March 7, 1961 C. F. CLOSE 2,973,807

ARTICLE OF FURNITURE

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FIG. 1

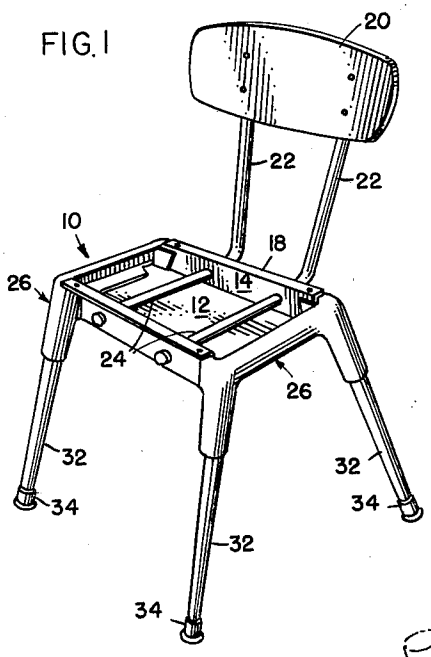


FIG. 2

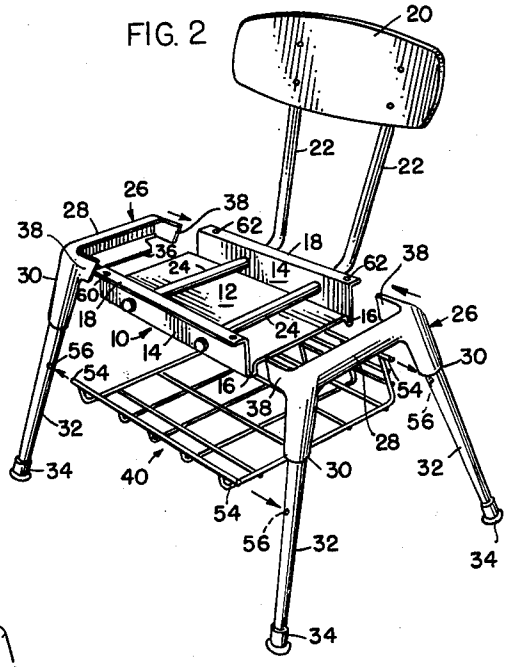
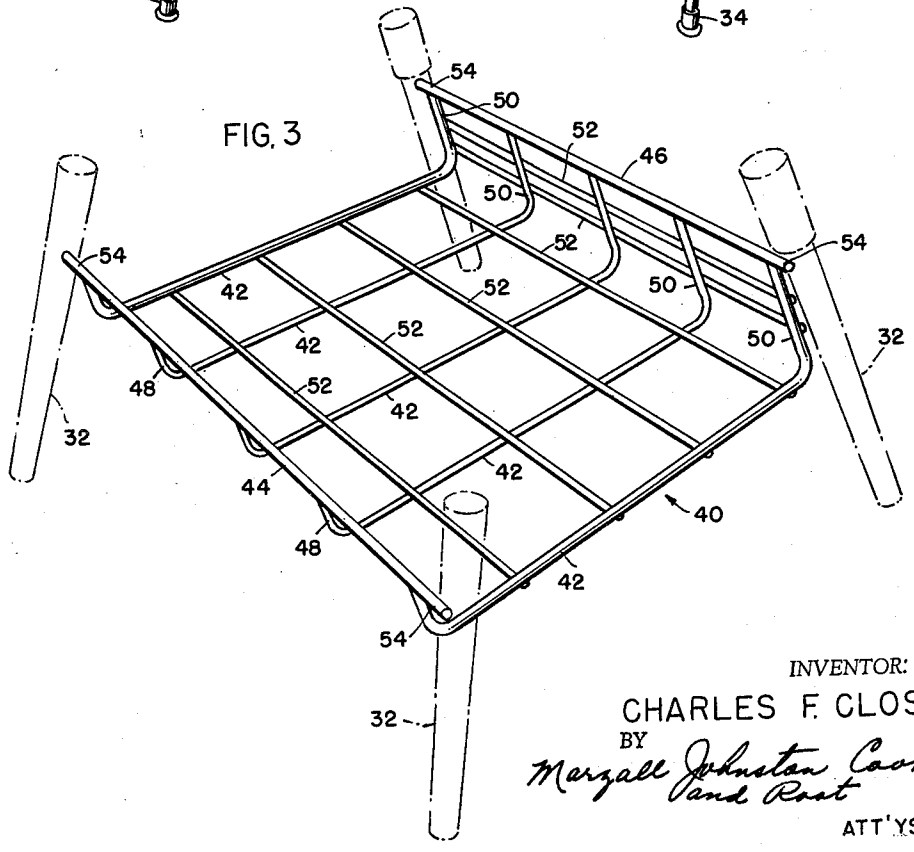


FIG. 3



INVENTOR:
CHARLES F. CLOSE
BY
Marzall Johnston Cook and Root
ATT'YS

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FIG. 4

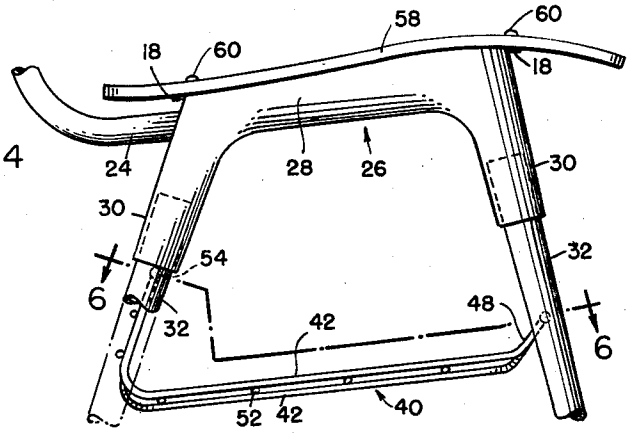


FIG. 5

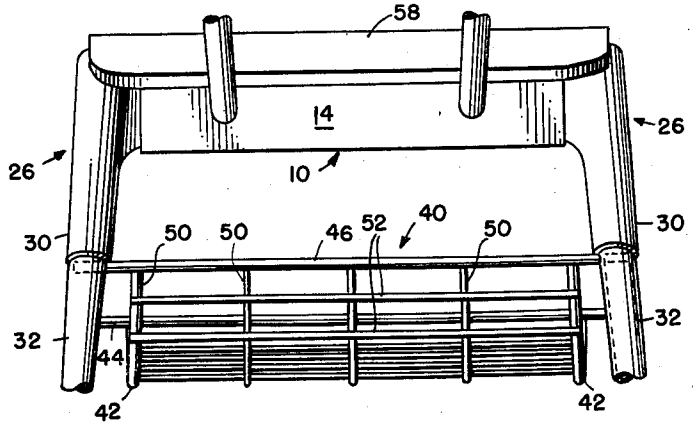
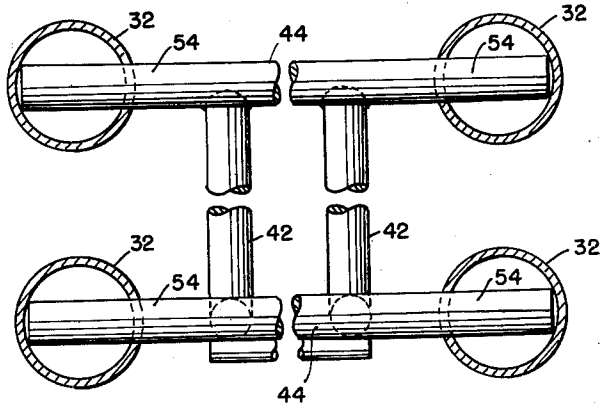


FIG. 6



INVENTOR:
CHARLES F. CLOSE
BY
Marzall Johnston Cook and Root
ATT'YS

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2,973,807

ARTICLE OF FURNITURE

Charles F. Close, Arlington Heights, Ill., assignor to Arlington Seating Company, Arlington Heights, Ill., a corporation of Illinois

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5 Claims. (Cl. 155—194)

This invention, in general, relates to articles of furniture, and more particularly, the invention relates to the construction and assembly of chairs, benches and the like.

In the design of chairs, and the like, the article of furniture, in order to attain market acceptance, particularly at economical cost, must be sturdy, have a pleasing overall design and also must be constructed of strong yet simple parts which are easily assembled in order to keep production costs at a reasonable level. All of these factors must be considered in the design and introduction of a new chair or the like into commercial channels. These factors are particularly important in the design and marketing of chairs for classrooms, auditoriums, and the like.

The present invention relates to chairs, or the like having qualities of sturdiness, pleasing design, and ease of assembly. It is one of the objects of the invention to provide chairs or the like which are of pleasing design and sturdily constructed.

Another object of the invention is to provide the basic chair framework having parts which are easily manufactured and assembled.

A still further object of the invention is to provide chairs having sturdily constructed framework, making them suitable for use in areas where the chair is subjected to hard use, such as schoolrooms, auditoriums and the like.

Still another object of the invention is to provide improvements in the construction and assembly of chairs, and the like.

These and other objects, which will occur to those skilled in the art from the following detailed description, are attained by the chair construction of a specific embodiment of the invention described in detail hereinafter in conjunction with the drawings, wherein:

Fig. 1 is a perspective view of the framework and back rest of an assembled chair constructed in accordance with the invention;

Fig. 2 is an exploded, perspective view of preassembled parts of the chair of Fig. 1 just prior to their assembly into the completed chair framework and includes a wire mesh article rack adapted to be supported by the legs of the chair in a position below the seat thereof;

Fig. 3 is a perspective view of the article rack with the legs of the chair shown in phantom;

Fig. 4 is a partial, side elevation of the chair of Fig. 1;

Fig. 5 is a partial, rear elevational view of the chair of Fig. 1; and

Fig. 6 is an enlarged, partial, cross-sectional view taken along the line 6—6 of Fig. 4.

Referring to the drawings, the embodiment of the invention illustrated comprises a relatively rigid, channel-like, central frame portion **10** made by stamping a unitary sheet of metal into a flat, rectangular, horizontally planar, central portion **12** with vertical side walls **14** at a right angle thereto and channels or grooves **16** along the lines of joinder of the central portion **12** with the side walls **14**. The upper edges of the side walls **14** are bent outwardly to provide flanges or lips **18** lying in a plane substantially at a right angle to the side walls **14** and parallel with the plane of the central portion **12**.

The chair has a chair back or back rest **20** supported on the central frame by a pair of bent rods or tubes **22, 24**. The substantially vertical portions **22** of the tubes or rods are attached to the chair back **20** in a suitable manner, such as by rivets, screws or the like. The horizontal legs **24** of the rods or tubes extend through aligned apertures in the side walls **14** of the central frame member **10** and, in the final assembly of the chair, are welded or otherwise fixed to the central frame **10**.

The remaining main framework of the chair is composed of two opposing end assemblies **26**, each constituting an inverted, substantially U-shaped frame member consisting of a quarter round, straight central segment **28**, substantially coextensive with the ends of the central frame **10**, having fixed with and depending therefrom tubular frame legs or sockets **30**.

The opposing end frame assemblies **26** may be stamped from a unitary metal sheet into a horizontal central segment **28** which is, in cross-section, rounded in the form of approximately a quarter circle. This shape is used because of its pleasing appearance and also to provide additional strength to this portion of the end frame assemblies. The frame legs or sockets of the substantially U-shaped frame are made by bending the metal into the form of hollow tubular, downwardly depending segments which receive and hold tubular supporting legs **32** of the chair. The bottom ends of the legs **32** are provided with caps **34** which may be molded or stamped from rubber, plastics, or metal.

At the lower side of the central segment of the end frame assemblies is an inwardly bent, horizontal plate **32**, which constitutes a part of the unitary metal piece constituting the end frame assemblies **26**. When the end assemblies are assembled with the central, channel frame **10**, the plates **36** rest on the top side of the central portion **12** in contact therewith. The end frame assemblies **26** also have inwardly extending, vertical plates, ears or wings **38** as an integral part of the unitary stamping constituting the end frame assemblies **26**.

The wings or ears **38**, when the chair framework is assembled, fit into the grooves or channels **16** and are in contact with the side walls **14** of the central frame **10**. Fig. 1 shows the relationship of the plate **36** and the ears or wings **38** with respect to the central frame **10**. The central frame **10** and the end assemblies **26**, upon interfitting their parts in the manner previously described, are made a unitary, rigid assembly by heat bonding, viz., welding or brazing, or possibly even rivetting the plates **36** and the ears or wings **38** to the walls **12** and **14**, respectively, of the central frame member **10**.

A rack or shelf for holding miscellaneous articles may be included in the chair assembly by mounting said rack or shell below the chair seat between the chair legs in the manner hereinafter described.

One important feature of such a chair with the shelf or rack mounted therein resides in the fact that the article rack can be advantageously employed in the assembly of the chair parts to hold the two end frame assemblies in place while the remainder of the chair is being assembled for welding. This advantage will be brought out in greater detail hereinafter.

The article rack shown in the drawing is a wire rack. However, it will be understood that other types of rack construction may be employed, such as stamped metal racks of a solid sheet of metal or a sheet of metal with holes punched out to make the rack assembly lighter. The embodiment of the article rack shown in the drawing is a rack made of rods or heavy wire designated generally at **40** and which slopes from front to rear (Fig. 4). The rack is a framework of bent wires or rods **42** running from front to rear, and lateral framework rods

or wires 44, 46 welded to the wires or rods 42 at their points of intersection. The wires or rods 42 have angularly disposed legs 48 at the front portion of the rack to give a small, downwardly sloping assembly at the front of the rack 40. The wires or rods 42 are bent at an acute angle to the central portion thereof to give a rear retaining wall substantially parallel with the back plane formed by the chair legs and of a substantially greater depth than the sloping portions 48 at the front of the rack. The intermediate lateral framework rods or wires 52 are welded to the wires on rods 42 at their points of intersection. The front and rear lateral framework rods or wires 44, 46 have segments 54 extending beyond the side edges of the article rack framework 40. These extensions 54 are seated in apertures 56 provided in the four legs of the chair. The interrelationship of the extensions 54 and the legs 32 is shown in the cross-sectional detail of Fig. 6.

By providing a rack structure of the character previously described, particularly one having extensions similar to those illustrated at 54, which extensions are seated in apertures 56 in the legs of the chair, the article rack, when inserted in these holes, serves to hold the two preassembled end assemblies in place while the end assemblies 26 are welded or brazed with the central frame portion 10. One of the difficulties heretofore encountered in assembling similar type articles has been the holding of all the elements in the proper place so that the proper alignment is attained during the final assembly operation just prior to fastening or bonding the parts together. By using the article rack for aligning the legs and the end assemblies 26, it is only necessary to hold them in one other place. This can be done with one suitable jig.

The manufacture of the chair is completed by attaching to the central frame 10 a seat 58 (Fig. 4). This can be done by screws, rivets or the like 60 which extend through holes in the seat 58 into holes 62 provided in the flanges 18 of the central frame 10.

It will be observed from the drawings, in particular Figs. 4 and 5, that the wire rack 40 slopes downwardly from front to rear and is shaped to provide retaining surfaces both at the front and rear, the retaining surfaces at the rear being relatively high and sloping forwardly in the same general direction as the rear legs to which the rack is attached. The retaining surfaces of the rack at the rear are high enough so that the contents of the rack are not easily accessible from the rear. However, the contents of the rack are readily accessible from both the front and the sides. The slope of the rack from front to rear tends to cause the contents of the rack to move by gravity to the rear where such contents are held securely by the rear retaining rods 50 and 52.

It will also be observed that in the chair structure shown the front and rear legs are unsymmetrically positioned with respect to one another due to the fact that the front and rear sockets 30 of the central frame project from said frame at different angles with respect to the straight central segment 28, the angle of projection of the rear sockets being greater than the angle of projection of the front sockets. The manner of construction wherein the ends 54 of the rack 40 are inserted with the apertures 56 of the legs 32 is especially advantageous in properly aligning the legs for the construction of a chair of this type.

It will be understood that the invention, in addition to the specific embodiment previously described in detail and illustrated in the drawing, embraces other embodiments of the generic invention disclosed. For example, the frame, seat and back rest, if used, may be made wider—thus giving a bench instead of a chair. Also, the central frame and end assemblies may be used per se in the manufacture of small and large tables and the like. Accordingly, the invention herein disclosed is not limited to the specific embodiment described in detail and illustrated in the drawing but is to be construed as encompassing all embodiments coming within the true spirit and scope of the invention.

Having thus described my invention in its useful and novel aspects it is claimed as follows:

1. A framework for an article of furniture comprising a rigid central frame lying in a horizontal plane, a unitary end assembly at each end of said frame, each unitary end assembly having a rigid central segment with hollow, leg-receiving sockets depending from the ends thereof, supporting legs mounted in said hollow sockets, and an article rack beneath said frame having an extension of said rack extending into an aperture in each of the supporting legs.

2. The combination of claim 1 wherein the article rack slopes from front to rear and is shaped to provide a retaining wall at the rear side thereof.

3. A method of manufacturing articles of furniture made of a metal central frame and preassembled metal end frame members, each having a pair of legs depending therefrom, there being opposing holes in each pair of legs, and a rack having outward extensions adapted to fit into said holes, comprising inserting the extensions of said rack in said holes, aligning the preassembled end frame members with said central frame and holding the parts in alignment while heat bonding the preassembled end frame members to said central frame.

4. A method of manufacturing a chair which has a metal frame and preassembled metal end frame members, each having a pair of legs depending therefrom and unsymmetrically arranged with respect to its associated end frame member, there being opposing holes in each pair of legs, and a rack having outward extensions adapted to fit into said holes, said rack having an upwardly extending retainer surface extending in the same direction as one of the legs in each pair, comprising inserting the extensions of said rack in said holes, aligning the preassembled end frame members with said central frame and holding the parts in alignment while heat bonding the preassembled end frame members to said central frame.

5. A chair comprising a rigid central seat supporting portion substantially rectangular in shape and a unitary end assembly fastened to said seat supporting portion at opposite ends thereof, each unitary end assembly having a rigid central segment with hollow leg receiving sockets depending from the ends thereof, one of said sockets making a substantially larger angle with respect to said central segment than the other, supporting legs mounted in said sockets, said legs having opposing apertures therein at predetermined locations intermediate of the length of said legs, and an article rack beneath said seat supporting portion, said article rack being formed from parallel spaced intersecting rods, one set of rods extending from front to rear of the chair and the other set extending crosswise, the set of rods extending from front to rear being bent upwardly at both the front and the rear and rigidly fixed to cross rods which extend beyond the sides of said rack and into the apertures in said supporting legs, the rods bent upwardly at the rear extending upwardly farther than the rods bent upwardly at the front whereby said article rack is accessible from the front and sides but there is only a limited space between the seat supporting portion and the top of the rear of the article rack.

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