Sept. 17, 1935. C. HIRTH 2,014,967

HOLD-DOWN DEVICE FOR VISES AND THE LIKE

Filed March 31, 1934

Fig. 1.

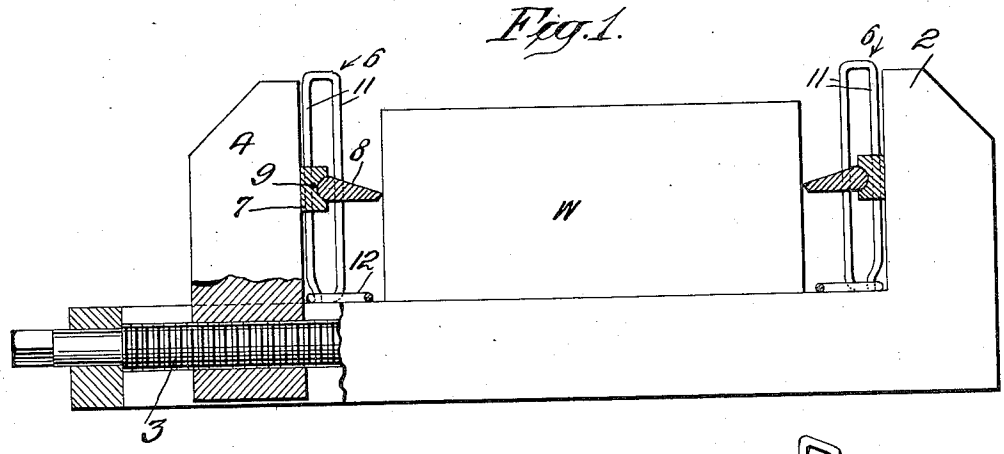



Fig. 2.

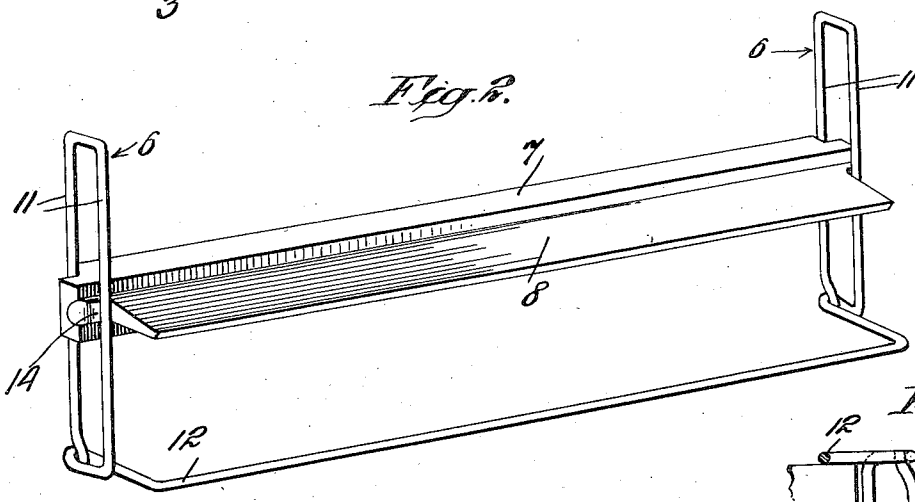



Fig. 3.

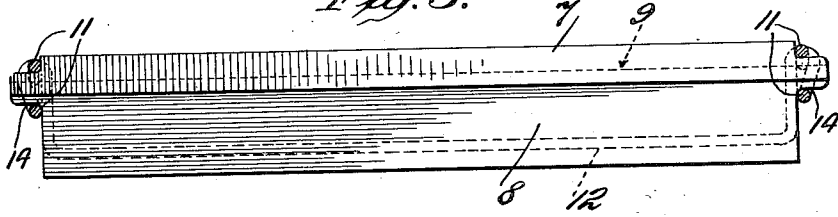
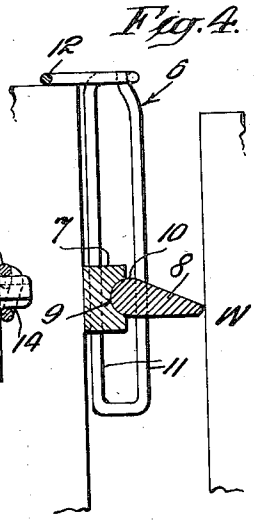



Fig. 4.




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Patented Sept. 17, 1935

2,014,967

# UNITED STATES PATENT OFFICE

2,014,967

## HOLD-DOWN DEVICE FOR VISES AND THE LIKE

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Application March 31, 1934, Serial No. 718,370

3 Claims. (Cl. 90—59)

This invention relates to improvements in hold-down devices for vises, work holders of planers, milling machines and the like and consists of an improved device having important advantages over devices for a similar purpose as heretofore used.

My improved device is of an improved design and simplified construction resulting in a hold-down device or attachment that may be economically produced and which, in use, will be highly efficient in securing the work and of adequate strength to perform its function and which will permit of the assembly or setting of the work within the vise with greater facility by reason of the hold-down device being formed for self support with pre-adjustment of its holding jaw thereby fully to relieve the hands for adjusting the work and tightening of the vise.

The described and other important features of my improvements are shown in the accompanying drawing, wherein like reference characters are applied to the corresponding parts in the several views.

In the drawing, Fig. 1 is a view in side elevation with portions in vertical section illustrating my improved hold-down device assembled with a vise and the work clamped therein.

Fig. 2 is a view of my improved, hold-down attachment shown in perspective.

Fig. 3 is a plan view of the toggle holding members of my device with the supporting frame member shown in horizontal section.

Fig. 4 is a partial view similar to Fig. 1 illustrating my improved device as employed in position suspended from the upper portion of the vise jaw member.

As here illustrated, the device of my invention is shown as used in conjunction with a vise or clamping means comprising the usual supporting or base member 1, provided with the fixed jaw portion 2 and supporting in suitable bearings an adjusting screw 3, upon which is threaded the movable jaw 4, which is accordingly adjustable with relation to jaw 2 upon rotation of the operating screw 3. In the usual arrangement the base portion 1 is provided with opposite parallel side members providing a guideway for the movable jaw 4 and forming a bearing rest for the work. As is well understood, in many operations it is required that the work will be held down securely against the bearing rest or supporting member 1, while being operated upon in a manner to resist upward movement or lifting of the work and for this purpose my improved device is intended to function more effectively than have devices heretofore used for this purpose.

In the approved embodiment of the features of my invention as here shown, the improved hold-down device is of simplified construction, being composed of but three parts, a supporting wire frame member 6 and a toggle action jaw member consisting of a vise jaw engaging member 7 and a work engaging jaw member 8 having pivotal connection therewith. The toggle action jaw member as best illustrated in Fig. 1, under the closing pressure of the vise jaw, will produce a downward pressure upon the work indicated at "W" as a result of the downward inclination of the jaw member 8 with relation to the co-acting jaw member 7 and the pivotal connection therewith provided by the curved groove 9 formed longitudinally of the member 7 and the rounded inner edge 10 of the jaw member 8 fitted therein.

As best shown in Fig. 2, the supporting or frame member 6 is formed of a single piece of wire with vertical side loop portions 11 providing guideways for the toggle acting jaw member 7—8 which is clamped there-between in a manner to secure the jaw members together in their proper cooperating relation and to permit of their being adjustable vertically in the guideways so formed.

The body or connecting portion of the frame member shown at 12 is laterally offset as indicated with relation to the end loop portions 11.

As shown, each of the jaw members 7 and 8 at its end portions is notched inwardly from its outer edge to provide retaining shoulders for engagement in the guideway loops 11', the shoulder engagement of the jaw member 7 being such as to position said member in proper vertical relation to the guideway 11 and the shoulder engaging surface 14 of the work engaging jaw member having a slight inclination or angular relation to normally establish the downward inclination of the jaw 8 with relation to the work.

In the use of the hold-down device so constructed, the hold-down attachments may be positioned as shown in Fig. 1 with the offset portion 12 of the frame member resting upon the oposite side members of the base portion of the vise and with the toggle acting jaw members adjusted to any desired height with relation to the work; this adjustment being made by sliding the jaw members up or down within the guideway loops within which they are resiliently clamped.

As thus positioned, the hold-down attachment is self-sustained, permitting free use of both

hands of the operator for tightening of the vise for clamping of the work placed to bear upon the base 1 of the vise. As will be understood upon tightening of the vise, the toggle action of the hold-down jaw members will increase the holding pressure thereof under any upward pressure and movement of the work. It is therefore firmly retained in position.

As shown in Fig. 4, the lateral offsetting of the connecting portion 12 of the frame member allows of the hold-down device being used in a position, inverted relative to that shown in Fig. 1. When so used, the toggle jaw members are first removed from the frame and reversed in position and the device is suspended from the upper surface of the vise jaw as indicated. The toggle jaw 8 is then as shown downwardly inclined with relation to the work so that tightening of the vise will produce a downward pressure on the work.

Having described my invention, I claim:

1. A hold-down attachment for vises and the like comprising a supporting frame having at each side thereof vertical, spaced, resilient members forming guide-ways, a two-part articulated jaw fitted within the guide-ways and held in assembled relation by said resilient members, one of said jaw members being formed with a grooved bearing surface, the other with a rounded edge received therein and said jaw members having shoulder engagement with the resilient frame members, said shoulders having a relative angular relation normally to position the work engaging jaw member downwardly inclined with relation thereto.

2. A hold-down attachment for vises and the like comprising a supporting frame having at each side thereof vertical, spaced, resilient members forming guide-ways, a two-part articulated jaw fitted within the guideways and held in assembled relation by said resilient members, one of said jaw members being formed with a grooved bearing surface, the other with a rounded edge received therein and said jaw members having a relative angular relation normally to position the work-engaging jaw member downwardly inclined with relation thereto, said supporting frame having an offset connecting portion adapted for suspending the device from the upper surface of the vise jaw.

3. A hold-down attachment for vises and the like comprising bent wire supporting frame having at each side thereof vertical, spaced, resilient members forming guide-ways, a two-part articulated jaw fitted within the guide-ways and held in assembled relation by said resilient members, one of said jaw members being formed with a grooved bearing surface, extending longitudinally thereof, the other with a complementally rounded edge received therein for swivel action and said jaw members being formed to have shoulder engagement with the resilient frame members and said shoulders having a relative angular relation normally to position the inner jaw member downwardly inclined.

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