Feb. 11, 1958 I. D. POTTORF 2,823,061

SELF-DUMPING BUCKET

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FIG. 1.

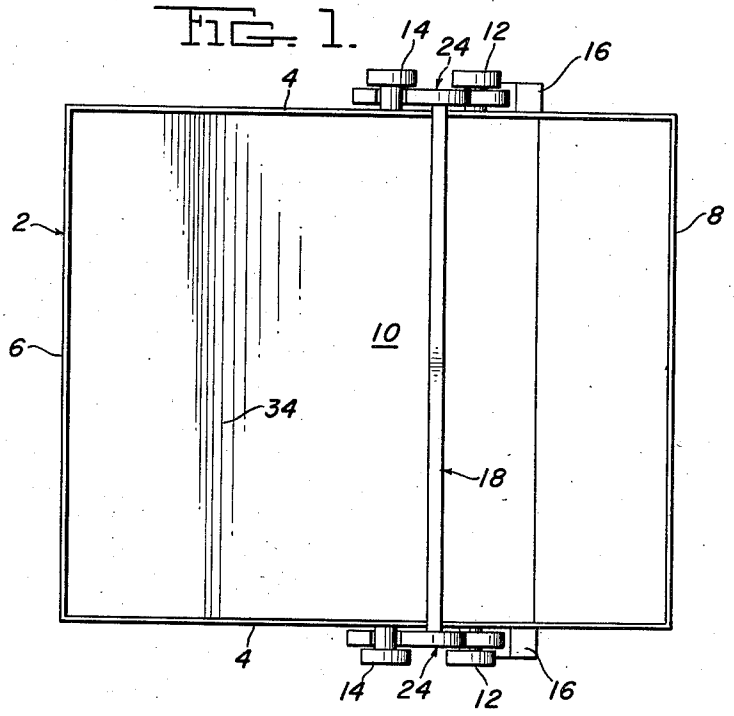
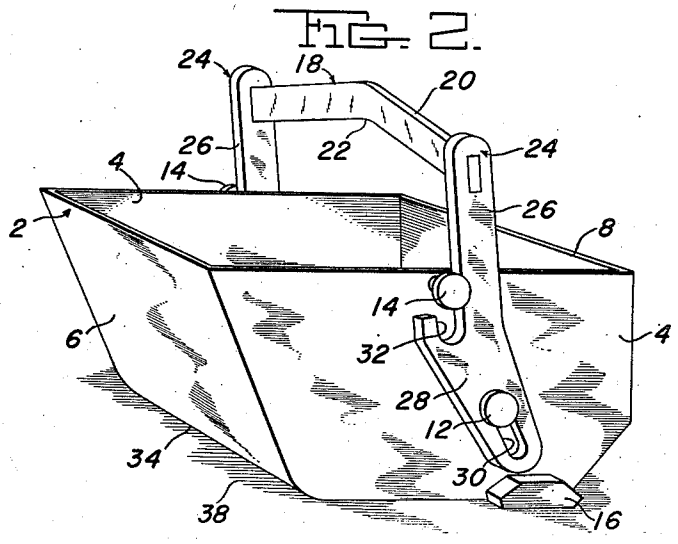


FIG. 2.



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FIG. 3.

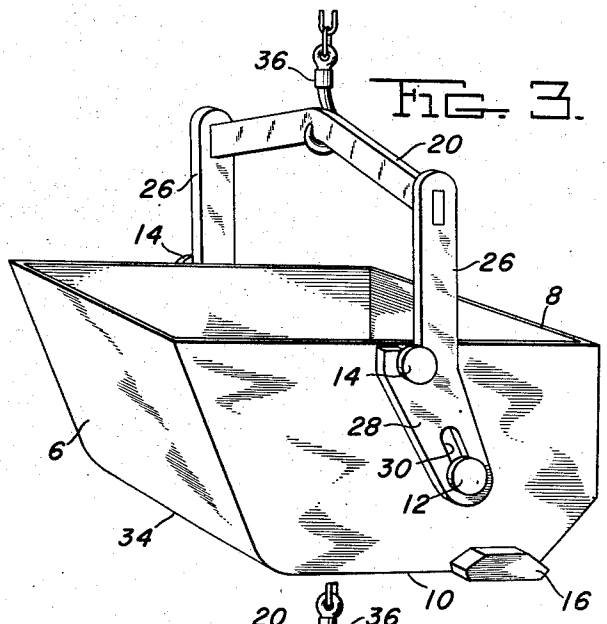
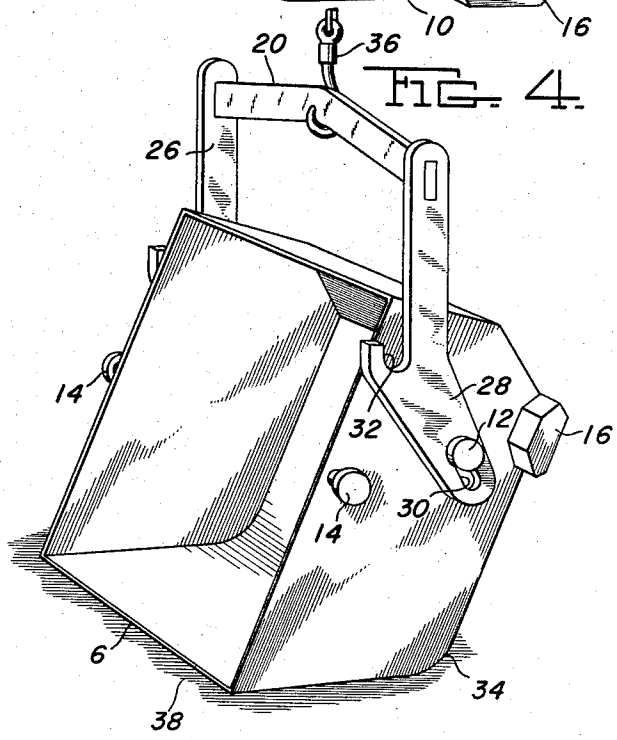


FIG. 4.



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SELF-DUMPING BUCKET

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2 Claims. (Cl. 294—73)

The present invention relates to a self-dumping bucket-and-bail type container for handling material.

Containers most commonly used for hauling materials such as scrap, foundry sand, etc., in industrial plants usually consisted of open top rectangular shaped boxes or buckets having hooks or holes on two opposite sides. When it was desired to transport a filled bucket to another point in the mill for disposition or re-use of the material contained therein, the lift cables of an overhead crane were attached to the hooks or holes in the bucket so that it could be hoisted and carried away by the crane. This procedure required a workman to attach the lift cables to the bucket and then to follow the crane to unhook one cable when the bucket had reached its destination so that it could be dumped by the crane. After the bucket had been dumped, it was necessary for the workman to re-attach the cables and then remove them after the empty bucket had been returned to its customary location. Manual hooking and unhooking of the cables from the bucket each time it was necessary to move it not only caused loss of production time in many instances but also created a safety hazard for the floor workman engaged in the operation.

It is, accordingly, an object of my invention to provide a bucket-and-bail type container which may be carried and dumped and otherwise handled solely by the craneman's manipulation of a crane lift hook.

It is a further object of my invention to provide an improved bucket-and-bail type container having the bail affixed to the bucket in such a manner that the bail will remain in substantially upright position when the bucket is at rest.

These and other objects will become more apparent after referring to the following specification and attached drawings, in which:

Figure 1 is a top plan view of the invention in resting position;

Figure 2 is a perspective view of the invention in resting position;

Figure 3 is a view similar to Figure 2 of the device of the invention locked in carrying position; and

Figure 4 is a perspective view showing the position of the bucket of the invention immediately after dumping.

Referring more particularly to the drawings, reference numeral 2 indicates generally the bucket element of the container of my invention. Bucket 2 is made up of a pair of parallel side walls 4, a forward end wall 6, a rear end wall 8 and a bottom 10. A trunnion pin 12 is attached to and projects outwardly of the lower portion of each side wall 4 at a point offset from the center of gravity of the bucket. A projecting pin 14 is affixed to the outer surface of each wall 4 at a point spaced above and vertically offset from the trunnions 12. A counterweight 16 may be affixed to the bottom of the bucket adjacent each side of the lower edge of the rear end wall 8 for a purpose to be hereinafter described.

The bucket is provided with a bail 18 which includes an angular cross member 20 formed with a concave hook-engaging portion 22 intermediate its length. The cross member 20 is provided with a rigid leg 24 depending from each of its ends. Each leg is made up of a straight upper portion 26 and a lower portion 28 which extends downwardly at a slight angle to the longitudinal axis of portion 26. An elongated slot 30 is provided adjacent the bottom of each leg which extends in a plane substantially parallel with the longitudinal axis of leg portion 28. The bail is attached to the bucket by the trunnion pins 12 being slidably fitted in the slots 30. The angular inclination of the upper and lower leg portions 26 and 28 relative to each other causes the bail to rest against the pins 14 when the bucket is at rest and the trunnions 12 abut the upper edges of the slots 30, as best shown in Figure 2.

A notch 32 is formed in the forward edge of each leg, at a point adjacent the junction of the portions 26 and 28, for receiving the pins 14 when the bail is raised to lift the bucket.

In operation, the bail 18 leans against the pins 14 when the container is in resting position and being loaded. When it is desired to transport the bucket, the hook 36 of a crane (not shown) is brought into position under the hook-engaging portion 22 of the cross member 20 and raised to engage the bail and cause notches 32 to engage the pins 14 after which continued elevation of the crane hook raises the bucket so that it can be transported to the desired destination. Upon reaching its destination, the bucket is lowered to resting position on a supporting surface 38 adjacent the area into which it is desired to dump the contents of the bucket. After the bucket has been deposited in resting position on the supporting surface 38, continued lowering of the crane hook causes the bail to be lowered free of engagement with the pins 14. Then the bail is again engaged by the crane hook and simultaneously moved slightly rearwardly and upwardly to cause the leg portions 28 to slide along the trunnions 12 until the trunnions are engaged by the bottom edges of the slots 30. Then, as the crane hook lifts the bail higher, the offset position of the trunnions 12 relative to the center of gravity of the bucket causes the bucket to pivot on the bail and dump its contents over the forward end wall 6, as best shown in Figure 4. The crane hook is then lowered to bring the bucket to rest on its sloping forward end wall 6. After the bucket has thus been brought to rest, the weight of the bail 18 bearing on the trunnions 12, and the counterweights 16 cause the bucket to pivot on the lower edge 34 of the forward wall 6 until the bottom 10 of the bucket rests on the supporting surface 38. The bail is then lifted vertically causing engagement of the pins 14 by the notches 32 thus locking the bucket in carrying position so that it may be returned to its customary location. When the empty bucket is deposited at the desired location, the leg portions 28 will slide downwardly by their own weight along the trunnions 12 and the notches 32 will become disengaged from the pins 14. The angular shape of the leg portions 28 and the position of the pins 14 relative to the position of the trunnions 12 will cause the bail 18 to remain in substantially vertical position resting against the pins 14. In this position the bail is easily engageable by the crane hook through simple manipulation by the crane operator. Thus, the entire sequence of operation, including picking up the loaded bucket, transporting it to the dumping destination, dumping the bucket, and returning the empty bucket to its initial location, is carried on by the crane operator alone without the necessity of subjecting a floorman to any safety hazards.

While one embodiment of my invention has been shown and described, it will be apparent that other

adaptations and modifications may be made without departing from the scope of the following claims.

I claim:

1. Material-handling apparatus comprising a bucket having parallel side walls, end walls and a bottom, and a bail for lifting said bucket, said bail including spaced parallel side arms pivoted to said side walls by pin-and-slot connections on an axis offset to one side of a vertical plane extending transversely through the center of gravity of the bucket from one side wall to the other and below a horizontal plane extending transversely through the center of gravity of the bucket from one side wall to the other, the slots of said connections being at an angle to the vertical such as to cause the lower ends of the arms to move toward and from one of said end walls when the bail is raised and lowered, aligned pins extending laterally from said side walls above said axis,

said arms having notches to receive said pins when the bail is raised in one angular position relative to the bucket thereby locking the bucket in carrying position and to clear said pins when raised in a different angular position thereby freeing the bucket for tilting to dump the contents.

2. Material-handling apparatus as defined by claim 1 characterized by said pins being disposed on the side of said vertical plane opposite said axis whereby the bail when lowered tends to tilt toward said pins until arrested thereby.

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