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ENDLESS BED SANDER

Filed Dec. 31, 1925

2 Sheets-Sheet 1

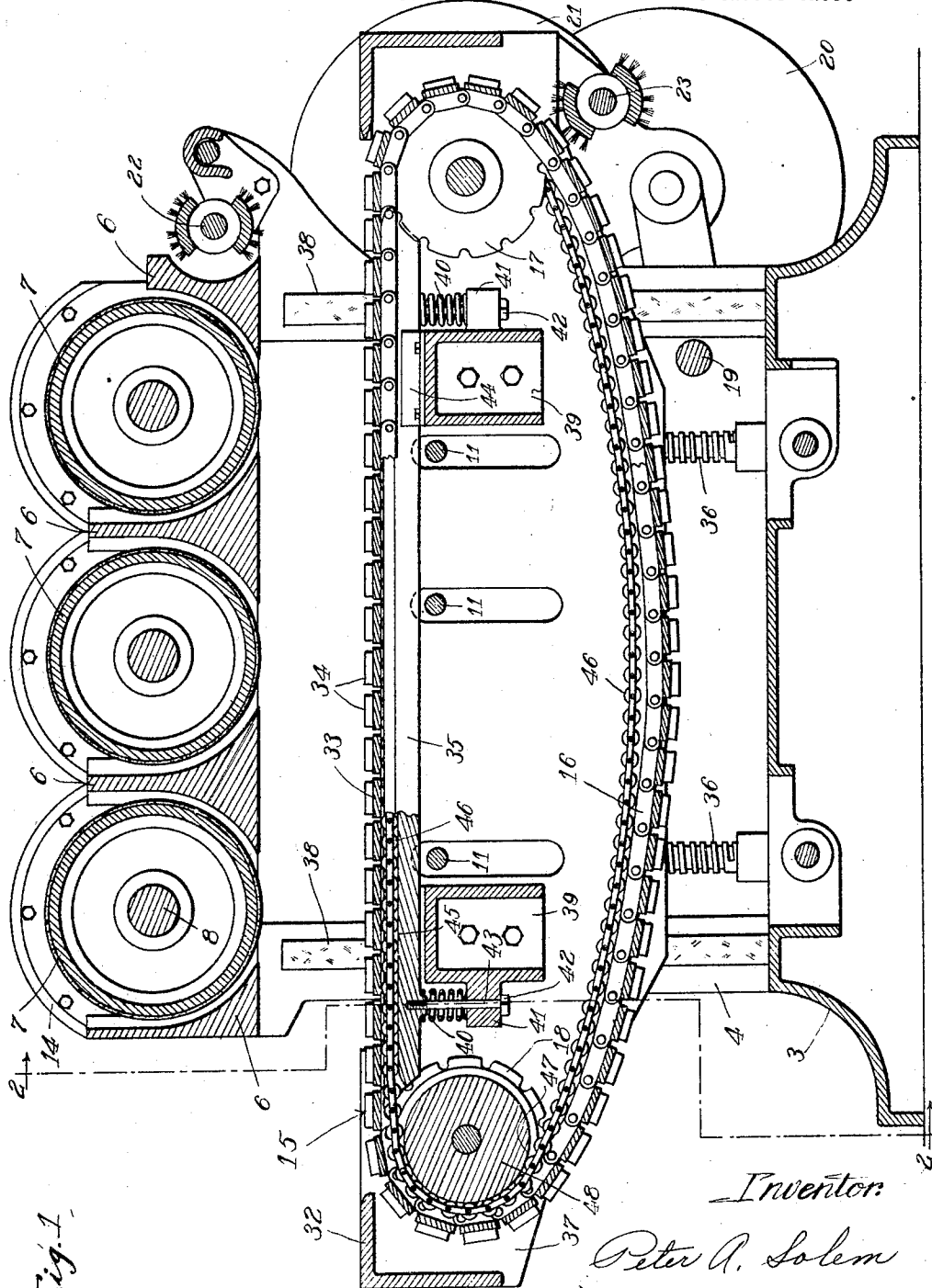


Fig. 1.

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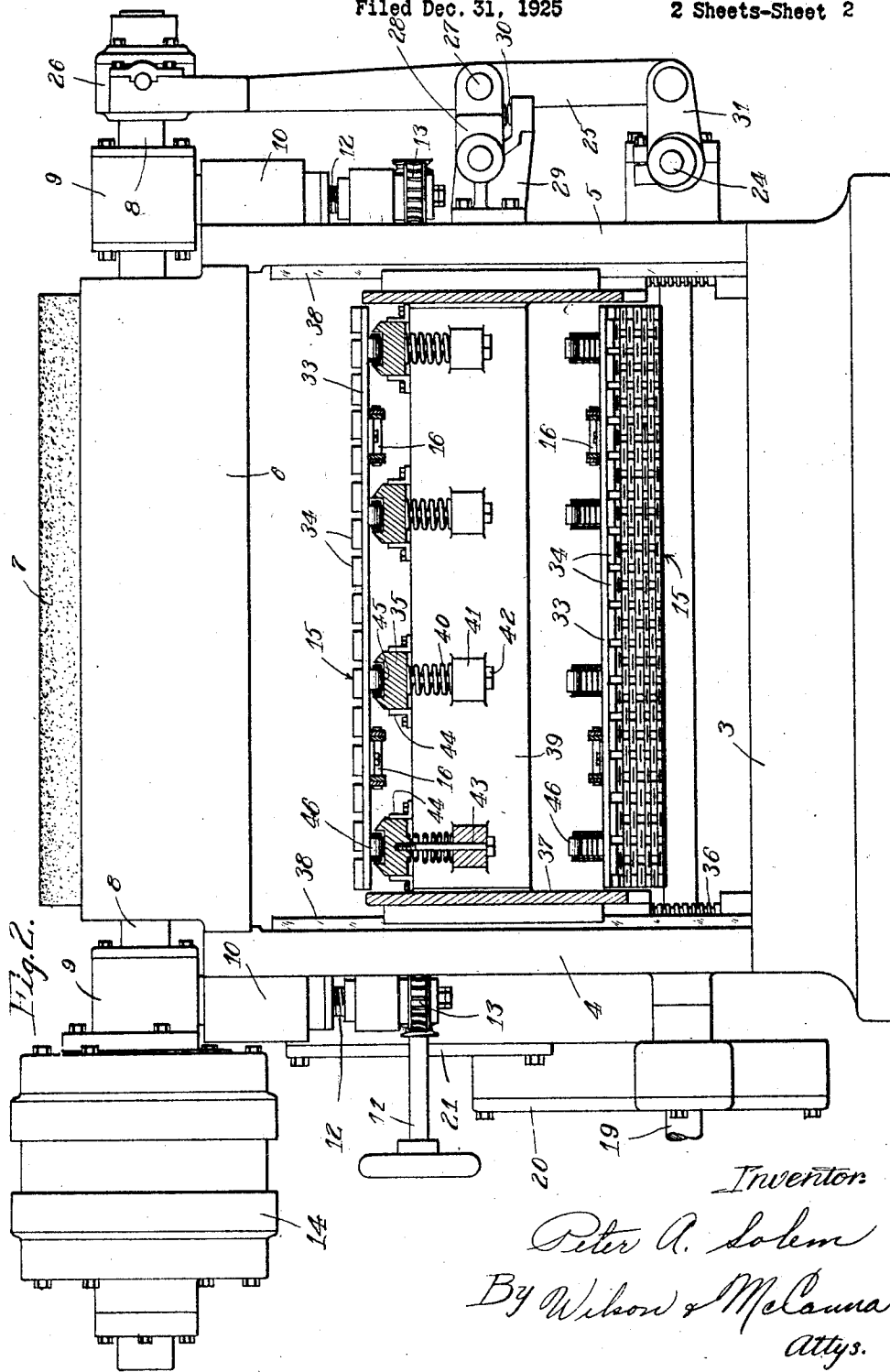
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UNITED STATES PATENT OFFICE.

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ENDLESS-BED SANDER.

Application filed December 31, 1925. Serial No. 78,512.

This invention relates to abrading machinery and more particularly to sanding machines of the endless bed type which usually employ rotating sanding or abrading drums or cylinders.

In machines of the kind referred to, the endless bed serves to feed the work to the abrading drums and for this purpose has been provided with resilient pads to secure the necessary traction with the work. The bed has heretofore traveled on a rigid support consisting of longitudinal rails or guides and in the event of any gross irregularity in the work or because of carelessness or ignorance on the part of the operator in failing to make the proper setting of the machine, the work frequently became jammed in the machine. It is therefore, one of the principal objects of the present invention to avoid this serious difficulty and I have provided for this purpose resilient mountings for the bed rails which afford a rigid support in the ordinary operation of the machine but will yield in the event of an excessive pressure brought to bear when too large a piece of work is fed into the machine and would otherwise result in jamming.

The endless bed in machines of this type was heretofore made to travel in direct contact with the bed rails and afforded serious resistance to the feeding of the bed due to the friction resulting from the pressure of the work on the bed. As a result, considerable power was consumed in the feeding of the work. It is a further important object of the present invention to provide anti-friction bearings for the endless bed on the bed rails to make for easier and smoother running and reduce operating costs. The anti-friction means I prefer to provide in the form of an endless roller bearing chain traveling inside the endless feed bed so as to enter between the bed rails and the feed bed. The provision of this anti-friction bearing feature enables the use of vertically yieldable bed rails inasmuch as I eliminate thereby the communication of endwise thrust on the bed rails by the endless feed bed.

The foregoing and other objects of the

invention will appear in the course of the following detailed description in which reference is made to the accompanying drawings illustrating the invention, wherein—

Figure 1 is a longitudinal vertical section through a sander incorporating the novel features of my invention; and

Fig. 2 is an end view of the machine with a portion appearing in transverse vertical section on the line 2—2 of Fig. 1, looking in the direction of the arrows.

The same reference numerals are applied to corresponding parts in both views.

In sanding machines of the kind mentioned, a heavy base 3 is usually provided having rather heavy upright side frame pieces 4 and 5 extending therefrom and suitably fixed together in spaced relation. The frame pieces carry pressure bars 6 having smooth under faces for the passage therebeneath of the stock operated upon. The pressure bars are arranged on opposite sides and between abrading drums 7 mounted on shafts 8 received in bearings 9 arranged for vertical adjustment in bosses 10 on the outside of the frame pieces 4 and 5. The drums are individually adjustable as to elevation by hand wheels on the shafts 11 which operate jack screws 12 through the worm and gear connections shown at 13. The drums are driven individually by motors 14 which are controlled singly or collectively to give a one, two or three drum machine, as desired, and so as to permit any one or more or all of the motors being started or stopped when required. Work is fed to the drums by an endless feed bed 15 which will be described more fully hereinafter. It will suffice at this point to state that the bed comprises a sprocket chain 16 meshing with a drive sprocket 17 and an idler sprocket 18 at opposite ends of the machine. The sprocket 17 is driven from a main power shaft 19 through suitable transmission in the housings 20 and 21, the shaft 19 being coupled or otherwise suitably driven by a motor supported on a bracket at the side of the machine. The shaft is shown broken away and the motor referred to is not

shown. Besides operating the bed, the shaft 19 has a belt connection (not shown) for driving the brushes 22 and 23 and has a gearing connection (not shown) for driving a shaft 24 for operating the rocker arms or beams 25. The brush 22 cleans the stock passing out of the machine and the brush 23 keeps the endless bed clean. The rocker arms 25 communicate an oscillating or reciprocatory motion to the drums 7 through the thrust bearing connections 26 with the shafts 8. Each of the rocker arms 25 is pivoted intermediate the ends thereof, as shown at 27, on a link 28 pivoted to a bracket 29 fastened to the outside of the frame piece 5 and a counter-balancing compression spring 30 acting between the bracket 29 and the link 28 serves to keep the rocker arm in floating relation to the projecting end of the shaft 8 so that no weight is imposed thereon. This is with a view to avoiding the deflection of the projecting end of the shaft to eliminate any whipping action and consequent deflection. The shaft 24 has eccentrics thereon for rocking the arms 25 through link connections 31 at the lower ends of the rocker arms. Usually the first drum of the set is given simple rotation for the initial rough finishing cut on the work. In the present case, the work entered in the machine over the table 32 is roughed off by the first drum it encounters. The other two drums oscillate transversely while rotating and in this way produce a very smooth surface on the work, it having been found that without oscillating motion the fibres of the wood are drawn or strung out and are left in a loose fuzz on the surface of the stock. For the most part the arrangement just described is commonly employed in endless bed sanders and no invention is claimed therein except only in so far as the details referred to cooperate with the features to be described hereinafter.

The endless feed bed 15 comprises a plurality of transverse steel slats 33 upon which traction pads 34 of reinforced rubber are secured. Each slat 33 is fastened to a link of the heavy steel sprocket chain 16 and while a single sprocket chain may be employed, I prefer to provide two chains near opposite sides of the bed as shown in Fig. 2. The bed travels beneath the drums over rails 35 extending longitudinally in the machine. Four rails are preferably provided with the sprocket chains operating therebetween. The rails 35 support the bed normally in a definite spaced relation to the drums as determined by the adjustment of the jack screws 36 which raise and lower the bed and rails with the carriage 37. The latter operates on vertical ways 38 provided on the inside of the frame pieces 4 and 5. The fixed, spaced relation of the bed to the drums determines of course the depth of cut to be made by the machine. Cross beams 39 at opposite ends of the carriage 37 support the opposite ends of the rails 35 on compression springs 40. The latter act between the rails 35 and lugs 41 on the beams 39 and are held in place by bolts 42 which operate and are guided for vertical movement in holes 43 provided in the lugs 41. The construction described provides a yielding support for the endless feed bed which though normally serving as a rigid support to keep the bed in a definite spaced relation to the drums will, nevertheless, yield in the event of excessive pressure brought to bear by the work on the bed in case too large a piece of work is fed into the machine or in the event the work is of such an irregular character as would cause a jam. It frequently occurs that an inexperienced operator or one who is careless or ignorant will attempt to feed work through the machine for which it is not set properly and the breakage of gears in the transmission for driving the feed bed or the destruction of other parts will follow where no safety provision is made as in the present case. The slats 33 are sufficiently flexible to be bowed in the event a high spot on the work should occur that would tend to cause a giving of the feed bed support at one point to avoid jamming. The spacing laterally of the yieldable supports will permit any one or more bed rails to give individually to take care of the circumstance mentioned.

The bed rails 35 are held against lateral displacement and have vertical movement between angle irons 44 bolted on top of the cross beams 39. The tops of the rails 35 are channeled to provide tracks 45 extending lengthwise in the machine for the reception of anti-friction rollers 46. The latter are linked together in an endless chain riding in grooves 47 in the periphery of drums 48 mounted on the same shafts with the sprockets 17 and 18 between the latter. The spacing of the rollers 46 is such as to insure the location of two rollers under each slat at all times for smooth, easy running. The load imposed on the motor for feeding the work is, of course, substantially reduced and the machine is more economical to operate. The elimination of friction between the feed bed and the bed rails avoids communication of an endwise thrust on the bed rails and enables the vertically resilient or yieldable mounting above described.

I claim:

In a drum sander, an endless feed bed operating in spaced relation to the drums from end to end of the machine, means for supporting said bed comprising rigidly supported transverse beams, a plurality of spaced, longitudinal bed supporting rails placed adjacent the edges of the bed and also on an intermediate line or lines, and

individually yieldingly supported on the transverse beams, the said bed being made up of hingedly connected cross slats supported by said rails and of such relatively
5 yieldably resilient material as to bend between the rails under a force less than that necessary to deflect the adjacent rail, where- by the slats may individually conform to irregularities of surface of the work without general distortion throughout the width 10 of the bed.

In witness of the foregoing I affix my signature.

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