

May 5, 1953

L. D. MOORE

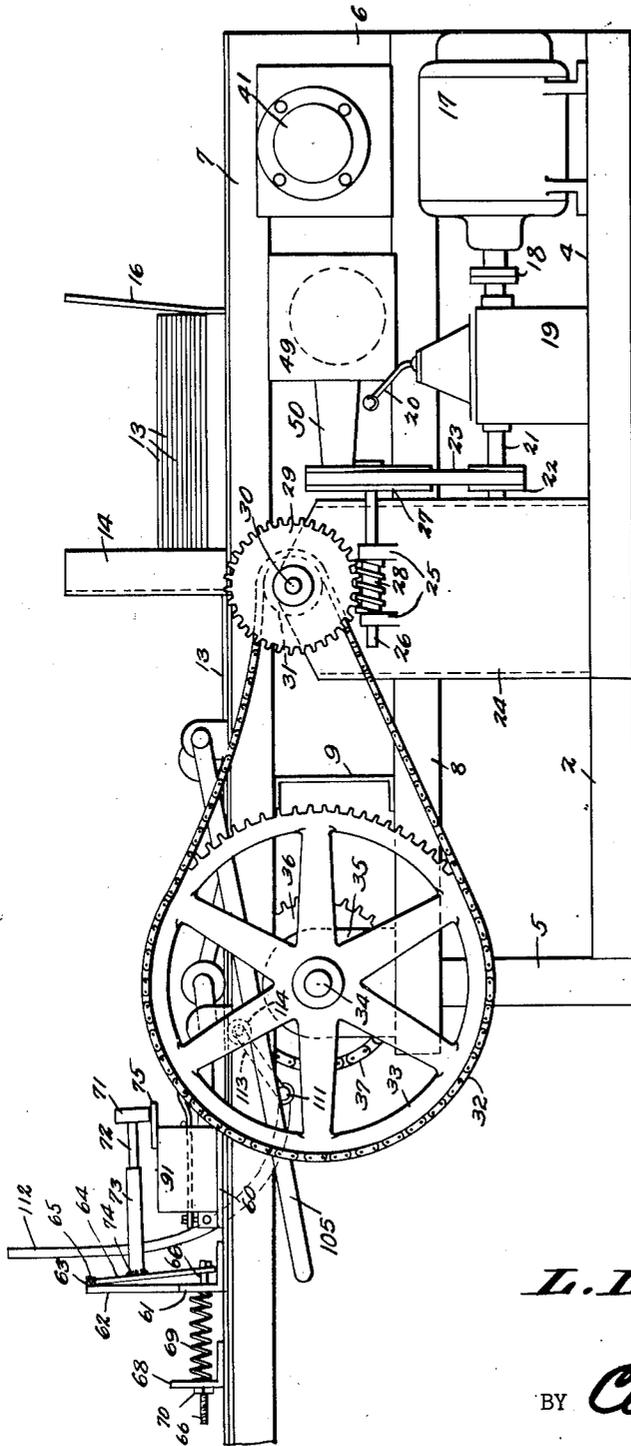
2,637,057

MACHINE FOR CLEANING AND SCRAPING PALLETS OF BLOCK MOLDS

Filed Sept. 30, 1948

5 Sheets-Sheet 1

Fig. 1.



L. D. Moore

INVENTOR

BY *Catnow & Co.*
ATTORNEYS.

May 5, 1953

L. D. MOORE

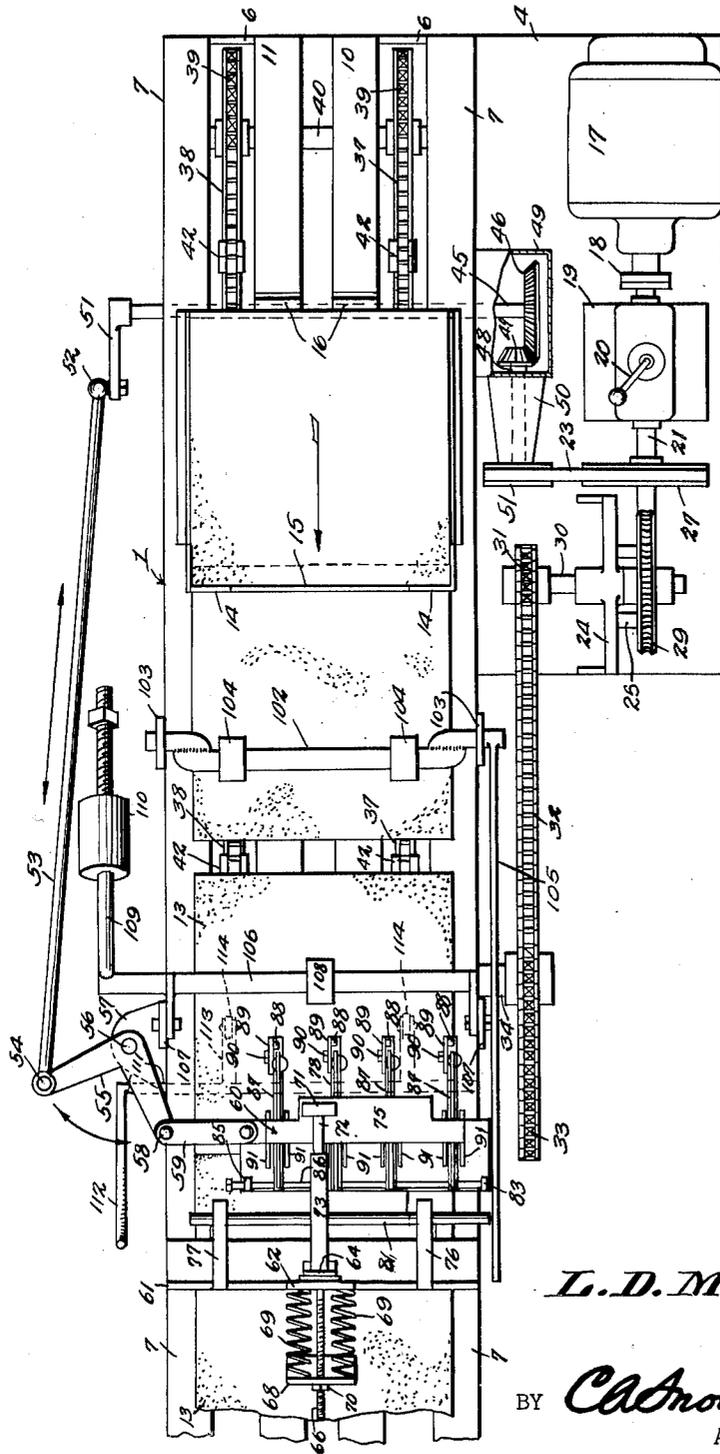
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Fig. 2.



L. D. Moore

INVENTOR

BY *Chas. H. Snow & Co.*
ATTORNEYS.

May 5, 1953

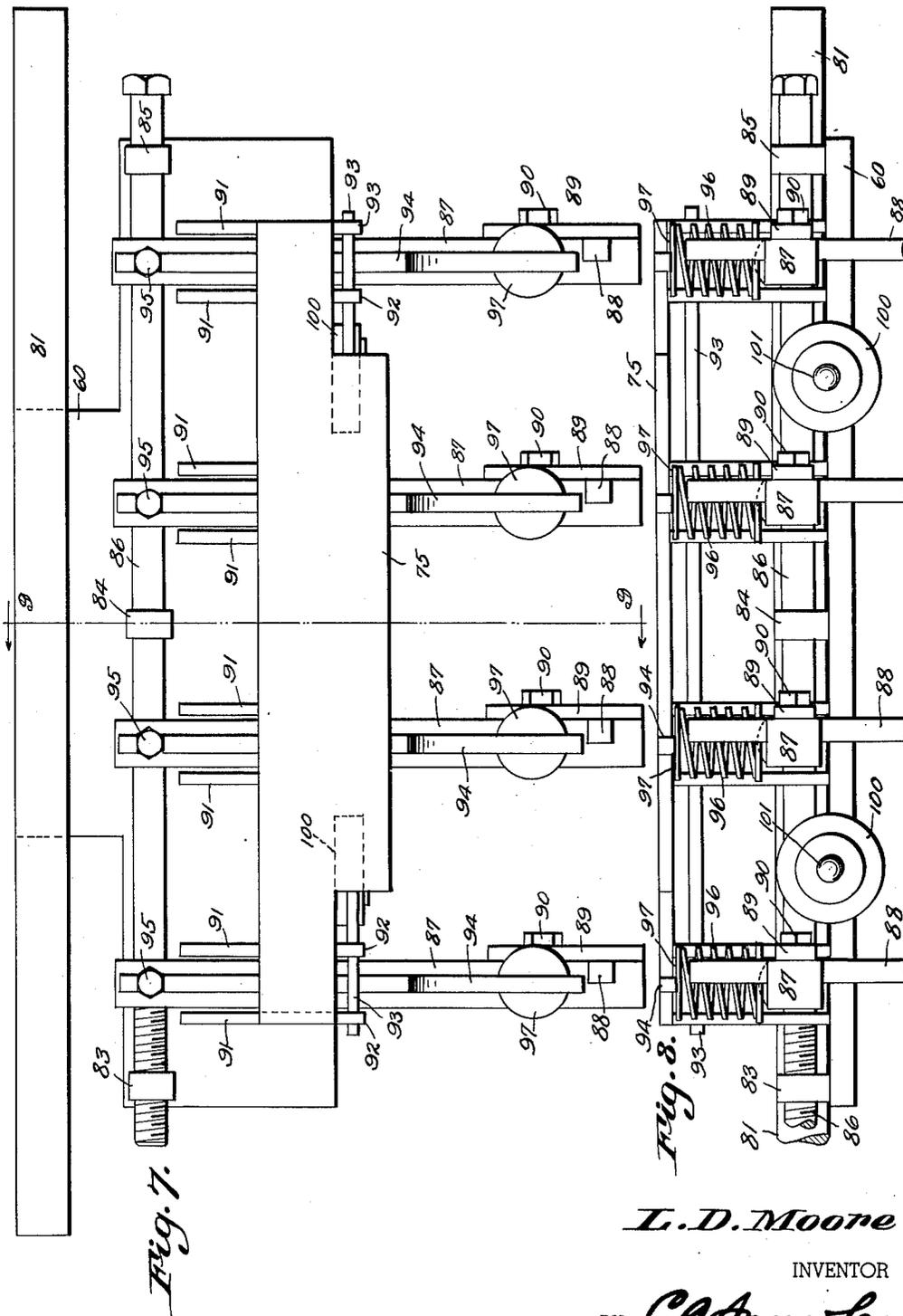
L. D. MOORE

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MACHINE FOR CLEANING AND SCRAPING PALLETS OF BLOCK MOLDS

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5 Sheets-Sheet 4



L. D. Moore

INVENTOR

BY *Chas. H. Lee*
ATTORNEYS.

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L. D. MOORE

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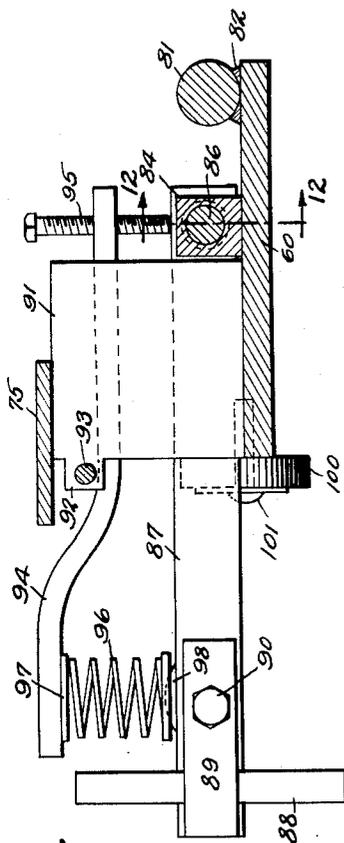


Fig. 9.

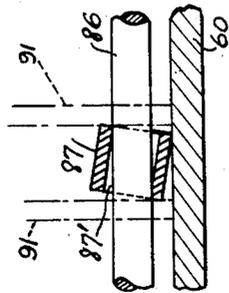


Fig. 12.

Fig. 11.

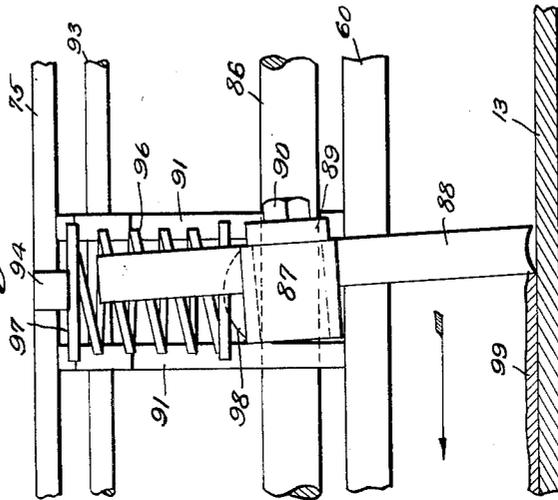
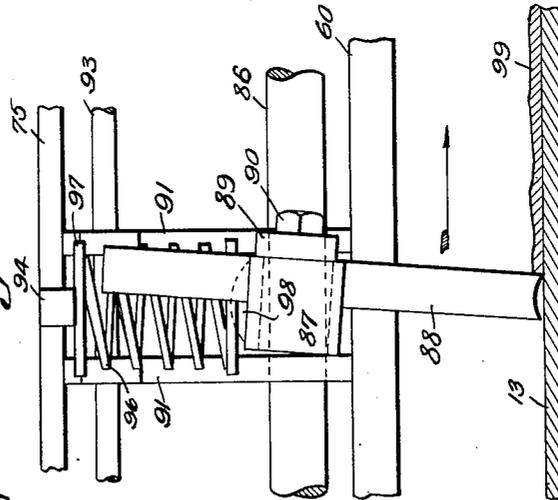


Fig. 10.



L. D. Moore

INVENTOR

BY *Carroll* *Lee*
ATTORNEYS.

UNITED STATES PATENT OFFICE

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MACHINE FOR CLEANING AND SCRAPING PALLETTS OF BLOCK MOLDS

Leonard D. Moore, Ogden, Utah

Application September 30, 1948, Serial No. 51,977

3 Claims. (Cl. 15-93)

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This invention relates to improvements in pallet cleaning machines.

An object of the invention is to provide an improved cleaning machine for removing the extraneous concrete from pallets used for supporting cement blocks in cement block making plants.

Another object of the invention is to provide an improved power driven reciprocating cutter pallet cleaning machine for periodically cleaning plates or pallets used in cement block making plants.

A further object of the invention is to provide an improved automatically fed power operated pallet cleaning machine having a plurality of reciprocable and adjustably tensioned cutters for removing the concrete coating built up on the plates or pallets used for supporting concrete blocks when being formed in plants where concrete blocks are manufactured.

A still further object of the invention is to provide an improved pallet cleaning machine which will be highly efficient in operation, and relatively inexpensive to manufacture and produce.

Other objects will appear as the description proceeds.

In the accompanying drawings which form a part of this application,

Figure 1 is a side elevation of the improved pallet cleaning machine;

Figure 2 is a top plan view of the improved pallet cleaning machine;

Figure 3 is an end view of the improved pallet cleaning machine;

Figure 4 is a detail side elevation of the chain with pallet advancing dog showing the same in engagement with a pallet shown in sectioned elevation;

Figure 5 is a top plan view of the chain and pallet advancing dog;

Figure 6 is a perspective view of the fixed support for the reciprocable shaft upon which the cutter table is supported, showing the adjustable tensioning means for the shaft upon which a roller will be mounted for applying a downward pressure upon the cutter table;

Figure 7 is an enlarged plan view of the cutter table with resiliently tensioned cutter bars supported thereby;

Figure 8 is a front elevation of the cutter table with resiliently tensioned cutter bars supported thereby;

Figure 9 is a partial sectional view taken on line 9-9 of Figure 7;

Figure 10 is an enlarged detail front elevation of a resiliently tensioned cutter angled to cut to the right, and

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Figure 11 is an enlarged detail front elevation of a resiliently tensioned cutter angled to cut to the left.

Figure 12 is a sectional view taken on line 12-12 of Fig. 9.

Like characters of reference are used throughout the following specification and the accompanying drawings to designate corresponding parts.

In carrying out the invention, there is shown and provided an improved pallet cleaning machine including a main supporting frame generally designated by the reference numeral 1 formed by the transversely spaced longitudinally extending angle iron side bottom members 2 and interconnected transversely extending angle iron end bottom members 3 suitably connected between the opposite ends of the side bottom members 2. A base plate 4 is suitably attached to the members 2 and 3, providing means for supporting the driving mechanism for the pallet cleaning machine, later more fully described.

Transversely spaced upwardly extending angle iron standards 5 and 6 are secured to the end bottom members 3, and are connected together by means of the top and intermediate angle iron side members 7 and 8, which are considerably longer than the base plate 4 and extend laterally thereof. Transversely extending channel members 9 are secured between the top and intermediate angle iron side members 7 and 8, being disposed in longitudinally spaced relation to each other. A pair of spaced longitudinally extending angle iron supporting members 10 and 11 are attached to the upper transverse end members 12, and extend on a common plane with the top angle iron side members 7 and between the same, as clearly shown in Figures 2 and 3 of the drawings, thus forming a table over which the pallets 13 will slide as they are being cleaned.

A pallet holding rack is provided on top of the table forming members 7, 10 and 11 and consists of the transversely spaced upwardly extending angle iron corner members 14 suitably attached to the members 7 and connected by means of the cross strip member 15. A pair of upwardly extending resilient arms 16 are suitably attached to the members 10 and 11 for engagement with the ends of the pallets 13 when stacked within the rack.

An electric motor 17 is mounted upon the base plate 4 and is connected by means of the coupling 18 with a clutch mechanism 19 having an upstanding operating handle 20, said clutch mechanism 19 also being mounted upon the base plate 4.

A driven shaft 21 extends from the clutch

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mechanism 19 and supports a pulley 22 thereon, over which an endless belt 23 extends.

A vertical web or plate support 24 is attached to a side bottom member 2, being provided with transversely spaced bearing ears 25 through which a shaft 26 is rotatably supported. A large pulley 27 is secured to one end of the shaft 26 and also supports and is driven by the belt 23. A worm 28 is secured to the shaft 26 between the bearing ears 25 and meshes with the spur gear 29 fixed to the end of the transversely extending shaft 30 mounted for rotation at the upper end of the web or plate support 24. A small spur gear 31 is fixed upon the inner end of the shaft 30. An endless chain 32 extends about the gear 31 and about a large gear 33 secured to one end of the cross shaft 34 mounted in the bearing brackets 35 supported by the intermediate side members 8, said shaft 34 extending below the table forming members 7, 10 and 11.

Transversely spaced sprocket wheels 36 are secured upon the central portion of the shaft 34 and are connected by the chains 37 and 38 with similar spaced sprocket wheels 39 fixed upon the cross shaft 40 mounted in the bearings 41 disposed between the top and intermediate side members 7 and 8.

Upstanding pallet engaging dogs 42 are formed on a number of the links 43 of the chains 37 and 38, being positioned at intervals in opposed relation, and formed with shoulders 44 for engaging the lowermost pallet 13 in the stock when in the rack, and move the said lowermost pallet 13 along the table formed by the members 7, 10 and 11 to the proper position to be cleaned as the electric motor 17 drives through the several gears and chains, and pulleys and belt.

A drive shaft 45 is mounted transversely below the table formed by the members 7, 10 and 11, and supports a bevel gear 46 on one end thereof which meshes with the smaller bevel gear 47 on the adjacent end of the stub shaft 48 mounted in the housing 49. A bearing collar 50 is supported by the housing 49 and supports the stub shaft 48. A pulley 51 is fixed upon the opposite end of the stub shaft 48 and is driven by the belt 23 and electric motor 17.

A crank arm 51 is secured to the opposite end of the drive shaft 45 and is joined by a ball and socket joint or connection 52 with the pitman rod 53. The opposite end of the pitman rod 53 is connected with one end 54 of a bell crank lever 55 pivoted at 56 to a supporting bracket 57 on the side edge of a member 7. The opposite end 58 of the reciprocable bell crank lever 55 is connected by the link 59 with reciprocable cutter base plate generally designated by the reference numeral 60.

A cutter base plate support is fixed transversely of the top table members 7 and on the upper surfaces thereof, and comprises the angle iron member 61 provided with a vertically extending central portion 62 having spaced bearing ears 63 on the upper end thereof. A tensioning arm 64 is pivotally supported at 65 between the bearing ears 63, and supports a rearwardly extending screw 66 at its lower end which is slidably extended through an opening 67 in said member 61. The rear threaded end of the adjusting screw 66 extends through the angle iron support 68, and between the coil springs 69. These coil springs are disposed between the support 68 and the table support member 61, their tension being varied by the nut 70 on the screw 66, said

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springs normally directing a pull on the tensioning arm 64, tilting the shaft 72 downwardly whereby the desired downward pressure will be exerted upon the roller bearing 71 mounted upon the outer end of the adjustable shaft 72 supported in the sleeve 73 welded at 74 to the tensioning arm 64 pressing the bearing plate 75 downwardly, as said roller bearing 71 bears upon the transverse bearing plate 75 on the reciprocable T-shaped cutter base plate 60.

A pair of forwardly and downwardly extending arms 76 and 77 are secured to the upper edge of the fixed support 61, and have the aligned bearings 78 and 79 welded at 80 to their lower ends. A shaft 81 is reciprocably mounted in the aligned bearings 78 and 79 and supports the cutter base plate 60 which is welded at 82 thereto.

A plurality of transversely spaced bearing brackets 83, 84 and 85 are fixed at the center and opposite ends of the T-shaped cutter base plate 60 for receiving the pivot bolt 86, which in turn pivotally and tiltably supports the inner ends of the cutter blade supporting arms 87. The supporting arms 87 are provided with openings 87' that are substantially greater in diameter than the pivot bolt 86 mounted therein, so that a loose fit is provided between the arms 87 and the pivot bolt 86 allowing a tilting movement of the arms 87 on said bolt 86. Vertically disposed cutter blades 88 are clamped to the outer ends of the cutter blade supporting arms 87 by means of the clamp plates 89 and bolts 90.

A pair of transversely spaced upwardly extending guide plates 91 are disposed at the opposite sides of each of the four cutter blade supporting arms 87 being suitably attached to the upper surface of the reciprocable cutter base plate 60, and support the bearing plate 75 on their upper edges.

Forwardly extending apertured bearing ears 92 are formed integrally on the front edges of the guide plates 91 for supporting the bearing pins 93 upon which the four forwardly extending pressure bars 94 are rockably supported intermediate their ends.

Adjusting screws 95 are threaded vertically through the rear ends of the pressure bars 94 with their lower ends on the rear ends of the cutter blade supporting arms 87. Coil springs 96 are disposed between the cap plates 97 on the forward ends of the pressure bars 94 and the lower bearings 98 on the upper forward surfaces of the cutter blade supporting arms 87, whereby the said arms 87 with their cutter blades 88 may be tilted angularly either to the right or left and held under the desired resilient tension while cleaning the cement coating 99 from the pallets 13.

A pair of rollers 100 are mounted upon the supporting pins 101 secured to the forward edge of the reciprocable cutter table 60 and contact the pallets 13 providing a support for the table 60 as it is reciprocated back and forth by the crank 51, pitman rod 53, bell crank lever 55, and connecting link 59.

A U-shaped crank shaft 102 is mounted transversely of the members 7 in brackets 103 attached to said members, and supports the rollers 104 for engaging and applying downward pressure to the pallets 13 as they are removed from the stock. A long weight arm 105 is attached to the end of the crank shaft 102 for retaining pressure on said rollers 104.

A transversely extending shaft 106 is mounted in the brackets 107 on the members 7, and sup-

ports a central roller 108 for contacting the upper surface of the pallets 13 as the cutter blades 88 reciprocate over the same in the cleaning operation. An arm 109 is attached to one end of the shaft 106 and adjustably supports the weight 110 threaded thereon for varying the downward pressure of the roller 108 upon the pallet 13.

From the foregoing description, it will be seen that as the pallets 13 are moved from the bottom of the stock by the chains 37 and 38 and dogs 42, they will pass under the rollers 104 and then under the roller 108 to be cleaned by the reciprocating cutter blades 88, and finally when cleaned, said pallets 13 will be discharged from the opposite end of the machine.

A shaft 111 having an arcuate manipulating handle 112 is mounted transversely below the top angle iron side members 7 directly below the reciprocable cutter table 60, and is provided with the spaced upwardly and forwardly extending arms 113 which support the roller bearings 114 at their outer ends for engaging the under surfaces of the pallet 13 which is being cleaned, to lift it level and to the same plane with the next oncoming adjacent pallet 13, in case there is a difference in thickness between the adjacent pallets 13.

While the preferred embodiment of the instant invention has been illustrated and described, it will be understood that it is not intended to limit the scope of the invention thereto, as many minor changes in detail of construction may be resorted to without departure from the spirit of the invention.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a pallet cleaning machine, a frame, a cutter base plate mounted on the frame, a pallet rack at one end of the cutter base plate in which pallets are held, means for moving the pallets longitudinally of the cutter base plate, a cutter support including a cutter table disposed transversely of the cutter base plate in spaced relation therewith, bearings mounted on the cutter base plate, a shaft mounted within said bearings, supporting arms mounted on the cutter table extending beyond one horizontal edge thereof, pairs of vertical guide plates on the cutter table mounted in spaced relation with respect to each other, cap plates disposed transversely of the cutter table between the planes of the vertically disposed guide plates, coiled springs mounted between planes in which said plates lie, the upper ends of the coiled springs resting against said cap plates, lower bearings on the supporting arms against which the lower ends of said springs engage, restraining upward movement of said supporting arms, cutter blades pivotally mounted with respect to the cutter base plate, adjustable pressure arms pivotally mounted intermediate their ends, one of the ends of each arm resting on a coiled spring normally compressing the springs urging the cutter blades to their work, adjusting screws extending in openings formed in the other ends of said arms, adjusting said arms vertically, and means for moving the cutter table with its cutting blades laterally over the pallet being cleaned.

2. In a pallet cleaning machine, a frame including a cutter base plate, a pallet rack at one end of the cutter base plate from which pallets are delivered to said cutter base plate, a cutter

table movable transversely of the cutter base plate in vertical spaced relation therewith, a transversely disposed shaft secured to the cutter table, blade supporting arms loosely mounted on said shaft disposed longitudinally of the frame, vertical cutter blades supported on the blade supporting arms, coiled springs resting on the blade supporting arms, spaced guide plates rising from said cutter table, pressure bars having one of their respective ends pivotally held between said spaced guide plates, the other ends of said pressure bars resting on said springs exerting downward pressure on said blade supporting arms beyond the normal pressure directed to the blades by said coiled springs upon upward movement of said cutter blades, and means for moving the cutter table and blades transversely of the cutter base plate.

3. In a pallet cleaning machine, a frame including a cutter base plate, a pallet rack on said cutter base plate, a cutter table movable transversely of said cutter base plate in vertical spaced relation therewith, a transversely disposed shaft secured to the cutter table, blade supporting arms loosely mounted on the shaft extending therefrom and disposed longitudinally of the frame, vertical cutter blades supported on the blade supporting arms, coiled springs resting on said blade supporting arms normally biasing said blade supporting arms downwardly, pressure arms pivotally mounted on the cutter table, means for adjusting the pressure arms with respect to their pivots, said pressure arms engaging and compressing the springs against the blade supporting arms, a horizontal bearing plate mounted above said pressure arms, fixed with respect to said cutter base plate, horizontal rods on which said arms are rockably supported, a tensioning arm supported by the cutter table, a vertically movable spring pressed shaft extending from the tensioning arm and being movable with one end of the shaft resting on the horizontal bearing plate urging said bearing plate and cutter table towards the cutter base plate, compensating for varying thicknesses of material being cleaned from the pallets, and means for moving the cutter table and cutters transversely of the cutter base plate, cleaning material from the pallets moving over the cutter base plate.

LEONARD D. MOORE.

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