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1

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CLAMPING DEVICE FOR SCAFFOLDING

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Original application Jan. 7, 1957, Ser. No. 632,916, now Patent No. 2,917,129, dated Dec. 15, 1959. Divided and this application Sept. 25, 1959, Ser. No. 842,445 3 Claims. (Cl. 24-235)

This invention relates to a clamping device, and more particularly to a detachable clamping device for use in scaffolding constructions.

There has been an urgent need for relatively inexpensive, safe and practical scaffold equipment, such as may be used for repairing, cleaning, renovating and adding installations or equipment to building constructions. An important feature in scaffold equipment involves the ease in which the scaffold construction may be safely erected into a rigid structure and may be quickly disassembled for mobility. Therefore, it is important to have quick-acting and easily engageable clamping devices which will rigidly maintain the scaffolding structure in an assembled or upright position, and further, which are easily releasable for quick disassembly of the structure. A further requirement of such clamping devices is that they should be constructed in such a manner so that they are, in effect, self-locking and will not inadvertently become disengaged during use.

It thus has been an object of our invention to provide a solution to the problem of quickly releasable clamping devices for scaffolding construction;

Another object of our invention has been to devise a new and improved type of clamping device for scaffolding construction which may be snapped-in-place without manually activating its latching mechanism;

A further object of our invention has been to provide an improved clamping device for scaffolding which cannot be disengaged from its clamped member without first manually activating its latching device independently of the clamped-on member;

These and other objects of our invention will appear to those skilled in the art from the following disclosure and accompanying drawings in which:

FIGURE 1 is a greatly enlarged side fragment through a clamp or snap finger means and an associated hollow rail or cross member that is engaged thereby; in this figure, the full lines illustrate the clamp finger means in a "down," holding or latching position upon the cross member; the dot and dash lines illustrate the clamp finger means in its upper, released, non-engaging or non-latching position with respect to the cross member; and

FIGURE 2 is a top fragmental segment on the same scale as FIGURE 1 and taken at right angles thereto.

Referring now to the drawings, a hollow tubular member 23, such as a support body, swing frame or side member of a scaffolding structure, has a frame lock or clamp means 26 connected thereto. The clamp means is of a snap-on downwardly over-latching and an upwardly off-unlatching type. Cruciform end portions 26e having arcuate outer portions to conform with the inner diameter of the hollow tubular member 23, receive the end portions of the members 23 in a telescoping engagement as shown in the drawings. Each clamp 26 has an open, member-receiving bottom mouth or slot, a central slot or groove 26a, and an enlarged nose slot or groove 26b. The slots 26a and 26b, in effect, bifurcate a major longitudinal portion of the clamp means and provide an opening to operatively receive a clamping or latch finger element 27. The clamping finger member 27 is pivotally mounted on a cross-extending pivot pin 28 in the nose of the clamp 26.

2

A resilient, double-torsion spring 29 is carried on the pin 28 on opposite sides of the finger 27. The spring has a loop portion 29a over the finger 27 and has a pair of tension abutment feet portions 29b (see FIGURE 1) to provide the finger with a snap-latching or engaging action. The feet portions 29b abut a lower jaw 26d forming one end of the slot 26b to resiliently hold or urge finger 27 towards its down position (as represented by the full lines of FIGURE 1).

The clamp finger 27 is adapted to move within a supplementary back-slot or groove 26c of a guideway type. For this purpose, a rearwardly-projecting back stop or control lug portion 27c is adapted to move along the guideway 26c and between end abutment shoulders or stop portions a and b (see FIGURE 1). To release the latch finger 27, it is only necessary to manually push-up its back end portion against the tension of spring 29. The clamp 26 is shown overlying and clamped in operable engagement with a tubular member 14d, such as a transverse member, cross tie, or other frame member of a scaffolding construction. The construction of the spring acting clamp 26 permits a quick and easy engagement with the member 14d, either by moving the member 14d upwardly within the clamp, or by applying the clamp 26 downwardly against the member 14d. In either case, the clamp is applied without exerting direct manual movement on the finger 27 (since the member 14d will push the latch finger 27 upwardly against the action of the spring 29 and allow the member to be inserted within the clamping jaws), as the clamp is applied downwardly over and upon the member 14d. However, it is noted that once the member 14d is positioned within the clamp it is releasably locked in position by the spring-tensioned latching finger snapping back to its normal position (see FIGURE 1), and it cannot be removed therefrom merely by pulling it apart, since an outward pull between the clamp 26 and the member 14d will tend to cause a gripping action on the member 14d, due to the curvature of the latching finger 27. The clamp 26 may easily be removed from the member 14d merely by manually retracting the finger 27 upwardly in the clamps 26 against the tension of spring 29.

This is a divisional application of our application Serial No. 632,916, filed January 7, 1957, now Patent No. 2,917,129 and entitled "High Clearance Scaffold."

What we claim is:

1. In a snap-on clamping device adapted to project from a swing frame member to detachably engage over a second frame member, a nose part of unitary construction having a backwardly-projecting mounting portion for securing it on the first frame member to project forwardly therefrom, said nose part defining a forwardly-projecting open-mouth clamp of substantially arcuate-shape for movement with the swing frame member transversely on and off the second frame member, said clamp being bifurcated forwardly thereof by an intermediate slotted portion therealong that is open transversely thereof, said intermediate slotted portion having an enlarged diameter slotted portion adjacent a forward end portion of said clamp, a substantially arcuate-shaped open-mouth latching finger part, a pivot pin projecting through a forward end portion of said latching finger part across said enlarged diameter slotted portion and being secured at its ends within said clamp, said pivot pin operatively positioning said latching finger part within said slotted portions of said clamp with its open-mouth facing transversely in the same direction as the open-mouth of said clamp for relative swinging movement along said intermediate slotted portion between an unlatching position substantially within said clamp and a latching position in which its back end portion projects transversely beyond the back end portion of said clamp, the back end portion of said finger part when it is in its latching position engag-

ing the second frame member beyond a side thereof that is substantially diametrically-opposite the engagement of the forward end portion of said clamp to securely hold the second frame member in a latched relation; and spring means mounted on said pivot pin, secured to the forward end portion of said clamp, and operatively engaging the forward end portion of said finger part to resiliently urge the back end portion of said finger part outwardly beyond said clamp into and resiliently retain it in a latching position with the second frame member.

2. A clamping device as defined in claim 1 wherein, said intermediate slotted portion of said clamp has an inset-slotted portion extending arcuately-backwardly within said clamp and defining a guideway and stop limit means spaced transversely within said clamp, and said finger part has a backwardly-projecting lug positioned for movement along said inset-slotted portion to guide said finger part between said stop limit means in its relative swinging movement and limit the maximum extent of such movement for controlling the maximum swing of said finger part between its latching and unlatching positions within said clamp.

3. In a snap-on clamping device to project from a swing frame member of a scaffolding to detachably engage over a second frame member, a nose part of unitary construction having a backwardly-projecting mounting portion for securing it on the first frame member to project forwardly therefrom, said nose part defining a forwardly-projecting open-mouth clamp of substantially arcuate shape for movement transversely on and off the second frame member, said clamp being bifurcated forwardly thereof by an intermediate slotted portion therealong that is open transversely thereof, said intermediate slotted portion having an enlarged diameter slotted portion open to a front end portion of said clamp, a substantially arcuate-shaped open-mouth latching finger part positioned within and along said slotted portions of said clamp, a pivot pin extending through a front end portion of said finger part at said enlarged diameter slotted portion and being secured at its ends within the front end portion of said clamp, said pivot pin pivotally mounting the front end portion of said finger part for movement

along said intermediate slotted portion from an unlatching position therewithin wherein the back end portion of said finger part is substantially fully within said intermediate slotted portion to a latching position wherein the back end portion of said finger part extends transversely from and in a cooperating latching position with said clamp and engages the second frame member beyond a side thereof that is substantially diametrically-opposite the engagement of the forward end portion of said clamp to securely hold the second frame member in a latched relation, spring means projecting over the front end portion of said finger part and having side coil portions positioned about said pivot pin on opposite sides of said finger part and engaging said enlarged slotted portion to substantially center said finger part in its pivoted relationship therewithin at the forward end portion of said clamp, said spring means being secured to said clamp for resiliently urging said finger part to its cooperating latching position with said clamp, said clamp having an inset arcuately-shaped slotted portion within said intermediate slotted portion at its back end portion defining a guide slot and stop limit means at each end of said guide slot spaced transversely within said clamp, and said finger part having a back guide lug operatively positioned for guided movement within said inset slotted portion and adapted to engage said stop means for limiting the swinging movement of said finger part between its defined unlatching and latching positions.

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