Feb. 2, 1943. B. L. SIEGEL 2,309,795

METHOD AND DEVICE FOR HANDLING STACKS OF RESILIENT ARTICLES

Filed May 14, 1940 2 Sheets-Sheet 1

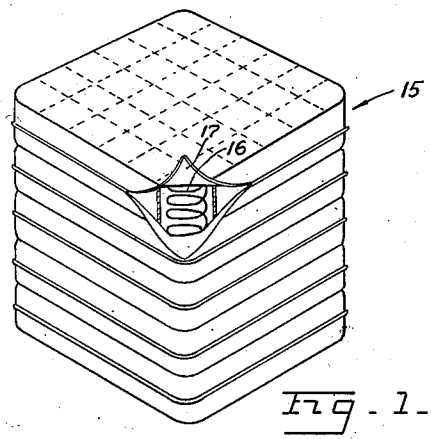

Fig. 1.

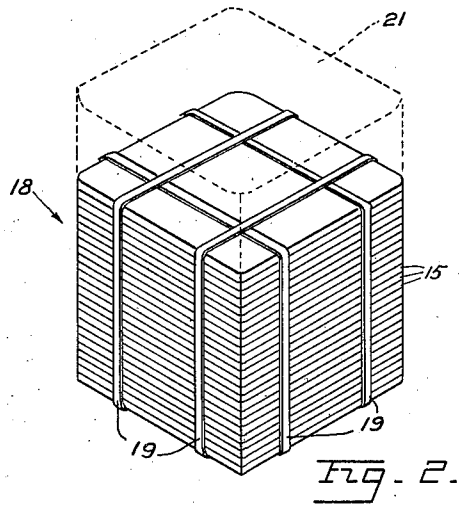

Fig. 2.

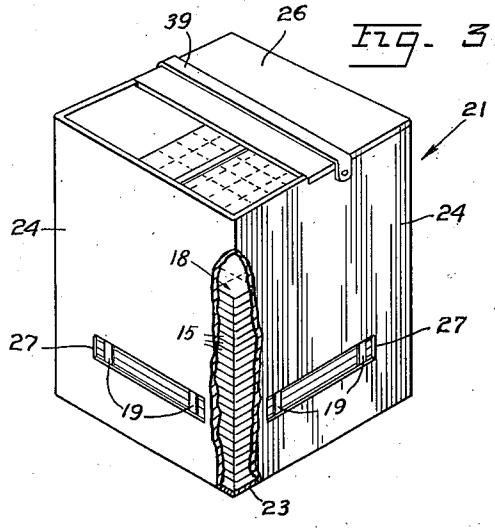

Fig. 3.

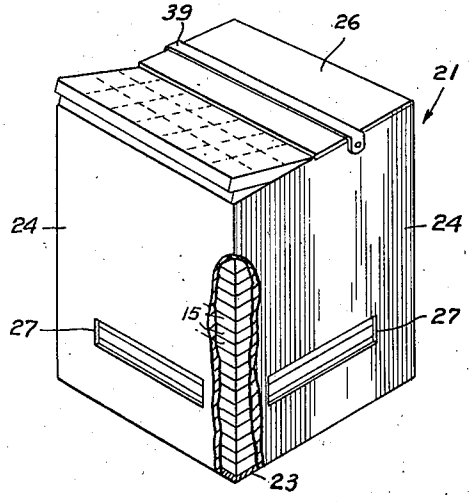

Fig. 4.

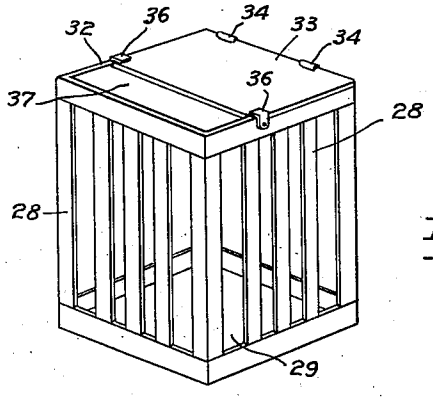

Fig. 5.

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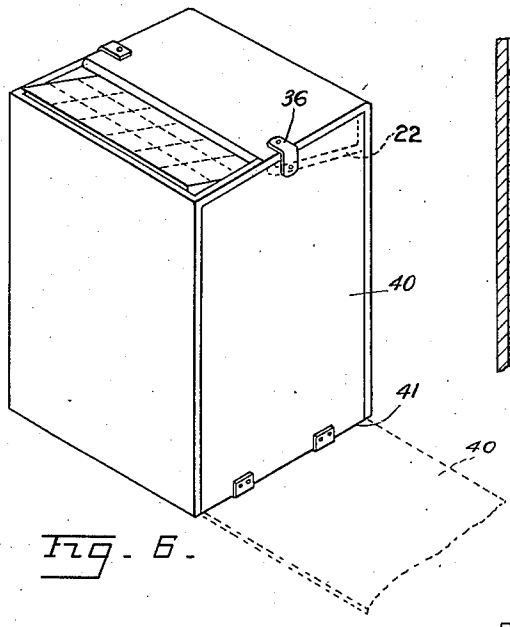

Fig. 6.

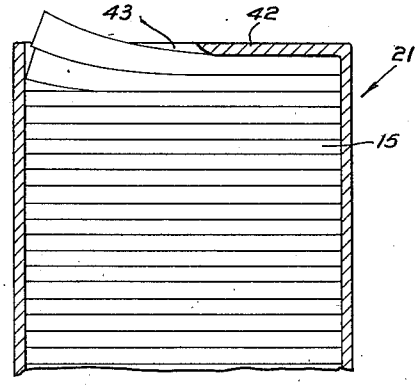

Fig. 7.

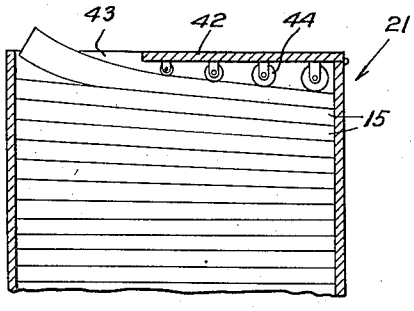

Fig. 8.

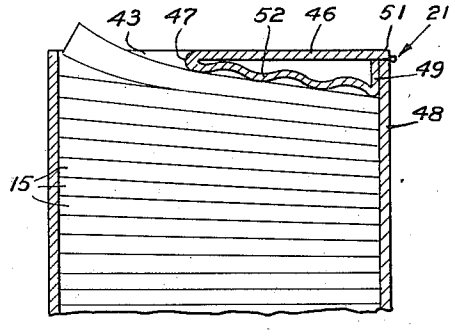

Fig. 9.

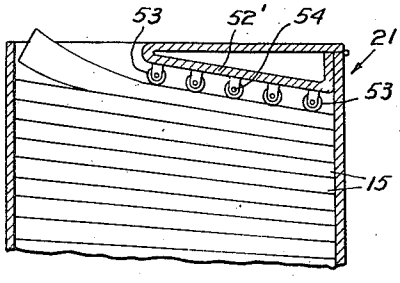

Fig. 10.

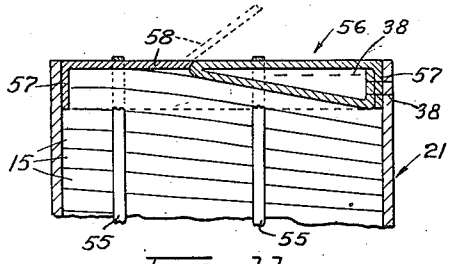

Fig. 11.

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METHOD AND DEVICE FOR HANDLING STACKS OF RESILIENT ARTICLES

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Application May 14, 1940, Serial No. 335,195

6 Claims. (Cl. 312—35)

This invention relates to a method and container for holding compressed spring cushion units and the like.

Spring cushion units and inner springs are used mostly in the manufacture of furniture, beddings and the like, such as for instance in upholstering or as inner spring mattresses. Each cushion unit or mattress usually includes a plurality of coil springs held together as a unit in rows side by side, usually covered by a covering of burlap or padding or the like.

For instance spring cushion units presently used in upholstering furniture have about six rows of coil springs, each row with about six coil springs arranged side by side on about the same level and held together to form a substantially rectangular unit. Considerable number of such cushion units are stored and used in a usual shop at the same time. In order to conveniently ship such cushion units in suitably large quantities it was found necessary to stack the desired number of cushion units one on top of the other, and then compress the entire stack face to face to as small a package as possible. The compressed package is then tied into a bale. When such a bale of cushion units is untied by the user the release of the cumulative pressure of the compressed springs throws the cushion units in all directions. This involves danger and inconvenience. The subsequent storing and handling of the loose spring cushion units is bulky, it takes up a great deal of space all over the shop, and it is awkward and inefficient.

An object of this invention is to provide a method for the efficient handling of compressed stacks of spring set units, such as spring cushion units or the like, whereby the expansion of the bale of cushion units is limited to a predetermined space to reduce the frictional contact between them sufficiently to allow the removal of the cushion units one by one but leaving sufficient pressure to urge the cushion units in place of the removed cushion unit thereby to provide for automatic feeding of the cushion units to the end of the stack.

Another object of this invention is to provide a method and device for efficiently holding a stack of superposed spring cushion units in partially compressed relation so as to allow removal of the spring cushion units one by one without releasing the entire stack.

Another object of this invention is to provide a method and device for shipping and storing stacked cushion spring units and the like in large numbers in a limited space so as to allow the removal of the cushions one by one with ease, yet retaining the remaining cushion units stacked.

Another object of this invention is to provide a method and device for releasing a bale of compressed cushion units within a limited space and for facilitating handling of the cushion units one by one while the remaining cushion units are held and urged under partial pressure, means being provided for reducing the frictional resistance for edgewise removal of the cushion units from the stack.

Other objects of the invention are to provide a device of the character described that will be superior in point of simplicity, inexpensiveness of construction, positiveness of operation, and facility and convenience in use and general efficiency.

With the foregoing and other objects in view, which will be made manifest in the following detailed description, reference is had to the accompanying drawings for the illustrative embodiment of the invention, wherein:

Fig. 1 is a fragmental perspective view of a stack of uncompressed cushion units.

Fig. 2 is a perspective view of a compressed and tied bale of cushion units; the relative position of the holder into which the bale is to be expanded is shown in broken lines.

Fig. 3 is a perspective view of a cushion unit bale holder, showing the bale of cushion units therein still compressed.

Fig. 4 is a perspective view partly in section, of the bale holder, showing the bale of cushion units expanded into the space of the holder.

Fig. 5 is a perspective view of a cushion unit bale holder made of slats.

Fig. 6 is a fragmental perspective view of another form of the holder.

Fig. 7 is a fragmental sectional view of a form of the outlet end of the bale holder.

Fig. 8 is a fragmental, sectional view of another form of the outlet end of the bale holder with non-friction guiding surface.

Fig. 9 is a fragmental, sectional view of another form of the outlet end of the bale holder with reduced frictional surface.

Fig. 10 is a fragmental, sectional view of another form of the outlet end of the bale holder with non-friction guiding surface.

Fig. 11 is a fragmental, sectional view of a form of the outlet end of the holder with separate cover secured thereon.

My method in general includes the steps of stacking the spring cushion units or the like

face to face substantially on the axis of compression of the springs in the cushion units, compressing the stack of cushion units, expanding the stack of compressed cushion units to a predetermined area, and guiding the removal of cushion units one by one from the stack by reduced frictional outlet.

In detail the above steps are carried out as particularly illustrated in Figures 1 to 4 of the drawings. The cushion units 15 are stacked as shown in Fig. 1. Each cushion unit 15 has therein a plurality of rows of coil springs 16, either in individual pockets, or just tied together in other usual manner. The rows of coil springs 16 are held together and covered by a suitable covering 17.

The stack of cushion units 15 is then compressed into a compact bundle or bale denoted by the reference numeral 18 and is suitably tied in such compressed position by wires or cords 19. When the bale 18 is to be shipped in such compressed position, then it is packed as tied. This bale 18 is under considerable compression. For instance a usual spring cushion unit which has an expanded height or thickness of about three and one half inches is compressed in such a bale to about five eights of one inch. The number of cushion units in a bale is determined according to requirements and size. For instance spring cushion units for upholstering may be packed in bales of twenty-five, fifty, seventy-five, or a hundred, while inner spring mattress units for bedding or the like are usually provided in stacks of twenty because of the larger sizes.

The compressed stack of cushion units 15, or the bale 18 is then partially expanded into a limited space as shown in Fig. 4. In the event the bale 18 is delivered in such compressed form to the shop of the user, then this step is accomplished by placing the tied bale 18 into a holder or container 21 in which upward expansion is limited by a partially obstructed outlet, and then the ties 19 are cut and the bale 18 is allowed to partially expand the limited height of the holder 21 so as to bear against said partially obstructed outlet. The relation between the height of the holder and the bale is such that the cushion units are not fully expanded therein until all except the last very few cushion units of the stack are removed. These last few can be easily lifted out one by one.

In the event the holder 21 is used also for shipping then the bale 18 is preferably either not tied, or it is allowed to expand before being tied, to the full length of the holder 21 preferably after the outlet of the holder 21 is obstructed. In this instance the stack of cushion units is delivered in the holder 21 and only a portion of the outlet is uncovered so as to leave a predetermined portion of the outlet obstructed.

The cushion units 15 are pulled out through the partially uncovered outlet of the holder 21 by edgewise sliding movement. The expansion in the holder is preferably so determined that the frictional contact between the faces of adjacent cushion units 15 is reduced sufficiently to allow the pulling out of one cushion unit 15 from the stack with a sliding movement over said face. The frictional resistance to such sliding or pulling removal is further reduced by expanding the stack of cushion units against an inclined guiding surface 22. Thus the top cushion unit 15 is partly separated from the face of the cushion unit below it and assumes an inclined position projecting into the unobstructed portion of the outlet of the holder. This guide surface may be adapted to further reduce frictional resistance to sliding motions by being provided with suitable antifriction means thereon.

The method of handling cushion units therefore includes the placing of the compressed stack of cushion units within a confined area, allowing the stack to partially expand to a predetermined height to reduce pressure so as to decrease frictional resistance to sliding removal of individual cushion units from the stack, the advancing of the cushion units to discharge positions by the spring action of the stack, and partially separating the frictional contact between the cushion unit to be removed and the stack by the spring action of the stack at a directed angle. This direction in the herein illustration is accomplished by the inclined guiding surface at the outlet.

The device for carrying out my method is preferably a holder 21 which is made in the form of a box or container, which may be used either for shipping a compressed bale 18, or for opening a compressed bale shipped to the user without such holder 21.

Each holder 21 includes a base 23, vertical sides 24 and a partially obstructing cover 26, or a full cover part of which may be removed as shown in Fig. 11. The sides 24 have suitable apertures 27 located where the ties or cords 19 of the bale 18 would be accessible for cutting.

In the form shown in Figures 3 and 4 the holder 21 is made of firm and comparatively strong sheet material to form a box like structure. It is to be understood that the holder 21 may be made of various suitable materials, such as wood, metal, fiber board, composition, or the like.

The form shown in Fig. 5 illustrates a construction made of slats or bars 28. This is a quite inexpensive and strong construction especially when made out of wood.

In this construction there is a bottom 29 on which the bale 18 may be rested when inserted through the top of this slat holder. Then the top 32 is partly covered by an obstruction 33, which is hinged at its outer edge at 34 so as to be swingable into an out of way position for the insertion of the bale 18 into the holder 21. After the bale 18 is inserted into the holder 21 this hinged obstruction 33 is swung into partial covering position of the top 32 and is clamped firmly against the opening by suitable releasable clamps 36. The obstruction 33 in the herein illustration is somewhat larger than a half of the top 32 so that it leaves unobstructed a predetermined limited area for outlet 37 according to the angle of discharge desired. After the bale 18 is expanded in the holder 21 it feeds the cushion units by its own pressure one by one to the top 32, from where each cushion unit may be pulled out endwise and upward at an incline through the limited outlet 37.

The partial obstruction at the outlet end of the holder 21 may be made in various forms. In the forms shown in Figures 3, 4 and 11 the partial cover 25 is formed by a folded and reinforced flap of the holder material and may be fixed in place in case the spring cushions are shipped in the holder 21, by suitable clips 38, as shown in Fig. 11, or made removable by a releasable strap or clamp 39 as shown in Fig. 3, which latter allows for the insertion and replacement of bales of cushions in the holder without dismantling the holder 21. In the form shown in Fig. 6, the cover portion or obstruction

is fixed and a side 40 is made swingable around an edge such as the bottom edge 41 thereof to allow insertion of the bale 18 through said side without lifting the bale 18. This side 40 is then secured to the top by means of a clamp like the clamp 36 heretofore mentioned.

In Fig. 7, is shown a straight partial obstruction 42 leaving a limited outlet 43. In Fig. 8 is illustrated a directing and non-friction guiding of the cushion units at the outlet by means of a series of anti-friction rollers 44 which are suitably journaled beneath the cover 42. The series of rollers 44 are increased in diameter from the outlet 43 toward the hinged end of the obstruction cover 42 so as to provide an inclined guiding surface directing upwardly toward the restricted outlet opening 43. This causes the uppermost cushion unit 15 to partly project into the outlet 43 and thus partly be released from frictional contact with the next cushion unit 15 beneath it. This arrangement also reduces the sliding friction between the cover 42 and the cushion unit 15.

In Fig. 9 is shown another form of guiding anti-friction arrangement on the underside of the obstruction strip or cover 46 which in this instance is folded upon itself at 47 so as to provide a rounded outlet edge and then its lower portion is extended back downwardly and to the side 48 of this holder and is then flanged upwardly at 49 to bear against the hinged corner 51 of the cover flap 46. The inclined portion 52 is corrugated so as to provide a slightly yielding interrupted guiding surface with reduced friction resistance to sliding of the top cushion unit 15.

In Fig. 10 I show a folded flap structure of the type described in connection with Fig. 9, except that the inclined portion 52' is not corrugated but instead it is provided with a series of rollers 53 suitably journaled in bearing 54 on the underside of the inclined flap portion 52'.

In Fig. 11, the cover 56 is a separate part and can be placed into the usual compressing machine so that the cover 56 is on the top of the stack of cushion units 15 as this stack is compressed. A pair of wires 55 may be extended in this form over the outside of the cover for tying the compressed stack. This allows the cutting of the wires 55 from the outside of the cover. Then the stack is either compressed against or placed on the bottom in the inside of the holder 21. After completion of compression to the length of the holder 21, the side flanges 57 of the cover part 56 are suitably fixed, such as by glue or by the staples 38, to the sides of the holder 21. It is to be noted that the obstruction part of this cover 56 is reinforced, and the remaining cover portion 58 can be torn out and either cut off or folded into an out of way position as shown in broken lines in Fig. 11. Thus restricted outlet opening is created to operate as heretofore described. This form is particularly adapted for packaging in the holder and compressing simultaneously.

In all the embodiments of my invention the material is strong enough to resist the expanding force of the stack of cushion units. The cross sectional shape of the holder 21 is such as to conform to the contour of the cushion unit or mattress or the like article to be packed, stored therein or dispensed therefrom. The outlet obstruction may be smaller or larger according to the requirements.

I am aware that some changes may be made in the general arrangements and combinations of the several devices and parts, as well as in the details of the construction thereof without departing from the scope of the present invention as set forth in the foregoing specification, and as defined in the following claims; hence I do not limit my invention to the exact arrangements and combinations of the said device and parts as described in the said specification, nor do I confine myself to the exact details of the construction of the said parts as illustrated in the accompanying drawings.

I claim:

1. A holder for a compressed stack of superposed individual spring set units, comprising a container to receive said stack, the length of the container being shorter than the expanded length of less than half of the units in the stack, and a partial obstruction at an opening of said container preventing the removal of the entire stack, the size of the opening left free being such as to accommodate only such portion of the adjacent unit expanded by its own resiliency to the outside of the container that permits the pulling out of said unit but holds compressed the remaining portion of the unit until it is pulled out of the container.

2. A holder for a compressed stack of superposed spring units, comprising a container substantially conforming in cross section to the shape of the spring set units and being shorter than the expanded length of less than half of the units in the stack, said container being provided with an outlet through which individual units from the stack can be removed, means inside the container to tie the stack of units in compressed position independently of the container, said container having apertures for access for releasing said tying means, and means to partially obstruct said outlet to hold the stack under pressure in said container, the unobstructed portion of the outlet being such as to accommodate only such portion of the adjacent unit expanded by its own resiliency to the outside of the container that permits the pulling out of said unit but holds compressed the remaining portion of the unit until it is pulled out of the container.

3. A holder for a compressed stack of superposed spring set units, comprising a container substantially conforming in cross section to the shape of the spring set units, means applied to the stack of units when the same are compressed for holding the stack in compressed position in the container, an outlet through which individual units from the stack can be removed, means to partially obstruct said outlet to hold the stack under pressure in said container so that only a portion of the unit on the top of the stack is allowed to spring outwardly of the outlet, said obstruction holding the remaining portion of said unit in the container, and means to guide the spring set unit near said obstruction into said outlet, said container having apertures thereon for access to said stack holding means to permit the releasing of said holding means.

4. A holder for a compressed stack of superposed spring set units, comprising a container substantially conforming in cross section to the shape of the spring set units and being shorter than the expanded length of less than half of the units of the stack, an outlet through which individual units from the stack can be removed, and means to partially obstruct said outlet to hold the stack under pressure in said container, and means to releasably secure said obstructing means to the container.

5. A holder of the character described, comprising a container adapted to receive a stack of resiliently compressible articles therein, a cover adapted to be secured in place after the stack is compressed at least to the same height as that of the container and is inserted in said container, a portion of said cover being reinforced to obstruct the opening of the container but allow individual withdrawal of articles from said stack.

6. Means for holding and dispensing a compressed stack of superposed spring set units, comprising a container, means to hold the stack of units compressed to a stack shorter than the length of the container, a partial obstruction on the open end of the container opposite an end of the stack so arranged as to provide limited opening to limit the expansion of a unit through said opening so that only a part of the unit projects through said opening, said container having apertures to afford access for releasing said holding means so as to allow expansion of said stack of units against said obstruction, the container being shorter than the expanded length of less than half of the units of the stack.

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