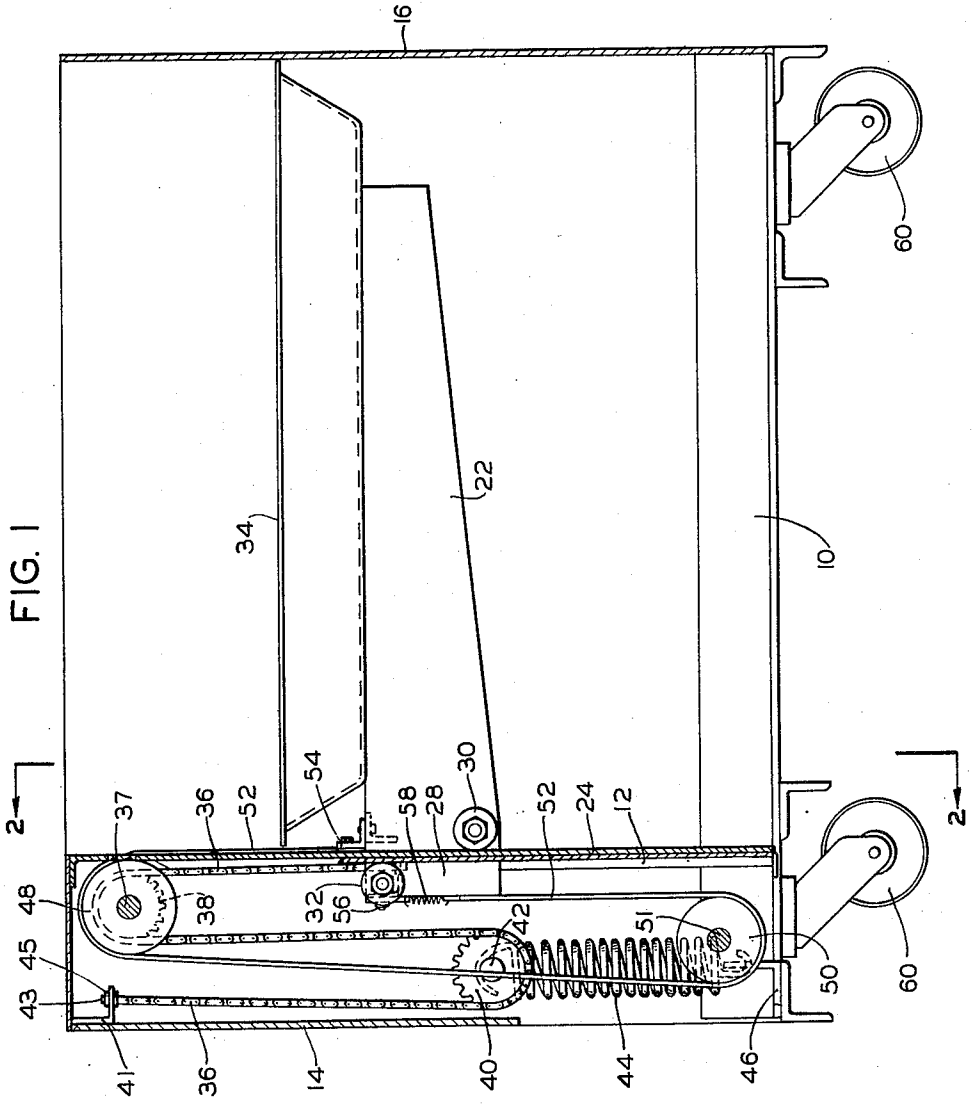
Nov. 5, 1957 C. H. LARSEN 2,812,104

SELF LEVELING STORING AND DISPENSING APPARATUS

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FIG. 1



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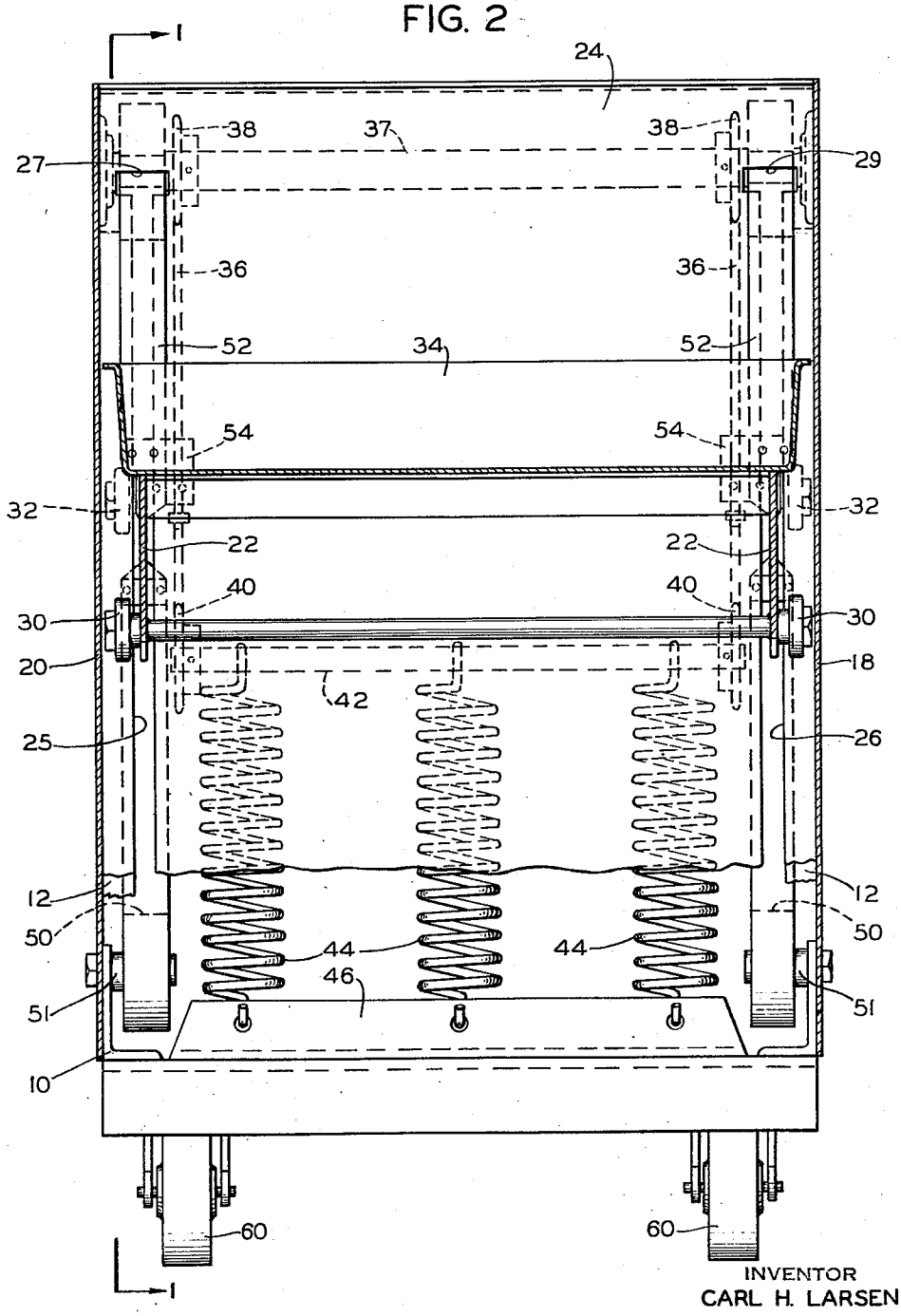
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FIG. 2



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2,812,104

SELF LEVELING STORING AND DISPENSING APPARATUS

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Application November 8, 1954, Serial No. 467,555

2 Claims. (Cl. 220—93)

This invention relates to an improved self-leveling, storing and dispensing apparatus and particularly to apparatus of the type employed for storing material in bulk.

Heretofore various types of self-leveling dispensers have been designed, including structures suitable for storing material in bulk without the use of tote boxes. One difficulty frequently encountered in storing material in bulk was due to the bulk material falling into the slot through which the table carrier arms projected. Even though these slots were made as small as possible, the bulk material, especially when it was of a small size and irregular shape, would catch in the slot, thereby preventing the carrier from ascending.

An object of this invention is to provide an improved self-leveling dispenser for storing bulk material wherein the slots through which the carrier arms project are covered and uncovered as the carrier descends and ascends.

Another object of this application is to provide a thin flexible covering tape which will be pulled down in front of the slot as the carrier is loaded, so as to prevent bulk material from falling into the slot.

Other objects and features of the invention will appear as the description of the particular physical embodiment selected to illustrate the invention progresses. In the accompanying drawings, which form a part of this specification, like characters of reference have been applied to corresponding parts throughout the several views which make up the drawings.

Fig. 1 is a sectional side elevation of my improved storing and dispensing apparatus.

Fig. 2 is a sectional end elevation taken on the line 2—2 of Fig. 1.

The self-leveling, storing and dispensing apparatus I have used to illustrate the invention consists of a rectangular base 10 to which is secured an upright rectangular shell formed by the walls 14, 16, 18 and 20 surrounding the vertically movable cantilever carrier. The latter consists of a pair of spaced carrier supports 22 each of which protrudes with one end through a vertical slot 25 and 26 respectively of a vertical separator wall 24 secured within the shell and spaced adjacent to the end wall 14. The separator wall 24 is secured to the two side walls 18 and 20 of the shell by means of a pair of upright angle irons 12 which also provide a suitable amount of rigidity to the ends of said wall.

To the end portion 28 of each carrier support 22 are pivotally mounted two rollers 30 and 32 arranged and spaced in such a manner that rollers 30 of the two carrier supports contact one side of the upright separator wall 24 while the rollers 32 engaged with the respective flanges of the upright angle irons 12 on the opposite side of said wall 24. A tray 34 is mounted on the cantilever support 22 for holding and supporting the bottom of the bulk material stacked in the self-leveling, storing and dispensing apparatus.

Sprocket chains 36 are connected at one end to the

carrier support portions 28 and pass upwardly around sprocket 38, then downwardly and upwardly around sprockets 40 to an anchorage 41 to which the ends of the sprocket chain are secured by means of a suitable bolt 43 and nut 45. The loop in the sprocket chain 36 in which the sprockets 40 are supported moves up and down opposite to the movement of the carrier 22.

The sprockets 40 are mounted on a saddle shaft 42. One end of the calibrated tension springs 44 is connected to the saddle shaft 42 while the other end of the calibrated tension springs 44 is fixedly connected to the base 10 of the self-leveling dispenser by means of a suitable anchor 46.

A pair of rollers 48 are mounted for free rotary movement on the same shaft 37 as supports the sprockets 38 and a second set of rollers 50 is pivoted to a pair of stubs 51 in the lower portion of the shell as shown in Fig. 1 and Fig. 2. The rollers 48 and 50 are so positioned that they will be in front of the slots 25 and 26.

A pair of flat steel bands 52 are connected at one end by suitable means such as the angle plates 54 to the carrier support 22 and extend upwardly covering the front of the slots 25 anl 26 and pass in through the enlarged portions 27 and 29 at the upper end of said slots 25 and 26 and then over the rollers 48, then downwardly around the lower rollers 50 and then upwardly again to the portion 28 of carrier arms 22. The end of the bands 52 is connected to the portion 28 by suitable means such as the bolt 56. A suitable spring 58 interconnects the bolt 56 and the end of the flat steel tapes 52 to apply a slight tension to the flat steel spring 52.

The entire self-leveling, storing and dispensing apparatus may be movably supported by mounting corners of the base 10 on suitable casters 60. The empty carrier has been shown in a partially depressed position which it would occupy if it were half loaded with material. No material has been shown supported on top of the pan 34 to facilitate illustrating the structure of the self-leveling, storing and dispensing apparatus.

The operation of the self-leveling, storing and dispensing apparatus may be briefly described as follows. When the self-leveling, storing and disepensing apparatus is empty the cantilever bracket will be in its uppermost position so that the arms 28 touch the top of the slots 27 and 29 which limits the distance the cantilever platform 22 can travel when the unit is empty.

When bulk material is placed on top of the pan 34 it causes the cantilever support 22 to move downwardly pulling with it the sprocket chains 36 and the steel tapes 52. When the sprocket chains 36 are pulled downwardly in this manner they shorten the loop in which the sprockets 40 are supported, thereby causing the counterbalancing springs to be stretched. The cantilever platform 22 is allowed to descend by the counterbalancing springs a distance under the weight of the material placed on the carrier which will maintain the top of the material supported thereon at a substantially constant elevation.

The steel springs 52 in descending in front of the slots 25 and 26 prevent the bulk material from falling into these slots. When the material is unloaded from the self-leveling, storing and dispensing apparatus, the cantilever platform 22 is moved upwardly, under the action of the calibrated counterbalancing tension springs. As the cantilever platform 22 moves upwardly, because of the fact that the opposite end of the steel tapes 52 are also connected to the cantilever support 22, it pulls the tape upwardly in front of the slots, so that at all times the slot is covered and the tape 52 moves a distance corresponding to the distance the carrier platform 22 is moved.

It will be appreciated that while I have shown a cantilever platform used with my invention it is also possible

to employ this invention with either more or fewer slots than shown. For example, apparatus having a single slot, such as shown in U. S. Patent 2,692,177, granted to Carl H. Larsen on October 19, 1954, an apparatus having four slots such as shown in U. S. Patent 2,626,727, granted to William Gibbs et al. on January 27, 1953, may advantageously employ this invention.

The invention hereinabove described may be varied in construction within the scope of the claims, for the particular device selected to illustrate the invention is but one of many possible embodiments of the same. The invention, therefore, is not to be restricted to the precise details of the structure shown and described.

What is claimed is:

1. A self-leveling, storing and dispensing apparatus comprising a base, walls extending upwardly from said base, defining a shell, a material storing platform in said shell traveling up and down relative to one wall thereof, said one wall having a slotted opening formed therein for receiving an arm of said platform, counterbalancing means on the outside of said one wall extending downwardly from the top thereof and connected to said arm for counterbalancing the weight of the material supported on said platform so as to maintain the top of the material at a constant elevation, a steel tape passing over the top of the said one wall and downwardly within the shell in front of said slot and having one end thereof connected to said arm to close off said slot as said material supporting platform descends to prevent material from falling into said slot.

2. A self leveling, storing, and dispensing apparatus comprising a base, walls extending upwardly from said base and defining a shell, a material storing platform in said shell traveling up and down relative to said shell, one of said walls having a vertically slotted opening formed therein, an arm extending from said platform, through said slotted opening, counterbalancing means mounted on the other side of said wall and movable up and down relative to said slot and connected to said arm for counterbalancing the weight of the material supported on said platform so as to maintain the top of the material at a constant elevation, a steel tape passing downwardly inside of said shell from the top of the wall having the slotted opening and in front of the slot, one end of said tape being connected to said arm to close off said slot as said material supporting platform descends to prevent material from falling into said slot.

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