United States Patent

Hartman

[15] 3,652,048

[45] Mar. 28, 1972

[54] VERTICALLY ADJUSTABLE WALL BRACKET ASSEMBLY FOR MOUNTING A SHELF

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[22] Filed: **Aug. 6, 1970**

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[52] **U.S. Cl.**.....**248/243,** 108/108, 211/90, 248/245

[51] **Int. Cl.**.....**A47g 29/02**

[58] **Field of Search**.....248/243, 241, 244, 245, 246; 108/108, 107, 106, 109, 152; 52/36; 211/90, 148

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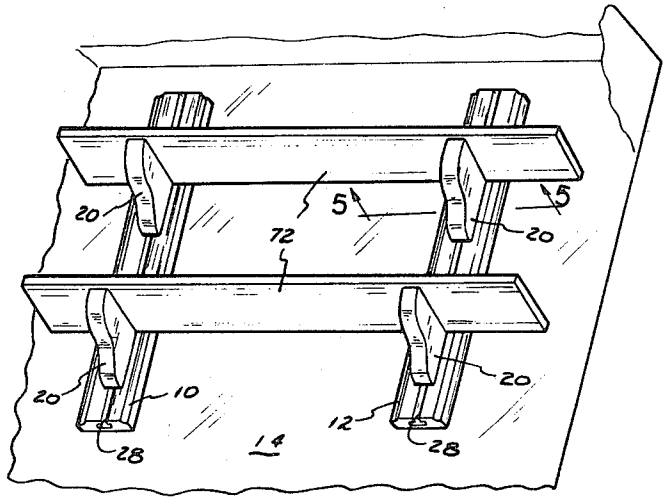
Primary Examiner—J. Franklin Foss

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[57] **ABSTRACT**

A vertically adjustable wall bracket assembly for mounting a shelf having two or more elongated support members adapted to be mounted vertically on a wall, each support member having a vertically disposed T-shaped channel with an anchor plate slidably disposed therein, means on the anchor plate to secure the anchor plate inside the T-shaped channel at any vertical height, and means to attach the anchor plate to a shelf supporting bracket, the shelf supporting bracket being arranged for use as a support for a shelf.

6 Claims, 6 Drawing Figures



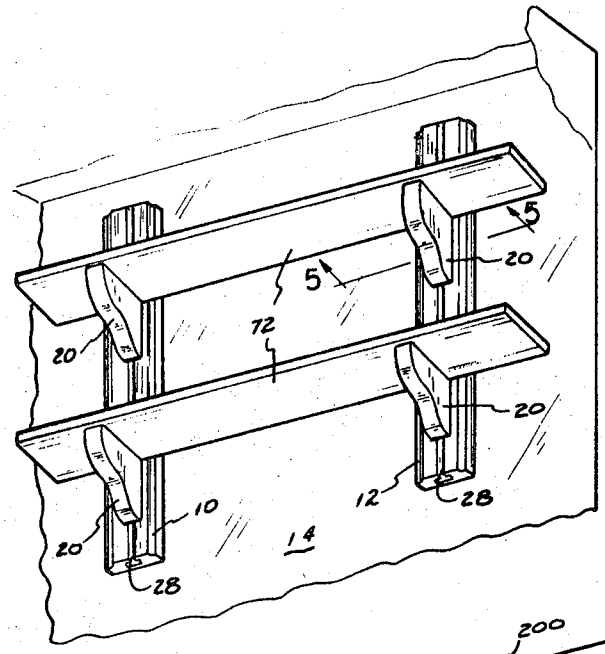


FIG-1

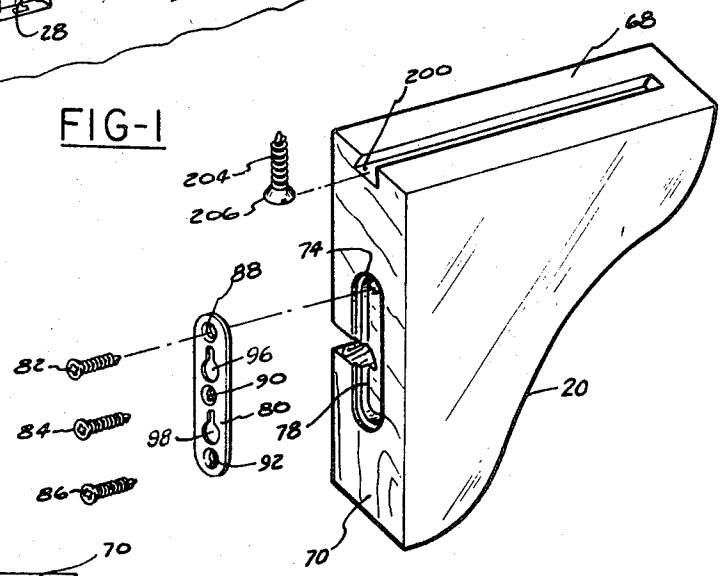


FIG-2

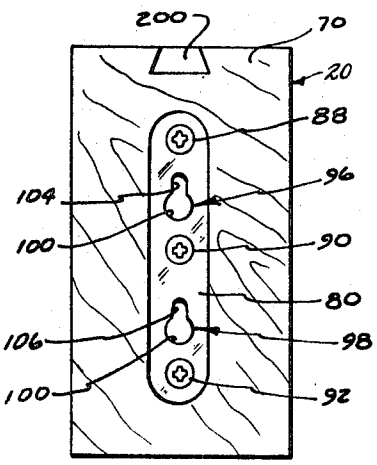


FIG-3

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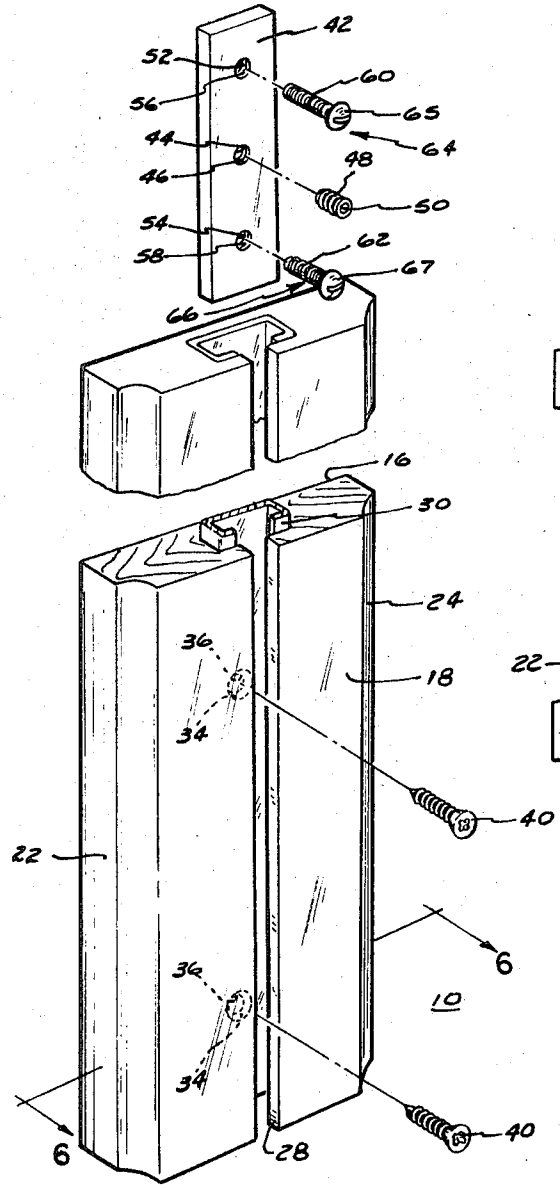


FIG-4

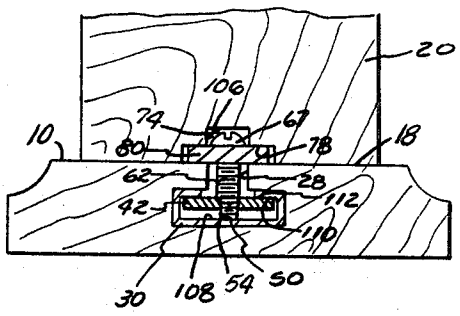


FIG-5

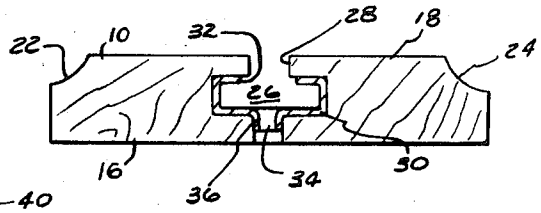


FIG-6

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VERTICALLY ADJUSTABLE WALL BRACKET ASSEMBLY FOR MOUNTING A SHELF

BACKGROUND OF THE INVENTION

I. Field of the Invention

This invention relates to adjustable wall bracket assemblies for mounting shelves and the like, and more particular to infinitely vertically adjustable wall bracket assemblies thereby providing any desired vertical positioning of shelves and the like.

II. Description of the Prior Art

In the prior art vertically adjustable wall bracket assemblies for mounting shelves have been devised in which two or more elongated support members are vertically mounted on a wall. The support members contain a plurality of openings, usually in the form of slots, into which supporting brackets for the shelves may be inserted and locked. To alter the vertical positioning of a shelf, it is necessary to remove it and disengage the shelf supporting brackets from the slots in the wall mounted support member, which is oftentimes a difficult and laborious procedure. A new position for the shelf must be determined and the shelf supporting brackets reinserted into new slots in the support members and the shelves then replaced. However, there are several inherent disadvantages in this type of assembly for mounting shelves. The wall brackets must be mounted very accurately, parallel to each other, otherwise the slots in the support members will not be horizontally aligned and the shelves will be tilted. Secondly, in order to support any reasonable weight on a shelf, it is necessary to provide a rather tight fitting locking engagement between the shelf supporting brackets and the support members. In view of this, it is often difficult and time consuming to separate the shelf supporting bracket from the wall bracket.

Another disadvantage of many slotted bracket systems is that the weight of the shelves often causes the metal in the slot area to bend out, permitting the shelves to sag. Also, it is often difficult to assure accurate alignment of the slots of a plurality of support members, which is required to keep the shelves horizontal.

Finally, it is often desirable to mount a shelf at some vertical height intermediate two sets of slots, which cannot be done due to the limitation of a finite number of vertical slots available.

SUMMARY OF THE INVENTION

Generally, two or more support members, each having a longitudinal T-shaped channel, are mounted vertically on a wall so that the smaller width leg of the T-shaped channel forms a longitudinal groove on the outward face of the support members. An elongated generally rectangular metal channel, having a longitudinal groove, may be placed in that larger width head portion of the T-shaped channel so that the longitudinal groove of the metal channel registers with the smaller width leg portion of the T-shaped channel.

A preferably elongated anchor plate, slidably carried in the metal channel is then adjusted to the desired height and locked in place by tightening a set screw in the anchor plate against the rear inner surface of the metal channel, thereby forcing the forward edges of the anchor plate to frictionally engage with the forward inner edge surfaces of the metal channel adjacent the groove. The anchor plate also holds one or more screws with enlarged heads so that the enlarged heads of the screws protrude through the smaller width leg portion of the T-shaped channel and outwardly of the forward surface of the supporting members. A shelf supporting bracket, having a rear mounting plate with keyhole openings fastened on a stepped recess, is then locked to the anchor plate by engaging the enlarged heads of the screws with the keyhole openings of the mounting plate.

A shelf board is then placed across the shelf supporting bracket.

In view of the disadvantages of shelf support systems heretofore in common use, it is therefore a primary object of the invention to provide a vertically adjustable wall bracket assembly for mounting shelves and the like, comprising at least two support members for mounting at least two shelf supporting brackets at any desired vertical position.

Another object of the invention is to provide a vertically adjustable wall bracket assembly for mounting shelves and the like in which each shelf supporting bracket may be independently vertically adjusted to any vertical height along the wall mounted support member, thereby eliminating the necessity of absolute parallelism or other alignment of the support members in order to obtain a horizontal shelf.

Another object of the invention is to provide a shelf supporting bracket which is readily installed and removed from the wall mounted support member.

Another object of the invention is to provide a vertically adjustable wall bracket assembly for mounting shelves and the like in which the wall mounted support member has adjustable means for tightening of the connection between it and the shelf supporting bracket.

Another object of the present invention is to provide a vertically adjustable wall bracket assembly for mounting shelves and the like which may be installed and adjusted by an unskilled persons using only simple tools, such as a screw driver.

DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the invention, reference may be had to the accompanying drawings in which like reference characters refer to like parts throughout the several views, and in which:

FIG. **1** is a perspective frontal view of assembled wall mounted support members and shelf supporting brackets with a shelf-board supported by the brackets;

FIG. **2** is an exploded perspective view illustrating the shelf supporting bracket and the means by which the shelf supporting bracket is attached to the wall mounted support member;

FIG. **3** is an elevational view of the rear surface of the shelf supporting bracket;

FIG. **4** is an exploded perspective view of the wall bracket assembly illustrating the means by which the support member is attached to the wall and adapted to carry the shelf supporting bracket;

FIG. **5** is a cross-sectional view taken substantially along line **5—5** of FIG. **1**; and

FIG. **6** is a cross-sectional view taken substantially along line **6—6** of FIG. **4**.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown, the vertically adjustable wall bracket assembly for mounting a shelf comprises at least two elongated support members **10** and **12** fastened vertically against a wall **14**. As shown, these members are made of wood, but they may also be made from roll-formed metal. Since the support members **10** and **12** are substantially identical, a description of the member **10** will suffice as a description of both. The support member **10** has a substantially flat rear surface **16** which abuts the wall **14** when installed, a substantially flat front surface **18** which is preferably parallel the rear surface **14** and engages a shelf supporting bracket **20**. Side surfaces **22** and **24** of the support member **10** serve no functional purpose, but may be utilized for decoration or styling.

Preferably midway between the side surfaces **22** and **24** on the support member, as shown in FIGS. **4–6**, and elongated T-shaped channel **26** is longitudinally routed out of the support member **10** so that the bottom of the "T" forms a longitudinal groove **28** in the front surface **18**. An elongated metal, generally rectangular, channel member **30**, having a longitudinal groove **32** to provide an opening to the inside of the channel member **30** in conjunction with the groove **28**, is closely fitted into the head portion of the "T" of the T-shaped channel **26**. After the metal channel **30** has been longitudinally inserted into the T-shaped channel **26** of the support member **10**, a number of holes **34** may be punched or ex-

truded through the metal channel **30** and the wooden support member **10**, as seen in FIG. **6**, to form a frustoconical shaped or tapered portion **36** at the point of extrusion, and the hole **34** opens through the rear surface **16** of the support member **10**. The tapered portion **36** has a twofold purpose; first, it serves to grip the support member **10** and firmly retain the metal channel **30** to the support member **10** against longitudinal displacement and secondly, it serves as a countersink for a screw **40** which is used to secure the support member **10** against the wall **14**, so that the head of the screws **40** will not interfere with the other components of the assembly.

An elongated barlike anchor plate **42** is sized to slidably fit into the metal channel **30**, as shown in FIG. **4**. A hole **44** is provided preferably near the center of the anchor plate **42** and is threaded as at **46** to be engaged by the threads **48** of a set screw **50**. In addition, two other holes **52** and **54** are provided as shown, threaded as at **56** and **58**, to be engaged by the threads **60** and **62** of screws **64** and **66** having enlarged diameter head portions **65** and **67** respectively. The screws **64** and **66** are preferably disposed on each side of the hole **44** and on a longitudinal center line passing therethrough. The purpose and operation of the anchor plate **42** and the parts attached to it will be later described in detail.

The shelf supporting bracket **20**, shown in FIGS. **2** and **3**, is preferably made of wood and has two substantially flat and perpendicular surfaces **68** and **70**. The upper surface **68** of the shelf supporting bracket **20** lies in a horizontal plane, when assembled, and is utilized to support a shelf board **72**, as shown in FIG. **1**.

A trapezoidal groove **200** may be routed through the upper surface **68** of the shelf supporting bracket **20** to be engaged by the heads **206** of screws **204** which are screwed into the bottom side of the shelf board **72** providing a strong mechanical engagement between the shelf board **72** and the shelf supporting bracket **20**.

The rear surface **70** of the shelf supporting bracket **20** lies in a vertical plane and, when assembled, abuts against the outer surface **18** of the support member **10**. An elongated, generally oval shaped, stepped recess **74** is formed on a vertical centerline in the rear surface **70** of the shelf supporting bracket **20**, thereby providing a generally oval-shaped shoulder **78**, as best shown in FIGS. **2** and **5**. A metal plate **80**, having an oval shape and thickness substantially identical to the shape and depth of the larger portion of the recess **74** is inserted therein so that when it rests on the shoulder **78** it is flush with the surface **70** of the shelf supporting bracket **20**. Preferably, three screws **82**, **84** and **86** inserted through three countersunk holes **88**, **90** and **92**, in the plate **30** respectively, are screwed into the inner surface of the recess **74** to secure the plate **80** to the shelf supporting bracket **20**. Two keyhole openings **96** and **98** are formed in the plate **80**, having generally circular lower portions **100** with a diameter large enough so that the heads **65** and **67** of the screws **64** and **66** extending from the anchor plate **42**, may easily pass through, the bracket **20** then being pushed downward to engage the screw threads **60** and **62** **64** and **66** of the screws **60** in the smaller portions **104** and **106** of the keyhole openings **96** and **98** to thereby affix the bracket **20** to the anchor plate **42** on assembly.

In summary, the fabrication and complete assembly of the invention is as follows: the support members **10** and **12** are each preferably factory formed and the T-shaped channel **26** is routed in. The metal channel **30** is inserted lengthwise into the T-shaped channel **26** and the countersunk holes **34** are punched through. Each of the assembled structures is secured to the wall **14** by the screws **40** in a generally vertical position. The anchor plate **42** is then inserted lengthwise into the metal channel **30** and adjusted to the desired shelf height. The set screw **50** is then tightened against the rear inner surface **108** of the channel **30**, thereby forcing front edges **110** of the anchor plate **42** to engage the front inner surface **112** of the channel **30**, as best shown in FIG. **5**. The elongated nature of the anchor plate **42** provides a long edge surface **110**, thereby providing a firm frictional engagement between the two surfaces **110** and **112** capable of supporting comparatively heavy loads. The screws **64** and **66** are then screwed into holes **52** and **54** of the anchor plate **42** with their heads extending outwardly enough to engage with the keyhole openings of the shelf supporting bracket plate **80**.

A shelf supporting bracket, with the plate **80** properly secured thereto by the screws **82**, **84** and **86**, may then be attached to each of the wall brackets **10** and **12** by engaging the heads **65** and **67** of the screws **64** and **66** with the keyhole openings of the plate **80** and pushing the shelf bracket **20**, downwardly thus firmly locking the shelf bracket **20** to the support member **10**. If a stronger engagement between the shelf **72** and the shelf supporting bracket **20** is desired, the screws **204** may be screwed into the bottom side of the shelf **72** and the screw heads **206** may be inserted into the trapezoidal grooves **200** of a pair of brackets prior to the engagement of shelf supporting brackets **20** with the supporting members **10** and **12**. In this way the shelves **72** are securely locked in place and cannot be removed without removing the brackets **20**.

If the screws **204** are not used with shelf supporting brackets **20** similarly installed on each support member **10** and **12** at substantially the same vertical height, a shelf board **72** is then placed on the upper surfaces **68** of the shelf supporting brackets **20**, to complete the shelf assembly. Vertical adjustment to level the shelves can then be made by loosening the set screws **50** and moving the anchor plates **42** vertically before again tightening the set screws **50**. The anchor plate **42** can, of course, be removed at this point by grasping and moving the bracket **20**.

It will be apparent that a number of shelves may be mounted to each set of support members. It should also be obvious that any shelf height, within the limits of the wall brackets **10** and **12**, may be obtained with the use of convenient tools by merely lifting the shelf supporting brackets **20** off the the screws **64** and **66**, loosening the set screws **50**, adjusting the anchor plates **42** to new positions, retightening the set screws **50**, and re-installing the shelf supporting brackets **20**.

It will be apparent that the foregoing description of the invention is for illustrative purposes only and that modifications and alterations may be made to the invention by those skilled in the art without departing from the spirit of the inventions or the scope of the appended claims.

What is claimed is:

1. A vertically adjustable wall bracket assembly for mounting one or more shelves on a wall, comprising:

at least two elongated support members;

first means for securing said support members vertically on the wall;

each support member having a longitudinal T-shaped channel with the smaller width leg portion thereof opening from the outer surface of the support member opposite the wall abutting surface thereof;

a rectangular elongated metal channel having a longitudinal groove inserted in the larger width head portion of the T-shaped channel of the support member so that the longitudinal groove of the metal channel registers with the smaller width leg portion of the T-shaped channel;

at least one shelf supporting bracket;

an anchor plate slidably carried in said metal channel;

second means for locking the anchor plate in any adjusted longitudinal position in said metal channel, said second means comprising at least one set screw member threadably engaged with the anchor plate and abutting against the inner base surface of the metal channel, thereby urging the anchor plate outwardly to frictionally engage its edges with the lower edge surfaces of the elongated metal channel adjacent its longitudinal groove to lock the anchor plate against longitudinal displacement; and

third means for securing a shelf supporting bracket to the anchor plate.

2. The invention according to claim **1** wherein said third means comprises:

one or more screws with enlarged heads, the screws being adjustably threadably engaged with the anchor plate with their enlarged heads protruding outwardly through the longitudinal groove of the metal channel member and the leg portion of the anchor plate T-shaped channel;

a recess in one surface of said shelf supporting bracket closed by a mounting plate secured to the bracket and flush with said one surface;

keyhole openings in said mounting plate and registering for engagement with the enlarged heads of the screws engaged with said anchor plate.

3. The invention according to claim 1 wherein said first means comprises one or more holes punched through said metal channel and the rear surface of said support members, the edges of the hole through the metal channel tapering rearwardly into and gripping the said support member, and screw members inserted through said holes for further attaching said metal channel to said support member and said support member to said wall.

4. A vertically adjustable wall bracket assembly for mounting one or more shelves on a wall, comprising:

at least two elongated support members, each support member having a longitudinal T-shaped channel with the smaller width leg portion thereof opening from the outer surface of the support member opposite the wall abutting surface thereof;

at least one shelf supporting bracket;

an anchor plate slidably carried in the T-shaped channel of the support member;

second means for locking the anchor plate in any adjusted longitudinal position in the T-shaped channel, said second means comprising at least one set screw member threadably engaged with the anchor plate and abutting against the inner surface of the T-shaped channel, thereby urging the anchor plate outwardly to frictionally engage its edges with the inner edge surfaces of the T-shaped channel adjacent its leg portion to lock the anchor plate against longitudinal displacement; and

third means independent of said set screw member for securing said shelf supporting bracket to the anchor plate whereby said anchor plate can be first locked into position with respect to said support members and then said shelf supporting bracket can be secured to said anchor plate

5. The invention according to claim 4 wherein said first means comprises one or more holes punched through said support members and screw members inserted through said holes for attaching said support members to said wall.

6. The invention according to claim 4 wherein said third means comprises:

at least one screw with an enlarged head, said screw being adjustably threadably engaged with the anchor plate with its enlarged head protruding outwardly through the leg portion of the T-shaped channel;

a mounting plate on one surface of said shelf supporting bracket secured to the bracket and flush with said one surface; and

keyhole openings in said mounting plate and registering for engagement with the enlarged head of the screw engaged with said anchor plate.

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,652,048 Dated March 31, 1972

Inventor(s) Lawrence Hartman (HWP-100-A)

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

IN THE REFERENCES CITED:

under Foreign Patents or Applications, please insert --1,314,012 - French - 11-1962 - Versatile - 248/245--

IN THE SPECIFICATION:

Col. 3, line 56, after "60 and 62" insert --of the screws--

Col. 4, line 35, change "the" second occurrence to --of--

Signed and sealed this 26th day of September 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents