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W. J. MULLALLY

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CUSHION BACK DIPPER

Filed May 5, 1927.

Fig. 2

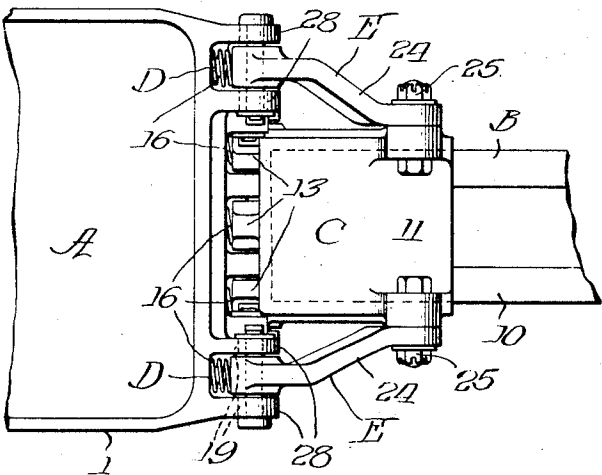


Fig. 3

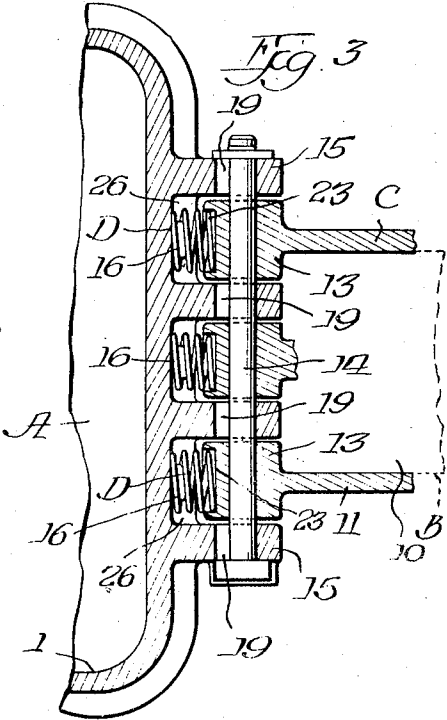
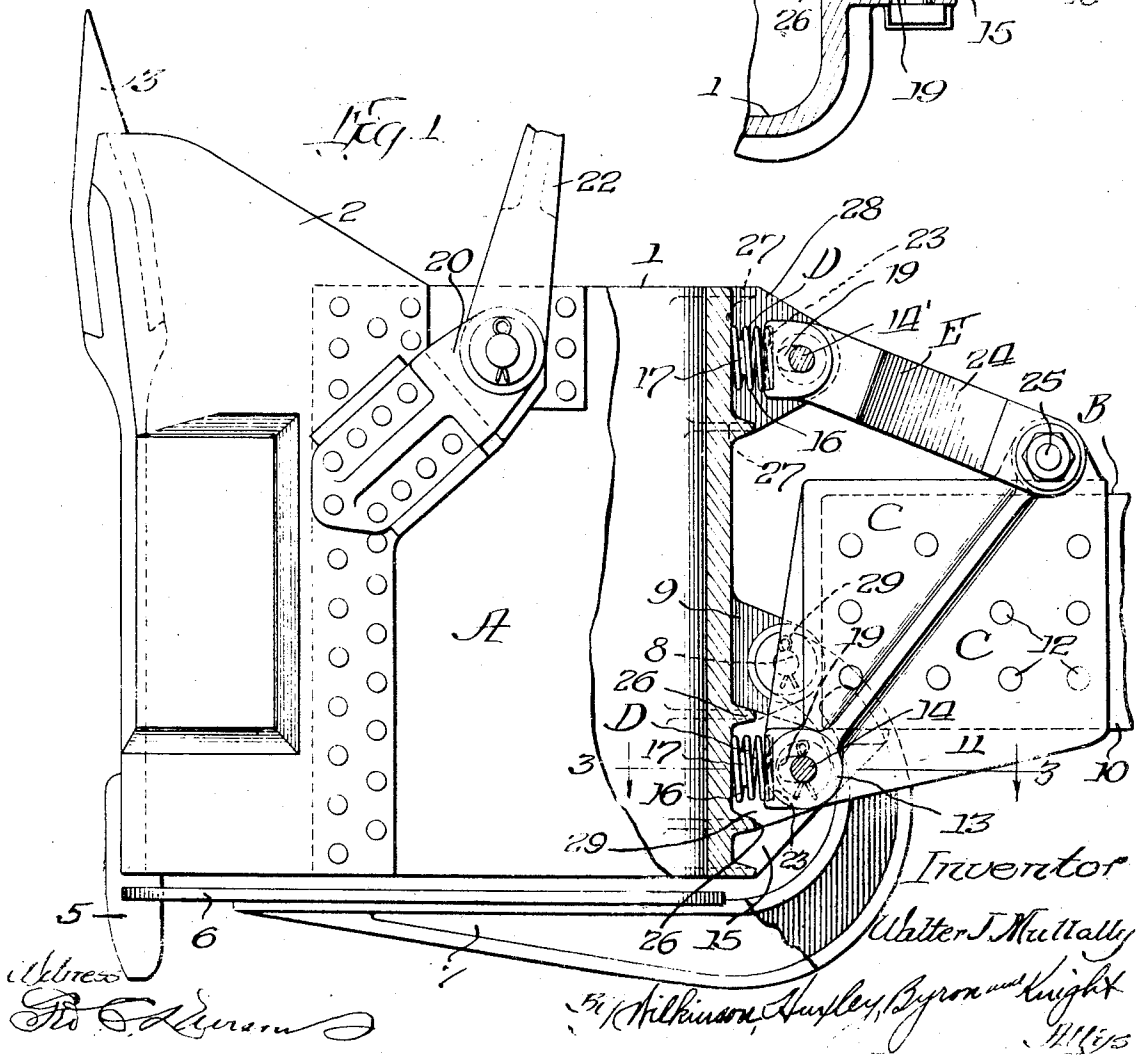


Fig. 1



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CUSHION-BACK DIPPER

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The invention relates to a dipper and more particularly to means attached to a dipper for the general purpose of cushioning the shocks incident to operation.

5 Formerly, the connections between the dipper stick and the dipper were of rigid or semi-rigid construction formed by either a direct connection through the dipper casting and the dipper back by means of pintles, or
10 from the dipper stick to the dipper back through a dipper stick casting and suitable links.

An object of the invention is to provide means to prevent damage to the dipper
15 bucket or dipper stick in operation.

Another object is to provide means for absorbing shocks to thereby eliminate breakage of the dipper back or dipper stick casting, or wrecking the holding pintles.

20 A more specific object is to provide springs or other cushioning means to absorb the shocks incident to operation of the dipper, which shocks would otherwise have to be absorbed by the pinions.

25 A further object is to provide means to absorb shocks and therefore allow a lighter structure to be built for the same work, thereby effecting a saving in the course of construction and also eliminate breakage thereby effecting a saving in the repair cost and
30 operation.

With these and various other objects in view, the invention may consist of certain novel features of construction and operation as will be more fully described and particularly pointed out in the specification, drawings and claims appended hereto.

In the drawings, which illustrate an embodiment of the device and wherein like reference characters are used to designate like parts—

Figure 1 is an elevation, partly in section, showing the invention applied between the dipper back and dipper stick casting;

45 Figure 2 is a plan view looking down on Figure 1; and

Figure 3 is a sectional plan view taken substantially on line 3—3 of Figure 1 and looking in the direction of the arrows.

50 In general, A represents the usual dipper

bucket and B the dipper stick for holding said bucket. The dipper stick is provided with a casting C to which links E are attached for the purpose of attaching the bucket to the dipper stick, and it has been found advisable and highly desirable to dispose cushioning members D between the dipper bucket and links, for the purpose and by the means to be more particularly pointed out.

More particularly, 1 represents the dipper bucket provided with the loading front 2, which may be provided with the usual teeth 3. The front is provided with a depending latch 5 for locking the bottom dump door 6 which is supported on bracket 7 hinged by a pintle 8 to lugs 9 on the dipper back. The front and door are operated in the usual manner through the bail 22 pivoted at 20 to the bucket. 10 represents the dipper stick carrying the dipper stick casting 11 fastened thereto by any suitable means such as rivets 12. The stick casting is provided with lugs 13 which are adapted to support the bucket by means of the pintles 14 passing through said lugs and through elongated slots 19 in lugs or ears 15 on the dipper back.

Disposed in a recess formed by stiffening ribs 26, is a lug 17 around which is positioned a cushioning spring 16, which is disposed between the dipper back and stick casting. Disposed between the top of the dipper bucket and the stick casting and connected thereto, is a link 24 fastened to the casting by means of the pintle 25 and to the dipper bucket through the lugs or ears 28 by means of the pintle 14' disposed in slots 19 provided preferably in the lugs. The stiffening ribs 27 corresponding to the ribs 26 are also provided on either side of this pintle 14' to form a recess in which the lug 17 and spring 16 are disposed in a manner similar to that provided for the lower supporting pintle. The link and stick casting may conveniently be provided with a recess 23 in way of the springs for carrying said springs to thereby prevent any slippage which might be caused due to any movement between the parts.

It is, of course, understood that the coil springs 16 are merely an illustration of a pre-

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ferred embodiment of the invention and that any other cushioning means such as leaf springs disposed preferably between the ribs 26 or 27, may be provided, or that any other cushioning means may be provided such as rubber blocks disposed in recesses such as 23 which might be provided in both or either of the supporting means and the dipper back. It is also to be understood that the recesses 19 may just as easily be provided in the stick casting, lugs and the links, in which case the pintles will not move in operation as they will be held in the usual holes in the bucket ears. Or the upper spring may be disposed between the link and the pintle 25 instead of between the link and the dipper back. It is therefore to be understood that the device shown is merely by way of illustration as other and various forms of the device will, of course, occur to those skilled in the art.

I claim:

1. In a device of the character described, the combination of a dipper stick, a dipper bucket, recesses in said bucket and stick, and cushioning means in said recesses.

2. In a device of the character described, the combination of a dipper stick, a dipper bucket loosely connected to said dipper stick, recesses in said bucket and stick, a lug in one of said recesses, and cushioning means between said recesses and associated with said lug.

3. In a dipper bucket, supporting lugs on the dipper bucket, positioning lugs on said bucket between said supporting lugs and cushioning means held by said positioning lugs between said dipper bucket and a support thereof.

4. In a device of the character described, the combination with a support, a dipper bucket, supporting ears on the dipper bucket, lugs between said ears, recesses in said support, and cushioning means associated with said lugs and recesses.

5. In a device of the character described, the combination of a dipper bucket, a support, said support comprising a bracket and a link for supporting the bucket, a resilient connection between said bracket and said bucket and a resilient connection between said link and said bucket, said connections permitting a limited relative movement between said bucket and said support.

6. In combination with a support, a dipper, securing means between said support and dipper, said means including securing members disposed on said dipper and forming recesses with adjacent members carried by said dipper, cooperating members having recesses therein carried by said support, and resilient members disposed in said recesses formed by said securing and adjacent members and in said cooperating members.

7. In excavating apparatus, a dipper bucket, a supporting bracket adapted to be

secured to a dipper stick, a pintle connecting said bucket and said bracket, said bucket having elongated openings allowing limited movement of said bucket relative to said pintle, positioning lugs formed on said bucket and resilient means centered by said lugs bearing against said bracket and said bucket to resist relative movement.

8. In excavating apparatus, a dipper bucket, a supporting bracket adapted to be secured to a dipper stick, a pintle connecting said bucket and said bracket, said bucket having elongated openings allowing movement of said bucket relative to said pintle, positioning lugs formed on said bucket, said bracket having recesses opposite said lugs and resilient means held by said lugs and said recesses.

9. In excavating apparatus, a longitudinal dipper stick, a dipper bucket of the type comprising a digging front, a discharge door and a supporting back disposed parallel to the digging front, said dipper stick being disposed at a right angle to the plane of said back, loose connection means between said dipper stick and said back and means for guiding the bucket for limited movement in a direction longitudinal of said dipper stick.

10. In excavating apparatus, a longitudinal dipper stick, a dipper bucket of the type comprising a digging front, a discharge door and a supporting back disposed parallel to the digging front, said dipper stick being disposed at a right angle to the plane of said back, loose connection means between said dipper stick and said back, means for guiding the bucket for limited movement in a direction longitudinal of said dipper stick and cushioning means interposed between said dipper stick and said bucket tending to resist said limited movement.

11. In excavating apparatus, a dipper bucket member, a dipper stick, a supporting bracket member secured to said stick, a pintle connection between said bracket member and said bucket member, one of said members having elongated openings to receive said pintle connection, said openings allowing limited relative movement between said members and resilient means disposed between said members at said pintle connections.

Signed at Chicago Heights, Illinois, this 4th day of April, 1927.

W. J. MULLALLY.