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CLAMP AND HOUSING APPARATUS

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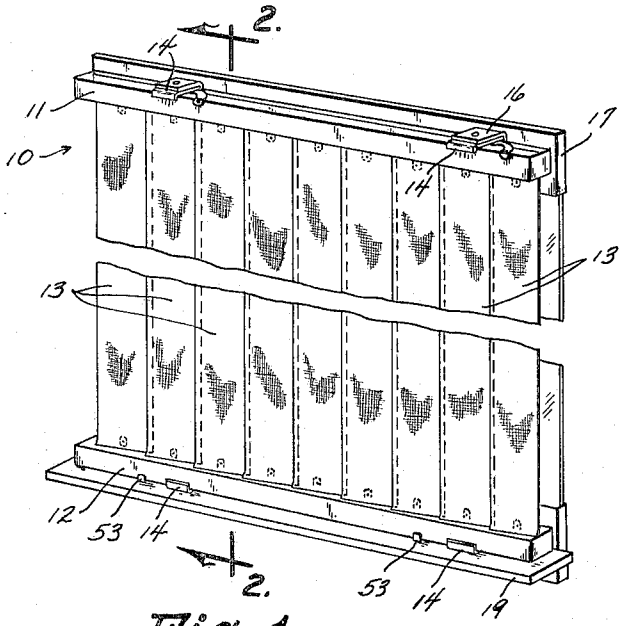

Fig. 1

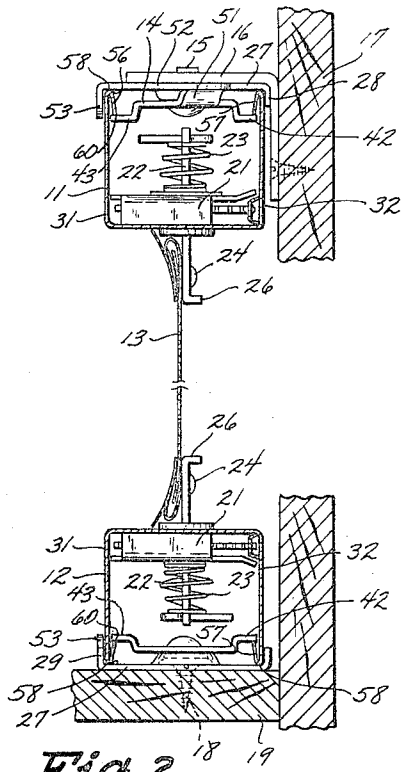

Fig. 2

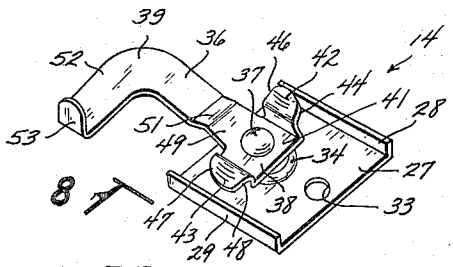

Fig. 3

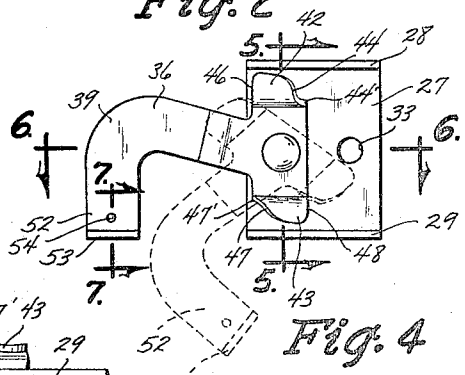

Fig. 4

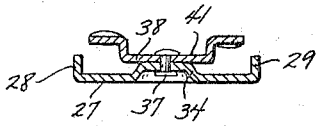

Fig. 5

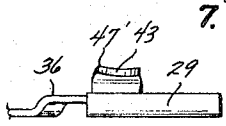

Fig. 8

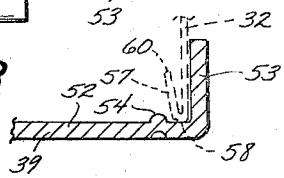

Fig. 7

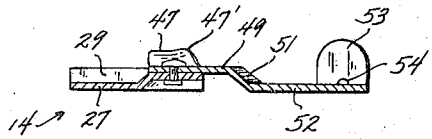

Fig. 6

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CLAMP AND HOUSING APPARATUS

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This invention relates to window shutters or louvers of the vertical type, and more particularly to a device for releasably clamping the upper and lower housings of the louver assembly to a window frame or the like.

It is therefore an object of this invention to provide an improved structure for releasably clamping a louver assembly housing to a window frame or the like.

It is another object of this invention to provide an improved louver housing and clamping bracket combination which enables a quick and easy assembly and dis-assembly of the housing to the bracket.

Still another object of this invention is to provide a structure for easy installation of a louver housing to a window frame which also provides an extremely secure releasable clamping of the housing to a stationary position.

Yet another object of this invention is to provide a structure having the aforementioned features which is of a neat appearance so as not to detract from the beauty of the louver assembly.

Another object of this invention is to provide a novel bracket, securing a louver housing to a window frame, which bracket prevents both lateral and longitudinal movement of the louver housing.

It is yet another object of this invention to provide an improved louver housing and clamping bracket structure for both the upper and lower housings of a louver assembly, whereby either upper or lower housings may be released from its secured position to enable the most efficient maintenance of the window.

Still another object of this invention is to provide a structure capable of attaining the above designated objectives which is easy to manufacture, simple to install, and effective in use.

These objects, and other features and advantages of this invention will be readily apparent from the following descriptions, when taken into consideration with the accompanying drawings, wherein:

FIG. 1 is a perspective view of a conventional window frame, and showing assembled thereto a preferred embodiment of the combined louver assembly and clamping brackets of this invention;

FIG. 2 is a foreshortened enlarged sectional view taken along the line 2—2 in FIG. 1;

FIG. 3 is a perspective view of one of the swing clamp brackets which is a part of this invention;

FIG. 4 is a plan view of the swing clamp bracket of FIG. 3;

FIG. 5 is a sectional view taken along the line 5—5 in FIG. 4;

FIG. 6 is a sectional view taken along the line 6—6 in FIG. 4;

FIG. 7 is a fragmentary, enlarged sectional view of a portion of the swing clamp bracket taken along the line 7—7 in FIG. 4; and

FIG. 8 is a fragmentary, side elevational view taken along the line 8—8 in FIG. 3.

Referring now to the drawings, the vertical Venetian blind assembly of this invention is illustrated generally at 10 in FIG. 1, and includes an upper channel housing 11, a lower channel housing 12, and a plurality of vertical parallel louvers 13 attached to the housings 11 and 12 in a predetermined relationship.

A pair of swing clamp brackets 14 are provided for releasably mounting the upper housing 11, each bracket 14 being secured by a cap screw 15 or the like to an L-shaped bracket 16. Each bracket 16 is in turn secured by any conventional means to an upper member 17 of the window casing. Another pair of brackets 14 are secured, each by a wood screw 18 or the like to the sill 19 of the window casing for releasably securing the lower housing 12 of the louver assembly 10 thereto.

The louver assembly comprises generally, in addition to the upper and lower housings 11 and 12, respectively and the louvers 13, an operating structure 21 for each louver 13 at its upper end and its lower end, as best illustrated in FIG. 2. Connection is made between the ends of each louver and the respective operating structures 21 therefor by a louver stem 22 for each structure 21, which stem 22 is reciprocally held in the structure by a spring 23 (FIG. 2). Each louver 13 has a button hook 24 at each end which is adapted to hook into an opening (not shown) provided therefor in the lower end 26 of a louver stem 22. By this arrangement, each louver is held taut, but is easily disengaged from a louver stem 22 by pulling the stem away from its respective housing, whereby the button hook 24 may be disengaged from the stem 22.

For the objects enumerated hereinbefore, the swing clamp brackets 14, hereinafter termed swing clamps for brevity, are provided. When taken in combination with a particular construction therefor of the housings 11 and 12, this combination provides the basis for this invention. As each swing clamp 14 is identical, whether used with the upper housing 11 or the lower housing 12, and whether used with a bracket 16 or attached to a sill 19, only one swing clamp 14 will therefore be described.

Referring particularly to FIGS. 3–8, a swing clamp 14 comprises a flat rectangular base 27 having a pair of parallel side flanges 28 and 29, both flanges being bent at approximately 90 degrees to the main plane of the base 27, and extended in the same direction. The width of the base 27 between the flanges 28 and 29 is such that the parallel legs 31 and 32 (FIG. 2) of either housing 11 and 12 fit snugly up against the adjacent surface of the base 27 and contiguous to the side flanges 28 and 29. A hole 33 is formed in one end of the base to accommodate a screw or the like to be inserted therethrough for fastening the swing clamp 14 to any desired stationary object.

At the other end of the base 27, a circular boss 34 is formed for supporting a swing arm 36, rotatably secured to the base 27 by means of a rivet 37 or the like inserted through the boss 34. The swing arm 36 includes a clamp portion 38 and a finger portion 39. The center of the clamp portion 38 comprises a flat part 41 which has on each side thereof a pair of ears 42 and 43 raised from the plane of the part 41 as best illustrated in FIG. 5. The ear 42 has a curved leading edge 44 as clearly shown in FIG. 4, and a trailing edge 46 which extends tangential to the side flanges 28 and 29 of the base 27 . The other ear 43 also has a leading edge 47 which is curved, and a trailing edge 48 which is straight or tangential relative again to the side flanges 28 and 29. The purpose for the provision of particularly the leading edges 44 and 47 will be described hereinafter.

The finger portion 39 of the swing arm 36 has an inner section 49 which extends outwardly from the part 41 on the same level therewith (FIG. 6), which then depends at an inclined angle by an intermediate section 51 to a flat bottom section 52 (FIG. 6) which curves about in a right angle or L-shape. At the outer end of the bottom section 52 is an upturned ear 53 which enables the swing arm 36 to be manipulated by the fingers of an operator. A slight protrusion 54 (FIG. 7) is formed in the bottom section 52

to extend in the same direction as the ear **53** for a purpose hereinafter described.

To cooperate in clamping either housing **11** and **12** to one or more swing clamps **14**, the legs **31** and **32** of a housing have flanges **56** and **57** (FIG. 2) which are reversely bent a short distance substantially parallel and inwardly of the legs **31** and **32**. The height, or depth as the case may be, of both flanges **56** and **57** is equal, both flanges being of equal portions, and whereby the upper edges of the flanges form shoulders **60** parallel to each other and equidistantly spaced from the leg end edges **58**. Of note, the edges **58** lie in the same plane. Thus, to assemble a housing to a swing clamp, the swing clamp **14** is first affixed to either the sill **19** or to the bracket **16** so as to provide its base **27** being stationary. The swing arm **36** is then rotated by finger manipulation on the ear **53** to the dotted line position of FIG. 4. In this rotated position, the transverse or lateral spacing between each ear **42** and **43** and the adjacent side flange **28** and **29**, is such that the bottom edges **58** (FIG. 4) of the housing legs **31** and **32** are seated flat against the base **27**, and with the legs **31** and **32** contiguous to the side flanges **28** and **29** of the swing clamp **14**.

The bottom section **52** of the swing clamp arm **36**, which is on a level with the base **27** of the swing clamp **14**, is also so positioned, due to the intermediate section **51** having struck the adjacent edge **59** (FIG. 4) of the base **27** and thus limited the outwardly swinging movement of the swing arm **36**, that the bottom edges **58** also do not bind against any part of the swing arm **36** when they are being seated against the base **27**. The swing arm **36** is then free to be rotated from the dotted line position of FIG. 4 to the full lined position thereof. During the rotating or swinging movement of the arm **36** to the full lined position of FIG. 4, the leading edges **44** and **47** of the ears **42** and **43**, respectively, which have slightly upturned front portions **44'** and **47'** (FIG. 8), engage the ends **60** (FIG. 2) of the leg flanges **56** and **57**, providing thereby as the swing arm is turned a gradually increasing clamping action of the ears **42** and **43** against the flanges **56** and **57**. As best shown in FIG. 2, the ears **42** and **43** thus tend to force and securely clamp and hold the housing by means of its leg flanges **56** and **57** against the base **27** of the swing clamp **14**. Therefore, when the swing arm **36** is in its full lined position of FIG. 4, the lateral or transverse space between the ears **42** and **43** and the respective adjacent inner surface of a side flange **28** and **29** is sufficiently small, such that when the housing legs **31** and **32** are inserted therebetween, the ears **42** and **43** extend over and above, or below as the case may be, the inturned housing leg flanges **56** and **57**.

A release of a housing **11** or **12** from a swing clamp **14** is just as simple as an assembly therebetween. A swing arm **36** is merely rotated from the full lined position of FIG. 4 to the dotted lined position thereof, whereby as the ears **42** and **43** are removed from their overhanging—so to speak—position relative to the leg flanges **56** and **57**, the housing can quickly and easily be lifted away from the swing clamp **14**.

In view of this description, it is therefore readily seen that the installation of a louver assembly housing to a swing clamp is easily accomplished, and that when the assembly is complete, the housing is secured against both lateral and longitudinal movement relative to the swing clamp bracket and relative also to the window frame.

Referring to FIG. 1, one can readily appreciate that the provision of the swing clamp **14** does not detract from the overall beauty of the louver assembly **10**, as only the finger manipulating ear **53** and one of the side flanges **28** or **29** appear to the naked eye. Furthermore, it can readily be appreciated that should one want to wash or otherwise maintain the window behind the louver assembly **10**, that one could merely release both lower swing clamps **14**, move and hold the lower portion of the louver assembly **10** away from the window so as to enable one

to move in between, accomplish the task, and then quickly and easily reassemble the lower channel housing **12** to the two lower swing clamps **14**.

In FIG. 7, it is seen that when the swing arm **36** is moved to the full line clamping position of FIG. 4, the protrusion **54** is moved beneath the bottom or free end edge **58** of the adjacent leg **32**. The outer end **53** of the swing arm finger portion **39** is thus held in a semi-locked condition. Upon the portion **39** being moved from this position, the flexibility of the thin walled leg **32** permits the protrusion **54** to pass therebeneath.

Although a preferred embodiment of this invention has been described hereinbefore, it is not to be so limited as modifications and other alternate constructions are readily envisaged without departing from the true spirit and scope of the invention as defined in the appended claims.

We claim:

1. In a louver assembly including vertical louvers, apparatus for releasably clamping each end of each louver to a stationary member, also at each end thereof, comprising in combination:

a housing including a unit releasably engaged with an end of a louver, said housing having a U-shaped structure with legs extending parallel to each other and in the same direction;

shoulders formed on the inside of said legs by reversely bending equal outer portions of the legs so that said shoulders are of equal height; and

clamp means including a base and an arm pivotally mounted on said base for rotatable movement over said base;

said base insertable between said legs and the stationary member, and secured to the stationary member with said end edges of said legs placed flat thereon to support the U-shaped structure, said arm having a portion at said pivotal mounting with opposite end tips extending normally laterally towards said legs, said portion movable from a first position with said end tips spaced laterally from the leg end edges to a second position contiguous with said end tips extending over and in frictional engagement with said shoulders, said end tips clamping said shoulders and thus said housing toward and against said base;

said arm having further a finger portion extending outwardly and away from said base and with an exposed free end thereof always disposed laterally outwardly from one of the legs.

2. In a louver assembly including vertical louvers, apparatus for releasably clamping each end of each louver to a stationary member, also at each end thereof, comprising in combination:

a housing including a unit releasably engaged with an end of a louver, said housing having a U-shaped structure with legs extending parallel to each other and in the same direction;

shoulders formed on the inside of said legs by reversely bending equal outer portions of the legs so that said shoulders are of equal height; and

clamp means including a base and an arm pivotally mounted on said base for rotatable movement over said base;

said base having a flat portion and a pair of parallel side flanges extended at substantially right angles to said flat portion, the flat portion secured to the stationary member with said end edges of the legs placed flat thereon with the outside of the legs contiguous to said side flanges, said arm having a portion at said pivotal mounting with opposite end tips extending normally laterally toward said legs, said portion movable from a first position with said end tips spaced laterally from the leg end edges to a second position with said end tips extending over and in frictional engagement with said shoulders,

said end tips clamping said shoulders and thus said housing toward and against said base;

said arm having further a finger portion extending outwardly and away from said base and disposed in the same plane as said flat portion.

3. A clamp and housing apparatus for releasably securing the housing to an object comprising in combination:

a housing including a pair of parallel legs having free edges lying in the same plane;

shoulders formed on the inside of the legs by reversely bent equal portions of the legs extended inwardly of the legs and with their upper shoulder-forming edges located in the same plane; and

means for releasably securing the legs including a base and arm pivotally mounted on said base for rotatable movement over said base;

said base having a flat portion defined by end edges, and by a pair of parallel side flanges extended at substantially right angles to said flat portion, the flat portion secured to the object with the free edges placed flat thereon with the outsides of the legs contiguous with said side flanges;

said arm having an ear portion with a pair of opposed ears spaced above said base, and a finger portion extended in an angular direction from said ear portion and with an outer end disposed in the same plane as the plane of said base, whereby one of said

free edges is also placed flat and contiguous to said outer end, said ears being spaced apart a distance sufficient for said ear portion to be moved from a position wherein said ears overlie said shoulders and frictionally clamp said shoulders toward and against the object, to a position wherein said ears are positioned between said shoulders and disengaged therefrom.

References Cited by the Examiner

UNITED STATES PATENTS

2,165,669	7/1939	Wade	160—178 X
2,209,580	7/1940	Sargent	189—36
2,591,775	4/1952	Bopp et al.	160—196
2,780,850	2/1957	Lieff	24—73
2,897,928	8/1959	Selig	248—224 X
2,930,459	3/1960	Moser	189—88
2,944,642	7/1960	Evans	189—36
2,962,783	12/1960	Elder	189—88
3,129,751	4/1964	Weber	16—94

FOREIGN PATENTS

538,794	1/1956	Italy.
205,865	10/1939	Switzerland.

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