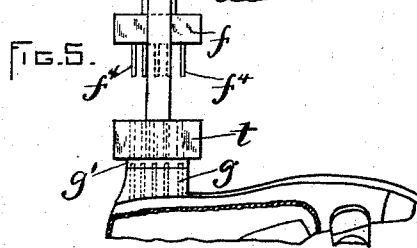
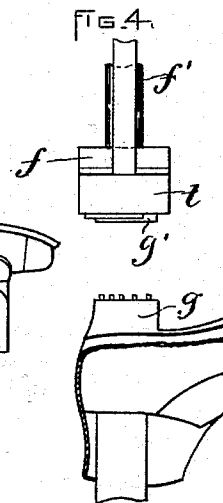
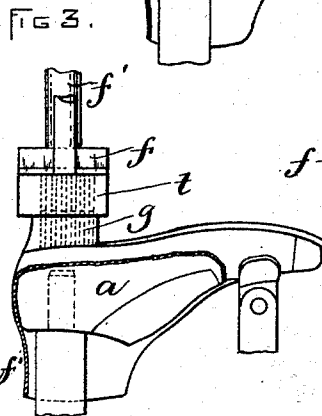
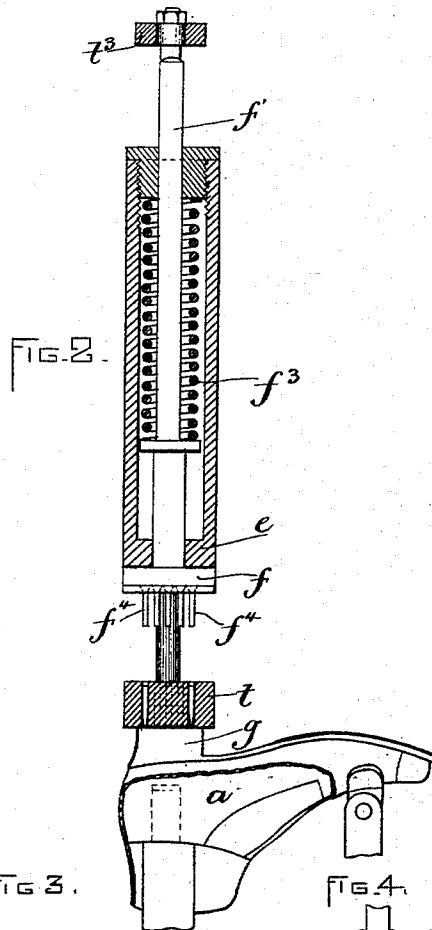
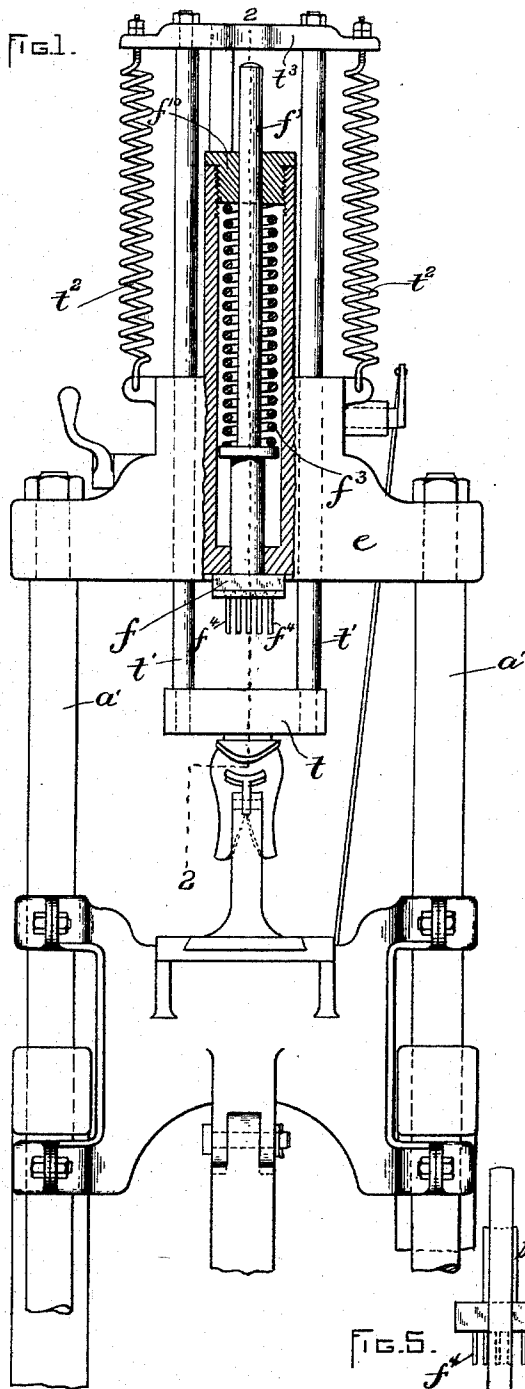


(No Model.)

H. A. WEBSTER.
METHOD OF ATTACHING HEELS TO BOOTS OR SHOES.

No. 483,293.

Patented Sept. 27, 1892.



WITNESSES:
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UNITED STATES PATENT OFFICE.

HAROLD A. WEBSTER, OF HAVERHILL, ASSIGNOR TO JAMES W. BROOKS,
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METHOD OF ATTACHING HEELS TO BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 483,293, dated September 27, 1892.

Application filed April 4, 1892. Serial No. 427,628. (No model.)

To all whom it may concern:

Be it known that I, HAROLD A. WEBSTER, of Haverhill, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Methods of Attaching Heels to Boots or Shoes, of which the following is a specification.

This invention has for its object to enable a heel to be attached to a boot or shoe through the instrumentality of a heeling-machine while the boot or shoe is on the wooden last on which it was made without liability of injuring or crushing the said last by the force used in driving the heel-attaching nails.

The invention consists in the hereinafter-described improvement in attaching heels to boots or shoes, the same consisting in alternately storing up an elastic force and distributing and expending said force percussively on the gang of attaching-nails in the direction required to simultaneously drive said nails, so that after the nails have been driven and have become rigid parts of the heel there will be no severe or crushing strain upon the shoe-support, as I will now proceed to describe.

Of the accompanying drawings, forming part of this specification, Figure 1 represents a front elevation of a portion of a heel-attaching machine by which my improved method may be practiced. Fig. 2 represents a section on line 2-2, Fig. 1, showing the hammer or device for yieldingly driving the nail in its raised position preparatory to the attaching operation. Fig. 3 represents a side view showing the hammer in the position it occupies when it has driven the nails. Fig. 4 represents a side view showing the templet which holds the nails in position to be driven into the heel raised after the driving operation and provided with a top lift preparatory to spanking the same onto the nailed heel. Fig. 5 represents a side elevation showing the said templet in the position it occupies when it has spanked the top lift onto the heel.

The same letters of reference indicate the same parts in all the figures.

In carrying out my invention I employ any suitably-organized heel-nailing machine having a support or supports for a wooden last a , and a hammer f , which is adapted to strike a

yielding blow, and thereby drive all the nails in a heel g simultaneously home.

I use the term "hammer" to designate any device which is adapted to simultaneously drive a gang or group of nails, and I intend by this term to designate the group or gang of drivers f^4 , which are shown in the drawings as affixed to and projecting downwardly from the block f , which constitutes the body of the hammer.

In all cases when the nails are driven into the heel by the power of the heeling-machine the drivers f^4 will be essential parts of the hammer; but in case the heel has been previously loaded and charged with nails driven substantially through the entire thickness of the heel by a previous or independent process a hammer without drivers would be employed.

In the drawings I have shown the hammer f as affixed to the lower ends of a guide-rod f' , which is adapted to slide in a fixed cross-head e , attached to fixed supporting-uprights $a'a'$. The hammer f is arranged so that when depressed it will act upon the heel g , which has previously been placed in position upon heel-seat of a boot or shoe on the last a . In the present case I show as the means for operating the hammer f a spring f^3 , bearing at its lower end on a collar affixed to the rod f' , and at its upper end on a fixed plug f^{10} , rigidly attached to the cross-head e , said spring being so arranged that when the hammer f and the rod f' are raised, as shown in Figs. 1 and 2, the spring will be put under increased tension, so that when it is permitted to act it will drive the hammer against the heel with sufficient force to properly engage all the nails with the sole or heel-seat of the boot or shoe. The hammer may be held in its raised position against the stress of the spring f^3 by means of a latch or detent adapted to engage a suitable fixed support, suitable means being provided to displace said latch or detent and remove it from its engagement with the support, so that the spring will be permitted to act in driving the hammer.

The nails that are simultaneously driven by the drivers f^4 may be held in position for the action of said drivers by means of a templet

t , which is adapted to move vertically and is interposed between the hammer and the heel. Said templet has a series of nail-holes coinciding with the drivers f^4 . Said holes may be charged with nails by the use of any suitably-constructed loading device adapted to drop a charge of nails simultaneously into the nail-holes of the templet while the latter is in place on the heel, as shown in Fig. 2. The templet is here shown as secured to vertical rods t' , adapted to slide in the fixed cross-head e at opposite sides of the guide-rod f' . Springs t^2 t^3 are provided to depress the templet t and cause it to strike the heel g with a yielding blow, said springs being attached at their lower ends to ears on the cross-head e and at their upper ends to a cross-bar t^3 , affixed to the upper ends of the rods t' t' . The templet may be held in a raised position, as shown in Fig. 4, by means of detent devices similar to those described for holding the hammer f . In case it is desired to use the templet as a means for spanking on the top lift, as hereinafter described, the under side of the templet may be provided with top-lift-holding devices of any suitable construction.

Operation: Supposing the boot or shoe to be in place on a wooden last a and the latter supported by the last-supports, with which the machine is provided, the heel g is then properly located on the boot or shoe and the templet t is brought to bear upon the heel, as shown in Figs. 1 and 2. The templet may be then loaded with nails, the hammer f being at this time held in its raised position. The hammer is now released and caused by the spring f^3 to descend and cause the drivers to give a quick yielding blow upon the nails and simultaneously drive the entire charge into the heel and clinch the same upon the metal bottom plate, with which the last is provided, the position of the hammer when the nails have been driven being indicated in Fig. 3. The hammer and templet may be now raised together, as shown in Fig. 4, and held in an elevated position until a top lift g' has been applied to the under side of the templet, as shown in Fig. 4. The templet may now be released and caused by its springs t^2 to descend and yieldingly spank the top lift upon the projecting ends of the nails in the heel g , the yielding blow of the templet also serving to compress the heel to some extent. It is found that by thus driving all the nails simultaneously home by a yielding blow the injurious or crushing strain upon the last is so reduced that it is feasible to nail heels upon wooden lasts, the expense involved in the wear and injury to the lasts being less than that involved in removing the boots or shoes from the lasts on which they are made and placing them upon a metallic last or work support—an operation which has heretofore been necessary on account of the impracticability of using wooden lasts in a heel-ing-machine.

It is obvious that the templet t may be depressed by the action of the hammer-depressing spring f^3 , instead of by an independent spring t^2 , in which case the hammer and templet would be released together preparatory to spanking on the top lift, the spring f^3 acting on the templet through the hammer.

It will be understood that when the heel is to be provided with a blind-nailed top lift the drivers f^4 will be made of such length that they will not drive the nails entirely into the heel, but will leave the ends of the nails projecting sufficiently to engage the holes in the top lift; but if the heel is to be flush-nailed the drivers will be made longer, so that they will drive the nails flush with the top surface of the heel.

In case the heel has been loaded with nails by a previous operation, the nails being driven substantially through the heel, or possibly a little more, the templet t will not be required and the hammer f may be used without the drivers f^4 .

The force of the hammer-impelling spring or springs is expended in driving the nails, so that said force practically ceases when the nails have been driven home, and their independent motion in or through the heel and sole is arrested by the surface that clinches their points. The action of a spring on a hammer or gang of drivers, in the manner described, in its effort to regain its normal condition of pressure after being put under increased pressure is peculiar to a spring, because the movement imparted to the hammer is so quick that the nails are driven or partially driven before the inertia of the heel can be overcome sufficiently to impart the full force of the spring through the heel to the last, and also because the force is yielding and is absorbed in driving the nail, so that when the nails become fixed parts of the heel and can no longer move independently in or through the heel no injurious or crushing force is exerted by the spring through the hammer and nails on the last.

I am aware that it has been proposed to drive nails by the action of compressed air on a piston connected with a gang of drivers; also, that it has been proposed to drive nails by the pressure of the atmosphere on one side of a piston similarly connected, the air being exhausted from the opposite side of the piston. I do not find, however, in such propositions an equivalent of the action of a spring or springs on a hammer or gang of drivers, because the air-pressure is practically constant and unvarying, so that after the nails have been driven and have become fixed parts of the heel practically the same force is exerted through the nails on the last that was exerted in driving the nails, there being no such absorption or expenditure of force as there is in the use of a spring. It is true that the force or pressure exerted by compressed air on a piston is somewhat yield-

ing in consequence of the elasticity of the air; but the fact remains that the force is constantly and uniformly exerted as well after the nails have been driven as during the driving operation.

I claim—

1. That improvement in the art of attaching heels to boots or shoes which consists in exerting simultaneously on a gang of attaching-nails a percussive yielding pressure the force of which is absorbed in driving the nails, as set forth.

2. That improvement in the art of attaching heels to boots or shoes which consists in alternately storing up an elastic force and distributing and expending said force percussively on the gang of attaching-nails in

the direction required to simultaneously drive said nails, as set forth.

3. That improvement in attaching heels to boots or shoes which consists in first securing the heel-blank by driving all the attaching-nails simultaneously with a percussive yielding blow and then spanking on the top lift with a yielding blow, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 28th day of March, A. D. 1892.

HAROLD A. WEBSTER.

Witnesses:

HADLEY P. FAIRFIELD,
C. F. BROWN.