

Sept. 15, 1970

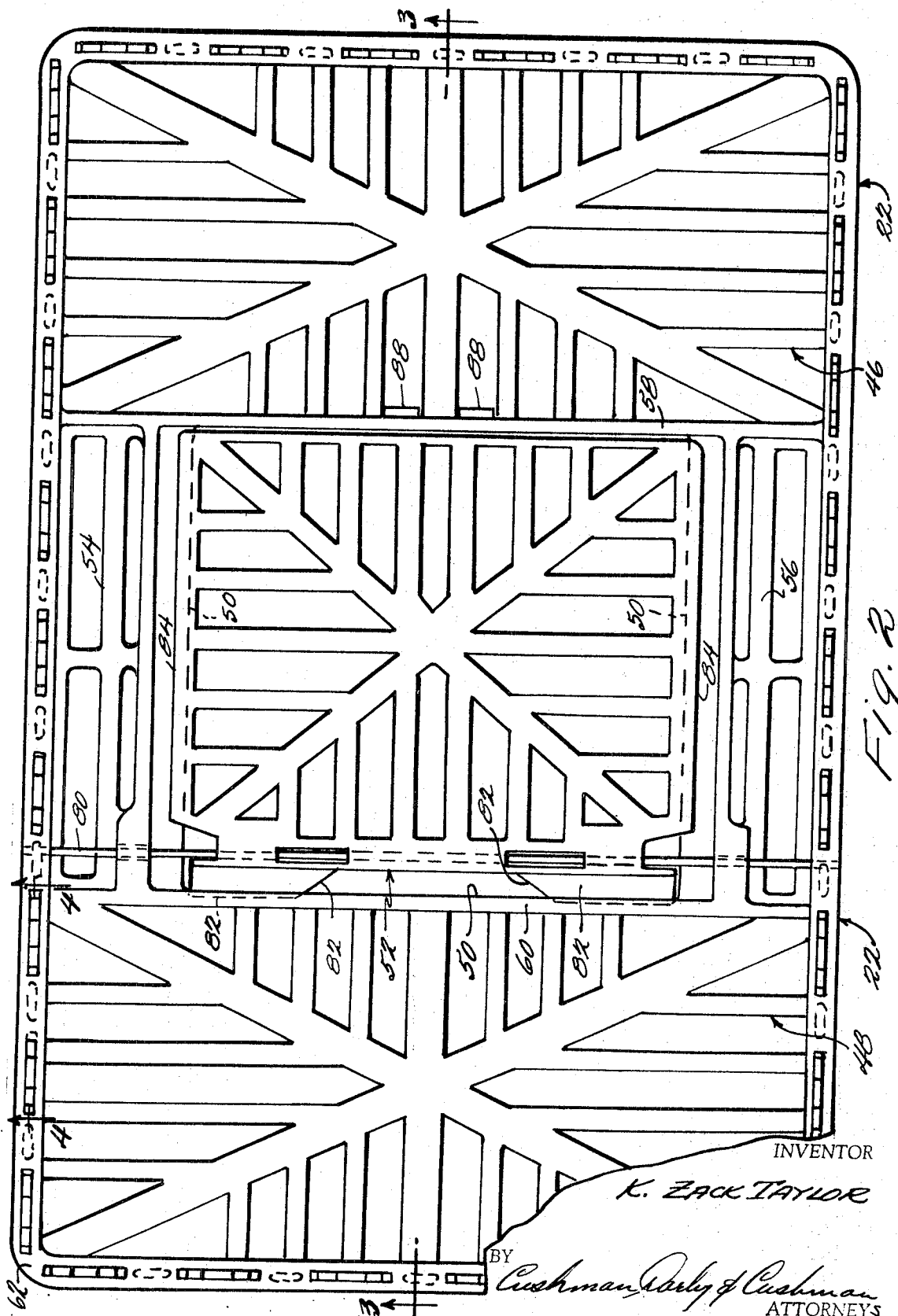
K. Z. TAYLOR

3,528,583

COLLAPSIBLE POULTRY COOP

Filed June 11, 1968

3 Sheets-Sheet 2



Sept. 15, 1970

K Z. TAYLOR

3,528,583

COLLAPSIBLE POULTRY COOP

Filed June 11, 1968

3 Sheets-Sheet 3

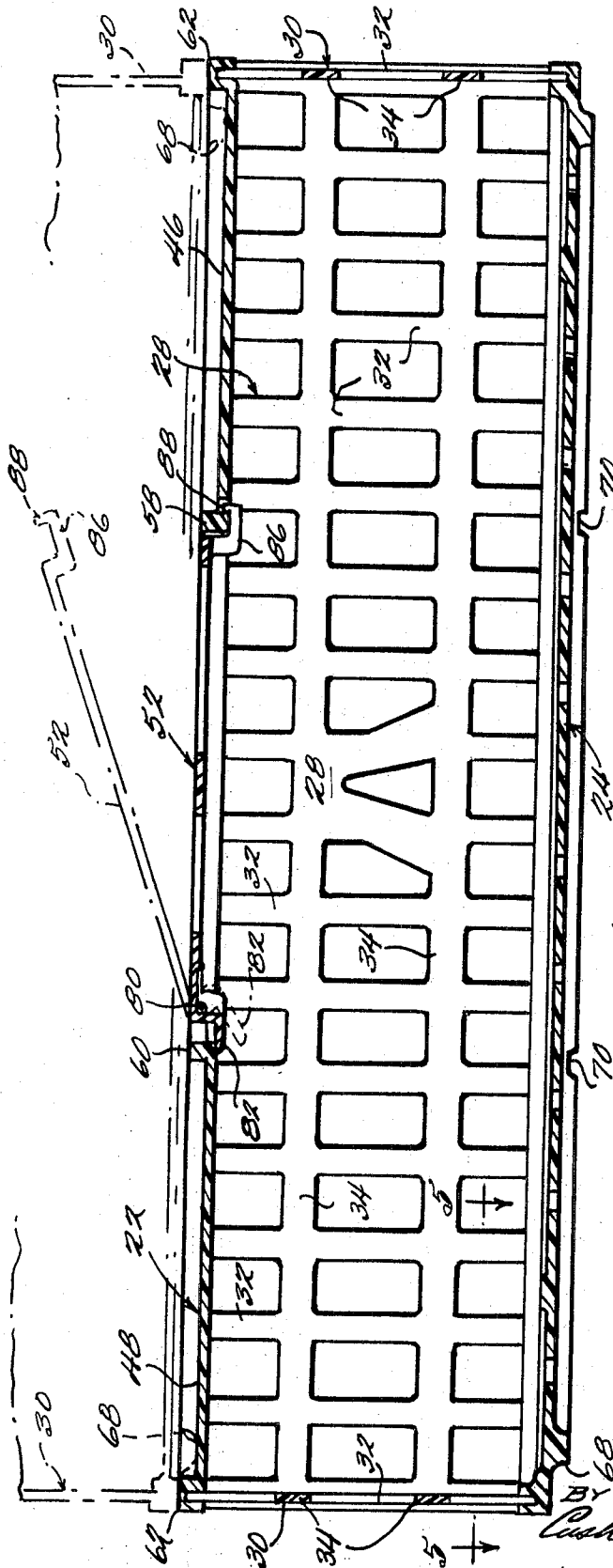


FIG. 3

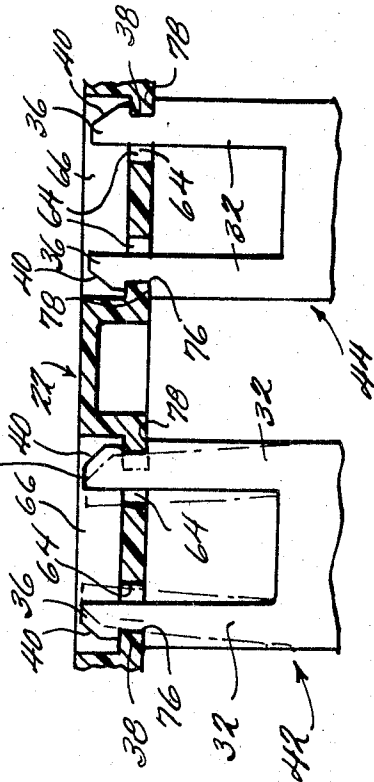


FIG. 4

INVENTOR
K. ZACK TAYLOR

Cushman, Quiley & Cushman
ATTORNEYS

1

3,528,583

COLLAPSIBLE POULTRY COOP

K Zack Taylor, Decatur, Ga., assignor to Uniplastic Corporation, Atlanta, Ga., a corporation of Georgia
Filed June 11, 1968, Ser. No. 736,143

Int. Cl. B65d 7/00

U.S. Cl. 220-4

14 Claims

ABSTRACT OF THE DISCLOSURE

The present invention relates to a collapsible crate construction, for use as a poultry coop, and designed with novel snap-locking structure to facilitate assembly of the side walls to the top and bottom. The parts of the crate may be made of a plastic composition, and the crate is designed to facilitate nesting or stacking of like crates.

The present invention relates to a crate construction and particularly to a collapsible type crate construction designed to be transported in a disassembled or knocked-down condition and to be readily assembled when needed. Crates embodying the present invention will be particularly useful as poultry coops, but they may be useful for other purposes, as will be apparent.

An object of the present invention is to provide a novel collapsible crate construction including novel snap-locking structure for quick assembly.

A further object of the invention is to provide a crate construction of the type under consideration having a novel stacking or nesting feature to facilitate storage and stacking, and to prevent the crates from sliding when so stacked.

An additional object of the invention is to provide a crate construction of the type under consideration and having a novel door or hatch construction.

A still further object of the invention is to provide a novel crate construction having parts designed to be made of a plastic material in an injection molding process, wherein the parts of the crate have a cellular core integral with a hard, solid, and high density skin, providing a product with a good, thick-walled feel and structural characteristics at less weight than is possible with standard injection molding methods.

Further objects and advantages of the invention will be in part obvious and in part pointed out hereafter. The novel features of the invention may be best made clear from the following description and accompanying drawings in which:

FIG. 1 is a perspective view of a crate construction embodying the invention, and with some structure omitted for convenience of illustration;

FIG. 2 is an enlarged top plan view of the crate construction showing FIG. 1;

FIG. 3 is a vertical sectional view of the crate construction taken along line 3-3 of FIG. 2;

FIG. 4 is an enlarged fragmentary vertical sectional view taken along line 4-4 of FIG. 2 and illustrating novel snap-locking structure embodying the invention;

FIG. 5 is a fragmentary plan view of a corner of the bottom of the crate construction shown in FIG. 1, and on an enlarged scale, taken from the direction indicated by line 5-5 in FIG. 3;

FIG. 6 is an enlarged fragmentary vertical sectional view taken along line 6-6 of FIG. 5 and illustrating the snap-locking feature of the invention;

FIG. 7 shows an enlarged fragmentary plan view of an end of one of the side walls of the crate.

Referring now to the drawings, a crate 20 constituting an illustrative embodiment of the invention is shown

2

therein. It will be seen that the crate 20 is provided with top 22 and bottom 24 walls, and front 26, rear 28 and end 30 side walls, all of generally rectangular shape or outline. As will be described in more detail hereinbelow, a novel structure is provided whereby these parts may be transported conveniently in a disassembled condition, and yet be readily and conveniently assembled in the final form indicated in FIG. 1, when desired.

The side walls 26, 28, 30 are shown as being of openwork construction, and providing somewhat of a fence appearance. In constructing these side walls, the front 26 and rear 28 side walls preferably are of identical configuration, size, shape and structure, while the left and right side walls 30 preferably are of a configuration, size, shape and structure identical to each other, to facilitate construction and replacement, if desired. The left and right side walls 30 will be of a configuration and structure similar to the configuration and structure of the front 26 and rear 28 walls, but of a shorter length. However, if desired, all of these walls may be of identical configuration and size, and in that case the top 22 and bottom 24 and the final configuration of the crate would be square rather than oblong. Thus, the following description of the structure of rear wall 28 will be understood to be likewise applicable to the other side walls 26, 30.

Referring to the rear wall 28, it will be seen in FIG. 3 that this wall is shown as comprising parallel vertical elements 32 joined by horizontal elements 34 providing an attractive openwork fence appearance. As best seen in FIGS. 4 and 6, the upper and lower ends of the vertical elements 32 are formed with a prong-like structure 36 with a notch 38 and beveled surface 40 formed therein, as shown. It will be noted that adjacent notches 38 open in different or opposite directions, providing operative pairs of prong-like structures wherein the notches 38 of each such pair face away from each other. Two such operative pairs are shown in FIG. 4 and are identified by reference numerals 42 and 44. This structure at the top and bottom of the vertical elements 32 is designed to provide for a quick, snap connection of the side walls to the top 22 and bottom 24 of the crate, as will be explained more fully hereinbelow.

The end or outer vertical elements 32 of the side walls 26, 28, 30 may be provided with an inwardly directed projection 33, as shown in FIG. 7, extending throughout the length of the vertical element 32, to provide a stronger corner joint structure for the side walls, when assembled.

The top 22 of the crate, in the illustrative embodiment thereof shown in FIGS. 1 through 4, includes an open framework shown as having a right section 46 and left section 48 of a generally rectangular shape, and of similar design, as best seen in FIGS. 1 and 2. A generally rectangular opening 50 is provided between these sections 46, 48 and a door or hatch 52 is suitably mounted in this opening, as will be described in more detail below. The sections 46, 48 are joined to narrow intermediate sections 54, 56 at the front and rear middle portions of the top 22, and these intermediate sections cooperate with the cross pieces 58, 60 of sections 46, 48 to define the opening 50.

As best seen in FIGS. 1, 2 and 3, the periphery of the top 22 is provided with a ridge 62 which is shown as extending along the entire periphery. This ridge 62 is shown as including pairs of openings 64 in recesses 66 therein, as best seen in FIG. 4, and each pair of openings 64 in each recess 66 is designed to receive an operative pair of prongs 36 from the upper ends of the side walls 26, 28, 30, as seen in FIG. 4. Thus, these openings 64 are provided throughout the entire ridge 62 in the periphery of the top 22. The ridge 62 is designed to cooperate with a complementary structure on the bottom 24 of the crate

3

to facilitate nesting or stacking of the crates, as will be referred to hereinbelow.

The bottom 24 of the crate, as best seen in FIGS. 3, 5 and 6, is also of generally rectangular outline, including a ridge 68 disposed adjacent to the periphery thereof. This ridge extends along the entire periphery of the bottom and is spaced inwardly from the outer edge of the bottom 24 so as to be disposed inwardly of the ridge 62 on the top 22, when nesting these crates, as best indicated in phantom lines at the top of FIG. 3.

The ridge 68 on the bottom 22 is provided with recessed or notched out portions 70 therein, designed to engage over and with the cross pieces 58, 60 of the top 22 when crates are nested together. This provides additional locking, in combination with the cooperation of the ridges 62, 68 on the top and bottom walls, to prevent sliding of the crates when nested.

A plurality of pairs of openings 72 is provided in recesses 74 throughout the entire periphery of the bottom 24, as best seen in FIGS. 5 and 6. Openings 72 and recesses 74 correspond to the openings 64 and recesses 66 of the top 22 and are designed to receive operative pairs of prong-like structures 36 at the bottom of the side walls, as best seen in FIG. 6.

All of the parts of the crate 20 may be constructed of a plastic composition and using an injection molding method as suggested in Pat. No. 3,268,636. It has been found that such a composition coupled with the configuration and structure of the walls 26, 28, 30 enables the prong-like elements 36 at the top and bottom of these walls to be stiff and tough, but sufficiently elastic or resilient to allow them to be deformed or squeezed together, in connection with snap-fastening these walls to the top and bottom of the crate. For example, as best seen in FIG. 4, the novel snap-locking structure of the present invention contemplates that in connecting the side walls to the top and bottom walls, the beveled surface 40 of each operative pair of prongs 36 will first engage the outer edges 76 of an operative pair of openings 64; then as the prongs 36 are forcibly pushed into these openings 64, the beveled surfaces will operate as a cam and force the vertical elements 32 to deflect or bend as indicated in dashed lines in FIG. 4, to enable the prongs 36 to pass into and through the openings until the bottom surface or edge 78 of the notches 38 engages the adjacent wall portion of the top 22 or approaches the same, at which time the notches 38 will be disposed to receive the adjacent surface of the top 22, and snap thereover into the final position shown in solid lines in FIG. 4, thus locking the parts together in a firm and secure manner, yet permitting disassembly, if desired, as by reversing the procedure just described.

The door or hatch 52, as best seen in FIGS. 1, 2 and 3, is shown as being of a generally rectangular configuration and of open work construction. A stiff and strong but somewhat elastic hinge member 80 in the form of a wire or a rod is suitably mounted in the intermediate sections 54, 56 of the top 22 and extends through the left hand end of the door 52, through suitable holes or openings provided therein, for hinging the door in this opening. The rear or left hand end of the door 52 is shown as including lugs or ears 82 arranged to engage underneath the cross piece 60 and dispose the side pieces 84 of the door in a plane above the adjacent surfaces of intermediate sections 54, 56 of the top as best seen in FIG. 3. The front or right hand of the door is provided with a latch 86, having upwardly extending lugs 88, designed to detachably fasten underneath the cross piece 58, as shown in FIGS. 2 and 3. When it is desired to open the door 52 to provide access to the interior of the crate, the operator will depress the door by putting pressure on the portion thereof adjacent to latch 86, and press it downwardly until the lugs 88 of the latch are below the cross piece 58 and the operator will then slide or move the door bodily toward the left hand end of the crate, as viewed in FIG. 3, until the lugs 88 of the latch 86 are disposed to

4

the left of the cross piece 58, and free to slide or move upwardly therepast. This bodily movement of the door from the right to the left as viewed in FIG. 3 is permitted by reason of the resilience and elasticity of the hinge rod or wire 80, permitting this rod to be actually deflected or bent while the door is being so moved bodily, and the rod will snap back or return to its normal position once the lugs 88 of the latch have been lifted past the cross piece 58, and the door swung or pivoted upwardly to an open position. The structure of the door and hinge enable it to be swung counterclockwise through 180°, as viewed in FIG. 3, to a horizontal fully-opened position resting on the section 48 of top wall 22. In latching or closing the door the reverse operation takes place, namely, the door will be swung or pivoted downwardly, and then it will be moved bodily to the left, as viewed in FIG. 3, until the lugs 88 of the latch are disposed to the left of cross piece at which time the door will then be swung or pivoted further downwardly until these lugs are below the cross piece 58 at which time the deformed rod 80 will snap the door to the right, as viewed in FIG. 3, to dispose the lugs 88 in locking engagement with the cross piece, as shown in FIG. 3. The door will be made of a stiff but sufficiently elastic or resilient material, such as that referred to above, to allow it to be deflected or bent in connection with the opening and closing operations discussed above.

The crate construction of the present invention will be particularly useful as a poultry coop.

The present invention will thus be seen to completely and effectively accomplish the objects enumerated hereinabove. It will be realized, however, that various changes and substitutions may be made to the specific embodiments disclosed herein for the purpose of illustrating the principles of this invention, without departing from these principles.

What is claimed is:

1. A collapsible crate comprising:

top, bottom and side walls defining an enclosure, said side walls being of open work construction, means for snap-fastening said side walls to said bottom and said top walls,

said snap-fastening means including pairs of prong-like elements at the top and bottom of said side walls and pairs of openings provided in said top and bottom walls and designed to receive and provide a snap-lock with said prong-like elements,

said top and bottom walls including respective ridges along the peripheries thereof wherein each of said ridges includes a plurality of recesses wherein respective pairs of said openings are located in respective ones of said recesses.

2. The crate structure defined in claim 1 wherein said side walls comprise a plurality of spaced parallel members defining at the upper and lower ends thereof said prong-like elements, said elements being provided with notches arranged to snap-lock in the portions of said top and bottom walls defining the openings therein.

3. The crate structure defined in claim 2 wherein said side walls are constructed of a relatively stiff but elastic plastic material.

4. The crate structure defined in claim 3 wherein said top is of openwork construction with a relatively large opening therein, door means arranged in said opening, and hinge means including a spring wire for hinging said door in said top wall to provide both for pivoting of said door about the long axis of said spring wire and for bodily straight-line movement of said door in a direction perpendicular to the axis of said wire.

5. The crate structure as defined in claim 4 and further comprising latch means for detachably holding said door in a closed position in said opening.

6. The crate structure defined in claim 3 wherein said top and bottom walls are of the same plastic construction as said side walls and are provided with means enabling

5

crates of similar construction to be stacked one on top of the other.

7. The crate structure as defined in claim 6 wherein said nesting means includes complementary ridges on said top and bottom walls and arranged adjacent the peripheries thereof.

8. A crate collapsible for compact storage or shipment when not in use, comprising:

top, bottom and side walls defining an enclosure;
said side walls having a plurality of spaced members with prong-like elements at the tops and bottoms of said spaced members;

said top and bottom walls including pairs of openings designed to receive and provide a snap-lock with said prong-like elements;

said prong-like elements being provided with notches and beveled surfaces arranged to enable the elements to snap-lock in the portions of said top and bottom walls defining the openings therein.

9. A crate as in claim 8 wherein said top and bottom walls include respective ridges along the peripheries thereof and wherein each of said ridges includes a plurality of recesses wherein respective pairs of said openings are located in respective ones of said recesses.

10. The crate defined in claim 9 wherein said top is of openwork construction with a relatively large opening therein, door means arranged in said opening, and hinge means including a spring wire for hinging said door in said top wall to provide both for pivoting of said door about the long axis of said spring wire and for bodily straight-line movement of said door in a direction perpendicular to the axis of said wire.

11. The crate as defined in claim 10 and further com-

6

prising latch means for detachably holding said door in a closed position in said opening.

12. The crate defined in claim 11 wherein said side walls are constructed of a relatively stiff but elastic plastic material.

13. The crate defined in claim 12 wherein said top and bottom walls are of the same plastic construction as said side walls and are provided with means enabling crates of similar construction to be stacked one on top of the other.

14. The crate as defined in claim 13 wherein said nesting means includes said respective ridges, said ridges located respectively on said top and bottom walls to enable the nesting of crates of similar construction one on top of the other.

References Cited

UNITED STATES PATENTS

1,542,115	6/1925	Wies.	
2,839,214	6/1958	Crane	220—60 X
3,069,002	12/1962	Hart	220—83
3,095,992	7/1963	Shreckhise	217—57
3,214,057	10/1965	Box	220—97
3,407,961	10/1968	Box	220—60 X
3,236,410	2/1966	Swartz	220—83 X

FOREIGN PATENTS

646,426 9/1962 Italy.

RAPHAEL H. SCHWARTZ, Primary Examiner

U.S. Cl. X.R.

217—43; 220—60