

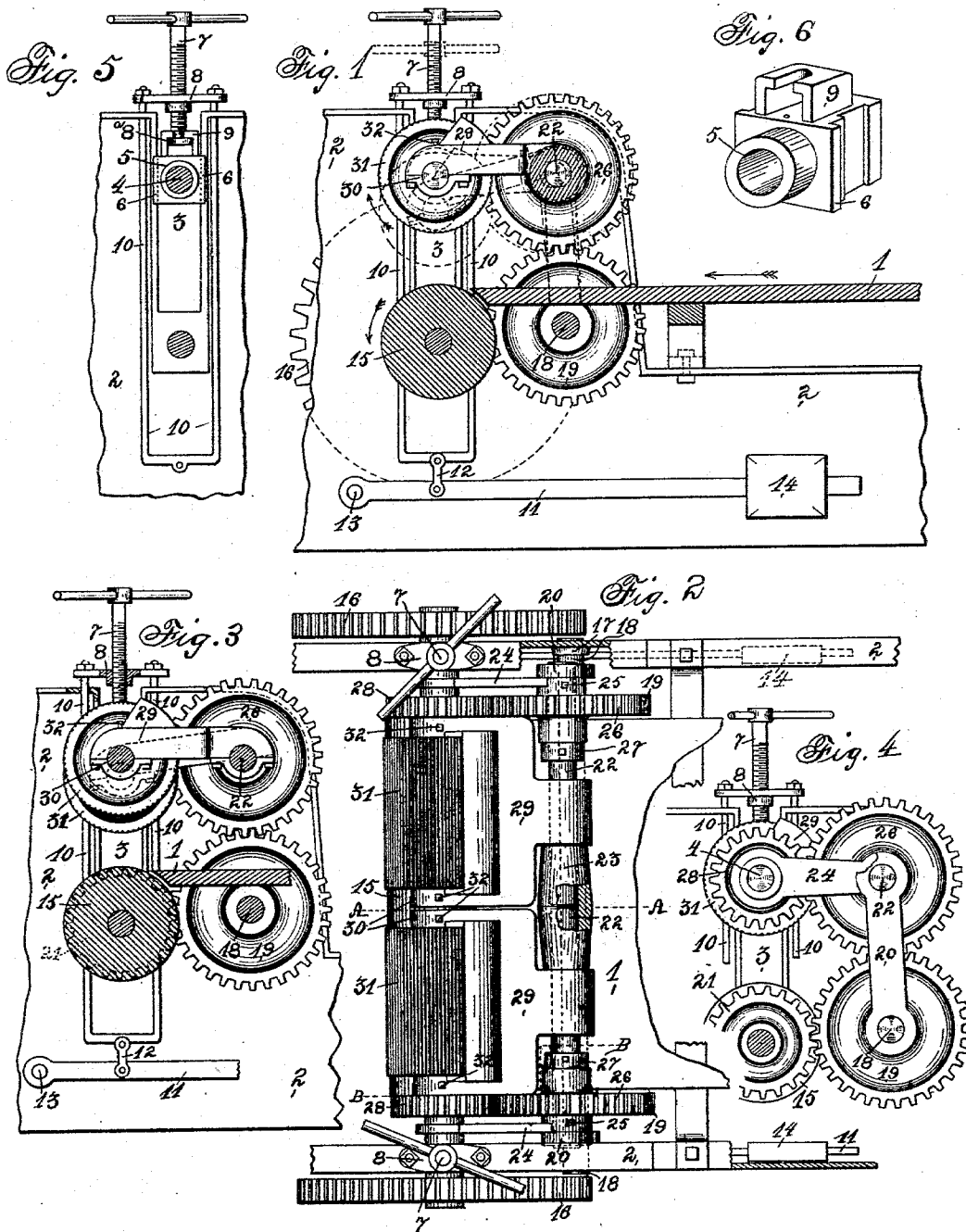
(No Model.)

E. JUDD.

FEED MECHANISM FOR WOODWORKING MACHINES.

No. 511,205.

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EDWIN JUDD, OF ST. LOUIS, MISSOURI, ASSIGNOR TO HALL & BROWN
WOOD WORKING MACHINE CO., OF SAME PLACE.

FEED MECHANISM FOR WOODWORKING MACHINES.

SPECIFICATION forming part of Letters Patent No. 511,205, dated December 19, 1893.

Application filed April 10, 1893. Serial No. 469,656. (No model.)

To all whom it may concern:

Be it known that I, EDWIN JUDD, of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Feed Mechanism for Woodworking Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved in-feed for wood planers, matchers, &c., particularly for combined planing and matching machines.

The invention consists in the novel construction, combination and arrangements of parts hereinafter described and pointed out in the claims.

The object of my invention is to provide an improved in-feed gear for machines of this class, whereby two or more pieces of lumber of different thicknesses can be positively fed through the machine at the same time.

A further object of my invention is to provide improved mechanism for raising and lowering the feed-roll-sections at each side of the machine independently, and for imparting to each section a yielding continuous downward pressure.

In the drawings: Figure 1 is a sectional side elevation of parts of a wood-planing machine or surfacer having a horizontal bed, the section being taken on the line A—A of Fig. 2. Fig. 2 is a sectional plan view of same. Fig. 3 is a sectional elevation of same taken on the line B—B of Fig. 2. Fig. 4 is a side elevation of the parts shown in Fig. 2, with the side plate of the frame and the large gear-wheel removed, looking at the side of Fig. 2, which is at the bottom of the sheet of this drawing. Fig. 5 is a detail side elevation, looking at the inner surface of the side plate of the frame, shown at the upper portion of Fig. 2, and illustrating the details of the feed-roll adjusting devices. Fig. 6 is a detail view in perspective of a vertically-movable journal-box, used in a machine.

I have illustrated but two sections and the necessary adjacent parts of the machine, although it is clearly evident in applying the invention to machines of the class above mentioned, these parts may be duplicated any

number of times so as to provide tandem feed rolls, as the builder may desire and the buyer prefer. In other cases, the feed mechanism which I here show may be substantially inverted with the parts in the same relative position, so that the sectional feed rolls will engage the pieces of lumber upon their under surfaces. Such changes, I desire to state, would fall within the line of skill possessed by any ordinary mechanic.

Referring to the drawings: I have deemed it unnecessary to illustrate a complete machine.

1 indicates the bed of a wood planer, or a combined wood planer and matcher, and 2, the opposite vertical side-plates of the frame thereof.

The direction in which the lumber is fed to the machine is indicated by the arrow in Fig. 1.

3 indicates opposite vertical guide-ways formed in the opposite side-plates of the frame, and having an open upper end.

4 indicates a pair of short shaft sections, the outer end of each of which is mounted in a box or bearing 5, which latter is arranged to slide freely up and down in one of the guide-ways 3. The inner ends of the shaft sections 4 are closely adjacent each other, and said sections are normally in alignment. The boxes 5 are provided with guiding-flanges 6, which engage the sides of the guide-ways 3, and serve to guide said boxes in their upward and downward movement.

7 indicates an adjusting screw, the upper end of which is provided with a suitable handle or hand-wheel, and the body of which is threaded through a cross-head 8, which latter is located above the open end of the guide-way 3.

As the mechanism at each side of the machine for adjusting the height of the shaft section 4, at that side, is identical, I will limit my description to the mechanism at one side of the machine. The adjusting screws 7 may be operated separately, as I here show them, or they may be connected by any known means, such as that which is now in every day use for such purposes, so as to be operated simultaneously, and thereby adjust the height of the roll sections, for different thick-

nesses of lumber. The lower end of the adjusting screw 7 is provided with a head or enlargement 8^a, which is mounted to revolve in a housing 9 formed upon or secured to the upper side of the box 6, so that when said screw is turned in either direction the box to which it is connected, will be correspondingly moved up or down. A U-shaped stirrup 10 has the upper ends of its arms connected to the cross-head 8, and its body extends downward and is connected to a weighted lever 11, by means of a link or equivalent device 12. The lever 11 is fulcrumed at 13, and carries an adjustable weight 14.

15 15 indicates the under feed roll, which is of the ordinary construction, and need not be specifically described with the exception of stating that it extends substantially across the bed of the machine in the form of a single long roll and is driven by means of a gear-wheel or gear wheels 16 mounted upon the projecting end or ends of its shaft, meshing with another suitable gear or gears (not shown) so that it will be revolved in the direction indicated by the arrow in Fig. 1.

Mounted in bearings 17 and extending across the machine directly beneath the bed 1 parallel with and in the rear of the lower roll 15, is a long shaft 18. Keyed or otherwise fixed upon the shaft 18 adjacent each edge of the bed 1 is a gear-wheel 19, and the lower end of a link 20 is loosely mounted upon said shaft exterior of each of said gear-wheels 19, so as to loosely engage and rock upon said shaft during the operation hereinafter mentioned. A gear wheel 21 is mounted upon the long shaft of the under roll 15, one adjacent each of its ends, so that there are two of said gears 21 carried by said shaft. The gears 21 carried by the under roll of the shaft mesh with the gears 19 carried by the shaft 18.

22 indicates a shaft which is cut into two sections and each section is held in alignment by means of a sleeve, 23 the bore of which is loosely engaged by the inner end of one or both of the sections of this shaft, so that each section may axially rotate or rock independent of the other. This shaft extends the full width of the bed 1, a sufficient distance above same to permit the passage of thick pieces of lumber to the feed rolls, but it has no fixed bearings or boxes and is free to be moved bodily forward or back.

The rear ends of a pair of links 24 are rigidly fixed one to each section of the shaft 22, by means of set screws 25 or keys, so that the opposite ends of said links project forward and are loosely mounted one upon each of the shaft sections 4 at a point adjacent the vertical movable boxes or bearings 5.

26 indicates a pair of gear-wheels, one each of which is loosely mounted to revolve freely upon each section of the shaft 22, at a point adjacent its outer end.

27 indicates a pair of collars, one each of which is fixed upon each section of the shaft 22 adjacent the hub of each gear-wheel 26,

for the purpose of holding said gear-wheels in proper position upon its section.

28 indicates another pair of gear-wheels, one of which is fixed upon each shaft section 4 at a point adjacent the link 24.

29 indicates a pair of cast-iron yokes, which are substantially -shaped in plan view. Each one of this pair of yokes has its rear end rigidly fixed to one section of the shaft 22, so as to rock with said section, and its arms are provided with bearings 30 in which one of the short shaft sections 4 is mounted to operate. Fixed upon each of the short shaft sections 4, between the arms of a yoke 29, is a short roll section 31, for the purpose of positively feeding the lumber.

Suitable oilers 32 are applied to the bearings in the arms of the yokes 29, for the purpose of applying lubricant to the journals of the short shaft sections 4.

The construction is such that the links 24 and the yokes 29 form the only support for the roll sections 31 and their shaft sections, so that although said roll sections may be adjusted up and down, they will be positively supported and positively driven during such adjustment.

From the above construction it will be seen that the two short roll sections are each yieldingly mounted in a swinging yoke, so that each may feed independent pieces of lumber, although one piece be of considerably greater thickness than the other. It will be further seen that although the roll-sections 31 are yieldingly mounted to swing up and down, each of them is also separately movable bodily a slight distance in the direction longitudinal of the bed of the machine. It will be further seen that there is applied to each roll-section an independent continuous downward pressure, in addition to the gravity of said sections themselves, the pressure mechanism for each roll-section being separate and independent both in construction and operation.

The operation is as follows: Two pieces of lumber of different thicknesses being placed on the under long roll 15 and in contact each with one of the roll sections 31, and the machine started up, the roll-sections will assume the position shown in Fig. 3, that is, the one resting upon the thinner piece of lumber will drop below the one resting upon the thicker piece and retain such position during the feeding of said piece of lumber, but during such time each piece will be positively fed by the roll section which engages it, no matter if the thicknesses be different. The shaft-sections 4 are guided in the straight vertical grooves 3, and when they are moved upward or downward they swing the shaft-sections 22 either forward or backward into and out of the position in which they are shown by dotted lines in Fig. 1. Of course, when a thick piece of lumber passes under both roll-sections 31, the shaft-sections 22 each occupy about the position in which they are shown in solid lines in Fig. 1, but when a thin piece

of lumber is passed under one of said roll-sections only one of the shaft-sections 22 occupies the position indicated by dotted lines in Fig. 1, and the other occupies about the position in which it is shown in solid lines in said figure, said shaft-sections 22 being loosely connected by the sleeve 23 in the manner previously described, so that said sections 22 are held in alignment, but as a whole shaft will be skewed around so as to occupy a slightly oblique position with relation to the said roll-sections. This oblique movement is very slight, and is permitted by a slight bending or twisting of the links 20 and 24, which are connected thereto, said shaft-sections 22 having, as previously stated, no fixed bearing. This oblique movement is further permitted by reason of the fact that the adjacent ends of said shaft-sections 22 are loosely mounted in the sleeve 23. By the words "loosely mounted," I mean that the size of said shaft-sections 22 is slightly less than the diameter of the bore of said sleeve, so that a slight oblique movement of each of said sections may take place in the bore of said sleeve. The roll sections are each yieldingly mounted, for the reason that said sections may readily lift independent of each other when they run upon a piece of lumber, the yokes 29 carrying said roll sections will be slightly swung upward, rocking the shaft 22 in its bearings in the upper ends of the rocking links 20, and throwing the upward pressure upon the boxes 5, and upon the screws 7, the cross-heads 8, the stirrups 10, the weight levers 11, and thereby lifting the weight 14 a corresponding distance. This construction is such that the weight 14 imparts a yielding continuous downward pressure upon the roll sections, thereby causing them to yieldingly engage the upper surface of the lumber fed beneath them.

When it is desired to adjust the roll sections for lumber of greater or less thickness, the screws 7 are turned in a corresponding direction, thereby raising and lowering the boxes 5 in their guideways 3, independently of the stirrups 10 and the weight levers 11, said stirrups and said weight levers remaining stationary during this adjustment of the boxes 5. Such a construction provides a very durable and efficient in-feed for wood-planers, matchers, &c., the same being of reasonable cost and not liable to become deranged during use.

Although the shaft sections 4 upon which the roll sections 31 are mounted do not extend continuously across the machine, yet I have found that these parts are amply strong for all practical purposes, the horizontal links 24 really forming a rigid connection between said shaft sections and the rocking sections of the shaft 22.

I am aware that a surfacing machine has been made with two vertically moving independent press-rolls on opposite sides to force

the lumber upward against an endless feeding apron, and this I do not claim.

I am further aware that a planing machine has been constructed with separate feed-rolls mounted in swinging yokes, one in front of the other in tandem style, but as in such construction the yokes have been loosely mounted to swing upon a long shaft which is fixed so as to extend continuously across the machine in immovable bearings, the same fails to answer the purpose of my invention, and I make no claim to such construction.

I am further aware that a surfacing machine has been made with a series of short aligned gravity rolls located to move up and down independently, but in this latter arrangement there has been no provision made for any other downward pressure upon the rolls than that exerted by the gravity of the rolls themselves, and this I do not claim.

What I claim is—

1. In a wood planer, matcher, or the like, four separate shaft-sections, two of which are mounted end to end to rock independent of each other and swing bodily, and the other two of which are also mounted end to end to move bodily but to rotate, roll-sections mounted one upon each of said last mentioned shaft-sections, means which connect each of said last mentioned shaft-sections to one of said first mentioned shaft-sections, so that when said last mentioned sections are moved bodily up and down, said first mentioned sections will be correspondingly rocked, a sliding-bearing for the outer ends only of said last mentioned shaft-sections, links which movably support the outer ends of said first mentioned shaft-sections, gearing for imparting independent axial movement to each of said roll-sections, and means for imparting a yielding continuous downward pressure to said roll-sections, substantially as herein specified.

2. The combination in a wood planer matcher or the like, of a suitable machine frame, a pair of short shaft sections 4, bearings or boxes 5 arranged to slide freely up and down in guides in said frame and in which the outer ends of said shaft sections are mounted, means for adjusting said boxes or bearings vertically in said guides, the inner end of said shaft sections being disposed closely adjacent each other and said sections normally in alignment, a shaft 22 cut into two sections and each section held in alignment, a sleeve 23 the bore of which is engaged by the inner ends of both sections of said shaft 22 so that each section may rock or have axial-rotation independent of the other, said shaft 22 extending the full width of the bed of the machine but being devoid of fixed bearings or boxes and being free to be moved bodily forward or backward, a pair of horizontal links 24 the rear ends of which are readily fixed one to each section of the shaft 22 so that the opposite ends of said links project forward and are loosely mounted

one upon each of the shaft sections 4 at a point adjacent the vertical movable boxes or bearings 5, a pair of cast iron yokes 29 the rear ends of which are fixed one upon one section of the shaft 22 and one upon the other section of said shaft so as to rock with said sections, short roll sections mounted in said yokes, means connected to the sections of the shaft 22 to move the same and impart a continuous yielding downward pressure to said roll sections in addition to the weight thereof, and gearing for positively driving said roll sections, substantially as herein set forth.

3. In a wood-planer, matcher or the like, the combination of a bed 1, opposite vertical side plates 2 of the frame vertically moving shaft boxes mounted upon said side plates, a pair of short shaft sections 4 the outer end of each of which is mounted in said boxes and the other ends of which are adjacent each other and normally in alignment, an under feed roll 15, a short roll section 31 mounted upon each of the shaft sections above said under roll, a sectional shaft 22 mounted in the rear of said shaft sections, to rock and move axially and laterally yokes 29 fixed upon the sections of said shaft 22 and arranged to support the inner edges and ends of said shaft sections, means for raising and lowering the roll sections independent of each other, means for

imparting independent constant downward pressure to each of said roll sections, and means for rotating each of said roll sections, substantially as herein specified.

4. In a wood-planer, matcher or the like, the combination of independently driven short roll sections placed end to end, the side plates of the machine-frame having opposite vertical guide-ways formed therein, a box or bearing 5 mounted in each of said guideways to control the upward and downward adjustment of said roll sections, a cross-head 8 mounted above the open end of each guideway, adjusting screws 7 the upper ends of which are provided with suitable handles or hand-wheels and the body of each of which is threaded through one of said cross-heads, the lower end of each adjusting screw loosely engaging one of said boxes, U-shaped stirrups 10 having their upper ends connected to said cross-heads and their bodies extending downward and connected to a weighted lever, substantially as herein specified.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN JUDD.

Witnesses:

EDWARD EVERETT LONGAN,
JNO. C. HIGDON.