

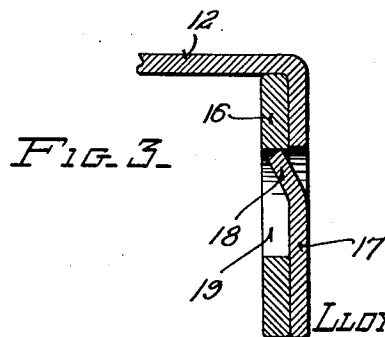
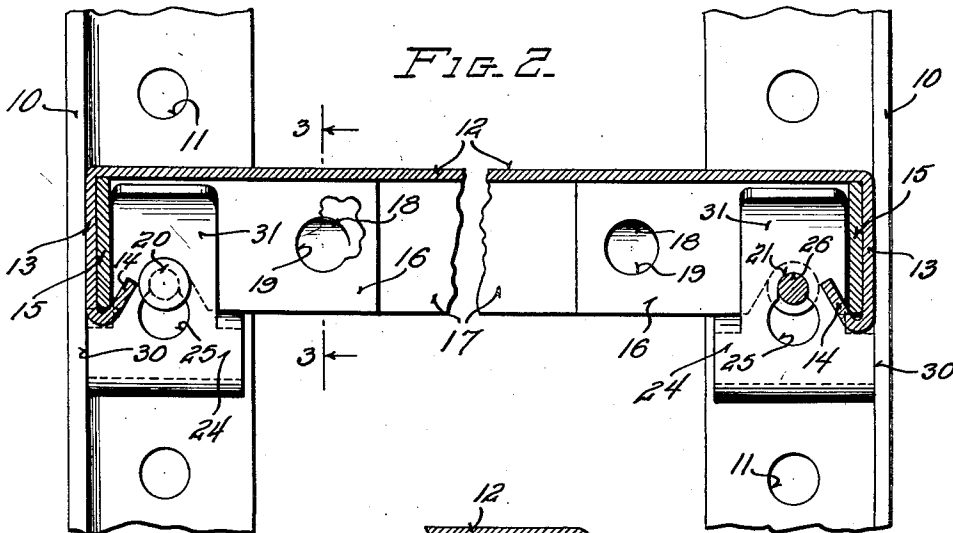
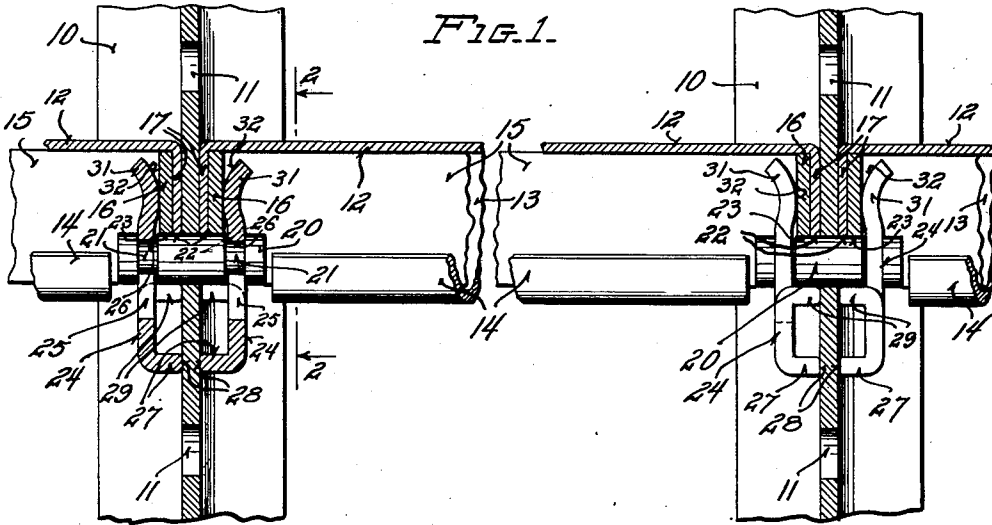
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L. H. FENSTERMAKER

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METAL SHELVING

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Inventor

LLOYD H. FENSTERMAKER.

By

Riffler Bros.

Attorney

UNITED STATES PATENT OFFICE

LLOYD H. FENSTERMAKER, OF MILWAUKEE, WISCONSIN

METAL SHELVING

Application filed August 29, 1929. Serial No. 389,149.

This invention relates to metal shelving.

The use of metal shelving in stores, warehouses, libraries and like places has become almost universal. In virtually all instances this metal shelving is of the knock down type and its several elements must be joined together to fabricate the structure. While numerous forms of sheet metal shelving are at present available, each has its inherent defects. In one instance the multiplicity of elements which combine to form the shelving makes the cost prohibitive. In another instance the cost of assembly is high. While in still another instance adjustability of the shelving after assembly is virtually precluded by reason of the fact that the several elements are riveted together or anchored in such a manner as to prevent their being dismantled or rearranged. The most common fault present in shelving of this type is the necessity of the use of tools to assemble the several elements or to in any way alter the shelving arrangement.

One object of the present invention is to provide metal shelving which may be fabricated or knocked down without the use of tools.

Another object is the provision of shelving and supporting means therefor which are adapted to be manufactured at an extremely low cost by virtue of the few essential elements and the simplicity of these elements.

Other objects and advantages will appear from the following description of an illustrative embodiment of the present invention.

In the drawing:—

Figure 1 is a fragmentary longitudinal sectional view of metal shelving constructed in accordance with the teachings of the present invention. This sectional view is taken in a plane through adjacent front uprights.

Fig. 2 is a transverse sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged sectional view on the line 3—3 of Fig. 2.

The metal shelving shown in the accompanying drawing comprises a plurality of spaced uprights 10 preferably in the form of T-beams having a series of spaced apertures 11 piercing the stem portions thereof. A plu-

rality of sheet metal shelves 12 are provided with depending flanges 13 at their front and rear edges. The lower extremity of these flanges 13 are provided with short inwardly and upwardly directed flanges 14 which serve to position reinforcing straps 15. These reinforcing straps 15 are provided with legs 16 which are bent at right angles to the body portion of the straps. The legs 16 lie adjacent depending flanges 17 which are formed on the ends of the shelves 12. Ears 18 which are struck out of the flanges 17 (preferably at the time of manufacture) are adapted to engage in recesses or apertures 19 formed in the legs 16 of the reinforcing straps 15 to secure the straps in position within the flanges 13 of the shelves 12. To position the reinforcing straps 15 they may be canted slightly to permit them to be passed between the body portion of the shelf 12 and the flange 14. The straps may then be swung by forcing the legs 16 toward the shelf 12 until the front face of the strap is in contact with the flange 13 at which time the ear 18 will snap into the recesses 19 to secure the reinforcing straps in position on the shelves.

A shelf supporting key 20 is adapted to be inserted into a selected aperture 11 of a T-beam 10. In the present embodiment of the invention, I have chosen to illustrate the key 20 in the form of a pin which is provided with reduced portions in the form of grooves 21 adjacent each end thereof. It will be noted at this time that the top face which lies between the grooves 21 of the key 20 is in contact with the base of cut out portions 22 and 23 of the shelf flange 17 and the leg portion 16 of the reinforcing strap 15 respectively. Thus it will be seen that the key 20 forms the load sustaining connection between the shelf 12 and the upright 10.

A clip 24 preferably formed by a stamping of sheet metal serves to releasably retain the key 20 in position on the upright 10. The clip 24 is provided with a key-hole slot 25 which has its reduced portion 26 extended upwardly. The lower extremity of the clip is provided with an inwardly directed flange 27 provided with a face 28 which is adapted to contact with the surface of the stem of the

T-beam 10. A pair of feet 29 which are bent from the body portion of the clip 24 are also adapted to contact with the T-beam 10 to insure firm contact between the clip and the T-beam. A side 30 of the clip is adapted to contact with the cross portion of the T-beam to prevent rotation of the clip when it has been positioned upon the key 20. The upper extremity of the clip is in the form of a finger 31 provided with a convex surface 32 which is adapted to engage the inner surface of the leg 16 of the reinforcing strap 15 to bind the end flange 17 against the T-beam.

The assembly of the shelving is extremely simple and may be accomplished without the aid of tools. As the reinforcing straps 15 have been properly positioned within the flanges 13 of the shelves 12 in the manner herein above described; the several keys 20 may be inserted into the particular apertures 11 of the uprights 10 which will give the desired shelf position. The clips 24 may then be applied to the keys 20 by threading their keyholes 25 over the ends of the keys 20. The clips may be moved longitudinally on the keys until the reduced portions 26 of the keyholes register with the several grooves 21 on the keys 20. Simultaneously the face 28 of the flange 27 and the feet 29 which are bent from the body portion will contact with the surface of the side of the upright 10. At this time the clip may be forced downwardly to securely retain the key 20 within the upright 10. When the clips are thus positioned the several shelves 12 may be placed in position above the clips and forced downwardly until their cut-out portions 22 and 23 are in contact with the top surface of the key which lies between the grooves 21 and the upright member 10. The distance between the grooves 21 is such that the fingers 30 of the clips 24 will apply pressure against the legs 16 of the reinforcing straps 15 when shelves are in a proper position. Thus it will be noted that the flanges 17 of the adjacent shelves 12 will be drawn tightly against the upright 10 to thereby insure a firm and rigid connection for each shelf.

From the foregoing specification it will readily be seen that a simple, economical and effective shelving has been provided which may be readily assembled or altered without the use of any tools.

While the invention has been described in considerable detail in the foregoing specification, it will readily be understood that various changes may be made in its embodiment without departing from or sacrificing any of the advantages hereinafter claimed.

I claim:—

1. In a shelving structure the combination of an upright, a shelf supported thereby and having a depending edge flange, a vertical clip having an upper end arranged to clamp

said flange against said upright and also having a lower end arranged to press against said upright, said clip having a key-hole slot therein intermediate said ends, and a removable key horizontally disposed in said upright and releasably engaged in said slot to retain said clip in clamping position, said clip being movable lengthwise of said slot into and out of locking engagement with said key.

2. In a shelving structure the combination of an upright, a shelf having a depending flange, a horizontal key removably mounted in said upright and engaging said flange to support the same, and a clip having one end arranged to clamp said flange against said upright and the other end arranged to bear against said upright, said clip also having a slot intermediate the ends thereof releasably engaged with said key to releasably retain said key and to releasably maintain said clip in clamping position.

3. In a shelving structure the combination of an upright, a shelf having a depending flange, a horizontal key removably mounted in said upright and engaging said flange to support the same, and a clip arranged to clamp said flange against said upright, said clip having a key-hole slot engaged with said key to releasably retain said key and to releasably maintain said clip in clamping position, said clip being movable lengthwise of said slot into and out of locking engagement with said key.

4. In a shelving structure the combination of an upright, a shelf having a depending flange, a horizontal key removably mounted in said upright below said shelf, said key having a head at one end thereof, and a clip arranged to clamp said flange to said upright, said clip having a keyhole slot therein in which said key is engaged and coacting with said head to releasably retain said key and to releasably maintain said clip in clamping position, the large end of said slot being of a size to permit passage of said head therethrough when aligned therewith thereby to effect release of said clip and key by movement of said clip relative to said key in a direction lengthwise of said slot.

5. In a shelving structure the combination of an upright, a shelf having a depending flange, a horizontal key removably mounted in said upright below said shelf, said key having a head at one end thereof, and a clip arranged to clamp said flange to said upright, said clip having a vertical keyhole slot therein in which said key is releasably engaged, the large end of said slot being of a size to permit passage of said head therethrough when aligned therewith thereby to effect release of said clip and key by vertical movement of clip relative to said key.

6. In a shelving structure the combination of an upright, a shelf having a depending

flange, a key removably mounted in said upright and extending therethrough, and a pair of clips releasably engaged with the opposite ends of said key and coacting therewith
5 to clamp said flange against said upright, each of said clips having a slot to receive said key and movable lengthwise of said slot into and out of interlocking engagement with said key.

10 7. In a shelving structure the combination of an upright, a shelf having a depending flange, a key removably mounted in said upright and engaged with said flange to support the same, said key extending through
15 said upright, and a pair of clips releasably engaged with the opposite ends of said key and coacting therewith to clamp said flange against said upright, each of said clips being slotted to receive an end of said key and
20 removable relatively to said key to release the same.

8. In a shelving structure the combination of an upright having a vertical series of apertures therein, a shelf having a depending
25 flange, a shelf supporting key removably fitted in one of said apertures and extending therethrough, said key having a reduced portion adjacent each end thereof, and a slotted clip releasably engaged with each reduced
30 portion and cooperating with said key to clamp said flange against said upright.

In witness whereof, I hereunto subscribe my name this 26th day of August, 1929.

LLOYD H. FENSTERMAKER.

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