

J. E. JACKSON.

MACHINE FOR LASTING BOOTS AND SHOES.

APPLICATION FILED MAR. 31, 1899. RENEWED NOV. 21, 1903.

985,348.

Patented Feb. 28, 1911.

6 SHEETS—SHEET 1.

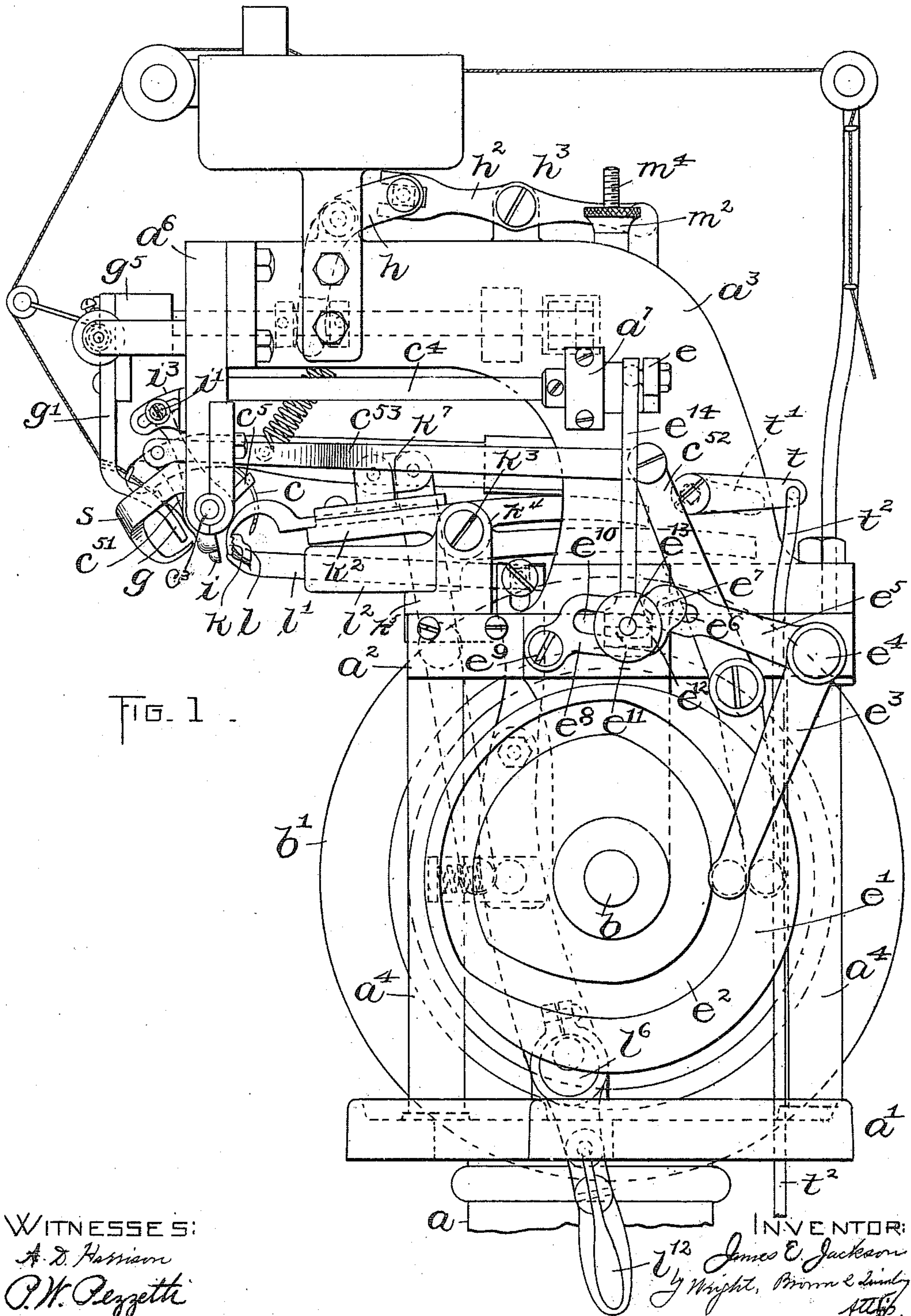


FIG. 1.

WITNESSES:
A. D. Harrison
C. W. Pezzetti

INVENTOR:
James E. Jackson
By Wright, Brown & Smith
Attys.

J. E. JACKSON.

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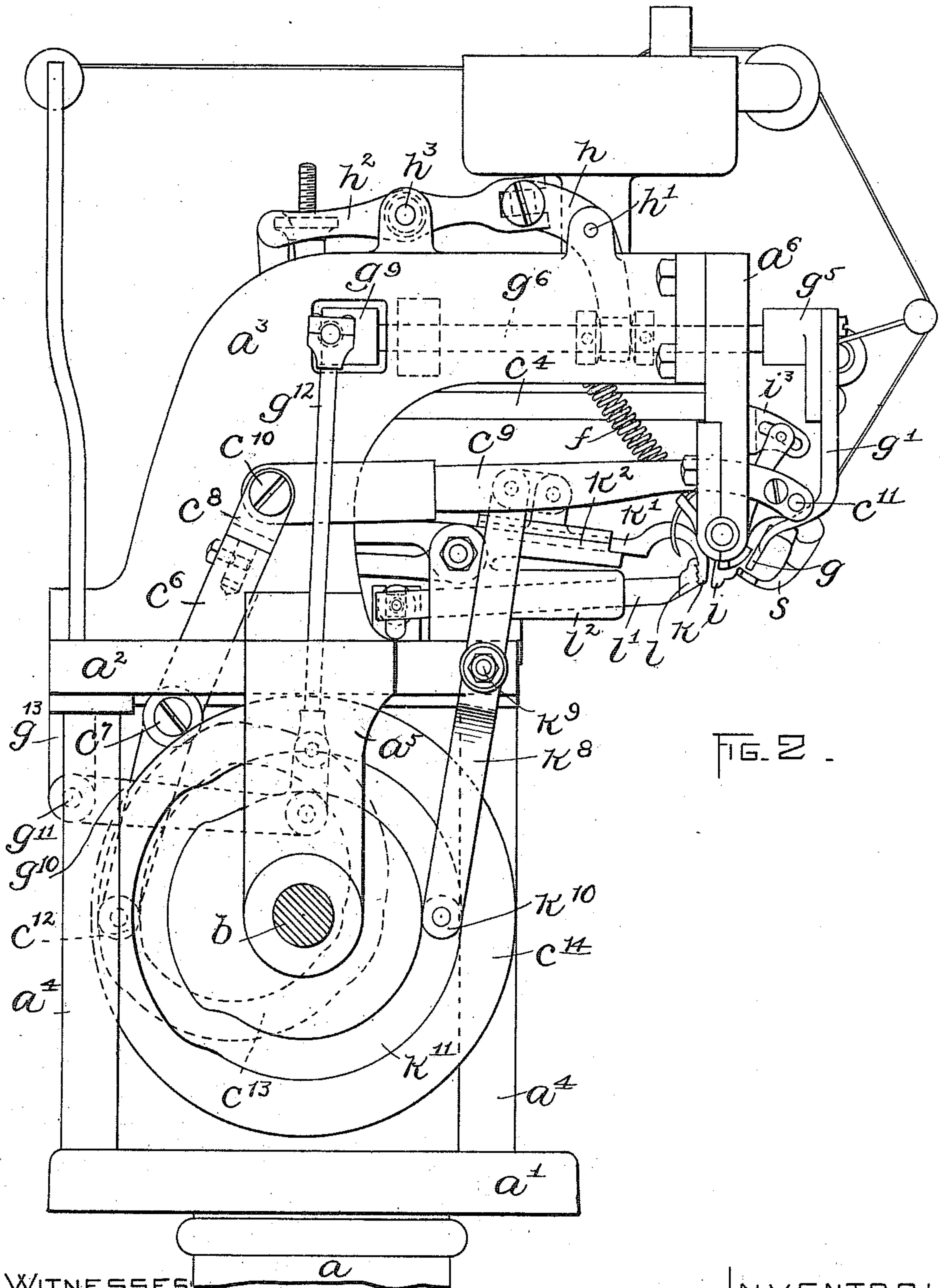


FIG. 2.

WITNESSES

A. D. Harrison

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INVENTOR:

James E. Jackson

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J. E. JACKSON.

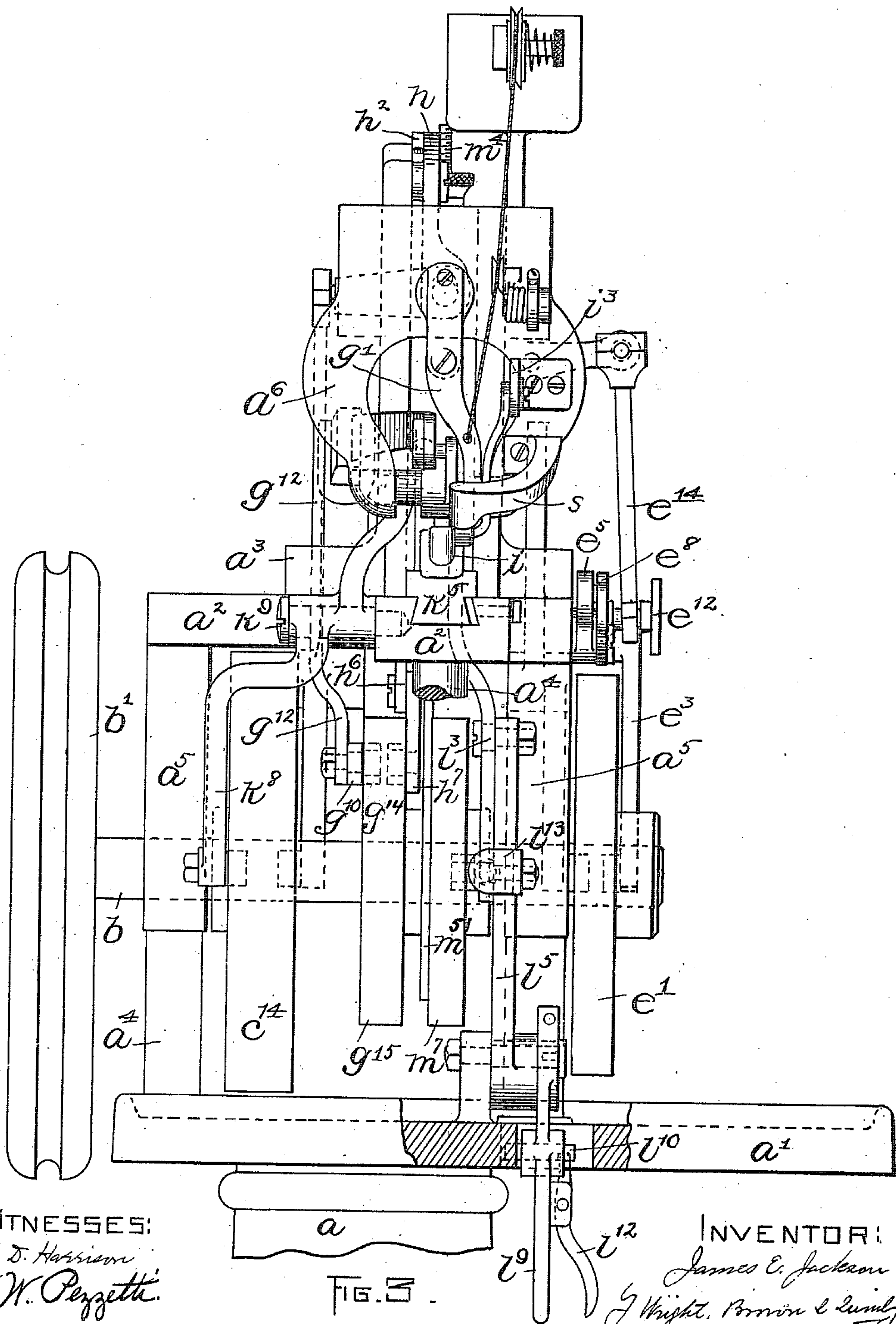
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6 SHEETS—SHEET 3.



WITNESSES:

A. D. Harrison

O. W. Perzeth

FIG. 3.

INVENTOR:

James E. Jackson

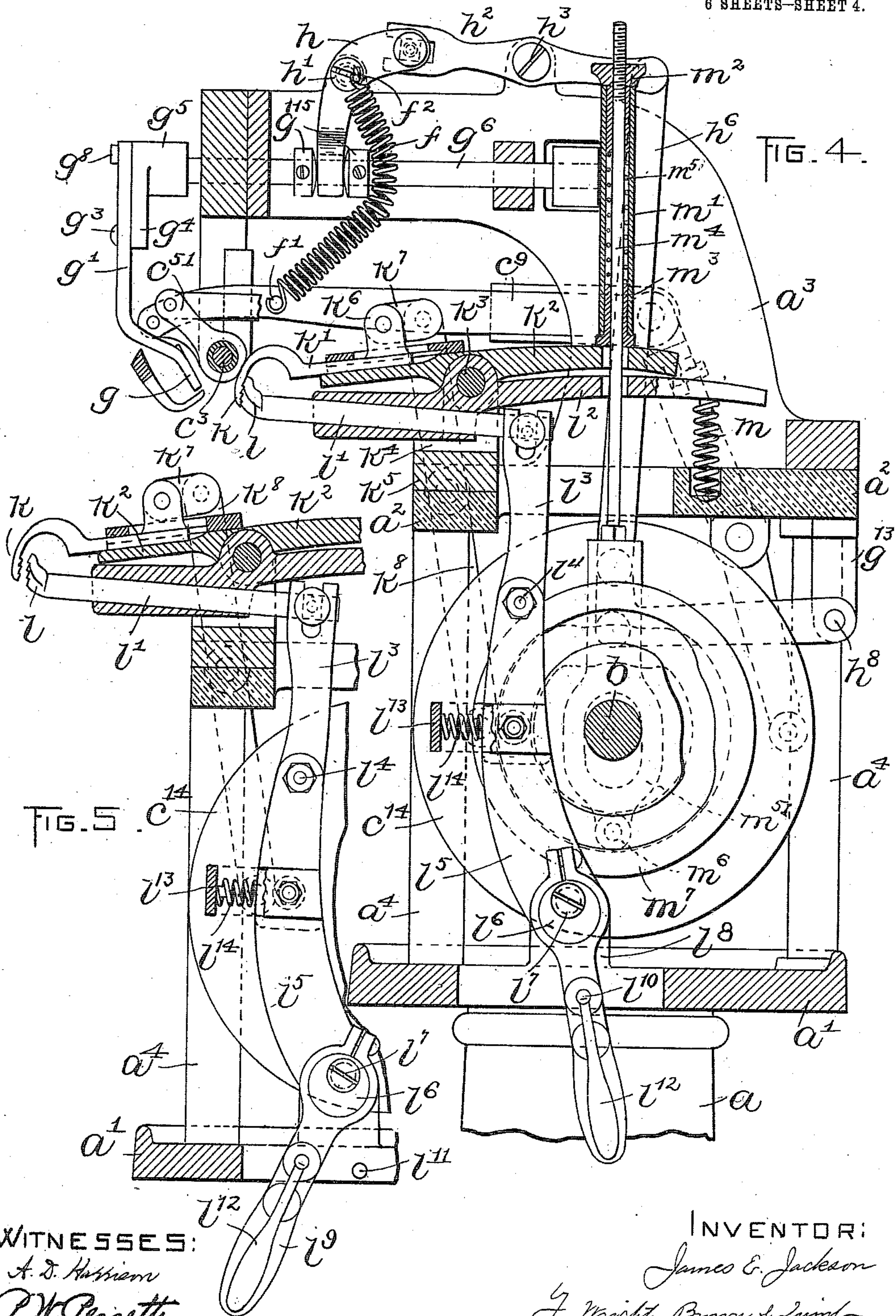
J. Wright, Barron & Lumley
Attys.

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6 SHEETS—SHEET 4.



WITNESSES:

A. D. Harrison
P. W. Pezzetta

INVENTOR:

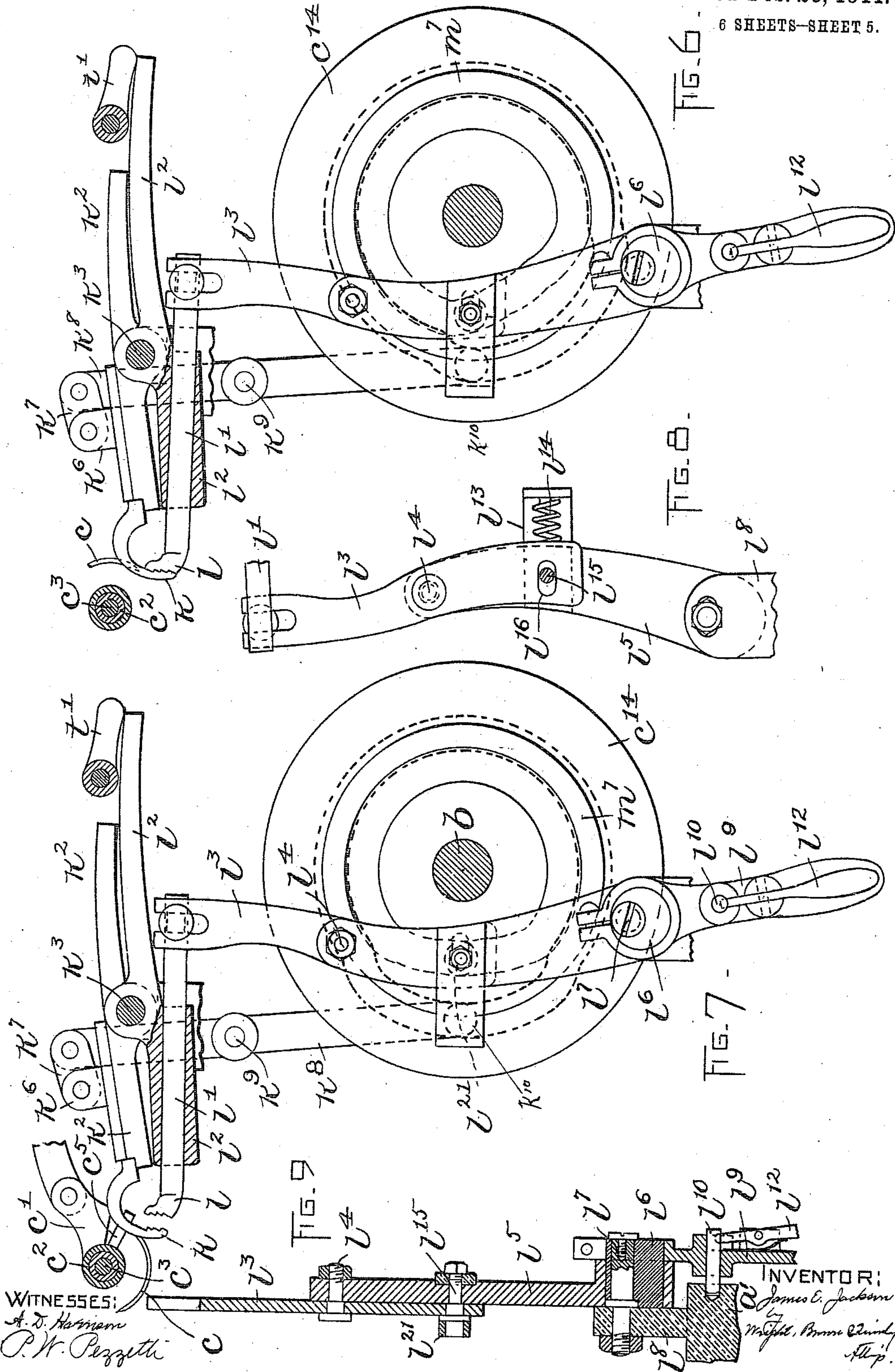
James E. Jackson
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6 SHEETS-SHEET 5.



MACHINE FOR LASTING BOOTS AND SHOES.

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6 SHEETS—SHEET 6.

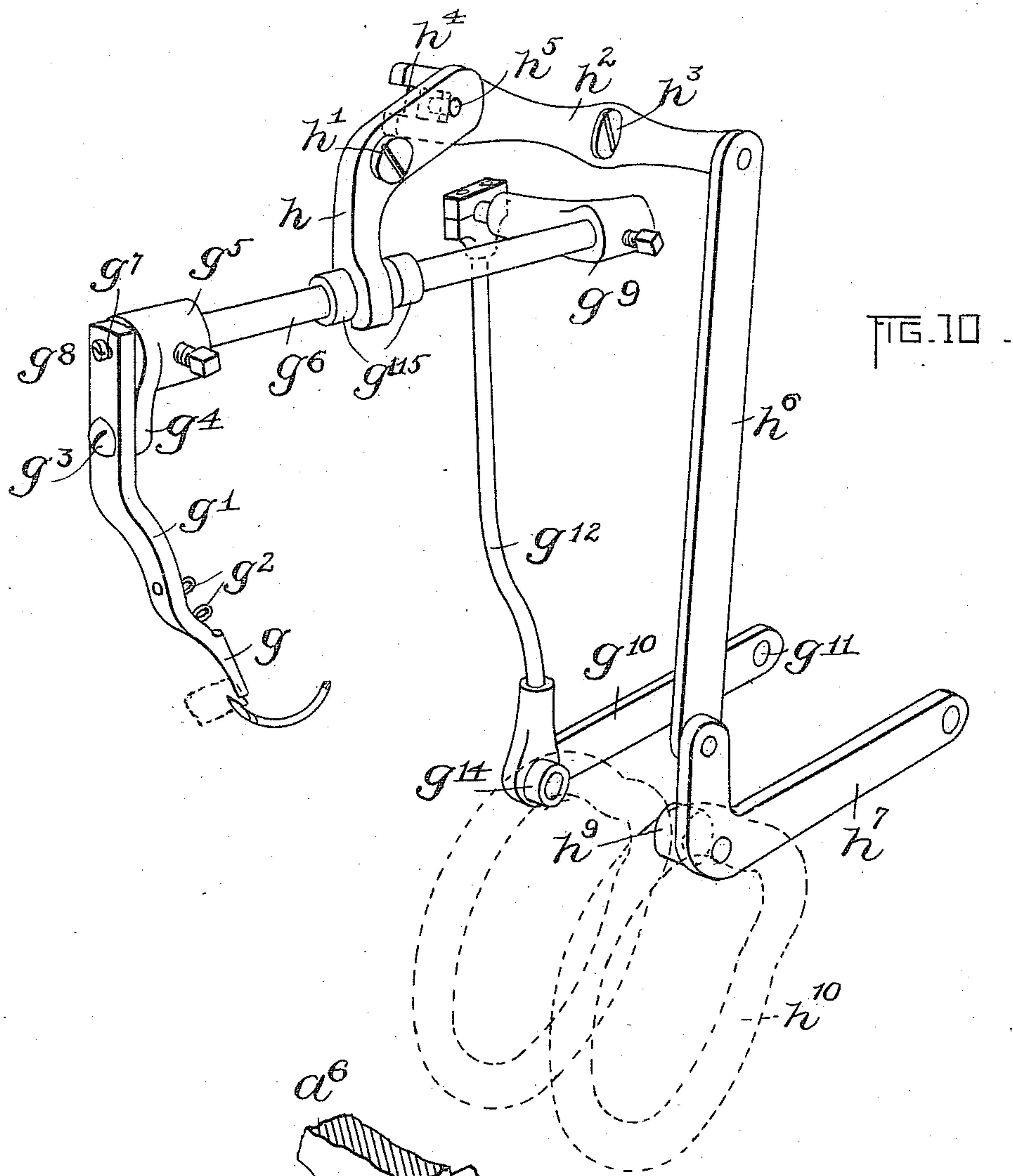


FIG. 10.

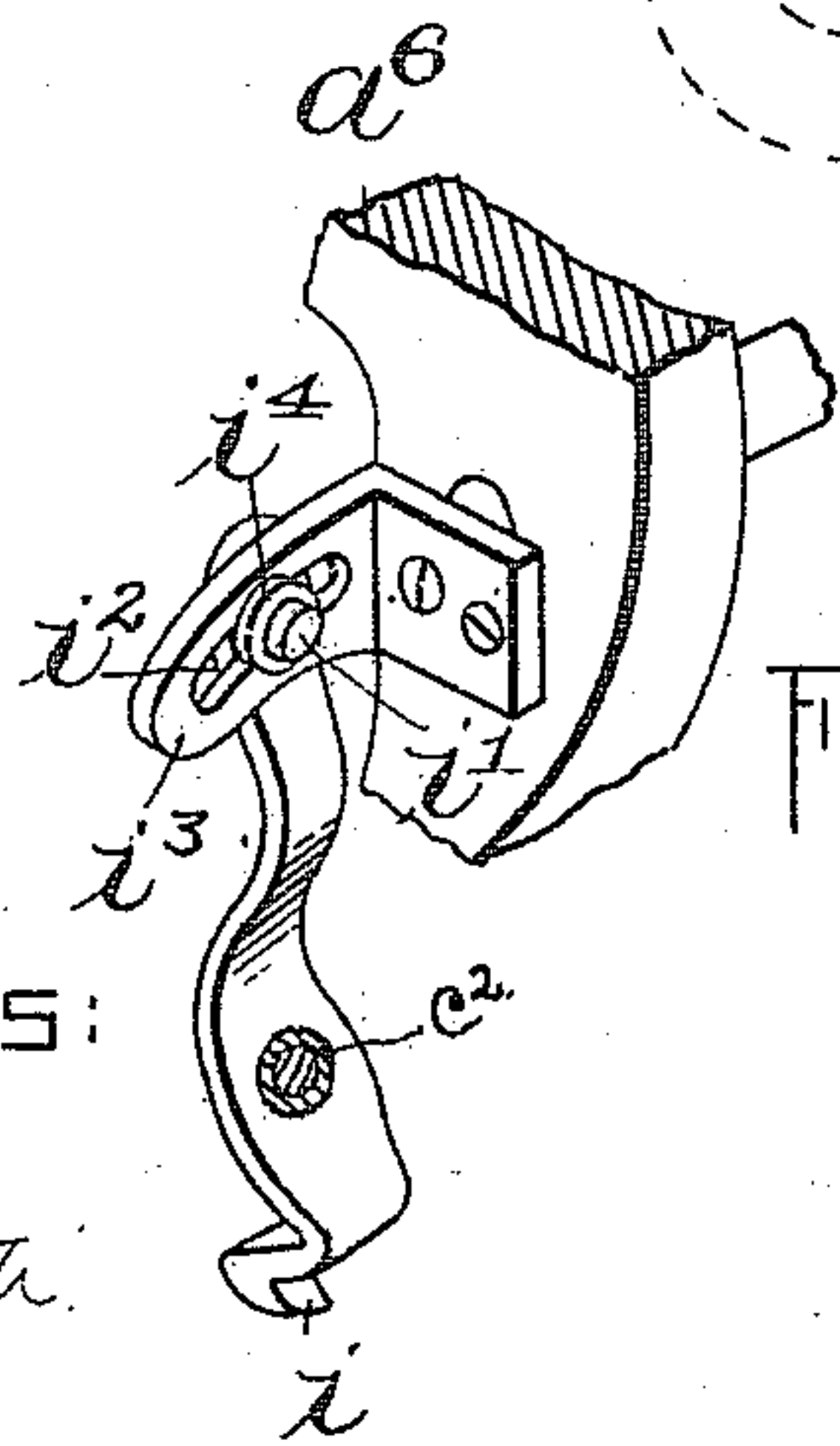


FIG 11 .

A. D. Harrison
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UNITED STATES PATENT OFFICE.

JAMES E. JACKSON, OF LYNN, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO UNITED SHOE MACHINERY COMPANY, A CORPORATION OF NEW JERSEY.

MACHINE FOR LASTING BOOTS AND SHOES.

985,348.

Specification of Letters Patent.

Patented Feb. 28, 1911.

Application filed March 31, 1899, Serial No. 711,250. Renewed November 21, 1903. Serial No. 182,199.

To all whom it may concern:

Be it known that I, JAMES E. JACKSON, of Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Lasting Boots and Shoes, of which the following is a specification.

This invention has relation to sewing machines for lasting boots and shoes, and particularly to that class of machines in which pincers are employed for automatically and intermittently stretching the upper over the last as the stitching operation is taking place.

The object of the invention is to provide certain improvements in machines of the type referred to, by means of which the upper may be more perfectly stretched prior to its being stitched to the insole.

In all earlier machines with which I am familiar, the edges of the upper are drawn by the pincers perpendicularly to the plane of the sole, and must be drawn across the sole by the tension of the thread during the stitching operation. This puts an additional strain upon the threads and not only tends to break them, but frequently causes them to pull or tear through the edges of the upper and thereby injure the shoe.

In the machine which contains my present invention, the edges of the upper are drawn up past the edges of the sole and then across the sole by the pincers, so that the strain experienced by the thread in securing the upper to the insole is practically inconsiderable, and the upper is thoroughly stretched. The machine also possesses certain other features of novelty which enhance its efficiency and render it capable of producing better results than have heretofore been produced in machines of the same general class.

Reference is to be had to the accompanying drawings, and to the letters and figures marked thereon, forming a part of this specification, the same letters indicating the same parts or features, as the case may be, wherever they occur.

Of the drawings:—Figure 1 represents in side elevation a machine embodying my invention. Fig. 2 represents an elevation of the machine from the other side. Fig. 3 represents a front elevation of the same. Fig. 4 represents a longitudinal section through the machine with the pincers at one extreme of its movement. Fig. 5 represents a partial section of a portion of the mechanism shown

in Fig. 4, the pincers being in the position which it occupies when the shoe to be lasted is presented to the machine, the jaws of the pincers being separated. Figs. 6, 7, 8 and 9 show in detail the pincers, Figs. 6 and 7 illustrating them in different positions. Fig. 10 is a perspective view of the looper mechanism. Fig. 11 represents in detail a perspective view of the adjustable button or channel guide for adjusting the pincers.

This invention consists of improvements in the machine illustrated in my co-pending application Serial No. 630,153, filed March 31, 1897, and reference may be had to the said application for explanation of some of the parts which are hereinafter briefly referred to.

The machine is mounted upon the usual standard a on which is the table a' , the base a^2 upon which the goose-neck a^3 is mounted being supported by columns or standards a^4 resting upon the table a' . The plate or base a^2 is provided with depending brackets a^5 in which is journaled the transverse driving shaft b to which are secured the cams for imparting motion to the various operative parts of the machine. On the projecting end of the shaft is a belt wheel b' by means of which it is rotated in the usual way.

The stitch forming mechanism is substantially similar to that illustrated and described in my said co-pending application; and hence I shall not describe it except to state that a needle c is mounted upon a carrier c' (see Fig. 7) journaled upon a sleeve c^2 mounted in the ends of a bracket a^6 on the end of the goose-neck a^3 . In the said sleeve c^2 is a sliding shaft c^3 which is reciprocated longitudinally by a rock-shaft c^4 projecting into the bracket a^6 and provided with an arm (not shown) which engages with the bar or shaft c^3 . The needle is moved laterally (*i. e.*, longitudinally of the bar c^3) to feed the work and is provided with a strengthener c^5 as described in my said co-pending application, said strengthener being mounted on a carrier c^{51} oscillated by a lever c^{52} , a connecting rod c^{53} , and a cam groove in the cam c' to be subsequently described.

The needle carrier c' is oscillated by a lever c^6 fulcrumed on the under-side of the plate a^2 . A coupling member c^8 is swiveled in the upper end of said lever so that it is capable of rotation therein and is provided

with ears to receive the rear end of a connecting rod c^9 pivoted thereto by a pintle c^{10} . The forward end of said connecting rod is pivoted at c^{11} to the needle carrier. On the lower end of the lever c^6 there is a roll or trundle c^{12} which extends into a cam-groove c^{13} (see dotted lines, Fig. 2,) in a cam disk c^{14} , rigidly secured to the shaft b . As the shaft is rotated, the lever c^6 is oscillated about its pivot c^7 to vibrate the needle carrier and to cause it to penetrate and then release the work upon the formation of a stitch.

When the needle is in the work, the shaft c^4 is rocked to move the needle carrier longitudinally of the sleeve c^2 . The rocking of the shaft c^4 is effected by means of devices which are better illustrated in Fig. 1. The rear end of the said shaft is journaled in a bracket a^7 which extends outward from the side of the goose-neck or overhanging arm a^3 and on its extremity is an outwardly projecting arm e . A cam e' is affixed to the right hand end of the shaft b (looking from the front) and is provided on its outer face with a cam groove e^2 into which extends a roll or trundle on the end of the arm e^3 of a bell crank fulcrumed on a stud e^4 projecting laterally from the rear side of the plate a^2 . The arm e^5 of the said bell crank is slotted at its end at e^6 to receive a pin e^7 projecting from the end of a lever e^8 fulcrumed at e^9 in the side of the said plate a^2 , the said lever e^8 being slotted at e^{10} to receive a two-part block e^{11} which may be adjusted in the slot and secured after adjustment by a screw e^{13} having a milled head e^{12} . On the screw e^{13} is pivoted a connecting rod e^{14} whose upper end is pivoted to the arm e by a ball-and-socket connection, as shown.

The rotation of the cam e' causes an oscillation of the bell-crank and a consequent oscillation of the lever e^8 which in turn imparts motion to the shaft c^4 through the medium of the connecting rod e^{14} and the arm e . The degree of movement of the arm e is varied by adjusting the block e^{11} in the slot e^{10} , it being secured after adjustment by the said screw e^{13} .

In order to prevent the connecting rod c^9 and the needle carrier from reaching or passing a dead center, by any possibility at the extremes of their movements on the connecting rod c^9 , I employ, as shown in Fig. 4, a spring f having one end attached to a stud f' on the rod c^9 , and its other end to a pin f^2 on a stud which I shall presently describe. The tension of this spring upon the connecting rod aids the cam in moving the latter and the needle carrier away from the dead centers and prevents the parts from reaching or passing beyond a dead center.

The looper is indicated at g . It consists of a tubular guide on the end of an arm g' having one or more additional guides g^2 for

the thread. Said arm is fulcrumed by a screw g^3 on an arm g^4 formed on a sleeve or collar g^5 secured to the end of a shaft g^6 arranged in the hollow goose-neck or overhanging arm a^3 . The short end of the arm g' is slotted at g^7 to receive a set screw g^8 so that the looper is adjustable relatively to the said collar and to the said shaft g^6 . The last-mentioned shaft is properly journaled in the said overhanging arm and projects outwardly from the bracket a^6 and by mechanism which I shall now describe, the looper is moved in a rectangular path around the end of the needle to lay a loop in the barb thereof. On one end of the shaft is an arm g^9 rigidly secured thereto and connected to a lever g^{10} , fulcrumed at g^{11} on a stud extending laterally from a bracket g^{13} , by a connecting rod g^{12} . A roll or trundle g^{14} extends into a groove in a cam g^{15} , as shown in Fig. 3. The oscillation of the lever g^{10} causes the rocking of the shaft g^6 and a movement of the looper in a direction parallel with the axis of the shaft b or of the sleeve c^2 . The said shaft g^6 is also moved longitudinally to carry the looper in a direction transverse of the axis of the said sleeve c^2 , said longitudinal movement of the shaft g^6 being accomplished by means of the bell crank lever h which is fulcrumed at h' , in lugs projecting upwardly from the overhanging arm or goose-neck.

The lower end of the lever is bifurcated and projects downward between two collars g^{115} on the shaft g^6 . The lever h^2 is fulcrumed by a stud h^3 in a lug or lugs extending upwardly from the goose-neck, said lever being slotted at its forward end to receive a block h^4 having a pin which extends into an aperture h^5 in the end of the bell crank lever.

The rear end of the lever h^2 is connected by a connecting rod h^6 with a lever h^7 fulcrumed in a stud h^8 (see Fig. 4) extending outward from a bracket g^{13} . The lever h^7 has a roll or trundle h^9 extending into a cam groove h^{10} in a cam g^{15} before described as being rigidly secured upon the shaft b , as shown in Fig. 3.

From this description, it will be seen that when the shaft b is rotated, the shaft g^6 is moved outward, then laterally to the left, then inward, and then laterally to the right, remaining in the last position to which it was moved until another loop is to be placed around the needle. Of course, the parts are so timed that the looper is not actuated until the needle has been projected through the work and is ready to receive the loop.

The shoe is held in position for the stitching operation by the operator, against an abutment or channel-guide i , shown in Fig. 11. This consists of a bar fulcrumed on the sleeve c^2 and adapted to be held in any desired position by a screw i' passed through

its upper end and through a slot i^2 in a bracket i^3 secured to the bracket a^6 . This screw i' passes through a nut i^4 , so that if desired, the abutment may be moved inward 5 or downward, as the case may be, to suit the particular style of shoe that is being sewed. As the shoe is being sewed, the upper is drawn automatically over the last and to this end I provide pincers and mechanism 10 for causing said pincers to grip the upper, draw it upward, and then over the sole of the last to lay the upper snugly thereon. During these movements of the pincers the abutment i occupies a position on the oppo- 15 site side of the channel lip and acts as a guide for the shoe and also holds up and supports the lip against the pressure of the pincers during the overdraw movement. In order that the force due to the thrust of the 20 needle may be so applied as to hold the upper snugly against the channel lip during the stitching operation, the needle is arranged so that its forward movement is inward over the shoe bottom, and it will be 25 seen that the abutment and guide i supports the lip against the pressure of the pincers and also supports it against the thrust of the needle, and additionally is capable of being adjusted relatively to the pincer to provide 30 for varying distances between the edge of the sole and the channel lip found in shoes of different styles and sizes.

The pincers consists of two jaws k and l . The jaw k is on a slide k' adapted to move 35 in guides in a lever k^2 which is fulcrumed on a stud k^3 supported in ears k^4 on a slide k^5 adjustable in a dove-tailed groove in the base-plate a^2 , as shown in Fig. 3. The jaw l is on the end of another slide l' adapted to 40 move in guides in a lever l^2 likewise journaled on the said stud k^3 . The rear ends of the levers l^2 k^2 are in contact and are held upward normally by a spiral spring m , as shown in Fig. 4. The two levers are bodily 45 rocked to move the jaws upward past the edge of the insole by means of the following devices.

m' is a tubular casing having loosely mounted in one end a nut m^2 and in the 50 other end a bushing or collar m^3 . A connecting rod m^4 extends through the nut and through the said bushing m^3 being threaded on its outer end to engage the said nut. A spiral spring m^5 is placed in the said casing 55 around the rod and its ends abut against the said bushing and the said nut so that a force exerted upon the nut is yieldingly transmitted through the spring to the lever k^2 and the pincers. The lower end of the connect- 60 ing rod m^4 is secured to a yoke m^{51} shown in dotted lines in Fig. 4, which embraces the shaft b , there being a roll or trundle m^6 on the lower end of the said yoke which extends into a groove in a cam m^7 rigidly se- 65 cured to the said shaft b . When the con-

necting rod m^4 is drawn downward, it rocks the levers l^2 k^2 upon their fulcrum k^3 and raises the jaws k and l .

In order to cause the jaws to grip the upper, the jaw l is first advanced until it yield- 70 ingly clamps the upper against the jaw k . To this end, the rear end of the slide l' is connected by a pin and slot connection with a lever l^3 fulcrumed at l^4 on the lever l^5 , the latter being fulcrumed at its lower end on 75 an eccentric l^6 , journaled upon the stud l^7 projecting outward from an ear or lug l^8 arising from the base plate a' as shown in Fig. 9. A handle l^9 is secured to said eccentric 80 so as to rotate it, said handle being held in either of two positions by a pin l^{10} which may take into one of a plurality of holes l^{11} in the base plate a' . The pin is withdrawn from engagement with said holes against 85 the resistance of a spring by means of a lever l^{12} , as shown in Fig. 9.

The purpose of the handle and the eccentric l^6 is to enable the jaws to be separated to place work between them or to throw the 90 jaws out of operation by moving them apart a distance greater than the range of the closing movement. Secured to the lever l^5 is an arm l^{13} having a bent end between 95 which and the end of the lever l^3 is a spring l^{14} . The pin l^{15} on the lever l^5 extends into a slot l^{16} in the end of the lever l^3 so as to control the movement of one with relation to the other, said pin l^{15} being also utilized to receive a trundle or roll l^{21} which extends 100 into a cam groove in the cam m^7 .

By means of the levers l^3 and l^5 and the spring l^{14} , the jaw l grips the upper yield- 105 ingly against the jaw k so as not to injure the leather. After it has gripped it, the connecting rod is drawn downward to yieldingly raise the two jaws to stretch the upper over the last by a force acting perpendicular to the sole. Immediately thereafter, the 110 slide l' is further advanced by the cam m^7 to carry the upper transversely in a direction parallel to the sole, the jaw k at this time receiving a similar movement through the following devices.

Projecting upwardly from the slide k' is an ear k^6 which is connected by a link 115 k^7 with a lever q^8 fulcrumed at k^9 on the base plate. The lower end of this lever has a trundle or roll k^{10} which extends into a cam groove k^{11} in the outer face of the cam 120 c^{14} . The movement of the jaw k transversely across the sole of the last after the stitching perpendicular to the sole is equal to that of the jaw l , the two jaws being actuated at the same time by their respective 125 cams. By this means, the upper is first gripped yieldingly between the two jaws; the two jaws are then moved upward to stretch the upper over the last; and they are then moved transversely or across the sole 130 of the last to still further draw the upper

tightly around the edges of the insole into position to be stitched to the insole by the stitching mechanism.

To limit the movement of the levers l^2 l^2 , I employ the pivoted stop t' , which may be rocked downward by the arm t , the connecting rod t^2 , and a treadle (not shown) to engage the lever l^2 , and prevent its rear end from being swung its full extent upward.

The stop t' may be held at any desired angle by the treadle.

To protect the hand of the operator, I secure to the bracket a^b , a guard s , as shown in Figs. 1, 2, 3 and 4, which projects in front of the machine and serves as a rest for his fingers while holding a shoe in position to be stitched.

The operation of the machine will be understood without further description, it being sufficient to state that as the sewing or stitching mechanism attaches the upper to the insole, the pincers draws the upper taut over the last, and holds it preparatory to the needle penetrating it and the insole.

Though the machine as described is not provided with an awl, yet where it is employed for heavy work, the awl may be mounted and operated as described in my said co-pending application.

Having thus explained the nature of the invention, and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made, or all of the modes of its use, I declare that what I claim is:—

1. A sewing machine for lasting boots and shoes, comprising means for stretching the upper about the last comprising coacting jaws for gripping the edge of the upper, means for causing said jaws to grip the upper, and automatic mechanism for causing said jaws to draw the upper first in lines substantially transverse to the plane of the insole and then in lines substantially parallel to the plane of the insole, and then to hold the gripped portion of the upper against the outer face of the lip of the insole, combined with means operating automatically to secure the upper while it is so held.

2. A sewing machine for lasting boots and shoes comprising stitching mechanism and means for stretching the upper including a pivoted pincers, means for rocking said pincers about its pivot to stretch the upper in lines substantially perpendicular to the sole of the last, and mechanism for operating said pincers to draw the edges of the upper across the said sole.

3. A sewing machine for lasting boots and shoes comprising stitching mechanism and means for stretching the upper including co-acting jaws, pivoted levers on which said jaws are slidably mounted, and mechanism for causing said jaws to grip the upper and stretch it over the last.

4. A sewing machine for lasting boots and shoes comprising stitching mechanism and means for stretching the upper including pivoted levers and a jaw slidably supported in the end of each lever.

5. A sewing machine for lasting boots and shoes, comprising stitching mechanism, and means for stretching the upper including pivoted levers, a jaw slidably supported by each lever, and mechanism for actuating each jaw independently of the other.

6. In a sewing machine for lasting boots and shoes, a combined channel guide and abutment, consisting of a centrally pivoted bar, a bracket, and means for adjustably securing one end of said bar to said bracket.

7. In a machine for lasting boots and shoes, means for stretching an upper over a last comprising jaws and automatically operating yielding mechanism for moving one jaw toward the other to grip the upper and for further moving the two jaws in the same direction as the gripping movement to draw the upper over the last bottom, said mechanism having provision for predetermining the movement of one of said jaws in the overdrawing operation.

8. In a machine for lasting boots and shoes, means for stretching the upper over the last comprising a pair of slidably supported jaws, and independent means for moving said jaws longitudinally to cause them to grip and then in the same direction to stretch the upper.

9. In a machine for lasting boots and shoes, means for stretching the upper over the last comprising a pair of co-acting jaws, means for moving one jaw yieldingly, and independent means for moving the other jaw positively, said means being so constructed and arranged that one jaw is moved relatively to the other to grip the upper and then both are moved in the same direction as the first movement to stretch the upper.

10. In a machine for lasting boots and shoes, means for stretching the upper over the last comprising a pair of co-acting jaws, means for moving the jaws transversely, means for moving one jaw yieldingly toward the other to grip the upper, and independent means for thereafter moving the other jaw positively with the first jaw and in the same direction as the first-mentioned movement for stretching the upper parallel to the shoe bottom, combined with means for giving the jaws a movement substantially perpendicular to the shoe bottom.

11. A sewing machine for lasting shoes, having pincers, and stitching mechanism movable laterally relatively to the pincers for feeding the shoe, combined with mechanism for actuating the pincers to pull the upper approximately perpendicular to the insole for stretching it and then in a direction to lay the upper against the outer face

of the channel lip of the insole and for actuating the stitching mechanism to fasten the upper to said face of the lip while it is so held.

5 12. In a sewing machine for lasting shoes, the combination with stitching mechanism comprising a needle, of pincers comprising relatively movable jaws and actuating mechanism separate from the stitching mechanism for closing the jaws, uplifting them to
10 pull the upper, and moving them over the shoe bottom to carry the upper into position against the channel lip of the insole to be acted upon by the stitching mechanism, said
15 machine having provision for holding the upper under tension in said position while the needle pierces the upper and the lip.

13. A machine of the class described, comprising mechanism for stretching an upper
20 about a last including pivoted levers, a jaw slidably supported in the end of each lever, means for actuating the jaws to grip the upper, and means for actuating the levers to stretch the upper.

25 14. A machine of the class described, comprising means for stretching an upper about a last including pivoted levers, a jaw slidably supported in the end of each lever, and mechanism for causing the jaws to grip the
30 upper and stretch it over the last.

15. A machine of the class described, comprising mechanism for stretching an upper about a last including pivoted levers, jaws
35 carried by the levers for gripping the upper, means for rocking the levers to pull the upper, and means for moving the jaws relatively to the levers for carrying the upper over the last bottom.

40 16. In a machine for lasting boots and shoes, the combination with pincers for working an upper over a channeled insole on a last, of actuating mechanism for the pincers including means for effecting a
45 movement of the pincers over the last bottom toward the outer face of the lip of the channeled insole, said mechanism having provision for predetermining the extent of said movement, and an abutment for engaging the opposite face of the channel lip to
50 position the shoe laterally with relation to the pincers and support the lip against the pressure of the pincers, said machine having provision for relatively adjusting the abutment and the initial position of the pincers.

55 17. In a machine for lasting boots and shoes, the combination with pincers and actuating mechanism therefor including means for effecting a movement of the pincers over a last bottom and toward the
60 outer face of the lip of a channeled insole, said mechanism having provision for predetermining the extent of said movement, of a guide to engage the opposite face of the channel lip to position the shoe laterally
65 with relation to the pincers and support the

lip against the pressure of the pincers, said guide having provision for adjustment toward and from the pincers.

18. In a machine for lasting shoes, the combination with pincers for working an
70 upper over a channeled insole on a last, of actuating mechanism for the pincers including means for effecting a movement of the pincers over the last bottom toward the
75 outer face of the lip of the channeled insole, said mechanism having provision for predetermining the extent of said movement, an abutment for engaging the opposite face of the channel lip to position the shoe laterally
80 with relation to the pincers, said machine having provision for relatively adjusting the abutment and the initial position of the pincers, and means for securing the upper to
85 said lip arranged for actuation in a direction toward the outer face of the channel lip while the upper is positioned with relation to the lip by the pincers.

19. A machine for lasting shoes, having pincers, and means for actuating the pincers to stretch the upper and to position it with
90 relation to the lip of an insole on the last bottom to permit the upper to be secured to said lip, an abutment for engaging the opposite face of the channel lip and having provision for independent adjustment rela-
95 tively to the pincers, combined with mechanism for forming stitches extending transversely through the lip and the upper to secure the upper in lasted position including
100 a needle arranged for movement in a direction to force the upper against the outer face of the channel lip.

20. In a machine for lasting boots and shoes, means for stretching the upper over
105 the last comprising a pair of co-acting jaws and means for yieldingly actuating one jaw comprising a pivotally-supported lever carrying a pin provided with a cam roll, a second lever having one arm connected with
110 said jaw, its other arm provided with a slot to engage said pin, and fulcrumed at an intermediate point to the first-named lever, a bracket fast to one of said levers and yielding means between the bracket and an arm
115 of the other lever.

21. In a machine for lasting boots and shoes, means for stretching the upper over
120 the last comprising a pair of co-acting jaws, and means for actuating one jaw comprising an adjustable eccentric, a lever pivotally supported thereon and carrying a pin provided with a cam roll, a second lever having
125 one arm connected with said jaw, its other arm provided with a slot to engage said pin, and fulcrumed at an intermediate point to the first-named lever, a bracket fast to one of said levers and yielding means between the bracket and an arm of the other lever.

22. In a lasting and sewing machine, the combination with stitching mechanism com-
130

prising a needle, of pincers comprising relatively movable jaws and actuating mechanism independent of the stitching mechanism for closing the jaws, raising
5 them to pull the upper, and moving them over the shoe bottom to position the upper against the outer face of the channel lip of the insole, said machine having provision for holding the upper under tension in position
10 while the needle pierces the upper and lip,

and an abutment arranged to be positioned on the opposite side of the channel lip to support the lip against the pressure of the pincers and needle, and to guide the shoe.

In testimony whereof I have affixed my
signature, in presence of two witnesses.

JAMES E. JACKSON.

Witnesses:

M. B. MAY,

MATTHIAS BROCK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."

Corrections in Letters Patent No. 985,348.

It is hereby certified that in Letters Patent No. 985,348, granted February 28, 1911, upon the application of James E. Jackson, of Lynn, Massachusetts, for an improvement in "Machines for Lasting Boots and Shoes," errors appear in the printed specification requiring correction as follows: Page 3, line 116, the reference letter "*g*⁸" should read *h*⁸; and same page, line 122, the word "stitching" should read *stretching*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 18th day of April, A. D., 1911.

[SEAL.]

C. C. BILLINGS,
Acting Commissioner of Patents.