Dec. 19, 1939. J. B. OLCH 2,184,056

FABRICATED MULTICELL SHUTTLE BOX

Filed April 18, 1938

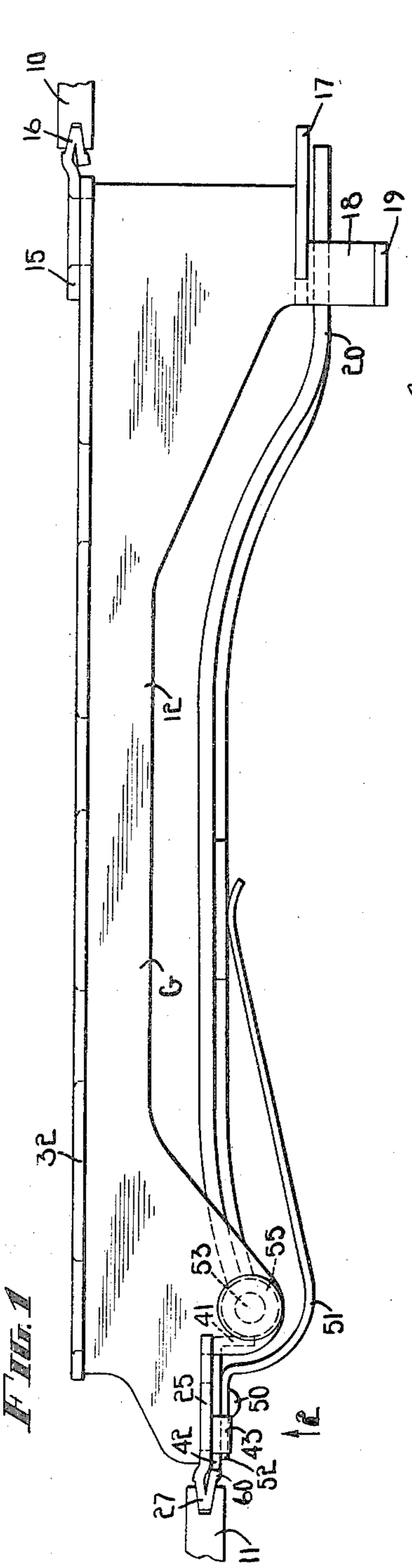


FIG. 1

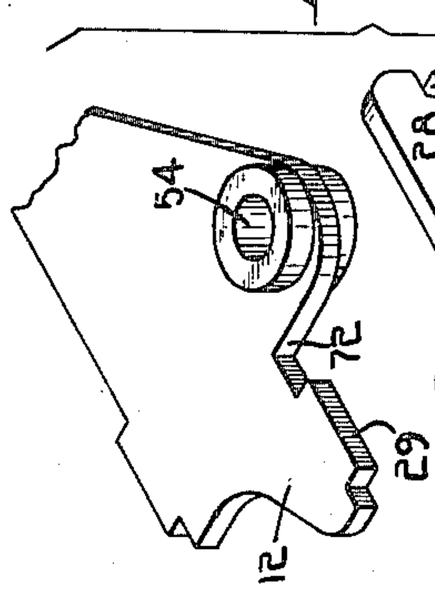
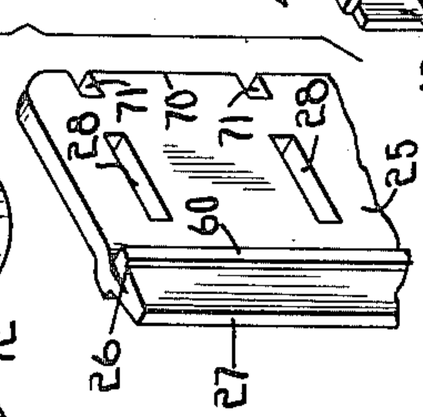


FIG. 3



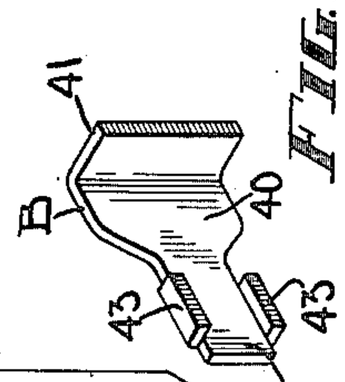


FIG. 5

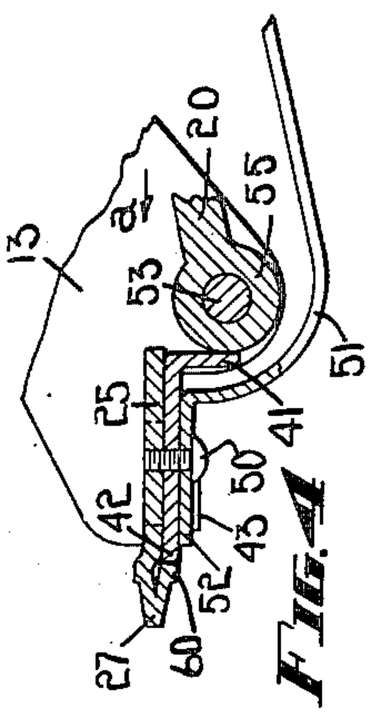


FIG. 4

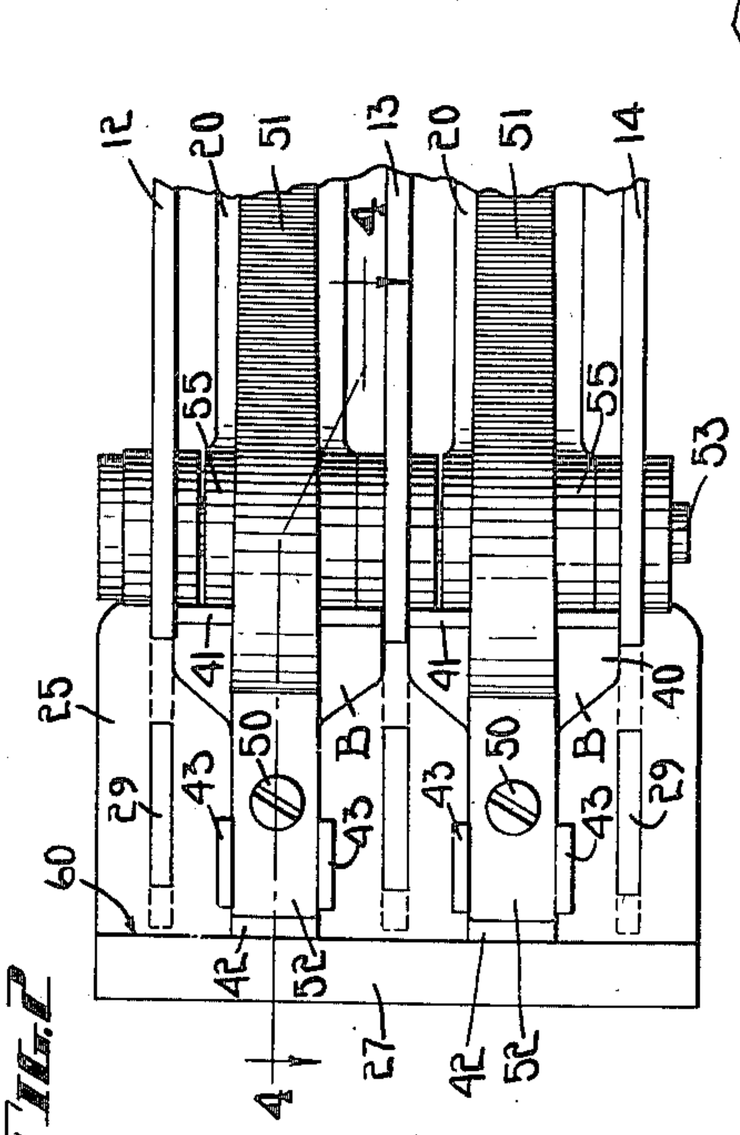


FIG. 2

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Patented Dec. 19, 1939 2,184,056

UNITED STATES PATENT OFFICE

2,184,056

FABRICATED MULTICELL SHUTTLE BOX

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Application April 18, 1938, Serial No. 202,692

8 Claims. (Cl. 139—184)

This invention relates to improvements in shuttle boxes for looms and it is the general object of the invention to improve upon the construction of shuttle boxes built up of sheet metal sections.

Shifting shuttle boxes for fancy looms are formed of a plurality of shuttle receiving cells which are movable so that any one of them can become active. These boxes shift ordinarily in a vertical direction and are provided with guide tongue plates which slide in grooved guides secured to the lay. Each cell is provided with a binder and binder spring and the cells are separated by horizontal vertically spaced plates or shelves forming the tops and floors of the cells.

It is an important object of my present invention to form the pressed steel box with a brace so constructed as to give support to several parts of the box. The brace as set forth hereinafter comprises a strip of sheet metal having a bent edge of such height as to support the adjacent shelves or plates. The other end of the brace has a pair of spaced lugs to support the binder spring. The body of the brace lies against the guide tongue plate and provides additional thickness of metal for increasing the anchorage of the binder holding screw.

The guide tongue plate has its outer edge reversely bent on itself to form a V-shaped guide tongue. It is another object of my present invention to extend the brace into engaging relation with the free edge of the bent tongue to support it.

The binder of the cell in active position is subjected to an endwise outward strain when the shuttle enters the cell. Heretofore the binder pin has been the only part of the box able to withstand this end pressure and when wearing of the pin develops there is an undesirable strain placed on the pin tending further to increase its wear. It is another object of my present invention to locate the previously mentioned turned edge of the brace so that it supports the hub of the binder to assist the binder pin in withstanding the end strain on the binder incident to shuttle boxing. This bent edge projects forwardly a substantial distance and is therefore able also to support the horizontal plates. In this way the brace not only assists in absorbing end pressure of the binder but also strengthens the adjacent parts of the horizontal plates to which the binder strains are transmitted from the pin.

It is a further object of my invention to notch the inner edge of the guide tongue plate for the reception of the horizontal plates, bracing the latter at points where they tend to break.

With these and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth.

In the accompanying drawing wherein a convenient embodiment of my invention is set forth,

Fig. 1 is a plan view of a shifting shuttle box made according to my invention,

Fig. 2 is a detailed front elevation of the left end of the box looking in the direction of arrow 2, Fig. 1,

Fig. 3 shows certain parts of a horizontal plate and the guide tongue plate detached from each other and suggesting the method of assembly in perspective,

Fig. 4 is a detailed horizontal section on line 4—4 of Fig. 2, and

Fig. 5 is a perspective view of the brace forming an important part of my invention.

Referring to Fig. 1, I have shown inner and outer box guides 10 and 11 which are fastened to the lay not shown and may be of the usual construction. The gang of boxes G comprises a series of horizontal vertically spaced plates 12, 13 and 14 which in the present instance define two shuttle receiving cells. The right end of these plates as shown in Fig. 1 are secured together by means of a rear vertical guide 15 extending into holding relation with all of the plates and having a tongue 16 to be received by the guide plate 10. A front plate 17 is also secured as by welding to the horizontal plates and the latter are extended as at 18 to have attached thereto a vertical strip 19 to limit motion of the binders 20. The right end of the gang of boxes of itself forms no part of my present invention and may be set forth in co-pending application Serial No. 187,827, U. S. Patent No. 2,141,656.

The left or outer end of the shuttle box may have a guide tongue plate 25 having an outer edge folded back on itself as at 26 to define a tongue 27 received by the outer plate 11. Plate 25 has horizontal slots 28 which receive tongues 29 formed on the several plates 12, 13 and 14, and welded to plate 25. The horizontal plates are provided with box backs 32 welded thereto.

The matter thus far described may be as set forth either in the aforesaid patent or in Lindegren Patent No. 1,826,317.

In carrying my present invention into effect I provide each cell with a brace B shown in Fig. 5 and having a vertical body 40 from the inner or right end of which is bent forwardly an edge

or flange 41. The height of the flange 41 is equal to the distance between the adjacent faces of adjacent horizontal plates and extend forwardly in contact with them, thereby supporting said plates against bending. The outer or left end of the brace is reduced as at 42 and has struck from the upper and lower edges thereof lugs 43.

In assembling, the brace is located as suggested in Figs. 2 and 4, one brace being provided for each cell and the body 40 of each brace being welded to plate 25. All of the parts of the box are fitted together and the braces placed as suggested in the drawing, after which the assembled parts are subjected to a single welding operation the result of which is to fasten all of them securely together.

After welding the braces and plate 25 are drilled and tapped to receive the screws 50 of the binder springs 51, the outer end 52 of each of which is located between the lugs 43 of the corresponding brace. A binder pin 53 passes through holes 54 in the plates and forms a pivotal support for the binders 20 by passing through their hubs 55. The screws 50 are therefore tapped into a double thickness of sheet metal, one of which is provided by the body of the brace.

As shown clearly in Fig. 4 the flange 41 projects forwardly from the plate 25 in close proximity to or actual contact with the hub 55. By this relation the end strain imposed on the binder in the direction of arrow *a*, Fig. 4, when the shuttle is boxed is supported partly by the binder pin 53 as usual, and partly by the flange 41. When the pin becomes worn all of the support may be derived from the flange 41. It will also be seen from Fig. 4 that the end 42 of the brace engages the free edge 60 of the reversely folded tongue 27 and therefore supports and braces the latter when it is subjected to outward pressure against the guide plate 11 incident to shuttle boxing. It is to be understood that the boxing of the shuttle not only subjects the binder to end strain but also tends to move the entire box unit in the direction of arrow *a*, Fig. 4, away from guide 10 and toward the outer guide 11.

By referring to Fig. 3 it will be seen that I have provided the right edge 70 of the guide tongue plate 25 with spaced notches 71 to receive portions 72 of the plates 12, 13 and 14, thereby supporting the plates near the points where they are subjected to strains transmitted through the binder pin.

From the foregoing it will be seen that I have provided each cell of a fabricated multicell shuttle box with a brace which supports the horizontal plates which it engages and also provides guide lugs for the binder spring. Furthermore, the brace supports the reversely bent guide tongue 27 and provides additional thickness of metal into which the binder spring screws 50 may be tapped. Also the flange 41 assists the binder pin in withstanding the outward end thrust of the binder when the shuttle is boxing. The plate portions 72 are received by notches 71 of plate 25 which thereby strengthens the horizontal plates.

Having thus described my invention it will be seen that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention and I do not wish to be limited to the details herein disclosed, but what I claim is:

1. In a loom shuttle box, a pair of vertically spaced horizontal sheet metal plates, a vertical wall secured to the plates and holding the same in spaced vertical relationship, a brace formed of sheet metal and having a flat body secured to the wall between the plates and provided with a flange bent therefrom and extending between the plates and having supporting engagement with the latter, and vertically spaced binder spring retaining lugs integral with the brace and extending away from the wall.

2. In a loom shuttle box, a pair of vertically spaced horizontal sheet metal plates, a vertical wall secured to said plates, a sheet metal brace having a flat body secured to the wall and having a part thereof extending between and engaging adjacent surfaces of adjacent plates to support the latter, a binder spring, and a screw to hold said spring in place, said screw tapped into the brace and said wall.

3. In a loom shuttle box, a pair of vertically spaced horizontal sheet metal plates, a vertical wall secured to said plates, a sheet metal brace having a flat body secured to the wall and having a part thereof extending between and engaging adjacent surfaces of adjacent plates to support the latter, a binder spring, a screw to hold said spring in place, said screw tapped into the brace and said wall, and binder spring retaining lugs integral with the brace and extending forwardly from the wall.

4. In a loom shuttle box, a pair of vertically spaced horizontal sheet metal plates, a wall extending vertically and secured to said plates, a binder pin extending through the plates, a binder having a hub surrounding the pin, said wall having a reversely bent outer edge terminating in front of the wall, and a brace formed of sheet metal having a flat body secured to the front of the wall and having an outer edge extending into supporting contact with said reversely bent edge in front of the wall, said brace also having an edge thereof bent forwardly from the wall and extending between the plates and having supporting contact with the latter and extending in close proximity to said hub to support the latter when the binder pin wears.

5. In a loom shuttle box, a pair of vertically spaced horizontal sheet metal plates, a vertical wall secured to said plates, and a sheet metal brace having a flat body secured to the wall and having a flange bent therefrom extending between the plates and in contact with adjacent faces of the plates to support the latter.

6. In a loom shuttle box, a pair of vertically spaced horizontal sheet metal plates, a vertical wall secured to said plates, a brace having a flat body extending along and secured to the wall, a binder pin extending through the plates, a binder having a vertical hub surrounding the pin, and a supporting flange integral with the back of said brace and extending between and engaging adjacent surfaces of adjacent plates to support the latter, said flange extending vertically along and in close proximity to the hub to support the latter against endwise motion when the shuttle is boxed and having supporting contact with said plates.

7. In a loom shuttle box, a pair of vertically spaced horizontal sheet metal plates, each plate having a forward extension, a binder pin passing vertically through the extensions, bearing members for the binder pin on adjacent horizontal surfaces of said extensions and projecting into the space between said extensions, a brace rigid with the plates, and a flange extending forwardly from the brace and lying between and engaging

adjacent surfaces of the extensions to support the latter, said flange also engaging the bearing member, the latter and the flange supporting each other.

8. In a loom shuttle box, a pair of vertically spaced horizontal sheet metal plates, an extension projecting forwardly from each plate, a binder pin passing vertically through the extensions, bearing elements on adjacent horizontal surfaces of the extensions, each bearing element extending into the space between the plates, a sheet metal vertical wall secured to the plates, and a flange rigid with the wall lying between and engaging adjacent faces of the horizontal sheet metal plates, and said flange projecting into engagement with the bearing elements, the latter and the flange supporting each other.

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