United States Patent

Larsson

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[54] PAPER HOLDDOWN CLIP

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[52] **U.S. Cl.** **24/67.3**

[51] **Int. Cl.** **B42f 1/00**

[58] **Field of Search** ..... 24/67.11, 67 R, 243 P, 263 PC, 24/11 F, 230 F, 230 SC, 67.3; 108/43

[56] **References Cited**

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[57] **ABSTRACT**

An economical drawing board including a sheet-holding frame with brackets formed thereon, and a pair of clamps for sliding along the brackets to hold down a sheet of paper against the frame. Each bracket has an inclined guide wall, and each clamp has a pair of runners for moving along the guide wall and a paper-engaging portion depending from one end of the runners to engage and hold down a sheet of paper. In order to prevent removal and loss of the clamps, the frame has a slot below each guide wall, and one runner has an elongated retainer member that abuts an end wall of the slot when the clamp is slid in a direction to remove it from the bracket.

7 Claims, 4 Drawing Figures

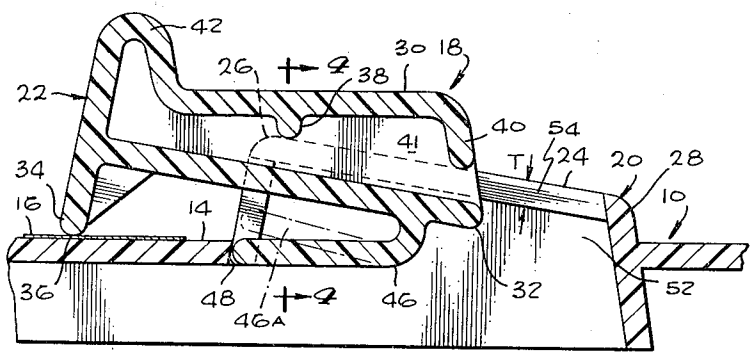

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Fig. 2

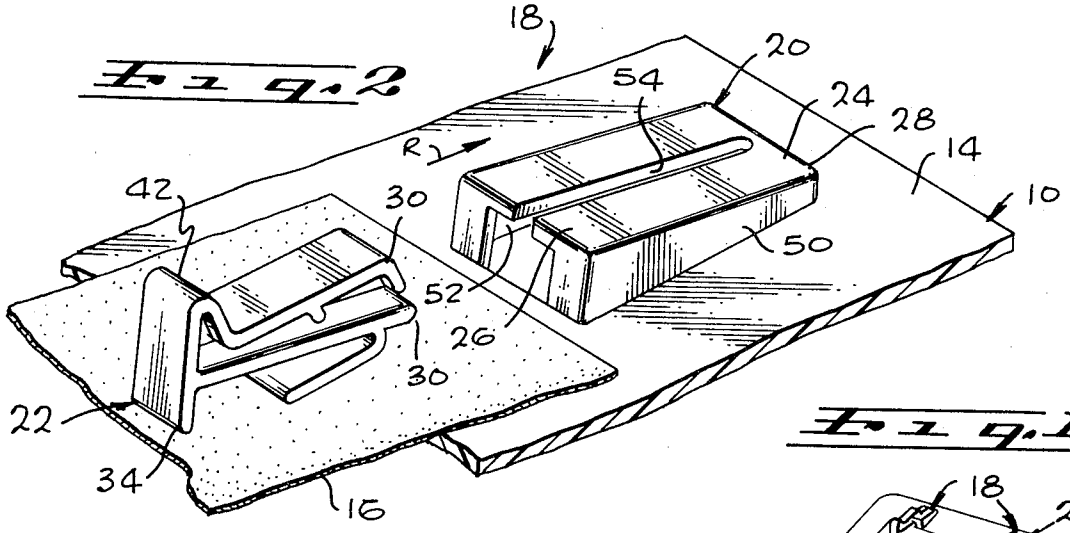


Fig. 1

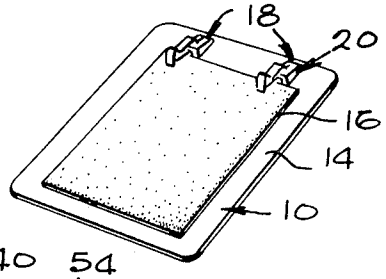
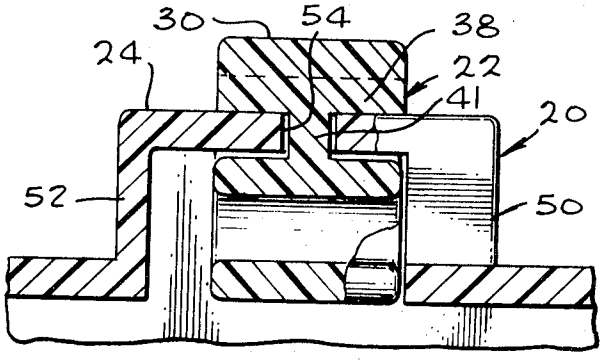


Fig. 3

Fig. 4



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PAPER HOLDDOWN CLIP

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to apparatus for holding down sheets of paper to a drawing board.

2. Description of the Prior Art

Many types of toys employ drawing boards which receive a sheet of paper that is to be drawn on. Clips are required to hold down a sheet of paper to the board in a manner that enables rapid insertion and removal of a sheet. While a wide variety of spring-operated clips can be employed, they generally require a pivotally mounted clamp and a spring for urging the clamp against the board, and they also entail riveting or gluing steps for securely holding them to the board. Toys that are designed for high-volume mass production and sale at a low price, which employ drawing boards, could benefit from clamps that were simple and economical to produce and install.

OBJECTS AND SUMMARY OF THE INVENTION

An object of the present invention is to provide a drawing board with easily operated paper-holding clamps, that is economical to mass produce.

Another object is to provide a simple paper holddown device which is simple to manufacture and install.

In accordance with one embodiment of the present invention, a drawing board is provided which includes a frame and a pair of clamps which can be economically manufactured and installed on the frame to holddown a sheet of paper thereto. The frame has a flat paper-supporting region and a pair of brackets along the edge of the region, each bracket having a guide wall inclined from the paper-supporting surface. A clamp is provided for installation on each bracket. Each clamp has a pair of runners for sliding along the guide wall and a paper-engaging portion at one end of the runners for moving down against a sheet of paper as the runners slide along the guide wall. In order to prevent loss of a clamp, the frame has a slot below each guide wall, and each clamp has a forwardly extending retainer member that can be received in the slot. During manufacture, the clamp is installed by engaging the runners with the guide wall and pushing it rearwardly until the retainer member passes into the slot. Thereafter, the clamp cannot to be completely removed because the front of the retainer member will abut the front of the slot.

The novel features of the invention are set forth with particularity in the appended claims. The invention will be best understood from the following description when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a drawing board constructed in accordance with the invention;

FIG. 2 is a partial perspective view of one holddown apparatus of the drawing board of FIG. 1;

FIG. 3 is a sectional side view of the holddown apparatus of FIG. 2; and

FIG. 4 is a view taken on the line 4—4 of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 illustrates a drawing board apparatus which includes a frame 10 with a flat paper-supporting region 14 that is designed to support a sheet of paper 16 that is to be drawn upon or otherwise utilized. Two paper holddown devices 18 are positioned along one edge of the frame to engage an edge portion of the paper and prevent the paper from moving. The frame 10 may be a drawing board used alone or as part of a more complicated toy, such as one that includes instruments which mark the sheet or follow lines already on it. The holddown devices 18 are constructed to enable the drawing board device to be mass produced at very low cost.

As shown in FIGS. 2–4, each hold down device 18 includes a bracket 20 formed as part of the frame 10 and a clamp 22 which can be received by the bracket 20 to press the sheet of paper 16 against the flat surface of the frame. The bracket 20 includes an upper guide wall 24 that extends at an incline with respect to the flat paper-supporting surface 14, the guide wall having a forward end 26 above the level of the surface 14 and a rear end 28 below the level of the front end 26. The clamp 22 has a pair of runners 30, 32 that can slide along the guide wall 24, and a sheet-engaging portion 34 depending from the forward end of the runners. As the runners 30, 32 slide in a rearward direction along the guide wall 24, as indicated by the directional arrow R, the lower end 36 of the sheet-engaging portion 34 moves down against the sheet 16 to clamp it securely against the frame.

The clamp 22 is a unitary member constructed of a resilient material such as a resilient plastic. The two runners 30, 32 extend substantially parallel to each other so that the upper runner 30 engages the top of the guide wall 24 while the lower runner 32 engages the bottom of the guide wall during sliding of the clamp therealong. The upper runner 30 has a pair of protrusions 38, 40 (FIG. 3) extending downwardly therefrom to contact the guide wall at spaced locations, while the lower runner 32 has a flat upper surface. The two runners 30, 32 are spaced apart by a distance slightly greater than the thickness T of the guide wall 24. A central web 41 maintains this separation, and also increases the durability of the clamp. The forward end of the upper runner 30 has a upwardly looped portion 42 that joins it to the sheet-engaging portion 34. The upwardly looped portion 42 serves as a convenient finger hold that can be grasped in pulling out the clamp when it is desired to remove a sheet of paper from the board.

In order to prevent complete removal of the clamp 22 from the bracket 18, which could result in loss of the clamp, an elongated retainer portion 46 is formed in the clamp. The frame 10 is provided with a slot 48 extending rearwardly from a position below the front end of the guide wall 24. The forward end wall of the slot 48 forms a ledge and a rearwardly facing surface. The retainer member 46 is biased towards the position shown in FIG. 3, wherein it abuts the front wall of the slot 48 when the clamp 24 is moved towards an extreme forward position. This prevents further forward movement of the clamp and therefore prevents its complete removal.

The retainer portion 46 of the clamp extends from a rearward location on the lower runner 32, and extends in a forward direction therefrom. The retainer portion 46 is long enough to assure substantial resiliency independent of the runner 32. During assembly of the drawing board, the clamp 22 is inserted into place by placing the runner 30 above the guide wall 24 and the runner 32 below it, and then moving the clamp rearwardly. During such movement, the retainer portion 46 initially deflects to ride over the frame, achieving a maximum deflection indicated at 46A just prior to reception in the slot 48. As soon as the front end of the retainer portion passes the front wall of the slot 48, the retainer portion springs downwardly and thereafter prevents removal of the clamp. Removal can be achieved by a person placing his hand under the frame 10 and pushing up on the retainer portion 46 while pulling forwardly on the clamp. However, such removal is not necessary during normal use of the apparatus, and the clamps are unlikely to be lost.

The bracket 20 is formed as an integral part of the frame 10. It includes a pair of upstanding walls 50, 52 with the guide wall 24 extending laterally between them. The guide wall 24 has a slot 54 extending along its length to receive the web 41 of the clamp.

Thus, the invention provides a simple sheet-receiving apparatus with simple sheet holddown devices. The frame 10 with the brackets 20 thereon can be formed in a single injection molding or vacuum-forming operation. In vacuum forming, the upward displacement of plastic to form the brackets automatically creates the slots 48. The clamps 22, which also can be formed in an injection molding operation, can be easily

installed by merely inserting them into the brackets. No riveting steps or the like are required during installation of the clamps, so that a minimum of equipment is required and the insertion can be performed very rapidly.

Although particular embodiments of the invention have been described and illustrated herein, it is recognized that modifications and variations may readily occur to those skilled in the art and, consequently, it is intended that the claims be interpreted to cover such modifications and equivalents.

What is claimed is:

1. Apparatus for holding a sheet comprising:

a frame having a flat sheet-supporting region and a plurality of brackets, each bracket having walls defining an elongated guide which is inclined from the plane of said flat sheet-supporting region; and

a plurality of clamps, each having an elongated runner portion formed to slide along said guide and a sheet-engaging portion depending from one end of said runner portion, whereby said sheet-engaging portion moves down against a sheet as clamp is slid along said guide.

2. The sheet-holding apparatus described in claim 1 wherein:

each of said guides of said brackets has a forward end portion and a rearward end portion below the level of said forward end portion;

said frame defines a slot extending rearwardly under each of said guides from a position beneath the forward end portion thereof;

the runner portion of each of said clamps has forward and rearward ends, said sheet-engaging portion depending from said forward end; and

each of said clamps has a resilient forwardly extending retainer portion for engaging the forward wall of said frame slot to prevent removal of said clamp after its insertion into said bracket.

3. The sheet-holding apparatus described in claim 1 wherein:

the guide of each of said brackets includes a wall of predetermined thickness; and

the runner portion of each clamp includes upper and lower elongated members extending substantially parallel to each other to hold said guide wall between them, said upper member having an upwardly looped portion at the end nearest said sheet-engaging portion, whereby to provide a finger hold for pulling out the clamp to release a sheet.

4. In a device for quickly receiving and releasing a sheet of paper or the like on a sheet-receiving surface of a frame, the improvement comprising:

a bracket fixed to said frame, said bracket having a guide wall extending at an incline to said sheet-receiving surface, with a forward end above said surface and a rearward and below the level of said forward end; and

a clamp constructed of resilient material, said clamp having a pair of spaced runner members slidably engaged with said guide wall to guide said clamp in forward and rearward movement therealong, said clamp also having a downwardly extending sheet-engaging portion for moving down against a sheet as said clamp is slid rearwardly.

5. The improvement described in claim 4 wherein:

said frame includes walls defining a ledge with a rearwardly facing surface; and

said clamp includes an elongated resilient retainer member extending from said second runner to engage said rearwardly facing surface of said ledge when said clamp is moved forwardly, whereby to resist removal of said clamp.

6. The improvement described in claim 4 wherein:

said bracket has a pair of laterally spaced upstanding walls and said guide wall extends laterally between said upstanding walls and has a slot extending along its length; and

said pair of runner members includes a first runner member lying on top of the upper surface of said guide wall and a second runner member lying below the lower surface of said guide wall and between said upstanding walls, and said clamp includes a web joining said runner members and extending through said slot in said guide wall.

7. In a device for quickly receiving and releasing a sheet of paper or the like on a sheet-receiving surface of a frame that has brackets, wherein the brackets have a pair of sidewalls and an inclined upper wall, the improvement comprising:

a clamp constructed of a resilient material, with a rear end for reception in said bracket and a front end for extending forward of said bracket, said front end including an elongated sheet holder with top and bottom portions, said clamp having an upper runner with an upwardly looped front portion extending from the top portion of said sheet holder and an elongated portion extending rearwardly therefrom, a lower runner extending rearwardly from a location on said sheet holder between the top and bottom portions thereof, and an elongated retainer extending forwardly from a location on said lower runner.

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