July 28, 1936. J. E. BOICE 2,049,045

WOODWORKING MACHINE

Filed Sept. 29, 1934

Fig. 2

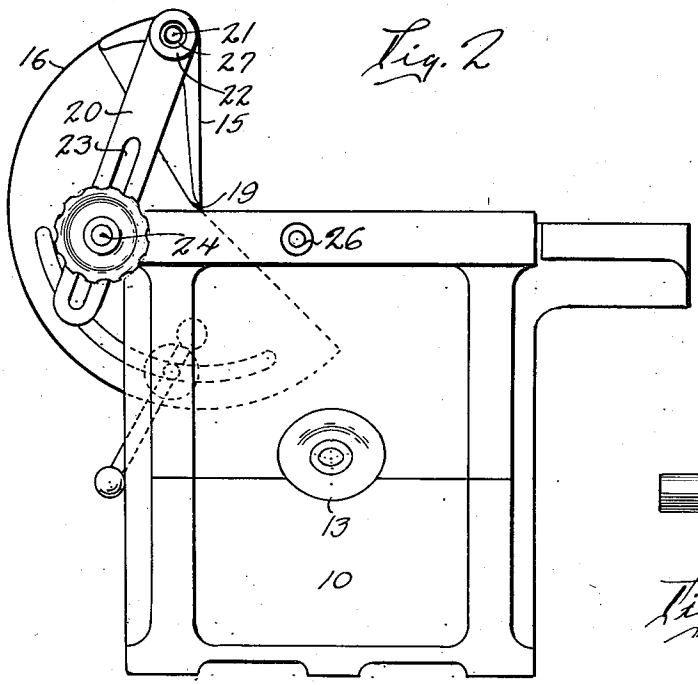
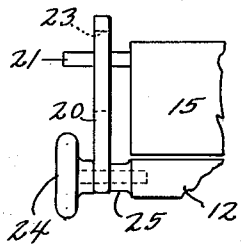


Fig. 6



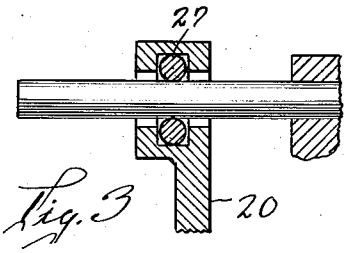


Fig. 3

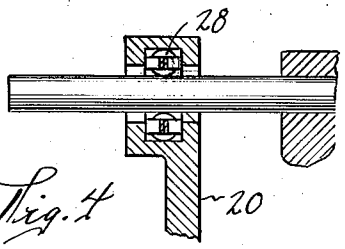
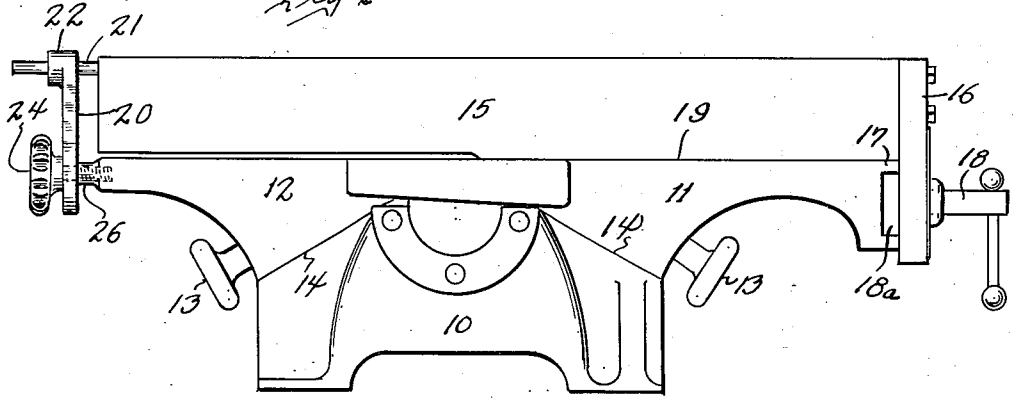


Fig. 4

Fig. 1



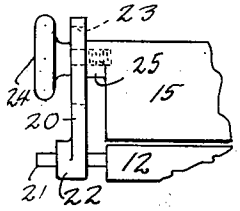


Fig. 5

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2,049,045

WOODWORKING MACHINE

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Application September 29, 1934, Serial No. 746,093

8 Claims. (Cl. 144—253)

This invention relates to the fence structure of woodworking machines, and is particularly adaptable to jointers wherein the work guiding fence is mounted for tilting movement around a longitudinal axis, and for translational movement transversely to said axis. Its purpose is to provide a simple and effective means for giving support to the "free" end of the fence, to brace said end against springing laterally under the pressure of work pressed against it during operation thereon. It has been the practice in the past, particularly in small jointers, to employ a single connection between one end of the fence and the bed of the machine, serving to lock the fence in any of the positions to which it may be adjusted as above specified, the rigidity of the fence being relied upon to keep the free end in proper alignment. In actual practice, however, there is always a small amount of "give" in the fence.

The invention aims to provide an auxiliary connection or free end support which will not interfere with the normal operation of the main adjusting connection. To this end, the auxiliary connection comprises simply a rigid link having a pivotal connection with both fence and bed and two slidable connections, with either the fence or bed or both, so as to allow relative translational movement between the fence and bed in any direction, together with clamping means operable, when tightened, to clamp the link in rigid association with either the fence or the bed. The clamp is operable to lock one of the pivotal connections and one of the slidable connections (that which allows relative translation transversely of the longitudinal axis of the fence) but does not affect the slidable connection which allows relative longitudinal translation, it being unnecessary to lock the latter connection, in view of the fact that the link functions only to rigidify the fence against lateral and/or vertical springing.

With these and other objects in view, my invention consists in the combination, construction, and arrangement of the various parts of the device, whereby the objects contemplated are attained, as described in the accompanying specifications, pointed out in the appended claims, and illustrated in the accompanying drawing, in which:

Fig. 1 is a front elevation of a jointer embodying the invention,

Fig. 2 is a rear end elevation of the same,

Fig. 3 is a detail sectional view of the connection between the link and fence,

Fig. 4 is a similar view of a modified form of said connection,

Fig. 5 is a view of a modified form of the connection, and

Fig. 6 is a similar view of another modification thereof.

The jointer illustrated in Figs. 1 and 2 is, with the exception of the auxiliary connection embodying the present invention, the same as the jointer described and illustrated in my copending application Serial No. 698,278, filed November 16, 1933. On the base 10 are slidably mounted the two bed sections 11 and 12, each adjustable for height by means of a hand wheel 13. Since the line of adjustment of the bed sections is inclined, as at 14, there will be a resultant longitudinal movement accompanying any vertical adjustment. The auxiliary connection embodied in the present invention allows for such vertical and longitudinal movement of either bed, the position of the fence relative to the rear bed being altered in response to adjustment of either bed section.

The fence 15 is sector shaped in cross-section and is mounted at its forward end on a sector 16 which extends below the level of the bed 11 into sliding engagement with the outer edges of the track 17. Clamping means 18, 18a slidably mounted in the track 17, supports the fence for tilting around the axis of the lower edge 19 of the fence, and for translational movement laterally across the bed 11, 12, and is adapted to lock the sector 16 against the track 17 in any of its positions of adjustment, as more fully illustrated in the copending application above referred to.

The present invention provides a rigid link 20 pivoted to the free end of the fence 15 by means of the stud 21, fixed in the end of the fence and slidably projecting through the sleeve 22 on the end of the link 20.

The other end of the link 20 has a slot 23 which receives the handscrew 24 which may be threaded into the threaded opening in the boss 25, located at the corner of the bed section 12, or in the boss 26 located near the center of the end of said section. The handscrew 24 serves to tighten the link 20 against the boss 25 or 26 so as to lock it against either pivoting or sliding relative to the bed section 12.

The stud 21 is engaged by a hardened ring insert 27 in the sleeve 22, the engaging surfaces being highly polished so that the stud 21 may slide, twist or rotate in the ring when the link 20 is loose, without binding.

In the operation of the device, the handscrew 24 is given a slight turn to loosen its grip against the link 20, preparatory to adjusting the fence. The latter may then be swung about its pivotal

axis, the link 20 following. The slot 23 allows the stud 21 to move away from or toward the handscrew 24 in response to such pivotal movement of the fence, or in response to translation of the fence transversely of its pivotal axis. If it is desired to adjust the position of the bed 11 or the bed 12, the link will be carried with the bed 12 as the latter moves longitudinally, or will allow the stud 21 to slide as the fence moves longitudinally with the bed 11, while simultaneously pivoting to compensate for the attendant vertical movement of the bed.

When the fence adjustment has been completed, a turn of the handscrew in the opposite direction will tighten the link 20 in a clamped embrace between the handscrew and boss 25 or 26 as the case may be, rigidifying the link relative to the bed 12 and holding the sleeve 22 in a rigidly fixed position relative to the bed. As a result, the stud 21, although it is still loosely extended through the ring 27, is held against any lateral or vertical springing.

The relative positions of stud 21 and handscrew 24 may be reversed as shown in Fig. 5, wherein the stud 21 is affixed in the bed 12 and the handscrew 24 is threaded into the boss 25 on the end of the fence.

In this case the link 20 becomes a rigid link with respect to the fence, and is anchored against movement in any direction transverse to the axis of the fence, by the stud 21.

It will be understood that in either case the link not only anchors the fence against lateral springing in a horizontal direction, but prevents the fence from springing upwardly as well. The latter feature is of importance where the fence is tilted over to a position where its guiding surface makes an acute angle relative to the face of the bed, or in the event that spring hold-downs are used in connection with the fence, as is sometimes the practice.

A third form of the invention is shown in Fig. 6, in which the slot 23, instead of being at the end of the link which is engaged by the clamping screw 24, is located in the end of the link which receives the stud 21, whereby the longitudinally slidable connection and the laterally slidable connection are both located at the same end of the link. The other forms of the invention have the advantage over this one in that the latter will hold the fence against springing only in a direction transverse to the slot 23.

Instead of the hardened ring 27, a ball bearing 28, either caged or loose, may be employed. This form of construction is in fact a preferential one, because of the absolute prevention of binding which it achieves.

I claim as my invention:

1. In combination with a woodworking machine including a bed, a work guiding fence and means at one end of said fence to clamp said fence to the bed in any of a series of positions adjusted transversely of the longitudinal axis of the fence, an auxiliary support for the free end of the fence comprising a rigid link having at one end a pivotal and longitudinally slidable connection with the free end of the fence, and having at its other end a pivotal and laterally slidable connection with the adjacent end of the bed, and means to rigidify the latter connection so as to constitute said link a brace preventing springing of the fence relative to the bed, transversely of its axis.

2. In combination with a woodworking machine including a bed, a work guiding fence and means at one end of the fence to clamp the same to the bed in any of a series of positions adjusted laterally of the bed, an auxiliary support for the free end of the fence comprising a rigid link having at one end a pivotal and longitudinally slidable connection with the bed and at its other end a pivotal and laterally slidable connection with the free end of the fence, and means to rigidify the latter connection so as to constitute said link a brace preventing lateral and/or vertical springing of the fence relative to the bed.

3. In combination with a woodworking machine including a bed, a fence and means at one end of the fence connecting said end to the bed in any of a series of adjusted positions, an auxiliary support for the free end of the fence comprising a rigid link having at one end an opening provided within its periphery with an annular bearing member providing a narrow circular line of bearing surface, a hardened polished stud affixed in the free end of the fence and slidably projecting through said bearing member, the link having at its opposite end an elongated slot, and means extending through said slot and cooperating with the adjacent end of the bed to clamp said link in any of a series of adjusted positions, in rigidified relation to the bed.

4. A woodworking machine as claimed in claim 3, in which the bearing member is an integral ring of hardened polished metal.

5. A woodworking machine as claimed in claim 3, wherein the bearing member is comprised in a series of hardened steel balls caged between the said opening and the stud.

6. In combination with a woodworking machine including a bed, a work guiding fence and means at one end of said fence to clamp it to the bed in any of a series of positions adjusted transversely of the longitudinal axis of the fence, an auxiliary support for the free end of the fence comprising a rigid link having near its respective ends pivotal connections with the free end of the fence and with the bed respectively, one of said connections being pivotal and longitudinally slidable and the other of said connections being pivotal and laterally slidable, and means to rigidify one of said connections so as to constitute said link a brace preventing springing of the fence relative to the bed transversely of its axis.

7. In combination with a woodworking machine including a bed, a work guiding fence and means at one end of said fence to clamp it to the bed in any of a series of positions adjusted transversely of the longitudinal axis of the fence, an auxiliary support for the free end of the fence comprising a pin projecting from said end, parallel to the longitudinal axis of the fence, a rigid link one end of which has a bearing slidably and rotatably receiving said pin and the other end region of which is formed with a longitudinal slot, and a clamping screw extending through said slot and serving to clamp said other end region in rigid engagement with the adjacent end of the bed.

8. In combination with a woodworking machine including a bed, a work guiding fence and means at one end of said fence to clamp it to the bed in any of a series of positions adjusted transversely of the longitudinal axis of the fence, and auxiliary support for the free end of the fence comprising a rigid link having near its respective ends pivotal connections with the end por-

tions of the fence and bed respectively, one of said connections comprising a pin mounted in and projecting in a direction parallel to the longitudinal axis of the fence, from one of said portions, a bearing formed in one end of said link and slidably and rotatably receiving said pin, and the other of said connections comprising a slot formed in the other end of the link and extending longitudinally thereof and a clamping screw extended through said slot and serving to clamp the link rigidly against said other end portion.

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