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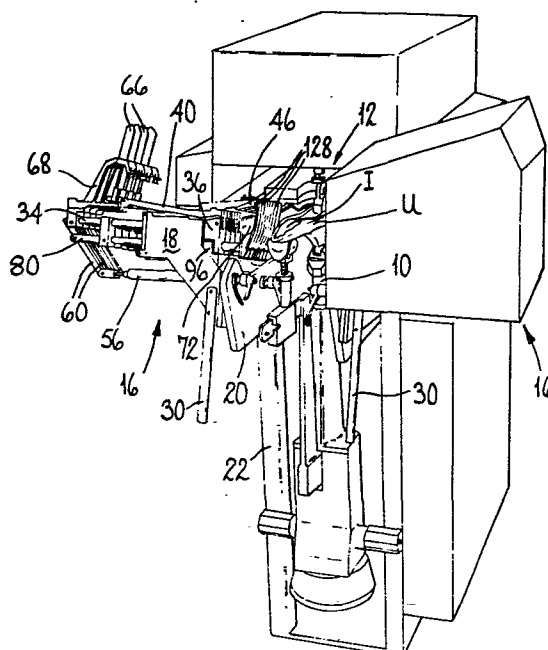
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⑤④ **Machine for lasting side portions of shoe uppers.**

⑤⑦ A side lasting machine has a last support (10), on which a last can be supported, bottom uppermost, and two side lasting assemblies (16), arranged one at each side of the last support. Each assembly (16) comprises a plurality of lasting fingers (46), a plurality of clamp pads (72), disposed each beneath a pair of the fingers (46) and mounted for limited pivotal movement about a vertical axis (136), and a plurality of lasting bands (128), depending one from each finger (46) and interposed between the pads (72) and shoe upper. In operation, as the fingers (46) move inwardly, the bands (128), held against the upper with sufficient pressure to allow slip between the bands (128) and pads (72), are drawn upwardly and the upper is thus updrafted, before being secured to the insole. In the rest condition, the fingers (46) are disposed above the level of the insole. As they move inwardly they also move downwardly on to the shoe, thus avoiding any need to set their heightwise position for different shoe styles.



1 Machine for lasting side portions of shoes

 This invention is concerned with a machine for
use in lasting side portions of shoe uppers. The term
5 "shoe" where used herein is used generically as indicating
articles of outer footwear generally, including such
articles in the course of manufacture.

 Machines for lasting side portions of shoe
uppers are known comprising a support for a shoe last on
10 which an upper, the side portions of which are to be
lasted, and an insole are positioned, and two side lasting
assemblies arranged so as to act on opposite side portions
of an upper positioned on a last supported by said support,
wherein each side lasting assembly comprises clamping
15 means, comprising at least one clamp member, movable
towards the last support to cause a side portion of the
upper to be held against the last, on which it is
positioned and which is supported by the last support, at
a locality spaced from the feather line thereof, lasting
20 element means, comprising a plurality of lasting elements
arranged side-by-side and movable inwardly towards the
last support so as to cause lasting marginal portions of
the side portion of the upper to be wiped over correspond-
ing marginal portions of the insole and be pressed there-
25 against, and lasting band means comprising at least one
upper-engaging band portion of flexible sheet material
arranged to be interposed between the shoe upper on the
one hand and the lasting elements and the clamp member(s)
on the other.

30 In U.K. Patent Specification No.1559171 is
described a side lasting machine in which each side
lasting assembly comprises a single lasting band which
is supported at its upper and lower edges, the arrange-
ment being such that, as the lasting band is moved
35 inwardly towards the last support, a portion thereof
intermediate its upper and lower edges first engages the
upper in the waist region, continued movement thereafter

1 causing the upper to be deformed in the direction of both
the top line and the feather line. The inward movement
of each assembly, furthermore, is limited by a presser pad
between which and the upper the lasting band is interposed,
5 which pad also assists in holding the upper in position
against the last during the lasting operation. When the
inward movement of each lasting band is arrested, the
lasting marginal portions of the upper, which are already
partially folded over the feather line by the action of
10 the inward movement of the lasting band, is merely rolled
over and pressed against corresponding marginal portions
of the insole by presser feet, which serve also to support
one edge of the lasting band.

It will thus be appreciated that, in the
15 operation of this machine, no significant drafting of the
upper, in the waist portion thereof, takes place but
rather the upper is deformed to the shape of the last by
the progressive application of pressure thereto from an
intermediate point outwardly towards the top line and
20 feather line. Furthermore, the action of the presser feet
is merely to roll the lasting marginal portion of the
upper over the insole edge without any inward wiping
action being applied thereto.

In U.S. Patent Specification No.1722499 is
25 described a machine having side lasting assemblies, each
of which comprises a plurality of lasting devices, each
device in turn comprising a lasting element in the form
of a wiping finger, a strap of flexible material one end
of which is secured to the wiping finger, and the other
30 end also being secured to a portion of the assembly, and
a clamp pad between which and the upper the strap is
interposed. In the operation of this machine, each device
operates independently of the others, the arrangement being
such that each assembly is moved bodily towards the shoe
35 and the presser pads are brought into pressing engagement
with the band against the upper, thus to clamp the upper
against the last at a locality closely adjacent the feather

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1 line. Thereafter, the pressure applied by the pads is
increased as the wipers move inwardly to wipe lasting
marginal portions of the upper against corresponding
marginal portions of the insole and press them there-
5 against. Thereafter, the wiping fingers are cammed
down from an out-of-the-way position to lay the lasting
marginal portions of the upper over corresponding
marginal portions of the insole and press them there-
against.

10 A further modification of this machine is
described in U.S. Patent Specification No.1843232. In
this machine, the straps are secured to the clamp members
at one end and are resiliently connected at the other to
the wiping fingers, the arrangement being such that the
15 wiping fingers effect an in-wiping action effectively on
the strap rather than on the upper, the resilient
connection yielding during such in-wiping movement so
that the wiping fingers move relative to their associated
20 straps. The overall effect of this arrangement is that
the lasting marginal portions of the upper are again
merely laid over corresponding marginal portions of the
insole and pressed thereagainst.

25 In U.K. Patent Specification No.1079611 are
described two lasting machines, in a first of which two
side lasting assemblies are provided, each comprising a
plurality of lasting bands which are pressed against the
upper by clamp members in the form of fingers, the bands
being capable of limited movement heightwise of the last
30 thus to provide an updraft on the upper prior to lasting
marginal portions thereof being folded over the insole
edge and pressed against corresponding marginal portions
of the insole. In this machine, however, no separate
lasting elements are provided, the bands serving the
35 function of both updrafting and overlaying members.
Again, in U.K. Patent Specification No.1339835, a machine
is described having two side lasting assemblies, each

1 comprising a plurality of lasting elements and a
plurality of bands, but in this case no clamping pads
are provided, the upper merely being engaged by the
bands which are drawn over the insole edge, together
5 with lasting marginal portions of the upper, during the
in-wiping movement of the lasting elements.

In the side lasting of shoes, problems arise
where the inside of the last, at the waist region, is
significantly inclined or rounded, so that it is
10 difficult to ensure that the material of the upper, which
is relatively bulky, is properly bedded down to the last
before the lasting marginal portions of the upper are
secured to corresponding marginal portions of the insole.
Thus, it is not always sufficient merely to rely on the
15 in-wiping action of wiping fingers to ensure that the
upper is properly bedded to the last, nor it is
necessarily sufficient merely to press the upper against
the last without any drafting force being first applied.
On the other hand, the use of wiping fingers or similar
20 lasting elements is advantageous in ensuring a sharp
feather edge on the finished shoe and also an adequate
bedding down of the lasting marginal portions on to
corresponding marginal portions of the insole, so that the
mere application of an updrafting force does not in itself
25 necessary provide a good result in the finished shoe.
Furthermore, it is desirable that clamp pads be provided
so that a controlled drafting force can be applied to
the upper, thus ensuring that any displacement of the up-
per does not lead to its being badly positioned on the
30 last prior to the waist lasting operation.

It is thus the object of the present invention
to provide a machine for lasting side portions of shoes,
wherein the upper is properly conformed to the last,
regardless of the shape of the latter in the waist region,
35 by the application of a controlled drafting force, and
also in the operation of which lasting marginal portions
of the upper are wiped over corresponding marginal portions

5.

1 of the insole and pressed thereagainst using conventional lasting elements.

5 This object is resolved in accordance with the invention, in a shoe upper conforming machine as set out in the second paragraph of this specification, in that the or each upper-engaging band portion is held by the clamp member(s), in the operation of the machine, against the upper positioned on its last under a pressure which does not prevent movement of the upper-engaging band portion(s) relative to the clamp member(s) but which is sufficient to cause such movement of said portion(s) to apply a drafting force to the portion of the upper engaged thereby, and in that the or each band portion of each side lasting assembly is connected at one end to the lasting elements of said assembly, inward movement of the lasting elements towards the last support as aforesaid thus being effective to cause movement of said band portion(s) to take place relative to the clamp member(s) whereby, in the operation of the machine, a drafting force is applied to the upper by said portion(s) heightwise of the last in the direction of the feather line of the shoe.

15 It will thus be appreciated that, using a machine in accordance with the invention, the lasting elements are utilised to apply a controlled drafting force to the upper through the upper-engaging band portion(s), the control being specifically achieved by the action of the clamp member(s) acting on the band portion(s).

25 Desirably, the upper-engaging surface of the or each upper-engaging band portion is such as to cause the upper to be frictionally engaged thereby, thus to apply a drafting force to the upper as aforesaid and at least one of the opposite surface of the or each band portion and the surface of the or each clamp member engaging such opposite surface is a low-friction surface. Thus, for example, the aforementioned surface of the or each clamp member may be of polytetrafluoroethylene. Conveniently,

1 furthermore, the or each upper-engaging band portion may
be made of a laminated sheet material having a first layer
which comprises the upper-engaging surface and which
provides sufficient friction to apply a drafting force to
5 the upper engaged thereby, and a second layer which com-
prises a low-friction surface which is engaged by the
clamping member(s).

In order further to ensure that the drafting
force applied by the band portion(s) is controlled,
10 desirably the sheet material from which the or each
portion is made has a modulus not less than 850 p.s.i. at
100% elongation (as per the ASTM test procedure).

The holding pressure applied by the clamp
member(s) to the upper-engaging band portion(s) is
15 preferably of the order of 1.4 kgf/sq. cm. (20 lbs/sq.
in.). Furthermore, preferably the or each clamp member
is mounted for pivotal movement about an axis extending
heightwise of the last. Where the clamping means comprises
a plurality of clamp members, desirably the position of
20 each such axis in relation to its clamp member, and also
the cross-sectional shape, viewed along said axis, of
each clamp member, are such as to enable the clamp members
to pivot without adjacent members binding on one another.

For effecting movement of the clamp member(s)
25 towards the last support as aforesaid, preferably fluid
pressure operated means is provided. In addition,
preferably locking means, e.g. a bar lock arrangement
associated with the or each clamp member, is also
provided for locking the clamp member(s) in position
30 after having been moved towards the last support to
hold the upper-engaging band portion(s) as aforesaid.

The machine in accordance with the invention is
preferably constructed and arranged in such a manner that
operation of the fluid pressure operated means is also
35 effective to cause inward movement of the lasting elements
to take place, further fluid pressure operated means
also being provided for effecting further inward movement

7.

1 of the lasting elements, when the or each clamp member
is holding the upper-engaging band portion(s) against
the upper as aforesaid. Conveniently, such further
inward movement of the lasting elements is through a
5 predetermined distance. Furthermore, conveniently in
the operation of the machine, after lasting marginal
portions of the upper have been wiped over corresponding
marginal portions of the insole as aforesaid under the
action of the lasting element means, said locking means
10 is operated to cause the clamp member(s) of each side
lasting assembly to be released, viz. when bedding
pressure is applied through the lasting elements to such
marginal portions.

In conventional machines which utilise lasting
15 elements in the form of wiping fingers, it is usual to
set each lasting element heightwise of the last support,
so that, in effecting an in-wiping action on the shoe
bottom, each such element engages the shoe just below the
feather line and rides up over said line, in this way
20 achieving a desired in-wiping drafting force. This
feature can be dispensed with in the machine in
accordance with the invention, and to this end preferably
each lasting element is movable not only inwardly towards
the last support as aforesaid, but also heightwise there-
25 of between a first condition, in which a pressure-apply-
ing surface thereof is spaced from the shoe bottom, and
a second condition, in which, in the operation of the
machine, said element is in pressing engagement with the
shoe bottom, the arrangement being such that, as each
30 element is moved inwardly towards the last support as
aforesaid, it is also moved from its first to its second
condition, whereby the or each band portion is caused to
be drawn around the feather edge of the shoe bottom, thus
effecting a drafting force on the upper prior to the
35 lasting marginal portion of the upper engaged thereby
being pressed against corresponding marginal portions of
the insole.

1 In accordance with the invention various
arrangements of band portions and lasting elements may
be contemplated. Thus, a single band portion may be used
in combination with a plurality of lasting elements.
5 Alternatively, the lasting band means of each side last-
ing assembly may comprise a plurality of band portions,
one associated with each lasting element, and in such
case, furthermore, the lasting elements may be mounted
in pairs and each pair have one clamp member associated
10 therewith, each clamp member thus being arranged to hold
two band portions in pressing engagement with the upper
as aforesaid. Again with such an arrangement of lasting
elements and clamp members, each pair of lasting elements
may have one band portion associated therewith.

15 There now follows a detailed description, to be
read with reference to the accompanying drawings, of one
machine in accordance with the invention, this machine
having been selected for description merely by way of
exemplification of the invention and not by way of
20 limitation thereof.

 In the accompanying drawings:-

 Figure 1 is a front perspective view of the
machine in accordance with the invention; and

 Figure 2 is a view in front elevation, showing
25 details of a left-hand side lasting assembly of said
machine.

 The machine in accordance with the invention
now to be described is a combined heel seat and side
lasting machine comprising a last support 10 on which a
30 last can be supported, bottom uppermost, with an insole
I located on the bottom thereof and a shoe upper U
positioned thereon. The machine further comprises heel
seat wiping instrumentalities 12 and a heel band 14, and
also two side lasting assemblies generally designated 16,
35 arranged forwardly of the heel seat lasting instrument-
alities, one at either side of the last support 10. The
side lasting assemblies are mirror-opposites of one

1 another and the left hand assembly will be now described
with reference to Figure 2.

5 The side lasting assembly 16 comprises a sub-
frame 18 carried on a forwardly extending plate 20 mounted
on a main machine frame 22 by pin-and-slot connections
whereby the side lasting assembly 16 can pivot bodily about
an axis extending transversely of the machine through a
leading edge of the heel seat wipers 12 when in their
advanced condition. For pivoting the sub-frame, a handle
10 30 is provided on the front thereof.

Forming part of the sub-frame 18 is a block 32
which accommodates four push-rods 34 for sliding movement
in a direction transversely of the bottom of a last
carried by the last support 10, said rods being arranged
15 side-by-side in the block 32. Fixedly supported at
the end, near the last support 10, of each push-rod 34
is a block 36 carrying a pivot pin 38 which extends fore-
and-aft of the machine and on which two levers 40 are
supported for pivotal movement. Each lever 40 supports
20 a further pivot pin 42, extending transversely of the
machine, and carrying an arm 44 on which a lasting element
46 is supported by a pivot pin 48, the axis of which
extends fore-and-aft of the machine. Each side lasting
assembly 16 thus comprises eight such lasting elements.
25 A spring 50 urges the lasting element downwardly about
the pin 48 (anti-clockwise, viewing Figure 2). The last-
ing element 46 has a flat pressure-applying surface 52,
while the end of said element facing the last support 10
is rounded at its top and bottom.

30 It will be appreciated that each block 36 carries
a pair of lasting elements 44, each element being
independently pivotable therein about its own pin 42.
Furthermore, it is to be noted that, when the pressure-
applying surface 52 is horizontal, the axis of the pin 42
35 lies in the plane of said surface.

For urging each lever 40 about its pin 38,
furthermore, four piston-and-cylinder arrangements 66 are

1 provided, each acting on two associated levers 40 and each
being carried by a bracket 68 carried on a mounting 70
secured to a rearward end of its associated push-rod 34.
In each pair of levers 40 one is shorter than the other
5 and there is provided, pivotally connected to the shorter
lever and connected by a pin-and-slot connection to the
longer lever, a link 92 itself connected by a pin-and-
slot connection to a piston rod 90 of its associated
piston-and-cylinder arrangement 66. In this manner, the
10 levers 40 can be pivoted about the pin 38 independently
of one another using a single piston-and-cylinder arrange-
ment. The amount of movement in a clockwise direction of
each lever is determined by a stop pin 94 carried by the
bracket 68.

15 Mounted in the block 32, one beneath each of
the push-rods 34, are four further push-rods 80. At the
end, nearer the last support 10, of each push-rod 80 is
secured a plate 78 to which is in turn secured a C-shaped
bracket 74 between the arms of which is secured a pivot
20 pin 136, on which is freely pivotable a clamp pad 72, each
pad thus being associated with a pair of lasting elements
46. The clamp pad 72 is of a polyurethane material having
a Shore A hardness of 70. The position of the pin 136 and
the cross-sectional shape, viewed in plan, of each pad 72
25 is such that pivoting movement of each pad can take place,
independently of the other pads, without adjacent pads
binding on one another.

Also mounted adjacent said end of each push-rod
80 is a block 96 which is connected to a piston rod 82 of
30 a piston-and-cylinder arrangement 84, there being four
such arrangements 84 each pivotally mounted on the sub-
frame 18. Furthermore, each block 96 is arranged to be
in engagement, in the rest condition of the machine, with
a face of a depending portion of its associated block 36.
35 Thus, when each piston-and-cylinder arrangement 84 is
operated, the push-rod 80 associated therewith is moved
inwardly to move the clamp pad 72 inwardly towards the

1 last support and, by engagement of the block 96 with the
block 36, the pair of wiping elements 46 associated with
said pad is moved inwardly also.

At the end of the inward movement of each clamp
5 pad 72, locking means is actuated to lock the push-rod 80
in position, said locking means comprising an apertured
plate 98 through a restricted aperture 100 of which passes
the push-rod 80 (and through a larger aperture 102 of
10 which passes the push-rod 34). Each plate 98 is pivoted
at 104 on a lug of the block 32 and is urged by a spring
106 into a locking position in which the aperture 100 binds
on the push-rod 80 in the manner of a bar lock. For
releasing the lock, a bar 108 is mounted for pivotal move-
ment on lugs of the block 32, said bar carrying four
15 adjustable stop screws 110 each of which can engage with
one of the plates 98. For pivoting the bar 108 a piston-
and-cylinder arrangement 112 is mounted on the block 32
and acts through a link 114 connecting the piston rod 116
thereof with said bar.

20 Carried on a depending portion of each block 96
is a bracket 118 supporting a piston-and-cylinder arrange-
ment 56 a piston rod 58 of which is pivotally connected
to a lever 60 pivoted, intermediate its length, on a rear-
ward end of its associated push-rod 80, and connected by
25 a pin-and-slot connection at its other end to the mounting
70 on the rearward end of its associated push-rod 34, for
purposes to be hereinafter described.

The machine in accordance with the invention al-
-so comprises lasting band means comprising a plurality
30 of bands 128, one associated with each lasting element 46.
The bands are connected by clamp plates 130 to upper sur-
faces of the arms 44 by which the lasting elements 46
associated with the bands are carried, and each band
extends over the inwardly facing end face of its associated
35 lasting element 46. The bands also extend, in pairs,
side-by-side over the inwardly facing face of the clamp
pad 72 associated therewith. The lower end of each band

1 is connected by springs 132 to a bracket 134 mounted on
the lower end of the plate 78. The springs 132 merely
serve to control the lower end of the bands but do not
affect the function of the bands, to be hereinafter
5 described.

In the operation of the machine, when in a rest
condition the lasting elements, under the action of their
associated cylinders 66, are in a first, raised, condition
in which they are spaced above the plane of the last
10 bottom; in addition, the lasting elements and the clamp
pads 72, are in a retracted position (see Figure 2). When
a shoe to be operated upon has been placed on the last
support 10, piston-and-cylinder arrangements 84 are
actuated to cause the clamp pads, and thus the lasting
15 elements 46 therewith, to be moved inwardly towards the
last support until the clamp pads, independently of one
another, are pressing their associated bands 128 into
contact with the shoe upper. As the clamp pads are moved
into pressing engagement with the bands as aforesaid, they
20 are free to pivot, independently of one another, each
about the axis of its pin 136, so that the surface of
each pad, through which surface pressure is applied as
aforesaid, engages, over substantially the whole of its
width, its associated bands. The pressure applied by the
25 pads is in the order of 1.4 kgf/sq. cm. (20 lbs./sq. in.).
In this position, piston-and-cylinder arrangement 112 is
de-actuated and the bar lock is applied, the clamp pads
now being locked in said position. At this stage, the
lasting elements 46 are still in their first, raised,
30 condition. Thereafter, piston-and-cylinder arrangements
56 are actuated whereupon, through their associated levers
60, the pivots of which on the push-rods 80 are now
stationary, the push-rods 34, and thus the lasting
elements 46, are moved inwardly relative to the clamp pads,
35 and at the same time piston-and-cylinder arrangements 66
are actuated to cause the lasting elements 46 to be moved
downwardly to a second, operative, condition in which the

1 pressure-applying surface 52 of each element 46 can engage
the shoe through its associated band 128. The inward
movement of the elements 46 under the action of the
cylinder 56 is limited by engagement of the forward face
5 of the block 36 with the plate 78; the distance through
which the elements 46 can move inwardly relative to the
pads 72, is of the order of 50 mm.

The effect of the inward and downward movement
of the lasting elements 46 is to cause the bands 128
10 associated therewith to be drawn relative to the pads 72
heightwise of the last and about the feather line region
thereof. To this end, the pressure applied by the pads
is sufficient to hold the bands in pressing engagement
with the upper while allowing such slippage to take
15 place, and further the surface of each band engaging the
upper is such that it can apply a frictional drafting
force to the upper while the surface of the pad 72 is
coated with a low-friction coating, e.g. polytetrafluoro-
ethylene, so that the band can readily slip relative
20 thereto.

Also during the inward and downward movement
of the lasting elements 46, because of the action of the
springs 50 in urging the elements anti-clockwise (viewing
Figure 2) about the pins 48, the pressure-applying sur-
25 face 52 of each element is brought into early engagement,
along its length, with the feather edge of the shoe
bottom, through its associated lasting band, and after
such engagement is progressively caused to pivot in a
clockwise direction (viewing Figure 2) about its pin 48
30 until it reaches its second condition in which it overlays
the lasting marginal portion of the upper and serves to
press them against corresponding marginal portions of the
insole. This progressive action of each lasting element
46 has an "ironing" effect on the marginal portions of
35 the upper.

It will be appreciated that the material of the
lasting bands 128 should not be significantly stretchy for

1 this function, while being relatively flexible so as to
conform to the shape of the shoe being operated upon.
It has been found that a suitable material is a poly-
urethane having a Shore A hardness in the range 70 to 90
5 and a modulus not less than 850 p.s.i. at 100% elonga-
tion (as per the ASTM test procedure). Furthermore, each
band has a thickness in the range 1.5 to 3.0 mm. (1/16
to 1/8 ins.).

When all the lasting elements 46 have reached
10 their second condition, and are in pressing engagement
with the shoe bottom, a bedding pressure can be applied
thereby to the wiped-over lasting marginal portions of
the upper, and to this end the fluid pressure control
circuit of the machine is arranged so that the piston-
15 and-cylinder arrangements 66 can be supplied with pres-
sure fluid at two different pressures. Furthermore, when
bedding pressure is applied, the piston-and-cylinder
arrangement 112 of each assembly is again actuated, there-
by releasing the bar lock arrangement against the action
20 of the springs 106, whereupon the action of the piston-
and-cylinder arrangements 56 is effective to cause the
levers 60 to pivot about their pin-and-slot connection
with the mountings 70 to cause a small withdrawal move-
ment of the push-rods 80 away from the last support, and
25 thus of the clamp members 72, thereby discontinuing their
pressing of the bands against the upper. In this way,
the bands 128 and clamp members 72 do not interfere with
the application of bedding pressure to the shoe bottom.

The machine in accordance with the invention
30 may also comprise selector means (not shown) whereby any
one pair of lasting elements 46 can be rendered in-
operative.

1 Claims:

1 1. Machine for lasting side portions of shoe
uppers comprising a support for a shoe last on which an
5 upper, the side portions of which are to be lasted, and
an insole are positioned, and two side lasting assemblies
arranged so as to act on opposite side portions of an
upper positioned on a last supported by said support,
wherein each side lasting assembly comprises clamping
10 means, comprising at least one clamp member, movable
towards the last support to cause a side portion of the
upper to be held against the last, on which it is
positioned and which is supported by the last support,
at a locality spaced from the feather line thereof,
15 lasting element means, comprising a plurality of lasting
elements arranged side-by-side and movable inwardly to-
wards the last support so as to cause lasting marginal
portions of the side portion of the upper to be wiped
over corresponding marginal portions of the insole and
20 be pressed thereagainst, and lasting band means com-
prising at least one upper-engaging band portion of
flexible sheet material arranged to be interposed between
the shoe upper on the one hand and the lasting elements
and the clamp member(s) on the other, characterised in
25 that the or each upper-engaging band portion (128) is
held by the clamp member(s) (72), in the operation of
the machine, against the upper positioned on its last
under a pressure which does not prevent movement of the
upper-engaging band portion(s) (128) relative to the
30 clamp member(s) (72) but which is sufficient to cause such
movement of said portion(s) (128) to apply a drafting
force to the portion of the upper engaged thereby, and
in that the or each band portion (128) of each side
lasting assembly (16) is connected at one end to the
35 lasting elements (46) of said assembly (16), inward
movement of the lasting elements (46) towards the last
support (10) as aforesaid thus being effective to cause

1 movement of said band portion(s) (128) to take place
relative to the clamp member(s) (72) whereby, in the
operation of the machine, a drafting force is applied to
the upper by said portion(s) (128) heightwise of the
5 last in the direction of the feather line of the shoe.

2. Machine according to Claim 1 characterised
in that the upper-engaging surface of the or each upper-
engaging band portion (128) is such as to cause the
10 upper to be frictionally engaged thereby, thus to apply
a drafting force to the upper as aforesaid, and further
in that at least one of the opposite surface of the or
each band portion (128) and the surface of the or each
clamp member (72) engaging such opposite surface is a
15 low-friction surface.

3. Machine according to Claim 2 characterised
in that the or each upper-engaging band portion (128) is
made of a laminated sheet material having a first layer
20 which comprises the upper-engaging surface and which
provides sufficient friction to apply a drafting force
to the upper engaged thereby, and a second layer which
comprises a low-friction surface which is engaged by the
clamp member(s) (72).

25 4. Machine according to any one of the
preceding Claims characterised in that the holding
pressure applied by the clamp member(s) (72) to the
upper-engaging band portion(s) (128) is of the order of
30 1.4 kgf/sq. cm. (20 lbs./sq. in.).

5. Machine according to any one of the
preceding Claims characterised in that the or each clamp
member (72) is mounted for pivotal movement about an axis
35 (136) extending heightwise of the last.

6. Machine according to Claim 5 characterised

1 in that the clamping means comprises a plurality of
clamp members and in that the position of each said
axis (136) in relation to its clamp member (72), and
also the cross-sectional shape, viewed along said axis
5 (136), of each clamp member (72), are such as to enable
the clamp members (72) to pivot without adjacent members
(72) binding on one another.

7. Machine according to any one of the
10 preceding Claims wherein fluid pressure operated means is
provided for effecting movement of the clamp member(s)
inwardly towards the last support as aforesaid,
operation of said means also being effective to cause
inward movement of the lasting elements therewith, and
15 wherein locking means is provided for locking the clamp
member(s) in such position, after having been moved to
hold the band portion(s) as aforesaid, further fluid
pressure operated means then being effective to cause
further inward movement of the lasting elements whereby
20 to cause lasting marginal portions of the upper to be
wiped over and pressed against corresponding marginal
portions of the insole, characterised in that said
locking means (98, 100, 104, 106) is operated to cause
the clamp member(s) (72) to be released, when bedding
25 pressure is applied through the lasting elements (46) to
the wiped-over lasting marginal portions of the upper.

8. Machine according to any one of the
preceding Claims wherein each lasting element is also
30 movable heightwise of the last support between a first
condition, in which a pressure-applying surface thereof
is spaced from the shoe bottom, and a second condition,
in which, in the operation of the machine, said element
is in pressing engagement with the shoe bottom,
35 characterised in that, as each element (46) is moved to-
wards the last support (10) as aforesaid, it is also
moved from its first to its second condition, whereby the

1 or each band portion (168) is caused to be drawn around
the feather edge of the shoe bottom, thus effecting a
drafting force on the upper prior to the lasting marginal
portions of the upper engaged thereby being pressed
5 against corresponding marginal portions of the insole.

9. Machine according to any one of the
preceding Claims characterised in that the lasting band
means (128) of each side lasting assembly (16) comprises
10 a plurality of band portions (128), one associated with
each lasting element (46).

10. Machine according to any one of Claims 1
to 8 characterised in that the lasting elements (46) of
15 the lasting element means are arranged in pairs, each
pair having associated therewith a clamp member (72), and
one band portion of the lasting band means being
associated with each pair of lasting elements (46).

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