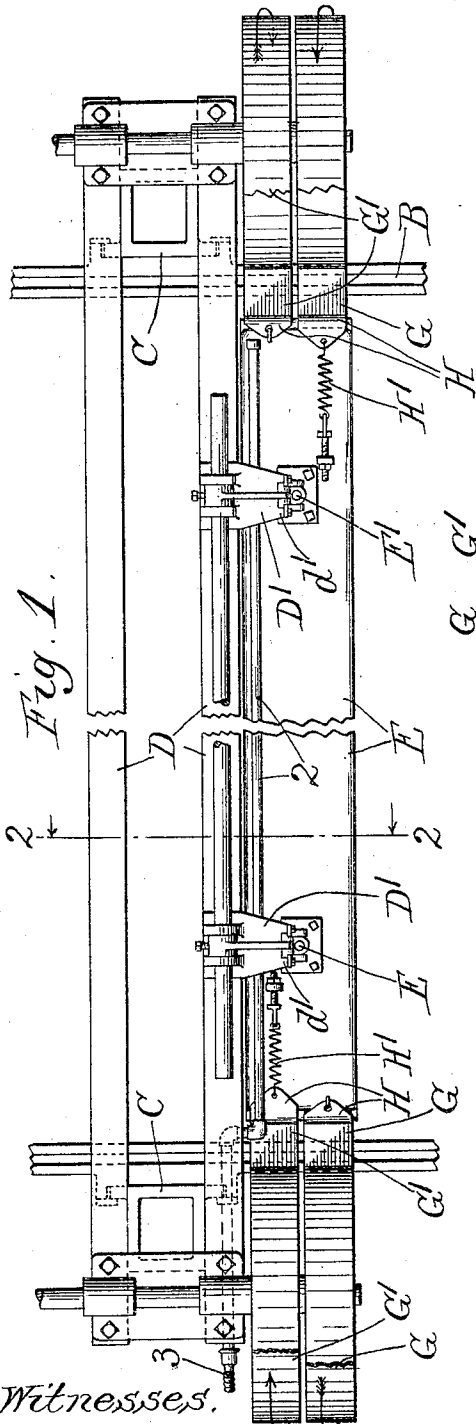


No. 799,694.

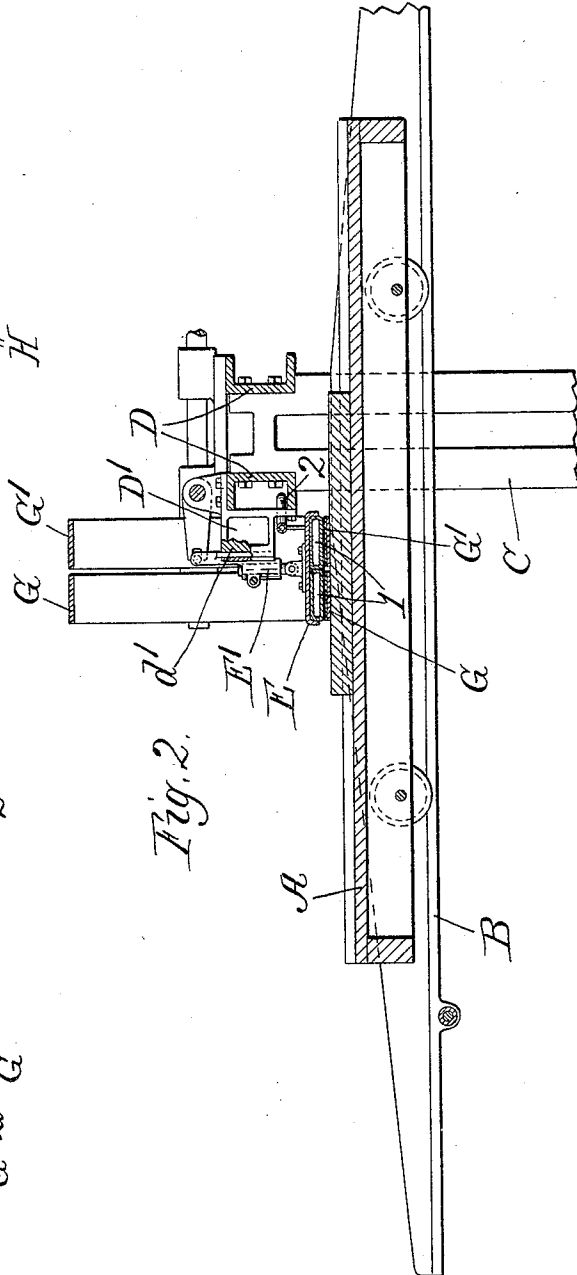
PATENTED SEPT. 19, 1905.

E. TYDEN.  
SANDING MACHINE.  
APPLICATION FILED MAR. 21, 1904.

2 SHEETS—SHEET 1.



Witnesses.  
Edward T. Wray.  
Fred B. Fischer



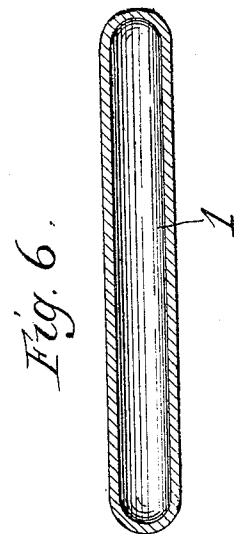
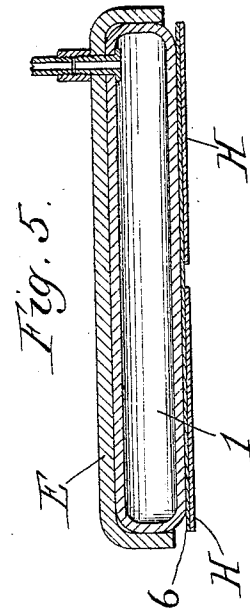
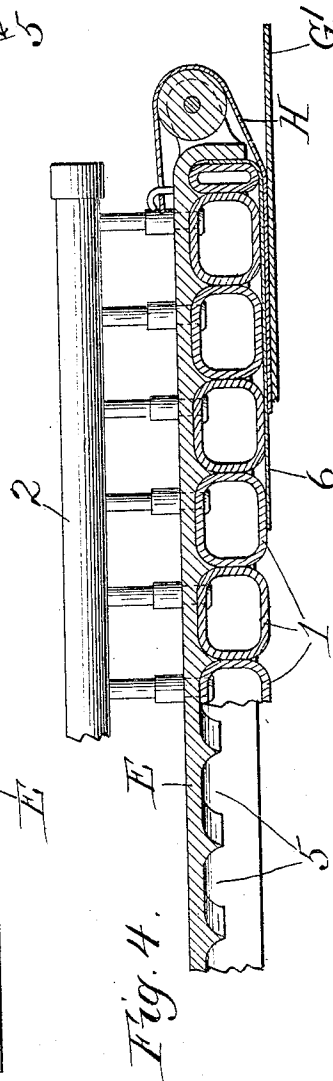
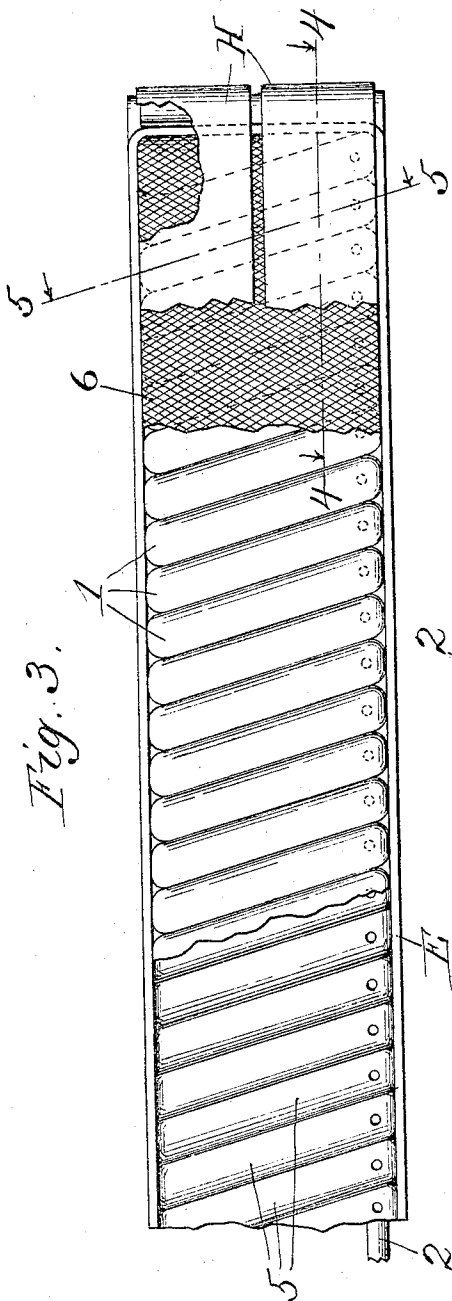
Inventor.  
Emil Tyden  
by Burton Burton  
Att'y.

No. 799,694.

PATENTED SEPT. 19, 1905.

E. TYDEN.  
SANDING MACHINE.  
APPLICATION FILED MAR. 21, 1904

2 SHEETS—SHEET 2.



Witnesses.

Edward T. Wray  
Fred G. Fischer

Inventor.  
Emil Tyden  
by Burton Burton  
his Atty's.

# UNITED STATES PATENT OFFICE.

EMIL TYDEN, OF HASTINGS, MICHIGAN.

## SANDING-MACHINE.

No. 799,694.

Specification of Letters Patent.

Patented Sept. 19, 1905.

Application filed March 21, 1904. Serial No. 199,176.

*To all whom it may concern:*

Be it known that I, EMIL TYDEN, a citizen of the United States, residing at Hastings, in the county of Barry and State of Michigan, have invented new and useful Improvements in Sanding-Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide improved devices for finishing or surfacing lumber by a sanding process, and particularly to provide improved means for causing a sanding-belt to operate with equal pressure, and consequently equal cutting effect, upon all parts of the surface of the wood over which it is operated for smoothing it.

It consists of the features of construction set out in the claims.

Figure 1 is a partly-sectional top plan view of the pressure-bar and a portion of the work and work-carrier and sanding-belt, section being made at a horizontal plane across the pneumatic connections and supports for the pressure-bar, a portion of the pressure-bar being broken away to show the cushioning devices. Fig. 2 is a section on line 2 2 of Fig. 1. Fig. 3 is a bottom or inverted plan of the pressure-bar. Fig. 4 is a section at the line 4 4 on Fig. 1. Fig. 5 is a detail section of the pressure-bar and one of the cushions, taken on line 5 5 of Fig. 3. Fig. 6 is a detail section of one of the cushions.

The general construction of the sanding-machine shown in this application is substantially the same as that shown in my application, Serial No. 190,079, filed January 21, 1904, now pending in the United States Patent Office, and in the drawings of the present application I have only shown so much of the general structure as is necessary to identify the several parts in which my present invention is contained.

The machine as a whole comprises a work table or carrier A, which is supported and adapted to be moved on horizontal guideways, on which one is shown at B, such guides being supported upon the standard-frame, of which one of the uprights is seen at C, said frame having a cross-head D connecting its opposite standards above the work-carrier, said cross-head being the means of supporting the pressure-bar in which the features of my present improvement are chiefly contained.

Said pressure-bar E has stems E', by which it is guided for vertical movement in the bearings d', provided in the brackets D' on the cross-head D, and is provided with any suitable means for raising and depressing it. (Not specifically illustrated.) The sanding belt or belts, preferably two, as in my former application, have their operating plies G G' traveling under the pressure-bar and over the work-carrier, being driven by suitable pulleys or drums, (not herein shown,) but arranged to drive said operating plies of the two belts in opposite directions, as indicated by the arrows on them, respectively. In my said former application I have shown as the means of forming a cushion by which the pressure-bar presses upon the upper side of the operating ply of the sanding-belts to hold them against the work a multiplicity of short or narrow cushions assembled in close order, so as to make a practically continuous cushion, each short or narrow element of which, however, may be separately withdrawn or collapsed to withdraw its pressure. Said short or narrow cushions in that construction were shown extending directly across the pressure-bar in the direction of travel of the work-carrier, so that the portions of the surface of the work receiving the pressure from these short cushions, respectively, would constitute strips or stripes extending longitudinally—that is, in the direction of travel of the work-carrier. This construction is liable to result in slight undulations in the surface and slight variations in the amount of pressure which different stripes or strips receive if the several short cushions are inflated, so as to exert pressure to different degrees, and if there should come to exist at their lateral lines of contiguity narrow areas at which the pressure would not be exerted directly, as is very likely to be the case, because such short or narrow cushions, whether held inflated by air or by some elastic stuffing, as hair or fiber, tend to bulge cylindrically and to exert more pressure at the middle of their width than at the sides or lines at which they are laterally in contact with each other. To prevent the production of such undulating or unequally-dressed surface, in my present invention I form the cushion in the pressure-bar by a multiplicity of short or narrow cushions 1 1 1, which, however, extend obliquely across the pressure-bar, their angle to the direction of travel and to the

length of the pressure-bar being such with respect to their width that the forward end of each of the short cushions overlaps the rear end of the adjacent one in the line of travel of the carrier, said overlap being preferably to the full extent of the width of each cushion, so that every point in any longitudinal line on the work in the travel of the latter under the belt will be exposed to the pressure of at least two of the cushions and will cross under the line of lateral contiguity and across the whole of the width of the two cushions and will be exposed, therefore, to all the varying degrees of pressure which may be exerted at different points in the width of each cushion, thus preventing any lines of maximum and minimum pressure which would tend to cause the sinuous surfacing of the work. The preferred form of these cushions 1 1 1 is that shown in the drawings, in which each of them is an inflatable hollow finger or tube, closed except that it is connected with a pipe 2, extending along the whole length of the pressure-bar at one side and connected at any convenient point, as at 3, with any source of compressed air for inflating the fingers or cushions 1. To preserve the proper oblique direction of the fingers and prevent them from being drawn into directly transverse position by the action of the belts, the under side of the pressure-bar may be formed with correspondingly-oblique grooves or channels 5 5 5, in which the several cushion-fingers are lodged, but so that they protrude far enough to prevent the rib or partition between the grooves from reaching the inclosing flexible sheath 6, which is stretched over the face of the pressure-bar outside—that is, below the cushions forming the outer casing of the complete cushion made up of the multiplicity of short cushion-fingers 1 1.

I do not limit myself to an inflatable or air cushion. The same advantage would be afforded by the oblique position of the cushion, whatever be its character, and when the cushion is not dependent upon compressed air forced into it for its resiliency the connection of the several cushions with anything corresponding to the pipe 2 will of course be not necessary. A satisfactory form of cushion may consist of a hollow finger or tubular chamber closed at both ends, as seen in Fig. 6. This may be primarily inflated to some degree of tension above atmospheric, if desired, the air in that case operating precisely as any other yielding and elastic filling might operate to hold the tube suitably distending and to cause it to operate with a yielding elastic pressure when the pressure-bar is forced against the belt.

The flexible steel bands H, held fast at one end to the pressure-bar and at the other end provided with means for stretching them, as

the springs H', may be employed between the cushions and the sanding-belts, respectively, to take the work and drag of the belts and to save the cushions therefrom, as in the structure shown in my said pending application.

I claim—

1. In a sanding-machine, in combination with an endless sanding-belt and means for driving it and a work-carrier movable to carry the work past the belt and exposed thereto, a pressure-bar at the opposite side of the operating ply of the belt from the carrier, having a multiplicity of cushions extending across it in direction oblique to the movement of the carrier.

2. In a sanding-machine, in combination with an endless sanding-belt and means for driving it, a work-carrier mounted for movement transversely to the travel of the operating ply of the belt; a pressure-bar at the opposite side of the operating ply from the carrier having a cushioned face toward said ply comprising a multiplicity of cushions extending across the pressure-bar in a direction oblique to the movement of the carrier.

3. In a sanding-machine, in combination with the sanding-belt, a carrier mounted for movement to carry the work past the sanding-belt and exposed to the action thereof; a pressure-bar mounted for pressure at the opposite side of said operating ply from the carrier comprising in its operating-face a multiplicity of cushions extending each in a direction oblique to the movement of the carrier, and means for inflating such cushions from a common source.

4. In a sanding-machine, in combination with two sanding-belts having their operating plies traveling in opposite directions, a carrier mounted for movement to carry the work in a direction transverse to the travel of the belts; a pressure-bar mounted at the opposite of said operating plies from the carrier and extending over said plies of both belts, said pressure-bar having in its face toward said operating plies a cushion consisting of a multiplicity of cushion-sections extending across said face in a direction oblique to the direction of movement of the carrier.

5. In a sanding-machine in combination with a work-carrier movable to carry the work past the sanding devices; sanding devices and means for giving the same movement for rubbing the work; a pressure-bar at the opposite side of the sanding devices from the work-carrier having a multiplicity of cushions extending across it in direction oblique to the movement of the work-carrier.

6. In a sanding-machine in combination with a sanding device and means for giving movement thereto for rubbing the work; a work-carrier movable to carry the work past the sanding device exposed thereto in direction transverse to the movement of the latter; and

a pressure-bar at the opposite side of the sand-  
ing device from the work-carrier having a  
multiplicity of cushions extending across it  
in direction oblique to the movement of the  
5 carrier.

In testimony whereof I have hereunto set  
my hand, at Chicago, Illinois, this 16th day of

March, A. D. 1904, in the presence of two wit-  
nesses.

EMIL TYDEN.

In presence of—

CHAS. S. BURTON,  
FRED G. FISCHER.