

Nov. 15, 1966

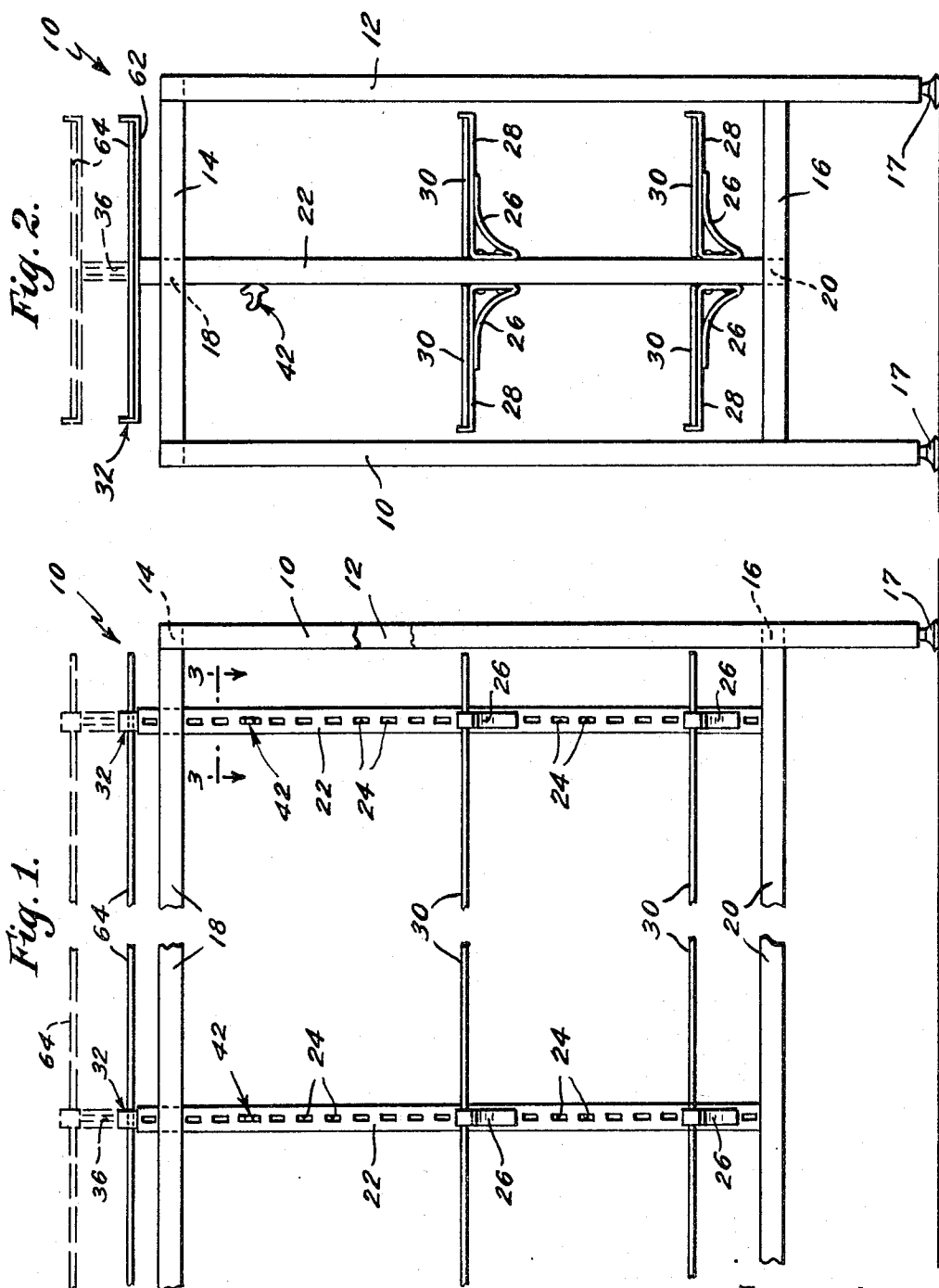
M. COHEN

3,285,208

ADJUSTABLE SUPPORT ASSEMBLY

Filed Feb. 8, 1965

2 Sheets-Sheet 1



Inventor,
Maurice Cohen,
by *Salter & Michaelson*
Att'ys.

1

3,285,208

ADJUSTABLE SUPPORT ASSEMBLY
Maurice Cohen, 3580 NW. 52nd St., Miami, Fla.
Filed Feb. 8, 1965, Ser. No. 430,977
12 Claims. (Cl. 108—146)

The present invention relates to an adjustable support assembly. More particularly, the present invention relates to an adjustable support assembly for use in a display rack and includes means for accommodating a fixed supporting element in addition to providing for vertical adjustment of a movable support member.

The adjustable support assembly embodied herein has particular application for use in display racks of that type that are provided with shelving for the display of merchandise. One type of such display rack includes tubular vertical members that are located intermediate the ends of the rack and that are formed with a plurality of vertically spaced slots therein. In order to mount the shelving, support brackets normally referred to as knife brackets are secured in the slots formed in the tubular vertical member, the knife brackets being fixed in position within the slots but being movable as required along the length of the tubular member to locate the shelving in any desired horizontal position.

In order to provide for additional merchandise display space, the present invention includes an inner telescoping member that is received within the slotted tubular member, the uppermost end of the inner member having a support member secured thereto on which shelving is mounted. By providing adjustable movement of the inner member with respect to the outer tubular member, the upper shelving may be adjusted to any required height. However, because of the location of the knife brackets within the slots of the tubular member, a unique adjustment assembly is provided in the present invention enabling the inner member to be vertically moved and located at any desired height with respect to the outer tubular member.

In order to provide for movement of the inner member with respect to the outer tubular member while the knife brackets for supporting shelves are fixed in the slots of the outer tubular member, a longitudinally extending channel is formed in the inner member that has direct communication with the slots in the outer member. A special latch construction that defines a locking element is pivotally mounted in one of the slots in the outer member and includes an interiorly extending arm that is normally biased inwardly into the channel of the inner member. The outer end of the inwardly projecting arm is formed with a notch and the channel in the inner member is provided with a plurality of vertically spaced slots. Since the arm is inwardly biased, the end thereof will be forced into a slot in the inner member to locate the edge of the slot in engagement with the notch in the arm and thus lock the inner member in position with respect to the outer member. This locked position is accomplished by allowing the inner member to rest by the weight thereof on the notch formed in the arm. Upon pivotal movement of the locking element, the arm is withdrawn from the slot in the inner member and the inner member drops downwardly with respect to the outer member by gravity. Upward movement of the inner member by the lifting thereof is unencumbered since the arm is formed with a cam edge that normally engages the rear wall of the channel in the inner member. Thus as the inner member is pulled upwardly the cam edge rides out of the inner member slots and prevents the arm from being locked to the inner member. By providing a spring that normally biases the arm to the latched position, the inner member may be moved upwardly until the desired

2

height is obtained for the shelf carried thereby, at which position the arm is engaged in a slot in the inner member, so that upon release of the inner member, the edge of the slot in which arm is located engages the notch in the arm, thereby locking the inner member in the desired position.

Accordingly it is an object of the invention to provide an adjustable support assembly for use in a display rack that includes an inner telescoping member mounted in a slotted tubular member for movement therein and without interference with brackets that are carried by the tubular member.

Another object of the invention is to provide an adjustable support assembly that includes an inner member that is mounted for telescoping movement within an outer member, a latch construction normally inhibiting downward movement of the inner member but providing for unencumbered movement of the inner member in an upward direction.

Still another object is to provide a slotted outer tubular member in which a pivoted latched element is mounted, an inner support member being slidably mounted in telescoping relation in the outer member and including means for engagement by said latch for locating the inner member in a desired vertical position.

Other objects, features and advantages of the invention will become apparent as the description thereof proceeds when considered in connection with the accompanying illustrative drawings.

In the drawings which illustrate the best mode presently contemplated for carrying out the invention:

FIG. 1 is an elevational view of a portion of a display rack illustrating the manner of use of the invention embodied herein;

FIG. 2 is an end view of the display rack illustrated in FIG. 1;

FIG. 3 is a sectional view taken along lines 3—3 in FIG. 1;

FIG. 4 is an enlarged fragmentary elevational view, with parts shown in section of the inner and outer members of the support assembly embodied in the present invention;

FIG. 5 is a sectional view taken along lines 5—5 in FIG. 4 and showing the latched position of the inner member with respect to the outer member;

FIG. 6 is a sectional view similar to FIG. 5 showing the position of the latch as the inner member is moved upwardly with respect to the outer member; and

FIG. 7 is a perspective view of the latch embodied in the present invention.

Referring now to the drawings and particularly to FIGS. 1 and 2, a portion of a display rack is illustrated therein and is generally indicated at 10. The display rack 10 is of conventional construction and includes vertical end supports 10 and 12, each pair of the supports 10 and 12 being spaced apart by upper and lower cross members 14 and 16. Fixed in the lower end of the vertical end supports 10 and 12 are feet 17 that may be adjusted as required. Longitudinally extending stretcher members 18 and 20 are located at the upper and lower ends of the display rack respectively and are interconnected between the cross members 14 and 16, respectively, intermediate the ends thereof. Fixed intermediate the ends of the display rack 10 to the upper and lower stretcher members 18 and 20 are a plurality of tubular vertical posts, two of which are indicated at 22 in FIG. 1. It is understood that as many of the vertical posts 22 will be located intermediate the end members of the display rack that are required to support shelving carried thereby. All of the tubular vertical posts 22 are formed substantially identical and therefore reference to one of the vertical posts and the de-

scription thereof will apply equally to all of these members. Each of the tubular vertical posts 22 has a generally square cross-sectional configuration and is provided with a plurality of slots 24 that are located in vertical spaced relation on the front and rear surfaces thereof. In this connection it is understood that both sides of the display rack 10 are normally utilized for displaying merchandise and as such, the display rack defines an aisle unit. However, for purposes of the description of this invention, reference will be made to only one set of the slots 24 as formed in the front surface of the vertical posts 22.

In the usual construction and use of the vertical posts 22, the slots 24 define adjustment positions for receiving inwardly projecting key portions of conventional knife brackets indicated at 26. Each knife bracket is formed in the usual manner with one or two projecting key portions depending upon the construction thereof, the key portions being received within the slots 24 to lock the knife brackets 26 in position in the well-known manner. As shown in FIG. 2 each of the knife brackets 26 includes a support platform 28 on which a glass shelf or the like 30 is placed. Any suitable merchandise may be carried by the glass shelf for the display and dispensing thereof.

Because of the limitations of display space defined by the shelves 30, it is desirable to provide additional upper shelving for the display rack and further because of space requirements it is desirable to adjust the upper shelving vertically so as to locate this shelving at a desired height. In order to accomplish this purpose, the adjustable support assembly of the present invention is provided and in addition to the tubular post 22 includes an inner member generally indicated at 32 that is telescopically received within the tubular post 22. The inner member 32 is preferably formed of extruded aluminum and has a special configuration that enables the inner member to be slidably and telescopically moved within the outer tubular post 22. The extruded configuration of the inner member 32 includes interior channels 34 that are provided for reducing the weight of the inner member. Also formed in the inner member 32 and communicating with the slots 24 that are formed in the tubular vertical post 22 are longitudinally extending channels 36. The channels 36 are separated by an internal web 38 that, in effect, defines a rear wall for each longitudinally extending channel. Formed in the web or rear wall 38 of the inner member 32 are a plurality of vertically spaced slots 40 that are adapted to cooperate with a latch or locking element generally indicated at 42 for locating the inner member 32 in a fixed vertical position with respect to the outer tubular post 22.

Referring now to FIGS. 5, 6 and 7, the latch or locking element 42 is illustrated and as shown is pivotally mounted in one of the slots 24 of the tubular post 22. As will be described hereinafter, it is not necessary that the latch 42 be located in any particular slot 24 so long as it is convenient to the operator of the device. The latch 42 includes a head portion 44 in which opposed notches 46 and 48 are formed. Also formed as part of the head portion 44 is an actuating finger 50 which as seen in FIGS. 5 and 6 extends outwardly of the tubular post 22 and is accessible for actuation by the operator of the device. Integrally joined to the head portion 44 is an arm 52 that extends upwardly with respect to the head portion and has a notch 54 formed in the outermost end thereof. Located adjacent to the notch 54 is a cam edge 56, the purpose of which will hereinafter be described. Formed in the edge of the arm 52 opposite to that of the cam edge 56 is a hole 58 in which a small spring 60 is received.

The latch 42, as indicated above, is pivotally mounted in one of the slots 24 formed in the outer tubular post 22 and is positioned such that it is conveniently accessible to the operator of the device. In order to mount the latch 42 in position in a slot 24, the arm 52 is inserted therein and projects upwardly into the channel 36 of the inner member 22 that communicates with the slot 24. The notches 46 and 48 are so shaped and proportioned as to

enable the inner portion of the head portion 42 to be inserted interiorly of the slot 24 and into the channel 36, these notches then providing for pivotal engagement of the latch 42 within the slot 24 in which it is inserted. The exterior portions of the latch 42, that is, the actuating finger 50 and the adjacent portions that define the notches 44 and 48 project outwardly of the slot 24, the actuating finger 50 then being accessible for operation. The small tension spring 60 in the mounted position of the latch 42 engages the inside surface of the wall in which the notch 24 is formed and thus normally forces the arm 52 to the position illustrated in FIG. 5. In this position the cam edge 56 extends into a slot 40 formed in the rear wall or web 38 of the inner member 32, the edge of this slot 40 being received in the notch 54 of the arm 52. When the latch 42 is located in the position as illustrated in FIG. 5, the inner member 32 is resting by the weight thereof on the latch 42, and is prevented from downward movement thereof. It is seen that the configuration of the arm 42 causes the arm to lock against the rear wall 38 of the channel 36 as indicated at 61 in FIG. 5 the weight of the inner member 32 causing the latch 42 to assume the position as illustrated in FIG. 5.

In the event that it is required to adjust the inner member 32 in an upward direction, the inner member 32 is grasped by the operator and pulled upwardly with respect to the fixed tubular post 22. Because of the configuration of the cam edge 56, the rear wall 38 of the channel 36 will force the cam edge outwardly of the slot 40 in which it is located, as seen in FIG. 6, thereby allowing for unencumbered upward movement of the inner member 32. The cam edge will fall into each of the slots 40 upon upward travel of the inner member 32 but will be forced outwardly therefrom upon continued upward movement of the inner member 32. When the desired position of the inner member 32 is reached, the operator may then release the inner member, and since the cam edge 56 has then moved within one of the slots 40 the upper edge of the slot 24 will fall downwardly into engagement with the notch 54 thereby locking the inner member 32 with respect to the tubular post 22. As previously mentioned, the tension spring 60 continuously forces the arm 52 inwardly as indicated. When it is desired to lower the inner member 32 with respect to the outer tubular post 22, the actuating finger 48 is depressed to move the arm 52 against the action of the spring to the position illustrated in FIG. 6. The cam edge 56 is withdrawn from the slot 40 in which it is located and the inner member 32 may then be lowered without engagement of the notch 54 with the upper edge of slots 40.

As shown in FIGS. 1 and 2, the uppermost ends of the inner members 32 that are carried in telescoping relation within the tubular posts 22 have a suitable bracket 62 mounted thereon on which a shelf 64 is located. The bracket 62 and shelf 64 may vary in configuration and design, but it is understood that the concept of the invention includes some form of a support member that is secured to the upper end of the inner members 32. Thus each inner member 32 is adjusted in vertical relation, the support member carried thereby being adjusted in vertical relation accordingly.

In use of the display rack, the knife brackets 26 of each tubular post 22 are located in vertical relation with respect to each other by insertion of the key portions thereof in the slots 24 of the tubular post 22. Notwithstanding the location of the knife brackets 26 and the key portions thereof within the slots 24 of the tubular post 22, the inner telescoping member 32 is vertically adjustable with respect to the fixed tubular post to locate the upper support 62 in a desired horizontal position. The locking element or latch 42 of the support assembly is positioned in one of the slots 24 such that it does not interfere with the knife brackets 26. The latch 42 is further pivotally received within the slot 24, the notches 46 and 48 provid-

5

ing for the pivotal mounting of the latch. As seen in FIGS. 5 and 6, the latch 42 in the position of use rests on the edge of the slot 24 in which it is inserted by means of engagement of this edge with the notch 46. The configuration of the notch 46 enables the latch 42 to be pivotally moved from the position illustrated in FIG. 5 to the position illustrated in FIG. 6. The formation of the notch 48 in the latch 42 is necessary in order that the arm 52 and the remaining head portion 44 of the latch be inserted within the slot 24. Thus during the insertion of the latch through the slot 24, the latch is lifted upwardly so that the upper edge of the slot is received within the notch 48. This enables the portion of the latch adjacent to the notch 46 to clear the slot 24 after the arm 52 is inserted through the slot.

Upward movement of the inner member 32 is accomplished by simply grasping this member adjacent the top thereof and moving it vertically, the configuration of the cam edge 56 of the latch 42 providing for unimpeded upward movement of the inner member. Upon release of the inner member 32 the upper edge of the slot 40 in which the cam edge 56 has entered engages the notch 54 to prevent further downward movement of the inner member 32 with respect to the outer tubular post 22. Since the spring 60 normally forces the arm 52 to the position illustrated in FIG. 5, the inner member 32 is released for downward movement only upon depressing of the actuating finger 50 to withdraw the arm 52 and the cam edge 56 from the slot 40 in which the cam edge is located and against the action of the spring 60.

While there is shown and described herein certain specific structure embodying the invention, it will be manifest to those skilled in the art that various modifications and rearrangements of the parts may be made without departing from the spirit and scope of the underlying inventive concept and that the same is not limited to the particular forms herein shown and described, except insofar as indicated by the scope of the appended claims.

What is claimed is:

1. In a display rack, an adjustable shelf assembly including a fixed tubular, vertical post that is square shaped in cross-sectional configuration, a plurality of slots formed in a surface of said vertical post and extending substantially the length thereof in spaced vertical relation for accommodating a shelf supporting knife bracket therein, an inner member located within said vertical post in telescoping relation and slidably movable with respect thereto, said inner member including at least one longitudinally extending channel that is located adjacent to the surface of said post in which the spaced slots are formed, said longitudinal channel being defined by spaced side walls and a rear wall, said rear wall having a plurality of vertically spaced slots formed therein, a lock element pivotally mounted in one of the slots formed in said post and including an arm having a notch formed in an outer end thereof that is engageable with an edge of a slot in said channel rear wall, means for resiliently urging said arm into a channel slot for locking the inner member to said vertical post, said lock element including an actuating finger that extends outwardly of the slot in the vertical post in which the lock element is located and that is engageable for retracting the arm from the channel slot in which it extends for releasing said inner member from said vertical post to enable said inner member to have slidable movement with respect to said post, and a display shelf mounted on the uppermost end of said inner member and movable therewith for displaying merchandise at a required height.

2. In an adjustable assembly, an outer tubular member having a plurality of slots formed in spaced relation along the length of a wall thereof for accommodating a mounting element of a support bracket therein, an inner member slidably mounted in said outer member in telescoping relation and having a support member mounted on the upper end thereof, said inner member having a longi-

6

tudinally extending channel formed therein that is located in communicating relation with said slots, said channel receiving therein a portion of the mounting element for said support bracket that extends through a slot in said outer member for permitting movement of said inner member with respect to said outer member, and means for locating said inner member in an adjusted position with respect to said outer member.

3. In an adjustable assembly as set forth in claim 2, said locating means including a locking element that is pivotally mounted in one of the slots in said outer member and that is formed with an inwardly projecting locking arm and an outwardly extending actuating finger, said channel having a rear wall in which a plurality of spaced slots are formed, said arm being receivable in a slot in said channel rear wall to locate said inner member in fixed position with respect to said outer member, said actuating finger being actuated for pivoting said arm out of the slot in which it is located to permit movement of said inner member with respect to said outer member.

4. In an adjustable assembly as set forth in claim 3, a spring secured to said locking element and engaging said arm for normally urging said arm toward the slots in the channel rear wall.

5. In an adjustable assembly as set forth in claim 3, said inner and outer members being located in vertical relation, said arm including a cam edge that is positioned for engaging an edge of the slots in the channel rear wall so that said arm is cammed out of said channel slots as said inner member is moved upwardly, thereby providing for unencumbered upward movement of said inner member, said finger further including a notch formed on the outer end thereof that is engageable by an upper edge of a channel slot when the inner member is released and rests by the weight thereof on said arm that projects inwardly into a channel slot.

6. In an adjustable support assembly for use in a display rack, an outer vertical member that is tubular in construction and that has a plurality of vertically spaced slots formed therein for accommodating a shelf supporting bracket, an inner member slidably mounted in said outer member in telescoping relation and including a display shelf that is mounted on the upper end thereof for the display of merchandise, means for supporting said inner member in an adjusted vertical position in said outer member and including means for normally limiting downward movement of said inner member from the adjusted position but permitting unencumbered upward movement thereof, said inner member including a longitudinally extending channel that is aligned with said spaced openings in said outer member, thereby providing for accommodation of said bracket in a slot in said outer member, said longitudinally extending channel being defined by a rear wall in which a plurality of vertically spaced slots are formed, said limiting means being received in one of the slots in said rear wall for limiting downward movement of said inner member with respect to said outer member, said supporting means being defined by an arm that is locked in and that extends through a slot in said outer member and that includes a notch formed in the inner end thereof, said arm being receivable in an opening in the rear wall of said channel wherein said notch engages an upper edge of a slot in said channel rear wall for retaining said inner member in an adjusted position, said arm further including a cam edge for engaging the channel rear wall of said inner member for retracting said notch from the locked position when said inner member is moved upwardly with respect to said outer member.

7. In an adjustable support assembly, a fixed outer member having a plurality of slots formed in a wall thereof in vertically spaced relation, said slots defining means for mounting a support bracket on said outer member in a selected position with respect to the vertical, an inner member located in said outer member in

7

telescoping relation and being adapted to receive a support member on the upper end thereof, said inner member being normally movable by gravity in a downward direction in said outer member, and means located in a slot of said outer member and being engageable with said inner member for restricting the downward movement thereof.

8. In an adjustable support assembly as set forth in claim 7, said restricting means including an arm that extends inwardly of said outer member, said arm being mounted for pivotal movement and being urged into engaging relation with said inner member to restrict the downward movement thereof, and spring means engaging said arm for urging it into engagement with said inner member.

9. In an adjustable support assembly as set forth in claim 8, said arm having a cam surface formed on the end thereof that is located in said outer member, said cam surface being engaged by said inner member upon upward movement of said inner member to permit the unencumbered movement thereof in an upward direction.

10. In an adjustable support assembly as set forth in claim 9, said restricting means further including an actuating finger that is located exteriorly of said outer member and is actuated for pivoting said arm out of engagement with said inner member, wherein said inner member is free to move downwardly by gravity to a selected vertical position with respect to said outer member.

11. In an adjustable support assembly as set forth in claim 7, said inner member having a longitudinally extending channel formed therein that communicates with the slots formed in said outer member, said channel receiving mounting portions of said support bracket therein that extend through the slots in said outer member, thereby enabling the inner member to be movable with

8

respect to said outer member when said support bracket is mounted on said outer member.

12. In an adjustable support assembly as set forth in claim 11, said inner member having an inner longitudinally extending wall that defines the rear wall of said channel, a plurality of slots formed in said rear wall in vertically spaced relation, said restricting means including an operating member having an arm that is located interiorly of said outer member, means for urging said arm into engagement with said rear wall so that when the inner member moves downwardly, the arm will enter into a slot in the rear wall and restrict further downward movement of said inner member.

References Cited by the Examiner

UNITED STATES PATENTS

357,879	2/1887	Walker	248—423	X
634,091	10/1899	Newlee	108—146	X
1,401,554	12/1921	Phillips	248—161	X
2,044,642	6/1936	Slater	248—243	
2,534,952	12/1950	Comer.		
2,703,691	3/1955	Minnis	287—58	
2,709,818	6/1955	Freese	108—144	X
2,739,777	3/1956	Schoenhardt	108—107	X
3,203,375	8/1965	Schroder	248—246	X

FOREIGN PATENTS

1,141,780	3/1957	France.
14,658	of 1913	Great Britain.

JAMES T. McCALL, *Primary Examiner*.

FRANK B. SHERRY, *Examiner*.