Dec. 24, 1940. W. J. GIBBS 2,226,308

APPARATUS FOR STORING STACKED ARTICLES

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Fig. 2

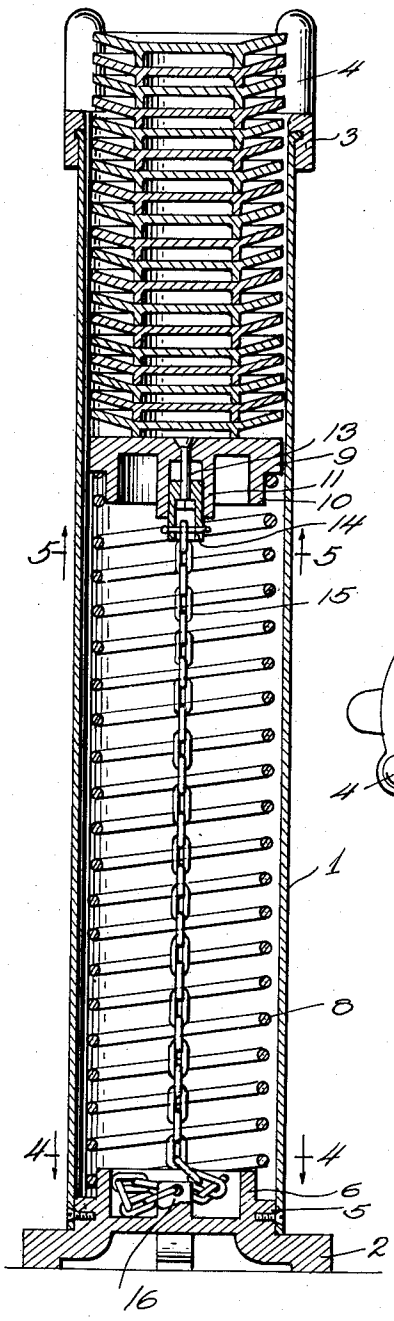


Fig. 3

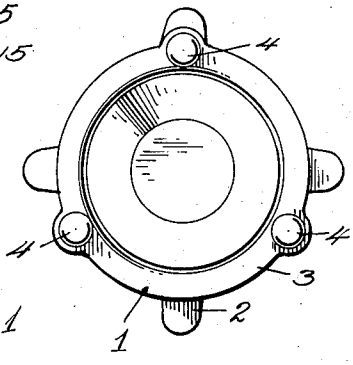
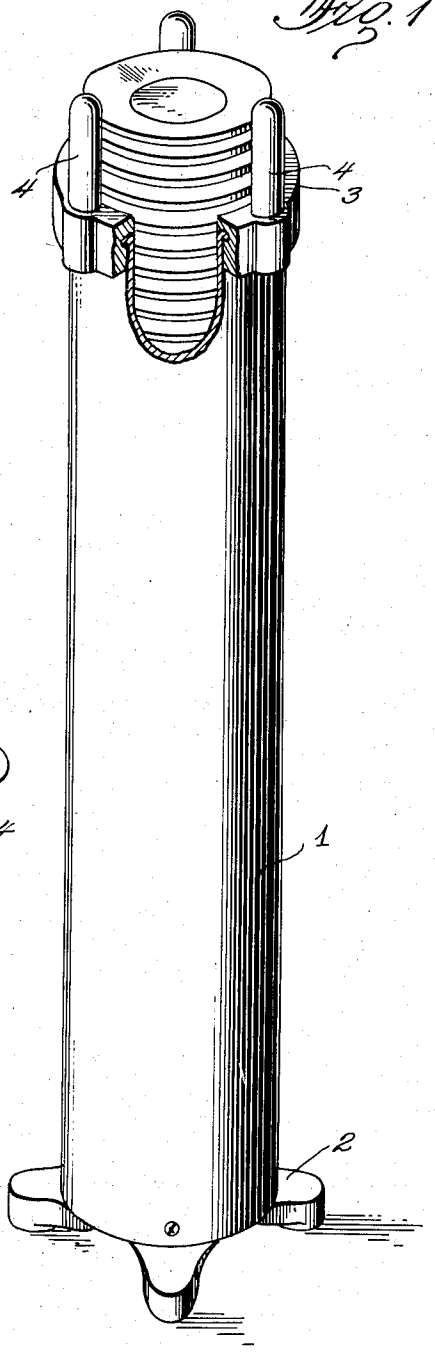


Fig. 1



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Fig. 6

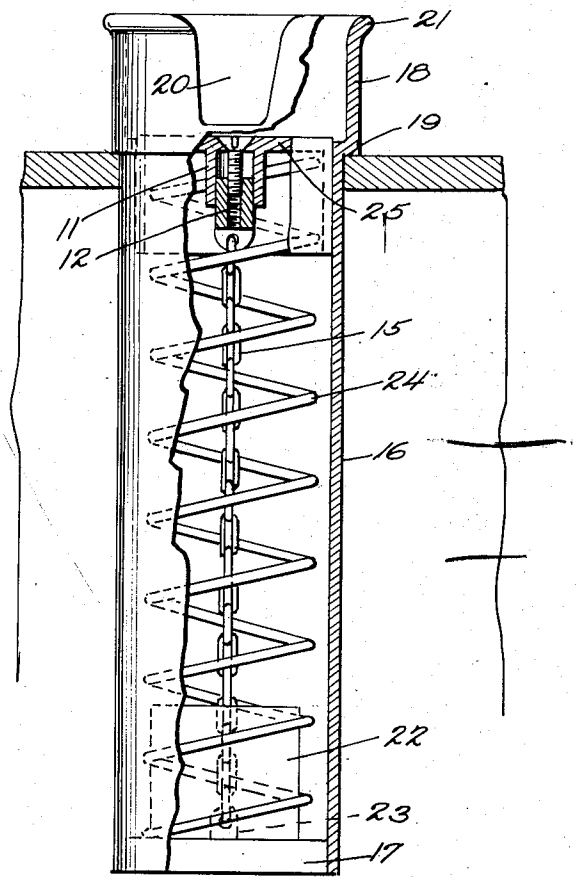


Fig. 4

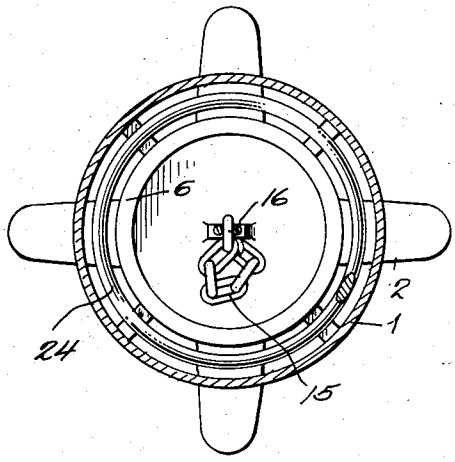


Fig. 5

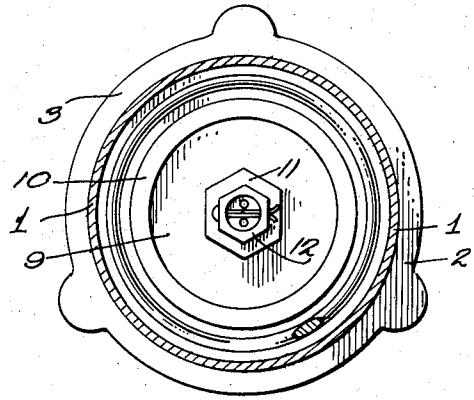
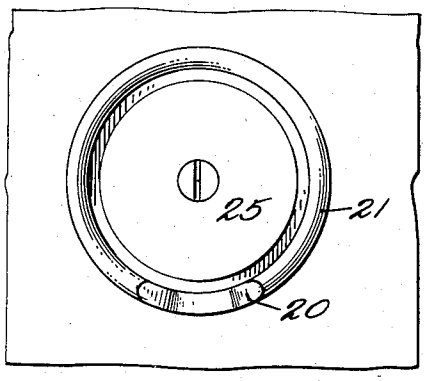


Fig. 7



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UNITED STATES PATENT OFFICE

2,226,308

APPARATUS FOR STORING STACKED ARTICLES

William J. Gibbs, Brooklyn, N. Y.

Application December 27, 1939, Serial No. 311,199

5 Claims. (Cl. 312—71)

This invention relates to apparatus for storing and feeding stacked articles of uniform size and weight. More particularly, it relates to a device for housing and dispensing stacked plates, saucers, bowls or other uniform articles capable of being stacked, said device being a specific form of the invention illustrated and described in my copending application Serial No. 130,787, filed March 13, 1937, of which this is a continuation-in-part.

The invention has among its objects, the provision of a device for housing and dispensing stacked articles so that the uppermost unit of the stack is always presented for use at a predetermined convenient position and the underlying units of the stack are housed or held in a protected position for automatic upward feeding upon the removal of the uppermost article of the stack, the provision of a time, space and breakage saving unit, and a device which obviates the necessity of stooping, reaching or lifting stacks of articles from place to place when in use.

In carrying out the objects of the invention there is provided a storing and dispensing unit including a vertical housing and calibrated spring motivated load handling carrier so arranged that a stack of articles on the carrier is so positioned in loading and unloading that the uppermost article of the stack is brought to predetermined height or position convenient for removal at the top of the unit. The apparatus will be better understood from the following detailed description of the invention having reference to the accompanying drawings wherein like reference numerals have been used to represent like parts throughout the several views, and in which—

Fig. 1 is a view in perspective partly broken away illustrating an embodiment of the invention.

Fig. 2 is a central vertical cross section of the device of Fig. 1.

Fig. 3 is a top plan view of the device of Fig. 1.

Figs. 4 and 5 are cross sectional views on the lines 4—4 and 5—5, respectively, of Fig. 2.

Figs. 6 and 7 are, respectively, elevation and plan views showing diagrammatically another embodiment of the invention.

Referring to the drawings, a cylindrical vertical casing 1 is fixed at its lower end to a base 2 centrally thereof so as to provide even weight distribution and carries at its upper end an enlarged collar 3 having thereon spaced upwardly extending guide rods 4, the spacing of said guide rods affording hand openings whereby an article positioned by the rods may be manually grasped and lifted. The base 2 is arranged to telescopically receive the lower end of the cylindrical casing and may be cast or otherwise fabricated to provide an annular casing receiving portion 5 with an upwardly facing seat and a central chain receiving receptacle 6 having annular walls 7 extending above said seat of smaller outside diameter than the inner diameter of said casing to provide in conjunction with the cylindrical casing an annular channel and seat for one end of a calibrated compression spring 8 within the casing.

The calibrated compression spring 8 is adapted to hold predetermined loads at predetermined levels at its upper end and to raise lightened loads to predetermined levels commensurate with their weights and to be compressed by increased loads to predetermined commensurate levels. The spring can be of such diameter with respect to the inner diameter of the casing 1 that there is room for the increase in diameter of the turns of the former as its length is decreased by increased loads, or said spring can bear against the inner surface of said casing 1 with provision for relative slippage between the two surfaces, the drawings being more or less diagrammatical. The spring carries at its upper end an inverted cylindrical cup-shaped carrier 9 having a reduced annular portion 10 defining a downwardly facing spring seat and in conjunction with the cylindrical casing an annular channel housing the upper end of the spring.

Extending downwardly from and centrally located on the underside of said carrier 9 is a square or hexagonal tube 11 in which is positioned with sliding fit a long nut 12 of the same shaped cross section as said tube 11. A countersunk flat head screw 13 extends through a countersunk hole through the top of the carrier 9 and engages said nut in threaded relation. The nut 12, at its lower end, carries a clevis 14 or other equivalent fastening means and carries the upper end of a chain 15 that extends downwardly with its lower end connected to a clevis 16 or other suitable fastening means fixed to the base and extending upwardly within the chain receiving receptacle. The chain 15 is of predetermined length so as to hold said carrier at a predetermined level under no load conditions, said length with relation to the carrier being adjustable by movement of the screw 13 in nut 12, the latter being held against rotational movement by cooperating tube 11, thus providing for adjustment of the carrier positioned above the casing. The chain receptacle serves to receive and hold the

loose chain when the carrier is depressed within the casing by a load thereon of stacked articles.

The structure described is that of a floor type unit but the device may also be arranged with a modified base which in relative size corresponds substantially to that illustrated in Fig. 6 of the drawings so that the unit may be used for counter mounting.

Fig. 6 shows a modified form of structure for counter use and illustrates also a manner of mounting the unit in a counter. In the structure shown in Fig. 6, the cylindrical casing **16** has fixed thereto at its lower end a bottom piece or base **17** extending within the casing, and has at its upper end an enlarged cylindrical portion **18** providing an annular shoulder **19** and having a hand slot **20** extending downwardly from its upper flared lip **21**. The annular shoulder is adapted to cooperate with a support such as a counter or table so that the unit is positioned mainly below the counter with only the upper end thereof extending above the counter.

The bottom piece **17** has fixed to its upper side chain cup **22** and chain fastening element **23**. The calibrated spring **24** rests on the bottom member supporting at its upper end an inverted cylindrical cup carrier **25** whose sides extend downwardly over the upper end of spring **24** and whose outer surface has a sliding fit with the inner surface of the casing. The upward movement of the carrier under the influence of the spring is limited in the manner previously described by chain **15** extending between the chain fastening element **23** on the bottom piece and adjustable connections including the slidable nut **12** and tube **11** on the carrier, which are identical in arrangement and structure with those previously described.

While operation of the device will have become apparent from the foregoing description, it is to be noted that the storage and delivery device is loaded at the top by placing the stacked articles on the carrier. The spring is compressed in accordance with the load placed on the carrier and to such an extent that the uppermost article of the stack is presented for removal at a predetermined adjustable position between the guide rods shown on Figs. 1 and 2 or the enlarged portion shown in Fig. 6. With removal of articles from the top of the stack, the spring automatically expands to raise the stack for a given distance for each decrement in the weight of the load. The device thus provides a novel storage for a maximum number of articles in a minimum of space, avoids breakage and obviates the necessity of a user stooping or reaching upwardly over shelves and the like.

While the invention has been described in connection with specific embodiments, it is to be understood that the words which have been used are words of description rather than of limitation, and that practice of the invention within the scope of the appended claims may be resorted to without departing from the true scope and spirit of the invention in all its aspects.

I claim:

1. In a device of the character described for storing and feeding stacked articles, an elongated vertical housing having a base portion and a top portion, said top portion having upwardly extending guiding means with a hand opening therein, a carrier for stacked articles reciprocable within the housing, a compression spring disposed between said carrier and base portion to support said carrier and its load of stacked articles with the uppermost unit of said articles at a predetermined position within said guiding means, said spring being calibrated and adapted to expand and raise stacked articles on the carrier a given distance for each given decrement in the weight of the load, whereby said stacked articles are presented with the uppermost unit of the stack at a predetermined level with respect to the upper end of the housing.

2. In a device of the character described for storing and feeding stacked articles, an apertured horizontal support, an elongated vertical housing adapted for projection through said support and having a base portion and an enlarged open top portion defining an annular supporting shoulder for overlapping engagement with the upper surface of the horizontal support adjacent the aperture therein to suspend said housing with its open top above said support, a carrier for stacked articles reciprocable within said housing, an adjustable flexible connection between said base portion and carrier for limiting upward movement of the carrier, and a compression spring disposed between said carrier and base portion to yieldingly support said carrier and a load of stacked articles thereon with the uppermost unit of said articles at a predetermined level above the top of said support for easy access to the hand of a user, said spring being calibrated and adapted to compress or expand respectively to lower or raise stacked articles on the carrier a given distance for each given addition of decrement in the weight of the load, whereby the uppermost unit of stacked articles is presented at a predetermined level with respect to the support.

3. In a portable device of the character described for storing and feeding stacked articles, an elongated vertical cylindrical casing having an open top portion with upwardly extending guiding means for articles extending above the casing, a supporting base fixed at the lower end of the casing and provided within the casing on its upper side with an anchorage for a flexible connection, a carrier for stacked articles reciprocable within the casing and provided on its under side with an adjustable connecting means, a flexible connection extending between said anchorage on the base and said adjustable connecting means for limiting upward movement of the carrier, and a calibrated compression spring disposed between the base and the carrier, said spring being adapted to support said carrier and a load of stacked articles thereon with the uppermost unit of the stacked articles at a predetermined level in said article guiding means above the end of said casing.

4. A device for storing and feeding stacked articles, an elongated cylindrical casing, a base member having a reduced portion extending within the lower end of the casing in spaced relation to the casing defining an annular spring receiving channel, a top member fixed to said casing and having upwardly extending article guides so spaced as to provide a hand opening or openings therebetween above the casing, a carrier for stacked articles reciprocable within the casing, an adjustable flexible connection between said carrier and base member limiting upward movement of the carrier, a calibrated compression spring seated in said annular channel and disposed between said base member and carrier to support the carrier and a load of stacked articles thereon with the uppermost unit of the stack at a predetermined level within said guiding means, said spring being so calibrated

and adjusted as to expand and raise stacked articles on the carrier a given distance for each given distance for each given decrement in the weight of the load on the carrier.

5. A device for storing and feeding stacked articles, an elongated cylindrical casing having an enlarged top portion with upwardly extending article guiding means above the casing and a bottom portion provided on its upper face with a receptacle and chain link connector within the receptacle, a carrier for stacked articles reciprocable within the casing and provided with an adjustable connecting means, a flexible connection fixed at its ends to said connector on the base and the connecting means on the carrier, a calibrated compression spring disposed between the bottom portion and carrier to support the carrier and a stacked load thereon, said receptacle being adapted to receive and house the slack of said flexible connection when said carrier is depressed and said spring being calibrated and adapted to expand and raise stacked articles on the carrier a given distance for each given decrement in the weight of the load to present the uppermost unit of the stack at a predetermined level.

WILLIAM J. GIBBS.