May 8, 1951 L. B. CARLSON 2,552,367

FEED MECHANISM FOR WOOD PLANING MACHINES

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Fig. 1

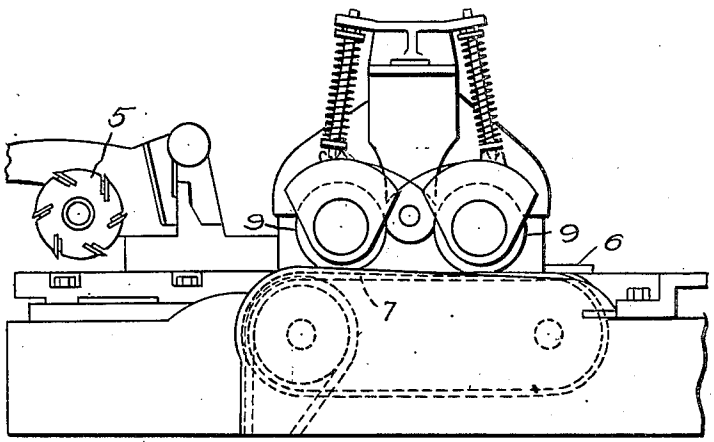
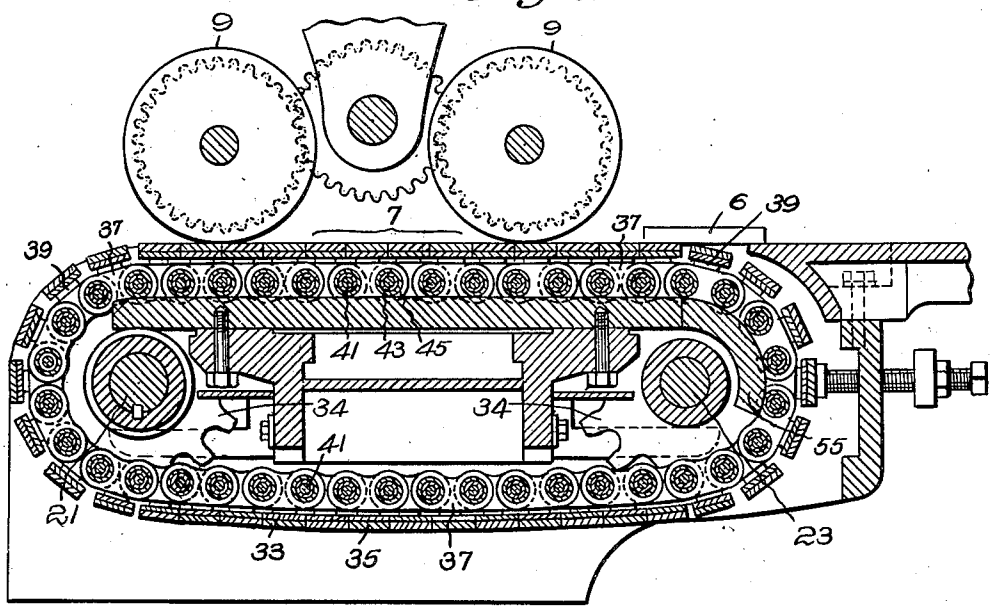


Fig. 2.



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Fig. 3.

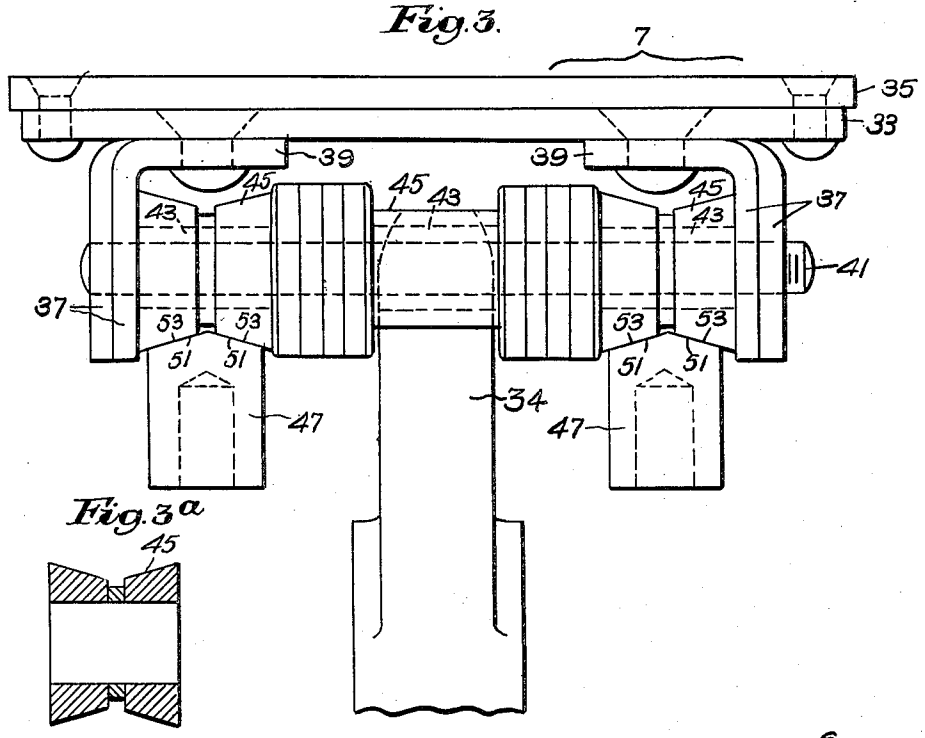


Fig. 3a

Fig. 4.

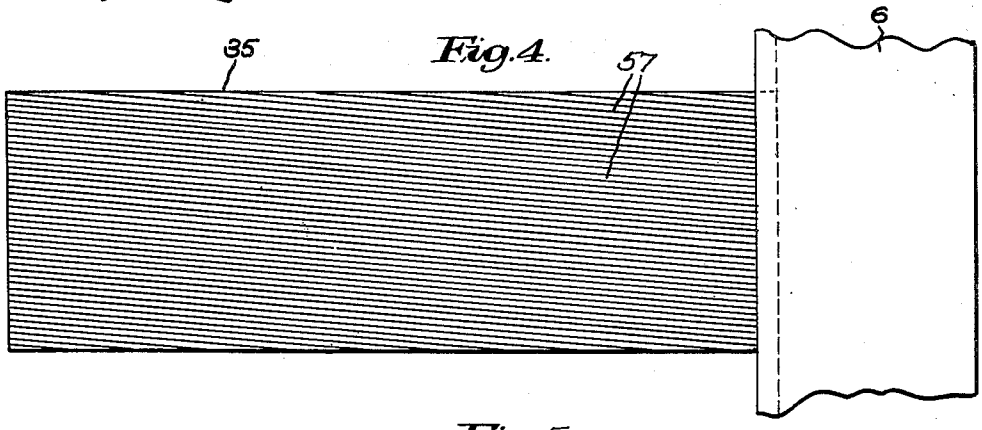
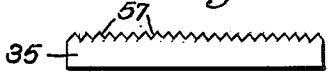


Fig. 5



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FEED MECHANISM FOR WOOD-PLANING MACHINES

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Application October 21, 1944, Serial No. 559,687

2 Claims. (Cl. 144—128)

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This invention relates to woodworking machines such as molders, planers, matchers or the like, all of which may be designated generically by the term "planer," and to the feeding mechanisms thereof, and more particularly to one of the type shown in the patents to Blood 1,704,677 and 1,800,175 wherein the feed mechanism which advances the pieces of stock along a guide to a remote point for operation of the planing mechanism proper thereon comprises a travelling bed consisting of a plurality of sections which form a work-engaging surface free of major projections and which are linked together in endless series, there being rollers carried by the bed beneath the exposed faces of the sections, a support on which at least certain of the rollers travel to sustain the upper run of the bed, and cooperating pressure means opposing the upper run of the bed to feed the work frictionally to the working point. The object of my invention is to provide improvements on a device of this nature which will render its operation more uniform and promote prolonged durability of the mechanism.

My invention will be well understood by reference to the following description of the illustrative embodiment thereof shown by way of example in the accompanying drawings, wherein:

Fig. 1 is a partial side elevation of a molder embodying in its construction a feeding mechanism illustrative of the invention;

Fig. 2 is a longitudinal section through the feeding mechanism, cooperating mechanism being shown in a simplified manner;

Fig. 3 is a transverse section through a portion of the feeding mechanism;

Fig. 3a is a diametrical section of a preferred construction of roller;

Fig. 4 is a plan view on an enlarged scale of a lag facing plate; and

Fig. 5 is an end view thereof.

Referring to Fig. 1, there is there shown a first cutter head 5 of a molder to which the work passes as it is fed forwardly along guide 6 and over the endless circulating bed 7, the work being pressed into feeding relation to the bed by suitable cooperating means, herein illustrated as rolls 9 which may be of well known construction and which do not require detailed disclosure herein. The construction of the travelling bed 7 in the embodiment of the invention shown resembles generally that disclosed in the Blood Patent 1,704,677 and, as therein, it may consist of a series of narrow, transversely disposed strips or lags 33 linked together in the form of an endless chain which is traversed by suitable sprockets 34 on the

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shafts 21 and 23, the leading sprocket on shaft 21 being a driven sprocket in the present instance. In the upper run of the chain the lags lie close together providing a uniform flat surface without major projections on which the work rests for a substantial distance and against which it is firmly pressed in firm, gripping relation by the pressure rolls 9. The lags 33 may conveniently be provided with renewable plates 35 riveted thereto at the ends and, as illustrated in Figs. 4 and 5 and hereinafter described, the faces of these plates may be suitably ribbed or roughened although, considered as a whole, the surface of the bed is uniform and, as above stated, without major projections. The work rests flat on the surface of the bed which, in driving the work, engages the same frictionally.

The lags are secured together in the form of a chain by pairs of vertically disposed links 37 having flange portions 39 to which the lags are riveted, the pairs of links on alternate lags being received between those on the adjacent lags and the links being suitably pivoted together at the joints between the lags as by means of the headed-over pins 41 passing through spacing sleeves 43 received in the inner pairs of links, which sleeves carry rollers 45, the successive pairs of links thus forming a chain. The number of these chains will vary with the width of the bed. One or more of the longitudinal series of rollers, herein one only because of the restricted width of the bed illustrated, engage the sprocket or sprockets on driving shaft 21 so that the circulating bed is driven, the upper run moving to the left in Figs. 1 and 2 to project the work towards the cutter head. Rollers of other longitudinal series of links provide an anti-frictional support for the upper run of the travelling bed so as to maintain the same rigidly in a horizontal plane, as seen in Fig. 2, and for this purpose longitudinal rails 47 are provided on which these rolls may travel in the manner of wheels. The description as given up to this point covers matter not broadly new although, as will appear, the rails 47 and those rollers 45 which cooperate therewith, referred to above in general terms, are of novel form.

Referring to Fig. 2, it will be apparent that in a machine of this kind the distance between the upper surface of the bed 7 where the work is and the supporting surface such as the rails 47 must be small. Therefore, with the rolls 45 as hitherto used, which were in the nature of cylindrical sleeves, the outer diameter on which the tractive reaction of the rails was exerted to

rotate them acted through a relatively small lever arm as compared with the diameter of the sleeves on which they turned and for practical reasons the bearing between these sleeves and the rollers was a relatively crude "plain" bearing. Under the great and constantly varying pressures encountered the rolls therefore had a tendency to slide from time to time without turning, as was demonstrated by the character of the wear observed on the rails. Also lateral pressures which were set up tended to brake the rolls by pressure of the links 37 against the same and the links 37 also might be pressed against the sides of the rails to cause undesirable friction and wear.

In the construction herein shown, as best seen in Fig. 3, the upper portion of the rail 47 is gabled, being provided with the opposed outwardly and upwardly facing diagonal surfaces 51, and the cooperating rolls 45 are of spool shape or double-conical form with opposed nappes 53 of the cone fitting and adapted to travel upon these surfaces. The roll 45 thus of itself tends to center the bed relative to the rails and resists lateral strains, while without over-all increase of dimension the base diameter of the cone may be made relatively large as compared with the diameter of the spindle, thus providing a relatively large lever arm tending to cause rotation of the rolls as they traverse the rails. It will be obvious that pure rolling engagement of the conical surfaces with the gabled surfaces 51 in a right line is not possible, but the resultant friction appears to develop a desirable tractive force to cause rotation of the rolls, and it will be observed that if slippage occurs adjacent the outer ends of the rolls, it will be in such direction as to tend to set the rolls in rotation in the desired direction.

While the rolls 45 may be of one-piece construction, they may desirably be formed, as seen in Fig. 3*a*, of two opposed truncated conical elements with an intervening washer. These parts need not be fastened together except that they are maintained face to face by the links on either side thereof. An independent or differential rotation of the conical parts may then occur.

I may also provide means cooperating with the rolls before they arrive into contact with the horizontal supporting surface, such as the rails 47, tending to overcome the inertia thereof and set them into rotative motion in the proper direction so that they will continue this motion when they pass onto the horizontal surface and come under load. In Fig. 2 I have shown at the intake end of the mechanism a continuation 55 of the rail 47 consisting of a circular segment of the same cross section as the rail and extending from a point over the center line of the right-hand shaft 23 throughout a substantial arc in the path of the rollers as the chain is advanced around the sprocket 23 at that end of the machine. The lowermost end of this extension may be rounded off slightly as shown to facilitate movement of the rollers thereon. The rollers thus make frictional contact with these downward extensions of the rails before they come under load, and while the tractive effect here is relatively small, the tendency is to overcome their inertia and deliver them to the horizontal surface in motion before they are subjected to the strain of the presser rolls 9 tending to lock them in position.

The wearing plates 35 which are attached to

the lags are shown in Figs. 4 and 5 as provided with grooves 57 which incline forwardly and outwardly from the guide 6 along which the piece of work is moved, thus forming a serrated surface which without interrupting the essential flat character of the bed causes frictional gripping of the work with a concomitant tendency to press it laterally, upwardly viewing Fig. 4, and against the guide. Such pressure is of advantage in insuring uniform passage of the pieces of stock, in obtaining proper end lock between them as they traverse the machine and in avoiding disturbances of such end locked connection.

I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive, as is in fact clear in several matters from the description itself. Reference is to be had to the appended claims to indicate those principles of the invention exemplified by the particular embodiment described and which I desire to secure by Letters Patent.

I claim:

1. A woodworking machine embodying a work-feeding mechanism for advancing successive work pieces in end butted relation to a remote point of operation of planing knives comprising opposed means for frictionally gripping the faces of the work pieces between them, the lower one of which is a circulating bed consisting of a plurality of sections forming a work-engaging surface free of major projections, the sections being linked together in an endless series, and rollers carried by the bed beneath the exposed face of the sections, means for driving the bed, and longitudinal rails on which at least certain of the rollers run to sustain the upper run of the driven bed in opposition to the opposed gripping means, said rails being gabled and the cooperating rollers being formed by pairs of separate conical frustra running on the gable surfaces.

2. In a wood planing machine the feed mechanism for advancing work along a longitudinal guide to a remote point of operation of planing knives comprising an endless series of flat lags linked together in the form of a chain, the chain embodying pintles cooperating with sprocket wheels to advance the upper run of the belt in a fixed plane adjacent said guide, means to support said upper run against deflection from the plane and cooperating pressure means to confine stock against the lag surfaces, the faces of the lags being substantially uniform and free of major projections but having shallow ribs inclining outwardly and forwardly from the guide.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
258,852	Doane et al.	May 30, 1882
975,721	Russell	Nov. 15, 1910
1,668,644	Hocquart	May 18, 1928
1,704,677	Blood	Mar. 5, 1929
1,809,054	Mattison	June 9, 1931
2,123,432	Mattison	July 12, 1938
2,305,525	Gustin	Dec. 15, 1942