

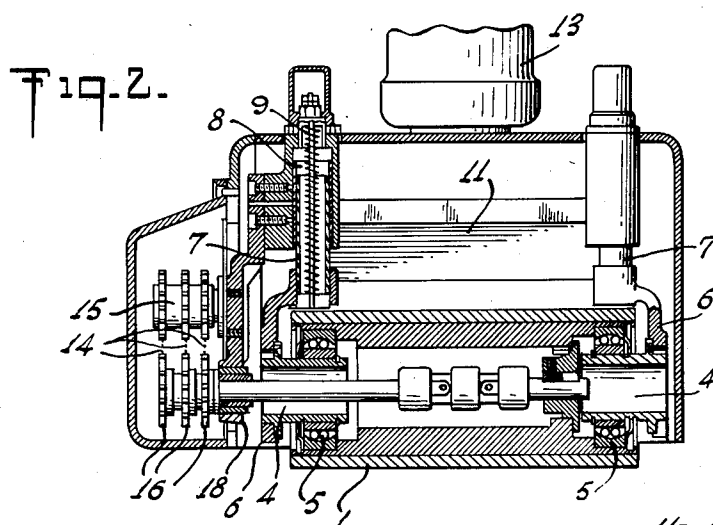
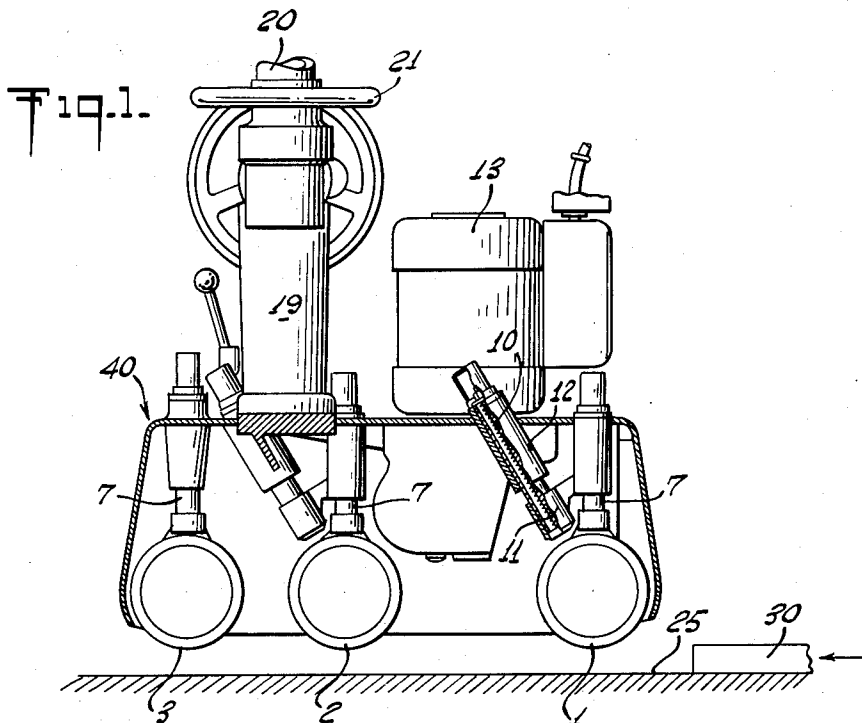
May 24, 1960

H. HELLE
FEED DEVICE FOR WOODWORKING MACHINES
ESPECIALLY PLANING MACHINES

2,937,674

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2 Sheets-Sheet 1



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Fig. 3.

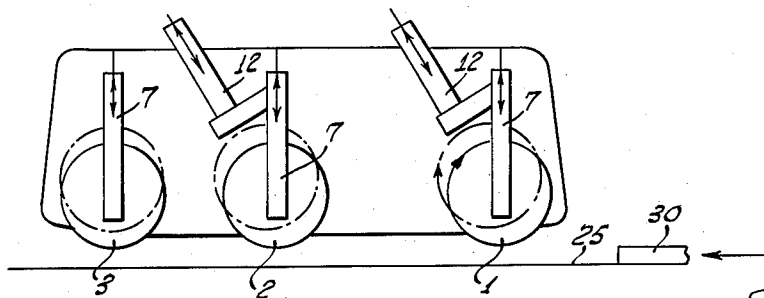


Fig. 4.

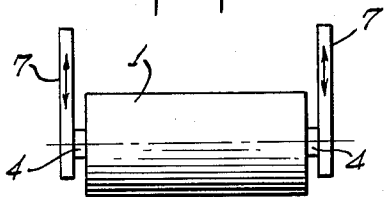


Fig. 5.

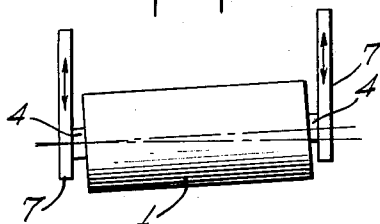


Fig. 6.

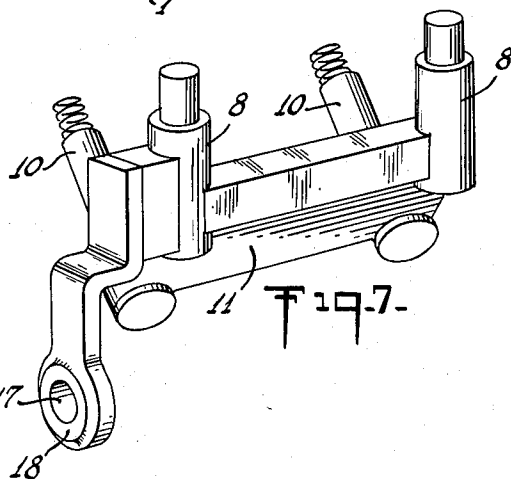
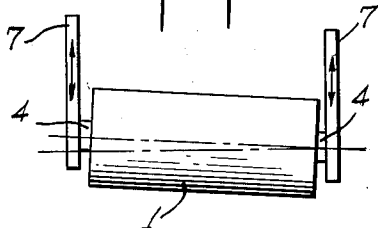
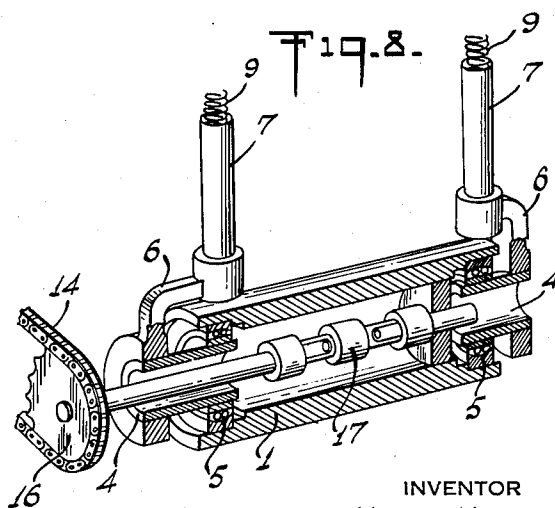


Fig. 8.



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FEED DEVICE FOR WOODWORKING MACHINES ESPECIALLY PLANING MACHINES

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7 Claims. (Cl. 144-247)

This invention relates to woodworking machines and more particularly to a feed device therefor.

Various types of feed devices have, heretofore, been provided for woodworking machines. However, in some of these devices the feed rolls are arranged on shafts supported in guided parallel relationship with each other upon the table top, each being arranged to swing freely upon a drive shaft. In this arrangement, the feed rolls only are permitted to swing. Other known feed devices are provided in which the feed rolls are arranged under spring pressure upon toggle joints which, while they also permit a raising of the rolls, do not permit any angling thereof, with respect to the surface of the work piece. All of these known feed devices for planing machines have the further disadvantage that they tend to straighten warped or twisted work pieces during movement over the machine table and over the cutting tool so that the work pieces, while being properly planed when leaving the machine, nevertheless distort back to their original warped condition.

It is, therefore, an object of the present invention to eliminate these disadvantages and, in addition, to provide self contained feed roll spring suspensions that also prevent the work piece from being thrown rearwardly during use of the device.

Other objects of the invention are to provide a feed device for woodworking machines bearing the above objects in mind which is of simple construction, has a minimum number of parts, is inexpensive to manufacture, and efficient in operation.

For other objects and for a better understanding of the invention, reference may be had to the following detailed description taken in conjunction with the accompanying drawing in which:

Figure 1 is a longitudinal cross sectional view of a feed device made in accordance with the present invention;

Figure 2 is a transverse cross sectional view of the apparatus shown in Figure 1;

Figure 3 is a diagrammatic side elevational view illustrating certain movements of the mechanism; and

Figures 4 through 6 are front elevational views showing certain parts in various operating positions;

Figures 7 and 8 are isometric versions of parts shown in Figures 1 and 2.

In accordance with the present invention, the feed rolls are supported in a yieldable position that permits them to move perpendicularly and angularly relative to the surface of the work piece so as to conform to the specific shape and position of distorted work pieces as they are moved through the woodworking machine. For this purpose, the rolls are suspended in long, vertical, telescoping spring guides that have adjustable pressure springs for independently controlling the movements of each feed roll regardless of which side is raised or lowered during use and which also includes obliquely adjusted spring systems which further resist movement of the rolls out of a normal parallel relationship with each other.

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Referring now more in detail to the drawing, a feed device made in accordance with the present invention is shown to include a main base or housing 40 within which the feed rolls 1, 2, 3 are supported on hollow bodies 4 and self-aligning ball bearings 5 which assure the aforementioned angling movement. The hollow bodies 4 are fastened in bearing flanges 6. The guide tubes 7 which are connected with flange 6 are displaceably held in guide bushings 8, which are acted upon by compression springs 9. The spring pressure is further increased by spring members 10 that are arranged obliquely to the main spring suspensions 9 by means of transversely extending bridges 11 which simultaneously provide seats for the vertical spring elements 7, 8, 9.

The driving of each feed roll is effected by means of a universal joint shaft 17 that extends through the hollow body 4 and is connected with the feed rolls 1, 2, 3, the drive bearings 18 being rigidly connected with the bridge 11. The support 19 of the apparatus in contrast to other feed devices has no threaded spindles for securing it in the desired adjusted position. On the other hand, the stand 19 has guide shafts 20 which are provided with flat threads so as to effect vertical adjustment of the feed device by means of hand wheels 21. The apparatus is driven by a reversible pole motor 13 that has two feed speeds through conventional worm and pinion gears (not shown) and through a chain 14, chain drum 15, and sprocket wheels 16 that are connected to the universal joint shafts 17 of the feed rolls.

In actual use, the work piece 30 is placed upon the machine work table 25 and moved toward the foremost feed roll 1 which is raised against the action of the vertical springs as permitted by the self-aligning bearings 5 to the position in which it assumes the exact inclination of the upper surface of the board 30, one end of the roll being free to be raised higher or lower than the opposite end thereof. Additional yieldability to the shape of the work piece is provided by the oblique bridges 11 which allow for angular movement of the feed rolls with respect to the work table. The feed rolls may be moved into a tilted position by the distorted work piece by the right hand or left hand spring members 7, 8, 9 arranged independently of each other. The intermediate feed roll 2 operates similarly.

The obliquely set bridges 11 also prevent the work piece 30 from being thrown backwardly (i.e. to the right in Fig. 1) by the cutting tool. This would endanger property and might cause possible injury to workmen. In the event that sufficient force urges the work piece in the opposite or backward direction (to the right in Fig. 1), the bridges 11 and the rotating feed rolls are pulled rearwardly (to the right and down) in their oblique guide 12 by the frictional engagement of the work piece with the rotating feed rolls 1 and 2. This clamps the work piece firmly to the machine table 25 of the machine so as to positively effect a stopping action on such rearward movement.

The elongated yieldable springs 9 permit a cushioning effect without any considerable increase of the supporting pressure of the feed rolls against the work piece, which, in a known manner, may be adjusted by simply tightening or loosening the springs.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claims.

What I claim as new and desire to protect by Letters Patent of the United States is:

1. Apparatus for feeding workpieces to woodworking machines and the like comprising a work face, a rotatable feed roll spaced opposite and in parallel relation to said work face adapted to move a workpiece between said

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feed roll and said work face, support means connected to said feed roll for substantially maintaining position of said feed roll, yieldable means in said support means biasing said feed roll against said workpiece, guide means in said support means adapted to allow tilting, transverse and oblique displacement of said feed roll with respect to said work face in response to the shape and movement of said work piece, said guide means including a vertical guide member for allowing tilting and transverse displacement of parts mounted thereon and an oblique guide member connected to said vertical member, one of said members supporting said feed roll and the other of said members guiding the first of said members and means in said support means for rotating said feed roll.

2. Apparatus for feeding workpieces to woodworking machines and the like comprising a work face, support means, a plurality of substantially parallel rotatable feed rolls spaced opposite and in parallel relation to said work face adapted to move a work piece between said feed rolls and said work face, said support means connected to said feed rolls for substantially maintaining position of said feed rolls, said support means including first guide means adapted to allow for translatory and tilting movement of said feed rolls in a plane transverse to said work face, first resilient means in said first guide means biasing said feed rolls against said work piece, said support means further including second guide means allowing for movement of said first guide means oblique to said work face and against the direction of the feeding motion of said workpiece, second resilient means in said second guide means adapted to bias said first guide means and said feed rolls against said workpiece in a direction opposing the feeding movement of said workpiece, and means in said support means for rotating said feed rolls.

3. An apparatus for feeding workpieces as in claim 2, wherein said feed rolls are adapted to frictionally feed said workpiece, whereby backlash motion by said workpiece opposing said feed rolls produces displacement of said feed rolls and said first guide means in the direction of

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said work face to clamp said workpiece to said work face.

4. Apparatus for feeding workpieces as in claim 3, wherein said first guide means include support bearings at each end of said feed rolls.

5. Apparatus for feeding workpieces as set forth in claim 4, wherein said first resilient means include independent spring means biasing the ends of each of said feed rolls to allow tilting of said feed rolls.

6. Apparatus for feeding workpieces as in claim 5, said means for rotating said rolls including universal joint means disposed in said feed rolls and adapted to transmit rotation to said rolls.

7. Apparatus for feeding workpieces to woodworking machines and the like comprising a work face, a rotatable feed roll spaced opposite and in parallel relation to said work face and adapted to move a workpiece between said feed roll and said work face, support means for said feed roll, guide means in said support means adapted to allow tilting, translatory and oblique displacement of said feed roll with respect to said work face in response to the shape of said workpiece, said guide means including a vertical guide for allowing tilting and translatory movement of said roller transverse to the direction of said work face and an oblique guide for allowing movement of said vertical guide in an oblique direction with respect to said work face, and means for rotating said feed roll in said support.

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