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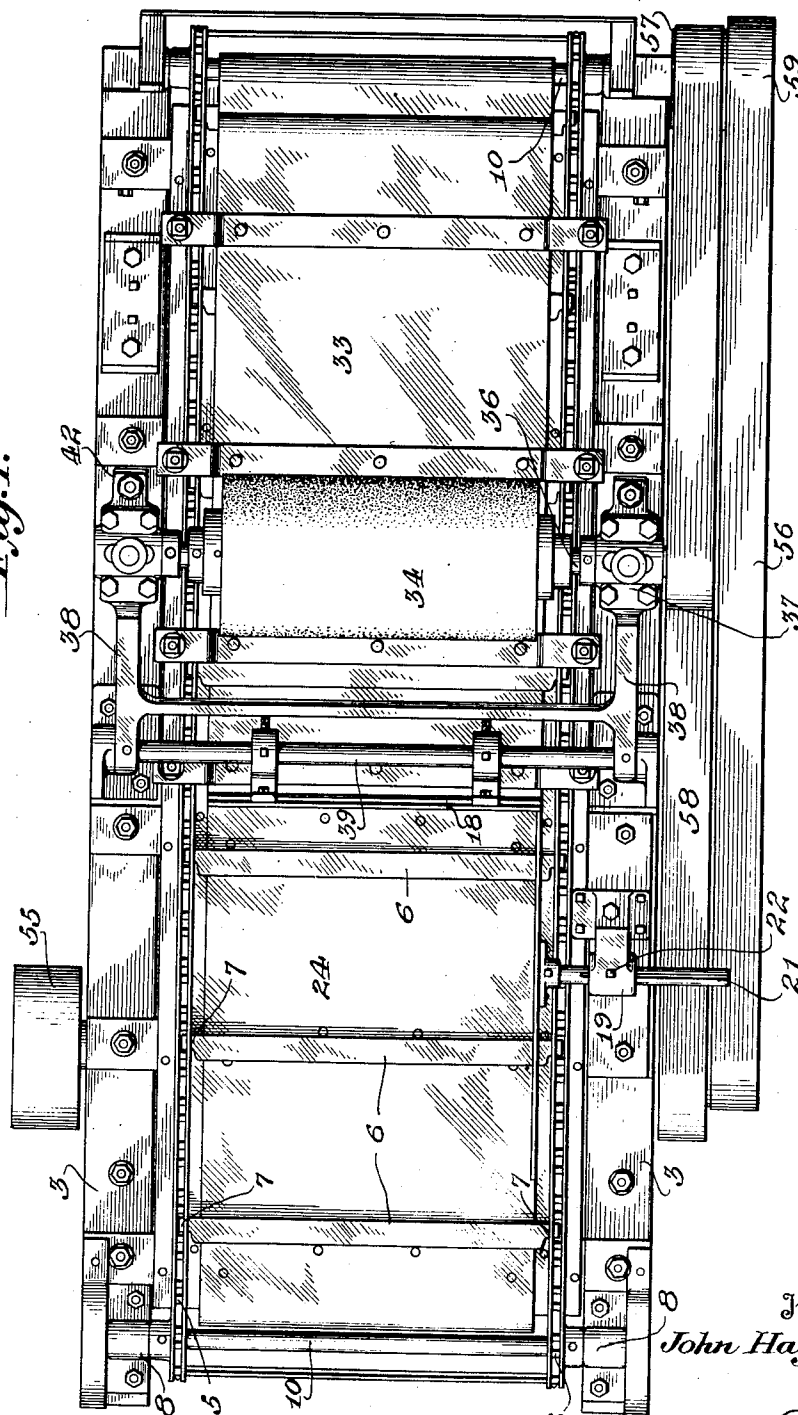
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J. HAGEN

BRUSHING MACHINE

Original Filed Feb. 10, 1927 3 Sheets-Sheet 1

Fig. 1.



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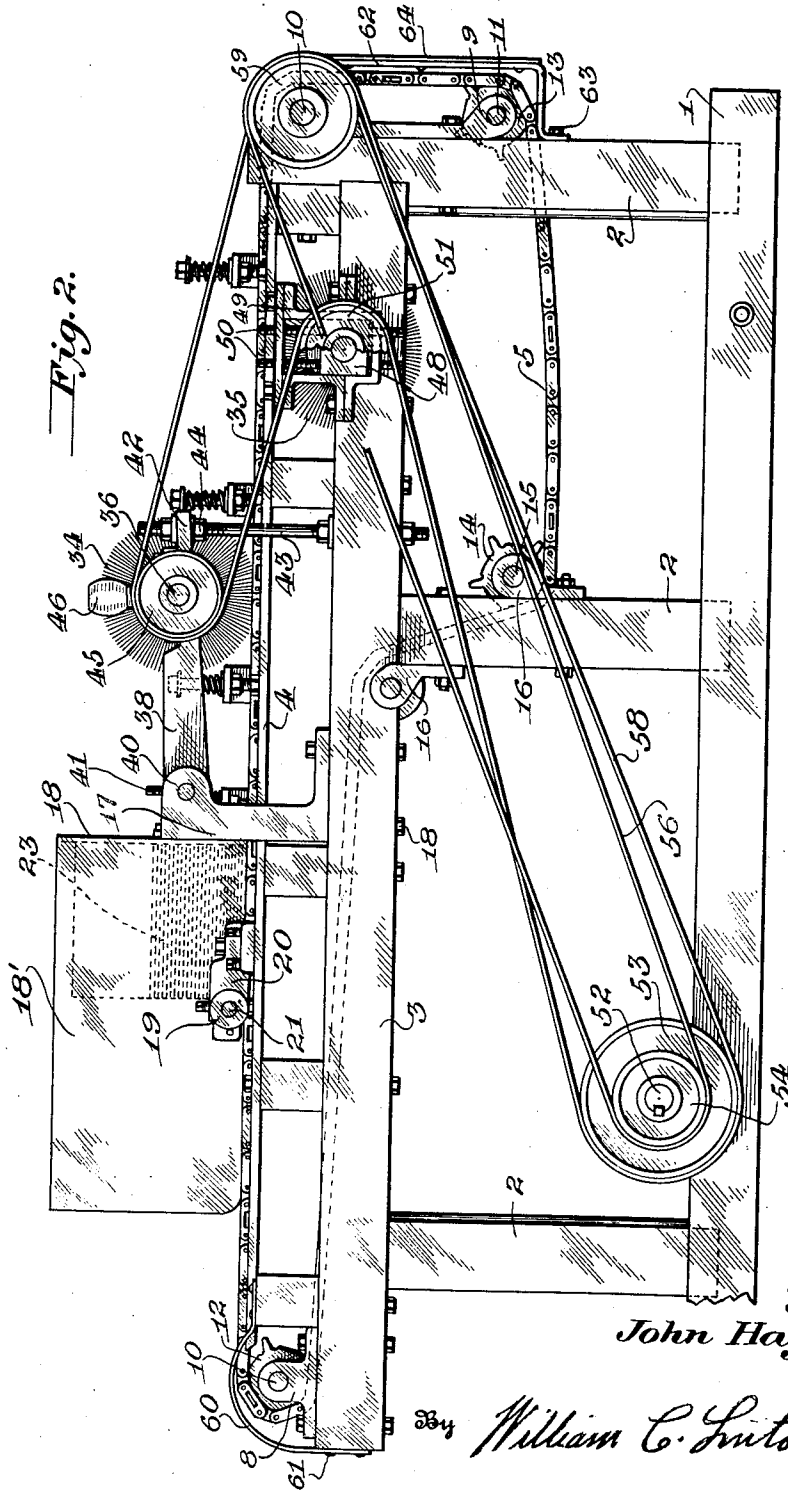
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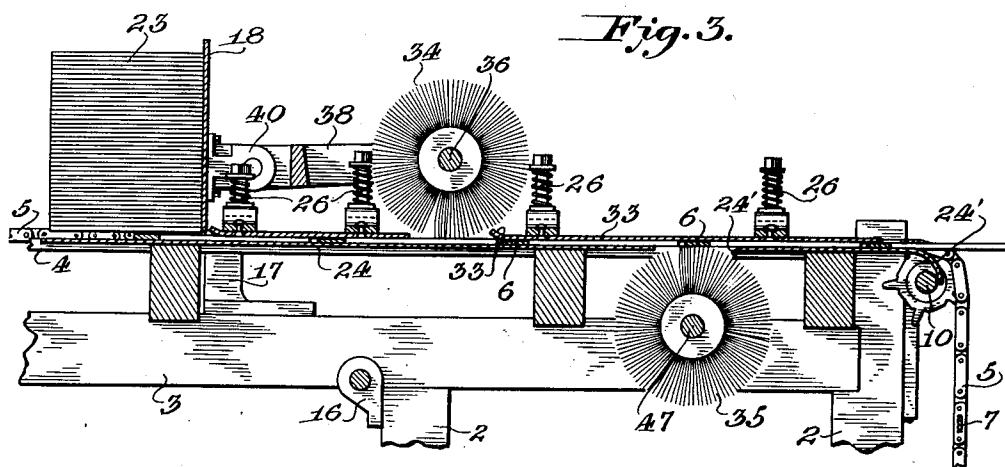
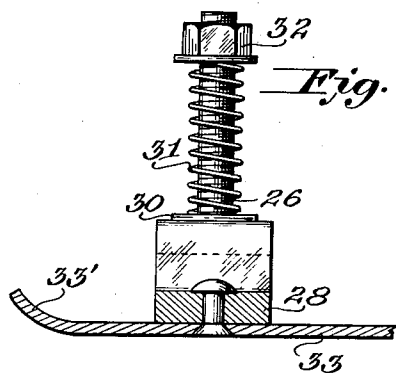
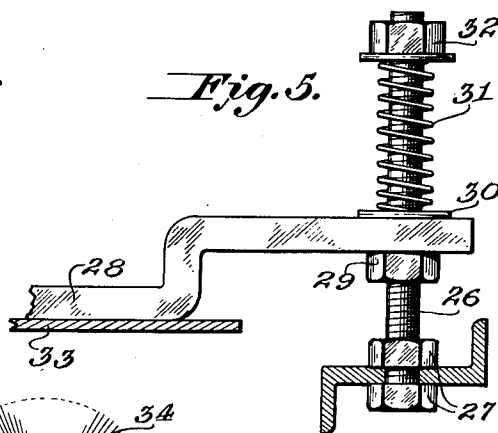
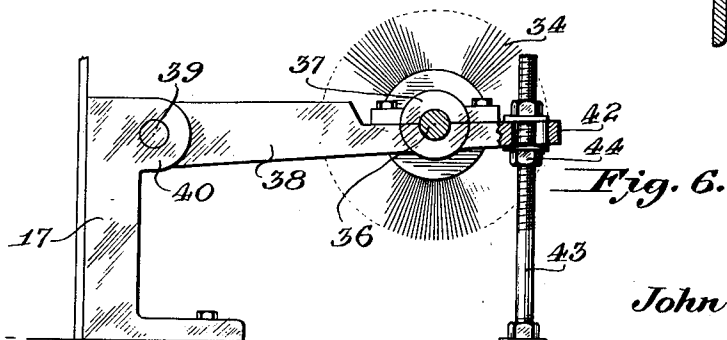
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BRUSHING MACHINE

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

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BRUSHING MACHINE.

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This invention relates to improvements in brushing machines, having for an object to provide a machine especially advantageous for brushing shooks whereby to free the same from the sawdust and dirt adhering thereto subsequently to sawing, the machine including means for retaining the shooks in piled or stacked relation and for individually removing them in sequential order from such stacks for treatment of their several sides by brushing means, following which the shooks are delivered from the machine ready for usage.

It is also amongst the important desiderata of the invention to provide a brushing machine wherein opposed rotatable brushes are mounted upon the frame thereof in a manner to contact with the opposite sides of the box shooks or other pieces as they are moved longitudinally over the same, said brushes being capable of adjustment to positions whereat their bristles will be caused to effectually engage the surfaces of the pieces to be cleaned.

Another and equally important object of the invention is to provide a machine with adjustable pressure exerting guide means so arranged and constructed that the pieces moving over the machine frame under influence of the conveyor, will be maintained in an orderly fashion and also, against relative displacement or disarrangement when engaged by the bristles of the cleaning brushes, hence, assuring an uninterrupted efficient operation and further, a thorough cleaning of the pieces treated in the machine.

Other objects of the invention will be in part obvious and in part pointed out hereinafter.

In order that the invention and its mode of operation may be readily understood by those skilled in the art, I have in the following detailed description and the illustrative drawings based thereupon, set out one possible embodiment of my invention.

In these drawings:

Figure 1 is a top plan view of the improved machine,

Figure 2 is a side elevation of the same,

Figure 3 is an enlarged fragmentary detail in vertical longitudinal section through the machine showing the relative arrangement of the rotary cleaning brushes with respect to the machine frame and the conveying means thereof and likewise, the relation of

the conveying means with the stacked box shooks,

Figure 4 is an enlarged fragmentary detail in vertical longitudinal section through one of the guide bars of the machine frame.

Figure 5 is an enlarged fragmentary detail in vertical transverse section through a portion of the machine showing the mounting of one of the pressure guide bars upon the bracket bolts therefor and the engagement of such bolt with the adjacent portion of the machine frame, and

Figure 6 is an enlarged fragmentary detail, a portion of which is shown broken away and in section, illustrating the mounting of the upper rotatable brush and the means for regulating vertical adjustment of the same with respect to the machine frame whereby its bristles may be caused to be properly adjusted with respect to the surfaces of a piece to be treated thereby.

Having more particular reference to the drawing in connection with which like characters of reference will designate corresponding parts throughout, the improved brushing machine may be stated to comprise a bed or base 1 composed of suitable timbers and receiving thereupon fixedly arranged pillars 2, the upper ends of which serve to receive and support a substantially rectangular machine frame consisting of interconnected longitudinally and transversely disposed timbers generally indicated by the numeral 3. Supported upon the extremities of the transverse timbers of the machine frame are longitudinally disposed tracks 4 receiving endless sprocket chains 5 thereupon, such chains being provided at spaced equidistant intervals with transversely disposed slats 6, the opposite extremities of which are reduced and engaged in portions of adjacent links of the chains as indicated at 7. These sprocket chains 5 together with the transversely disposed slats function as conveying means whereby to individually engage and remove in sequential order shooks from a supply stack supported upon the machine frame, hereinafter more fully described.

That the chains of the conveying means may be movably supported longitudinally of the frame, bearings 8 and 9 are fixedly supported upon the opposite extremities of the longitudinal timbers of the frame 3 and upon portions of certain of the pillars 2, as is shown in the Figure 2, whereby to rotatably sup-

port transversely disposed shafts 10 and 11, each of which have sprocket wheels 12 and 13 fixedly mounted thereupon and adapted to receive the endless sprocket chains 5 thereover. To support the lower and intermediate portions of the chains 5 with respect to the machine frame, idler sprocket wheels 14 are fixedly mounted upon the opposite portions of transversely arranged shafts 15 journaled in suitable bearings 16 secured to others of the pillars 2.

Supporting arms or brackets 17 are fixedly secured through the medium of bolts 18 to the upper sides and intermediate portions of the longitudinal timbers of the frame 3 and have abuttingly engaged therewith, the end piece or board of a shook receiving guide designated in the Figure 1 by the numeral 18, said end piece having a side 18' secured thereto and arranged in substantially parallelism to portions of said longitudinal timbers of the frame 3 and supported upon a suitable bearing bracket 19 fixed to an adjustable supporting arm 20 secured to an adjacent portion of the frame 3; the side 18' having its supporting connection with the bearing bracket 19 by way of a laterally extended longitudinally split rod 21 slidably received in the bracket 19 and keyed thereto through the medium of a set screw 22. It will be thus understood that the two sided guide means presented by the end piece 18 and the side 18' will afford an effectual means for receiving a stack of box shooks indicated at 23 whereby to maintain the same in proper relation that they may be individually delivered into engagement with the conveying means aforesaid. At the same time, the two open sides of the shook receiving and guide means will permit of the convenient arrangement of shooks in stacked relation upon the machine frame.

As hereinbefore stated, the shooks from the stack 23 are adapted to be individually removed from the bottom thereof in sequential order. The removed shooks are then moved longitudinally over the machine frame 3 in the manner illustrated in the Figure 3 and in order that they will be held against disarrangement or displacement during such movement, guide strips 24 are fixedly supported upon the opposite extremities of the transverse timbers of the machine frame in parallelism to the longitudinal timbers thereof, and serve to permit the sliding of the removed shooks thereover. Certain of these guide pieces 24 are formed with downwardly disposed extremities 24' whereby to facilitate the moving of the shooks uninterrupted from one to another, as they pass certain of the brushing means, while others of these downturned ends serve to provide a protective apron for the transversely disposed shaft 10 adjacent the discharge end of the machine frame.

Vertically disposed supporting bolts 26 are

engaged, at intervals, with portions of the angle metal tracks 4, through the medium of locking nuts 27, the upper extremities of said bolts slidably receiving thereupon the apertured extremities of transversely disposed pressure bars 28, which as will be noted, are arranged at intervals throughout that portion of the length of the machine frame 3 beyond the shook receiving guides 18 and 18'. These pressure bars 28 are formed with downwardly disposed intermediate portions of substantially U-shape, while the extremities thereof are laterally disposed and slidably received upon said bolts 26, particularly, upon adjustable supporting nuts 29 engaged with and previously adjusted to the desired positions upon such bolts, whereupon washers or similar devices 30 are engaged over the upper extremities of the bolts and with adjacent portions of the pressure bars to permit of effectual engagement of the lower ends of expansible coiled springs 31 therewith, these springs being received upon the bolts and having their respective tension adjusted through the medium of nuts 32 turned into engagement with the upper extremities of their respective bolts. Obviously, by varying the positioning of these adjusting nuts 32 upon their respective bolts 26, the bars 28 may be subjected to different pressures such as may be necessary toward maintaining the shooks against disarrangement during their movement under influence of the conveying means.

These pressure bars 28 are adapted to overlie the guides 24 and also, said bars 28 have secured to their under sides, combined guide and pressure sheets or aprons 33, the widths of which approximately correspond to the width of the machine frame as between the guide pieces 24, so that they overlie the latter and are provided with a yieldable support through the medium of the bolts 26 and the coiled springs 31 arranged thereupon and adjusted to the desired tension through the medium of the adjusting nuts 32. At this point, it is to be noted that the guide aprons 33 have certain of their ends upturned or curved upon themselves as indicated at 33', whereby the shooks removed from the stacks 23 and caused to move longitudinally over the machine frame, will pass under said aprons 33 without interference or liability of becoming "jammed" in such longitudinal movement. Furthermore, the guide aprons 33 are arranged in relatively spaced endwise relation in order that the engagement of brushing means with the upper sides or surfaces of the shooks passing over the machine frame may be effected in the manner herein-after more fully described.

With a view toward providing brushing means for removing sawdust, dirt and other matter from the opposite sides or surfaces of the shooks as they are directed over a machine

frame from the stacks 23, brushing means in form of rotatable and substantially cylindrical brushes 34 and 35 are provided; the rotatable brush 34 being fixedly mounted upon a transversely disposed shaft 36, the opposite ends of which are journaled in bearings 37 provided in the outer or free extremities of bracket arms 38 mounted for pivotal movement upon the bearing rod 39 disposed transversely of the intermediate portion of the machine frame having its opposite ends engaged in suitable bearing extensions 40 formed upon the upper portions of the supporting arms 17. Set screws 41 are preferably turned into engagement with portions of the extensions 40 and are adapted to be bindingly engaged with adjacent portions of the rod 39 whereby to lock or to partially lock the arms 38 in an adjusted position. Also, the outer or free extremities of these arms 38 are formed with apertured extensions 42 slidably engaged over the upper extremities of combined guides and adjusting bolts 43 fixedly supported in vertical positions upon portions of the longitudinal timbers of the machine frame 3, as is clearly shown in the Figures 1 and 2; adjusting nuts 44 being turned into engagement with the screw threaded extremities of the bolts 43 and having bearing with the upper and lower surfaces of the extensions 42 whereby to effect pivotal adjustment of the arms 38 and by consequence, vertical adjustment of the rotatable brush 34.

One end of the shaft 36 carrying the rotatable brush 34 is extended beyond its particular bearing 37 and carries a pulley wheel 45 thereupon in order that rotary motion may be transmitted to the same and by consequence to the brush 34; it being preferable that the shaft 36 be equipped with lubricating means in form of cups or similar devices 46 engaged and communicating with the bearings 37.

The remaining rotatable brush 35 is fixedly mounted upon a shaft 47 disposed transversely of the machine frame 3 at a point beyond the arrangement of the rotatable brush 34 at the opposite extremities of this shaft 47 are journaled in bearings 48 adjustably or slidably received in suitable brackets or boxings 49 secured in a suitable manner to adjacent portions of the longitudinal timbers of the machine frame 3. These brackets or boxings 49 have relatively parallel and vertically disposed adjusting bolts 50 engaged therewith and passing through screw threaded openings formed in their respective bearings 48 so that by rotating such bolts 50, vertical adjusting movement will be imparted to the several bearings 48 and consequently thereupon, the rotatable brush 35 carried upon the transversely disposed shaft 47 will be adjusted to the desired degree or nicety, whereby the same will engage with the under or lower surfaces of shooks passing over the machine frame. That rotary motion may be transmitted to

the brush 35, one end of the transverse shaft 47 is extended beyond its respective bearing 48 and carries a pulley wheel 51 thereupon.

Driving or motion transmitting means are provided the improved brushing machine in form of a transversely disposed shaft 52 journaled in suitable bearings adjacent the base or bed 1 of the machine frame and having the opposite extremities thereof extended beyond the opposite sides of said machine frame and provided upon one end with a pair of pulley wheels 53 and 54 of different size while upon the other end, a pulley wheel 55 is fixedly mounted. The pulley wheel 53 receives an endless belt 56 thereover, such belt passing diagonally upward and longitudinally of one side of the machine, as is shown in Figure 2, over an idler pulley wheel 57 loosely mounted upon one extremity of the transverse shaft 10 adjacent the delivery or discharge end of the machine, whereupon said belt is passed longitudinally and reversely upon itself about and into engagement with the periphery of the pulley wheel 45, from whence it is extended into engagement with the periphery of the pulley wheel 51 and from there into engagement with the aforesaid pulley wheel 53. Consequently upon this particular mode of gearing, it will be understood that with rotation of the pulley wheel 53, rotary motion will be collectively imparted to the rotatable brushes 34 and 35, thus causing the bristles of the same to have brushing contact with the adjacent surfaces of shooks passing longitudinally over the machine frame.

Another endless belt 58 is provided, this belt being engaged about the periphery of the pulley wheel 54 and extending diagonally upward and longitudinally of the adjacent side of the machine into driving contact with the periphery of a pulley wheel 59 fixedly mounted upon the adjacent extended end of the shaft 10 mounted upon the discharge end of the machine frame 3. Thus, it will be understood that with rotation of the pulley wheel 54, similar motion will be transmitted by way of the belt 58 to the pulley 59 and then from the shaft 10 carrying it to the sprocket wheels 12 fixedly mounted thereupon. Rotary movement of the sprocket wheels 12 upon the said shaft 10 will be transmitted to the several endless sprocket chains 5 of the shook conveying means and therefore, the several conveying means will be caused to move longitudinally of the machine frame and over their remaining sprocket wheels 12 and the idler sprocket wheels 13 and 14.

It is preferable that the conveying means in form of the endless sprocket chains 5 be provided with guide means adjacent the opposite ends of the machine frame 3 and therefore, a curved protecting apron or guard 60 is secured as at 61 to adjacent portions of the machine frame 3 at one end thereof and overlies the adjacent sprocket wheels 12, while

bracket bars 62 are secured to portions of the pillars 2 adjacent the delivery end of the machine frame as at 63 and have a protecting apron or sheet 64 engaged thereover, such
 5 apron affording an effectual housing and guard for the exposed sprocket wheels 12 and 13.

In operation of my improved brushing machine, a stack of shooks of a particular size
 10 are arranged adjacent the previously adjusted guides 18 and 18' in the manner as indicated in the Figure 2. Motion is now imparted to the conveying means in form of the endless sprocket chains 5 with their respective
 15 arms 6, causing such arms to move longitudinally over the machine frame in a direction towards the delivery end thereof. Simultaneously with the imparting of movement to the conveying means, rotary motion is
 20 transmitted to the rotatable brushes 34 and 35 through the medium of the belt gearing 56. As the various arms 6 of the conveying means pass beneath the stack of shooks 23, said shooks will be individually removed
 25 from the bottom thereof in sequential fashion and directed longitudinally of the machine frame in a direction corresponding with the direction in which the conveying means are moving, thereby carrying the individually re-
 30 moved shooks first, by the rotating brush 34 whereupon the upper surface of the same will be cleansed or brushed, and, with further longitudinal movement, the lower side or sides of the shooks will be moved over and into
 35 contact with the bristles of the rotating brush 35, thus freeing the same of sawdust or other dirt adhering thereto. In this way, the upper and lower surfaces of the shooks 23 individually removed from the stack supported
 40 adjacent the guide means 18 and 18' will be effected and therefore, it will be understood that as the shooks are discharged from the delivery end of the machine through the medium of the endless conveying means, they
 45 will be cleaned and ready for usage in the making of boxes.

Because of the adjustable positioning of the guide piece 18' upon the longitudinally split rod 21, it will be understood that shooks
 50 of different sizes may be accommodated in the improved brushing machine, merely by loosening the adjusting set screws 22 and then shifting said split rod 21 together with the guide piece 18 to the proper positioning
 55 whereupon the set screw 22 is retightened or relocked. Furthermore, the bristles of the rotatable brushes 34 and 35 may be caused to contact with the adjacent surfaces of the longitudinally moving shooks under different
 60 pressures, such as conditions or preference may dictate and therefore, it will be appreciated that these shooks may be caused to be freed of sawdust or other dirt adhering thereto, such adjustment of pressure upon the
 65 bristles of the brushes 34 and 35 being effected

through the medium of adjustment of their respective bearings 37 and 48.

Due to the fact that the longitudinally moving shooks are caused to pass between the strips 24 and the guide aprons 33, the latter
 70 being under tension of the previously adjusted coil springs 31 engaged with the various bolts 26, any possibility of disarrangement or displacement of such shooks will be avoided and therefore, efficient functioning of
 75 the machine will be insured.

Manifestly, the construction shown is capable of considerable modification and such modification as is within the scope of my
 80 claims, I consider within the spirit of my invention.

I claim:

1. A brushing machine comprising a frame, longitudinally moving conveyor means thereon, brushing means operatively
 85 supported in vertically spaced relation on the frame, longitudinally disposed guide strips on said frame, a plurality of vertically disposed supporting means on the frame, transversely arranged pressure bars slidably engaged with the supporting means, and guide
 90 aprons carried by said bars and overlying said guide strips.

2. A brushing machine comprising a frame, longitudinally moving conveying means thereon, relatively adjustable brushing means operatively supported in vertically and longitudinally spaced relation on the frame, longitudinally disposed guide
 95 strips on portions of said frame, a plurality of vertically disposed supporting means on the frame, transversely arranged pressure bars slidably and adjustably engaged with the supporting means, and guide aprons carried by said bars and overlying said guide
 100 strips.

3. A brushing machine comprising a frame, longitudinally moving conveying means thereon, rotatable brushing means adjustably supported in vertically and longitudinally spaced relation on the frame, longitudinally disposed guide strips on portions
 110 of said frame extending between the vertically and longitudinally spaced brushing means, a plurality of relatively spaced vertically disposed supporting means on the frame, transversely arranged pressure bars slidably engaged with the supporting means, spring means engaged with the supporting means and having adjustable bearing upon
 115 said pressure bars, and guide aprons carried by said bars and overlying said guide strips.

4. A brushing machine comprising a frame, longitudinally moving conveying means thereon, a pair of transversely disposed rotatable brushes adjustably mounted in vertical and longitudinally spaced relation on the frame and adjacent said conveying means, longitudinally disposed guide
 120 strips on portions of said frame, a plurality

of vertically disposed and relatively spaced supporting means on the frame, transversely arranged pressure bars slidably engaged with the supporting means, spring means on the supporting means having adjustable bearing upon said pressure bars, and guide aprons carried by said bars and overlying said guide strips.

5. A brushing machine comprising a frame, longitudinally moving conveying means thereon, a plurality of transversely arranged and vertically spaced rotatable brushing means adjacent the frame and the opposite sides of said conveying means, means for adjustably and rotatably supporting said brushes, means for collectively rotating said brushes, longitudinally disposed guide strips on portions of the frame passing between the said brushes, a plurality of relatively spaced vertically disposed supporting bolts on the frame, transversely arranged pressure bars slidably engaged with the supporting means, spring pressure means on the bolts having adjustable bearing upon said pressure bars, and guide aprons carried by said bars and overlying the guide strips.

6. A brushing machine comprising a frame, adjustable shook receiving guides on the frame, longitudinally moving conveying means on said frame adapted to bow under said shook guide means, a plurality of transversely arranged brushes, bearing means supporting said brushes for relative vertical adjustment upon the frame and with respect to said conveying means, means for effecting collective rotary movement of said brushes, guide strips arranged upon portions of the frame beyond said shook guide means and passing between said brushes, a plurality of relatively spaced vertically disposed supporting bolts fixed to portions of the same, transversely arranged pressure bars slidably engaged at their opposite ends with said bolts, spring means engaging said bolts and having bearing upon the pressure bars, means engaging the bolts and portions of said springs for adjusting their respective tension, and guide aprons carried by said bars and overlying said guide strips.

In witness whereof I have hereunto set my hand.

JOHN HAGEN.