April 21, 1970 E. E. SHILE ET AL 3,507,401

SPLICE CONSTRUCTION FOR ADJUSTABLE STORAGE RACKS

Filed Aug. 20, 1968 3 Sheets-Sheet 1

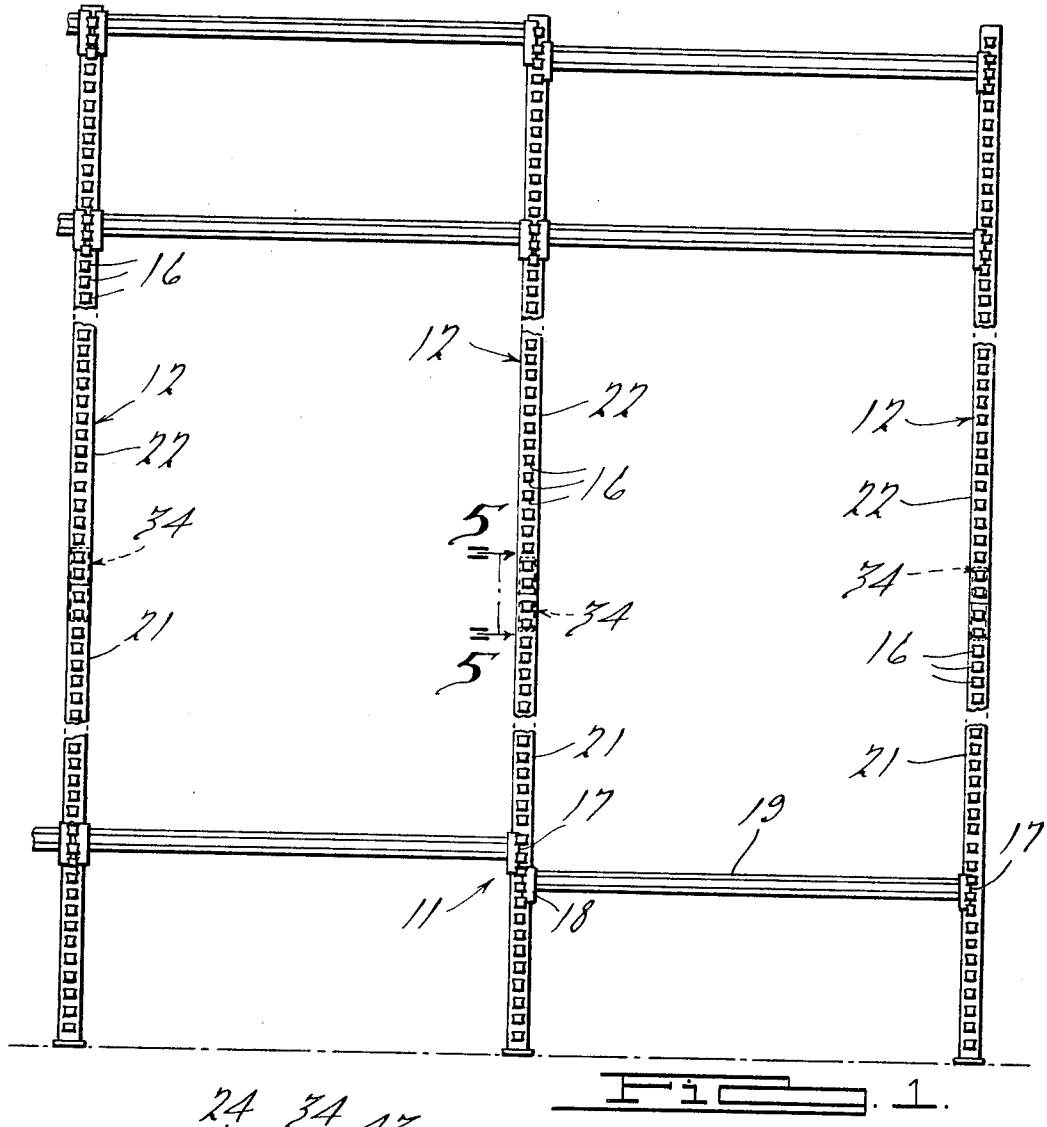


Fig. 1.

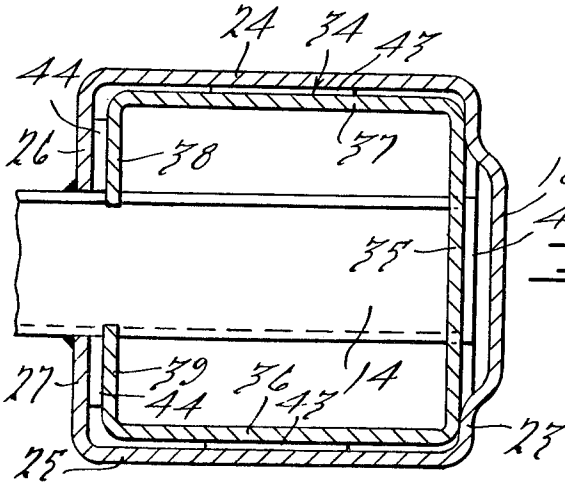


Fig. 2.

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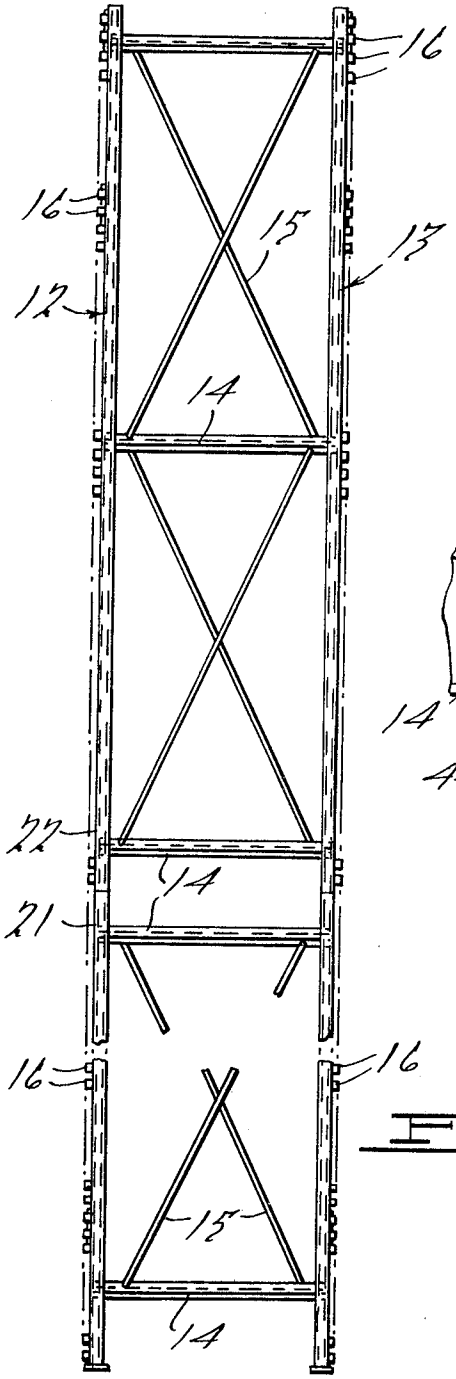


FIG. 2.

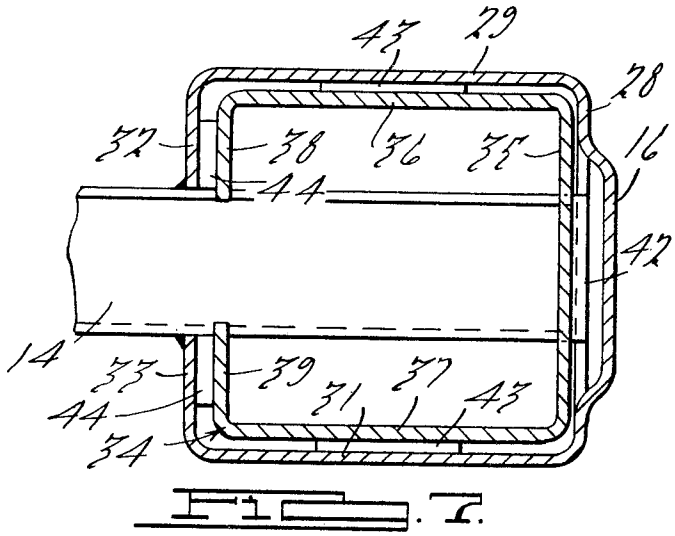


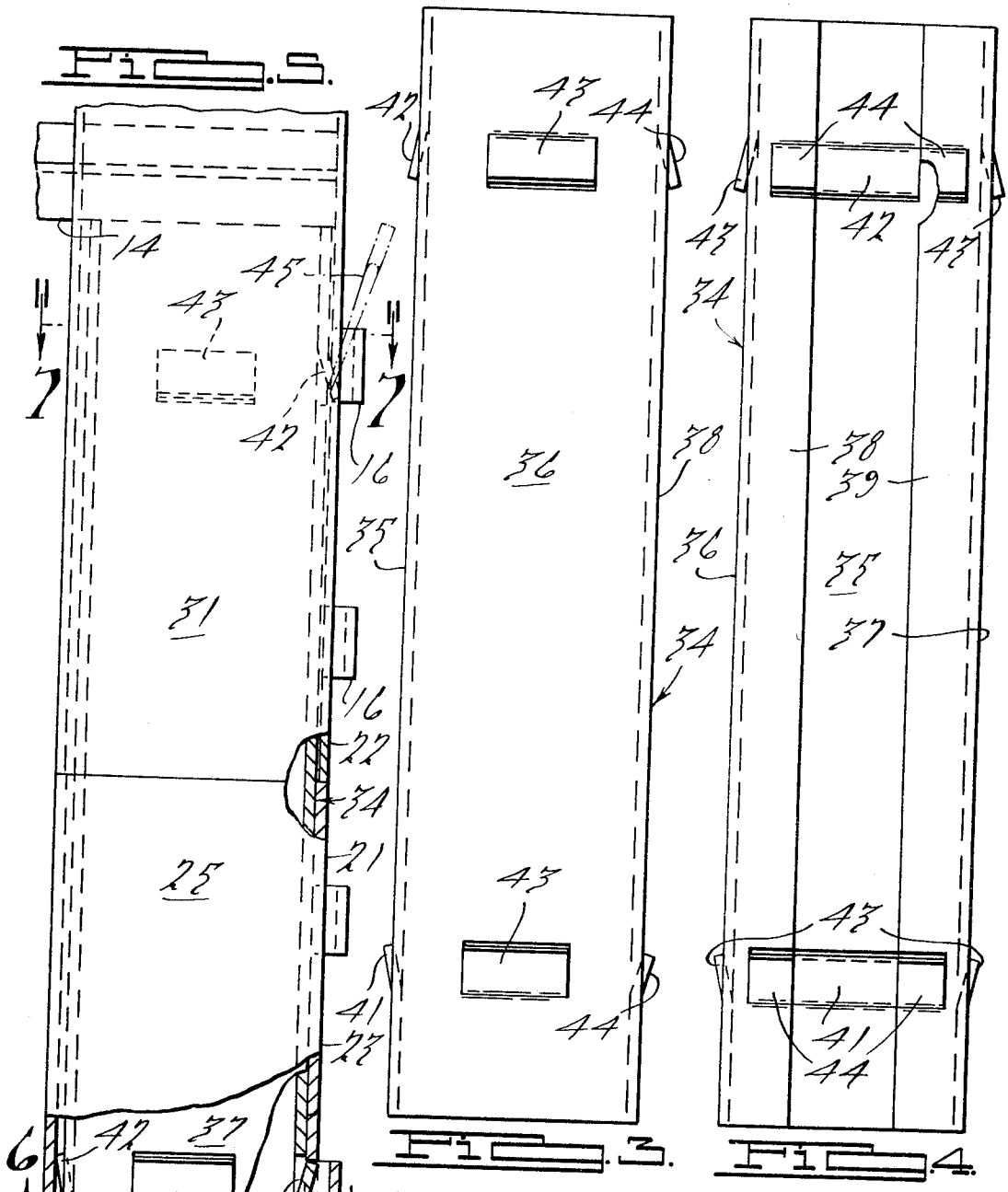
FIG. 1.

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SPLICE CONSTRUCTION FOR ADJUSTABLE STORAGE RACKS

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SPLICE CONSTRUCTION FOR ADJUSTABLE STORAGE RACKS

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U.S. Cl. 211—176 3 Claims

ABSTRACT OF THE DISCLOSURE

An adjustable storage rack having slotted columns and beams with teeth at their ends fitting into the column slots with a wedging action. The columns are in sections with the upper sections surmounting the lower sections, and a splice member telescopes into the adjoining ends of the abutting column sections and is locked in place by coaction with the column slots.

BACKGROUND OF THE INVENTION

Field of the invention

The invention relates to adjustable storage racks of the type shown in Patent No. 3,044,633 issued July 17, 1962 to Edward A. Baker, Jr. and entitled "Adjustable Storage Rack." Such storage racks have front and rear columns with outwardly facing pressed-out slots, and the beam ends have connecting members with downwardly extending teeth received by the slots which wedge them toward the column. The front and rear columns are connected by cross braces. Often a purchaser buys a rack having relatively short columns and later wishes to increase the rack capacity by increasing its height. Since an increased column height would create greater loads at the lower portions of the column than at the upper portions, it is desirable that if the rack height is increased by mounting one column section on another, the heavier gauge section be the lower one rather than the upper one. This can be accomplished by purchasing a heavier gauge column section to use as the lower section and placing the original section on top of it. To do this efficiently and economically, however, requires that the column sections have a constant outer cross-sectional shape, and that splicing means be provided which can telescope into the adjoining ends and be firmly held in place, while at the same time n.aintaining the columns in aligned position.

Description of the prior art

The splice sections conventionally used do not have means coacting with the column slots to retain the splice member in position, but require additional labor in order to properly secure them in position.

SUMMARY OF THE INVENTION

According to the invention ,splice members are provided in the shape of short lengths of steel with a box-shaped cross section, the outer dimensions of these members permitting them to be telescoped within the abutting column ends both front and rear. Pairs of outwardly inclined pressed-out tabs are formed on the walls of each splice member, these tabs being temporarily forced inwardly when the column ends are being pressed onto the splice member. The tabs facing the column webs snap outwardly into slots of the column sections to retain the splice member in position, while the remaining tabs frictionally engage the column sections to insure that the upper column rests squarely on the lower column. Cross braces extending between and into the front and rear column sections serve to center the splice members in position. If it is desired to remove the splice members, this may be done by inserting a screwdriver in the appropriate slots, pressing the locking tabs inwardly and withdrawing the column sections.

DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a front elevational view of a portion of an adjustable storage rack utilizing the splicing means of this invention;

FIGURE 2 is a side elevational view of the storage rack of FIGURE 1;

FIGURE 3 is the side elevational view of the splice member;

FIGURE 4 is a rear elevational view thereof, parts being broken away;

FIGURE 5 is an enlarged fragmentary elevational view taken along the line 5—5 of FIGURE 1 of the spliced portion of a column showing the splice member therein;

FIGURE 6 is a cross-sectional plan view taken along the line 6—6 of FIGURE 5 and showing the manner in which the splice member interfits with the lower column; and

FIGURE 7 is a cross-sectional plan view taken along the line 7—7 of FIGURE 5 and showing the manner in which the splice member interfits with the upper column.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The adjustable storage rack is generally indicated at **11** and comprises pairs of front and rear columns generally indicated at **12** and **13**, seen in FIGURE 2, each pair of columns being connected by cross braces **14** of Z-shaped cross section and by diagonal braces **15**. The columns have outwardly facing pressed-out slots **16** adapted to receive teeth **17** on L-shaped connecting members **18** which are secured to the opposite ends of beams **19**. These beams extend between adjacent columns and may be adjusted in height by choosing the slots **16** into which teeth **17** are inserted. The slots have sidewalls which flare outwardly and coact with the inner edges of teeth **17** to cause a wedging action, drawing brackets **18** into engagement with the side walls of the columns.

As described above, it is often desired to mount one column section on another in order to create a greater total column height. In order to do this it is desirable that the lower section be of heavier gauge material and therefore the original lower section (if the purchaser only bought one section initially) is placed above a newly purchased section of heavier gauge metal. In the present case the lower section of heavier gauge metal is indicated at **21** and the upper section lighter gauge metal is indicated at **22**. The outer dimensions of the sections will be the same but the inner dimensions are different, the lower section having thicker walls than the upper section.

Lower section **21** has a central web **23** and a pair of side walls **24** and **25** (FIGURE 6). A pair of flanges **26** and **27** extend toward each other from the rear edges of walls **24** and **25** but do not meet.

Similarly, upper column section **22** (FIGURE 7) has a central web **28**, a pair of sidewalls **29** and **31** and flanges **32** and **33** extending toward each other from the rear end of the side walls. Slots **16** are formed in webs **23** and **28** respectively. Cross braces **14** extend into the column sections, abutting the inner surfaces of webs **23** and **28**. They are located above and below the second slot **16** from the end of each column section, to aid in locating the splice members as will appear more fully below. The length of the cross braces are closely controlled so that the distance between the front and rear outer web surfaces of both the upper and lower column sections will be constant, That is, if the gauge of the upper column section **22** is less than that of the lower

sections **21**, the cross braces **14** between the front and rear upper sections will be correspondingly longer.

The splice members for both front and rear columns are similarly constructed. Each member is generally indicated at **34** and has a central web **35**, sidewalls **36** and **37**, and a pair of flanges **38** and **39** extending toward each other from the rear ends of the sidewalls. The length of member **34** is sufficient that it will extend beyond the second louver from the end of each section **21** and **22**, and permit the edges of flanges **38** and **39** as well as of web **35** to engage cross braces **14**. A pair of pressed-out tabs **41** and **42** are formed in the lower and upper portions respectively of web **35** of each member **34**, these tabs being inclined outwardly and toward each other. Tab **41** is joined to web **35** at its lower end and tab **42** at its upper end. The width of these tabs is slightly less than the width of pressed-out slots **16** and their height is somewhat less than the height of those slots. The outer edges of tabs **41** and **42** respectively are approximately in the plane of webs **23** and **28** respectively when the tabs are in their unstressed condition. Additional pairs of upper and lower tabs **43** are formed on sides **36** and **37** of each member **34**, and tabs **44** are formed in flanges **38** and **39**. These tabs are inclined outwardly and toward each other, and will frictionally engage the insides of columns **12** and **13** when inserted therein.

In operation, splice members **34** will be inserted into the adjoining ends of column sections **21** and **22** at both front columns **12** and rear columns **13** and the columns brought into abutting relation, so that the splice members engage cross braces **14**. The tabs **41** and **42** will be forced inwardly as the members telescope and will snap into position in slots **16** of column **21** and **22**. For this purpose the distance between the abutting edges of the columns and the adjacent slots **16**, and the spacing between slots **16**, are coordinated with the dimensions of the splice member so that tabs **41** and **42** will snap into the second slot from the end of each column section **21** and **22**, as shown in FIGURE 5. Cross braces **14** will properly center the splice member at the splice. Thus, the column sections will be in aligned relation and the splice member will be held from slipping out of position and will securely reinforce the abutting column section ends. It should be noted that when splice member tabs **41** and **42** are in interlocking position they will not interfere with the reception of teeth **17** by slots **16**. Tabs **43** and **44** will act to center the column sections **21** and **22** on each other so that they will be properly aligned for load transmittal purposes. In this regard, it should be observed that since cross braces **14** will maintain a constant distance between the outside web surfaces of the front and rear column sections, tabs **44** on the front and rear splice members will act in opposite directions to center the upper and lower sections on each other.

If it is desired to separate splice members **34** from either or both column sections, it is merely necessary to insert a screw driver **45** into, for example, the slot **16** which receives tab **42**, and pry this tab back into the plane of the web to which it is joined so that the column section my be withdrawn from the splice.

What is claimed is:

1. In a storage rack of the type having a plurality of front and rear columns connected by cross braces, said columns having sidewalls and outwardly facing central webs, vertically spaced pressed-out slots on said central webs, and beams with end connecting members having teeth receivable by said slots, each column having at least two sections, one surmounting the other, an elongated splice member having a generally constant external cross-sectional shape adapted to fit within the interiors of abutting ends of said column sections, said splice member having a central web facing the central webs of said column sections and sidewalls facing the sidewalls of said column sections, a pair of upper and lower pressed-out tabs in said central splice member web, said tabs extending toward each other and being inclined outwardly, the spacing between said tabs are being such that when telescoped into abutting column section ends the tabs will snap into position within slots on both column sections adjacent their abutting ends, whereby said splice member will be retained at the juncture of said columns, the outer edges of said tabs being approximately in the plane of the central webs of said column sections, and upper and lower outwardly inclined side tabs in each sidewall of said splice member, said side tabs frictionally engaging the sidewalls of said column sections.

2. The combination according to claim **1**, the sidewalls of said column sections and said splice member having flanges extending toward each other, and upper and lower outwardly inclined tabs on said splice member flanges frictionally engaging said column section flanges.

3. The combination according to claim **2**, the length of said splice member being such that its ends will be adjacent said cross braces connected to said upper and lower column sections, said cross braces entering said column section between its flanges and being in obstructing relation with the flange edges of said splice member, whereby the cross braces will center said splice member at the juncture of said column sections.

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U.S. Cl. X.R.

287—2; 182—178