

Sept. 14, 1965

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3,205,548

FABRIC HOLDING CLAMP

Filed Feb. 20, 1962

2 Sheets-Sheet 1

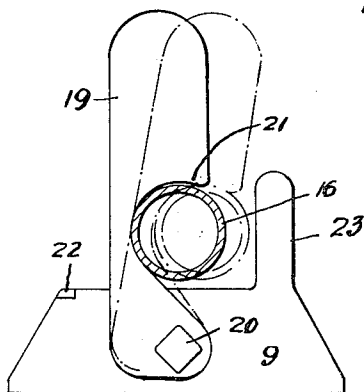
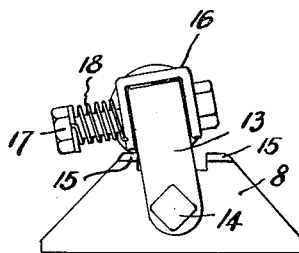
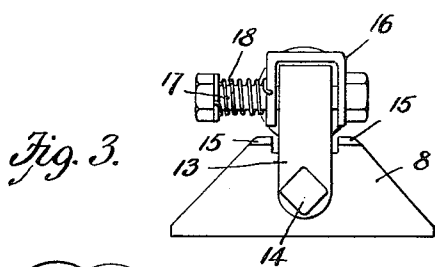
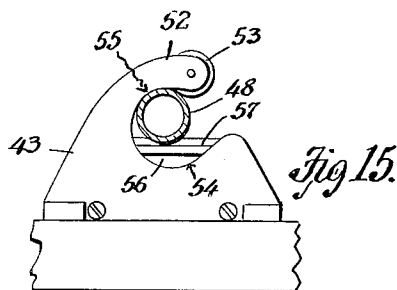
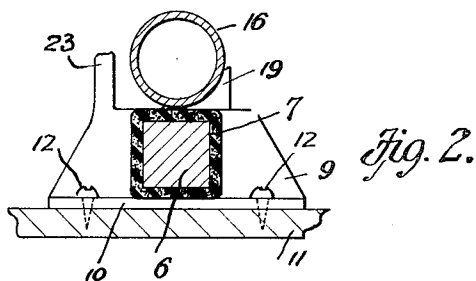
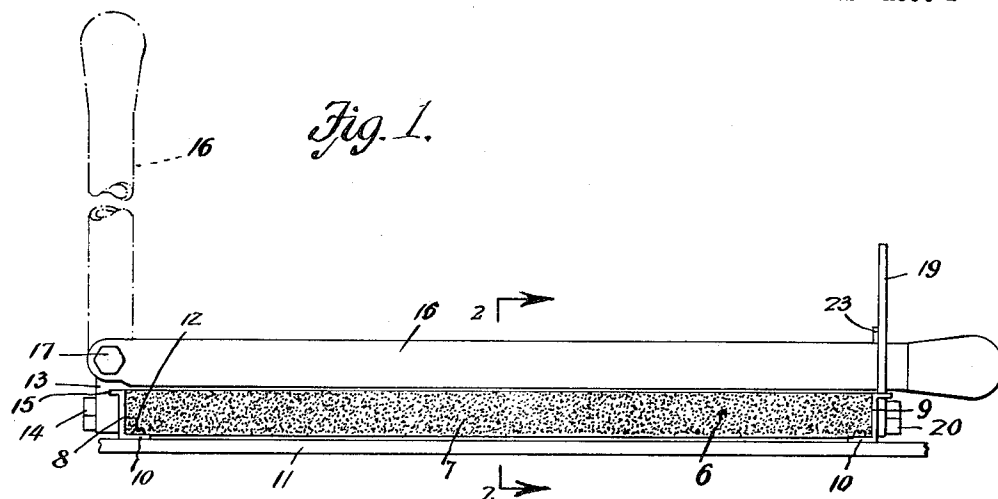


Fig. 5.

Fig. 4.

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2 Sheets-Sheet 2

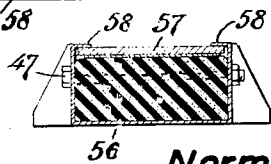
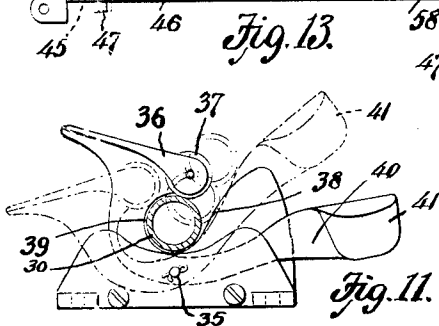
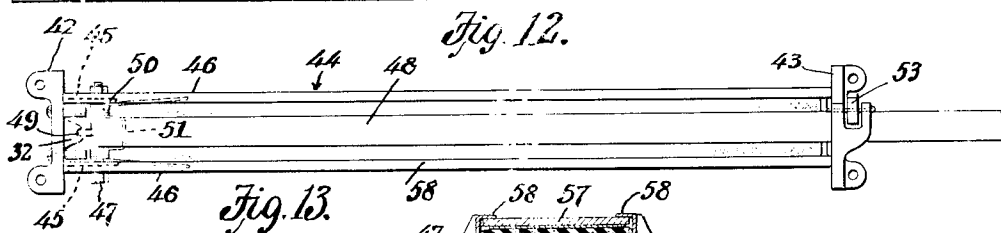
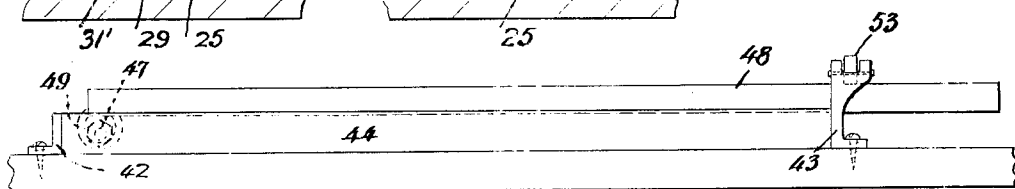
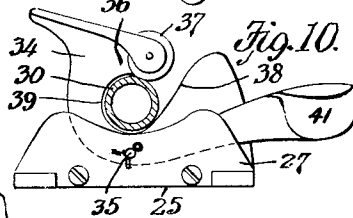
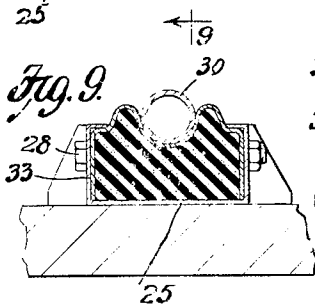
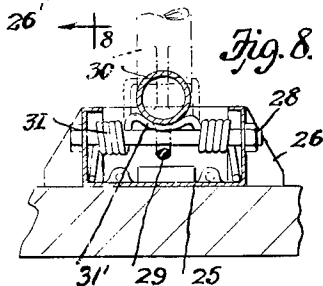
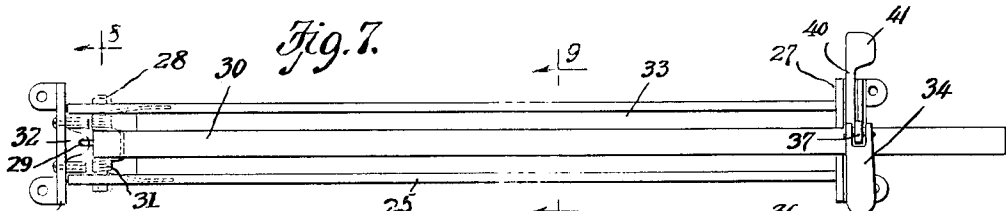
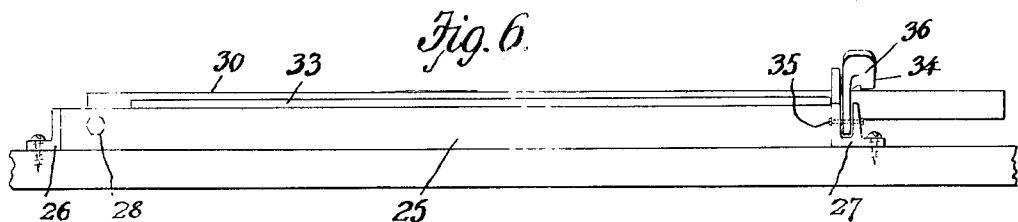


Fig. 14.

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3,205,548

FABRIC HOLDING CLAMP

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2 Claims. (Cl. 24—250)

In the operation of laundries, particularly those of the coin-type, a problem presents itself in folding relatively large articles, such as sheets, bedspreads, curtains and the like, after being dried, into convenient size for handling or storing. This operation usually requires two persons, one at each end of the article to be folded, and they co-operate with one another in stretching and properly folding the articles into the desired size. It often happens, however, that no additional helper is available, wherein it becomes difficult for a single person to properly stretch and fold the large and unwieldy article. My invention is directed to simple and efficient clamping mechanism to engage and hold one end of the article to be folded, while the operator stretches and folds it upon itself into the desired compact form and without any assistance other than what is afforded by the device of my development.

The primary object of the invention is to provide a clamp for the purposes generally stated which is of extremely simple construction and easy to operate, requiring no special skill or knowledge in attaining the desired result.

A further object of the invention is to provide a clamp so constructed as to firmly hold an end of the garment which is to be folded and which actuates to increase its clamping action as pull is applied to the free end of the garment.

A still further object of the invention is to provide a clamp of simple construction, which is composed of relatively few readily assembled parts, all of which are constructed and arranged together in such manner as to minimize the opportunity for wear, breakage or derangement, and which may be manufactured and marketed at a low price.

With the foregoing objects in view, together with others which will appear as the description proceeds, the invention resides in the novel construction, combination and arrangement of parts, all as will be described more fully hereinafter, illustrated in the drawings, and particularly pointed out in the claims.

In the drawings:

FIG. 1 is a rear elevation of a sheet folding clamp constructed in accordance with the invention,

FIG. 2 is a transverse sectional view on a slightly enlarged scale, taken substantially upon line 2—2 of FIG. 1,

FIG. 3 is an end view of the improved clamp in its normal position,

FIG. 4 is a similar view showing the folding bar rocked to increased clamping position,

FIG. 5 is a view of the opposite end of the clamping member and illustrating the manner in which the latch bar operates,

FIG. 6 is a side elevation of a modified form of the invention,

FIG. 7 is a top plan view thereof,

FIG. 8 is a transverse section taken on line 8—8 of FIG. 7, the dotted lines showing the clamp bar in raised position,

FIG. 9 is a transverse sectional view on line 9—9 of FIG. 7,

FIG. 10 is an end view showing the hold-down means for the clamp bar,

FIG. 11 is a similar view showing, in dotted lines, changed positions of the hold-down means,

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FIG. 12 is a view similar to FIG. 6 and showing a further modification of the invention,

FIG. 13 is a top plan view,

FIG. 14 is a transverse sectional view taken through the mid portion of the device shown in FIG. 12, and

FIG. 15 (sheet 1 of drawings) is an end view, on an enlarged scale, of the structure shown in FIG. 12, showing the hold-down means for the clamp bar.

Referring now more particularly to the drawings, and to that form of the invention illustrated in FIGS. 1 to 5 inclusive, the clamp includes a bed 6 of a desired length and preferably of rectangular cross section as shown more particularly in FIG. 2. This bed may be constructed of wood, rubber, steel or any other desired material, and has a covering 7 of suitable padding, such as heavy cloth, rubber or other spongy material. As shown, the transverse shape of this bed is substantially rectangular, but it will be understood that it may take other shapes if desired. This bed is arranged between supporting brackets indicated generally at 8 and 9, each bracket being provided with an intumed lower flange 10 to rest upon a supporting base or table 11, screws or other securing elements 12 being provided to securely hold the brackets in proper spaced relationship with the bed 6 between them.

The bracket 8 has arranged upon its exterior surface an upstanding rocker bar 13, the lower end of which is provided with a suitable opening through which a pivot bolt 14 extends, the said bolt being anchored at its inner end in the adjacent end of the fixed bed 6. The upstanding bracket is provided with spaced apart stops 15 to limit the lateral swinging movement of the rocker bar 13. The upper end of the rocker bar has pivotally secured thereto one end of a clamp bar 16, the said clamp bar being made of any suitable material and is preferably of inverted U-shape at one end to engage over the upper end of the rocker bar 13 as shown more particularly in FIGS. 3 and 4 of the drawings. This clamp bar is straight throughout its length, may be of metal or any other suitable material, and is preferably circular in cross section as shown. A hinge bolt 17 passes laterally through the end of clamp bar 16 as well as the upstanding rocker bar 13 so that the clamp bar may swing downwardly into parallelism with the bed 6 and overlying the latter throughout its length, or may be swung upwardly upon its pivot or hinge bolt 17 to upright position (substantially 90 degrees) as shown by dotted lines in FIG. 1. It is desired that normally the clamp bar 16 be in upright position, that is, the position shown in dotted lines in FIG. 1, therefore, the hinge bolt 17, which is elongated, is provided with an encircling spring 18, one end of which is secured to the hinge bolt, while its opposite end is secured to the adjacent end of clamp bar 16. This spring is arranged so as to normally force the clamp bar 16 to the upright position. The hinge bolt 17 is so arranged with respect to the rocker bar 13 that, when the clamp bar 16 is lowered, its surface closely approximates the upper surface of the bed 6 to maintain clamping action upon any goods or material resting upon the bed.

The bracket 9 at the opposite end of bed 6 is provided with a latch member 19, which may take the shape of a flat plate pivoted at its lower end by means of a bolt 20 extending through the exterior surface of the bracket 9 and passing into the adjacent end of the bed 6. This bolt 20 securely anchors the end of the bed 6 in proper position and at the same time provides a pivot upon which the latch 19 may swing laterally of the bracket. This latch is provided in one edge with a nose 21 conforming substantially to the contour of the clamp bar 16 and adapted, when in upright position, to engage over the said latch bar to hold the latter firmly in its lowered or horizontal position as shown in FIGS. 1 and 5. The plate 9 is provided near one edge with a stop 22 to limit

the swinging action of the latch in one direction, while at its opposite side a similar stop 23 is provided and so arranged as to be engaged by the clamp bar when moved a predetermined distance in a forward direction. The stop 23 is so located as to enable the clamp bar 16 to move approximately 10 degrees, and during such movement latch member 19 will force the clamp bar 16 downwardly toward the bed 6. It is obvious, therefore, that with a sheet or other fabric resting upon the bed and clampingly held by the bar 16, any pull upon the fabric will tend to move the latch member 19 in a forward direction and thus bring about a more secure grip upon the fabric interposed between the clamp bar 16 and the underlying bed 6. It will be understood that the nose 21 of the latch will be in firm contact with the upper surface of the clamp bar 16 and will thus hold the bar throughout its rocking movement in a forward direction. When it is desired to release the clamp bar, the tension upon the clamped garment will be released, and the latch 19 may then be moved rearwardly so as to disengage the nose 21 from engagement with the clamp bar 16, whereupon the spring 18 becomes active to swing the clamp bar to released or upstanding position.

From this description it is obvious that the folding of relatively large articles, such as sheets, spreads, curtains or the like, may be easily and quickly carried out without the assistance of an additional helper. The material to be folded is given its first fold at one end and placed upon the bed 6, at which time the clamp bar 16 is lowered and engaged with the latch 19. The operator may then stretch and align the edges of the material while it is being held securely at its opposite end by the clamp bar. If necessary, the garment is folded upon itself once and the free ends again engaged beneath the clamp bar, after which the fabric may be again folded upon itself into compact form before being released from beneath the clamp bar. It is obvious that as pull is applied to a garment confined between the clamp bar and the bed, the forward lateral movement of the clamp bar is permitted by the rocker bar 13 at one end of the bed and similar swinging movement of the latch 19 at the opposite end thereof.

FIGS. 6 to 11 inclusive of the drawings illustrate a modified form the invention may take, wherein the bed frame 25 is an elongated relatively narrow channel member having brackets 26 and 27 at its ends by means of which the bed frame may be firmly anchored or secured to a suitable support. Near one end of this bed frame is a transversely disposed pivot shaft or bolt 28 which loosely receives a loop member 29 affixed to the lower end of the clamp bar 30 and preferably projecting from one side thereof. This loop, being somewhat larger than the diameter of the pivot, permits the clamp bar to swing vertically as well as to rock laterally with respect to the bed. A spring 31 has its ends loosely surrounding the pivot bolt with its extremities engaged in the bottom of the bed frame channel, while its mid portion, indicated at 31', bears against the underside of the clamp bar, tending normally to force the latter into upright position. While at the same time, this spring permits the bar to rock laterally of the bed frame, yet when the bar swings to downward position it tends to maintain the clamp bar in parallelism with the longitudinal axis of the frame. The upward swinging movement of the clamp bar 30 is limited by engagement of the lower end of the bar with the stop 32.

Arranged firmly within the bed frame channel is a resilient bed 33 which extends throughout substantially the length of the bed frame and is frictionally engaged by the clamp bar when it descends to a position in parallelism with the bed frame. This bed may be formed of any suitable yielding or resilient preferably waterproof material.

The end bracket 27, in addition to holding the bed frame securely to a support, also constitutes a support for a

latch indicated generally at 34. This latch is pivoted as at 35 intermediate its ends in the longitudinal axis of the bed frame 25, and provides at one end a latch nose 36 to engage over the free end of the clamp bar 30 when the latter is in lowered position. This nose may be provided with a roller 37 to engage and bear upon the clamp bar when the latch is in closed position. The bracket 27 also provides a guide 38 whose forward edge is inclined as shown and in the path of the descending clamp bar so as to force the latter into the crotch 39 of the latch to permit the nose 36 to overlie and firmly hold the clamp bar in tight engagement with the resilient bed of the frame 25. The opposite side of the latch 34 is provided with an arm 40 to the extremity of which is a weight 41 which outweighs that part of the latch on the opposite side of the pivot 35, thus normally holding the nose in such position as to dispose the roller 37 in the path of the clamp bar 30 when it descends to horizontal position. When this occurs, the downward pressure upon the clamp bar 30 by an operator causes the bar to engage the roller and move the latch 34 forwardly, to be guided into the crotch by the latch guide 38. To release the clamp bar it is but necessary to depress the forward end of the latch 34, whereupon the action of the tensioned spring 31 will cause the clamp arm to swing to substantially vertical position and thus release the fabric which had theretofore been clamped between the clamp bar 30 and the resilient bed 33.

The structures shown in FIGS. 12 to 15 inclusive disclose a further slight modification of the invention. In this form, the end brackets 42 and 43 are firmly attached to the extremities of the bed frame 44, the latter being substantially similar to its equivalent element 25 illustrated in FIGS. 6 and 7. The end bracket 42 is provided with spaced apart parallel arms 45 which fit within the sides 46 of the bed frame, and the pivot pin or bolt 47 is secured at its ends to these arms. The clamp bar 48 is of tubular construction and is provided at its lower end with an enlarged loop 49 which encircles the pivot pin 47. A spring 50 has its ends encircling the pivot pin 47 on opposite sides of the loop 49, with its extremities engaged in the bottom of the bed frame 44 and with its mid portion 51 extending across and engaging the lower end portion of the bar 48 adjacent to the loop 49.

The opposite end bracket 43 is secured by screws, as shown, to the stationary bed and is provided with an upstanding rearwardly projecting clamp nose 52. This nose extends slightly beyond the longitudinal axis of the bed frame and is provided with a roller 53 to be engaged by the clamp bar 48 as it moves to descending or lowered position. In contacting the roller 53, the clamp bar is moved laterally as it descends, engaging the curved guide surface 54 on the bracket and forcing the arm forwardly into the crotch 55 beneath the roller. It will be observed that when in locked position the axis of the roller 53 is beyond the longitudinal axis of the clamp bar 48, thus firmly holding the clamp bar in locked, lowered position.

The bed within the frame in this embodiment of the invention may comprise a resilient element such as foam rubber indicated at 56, tightly fitting within the frame throughout substantially its entire length, and over which lies a relatively stiff supporting sheet of suitable material 57. The thickness of the foam rubber is such as to hold the supporting sheet material 57 in raised position with its longitudinal edges engaged beneath inwardly directed flanges 58 at the upper edges of the bed frame 44.

From this construction it is apparent that a tight gripping action between the clamp bar and the sheet material 57 is maintained throughout the entire length of the bar so as to tightly clamp the end of a fabric to be held for folding purposes. The resiliency of the foam rubber enables the clamp action to accommodate itself to various thicknesses of material that may be placed between the clamp bar and the surface 57. The capability of the clamp bar rocking laterally in a forward di-

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rection when pull is applied to a fabric clamped therein brings about a still tighter clamping action to resist any tendency of the fabric to move from beneath the clamp bar 48. When it is desired to release the material from the clamp it is but necessary to depress the free end of the clamp bar 48 until it is disengaged from beneath the roller 53 and moved rearwardly, and upon release of the bar 48 the spring 50 will swing the arm to substantially upright position.

From this description it will be apparent that slightly differing mechanical constructions may be resorted to in order to bring about vertical swinging movement of the clamp bar, lateral rocking movements of that bar, and clamping means for the free end of the bar to permit of such movements when the bar swings downwardly into clamping engagement with material resting upon the upper surface of the resilient bed. The simplicity of the structures is such that those having little knowledge of mechanical devices may easily and quickly operate the device to clampingly engage an end of a fabric to be folded, as well as to bring about a releasing action when the device has served its purpose. In all forms of the invention the pivoted clamping bar, when in lowered or clamping position, is capable of rocking bodily in a lateral direction when pull is applied to fabric clamped between the bar and the supporting bed, whereby to bring about a binding action of increasing pressure as the garment is pulled by the operator.

We claim:

1. A fabric holding clamp comprising
 - an elongated bed having straight parallel upstanding sides forming a frame,
 - a first bracket secured to one end of said frame to attach the frame to a support,
 - a pivot pin disposed transversely between said sides within said frame and adjacent to said first bracket,
 - a straight clamp bar of substantially circular shape, a loop rigid with and projecting laterally from said clamp bar at one end thereof and loosely encircling said pivot pin,
 - a spring disposed within said frame adjacent to and encircling said pivot pin and located underneath said clamp bar thereby tending normally to maintain said bar in a raised position,
 - a second bracket secured to the opposite end of said frame,
 - an upstanding arm projecting from one side of said second bracket extending over and beyond the longitudinal axis of said frame,
 - a roller carried at the end of said arm and disposed beyond the longitudinal axis of said frame, and

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a crotch in said arm beneath said roller and offset from said longitudinal axis on the opposite side thereof from said roller.

2. A fabric holding clamp comprising
 - an elongated bed having straight upstanding parallel side walls forming a frame,
 - said frame being substantially filled with a resilient material,
 - a first bracket secured to one end of said frame to hold the frame to a support,
 - spaced apart arms projecting from said bracket and engaged with the side walls of said frame,
 - a pivot pin extending transversely through the side walls of said frame and also through said arms,
 - a clamp bar,
 - a loop projecting laterally from one end of said clamp bar and loosely encircling said pivot pin,
 - a spring having its ends encircling said pin on each side of the clamp bar and having its mid-portion underneath said clamp bar to normally urge the same to an upstanding position in the longitudinal axis of said frame,
 - a second bracket to secure the opposite end of said frame to a support,
 - an upstanding latch arm integral with said second bracket extending over and beyond the longitudinal axis of said frame,
 - a roller on the end of said latch arm mounted beyond said longitudinal axis,
 - said latch arm providing a crotch beneath said roller and offset from said longitudinal axis on the opposite side thereof from said roller,
 - said crotch adapted to receive said arm when in lowered position with said arm being held therein by said roller.

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