No. 652,466. Patented June 26, 1900.

J. R. THOMAS.

FEEDING DEVICE FOR WOODWORKING MACHINES.

(Application filed Jan. 27, 1900.)

(No Model.)

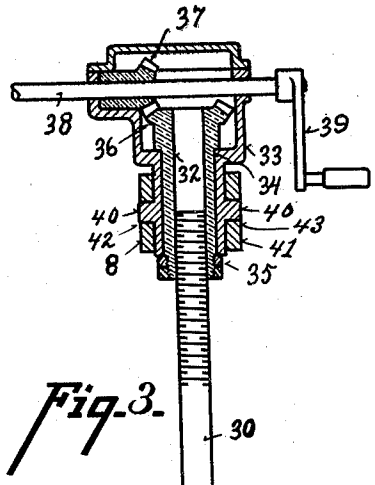


Fig. 3.

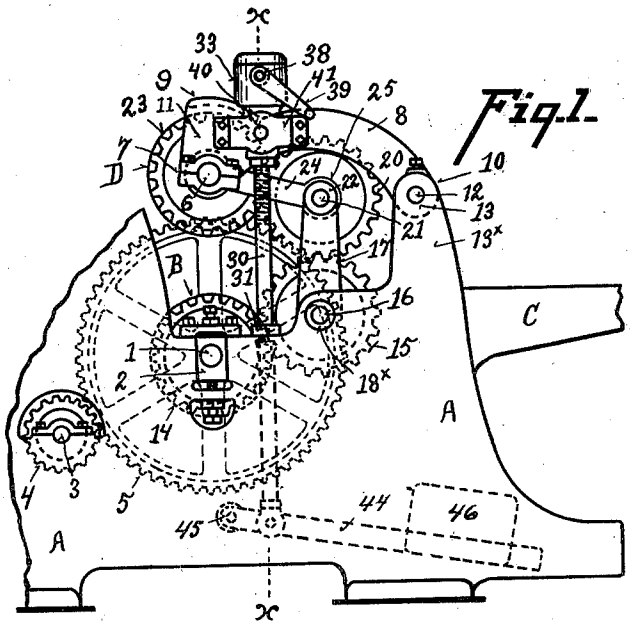


Fig. 1.

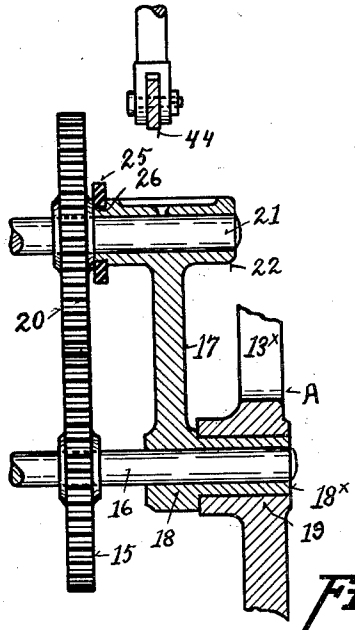


Fig. 4.

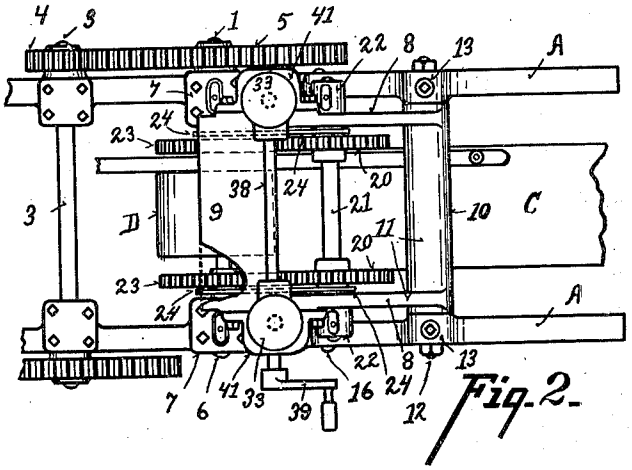


Fig. 2.

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UNITED STATES PATENT OFFICE.

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FEEDING DEVICE FOR WOODWORKING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 652,466, dated June 26, 1900.

Application filed January 27, 1900. Serial No. 2,968. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. THOMAS, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented a certain new and useful Improvement in Feeding Devices for Woodworking-Machines, of which the following is a specification.

My invention relates to feeding devices for woodworking-machines, and has for its object the providing of a device of the character described which is easy of operation, in which frictional resistance to yield of the feeding-roll is minimized, and which is compact and durable in construction.

My invention consists in providing a feeding-roll operated by gearing hung in an arm or housing swinging from a point at greater distance from the roll than the gear nearest the roll-gear; further, in providing a feeding-roll with a plurality of swinging connections having relatively stationary or fixed axes in different planes; further, in providing a feeding-roll adapted to be raised and lowered and operated by expansion-gearing and hung in a housing swinging from a point whose transverse vertical plane is at a greater distance from the roll than the transverse vertical planes of the axes of the expansion-gears; further, in arranging a feeding-roll to be operated by expansion-gearing and journaled in the end of a swinging arm extending above and beyond the expansion-links, and, further, in the parts and in the construction, arrangement, and combinations of parts hereinafter more fully described and claimed.

In the drawings, Figure 1 is a side elevation of my improved device as applied to a planing-machine frame. Fig. 2 is a plan view of the same. Fig. 3 is a detail in central transverse section, showing the adjusting-screw connections on the line x x of Fig. 1; and Fig. 4 is a detail of the upright link and connections, shown in cross-section.

I have shown and shall describe my improved feeding device in connection with the frame of a so-called "wood-planing machine."

A represents the frame, in which a roll B may be journaled in suitable manner, as by having its shaft 1 take into bearings 2.

C is a bed or work-support. The roll B may be given adjustment with relation to the work-support. It forms, preferably, the rigid roll of a pair. It may be operated from a shaft 3, receiving motion from a suitable source of power, carrying a pinion 4, meshing with a gear 5 on the roll-shaft.

D is a yielding feeding-roll and in the construction shown coöperates with the roll B to feed the stock, the roll D being given adjustment to and from the roll B and yielding to inequalities in the stock. The roll D is hung on a shaft 6, journaled in bearings 7. These latter bearings are supported by long arms 8, swinging from a point beyond the expansion-gearing, hereinafter described, to give the roll a substantial vertical adjustment, relieved of all sliding resistance. I prefer to connect these arms at the roll ends by a hood 9, which may take over the roll, and at the other end by a sleeve 10 to form a housing 11, swinging in parallel lines. The roll-bearings are preferably rigid with relation to the housing. The arms may be connected in other suitable ways. The housing may swing on a shaft or rod 12, connecting with the frame, as in bearings 13 in lugs $13^{\times}$. The roll D is operated, preferably at each end thereof, from a gear 14 on the shaft 1, which meshes with a gear 15 on a shaft 16. A link 17 takes about the shaft 16 at one end, forming a bearing 18 for the shaft, and is in turn journaled in the frame by having a sleeve $18^{\times}$ thereon taking into a bearing 19 in the frame. The gear 15 meshes with a gear 20, mounted on a shaft 21, which is journaled in a bearing 22 in the other end of the link 17. The gear 20 in turn meshes with a gear 23 of the roll D. A link 24 connects the gear 20 with the roll-gear 23, as by having an eye 25 thereof take about a journal 26 on the bearing 22, the other end of the link being preferably connected to the roll-bearing in a similar manner. The manner of gearing the roll D presents a suitable expansion device for operating the latter roll to compensate for various thicknesses of material to be operated upon and for varying thicknesses in the same piece. The stationary axis for the swinging connections of the expansion device with relation to the frame may be the axis of the bearing 18 or the roll B or other desirable part.

As stated, the bearings for the roll D are located in long arms or housing, which swing from the frame from a point preferably at greater distance from the roll than the expansion device. or gearing immediately connecting with the roll-gear. The arm or housing is swung to normally-determined positions for adjustment to thickness of stock by means of an adjusting-screw 30, connecting with the frame and with a trunnion connection on the arm. An adjusting-screw is preferably at each end of the roll. It takes into an elongated nut 32, sleeved in a shell 33. A shoulder 34 and nuts 35 prevent longitudinal movement of the elongated nut relatively to the shell, while permitting the turning thereof, the nuts 35 permitting its removal. The elongated nut also carries a gear 36, which meshes with a pinion 37, secured to an adjusting-shaft 38, journaled in the shell, the adjusting-shaft having a wheel or crank 39. The shell has trunnions 40, hung with relation to the arm, as by having a strap 41 taking about the shell and secured to the arm, the trunnions taking into seats 42 43 in the arm and strap. The screw-shaft 30 has a collar 31, by which it is seated with relation to the frame, and it also connects with a tension device—for instance, a lever 44, pivoted to the frame at 45 and carrying a weight 46.

If it is desired to adjust the feeding-roll in my improved device, the adjusting-shaft is turned, which turns the elongated nut in the shell and causes the adjusting-screw to take into the nut to greater or less extent and varies the distance between the roll D and the roll B. The roll D will swing from the pivoted end of the arms or housing, the links of the expansion device swinging at the same time to the new normal position of the roll D. The roll D also yields from the same swinging-point of the arms or housing to variations in thickness in the stock against the action of the tension device.

In my improved device all slides and straight sliding contacts are avoided, making the action of my improved device especially delicate, while providing a powerful construction. Binding of parts is prevented and even wear of parts is assured. The yielding feeding-roll is given a parallel lift and swings from a point at comparatively-great distance therefrom and is caused to rise and lower with relation to the rigid feeding-roll, in substantially the vertical plane of the latter, while rockingly connected with the frame throughout.

By means of my improved construction also a greatly-increased rate of feed may be obtained with greater intimacy of contact between the rolls and stock.

It is obvious that changes may be made in the constructions I have preferred to show without departing from the spirit of my invention.

I claim—

1. In a feeding device for woodworking-machines, the combination of a feeding-roll with a plurality of swinging connections extending from the roll having relatively-rigid axes in different planes, substantially as described.

2. In a feeding device for woodworking-machines, the combination of a feeding-roll, driven by gears at each end thereof, with a plurality of swinging connections extending from the roll having relatively-rigid axes in different planes, substantially as described.

3. In a feeding device for woodworking-machines, the combination of a frame, with a feeding-roll, and a plurality of swinging connections extending from the roll between the feeding-roll and the frame, and relatively-rigid points of swing for the connections rigid with relation to the frame and located in different planes, substantially as described.

4. In a feeding device for woodworking-machines, the combination of a feeding-roll, an expansion device comprising expansion-links and gears for rotating the roll, an arm for rotatively supporting the feeding-roll swinging from a point at greater distance from the roll than the expansion-link nearest the roll, substantially as described.

5. In a feeding device for woodworking-machines, the combination of a frame, a feeding-roll, means for raising and lowering the feeding-roll, expansion-gearing for rotating the feeding-roll, a housing in which the feeding-roll is journaled, and a connection for permitting the swinging of the housing, with the transverse vertical plane of the connection at a greater distance from the roll than the transverse vertical planes of the expansion-gears, substantially as described.

6. In a feeding device for woodworking-machines, the combination of a feeding-roll, an expansion device for rotating the latter, and a swinging arm for the feeding-roll extending above and beyond the expansion device, substantially as described.

7. In a feeding device for woodworking-machines, the combination of a frame, a feeding-roll, means for rotating the latter, an arm for swingingly guiding the feeding-roll with relation to the frame, and a connection for the arm with the frame independent of the means for rotating the roll, substantially as described.

8. In a feeding device for woodworking-machines, the combination of a frame, a housing swinging with relation to the frame, a feeding-roll journaled in the housing, with means for rotating the roll comprising a gear at the roll and a second gear meshing therewith, with a relative sidewise movement between the housing and said second gear to vary the distance between them, substantially as described.

9. In a feeding device for woodworking-machines, the combination of a frame, a housing swinging with relation to the frame, a feeding-roll journaled in the housing, an adjusting-screw for the housing, and a trunnioned nut connecting the housing and the ad-

justing-screw, with means for rotating the roll comprising a gear at the roll and a second gear meshing therewith, with a relative sidewise movement between the housing and said second gear to vary the distance between them, substantially as described.

10. In a feeding device for woodworking-machines, the combination of a frame, a housing swinging with relation to the frame, a feeding-roll journaled in the housing, an adjusting-screw for the housing, and a trunnioned nut connecting the housing and the adjusting-screw, a pressure device, with means for rotating the roll comprising a gear at the roll and a second gear meshing therewith, with a relative sidewise movement between the housing and said second gear to vary the distance between them, substantially as described.

11. In a feeding device for woodworking-machines, the combination of a feeding-roll with an unarticulated swinging connection and an articulated swinging connection having relatively-rigid axes in different planes, substantially as described.

12. In a feeding device for woodworking-machines, the combination of a feeding-roll with an unarticulated swinging connection and an articulated swinging connection having relatively-rigid axes in different planes, and a pressure device, substantially as described.

In testimony whereof I have signed my name hereto in the presence of two subscribing witnesses.

JOHN R. THOMAS.

Witnesses:
PARKE S. JOHNSON,
PHILIP W. TOZZER.