United States Patent [19]

Yamazaki

[11] **3,763,615**

[45] **Oct. 9, 1973**

[54] **METHOD OF CONSTRUCTING A WINDOW ACCESSORY**

[76] Inventor: **Keiichirou Yamazaki,** 12-1, 6-chome Kaneido, Kouton-ku, Tokyo, Japan

[22] Filed: **Jan. 12, 1972**

[21] Appl. No.: **217,112**

[30] **Foreign Application Priority Data**

Jan. 27, 1971 Japan 46/2398

[52] **U.S. Cl.** **52/507,** 49/50, 52/741

[51] **Int. Cl.** **E04g 3/14,** E06b 3/68

[58] **Field of Search** 52/202, 664, 665, 52/311, 480, 487, 461, 106, 741, 507; 182/93, 99, 82; 49/50–57

[56] **References Cited**

UNITED STATES PATENTS

406,048 7/1889 Kinnear 52/478

Primary Examiner—Frank L. Abbott
Assistant Examiner—James L. Ridgill, Jr.
Attorney—Eric H. Waters et al.

[57] **ABSTRACT**

A method of constructing a window accessory, such as a window railing or a window lattice, in which the window accessory is attached to the side wall of the building while being assembled at the same place, that is to say, at the height of the window. There is no need for lifting a heavy finished accessory of great bulk up to the height of the window, because it is not required to assemble such an accessory on the ground.

8 Claims, 16 Drawing Figures

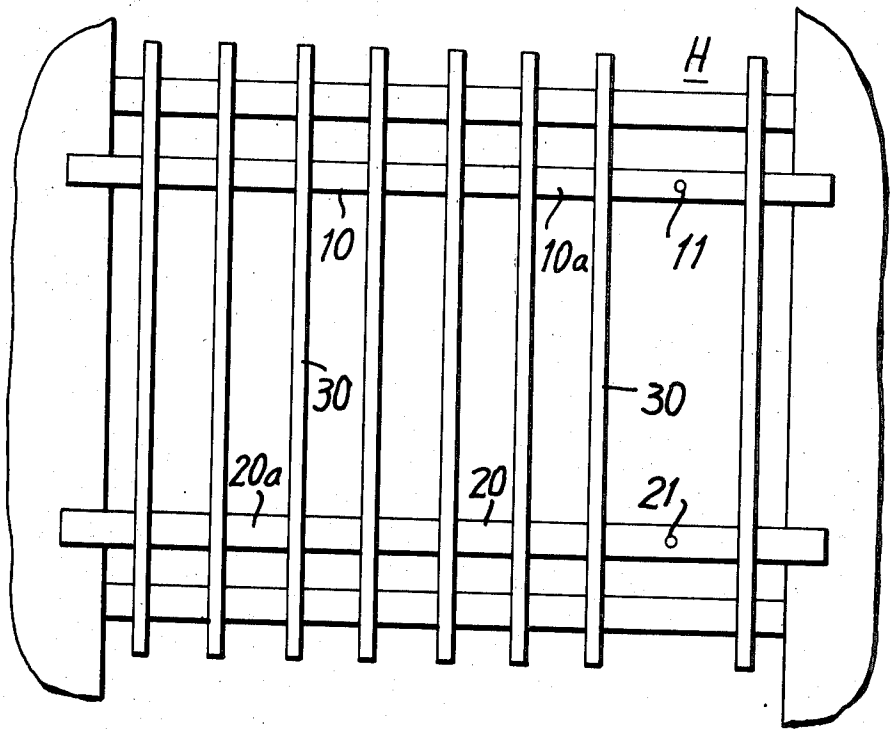


FIG. 1A

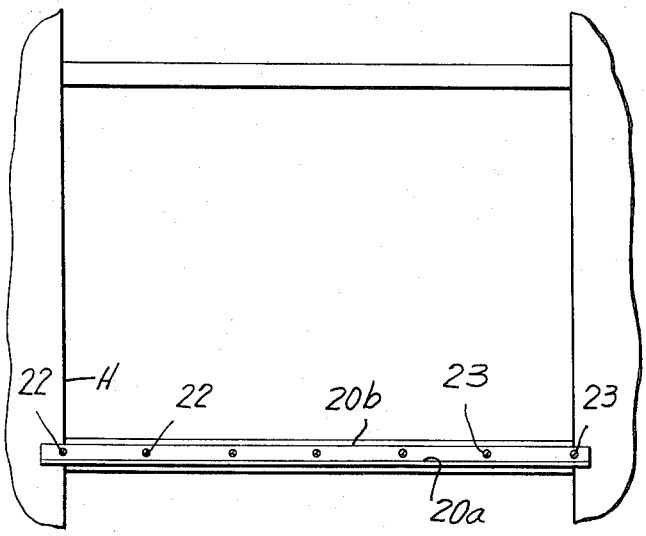


FIG. 1B

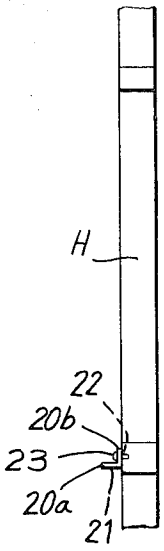
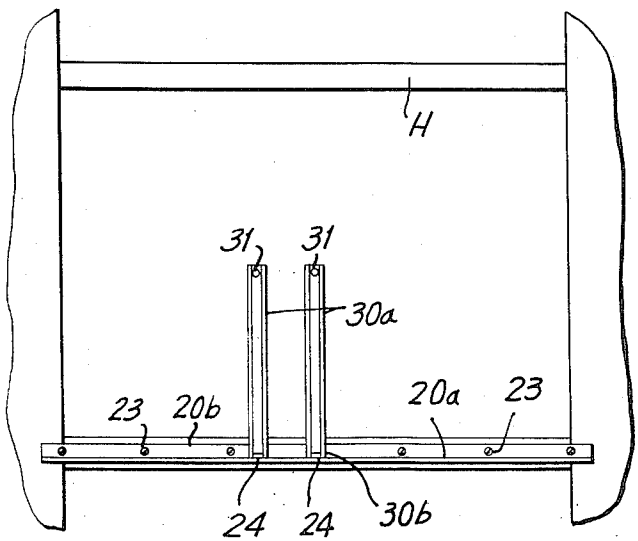


FIG. 2B

FIG. 2A



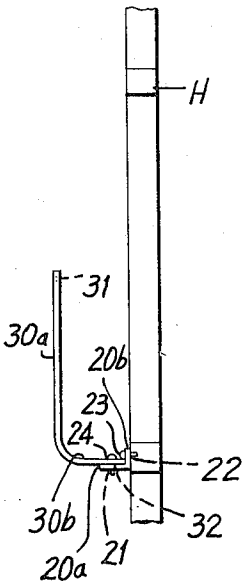


FIG. 3A

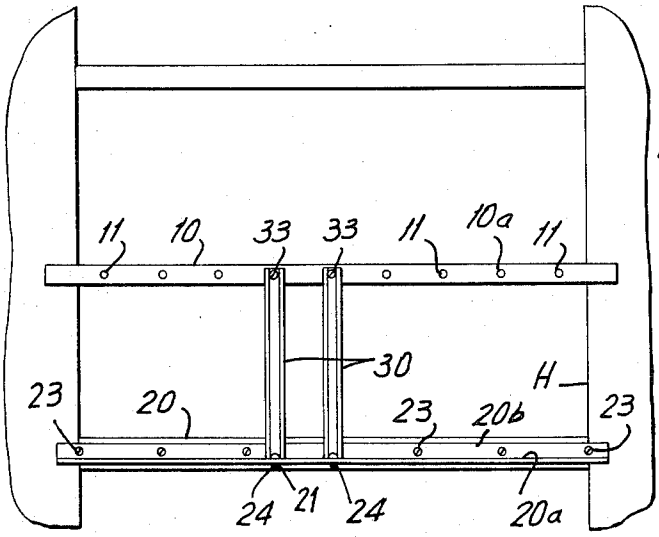


FIG. 3B

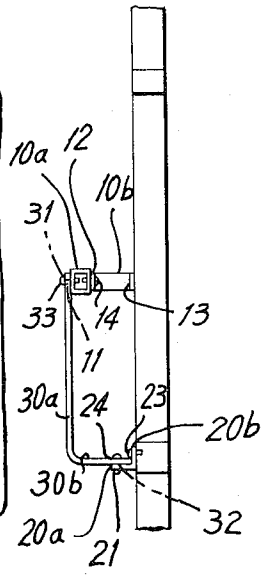


FIG. 4A

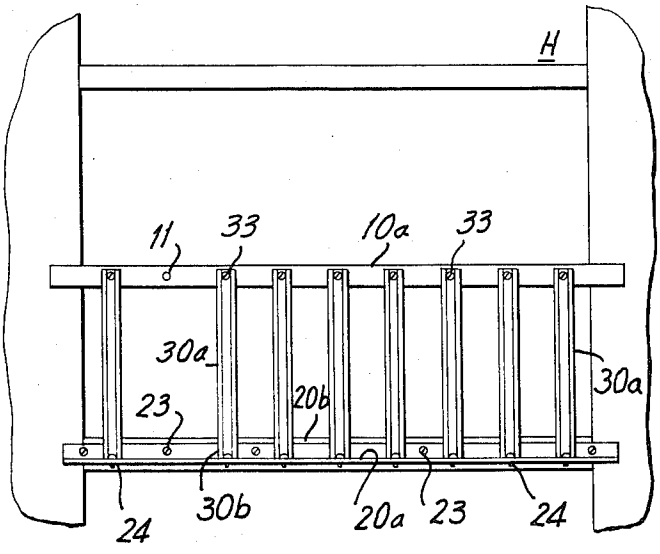


FIG. 4B

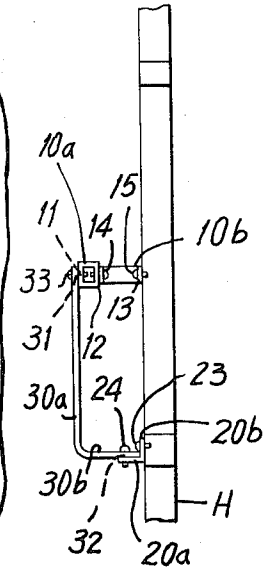


FIG. 5A

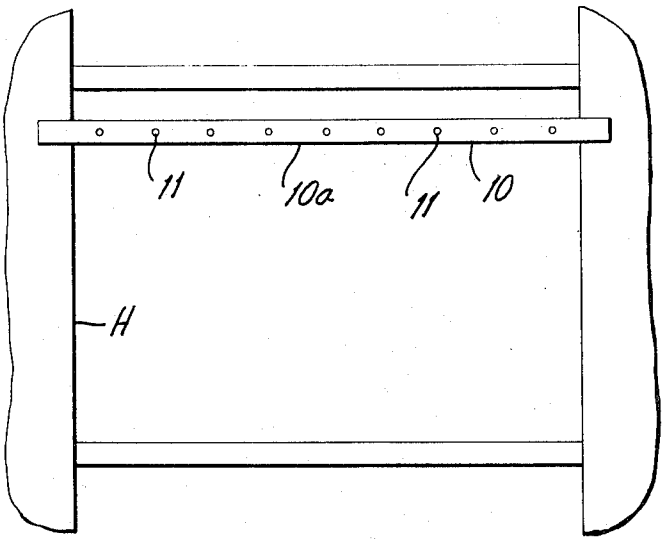


FIG. 5B

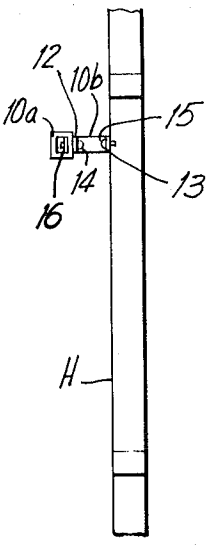


FIG. 6A

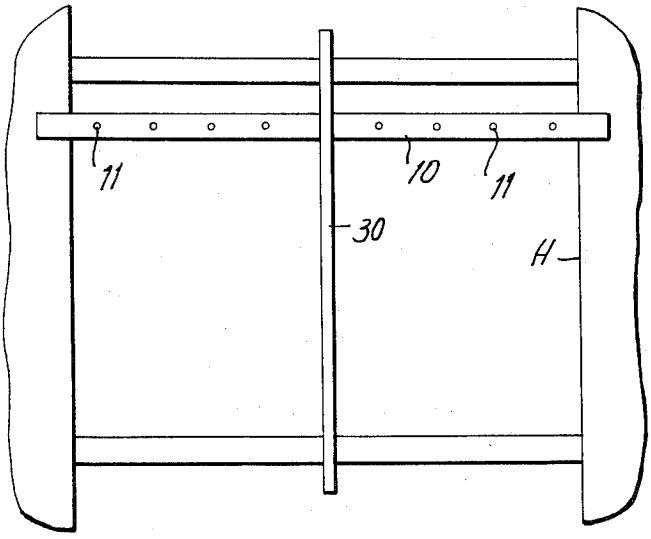


FIG. 6B

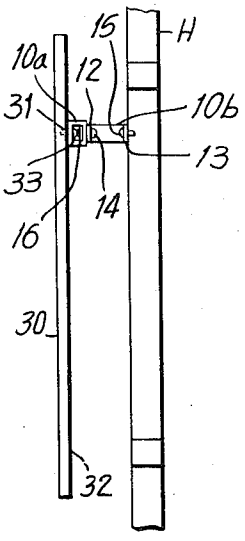


FIG. 7A

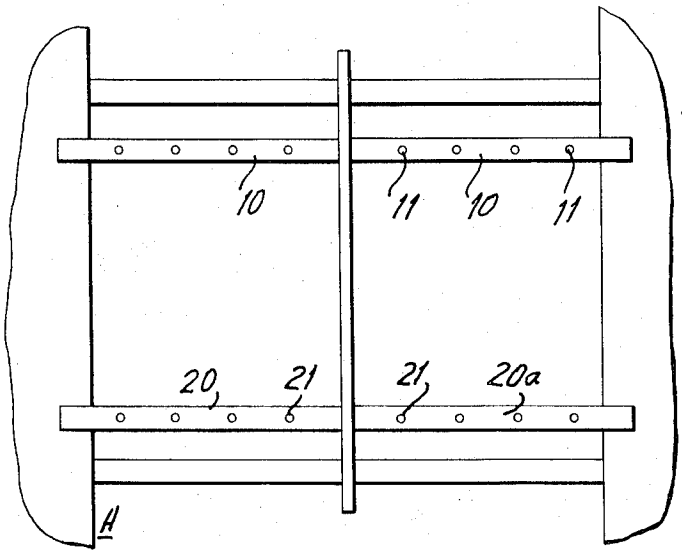


FIG. 7B

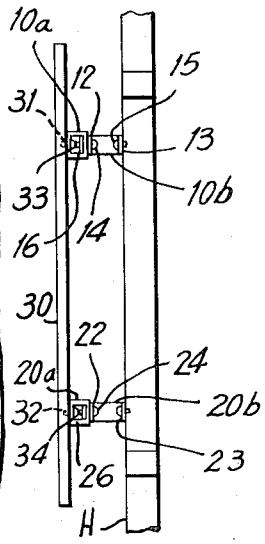


FIG. 8A

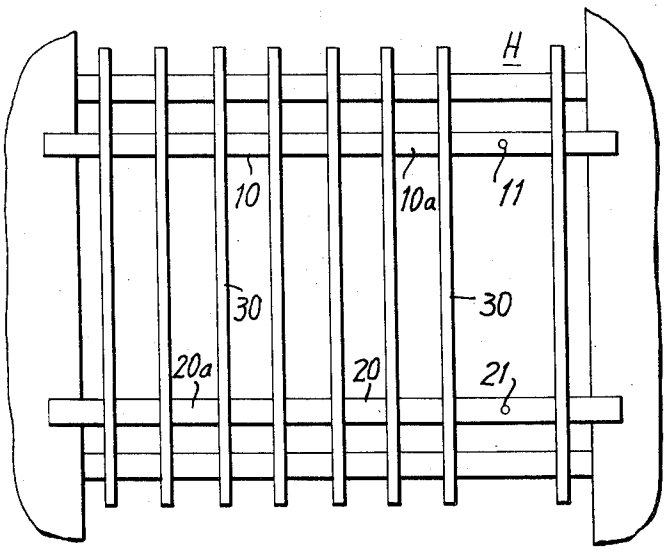
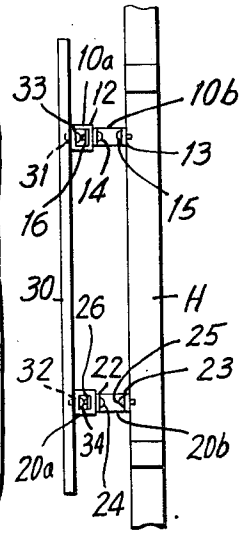


FIG. 8B



METHOD OF CONSTRUCTING A WINDOW ACCESSORY

BACKGROUND OF THE INVENTION

The present invention relates to a method of constructing a window accessory and, more particularly, to a method of attaching a window accessory to the side wall of the building while assembling it at the same place. Said window accessory is a bar assembly comprising at least two horizontal bars and a plurality of vertical bars which are connected each other at right angles. Such a bar assembly includes a window railing, a window lattice or the like.

THE PRIOR ART

In the prior art, such a window accessory has been assembled by welding or rivetting. Usually, the window accessory is completely assembled by skilled workmen at a remote shop and then transported to the attaching site, because there is need for providing some peculiar machines or apparatuses unadapted to carry about in order to accomplish all of the welding or rivetting operations. Such a finished window accessory is, however, so bulky that there is need for a large amount of storage space and packing material. It cannot be packed up so efficiently. In addition, it is almost impossible or very difficult to transport the finished window accessory from the assembling shop to the remote attaching site unless a plurality of workers cooperate each other, since the finished accessory as a whole is considerably heavy and bulky. For the same reason, it is impossible or very difficult for a single worker to lift up the completed accessory to the height of the window and then to attach it to the required side wall of the building. Thus, most prior art window accessory which require some unhandy machines and a plurality of skillful workers are considerably expensive and cannot be widely used, because an abundant supply of cheap labour cannot be almost expected.

Recently, in order to said disadvantages due to shop-assembling, a knockdown window accessory that may be assembled at the attaching site by means of setscrews or the like has been proposed. But, in effect, such a knockdown accessory is completely assembled on the ground, and then the completed accessory is lifted up to the required height by plurality of workers. Consequently, there still remains disadvantages resulting from handling a bulky finished window accessory of great weight with cooperation of more than two workers.

OBJECT OF THE INVENTION

An important object of the present invention is to provide a method for constructing a window accessory in which the window accessory will be attached to the side of the building while being assembled at the same place.

Another object of this invention is to provide a method of a window accessory whereby the window accessory can be constructed by a single unskilled worker at relatively low cost.

SUMMARY OF THE INVENTION

In accordance with the present invention, there is provided a method of constructing a window accessory in which one of the two horizontal bars is first fixed to the side of the building, at least one vertical bar is next fixed to said horizontal bar, the other horizontal bar is then fixed to said vertical bar, and the other horizontal bar is last fixed to side of the building.

Numerous other objects and advantages of the present invention will become readily apparent from the following detailed description taken in conjunction with the accompanying drawings which show the preferred embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** to **4** show each step of the first embodiment of the present invention, in which A is a front view of a window railing and B is a side view of it; and

FIG. **5** to **8** show each step of the second embodiment of this invention, in which A is a front view of a window lattice and B is a side view of it.

DETAILED DESCRIPTION OF THE INVENTION

In the preferred embodiment shown in FIG. **1, 2, 3** and **4,** the window accessory is a window railing of which components will be readily interconnected by simple securing means such as a setscrew.

The main components of this window railing are an upper horizontal bar **10,** a lower horizontal bar **20** and nine vertical bars **30.** The upper horizontal bar **10** consists of a body member **10***a* of a square pipe and an arm member **10***b* of a U-shaped plate. The body member **10***a* is provided with a series of nine tapped holes **11** on the front wall at equal spaces, which the tapped holes **11** serve as connections with the L-shaped vertical bars **30.** Alternatively, said tapped holes as connections **11** may be provided on any wall other than the front wall, that is to say, on the top wall, the bottom wall or the rear wall. Said U-shaped arm member **10***b* has a front leg **12** and a rear leg **13** which are parallel to each other. The front leg **12** is fixed to the rear wall of the body member **10***a* by means of setscrews **14.** On the other hand, the rear leg **13** will be fixed to the side wall of the building H by means of setscrews **15,** that is to say, this rear leg **13** will serve as connection with the building H. Said screw connections **11** with the vertical bars **30** are, therefore, completely separated from this screw connection **13** with the building H. The arm member **10***b* is usually attached to both ends of the body member **10***a.* If there is a door receptacle at one side of the window, said U-shaped arm member **10***b* will be removed from the side concerned to enable slide doors to pass by. In that case, said end of the body member **10***a* will be fixed to the side wall of the door receptacle by another attaching member which cannot prevent the slide door from passing through there. The L-shaped vertical bars of channel steel have a vertical member **30***a* and a horizontal member **30***b.* The vertical member **30***a* is provided with a hole **31** on the upper end, which will serve as connection with the body member **10***a* of the upper horizontal bar. The rear end of the horizontal member **30***b* is provided with a hole **32** which will serve as connection with the lower horizontal bar **20.** The lower horizontal bar **20** of a angle bar has a horizontal member **20***a* and a vertical member **20***b.* This horizontal member **20***a* is provided with a series of nine tapped holes **21** at the same spaces as said tapped holes **11** on the body member **10***a.* These tapped holes **21** will serve as connections with the horizontal members **30***b* of the L-shaped vertical bars **30.** Said vertical member **20***b* is provided with seven holes **22** which will serve as connections with the building H.

Thus, these connections **22** with the building H are separated from said connections **21** with the vertical bars **30.** As a result of the above arrangement, fixing of the vertical bar **30** to the lower horizontal bar **20** will not hinder fixing of the lower horizontal bar **20** to the building H, in other words, it will be possible to fix the lower horizontal bar **20** to the building H after the vertical bar **30** is fixed to the lower horizontal bar **20.**

The operation of the preferred embodiment of the invention is initiated with fixing one of the two horizontal bars, for example, the lower horizontal bar **20** to the side wall of the building H. The portion of the building H to which the lower horizontal bar **20** is fixed is a window sill constituting the lower part of the window frame. As shown in FIG. **1,** the position of the horizontal bar **20** is preferably adjusted so that the upper edge of the vertical member **20***b* may extend substantially parallel to the top surface of the window sill. Thus, the horizontal bar **20** is fixed to the window sill by means of nails or setscrews **23** which will be passed through said holes **22.**

In the next step shown in FIG. **2,** two L-shaped vertical bars **30** will be fixed to the above horizontal bar **20.** The vertical bars which will occupy the front central part of the finished window railing are preferably selected for the vertical bars concerned. The horizontal member **30***b* of the above-mentioned vertical bar **30** is placed onto the horizontal member **20***a* of the lower horizontal bar **20,** and the rear surface of the horizontal member **30***b* is brought into close contact with the front surface of the vertical member **20***b*. Thus, these two vertical bars **30** and the lower horizontal bar **20** are fixedly connected to each other at right angles by means of the setscrews **24** which are inserted through the holes **32** and then threadedly engaged with the tapped holes **21.**

In the third step illustrated in FIG. **3,** the other horizontal bar, that is to say, the upper horizontal bar **10** will be fixed to said two vertical bars **30** in the following manner. The vertical member **30***a* of the vertical bar is brought into contact with the front wall of the body member **10***a* of the upper horizontal bar at its rear surface, and then said horizontal bar **10** and two vertical bars **30** are interconnected at right angles by means of setscrews **33** which are passed through the holes **31** and threadedly engaged into the tapped holes **11.** Since these L-shaped vertical bars **30** are of the same shape and dimention, and the tapped holes of the upper horizontal bar **10** are provided at the same spaces as the tapped holes **21** of the lower horizontal bar **20,** said two vertical bars **30** can extend parallel to each other. For the same reason, the upper and lower horizontal bar **10** and **20** can be arranged in parallel to each other. In this way, the correct framework of the window railing can be surely constructed.

In the next step shown in FIG. **4,** the upper horizontal bar **10** is fixed to the side of the building H by means of a setscrew **15.** This setscrew **15** passes through a hole in the rear leg **13** of the arm member **10***b*.

In the last step, the remainder of the L-shaped vertical bars **30** are fixed to both horizontal bar **10** and **20** in the same manner as the above-mentioned. Alternatively, all of the nine vertical bars **30** may be fixed to them in the second step. Further, the vertical bar that will occupy each end portion of a finished window railing may be selected instead of said bars occupying the central portion in the second step. If the upper horizontal bar **10** can be surely held at right angles to the vertical bar **30** by another suitable arrangement, for example, by employing at least two setscrews, a single vertical bar **30** may be fixedly attached to one of the two horizontal bars at the second step.

In the other preferred embodiment of the present invention illustrated in FIG. **5, 6, 7** and **8,** the window accessory is a window lattice which is composed of two horizontal bars **10** and **20** and nine vertical bars **30,** and these components will be assembled by means of setscrews.

This upper horizontal bar **10** consists of a body member **10***a* of C-shaped cross section and a arm member **10***b* of U-shaped plate. The body member **10***a* is provided with a series of nine holes **11** which will serve as connections with the upper ends of the vertical bars **30.** The front leg **12** of the arm member **10***b* is fixedly connected to the rear wall of the body member **10***a* by means of setscrews **14** and nut plate **16.** The rear leg **13** of the arm member is adapted to be fixedly connected to the side wall of the building H by means of nails or setscrews **15.** Since these connections **11** with the vertical bars **30** and connections **13** with the building H are provided in different portions in such a manner, fixing of the vertical bar **30** to the upper horizontal bar **10** will not interfere with fixing of the upper horizontal bar **10** to the building H, in other words, fixing of the upper horizontal bar **10** to the building H will not obstruct the vertical bar **30** to the upper horizontal bar **10.** The lower horizontal bar **20** is constructed in the same manner as the upper horizontal bar **10,** and the front leg **22** of the U-shaped arm member **20***b* is fixed to the rear wall of the C-shaped body member **20***a* by means of setscrews **24** and nut plate **26.** The rear leg **23** of the arm member **20***b* is adapted to be fixedly connected to the building H by means of nails or setscrews **25.** The vertical bar **30** is made of a square pipe. A tapped hole **31** that will serve as connection with the upper horizontal bar **10** is provided on the upper end portion of the rear wall of the vertical bar **30.** On the other hand, a tapped hole **32** that will serve as connection with the lower horizontal bar **20** is firmed in the lower end portion of said rear wall.

The operation of the second embodiment of this invention is initiated with fixing one of the two horizontal bars, for example, the upper horizontal bar **10** to the side wall of the building H.

Firstly, the upper horizontal bar **10** is is fixedly connected to the side of the building H in the horizontal position. In this case, the upper window sill constituting the upper portion of the window frame may be utilized as a horizontal standard. The rear leg **13** of the arm member **10***b* will be fixed to the building by said setscrews after the body member **10***a* is positioned parallel to said window sill, as illustrated in FIG. **5***a* and **5***b*.

In the second step as shown in FIG. **6***a* and **6***b*, at least one vertical bar **30** which will occupy the front central portion of the finished window lattice is fixedly connected to said upper horizontal bar **10** at right angles by means of the setscrew **33** that will be passed through the hole **11** in the body member **10***a* and then threadedly engaged into the tapped hole **31** in the vertical bar **30.** A ruler may be used to ensure such a right-angled arrangement, if desired.

In the third step of the present method, the other horizontal bar, that is to say, the lower horizontal bar **20** is fixedly connected to said vertical bar **30** at right an-

gles by means of the setscrew **34** which will be passed through the hole **21** in the body member **20***a* and then threadedly engaged with the tapped hole **32** in the vertical bar **30.** Thus, the lower horizontal bar **20** can extend parallel to the upper horizontal bar **10,** because these holes **21** are provided at the same spaces as those holes **11.** Consequently, the proper framework of this window lattice could be unerringly constructed, as illustrated in FIG. **7.**

In the next step shown in FIG. **8***a* and **8***b*, said lower horizontal bar **20** is fixedly connected to the side wall of the building H. In this case, the rear leg **23** of the arm member **20***b* is fixed to the building H by nail or setscrew **25.**

Lastly, the remainder of the invention bars **30** will be fixed to these horizontal bar **10** and **20** in the same manner as described before. Alternatively, all of those vertical bars **30** may be fixed to them at the second step. If the vertical bar that will stand at the end portion of the finished widow lattice will be selected for the vertical bar which is first fixed at the second step, the side surface of the window frame will be utilized for the s standard for arranging said vertical bar at right angles to the upper or lower horizontal bar **10** or **20.**

According to the present invention, the window accessory can be fixedly attached to the side wall of the building H while being assembled at the same place, that is to say, at the height of the window. As a result of this, there is no need for storing the considerably heavy finished window accessory of great bulk in a warehouse and for transporting it to the remote attaching site. The window accessory need not be assembled at a shop, in other words, it can be stored and transported in the form of nonbulky components convenient for packing and handling. This contributes substantially to the mosy efficient utilization of storage space and considerable reduction of storing and transporting costs.

Furthermore, there is no need for lifting a bulky finished accessory of great weight up to the height of the window, because the window accessory need not be a assembled on the ground. This is the remarkable difference of the present invention from the simple knockdown window accessory of the prior art. Since such a window accessory may be transported and lifted up in the form of the comparatively light components of no great bulk, it can be completely assembled and attached by a single unskilled worker. This reduction of required worker to a minimum will serve to reduce the assembling and attaching costs. Thus, this method according to the present invention will have numerous advantages if a considerable rise of personnel expenses is taken into consideration. In addition, there is no need for providing a scaffold or ladder, because all of the operations can be performed from the inside of the building H.

Furthermore, if setscrews are used as securing means of those components, any skilled worker is not required for assembling. Such a window accessory can be readily assembled by untrained hands. Of course, it is possible to use any other securing means than a setscrew, such as a anchor rivet in which a tapered pin will be hammered or drawn to open a skirt, or a key which will be inserted into a tongue of the vertical bar projecting into the opposite side of the horizontal bar. These securing means are preferably suitable for field operations Needless to say, it is possible to vary the material and shape of these horizontal or vertical bars. Other embodiments of the invention employing the same or equivalent principles may be used by those skilled in the art without departing from the present invention.

What is claimed is:

1. A method of constructing a window accessory consisting of two horizontal bars and a plurality of vertical bars, comprising a first step of attaching one horizontal bar to the side wall of a building by fastening means driven into the side wall through holes in said one horizontal bar, a second step of attaching two vertical bars occupying the front central portion of the window accessory to said one horizontal bar at one end by means of setscrews inserted into holes formed in said vertical bars and then threadedly engaged with tapped holes formed in said one horizontal bar, a third step of attaching the other horizontal bar to said vertical bars at the other end by means of setscrews inserted into holes formed in said vertical bars and then threadedly engaged with the tapped holes formed in said other horizontal bar, a fourth step of attaching said other horizontal bar to the side wall of the building by fastening means driven into said side wall through holes formed in said horizontal bar, and the last step of attaching other vertical bars to said two horizontal bars at each end by means of setscrews inserted into holes formed in said vertical bars and then threadedly engaged with holes formed in said horizontal bars.

2. The method as defined in claim **1** wherein said fastening means comprises nails.

3. The method as defined in claim **1** wherein said fastening means comprises setscrews.

4. A window accessory construction in a building comprising, in combination, a first horizontal bar attached to the wall of the building with fastening means driven into said walls through holes formed in said first horizontal bar two vertical bars occupying the front central portion of the window accessory attached to said first horizontal bar at one end by means of screws inserted into holes in said vertical bars and threadedly engaging tapped holes in said first horizontal bar, a second horizontal bar attached to said vertical bars at the other end by screws inserted into holes in said vertical bars and threadedly engaging tapped holes in said second horizontal bar, said second horizontal bar being attached to the wall of the building by fastening means driven into said wall through holes in said second horizontal bar, and auxiliary vertical bars attached to said first and second horizontal bars at each end by screws inserted into holes in said auxiliary vertical bars and threadedly engaging holes in said first and second horizontal bars.

5. The window accessory as defined in claim **4** wherein one of said horizontal bars comprises a substantially square-shaped tubular member and an arm member having a plurality of holes.

6. The window accessory as defined in claim **5** wherein said vertical bars are L-shaped.

7. The window accessory as defined in claim **5** wherein said arm member comprises a U-shaped plate.

8. The window accessory as defined in claim **7** wherein the other of said horizontal bars comprises an angle bar having a horizontal member with a plurality of tapped holes, and a vertical member with holes for attaching to the building.

* * * * *