May 17, 1938. M. S. GIBSON 2,117,950

KNOCK-DOWN WINDOW GUARD STRUCTURE

Filed June 29, 1936 2 Sheets-Sheet 1

Fig. 1.

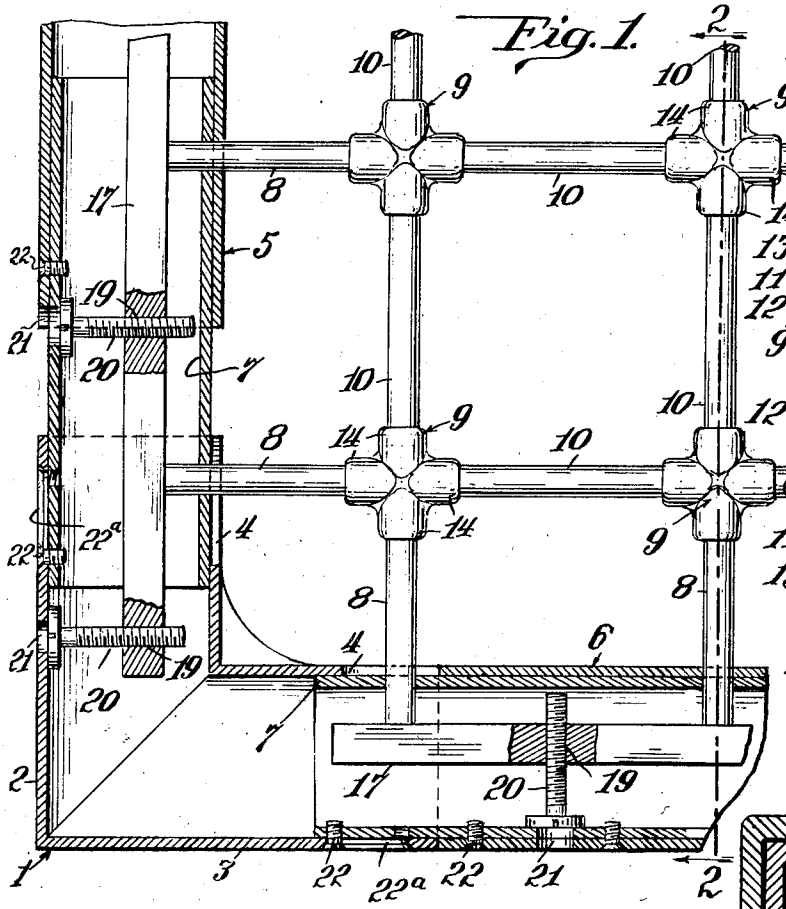


Fig. 2.

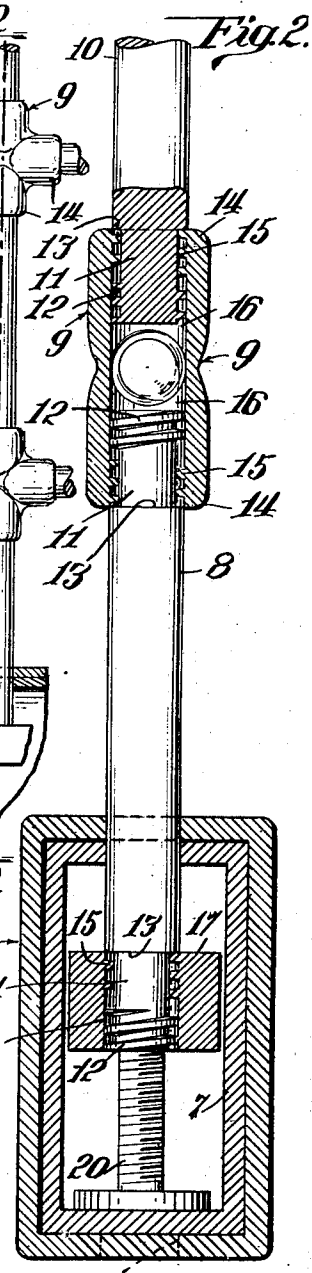


Fig. 3.

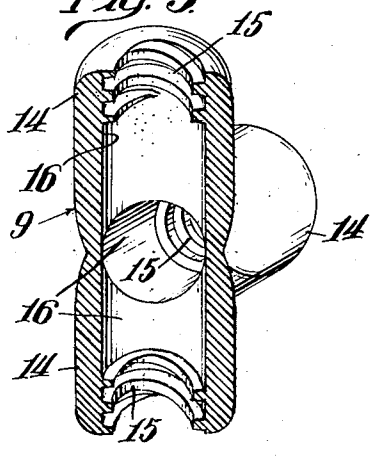
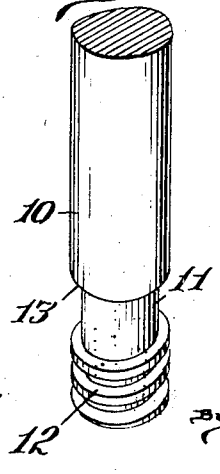


Fig 4.



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May 17, 1938. M. S. GIBSON 2,117,950

KNOCK-DOWN WINDOW GUARD STRUCTURE

Filed June 29, 1936 2 Sheets-Sheet 2

Fig. 5.

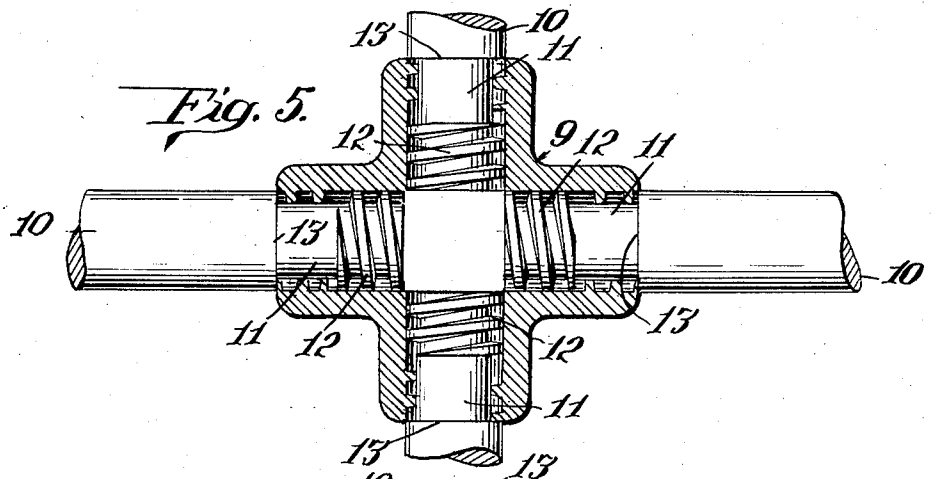


Fig. 6.

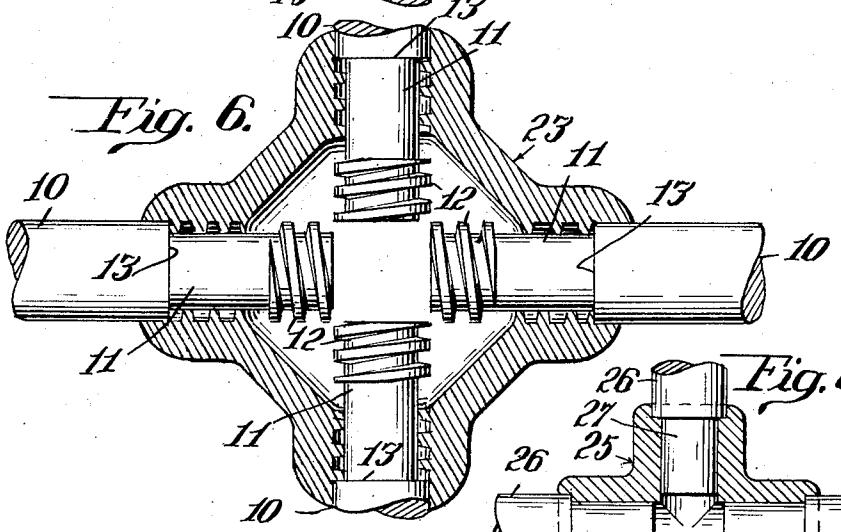


Fig. 8.

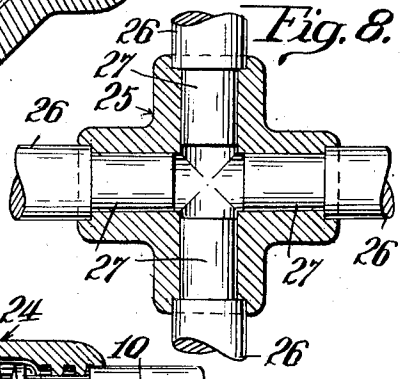
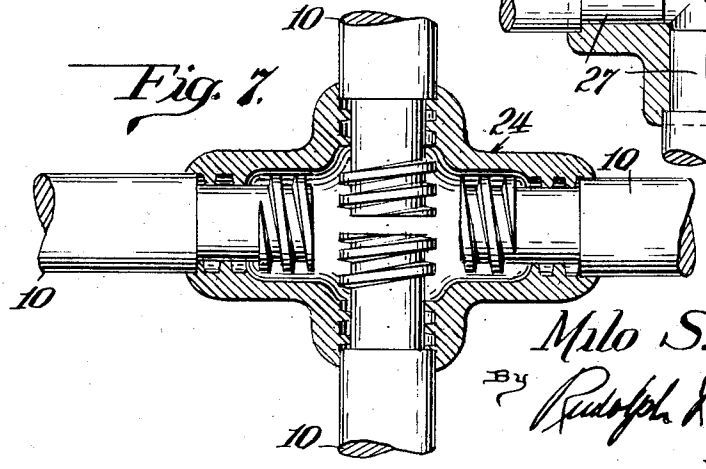


Fig. 7.



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UNITED STATES PATENT OFFICE

2,117,950

KNOCK-DOWN WINDOW GUARD STRUCTURE

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Application June 29, 1936, Serial No. 87,925

26 Claims. (Cl. 20—71)

The present invention has for its general object to provide a simple cheap and efficient structure constituting substantially burglar-proof guards for the windows and doors of buildings which will not exclude light to an appreciable extent and which, furthermore, will be more or less ornamental.

The particular object of the invention is to provide a structure of the type specified which is composed of elements capable of being easily and cheaply produced in large quantity and which may be easily assembled to fit any desired size of rectangular or substantially rectangular opening and which possesses the advantageous characteristics hereinafter described.

A further object of this invention, as in that which constitutes the subject matter of my pending application Serial No. 83,438, is to provide a structure made up exclusively of standard size factory-made parts capable of being assembled and adjusted elsewhere, to provide closure grills of sizes to fit rectangular openings of an infinite variety of dimensions.

The present invention is capable of being variously embodied and in the accompanying drawings several exemplary embodiments of the same are illustrated.

In the drawings,

Fig. 1 is a fragmentary view in front elevation, partly in section showing a structure for the purposes set forth constructed in accordance with the invention.

Fig. 2 is a vertical sectional view on an enlarged scale taken on the line 2—2 of Fig. 1,

Fig. 3 is a sectional perspective view illustrating one of the coupling members of the structure.

Fig. 4 is a fragmentary perspective view of one end portion of one of the rods of the structure adapted to be coupled with similar rods by means of the coupling illustrated in Fig. 3.

Fig. 5 is a central longitudinal sectional view of the device shown in Fig. 3.

Figs. 6, 7 and 8 are views similar to Fig. 5 illustrating other embodiments of coupling devices of the type illustrated in Fig. 3.

The structure of the present invention comprises a knockdown marginal frame or sash which is composed of equal hollow tubular corner members 1 which are L-shaped and the respective arms 2 and 3 of which are preferably rectangular in cross section and are open at their outer ends. Each arm is provided in its inner wall with a longitudinal slot 4 which extends inwardly toward the elbow portion of the corner member from the outer extremity of the said arm.

Associated with the said corner members 1 are tubular side rail and end rail sections 5 and 6, respectively. These are made in various lengths and are coupled with each other and said arms 2 and 3 of the corner members by means of sleeves 7 which engage telescopically in opposed end portions of said sections 5 and 6 at points between the corner members and also in the arms 2 and 3 of the latter and the adjacent rail sections 5 and 6. Means are provided for detachably engaging one end portion of each sleeve 7 with the member in which it engages. Preferably, one end portion of each sleeve 7 is welded to one of the rail sections 5 and 6, respectively.

The composite sash or marginal frame constructed as aforesaid is adapted to receive the outer end portions of rods 8 of the knockdown grill or foraminous panel composed of said rods 8, coupling members 9 and rods 10. The latter are all of equal dimensions and are all alike in all respects, whereas the said rods 8 may differ in length from the rods 10 without differing from the latter in any other respect.

By reference to Figs. 2, 4 and 5, it will be noted that each of the rods 8 and 10, which may be of any desired shape in cross-section, are equipped at their ends with shanks 11 of smaller cross-sectional dimensions than the middle or body portions of said rods. Each of said shanks 11 is equipped with threads 12 along its outermost end portion, the remainder of each shank being cylindrical between the threads 12 and the annular shoulders 13 opposed to said threads, said cylindrical portions being of the diameter of the rods of the threads 12.

The coupling members 9 are similar to the conventional X-couplings for pipe, having four equal arms disposed ninety degrees apart in the instance of Figs. 1 to 5 inclusive and Fig. 6.

Each of the arms 14 of each coupling member 9 is equipped adjacent its mouth with threads 15 for mesh with the threads 12 of the shanks of the rods 8 and 10, the said threads 15 extending a distance less than the cylindrical portions of the shanks 11. The rims of the mouths of said arms of said coupling member constitute stops for cooperation with the shoulders 13 of the rods 8 and 10 to limit the relative movements of said rods and coupling members in one direction.

Preferably, the cylindrical bores 16 of the inner end portions of the arms 14 of the coupling members 9 are equal in diameter with and are

aligned with the roots of the threads 15 or equal in diameter with the crowns of the threads 12 of the said shanks 11.

In assembling the grill structure, per se, the shanks 11 of the rods are threaded into the arms of the couplings 9 and vice versa, until the shoulders 13 abut the ends of the arms of the couplings 9. The assembled structure will be of greater length and width than the inner dimensions of the sash or marginal frame structure.

Generally, the spacing apart of the rods 8 and the rods 10 extending vertically and horizontally, respectively, will be the same though in some instances their spacing apart longitudinally and laterally, respectively, may vary in order to render the openings of the panel structure oblong in place of square, as shown.

In the instance illustrated the several component sections of the side and end rails, respectively, and the coupling sleeves 7 associated therewith, will be provided with openings corresponding in spacing apart with the respective rods 8.

The lengths of the components of the side and end rails of the sash structure will be multiples of the spacing apart of the rods 8.

In the instance illustrated, we may assume the spacing apart of the rods 8 to be four inches from center to center. In that event the spacing apart of the openings in the rail sections of the sash will also be four inches from center to center. Each rail section will be, for example, either four inches long or of lengths that are respectively multiples of four inches. In each instance the centers of the openings nearest the ends of the sections may be spaced two inches from said ends.

In assembling the side rails of the sash, sections of suitable lengths as exemplified in the next preceding paragraph will be selected and coupled until side rails equal in length to the space between centers of the upper and lowermost horizontal rods 8 are provided. When the several horizontal rods, exclusive of the uppermost and lowermost of the latter, are inserted into the several openings of the assembled side rails, the respective ends of the sections 5 of the latter will be spaced two inches from the axes of the upper and lowermost horizontal rods 8, but the sleeves 7 projecting from the ends of said assembled side rails will have openings positioned to receive the last-named rods 8.

Into the side and end rails, when assembled as above described, there are then inserted bars 17 which are equipped with partially threaded openings 18 spaced and disposed to receive and engage the shanks of rods 8 in exactly the same manner as incident to the arms of the coupling members 9.

Said bars 17 are also equipped, at points preferably midway between openings 18, with threaded openings 19 in which the shanks of screws 20 engage. The slotted heads of the latter are opposed to and are of larger diameter than openings 21 in the outer walls of rails of the sash. The bars 17 in the side rails are supported by the rods 8, while those disposed in the end rails are supported respectively by the upper set of vertical rods 8 and by the lower set of screws 20.

Each bar 17 has a latitude of adjustment of more than two inches between the outer and inner peripheral walls of the side and end rails, respectively.

The slots 4 of the corner sections are, in the present example, of a length to permit of adjustment of each corner section relatively to a side rail and end rail respectively, of no less than two inches.

In effecting assembly of the sash or marginal frame after having engaged the ends of all rods 8 with bars 17, the latter are moved toward the inner peripheral walls of the side rails, thus spacing the side rails farther apart to the maximum extent in the ultimately completed structure.

The corner sections 1 are then disposed over the projecting end portions of the terminal sleeves of the side rails.

The horizontal arms of the corner sections pass the opposed end portions of the extremities of the terminal sleeves 7 in this step of the assembly. Then the end rails will be positioned by adjustments of bars 17 therein by means of screws 20 for telescopic reception of their terminal sleeves 7 in the horizontal arms of the corner sections 1.

The latter are then moved into said engagement by moving the bars 17 of the side rails toward the outer walls of the latter.

Adjustments are continued until the panel is centered with respect to the side and end rails of the sash and thereupon the corner sections are firmly secured to said respective rails.

At this point in the assembly operations, all of the shoulders 13 of the rods 8 and 10 will be in close contact with the surfaces opposed thereto but not firmly pressed against the same. After the corner sections 1 are secured in place, the screws 20 are operated through the openings 21 to move all opposed bars 17 toward each other to place the grill panel under compression vertically and laterally.

Obviously, after the threads 12 have passed the threads 15, the rods 8 and 10 will be freely rotatable relatively to the coupling members 9, which is necessary, more or less, to render assembly of said rods with said couplings 9 easy of accomplishment. The main advantage of this freely rotatable connection between each rod 8 and 9 and members with which it is engaged lies in the fact that so long as said grill structure is under the said compression, which is relatively light, no thread of any rod can be brought into engagement with a companion thread to effect disengagement of said rod from the couplings 9 or rods 17. Freedom of rotation of said rods 8 and 10 is also advantageous in that it renders more difficult of accomplishment the severance of any of said rods by means of hacksaws or files.

The foregoing method of assembling the whole structure is capable of some variation.

In the manufacture of the coupling members 9, the cylindrical bore portions of the arms inwardly of the threads 15 must be effected by means of an undercutting drill or tool which is a relatively expensive operation. Cheaper types of coupling members are illustrated in Figs. 6 and 7, wherein the body portions of the respective coupling members 23 and 24 contain hollows in which the threaded end portions of the shanks 11 are received and are surrounded by free space instead of being confined as in the cylindrical bore portions of the arms of the couplings 9 which cooperate with the crowns of the respective threads 12 and 15 and the cylindrical portions of the shanks 11 to provide relatively long bearings for said shanks 11.

In the case of the couplings 23 and 24, respectively, the outer end portions of the arms are provided with enlarged bores providing bearings for the end portions of the rods 8 and 10 adjacent

said shanks 11, said portions of said rods being required to be cylindrical.

The coupling member 24 of Fig. 7 is adapted for the same purposes as the coupling member 9 and 23, but is better adapted from an ornamental point of view for grill structures wherein the openings are oblong instead of square.

Suitable substitutes for the threads 12 and 15, respectively, may be employed so long as they cooperate to prevent disengagement of the rods 8 and 10 from the parts with which they are engaged in the completed structure.

In Fig. 8, the coupling member 25 may consist of a single piece solid drop-forging or casting drilled as shown to receive the end portions of rods 26 and the shanks 27 thereof, which may be maintained rotatable relatively to the said coupling or may be welded thereto in instances where that is desired. If left rotatable, the bars 17 and sash structure will prevent disassembly of this structure as efficiently as in the case of the other several structures illustrated and described herein.

In the event that in the structure of Fig. 8, the rods are permanently secured to the coupling members 25, then the marginal frame must be made of the knockdown type in order to engage the marginal rods of the grill panel within the same and said marginal frame must be equipped also with means such as the adjustable bars 17, or equivalents thereof, to center the grill panel relatively to said frame and the latitude of adjustment of said bars 17, or equivalents thereof, must be such as is hereinabove described with reference to the length of the rods employed in connection with the coupling members in order to obviate the necessity of resorting to "made to measure" manufacture of the marginal frame.

This prescribed latitude of adjustment of the bars 17 may be decreased appreciably if resort be had to varying the lengths of the marginal rods 8 relatively to the lengths of the rods 10 or rods 26, as the case may be.

In all instances, the marginal elements of the panel structure, or equivalents thereof, secured to or engaged with the adjusting bars 17 and the marginal portions of the panel structure, extend through the inner peripheral wall of said marginal frame and the means for adjusting the bars 17, or equivalents thereof, must be engaged with either the inner or outer peripheral wall of said frame.

It is important that the structures of this invention shall be capable of disassembly for effecting variations in dimensions thereof so that purchasers moving from one dwelling to another may have said structures changed in dimensions to fit other window and door frames at relatively small cost.

Accordingly, and for greater resistance to the application of force to effect distortions of the structures to an extent which, in the instance of Fig. 8 might enable the rods 26 to be disengaged at several points from the coupling members 25 and thus enable the remainder of said rods 26 to be removed, the structures of Figs. 1 to 7 inclusive are preferable to that of Fig. 8, since bending of the rods 10 would not enable the latter to be disengaged from the coupling members 9 without stripping the threads 12 or 15.

I claim as my invention:

1. A knockdown grill structure including a marginal frame, and a grill panel comprising a plurality of coupling members equipped with radial openings, rods extending transversely to each other and each thereof engaged at opposite end portions in openings of two of said coupling members and cooperating with the latter to frame a plurality of rectangular openings, the side and end rails of the side marginal frame equipped with coupling means provided with openings aligned with and opposed to openings in the first-named coupling members disposed nearest adjacent to said rails of said marginal frame, and marginal rods having their opposite end portions engaged in the last-mentioned openings of said last-named coupling members and coupling means, the latter and said coupling members cooperating with each other for preventing the several rods from being disengaged therefrom.

2. A knockdown grill structure including a marginal frame, and a grill panel comprising a plurality of coupling members equipped with radial openings, rods extending transversely to each other and each thereof engaged at opposite end portions in the openings of two of said coupling members and cooperating with the latter to frame a plurality of rectangular openings, the side and end rails of said marginal frame equipped with coupling means provided with openings aligned with and opposed to openings in the first-named coupling members disposed nearest adjacent to said rails of said marginal frame, and marginal rods having their opposite end portions engaged in the last-mentioned openings of said last-named coupling members and coupling means, the latter and said coupling members cooperating with each other for preventing the several rods from being disengaged therefrom, said rods being rotatable relatively to said coupling members and means, respectively.

3. A knockdown grill structure including a marginal frame, and a grill panel comprising a plurality of single piece coupling members equipped with radial openings, rods extending transversely to each other and each thereof engaged at opposite end portions in openings of two of said coupling members and cooperating with the latter to frame a plurality of rectangular openings, the side and end rails of said marginal frame equipped with coupling means provided with openings aligned with and opposed to openings in the first-named coupling members disposed nearest adjacent to said rails of said marginal frame, and marginal rods having their opposite end portions engaged in the last-mentioned openings of said last-named coupling members and coupling means, the latter and said coupling members cooperating with each other for preventing the several rods from being disengaged therefrom.

4. A knockdown grill structure including a marginal frame and a grill panel comprising a plurality of coupling members equipped with radial openings, rods extending transversely to each other and each thereof engaged at opposite end portions in openings of two of said coupling members and cooperating with the latter to frame a plurality of polygonal openings, the side and end rails of the said marginal frame equipped with coupling means provided with openings aligned with and opposed to openings in the first-named coupling members disposed nearest adjacent to said rails of said marginal frame, and marginal rods having their opposite end portions engaged in the last-mentioned openings of said last-named coupling members and coupling means, the latter and said coupling members cooperating with each other for preventing the several rods from being disengaged therefrom.

5. A knockdown grill structure including a marginal frame and a grill panel comprising a plurality of single piece coupling members equipped with radial openings, rods extending transversely to each other and each thereof engaged at opposite end portions in openings of two of said coupling members and cooperating with the latter to frame a plurality of rectangular openings, the side and end rails of said marginal frame equipped with coupling means provided with openings aligned with and opposed to openings in the first-named coupling members disposed nearest adjacent to said rails of said marginal frame, and marginal rods having their opposite end portions engaged in the last-mentioned openings of said last-named coupling members and coupling means, the latter and said coupling members cooperating with each other for preventing the several rods from being disengaged therefrom, said rods being rotatable relatively to said coupling members and means, respectively.

6. A knockdown grill structure including a marginal frame and a grill panel comprising a plurality of coupling members equipped with openings, rods extending angularly to each other and each thereof engaged at opposite end portions in openings of two of said coupling members and cooperating with the latter to frame a plurality of openings of determined shape, the side and end rails of said marginal frame equipped with coupling means provided with openings, and marginal rods having their opposite end portions engaged in openings of coupling members nearest adjacent said rails and in the openings of said coupling means, the latter and all of said coupling members cooperating with each other for preventing the several rods from being disengaged therefrom, said rods being rotatable relatively to said coupling members and means, respectively.

7. A knockdown structure of the type specified comprising a hollow marginal frame, a knockdown grill structure consisting of a plurality of coupling members each equipped with a plurality of sockets spaced from each other, a plurality of rods each engaged at opposite end portions in sockets of two of said members and cooperating with the latter to define a series of openings, coupling devices disposed within the marginal frame, another series of rods each engaged at one end with one of said coupling devices and at its other end within a socket of an adjacent coupling member, and means operable from the exterior of the marginal frame for adjusting the positions of said coupling devices disposed within the latter relatively to said coupling members for cooperation with the latter to prevent disengagement of all of said rods from the latter and said coupling devices, respectively.

8. In a structure of the type specified, a foraminous panel composed of a plurality of equal coupling members each equipped with more than two openings extending angularly relatively to each other and having axes disposed in a common plane, a plurality of rods each adapted to engage at one end portion in an opening of one of said coupling members and at its other end portion in an opening of another of said coupling members, said rods cooperating with said members to define polygonal openings, said rods being rotatable relatively to the coupling members engaged therewith, said coupling members and portions of the rods engaged therewith equipped with cooperating formations requiring rotation of said rods relatively to said coupling members to effect insertion of the end portions of said rods into said openings and until the said formations of said rods have passed the said formations of said coupling members, whereupon said rods are freely rotatable relatively to said coupling members while in their last-mentioned position without effecting their disengagement from said members.

9. In a structure of the type specified, a foraminous panel composed of a plurality of equal coupling members each equipped with more than two openings extending angularly relatively to each other and having axes disposed in a common plane, a plurality of rods each equipped with partly smaller lateral dimensioned end portion bordered by annular shoulders adapted to engage the rims of the mouths of said openings when said end portions are disposed within the latter, said rods being rotatable relatively to the coupling members engaged therewith, said coupling members and portions of the rods engaged therewith equipped with cooperating formations requiring rotation of said rods relatively to said coupling members to effect insertion of the end portions of said rods into said openings and until the said formations of said rods have passed the said formations of said coupling members and said shoulders engage the latter, said rods being freely rotatable relatively to said members without disengagement therefrom while said shoulders are engaged with the latter.

10. In a structure of the type specified, a foraminous panel composed of a plurality of equal coupling members each equipped with more than two openings extending angularly relatively to each other and having axes disposed in a common plane, a plurality of rods each equipped with end portions of smaller lateral dimensions in part than the lateral dimensions of the rod thereby providing stop shoulders on the latter for engagement with the rims of the mouths of openings of said coupling members, the said end portions of said rods and the openings of said members equipped with cooperating formations adapted to pass each other during initial insertion of end portions of said rods into said openings and which are disposed out of engaging relation to each other when said stop shoulders engage said members and permitting free rotation of said rods relatively to said members without disengagement from the latter while in the last-named position.

11. In a structure of the type specified, a foraminous panel composed of a plurality of equal coupling members each equipped with more than two openings extending angularly relatively to each other and having axes disposed in a common plane, a plurality of rods each equipped with externally threaded extremities and annular grooves between the latter and the bodies of the rods, said openings being threaded at their mouth portion for a distance less than the length of said annular grooves and for meshing with the threads of said rods, thereby requiring rotation of rods relatively to the coupling members to effect complete insertion of the end portions of the former and causing the threads of the rods to pass the threads of the couplings, said rods being then freely rotatable relatively to the couplings in both directions without disengaging said rods from said couplings.

12. In a structure of the type specified, a foraminous panel composed of a plurality of equal coupling members each equipped with more than two openings extending angularly relatively to each other and having axes disposed in a common plane, a plurality of rods each equipped with ex-

ternally threaded extremities and annular grooves between the latter and the bodies of the rods, said openings being threaded at their mouth portion for a distance less than the length of said annular grooves and for meshing with the threads of said rods, thereby requiring rotation of rods relatively to the coupling members to effect complete insertion of the end portions of the former and causing the threads of the rods to pass the threads of the couplings, said rods being then freely rotatable relatively to the couplings in both directions without disengaging said rods from said couplings, the walls of said grooves spaced from the threads of said rods engaging the mouth portions of said openings to limit the inward travel of said last-named threads.

13. A knockdown grill structure including a marginal frame and a grill panel comprising a plurality of coupling members equipped with sockets, rods extending angularly to each other and each thereof engaged at opposite end portions in sockets of two of said coupling members and cooperating with the latter to frame a plurality of openings, the side and end rails of the said marginal frame equipped with coupling means, sockets in the latter, and marginal rods having their opposite end portions engaged in the sockets of said coupling means and in sockets of said coupling members disposed adjacent to said rails and adjusting elements engaged with said rails and said coupling means for adjusting the position of the latter relatively to said rails and said panel for maintaining all of said rods engaged with all of said coupling members and means, respectively.

14. The combination with a knockdown grill panel structure composed of separably interengaged members, of a hollow marginal frame of less inner dimensions and greater outer dimensions than the extreme dimensions of said panel structure and adapted to receive and engage the marginal portions of the latter against movement relatively to the front and rear walls of the said frame, and manually operable adjusting means within said frame accessible from the outer peripheral wall of the latter and engaged with said marginal portions of said panel and with a peripheral wall of said frame and movable toward and from the outer peripheral wall of the latter for adjusting the position of said panel relatively to said frame and maintaining said panel permanently in a predetermined position relatively to said frame and maintaining the separable parts of said panel interengaged with each other.

15. A structure of the type specified comprising a marginal frame, a plurality of sectional bar members extending longitudinally and transversely of said frame and engaged at their ends in the latter, a plurality of socket members, each equipped with a pair of opposed sockets disposed parallel with the end rails and a similar pair of sockets disposed parallel with the side rails of said frame, said sectional bars each composed of a plurality of rods engaged at opposite ends in sockets of said members and some thereof engaged at one end in said frame and at one end in a socket member, the total number of said rods being such as to cause all of the sockets of all of said socket members to be filled with end portions of said rods, said marginal frame constituting a means for preventing all relative disengaging movement between said rods, sockets and frame.

16. A structure of the type specified comprising a marginal frame, a series of spaced apart sectional bars extending in one general direction within the area bordered by said frame and engaged at their ends within the latter, each of said sectional bars comprising a plurality of rods and socket members equipped with sockets in which opposed ends of adjacent rods are engaged, and at least one sectional bar extending angularly of the first-named bars and engaged at its ends in said frame, each of the last-named bars composed of a plurality of rods each engaged in sockets of said members, the latter equipped with sockets receiving the ends of said last-named rods, said frame functioning to maintain all of said rods of said respective bars engaged with said socket members.

17. A structure of the type specified comprising a group of socket members each equipped with a plurality of sockets to receive and engage the ends of rods, each having its opposite end portions engaged in sockets of two of said socket members and maintaining the latter spaced from each other, some of said rods extending angularly relatively to others thereof, marginal rods each having an end portion engaged in a socket of a socket member, and a marginal frame equipped with means engaged with the outer end portions of said marginal rods for preventing relative disengaging movement between the latter and said last-named socket members and thereby serving also to prevent relative disengaging movement between all of said socket members and all of the rods engaged therewith.

18. A structure of the type specified comprising a group of socket members each equipped with a plurality of sockets extending radially from the middle of the member and adapted to receive and engage snugly the end portions of rods, and rods each engaged at their respective ends in sockets of two of said members, the number of said rods being such that substantially all of the sockets of all said members are filled thereby, said rods constituting means for maintaining said members spaced from each other, a marginal frame equipped with means for engaging the end portions of rods, and a group of rods engaged with said last-named means at one end and in sockets of some of said members at their other ends and cooperating with said frame to prevent all relative movements between all of said members and all of said rods and also preventing all movement of all said members and all of said rods relatively to said frame.

19. A skeleton closure for the purpose specified comprising a hollow marginal frame, a foraminous knockdown grill panel bordered by and engaged marginally within said frame, said grill panel composed of rods and members detachably engaged with each other and relatively arranged to define a predetermined pattern, and means disposed within said frame and manually adjustable toward and from the respective peripheral walls thereof and engaged with the marginal portions of the said panel projecting into said frame for adjusting the position of said panel relatively to said frame and maintaining the same in said adjusted position and also preventing disengagement of said rods and members from each other.

20. A skeleton closure for the purpose specified comprising a hollow marginal frame, a foraminous knockdown grill panel bordered by and engaged marginally within said frame, said grill panel composed of a plurality of separable elements having male and female interengagement with each other and relatively arranged and dis-

posed to define a predetermined pattern, and manually adjustable means mounted within said frame and detachably engaged with marginal elements of said panel and movable toward and from the respective peripheral walls of said frame for adjusting the position of said panel relatively to said frame and also maintaining all of said elements engaged with each other.

21. A closure structure comprising a hollow frame, a grill structure comprising rods and socket members adapted to receive opposite end portions of the rods, said rods and socket members equipped with cooperating formations adapted to pass each other as said rods are inserted into said sockets in a predetermined manner and cooperating with each other to prevent disengagement of said rods from said sockets except by reversing the manner of insertion of said rods into said sockets, some of said socket members being mounted within said frame, the latter provided with openings for passage of marginal rods of the grill structure into engaging relation to the last-named socket members, and means for manualy adjusting the last-named socket members to cause the same to move said marginal rods toward the area bordered by said frame and thereby to cooperate with the remaining socket members to maintain the said cooperating formations of the latter and said rods out of engaging relation to each other.

22. A structure of the type specified, comprising a marginal frame, a plurality of sets of rods extending angularly to each other, a plurality of members engaged with the end portions of the rods of the several sets thereof for connecting the same with each other and maintaining them detachably in predetermined relative position, means within the frame detachably engaged with the marginal rods of the several sets thereof, and manual adjusting devices engaged with said means for moving the same relatively to said frame and the area bordered thereby to positions wherein said rods, members and means are held against disengagement from each other.

23. A structure of the type specified comprising a marginal frame, a knockdown grill structure occupying the area bordered by said frame and composed of detachably interengaged members relatively arranged to define a predetermined pattern, and means mounted in the frame and engaged with the latter and with marginal members of the grill structure and positioned to maintain all of said members in their predetermined relative positions and against relative movements in directions for disengaging them from each other.

24. A structure of the type specified comprising a marginal frame, a knockdown grill structure occupying the area bordered by said frame and composed of detachably interengaged members relatively arranged to define a predetermined pattern, manually adjustable means mounted in the frame and engaged with the latter and with marginal members of the grill structure for maintaining the latter and all other component members of the grill structure in their predetermined relative positions and against disengagement from each other.

25. A structure of the type defined comprising a marginal frame, a knockdown grill structure disposed within the area bordered by said frame, and means within the frame engaged with the latter and with the grill structure for preventing knockdown of the latter and maintaining it in a predetermined position relatively to said frame.

26. A structure of the type specified comprising a hollow marginal frame and projecting marginally into the latter, a knockdown grill structure occupying the area bordered by said frame and composed of detachably interengaged members relatively arranged to define a predetermined pattern, manually adjustable means mounted in and engaged with the frame and engaged with marginal members of the grill structure for maintaining the latter and all other components in their predetermined positions relatively to each other and said frame and against disengagement from each other.

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