

[54] **SPRING CAGE FOR USE IN A TABLET DISPENSING RECEPTACLE**

[76] Inventor: **Eduard Hass**, 1010 Wein, Parkring 10, Vienna, Austria

[22] Filed: **Oct. 25, 1972**

[21] Appl. No.: **300,486**

[30] **Foreign Application Priority Data**

Nov. 9, 1971 Austria 9678/71

[52] U.S. Cl. **221/279, 221/52, 221/229**

[51] Int. Cl. **B65h 1/08**

[58] Field of Search 221/151, 229, 279, 52, 221/198; 222/340, 336, 341; 185/45

[56] **References Cited**

UNITED STATES PATENTS

1,971,450	8/1934	Heitmuller et al.	222/340
3,095,914	7/1963	Bachmann	222/341 X
3,344,951	10/1967	Gervais	221/198 X
3,410,455	11/1968	Haas	221/229
3,565,284	2/1971	Hinterreiter	221/229

Primary Examiner—Robert B. Reeves
Assistant Examiner—Frederick R. Handren
Attorney, Agent, or Firm—Kurt Kelman

[57] **ABSTRACT**

A spring cage for use in a receptacle for receiving and sequentially dispensing individual shaped bodies from a stack received in a receptacle housing having a dispensing end. The cage comprises a structural unit consisting of a spring abutment, a support bottom for carrying the stack of shaped bodies, and a compression spring held between the abutment and support bottom. The abutment and support bottom are releasably interlocked for insertion as a unit into the receptacle housing. The compression spring presses the stack of shaped bodies towards the dispensing end to place sequential uppermost shaped bodies of the stack into a dispensing position when the unit has been inserted and the interlocking of the abutment and the support bottom has been released.

5 Claims, 5 Drawing Figures

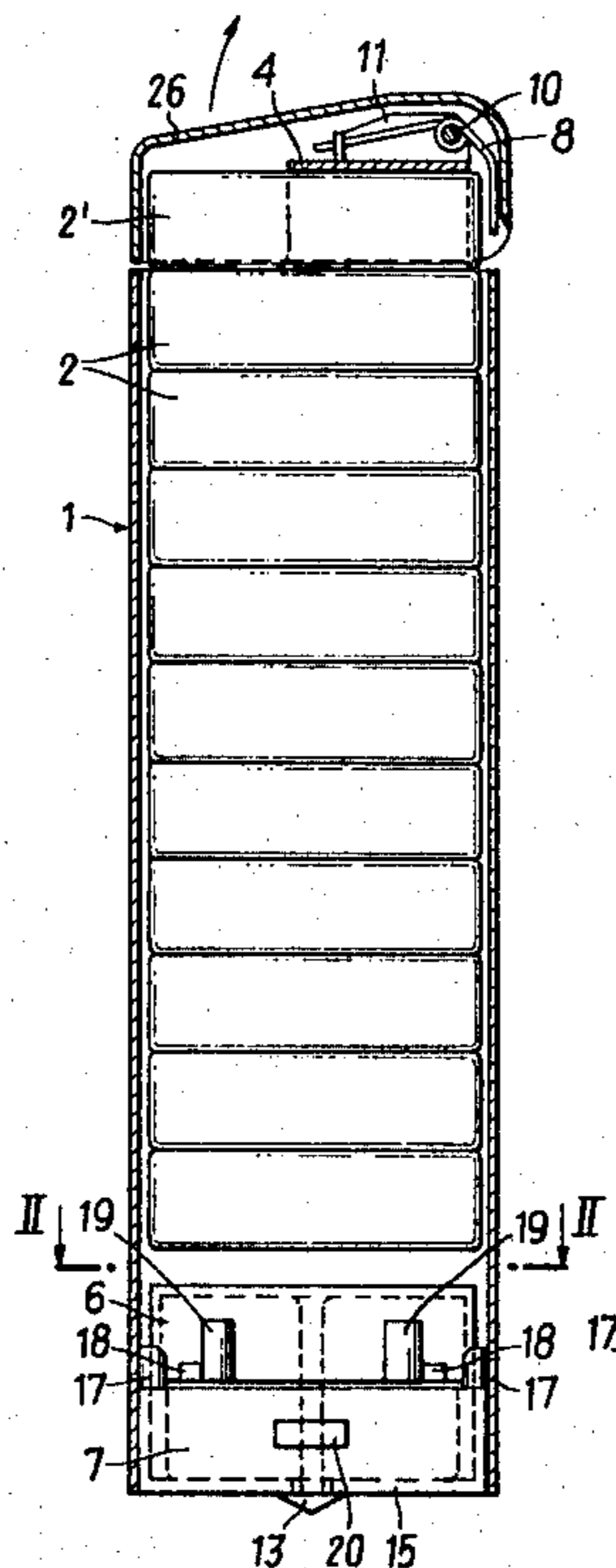


FIG. 1

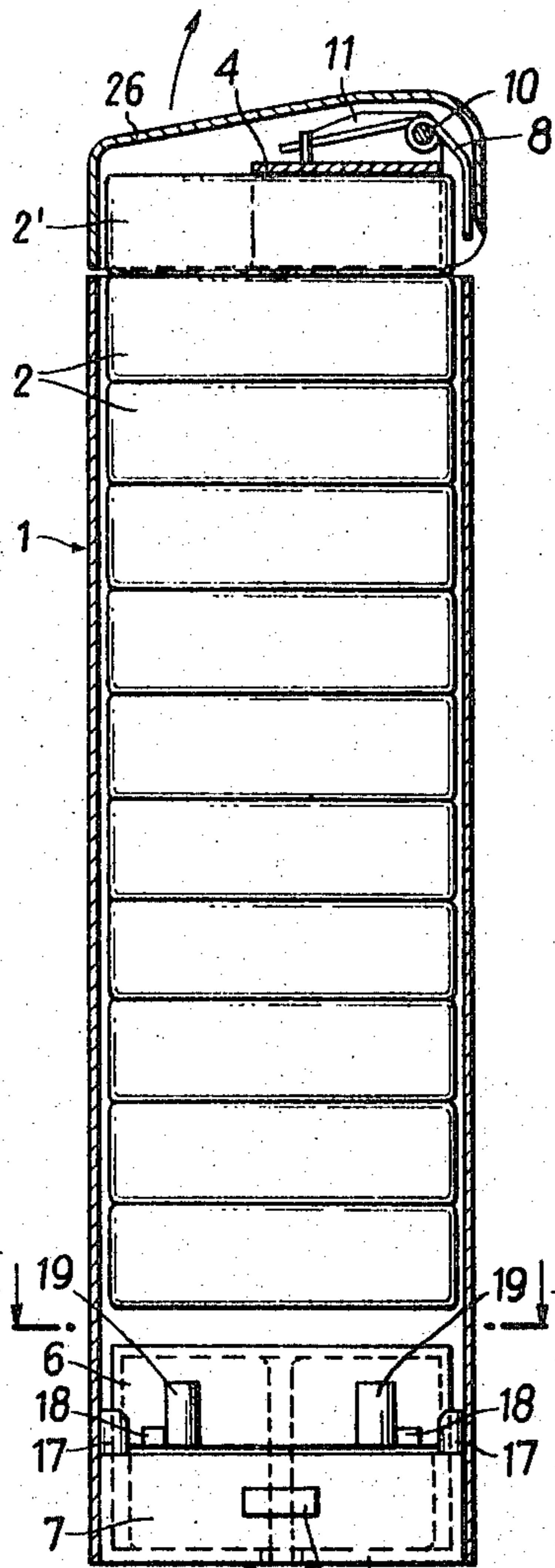


FIG. 3

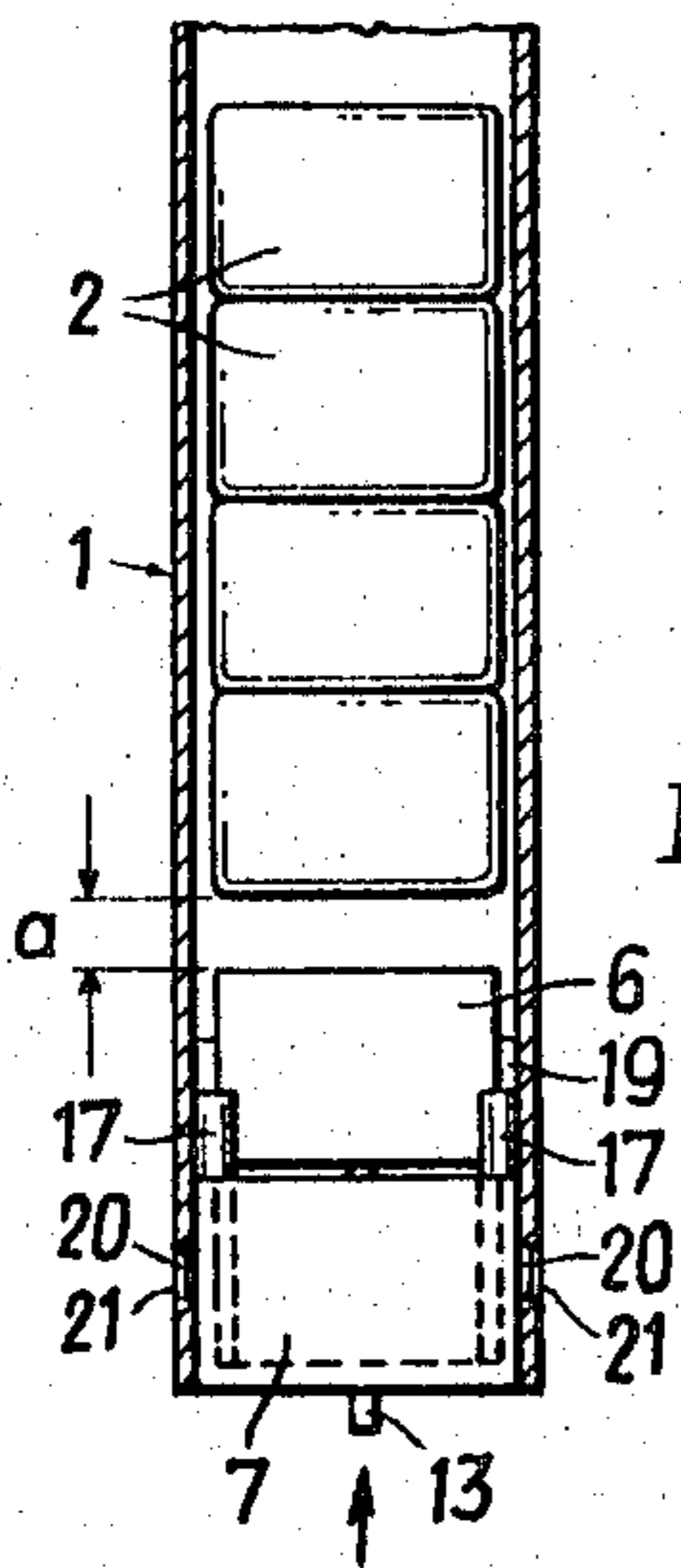


FIG. 5

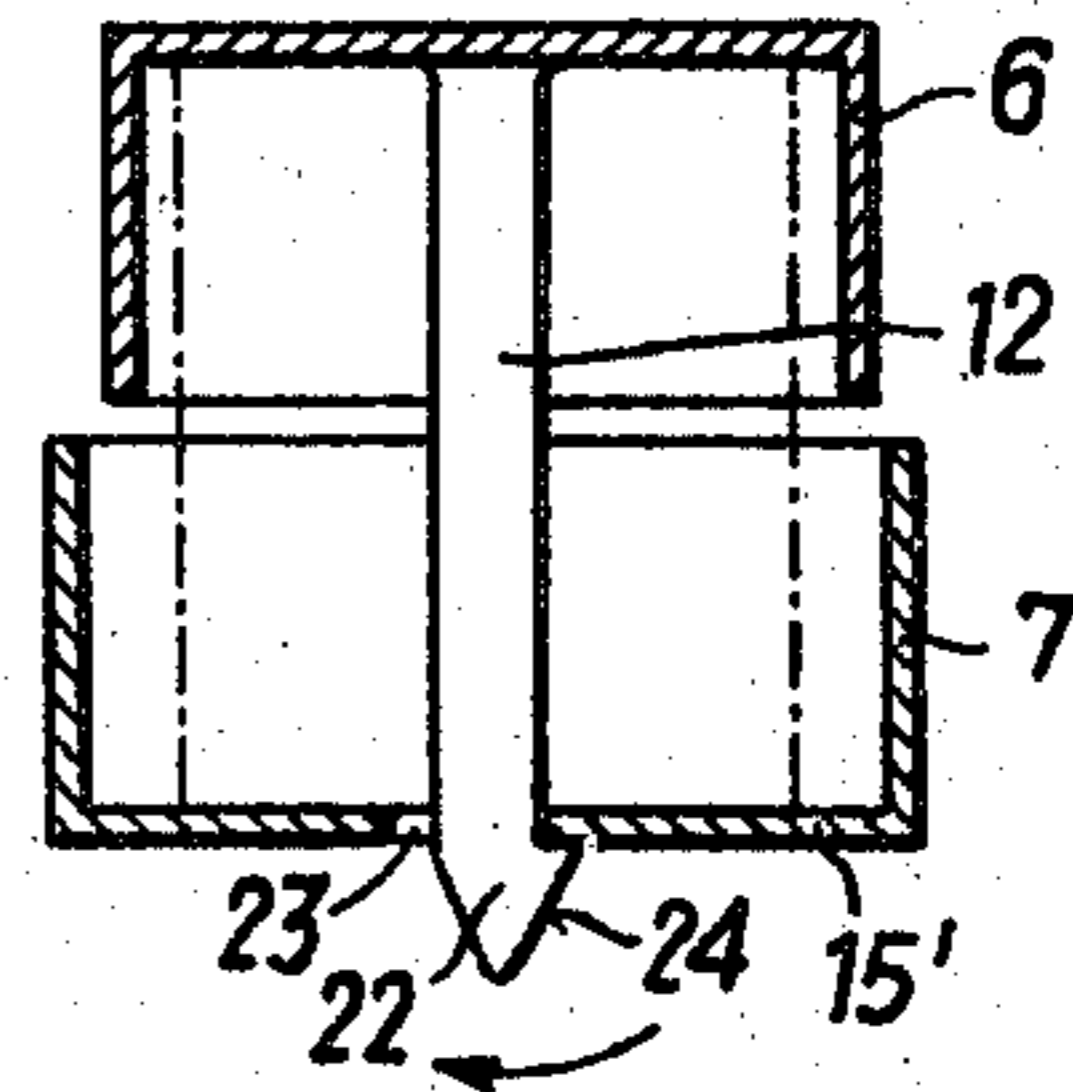


FIG. 4

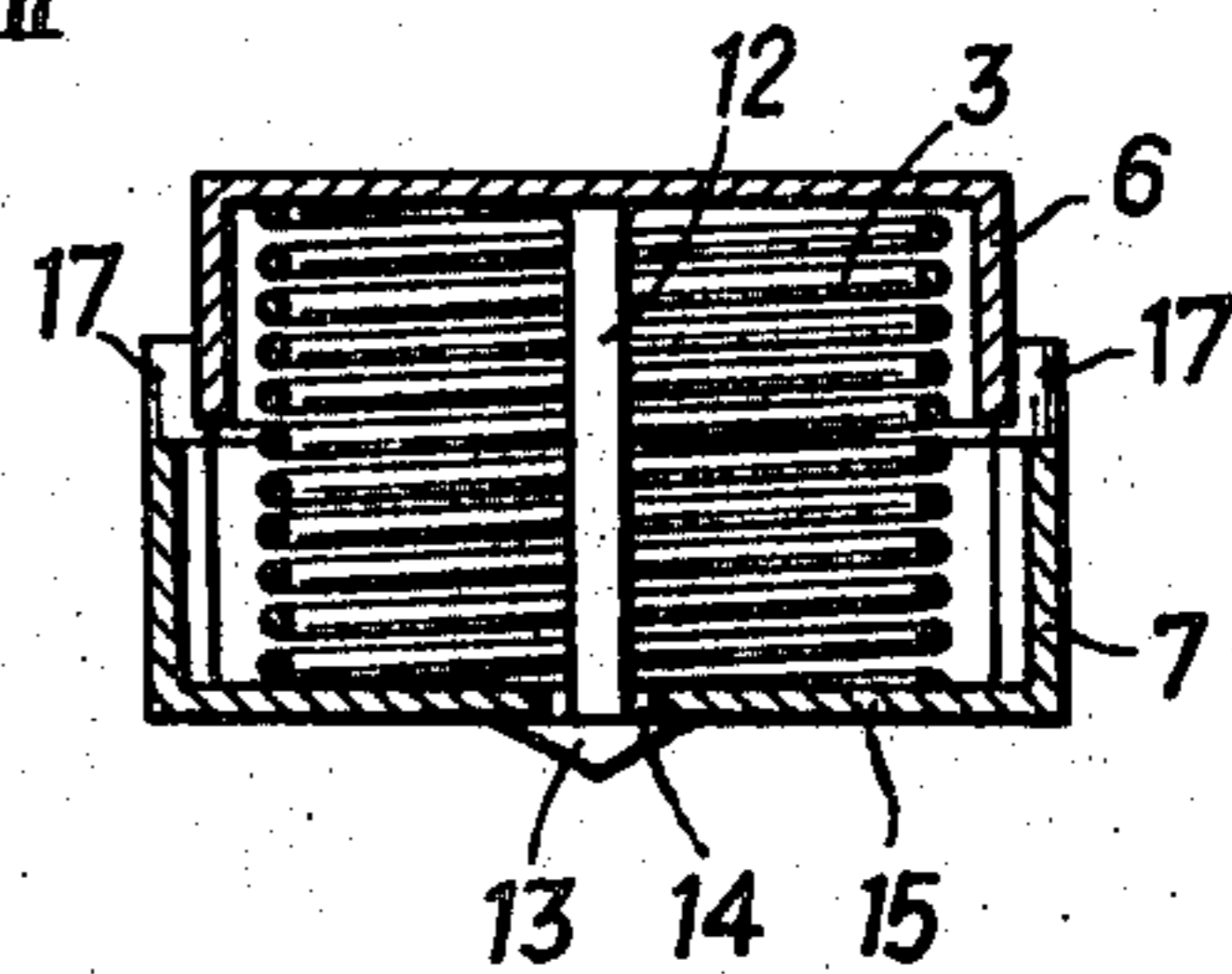
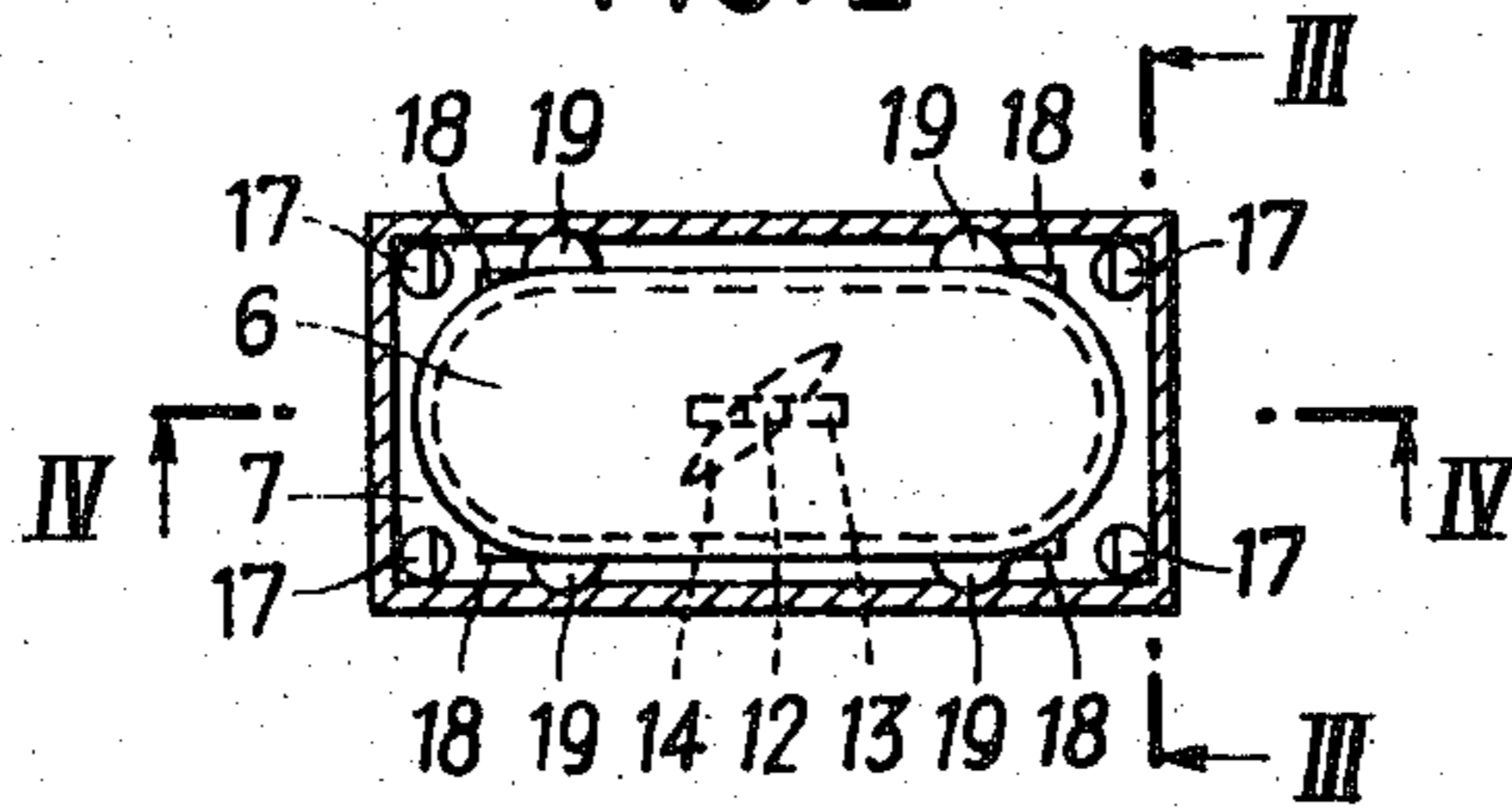


FIG. 2



SPRING CAGE FOR USE IN A TABLET DISPENSING RECEPTACLE

The present invention relates to improvements in receptacles for receiving and sequentially dispensing individual shaped bodies from a stack of like shaped bodies received in the receptacle.

Austrian Pat. No. 166,326 and corresponding U.S. Pat. No. 2,620,061 disclose a receptacle, one of the receptacle parts being a housing having a dispensing end and the other receptacle part being a pivotal cover at the dispensing end. Spring means in the housing presses the stack of shaped bodies, such as tablets, towards the dispensing end to place sequential uppermost shaped bodies of the stack into a dispensing position, a spring biases the pivotal cover into a closed position, and the cover has a portion pushing the uppermost shaped body and dispensing it from the receptacle when the cover is pivoted against the spring bias.

This type of dispensing receptacle has found wide commercial acceptance for use with a great variety of tablets. The receptacle disclosed in the indicated patents carries a laterally open drawer within the receptacle housing, a spring-biased bottom for the drawer which presses the stack of tablets towards the dispensing end of the housing, and the side walls of the receptacle housing have extensions at the dispensing end which support the cover. Other parts of the receptacle are the cover spring and the spring which biases the bottom. All the parts of the receptacle are assembled manually, the assembly of the springs being particularly cumbersome and time-consuming. The receptacles have also been filled by hand. Considering the steady increase in wages for manual labor, this has made the manufacture of these receptacles correspondingly more expensive.

It is the primary object of this invention to overcome these disadvantages in the manufacture and filling of receptacles of the indicated type, and to simplify the assembly of the receptacle parts, as well as making the automatic filling of the receptacles with stacks of shaped bodies possible.

The above and other objects are accomplished in accordance with the invention with a spring cage which is a structural unit consisting of a spring abutment, a support bottom for carrying the stack of shaped bodies, and a compression spring, such as a helical spring, held between the abutment and the support bottom. The abutment and the support bottom are releasably interlocked for insertion as a unit into the receptacle housing. The compression spring presses the stack of shaped bodies towards the dispensing end of the housing to place sequential uppermost shaped bodies of the stack into a dispensing position when the unit has been inserted and the interlocking of the abutment and the support bottom has been released.

To make the automatic filling of the receptacle possible, it is preferred to provide a click stop for fixedly holding the spring cage in the receptacle housing, the abutment and support bottom being cup-shaped and complementing each other to form a hollow body containing the compression spring when releasably interlocked.

Advantageously, the support bottom and abutment may be releasably interlocked by a hook extending from the support bottom and penetrating through an

aperture in the abutment, the hook being deformable to release the interlocking. In this manner, after the receptacle housing has been filled automatically with the stack of tablets, the spring cage may be inserted into the housing, snapped into position by the click stop, and the hook deformed simply by turning it about its axis to release the support bottom from the abutment, thus releasing the spring in the cage to act upon, i.e. press against, the support bottom. This concludes the assembly operation.

The above and other objects, advantages and features of the present invention will be more fully understood by reference to the following detailed description of certain now preferred embodiments thereof, taken in conjunction with the accompanying drawing wherein

FIG. 1 is a longitudinal section along line I—I of FIG. 2 of an embodiment of a receptacle with a spring cage according to this invention;

FIG. 2 is a transverse section along line II—II of FIG. 1 to illustrate the spring cage;

FIG. 3 is a section along line III—III of FIG. 2, showing the spring cage in elevational side view;

FIG. 4 is a section along line IV—IV of FIG. 2, the receptacle housing being omitted; and

FIG. 5 illustrates a modification of the spring cage, the spring being omitted.

Referring now to the drawing, the receptacle shown in FIG. 1 is of particularly simple and, inexpensive construction. Such a receptacle may be used as a disposable unit for a single use. This type of receptacle comprises a housing 1 directly receiving a stack of like tablets 2 which are sequentially dispensed from the receptacle, no open drawer within the housing being provided for holding the tablets, as in the receptacles disclosed in the above-mentioned patents. In this way, the assembly has one less part.

A spring means to be described hereinafter and including a tablet stack support bottom 6 presses the stack of tablets 2 towards the dispensing end of the receptacle housing to place sequential uppermost tablets 2' of the stack into a dispensing position delimited by transverse ledge 4 against which the uppermost tablet is pressed.

The present invention is not concerned with the dispensing end of the receptacle and the illustrated structure includes a cover 26 which is pivotal about pins 10 from a closed position into an open position, as indicated by the arrow in FIG. 1. The cover is held in closed position by spring 8 which biases the cover down in a counterclockwise direction while the cover portion pushes the uppermost tablet 2' forwardly and dispenses it from the receptacle when the cover is pivoted in a clockwise direction against the spring bias. The cover pivots 10 are mounted on side walls 11 extending upwardly from ledge 4.

According to this invention, the spring means is incorporated into a structural unit constituting a spring cage which may be inserted as a unit in receptacle housing 1. The spring cage consists of spring abutment 7, support bottom 6 for carrying the stack of tablets 2 and helical compression spring 3 held between the abutment and the support bottom. These three parts are pre-assembled into a structural unit, as shown in FIG. 4. Preferably and as illustrated, the abutment and the support bottom are cup shaped and complement

each other to form a hollow body containing the compression spring when releasably interlocked.

The interlocking is accomplished with a hook extending from support bottom 6 and penetrating through abutment 7, the hook being deformable to release the interlocking. In the illustrated embodiment, the hook consists of a stem 12 projecting from the support bottom 6 towards the bottom 15 cup-shaped abutment 7 and a head 13 received in aperture 14 of abutment bottom 15. To interlock the support bottom and the abutment, the aligned hook head 13 and aperture 14 are mutually offset, as shown in FIG. 2, i.e., the head 13 does not fit through the aperture 14 without first turning the stem about its axis. Thus, during assembly, the stem is slightly turned to lead the head through the aperture, whereupon it is released to permit the head to assume its undistorted position and become locked in the aperture, as illustrated in FIG. 2. The material of the stem has sufficient elasticity to permit the turning and to snap back automatically when the turning force is released. Since the compression spring 3 in the spring cage biases the support bottom and the abutment apart, they will remain locked after the turning force has been released from stem 12 so that the structural unit remains in the position shown in FIGS. 1 to 4, in which condition it is ready for insertion in the receptacle housing.

To hold the support bottom 6 and abutment 7 in their proper relative positions, they carry cooperating stops or lugs enabling suitable alignment of the two parts of the spring cage. In the illustrated embodiments, these include lugs 17 at the four corners of abutment 7 and cooperating stops 18 on support bottom 6. The assembly of the two parts will be further facilitated by provision of additional bosses 19 on support bottom 6 for guiding the support bottom in respect of the abutment.

The spring cage is held in the receptacle housing by a click stop illustrated to consist of laterally extending lugs 20 mounted on the side walls of abutment 7 for cooperation with conforming apertures 21 in the side walls of receptacle housing 1. When the pre-assembled spring cage unit is inserted into the housing through its open bottom in the direction of the vertical arrow shown in FIG. 3, the lugs 20 come to rest in apertures 21 to hold the spring cage in position in the receptacle, thus concluding the assembly.

Before the insertion of the spring cage, the receptacle housing is filled with the stack of tablets 2, a small space remaining between the lowermost tablet of the stack and the support bottom 6 of the spring cage after assembly, as can be seen in FIGS. 1 and 3. At this point, the head 13 is turned slightly so that it becomes aligned with aperture slot 14, the head being forced through the slot under pressure of spring 3 to release the interlocking of abutment 7 and support bottom 6. The spring pressure will move the support bottom through distance a so that the support bottom contacts the lowermost tablet and thus carries the stack of tablets. The receptacle is now in operative condition, with the spring 3 pressing the stack of tablets upwardly against ledge 4.

Insertion of the stack of tablets and of the spring cage through the open bottom of the receptacle housing, as well as the turning of hook head 13, may be effected automatically, i.e., by machine.

In the modification of the spring cage shown in FIG. 5, the stem 12' carries a hook-shaped head 24 which is in alignment with aperture slot 23 in abutment bottom 15'. During assembly, the head 24 passes through slot 23 and the head engages one edge of the slot to interlock the support bottom 6' and the abutment 7'. When it is desired to release these two parts, the stem 12' need not be turned but the head 24 is simply laterally displaced in direction of the horizontal arrow in FIG. 5 so that it slips through the slot.

It will be useful to make the receptacle, the cover and the spring cage parts of a thermoplastic synthetic resin of suitable rigidity, such as rigid polystyrene, which may be injection molded and thus produced very inexpensively. A certain rigidity is required particularly for part 6 since the stem 12 or 12' must have some elasticity to give it the property of a spring action during assembly in the above-described manner.

While the spring cage has been described in use with a simple receptacle, it will be useful also in combination with receptacle housings containing a drawer holding the tablets.

What is claimed is:

1. A spring cage in combination with a receptacle for receiving and sequentially dispensing individual shaped bodies from a stack of like ones of said shaped bodies received in the receptacle, the receptacle comprising a housing having a dispensing end, and the spring cage comprising a structural unit consisting of a spring abutment having an aperture, a support bottom for carrying the stack of shaped bodies, a compression spring held between the abutment and support bottom, and a hook having a head releasably engageable with the aperture of the abutment and a stem extending from the hook head through the aperture to the support bottom for releasably interlocking the abutment and support bottom for insertion as a unit into the receptacle housing, the hook being deformable to disengage the hook head from the aperture and the compression spring pressing the stack of shaped bodies towards the dispensing end to place sequential uppermost one of the shaped bodies of the stack into a dispensing position when the unit has been inserted and the interlocking of the abutment and support bottom has been released by disengagement of the hook head from the aperture, and a click stop fixedly holding the spring cage in the receptacle housing.

2. The spring cage in combination with a receptacle as defined in claim 1, wherein the abutment and the support bottom are cup-shaped and complement each other to form a hollow body containing the compression spring when releasably interlocked.

3. The spring cage in combination with a receptacle as defined in claim 1, wherein the aperture is arranged in the spring abutment to permit passage of the hook head therethrough only when the hook stem is elastically turned about its axis, and the bias of the spring in the cage tends to turn the hook stem back about its axis to permit the hook head to pass through the aperture into the cage to release the interlocking of the abutment and support bottom.

4. The spring cage in combination with a receptacle as defined in claim 1, wherein the abutment and the support bottom have cooperating projections for properly aligning the abutment and support bottom before the spring cage is inserted into the receptacle housing.

5

5. The spring cage in combination with a receptacle as defined in claim 1, wherein the aperture in the spring abutment is of a size to permit lateral displacement of the hook in respect thereto, the hook stem being elastically deformable for laterally displacing the hook head 5

6

from an engaged position in respect of the aperture to a disengaged position to permit the hook head to pass through the aperture into the cage to release the interlocking of the abutment and support bottom.

* * * * *

10

15

20

25

30

35

40

45

50

55

60

65