

Dec. 31, 1968

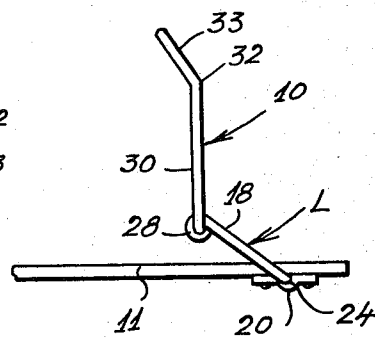
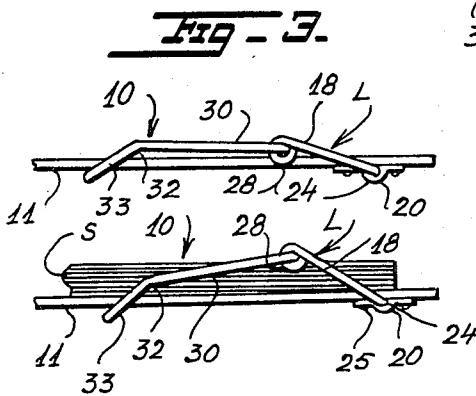
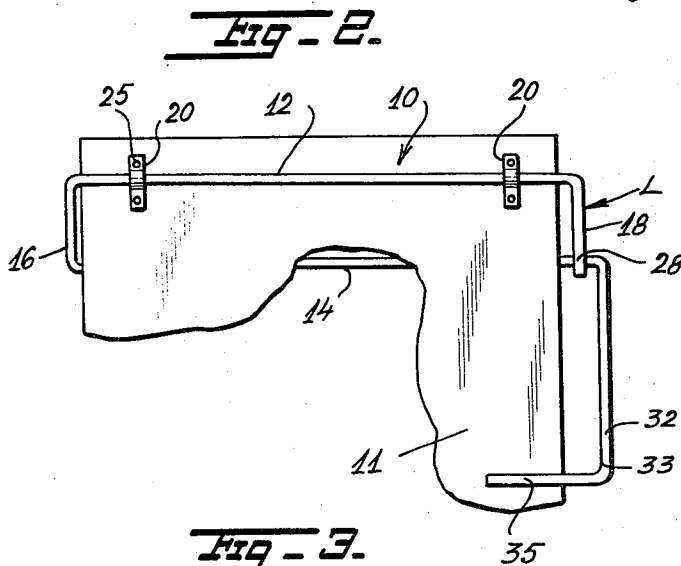
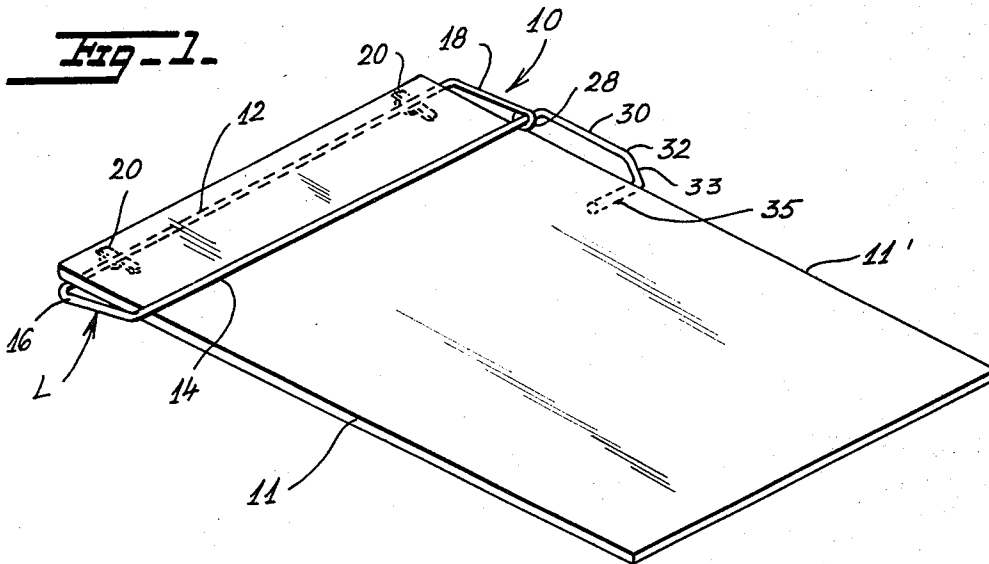
G. G. STODDARD

3,419,012

CLAMPING DEVICE

Filed April 12, 1967

Sheet 1 of 2



INVENTOR

Glenn G. Stoddard

BY

Polach & Faulstich
ATTORNEYS

Dec. 31, 1968

G. G. STODDARD

3,419,012

CLAMPING DEVICE

Filed April 12, 1967

Sheet 2 of 2

Fig - 7.

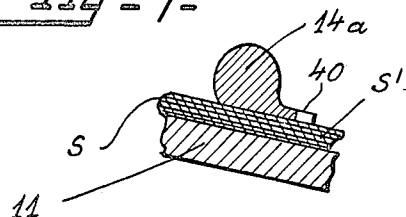


Fig - 6.

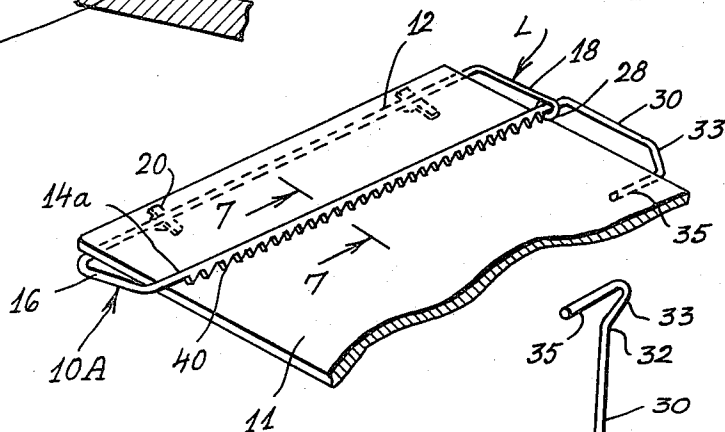


Fig - 8.

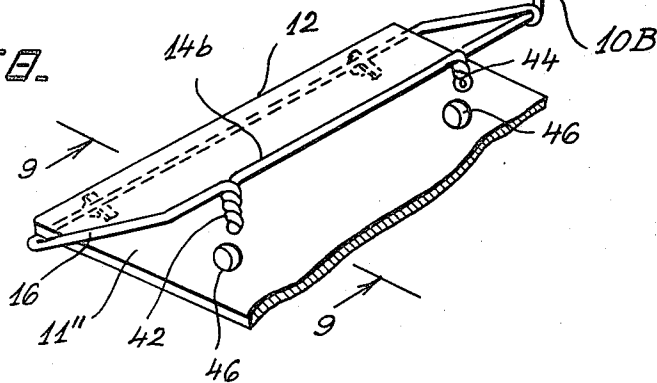
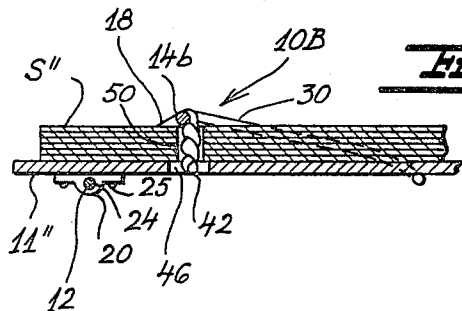


Fig - 9.



INVENTOR

Glenn G. Stoddard

BY

Jolachek & Saulsbury
ATTORNEYS

1

2

3,419,012

CLAMPING DEVICE

Glenn G. Stoddard, Oak Creek, Wis., assignor to Glenn G. Stoddard, Sydney M. Eisenberg, and Frank Marciniak, Milwaukee, Wis.

Filed Apr. 12, 1967, Ser. No. 630,427

1 Claim. (Cl. 129—35)

ABSTRACT OF THE DISCLOSURE

The disclosure describes a clamping device applied to clip board. The device includes a one-piece clamping member made of springy wire. The wire is formed into generally rectangular looped configuration to define a lever, torsion bar and material retainer, torsion restrainers, keeper for the lever, support-bearing for the torsion bar and lever, and a tie bar-shaft. Support bearings are also provided for mounting the clamping member to a board.

The invention concerns a clamping device of general application. A preferred application of the invention is its use as a clip board retaining device.

Heretofore, the conventional clip board has generally employed a pivotally mounted or hinged clamp jaw biased against the board by a coil spring. To position papers or other articles on the board, the jaw must be elevated against tension in the spring. This requires use of one hand by the user, while the user's other hand positions the papers on the board. If both hands are required to position the papers, this creates an awkward situation since the clamp will not stay open if it is manually released. The use of costly separate jaws and springs is also objectionable. The present invention overcomes this situation in a relatively simple and effective manner.

According to the invention there is provided a clamping device which stays open when released and which stays closed under tension when engaged. The device will hold articles of various thicknesses by accommodating to the thickness of the article held. The device has a single operating lever which is an integral part of the rectangular clamp. The clamp itself is formed of a single length of bent wire which is tensioned in torsion when in closed or engaged condition. The keeper of the lever is readily engaged with the baseboard and released therefrom. In a modification of the invention the device is adapted for use with papers having punched holes. In a further modification the device is adapted to facilitate cutting off sheets without releasing the clamping device.

One object of the invention is to provide an improved clamp utilizing a simplified torsional and clasp concept in such a way as to apply a retaining force without the necessity of holding the clamp open against a spring force while positioning an article to be clamped.

Another object is to provide a clamp in which a movable portion is so arranged as to be multifunctional, with a single integral member performing the functions of lever, keeper for the lever, torsion bar and material retainer, torsion arm and restrainer, tie bar and shaft, support-bearing, and a mechanically opposed torsion arm and restrainer, arranged to translate an essentially equal clamping force at either end of the torsion bar and material retainer. This structure in contrast to customary single lever actuated hinge assemblies, has the advantage that the movable clamping member is not dependent on the function of the modulus of cross section to avoid deflection, but depends rather on the torsional elasticity of the clamping member. In this manner, better utilization of springy material results.

Another object is to provide a clamp which spans the

sheet material to be retained in such a way as to permit unrestricted longitudinal placement.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings and to the appended claim in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure;

FIGURE 1 is an isometric view of a clipboard provided with a clamping device embodying the invention,

FIG. 2 is a rear plan view of the clipboard and clamping device, parts of the board being broken away,

FIG. 3 is a fragmentary edgewise view of the clipboard and clamping device, the clamping device being shown in closed or engaged position without any articles held on the board,

FIG. 4 is a view similar to FIG. 3, the clamping device being shown in open or released position,

FIG. 5 is a further edgewise view similar to FIG. 3, showing the clamping device in closed position holding a pile of sheets on the board,

FIG. 6 is a view similar to a part of FIG. 1 illustrating another embodiment of the invention,

FIG. 7 is an enlarged fragmentary sectional view taken on line 7—7 of FIG. 6,

FIG. 8 is another view similar to a part of FIG. 1, illustrating another embodiment of the invention, with the clamping device shown in open or disengaged position, and

FIG. 9 is a fragmentary sectional view taken on line 9—9 of FIG. 8, with the clamping device shown in closed or engaged position.

For purposes of simplified illustration, the clamping device is shown arranged as a clipboard retaining device. Referring now to FIGS. 1—5 of the drawing, there is shown the clamping device 10 mounted on a rectangular, flat, rigid board 11. The clamping device is made from a length of spring wire bent to define a generally rectangular loop L. The loop has two longer transverse bars 12, 14 and two shorter lateral end rails 16, 18. Bar 12 is disposed at the rear or underside of board 11 and is engaged at spaced points by a pair of clips 20. These clips have eyes 24 in which bar 12 is frictionally but rotationally engaged. The clips may be secured to board 11 by pins or rivets 25, or by integral teeth or other suitable means. The bar 12 of the device 10 serves as a tie bar and shaft connecting the two end rails 16 and 18. Rail 16 joins bars 12, 14 and serves as a torsion restrainer for material such as sheets S mounted on the board 11. Rail 16 also serves as an arm connecting the tie bar and shaft 12 with one end of bar 14.

Bar 14 is located at the front of the board 11. This part of the loop L serves as a torsion bar and material retainer. The other end of torsion bar and material retainer 14 is rotatably engaged in a bearing 28 defined by an eye loop formed at the free end of rail 18. This rail is disposed parallel to rail 16 and cooperates with it so that torsion bar 14 is uniformly applied along its length to the upper surface of board 11 and to the articles S thereon.

Extending perpendicularly to torsion bar 14 in a vertical plane laterally of rail 18 and perpendicular to the plane of loop L is a relatively long lever 30. This lever extends away from the loop and is formed with a bend 32 near its free end 33. A short finger 35 extends laterally inward of and underneath the board. Finger 35 serves as a keeper for the lever to hold it underneath the board 11 when the clamping device is closed. Then torsion bar 14 is pressed down on the surface of the board as clearly shown in FIG. 1. End rails 16 and 18 extend in an upwardly inclined position from rear to front of the board

3

11. The torsion bar 14 is twisted in torsion about 90°.

FIG. 4 shows lever 30 assuming a substantially vertical position while torsion bar 14 is elevated above board 11 and untensioned. To open the clamp as shown in FIG. 4, lever 30 is pulled manually slightly outward laterally of edge 11' of the board until finger 35 clears edge 11'. Then the lever can be manually released so that the entire clamp automatically opens. A pile of sheets S can be then freely arranged on board 11. The user can employ two hands for this operation since it is not necessary to hold the clamping device open manually. FIG. 5 shows how the clamping device accommodates to the thickness of the pile of sheets S as end rails 16 and 18 assume a keeper inclined position with respect to the front and rear surfaces of board 11. To assume this position, bar 12 rotates slightly in bearing clips 20. Also slightly more torsional tension is applied to torsion bar 14.

FIGS. 6 and 7 show another clamping device 10A in which parts corresponding to those of device 10 are identically numbered. In device 10A, the forward edge of torsion bar 14a is formed with serrations or teeth 40 extending the full width of board 11 and almost the full length of bar 14a. By this arrangement the uppermost sheet S' of a pile S on board 11 can be torn off nearly and quickly without disturbing the other sheets and without having to release the clamping device.

FIGS. 8 and 9 show another clamping device 10B which is generally similar to device 10 and corresponding parts are identically numbered. In this embodiment, a pair of twisted pegs 42, 44 are integrally formed with bar 14b. These pegs extend into a pair of laterally spaced holes 46 in the board 11' and into registering holes 50 in sheets S' when the clamping device is closed as indicated in FIG. 9. When the clamping device is open as shown in FIG. 8, a pile of sheets can be mounted on the board with holes 50 in registration with holes 46. This arrangement prevents any of sheets S' from being pulled out from underneath the torsion bar 14b while the clamping device is closed. This extra security feature may be desirable in certain cases. The clamping devices 10A and 10B operate in the same manner as device 10 insofar as the closing and opening are concerned. The clamping devices can be applied to other purposes than clipboards.

A most important advantage of the present invention is the relative simplicity of construction which enables the clamping devices to be manufactured at very low cost by mass production metal working machinery.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claim.

What is claimed is:

1. A torsional clamping device, comprising a single

4

length of springy wire bent to form a generally rectangular loop, said loop having two opposing parallel long bars and two opposing parallel, shorter end rails, one end of one of the rails being bent forming an eye, one end of one bar being rotationally engaged in said eye and extending therethrough, said wire being further bent to form a lever extending perpendicular to said one end of the one bar in a plane laterally of said one rail and perpendicular to the plane of the loop, said wire being still further bent to form a short finger extending perpendicular to said lever and laterally inward thereof parallel to said one bar for holding said one bar in torsional tension, a flat, rigid, rectangular baseboard, the other bar being disposed at the underside of the board to serve as a tie bar for the end rails while said one bar overlays the upper side of the board to serve as a torsion bar and material retainer, said short finger being engageable under the board for holding the lever down and torsionally tensioning said one bar while the short rails extend in inclined positions with respect to the upper and under the sides of the board, and whereby said rails elevate said one bar to clear the board for positioning material on the board when the short finger is disengaged from the board, said board being formed with a pair of holes spaced apart transversely of the board and aligned with said one bar, said one bar having projections engageable in said holes for retaining on the board sheet material having other holes registering with the holes in the board, clips rotatably securing said other bar to the underside of the board, so that the angular position of the end rails accommodates to the thickness of material held on the board by the torsion bar, and whereby the rails cooperate in holding and supporting said one bar so that said one bar applies pressure uniformly along its length to the upper side of the board, said projections being formed as twisted pegs integral with said one bar.

References Cited

UNITED STATES PATENTS

396,505	1/1889	Nolan	129—35
704,119	7/1902	Ryden.	
725,926	4/1903	Binner	129—35
2,134,177	10/1938	Ellis	281—44
2,164,496	7/1939	Brown	129—35
3,122,802	3/1964	Kaufman	24—66
3,215,452	11/1965	Goodwin	281—44

FOREIGN PATENTS

536,645	2/1957	Canada.
---------	--------	---------

JEROME SCHNALL, Primary Examiner.

U.S. Cl. X.R.

281—44; 24—66