecting said lengths of material at points spaced from their forward ends, and means connecting the rearward ends of said lengths to the rearward end of said bucket.

2. In an earth dislodger and surface scourer for a bucket of an excavating machine, a plurality of lengths of chain, including outermost lengths and innermost lengths, with all of such lengths normally spaced apart and disposed in parallelism, each length having a forward end and a rearward end; a link of rigid material connecting the forward ends of the innermost lengths; a cross chain connecting all of the lengths intermediate their ends; a cross chain connecting all of the lengths at their rearward ends; and means for securing the rearward ends of only the outermost chains to the rearward end of said bucket with the chains disposed upon the material-receiving surface of said bucket, the forward ends of said lengths being free of attachment to said bucket, and the intermediate links of said last-named cross chain being free of attachment to said bucket.

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