T. LUND.

STACKING MECHANISM.

APPLICATION FILED JAN. 15, 1917.

1,381,318.

Patented June 14, 1921.

2 SHEETS—SHEET 1.

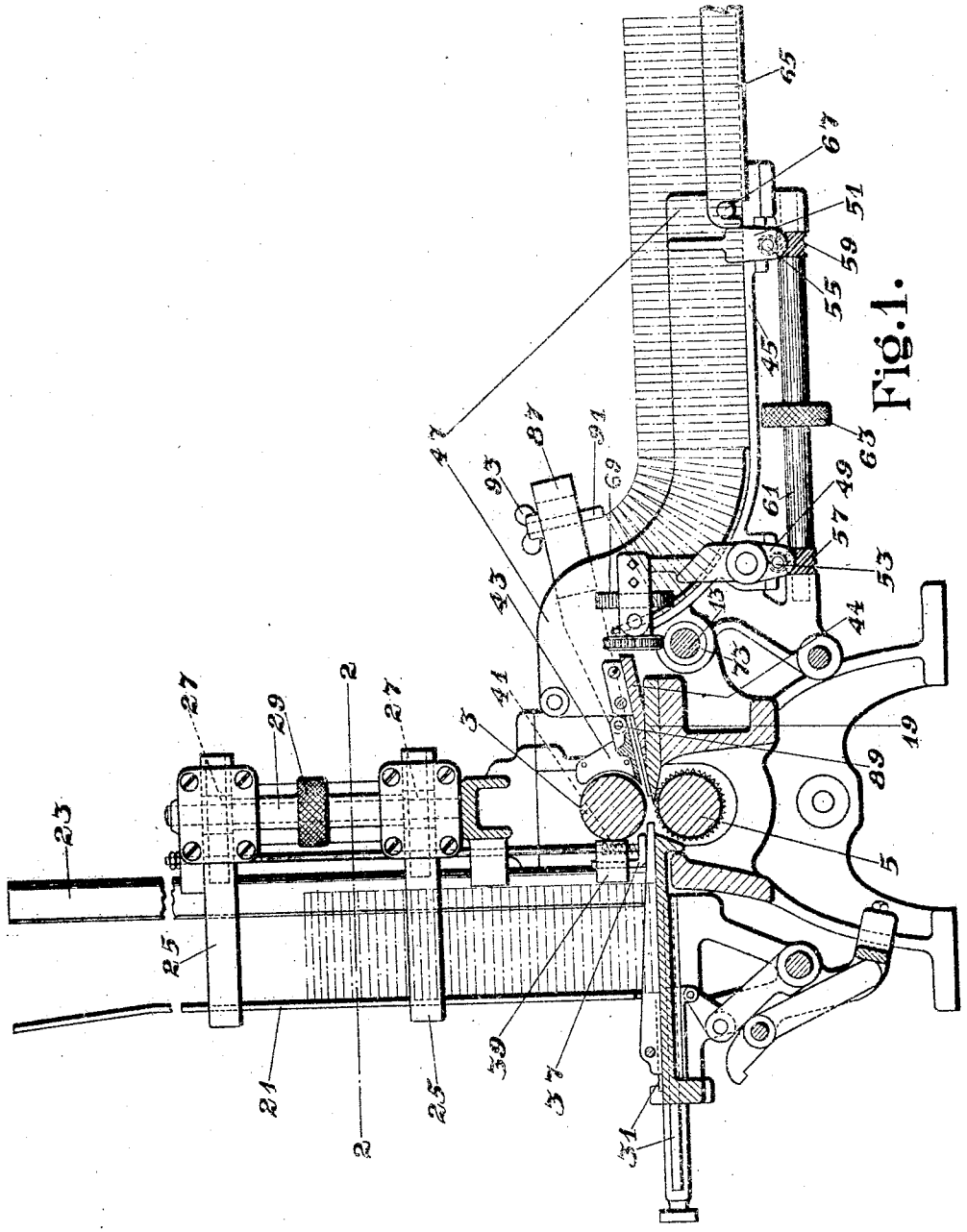


Fig. 1.

INVENTOR-

Thomas Lund

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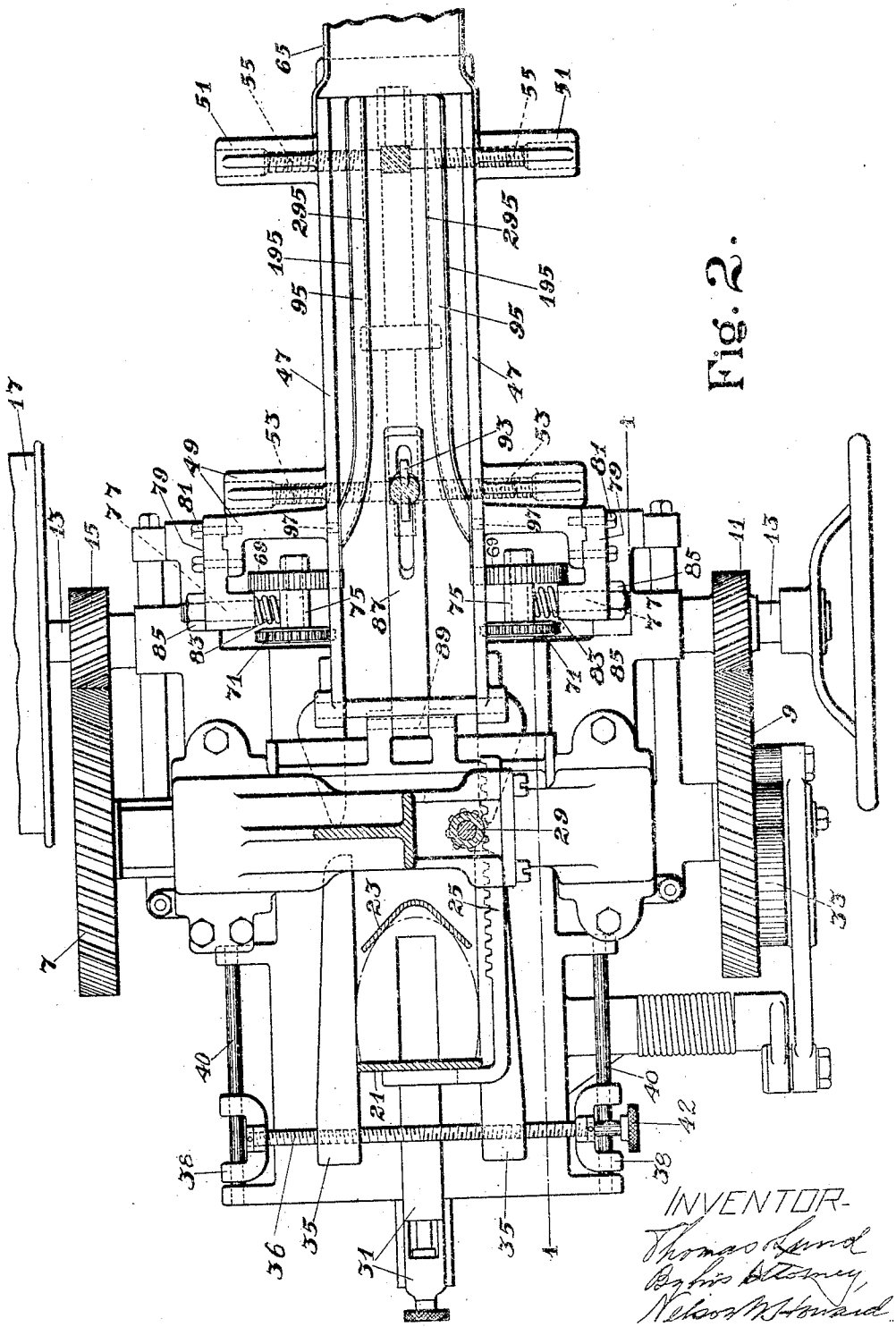


Fig. 2.

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UNITED STATES PATENT OFFICE.

THOMAS LUND, OF BEVERLY, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

STACKING MECHANISM.

1,381,318. Specification of Letters Patent. Patented June 14, 1921.

Application filed January 15, 1917. Serial No. 142,474.

To all whom it may concern:

Be it known that I, THOMAS LUND, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain Improvements in Stacking Mechanism, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to machines for operating upon a series of blanks and forming them into a stack and is herein illustrated in connection with a machine for operating upon heel lifts.

In the manufacture of boots and shoes it is customary to even top lift blanks on a skiving or splitting machine and then to subject these lifts to pressure in a compressing machine. Hitherto these top lifts have been allowed to fall in disorder into a box or similar receptacle after they have passed through the skiving machine; and, when it was desired to place these lifts in a magazine prior to feeding them to the compressing machine, it was necessary to stack them by hand. When an attempt is made to stack the lifts automatically as they come from the skiving machine by permitting them to fall into a chute or magazine and then pushing them down by means of the usual plunger, a difficulty arises. The blanks differ in length while the distance from the edge of the skiving knife to the mouth of the chute is fixed and constant. Consequently, while the usual plunger might be timed to stack blanks of a given length, it would be difficult to provide adequate means for changing the timing to provide for blanks of different lengths. In other words, the interval between the droppings of the blanks into the chute varies with blanks of different lengths, and thus presents an objection to the use of the usual reciprocating plunger which engages the face of the blanks one by one and pushes said blanks together into a stack, since if a blank which partly overhung the mouth of the chute happened to have its overhanging portion engaged by the plunger, such a blank would be liable to be tipped so that the forward end instead of the under face would contact with the upper face of the previous blank.

One feature of the present invention comprises a machine of the class described having in combination means for operating successively upon a series of blanks, a chute, means for delivering the blanks one by one into the chute, and means engaging the edges of the blanks to stack them. In the illustrative machine the edges of the blanks are engaged on opposite sides of the blanks by feed wheels which project through the walls of the chute and act to push each new blank against the preceding one.

In order to avoid possible injury to the edges of the blanks, another feature of the invention comprises the provision of springs for forcing the feed members against the edges of the blanks whereby said members may yield in case a blank is too wide to pass easily between the feed members.

These and other features of the invention, including certain details of construction and combinations of parts, will be described in connection with an illustrative machine and pointed out in the appended claims.

Referring now to the accompanying drawings,—

Figure 1 is a side view, partly in section and partly in elevation, of a machine in which the present invention is embodied;

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1.

Mounted in suitable bearings in the frame of the machine are two shafts on which are formed the upper feed roll 3 and the lower feed roll 5. To the upper shaft is fast a large gear 7 and to the lower shaft a large gear 9, the gear 9 meshing with a small gear 11 which is fast to a drive shaft 13. A second small gear (not shown) fast to the drive shaft 13 meshes with a small idle gear 15 which in turn meshes with the large gear 7. When, therefore, the drive shaft is rotated by means of a belt applied to the large pulley 17 which is fast to the drive shaft 13, the feed rolls 3, 5 are rotated in directions to cause a heel lift blank to be fed to the knife 19.

Located in front of the feed rolls is a skeleton magazine comprising a front wall 21 and a rear wall 23, said front wall being fast to horizontal bars 25 having racks formed on their rear ends which mesh with pinions 27 carried by a small upright shaft 29. Thus the front wall 21 of the magazine may be ad-

justed toward and from the rear wall 23 to provide for lifts of different lengths by rotating the small shaft 29. The lifts are fed one by one from the bottom of the stack by a feed slide 31 which is operated from a cam 33 fast to the gear 9 through suitable connections, those shown being substantially identical with the corresponding parts shown in the United States Patent to Pope No. 1,123,369, dated January 5, 1915. The bottom lift of the stack is engaged at the sides by two guide members 35 which are adjustable toward and from each other by a right and left screw 36 the ends of which are held in yokes 38 horizontally slidable on fixed rods 40. A knurled head 42 furnishes means for turning the screw to vary the distance between the guides 35 so as to accommodate lifts of different widths. In order to insure that the lifts shall be delivered one by one, the opening at the lower end of the front wall 23 is closed by a foot 37 which is vertically slidable in a block 39 and is held down by a spring 41. After the lifts pass the knife 19 they are held flat by means of a presser 43 so as to prevent their curling, said presser being carried by the bearings of the upper roll. This presser mechanism forms the subject-matter of my United States Patent No. 1,209,737, dated December 16, 1916, and will not be further described.

From this pressing or flattening mechanism the lifts pass upwardly across an inclined table 44 and drop into the upwardly curved mouth of a chute or holder the base 45 of which is stationary while the sides 47 are adjustable toward and from each other on the base to provide for lifts of different widths. To permit this adjustment the side walls are carried by front brackets 49 and rear brackets 51. A right and left screw 53 is threaded into the front brackets 49 and a second right and left screw 55 is threaded into the rear brackets. The stems of these screws have fast to or cut upon their middle portions spiral gears which mesh with spiral gears 57, 59 cut upon the ends of a horizontal shaft 61 which may be readily turned by grasping a thumb hold 63. A receptacle 65 is detachably hooked on pins 67 carried by the chute walls 47 so that, when filled, this receptacle may be used to carry a stack of lifts to a heel compressor or other machine in which they are to undergo a further operation.

As the lifts fall into the open mouth of the chute it is necessary to push them down in order to stack them and to move the stack along so that the receptacle may be filled. To this end feed wheels 69 having corrugations or dull teeth thereon project through the walls 47 of the chute into positions to engage the edges of the lifts. These feed wheels are mounted on the rear ends of short shafts to the front ends of which are fastened worm wheels 71 which engage a right and left worm 73 formed on the shaft 13. The short shafts are rotatably mounted in bearings 75 having square stems 77 which are received in sockets in brackets 79 fastened to the front brackets 49 of the side walls 47 by screws 81. Springs 83 force the bearings 75, and with them the feed wheels 69, toward the walls of the chute, the extent of such movement being controlled by nuts 85 threaded on the ends of the stems 77. Thus the feed wheels have yielding engagement with the edges of the lifts to provide for any slight variations which may occur in their width and to prevent an unusually wide lift from becoming jammed or injured. It will be noted that with the construction described above, when the thumb hold 63 is manipulated to move the side walls 47 of the chute toward or from each other, the feed wheels 69 move with said walls, the wheels 71 at such times rolling on the worm 73. In order to prevent the skived lifts from being pushed too far over the mouth of the chute, a bar 87, which is loosely pivoted to the frame at 89 and normally rests in the position shown, is provided with a slot in which a stop 91 is adjustably fastened by a wing nut 93.

In the operation of the machine the lifts are fed rapidly one by one to the knife and pushed ahead by the preceding lifts until one by one they drop into the mouth of the chute. The first few lifts do not stand up on edge but merely overlap one another on the bottom of the chute and are moved along in that position. However, as the lifts accumulate and offer more and more resistance to the action of the feed wheels 69 a lift is presently forced into an approximately upright position after which the stacking of the lifts proceeds until finally the lifts occupy the positions shown in Fig. 1. When the receptacle 65 has been filled, it is removed and an empty one substituted for it.

It is in some cases desirable to confine the stacked lifts a little more closely than they are confined by the walls 47 so as to cause the stack to offer a little more resistance to being moved along. In such case there may be provided two thin sheet metal spring members 95 (see Fig. 2) which are substantially of the same height as the walls 47. The spring members are detachably attached to the walls 47 by means of pins 97 which are fast to said springs and enter holes in said walls; and preferably these members are inclined to the plane of the base 45, their upper edges being indicated at 195 and their lower edges at 295. The purpose of these members, as has been stated, is to offer resistance to the movements of the lifts and thereby to facilitate the stacking operation.

It should be particularly noted that the feed wheels engage the edges of the lifts, and that the word "edge" as used in the claims refers to the surface which is at right angles to the upper and lower sides of the lifts.

Although the invention has been set forth in connection with a particular machine, it should be understood that the invention is not limited in the scope of its application to the particular machine which has been shown and described.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A machine of the class described, having in combination, means for operating successively upon a series of blanks, a chute, means for delivering the blanks one by one into said chute, a wheel for engaging the edge of each blank, and means for rotating the wheel about an axis which extends in the general direction of the depth dimension of the chute and at an angle to the direction in which the blank is moved by the wheel.

2. A machine of the class described, having, in combination, means for operating successively upon a series of blanks, a chute, means for delivering the blanks one by one into said chute, and feed members engaging the edges of the blanks after they have entered the chute to push them along and thereby stack them, said members being bodily movable toward and from said edges.

3. A machine of the class described, having, in combination, means for operating successively upon a series of blanks, a chute, means for delivering the blanks one by one into said chute, and means extending through the walls of the chute into engagement with the edges of said blanks for forcing them along in said chute.

4. A machine of the class described, having, in combination, means for operating successively upon a series of blanks, a chute, means for delivering the blanks one by one into said chute, and yielding means extending through the walls of the chute into engagement with the edges of said blanks for forcing them along in said chute.

5. A machine of the class described, having, in combination, means for operating successively upon a series of blanks, a chute into which the blanks are delivered one by one, feed wheels extending through the walls of the chute into engagement with the edges of the blanks, and means for rotating said wheels to force the blanks along in the chute.

6. A machine of the class described, having, in combination, means for operating successively upon a series of blanks, a chute into which the blanks are delivered one by one, feed wheels extending through the walls of the chute into engagement with the edges of the blanks, means for rotating said wheels to force the blanks along in the chute, and springs acting to permit said wheels to yield.

7. A machine of the class described, having, in combination, means for operating successively upon a series of blanks, a chute into which the blanks are delivered, said chute comprising a stationary wall and two movable walls, adjustable toward and from each other, feed wheels extending through said movable walls and adjustable therewith, and means for rotating said wheels.

8. A machine of the class described, having, in combination, means for operating successively upon a series of blanks, a chute into which the blanks are delivered, said chute comprising a stationary wall and two movable walls, adjustable toward and from each other, feed wheels extending through said movable walls and adjustable therewith, springs for urging said wheels toward the walls of said chute, and means for rotating said wheels.

9. A stacking device for a series of blanks, having, in combination, a chute having an upwardly directed mouth to receive a series of blanks, and means extending through the walls of the chute into engagement with the edges of said blanks for forcing them along in said chute.

10. A stacking device for a series of blanks, having, in combination, a chute having an upwardly directed mouth to receive a series of blanks, and yielding means extending through the walls of the chute into engagement with the edges of said blanks for forcing them along in said chute.

11. A stacking device for a series of blanks, having, in combination, a chute having a substantially horizontal body and an upwardly directed mouth, and means extending through the walls of the chute near said mouth into engagement with the edges of said blanks for forcing them down into the body of said chute.

12. A stacking device for a series of blanks, having, in combination, a chute comprising a stationary bottom and adjustable side walls, and means extending through said side walls into engagement with the edges of the blanks to stack them and to move the stack along in the chute.

13. A stacking device for a series of blanks, having, in combination, a chute comprising a stationary bottom and adjustable side walls, and means adjustable with said side walls and extending through said side walls into engagement with the edges of the blanks to stack them and to move the stack along in the chute.

14. A stacking device for a series of blanks, having, in combination, a chute into the mouth of which blanks may be delivered,

and continuously actuated stacking means extending through the walls of the chute in position at all times to engage the edges of a blank as it passes between said stacking means.

15. Stacking mechanism comprising a chute including adjustable side walls, feed wheels extending through said walls at opposite openings therein, said wheels being adjustable with said walls, and means for rotating said wheels constructed and arranged to remain operative when the walls and wheels are adjusted.

16. A machine of the class described, having, in combination, means for operating successively upon a series of blanks, a holder, means for delivering the blanks one by one into the holder, feed members arranged to engage opposed points on the edge of each blank, and means for operating the feed members to force the blanks along between the points on the feed members which are nearest each other.

17. A machine of the class described, having, in combination, means for operating successively upon a series of blanks, a holder, means for delivering the blanks one by one into the holder, feed wheels arranged to engage with their peripheries substantially opposed points on the edge of each blank, and means for rotating said wheels in opposite directions to force the blanks along in the holder.

18. A machine of the class described, having, in combination, means for operating successively upon a series of blanks, a chute over the mouth of which the blanks are pushed, a stop separate from the chute and located above the mouth thereof for engaging the forward ends of the blanks to prevent them from being pushed too far over said mouth, and means whereby the stop may be adjusted to provide for blanks of different dimensions.

19. A machine of the class described, having, in combination, means for operating successively upon a series of blanks, a holder into which the blanks are delivered, said holder comprising walls adjustable toward and from each other, feed members for advancing the blanks in the holder extending through said walls into engagement with the edges of the blanks and adjustable with the adjustable walls, and means for operating said feed members.

20. Stacking mechanism for blanks comprising a blank-receiving chute having bottom and side walls, so shaped as to present an upwardly extending mouth and provided with slots, a blank feeding device located outside said mouth but adapted to enter said slots and thereby engage the blanks entering the chute to feed them forward, and means for actuating said device in a manner to advance the blanks.

21. A stacking device for blanks comprising a chute having an upturned mouth into which blanks may be delivered, and stacking means operating through the upturned wall of the chute to engage the blanks as they enter the chute and feed them forward.

In testimony whereof I have signed my name to this specification.

THOMAS LUND.