March 22, 1932. J. R. SHAW 1,850,272

METHOD AND MEANS FOR REMOVING SAWDUST

Filed Aug. 25, 1930

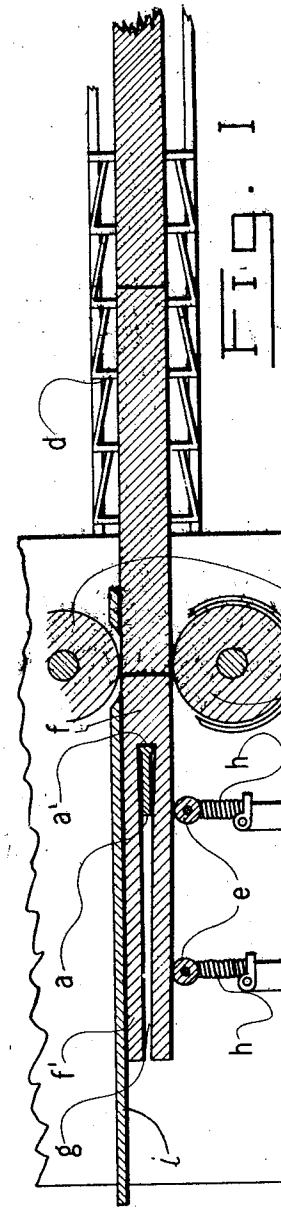


Fig. 1

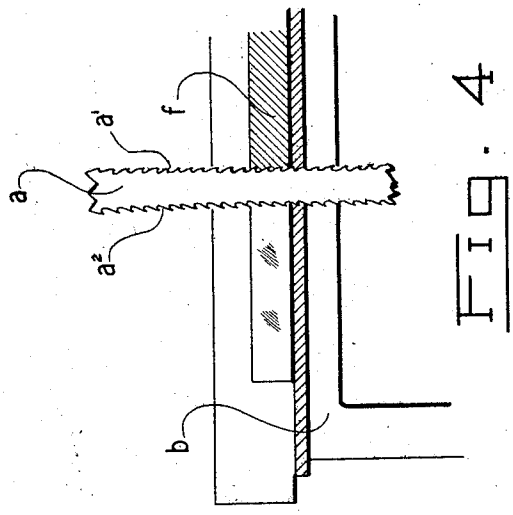


Fig. 4

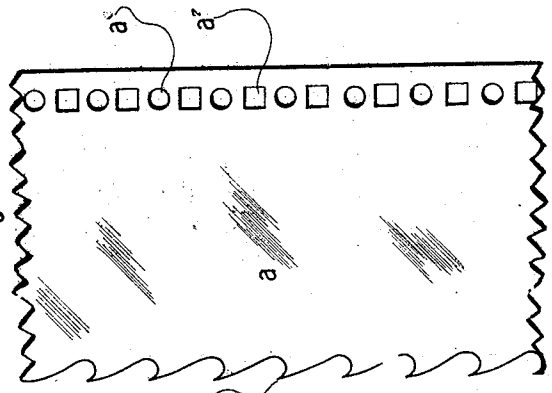


Fig. 3

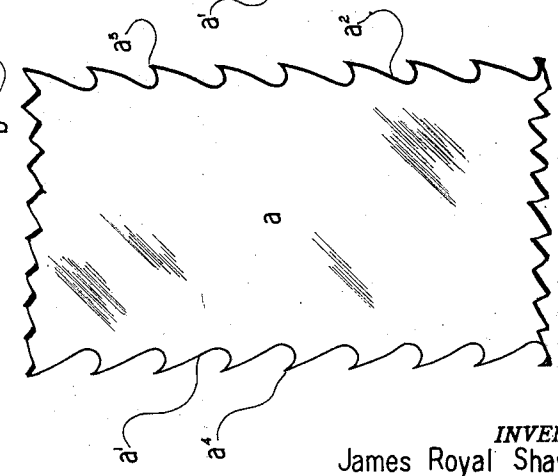


Fig. 2

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UNITED STATES PATENT OFFICE

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METHOD AND MEANS FOR REMOVING SAWDUST

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My invention relates to the provision of a novel method and means for removing sawdust and other loose or partially severed matter from the opposed surfaces of a kerf formed in sawed lumber and has particularly to do with this operation in the production of box shooks. In the manufacture of box shooks a board or section of wood of unit thickness is cut into a plurality of sections of proportionately lesser thicknesses, the machine performing this function being commonly termed a resaw. The boards are fed thru such machine on edge and at the discharge side of the saw are arranged in stacks with the opposed faces of the separate boards as severed, arranged adjacent each other. No opportunity is provided for permitting the sawdust produced by such resawing action to be removed unless a separate operation is provided by which such opposed surfaces are subjected to cleaning action, such as by a brush or other mechanical agency, or by a jet of fluid, preferably air. Much of the sawdust is in very fine form and lodges in the roughened faces of the boards which are merely sawed and not planed, so that the dust can be removed only with a very thorough cleansing agency, vigorously applied. Thus, when the box shooks are later made into boxes, a certain percentage of such dust adheres to the inner faces of the boxes and collects upon the products placed therein and presents a problem very seriously affecting the box shook industry, causing the shippers and packages to lean towards the use of paper and composition boxes, even though the latter have other undesirable qualities. An auxiliary cleaning process to be effective involves a substantial amount of time and must be charged for by the producer of such box shooks and such charge in many cases is sufficient to swing the balance against the use of such cleaned box shooks when considered from an economic viewpoint.

The object of my invention is to provide an inexpensive and simple method and means for thoroughly cleaning the surfaces of box shooks, so that such operation can be performed without additional expense or without reducing the capacity of a resaw and has further for its object the provision of a method and means for accomplishing this result without removing any additional material from such box shooks, so as further to diminish their thickness and reduce the price obtainable per bundle because of such reduced thickness.

This object is attained by forming the saw or saws in such resaw machine with indentations or perforations rearwardly of the sawing edge and providing means for holding the boards, which are severed by such saw during the operation, so as to be in close proximity to such perforated or indented portion of the saw. The latter, when they are thus positioned, function physically to carry away a portion of the dust and partially severed pieces which adhere to or which are lodged upon the opposed faces defining the saw kerf and to produce a powerful blast of air for removing the finer particles which are not physically removed.

The further details of construction and the mode of operation of a machine embodying my invention, and of the method employed, are hereinafter described with reference to the accompanying drawings, in which:

Fig. 1 is a plan view, quite diagrammatic, of the feed table, sawing means and work-holding and feeding mechanism, which embody my invention;

Fig. 2 is a fragmentary elevation of a section of a band saw embodying my invention;

Fig. 3 is a similar elevation of a modification of a band saw embodying my invention; and

Fig. 4 is an elevation of the device shown diagrammatically in Fig. 1.

My invention is adapted to be incorporated in any type of sawing machine, and is particularly adapted for use in a so-called resaw, of the type utilizing an endless band saw *a*. The table *b* of such resaw serves as a support for the work being operated upon and guide rollers *c* or other auxiliary devices including feeding means *d* define a path along which such work is moved while being operated upon by such machine. Such band saw is arranged to traverse such path and in case more than one saw is used such saws are

arranged in spaced alinement across such path and in predetermined relation, to produce sections of corresponding thickness. In addition, I provide pressure devices *h* preferably carrying rollers *e*, which latter are adapted to engage one side of the stock *f* and to tend, with the saw table gauge *i*, to force the partially severed portions of the stock being operated upon towards each other. Such pressure device and rollers of my invention are arranged to distort the partially severed sections *f'* of the stock *f* towards each other, thus to diminish the width of the kerf or kerfs *g* in such board at points rearwardly of the sawing edge *a'* of the band saw *a*. Such pressure devices preferably are resiliently mounted, being extended by a spring or similar devices *h* and such springs are adjustable to produce predetermined pressure against the sides of the stock *f*. Spaced substantially behind the sawing edge of the saw are a series of spaced indentations *a*2, which preferably extend entirely thru the body of the saw.

In Fig. 2 such indentations are arranged along the rearward edge of the saw blade and are open at such edge. The faces *a*2 of such indentations are preferably square with respect to the plane of the sides of the saw and the corners between the faces of the indentations and the saw are preferably maintained relatively square and sharp. The indentations also are preferably cupped in the direction of travel of the saw and correspond in shape to the teeth *a*4 of the cutting edge, differing from them, however, in that the projections *a*5 on the rearwardly-extending edge are not swedged or otherwise increased in thickness as are the teeth constituting the cutting edge, but on the other hand such projections *a*5 are substantially the same thickness or gauge as the body of the saw. Such projections *a*5 preferably lie wholly within the planes of the two opposed sides of the saw blade. In any event, however, such projections are of lesser thickness than the thickness of the teeth constituting the saw edge, so as not to further cut away the opposed faces of the board at each side of the saw kerf *g*, which would thus form additional sawdust.

In Fig. 3 such indentations are shown as enclosed holes spaced slightly from the rearward edge of the saw and are either round, as *a*6, or square-shaped, as *a*7. The exact shape of the hole seems to play but a minor part in the efficiency of the device and the shape and size of the hole are determined by the factors of maintenance and operation. The proportions shown in the drawings have been found to be desirable when considered in connection with a saw approximately five inches wide.

Although I have shown a saw having the intended cleaning portions as being incorporated in the saw blade at a point where the latter is substantially narrower than the thickness of the blade of the cutting edge, I wish to embody in the invention claimed by this application also a saw in which such indentations or perforations are incorporated in a saw at a point where such saw is approximately as thick as the cutting edge, that is in a saw thick at the edges and relatively thinner through the intermediate body section. This type of saw has advantages in certain types of work where the disadvantage of a saw of varying thickness is not a serious objectionable feature. In the majority of cases, however, the desirability of having a saw of relatively uniform thickness and with the sawing edge swedged to produce increased thickness at that point will outweigh the advantage of providing a saw having varying thickness. The proper action of the perforations or indentations in a saw of uniform thickness but with a swedged cutting edge will be accomplished by distorting the stock operated upon so that the sides adjacent the kerf will be brought into close proximity with the narrower perforated portions.

I claim:

1. In the art of woodworking the method of removing sawdust from between the opposed faces of a kerf produced by a continuously moving band saw, consisting in creating a continuous current of air directed through said kerf by forming said saw, rearwardly of the cutting edge thereof, with a series of spaced indentations, said indentations being separated by spaced lateral projections.

2. In the art of woodworking the method of removing sawdust from between the opposed faces of a kerf produced by a continuously moving band saw, consisting in creating a continuous current of air directed through said kerf by forming said saw, rearwardly of the cutting edge thereof, with a series of spaced indentations, said indentations being separated by spaced lateral projections, said indented portions of the saw extending within the planes of the sides of said saw.

3. In a machine of the character described comprising a table defining a path for the work operated upon, and a continuously operable saw traversing such path, said saw being provided with a series of indentations located in spaced relationship rearwardly of the cutting edge of the saw and depressed relatively from the faces of the saw, the portion of the saw blade carrying said indented portions of the saw being of lesser thickness than the cutting edge thereof means for driving the saw sufficiently rapidly to create a continuous current of air adjacent the sides of said saw and pressure means lying at opposite sides of such path and rearwardly of the

line of the cutting edge of the saw with respect to the direction of travel of the work along said path.

4. In a machine of the character described comprising a table defining a path for the work operated upon, and a continuously operable saw traversing such path, said saw being provided with a series of indentations located in spaced relationship rearwardly of the cutting edge of the saw and depressed relatively from the faces of the saw, the portion of the saw blade carrying said indented portions of the saw being of lesser thickness than the cutting edge thereof means for driving the saw sufficiently rapidly to create a continuous current of air adjacent the sides of said saw and resilient pressure means lying at opposite sides of such path and rearwardly of the line of the cutting edge of the saw with respect to the direction of travel of the work along said path.

5. In a machine of the character described comprising a table defining a path for the work operated upon, and a continuously operable saw traversing such path, said saw being provided with a series of indentations located in spaced relationship rearwardly of the cutting edge of the saw and depressed relatively from the faces of the saw, the portion of the saw blade carrying said indented portions of the saw being of lesser thickness than the cutting edge thereof means for driving the saw sufficiently rapidly to create a continuous current of air adjacent the sides of said saw, pressure means lying at opposite sides of such path and rearwardly of the line of the cutting edge of the saw with respect to the direction of travel of the work along said path, said means being of such strength to engage the side surfaces of the work and to force the opposed walls defining the kerf produced by said saw, against the indented portions of said saw.

6. In a machine adapted to resaw lumber of unit thickness into a plurality of units of correspondingly decreased thickness comprising a table defining a path for the work operated upon, and a continuously operable band saw traversing such path means operating continuously in one direction for feeding said units along said path and past said saw, said saw being provided with a series of indentations located in spaced relationship rearwardly of the cutting edge of the saw and depressed relatively from the faces of the saw, said indentations opening upon the rearward edge of said saw and being separated by spaced lateral projections, means for driving the saw sufficiently rapidly to create a continuous current of air adjacent the sides of said saw.

7. In a machine of the character described comprising a table defining a path for the work operated upon, and a continuously operable band saw traversing such path, said saw being provided with a series of indentations located in spaced relationship rearwardly of the cutting edge of the saw and depressed relatively from the faces of the saw, said indentations opening upon the rearward edge of said saw and being separated by spaced square-shouldered lateral projections.

8. In a machine adapted to resaw lumber of unit thickness into a plurality of units of correspondingly decreased thickness comprising a table defining a path for the work operated upon, and a continuously operable band saw traversing such path, means for driving the saw sufficiently rapidly to create a continuous current of air adjacent to the sides of said saw and means operating continuously in one direction for continuously feeding said units along said path and past said saw, said saw being provided with a series of indentations located in spaced relationship rearwardly of the cutting edge of the saw and depressed relatively from the faces of the saw, said indentations opening upon the rearward edge of said saw and being separated by spaced lateral projections, said projections being cupped and facing the direction of travel of said saw.

9. In the art of woodworking and in connection with a continuously operated band saw provided with a cutting edge, the method of removing the sawdust produced by said cutting edge from within the kerf produced by the latter consisting in producing and directing a blast of air thru said saw kerf rearwardly of the cutting edge, passing thru said saw kerf immediately rearwardly of said cutting edge, a non-cutting, scraping agency.

10. In the art of woodworking and in connection with a continuously operated band saw provided with a cutting edge, the method of removing the sawdust produced by said cutting edge from within the kerf produced by the latter consisting in passing thru said saw kerf immediately rearwardly of said cutting edge, a non-cutting, scraping agency.

11. In the art of woodworking and in connection with a continuously operated band saw provided with a cutting edge, the method of removing the sawdust produced by said cutting edge from within the kerf produced by the latter consisting in passing thru said saw kerf immediately rearwardly of said cutting edge, a non-cutting scraping agency moving synchronously with said cutting edge.

12. In the art of woodworking and in connection with a continuously operated band saw provided with a cutting edge, the method of removing the sawdust produced by said cutting edge from within the kerf produced by the latter consisting in passing thru said saw kerf immediately rearwardly of said cutting edge, a non-cutting, scraping agency of lesser thickness than the width of said kerf and distorting the portions of said material at opposite sides of said kerf towards each

other and into engagement with said scraping agency.

13. In the art of woodworking and in connection with a continuously operated band saw provided with a cutting edge of greater thickness than the remainder of the saw, the method of removing the sawdust produced by said cutting edge from within the kerf produced by the latter consisting in forming the saw blade rearwardly of the cutting edge to produce a blast of air passing thru said saw kerf at a point in the latter along the sides of the saw blade, passing thru said saw kerf immediately rearwardly of said cutting edge, a non-cutting, scraping agency of lesser thickness than the width of said kerf and distorting the portions of said material at opposite sides of said kerf towards each other and into engagement with said scraping agency.

14. In the art of resawing lumber of unit thickness into a plurality of boards of correspondingly decreased thickness, effecting the removal of sawdust from between the opposed faces of a kerf produced by a continuously moving bandsaw past which said lumber is fed and removed continuously in one direction, the method consisting in providing a saw having a forward cutting edge which is thicker than the body portion of the saw and having a series of spaced indentations arranged rearwardly of said cutting edge, said indentations being separated by spaced projections, said indented portions of the saw not projecting beyond the planes of the sides of the body of said saw, and driving said saw at such a high rate of speed as to create a continuous current of air from the top to the bottom of the kerf to blow away any loose particles remaining in said kerf.

15. In the art of sawing lumber, effecting the removal of sawdust from between the opposed faces of a kerf produced by a continuously moving bandsaw, the method consisting in providing a saw having a forward cutting edge which is thicker than the body portion of the saw and having a series of spaced indentations arranged rearwardly of said cutting edge, said indentations being separated by spaced projections, said indented portions of the saw not projecting beyond the planes of the sides of the body of said saw, forcing the opposed side walls defining said kerf inwardly towards each other at points arranged rearwardly of the cutting edge of the saw, and driving said saw at such a high rate of speed as to create a continuous current of air from the top to the bottom of the kerf to blow away any loose particles remaining in said kerf.

16. In the art of sawing lumber, effecting the removal of sawdust from between the opposed faces of a kerf produced by a continuously moving bandsaw, the method consisting in providing a saw having a forward cutting edge which is thicker than the body portion of the saw and having a series of spaced indentations arranged rearwardly of said cutting edge, said indentations being separated by spaced projections, said indented portions of the saw not projecting beyond the planes of the sides of the body of said saw, forcing the opposed side walls defining said kerf inwardly towards each other at points arranged rearwardly of the cutting edge of the saw to such a degree that said walls come into contact with said saw only adjacent to said indented portions of the latter thereby adapting the latter to effect the physical removal of particles of sawdust adhering to the side walls of the kerf, and driving said saw at such a high rate of speed as to create a continuous current of air from the top to the bottom of the kerf to blow away any loose particles remaining in said kerf.

In testimony whereof he has affixed his signature.

JAMES ROYAL SHAW.