Sept. 17, 1935. J. B. COFFEY 2,014,469

FOLDING MACHINE

Filed Aug. 13, 1931 4 Sheets-Sheet 1

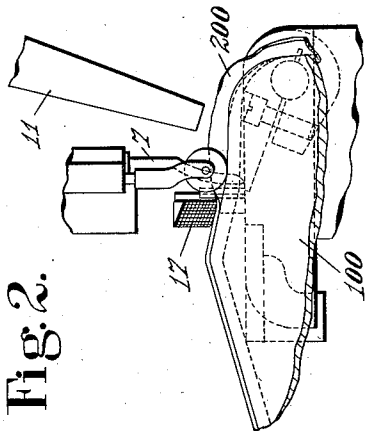


Fig. 2.

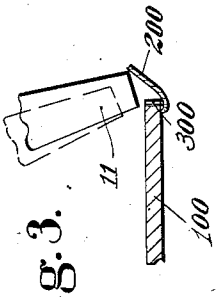


Fig. 3.

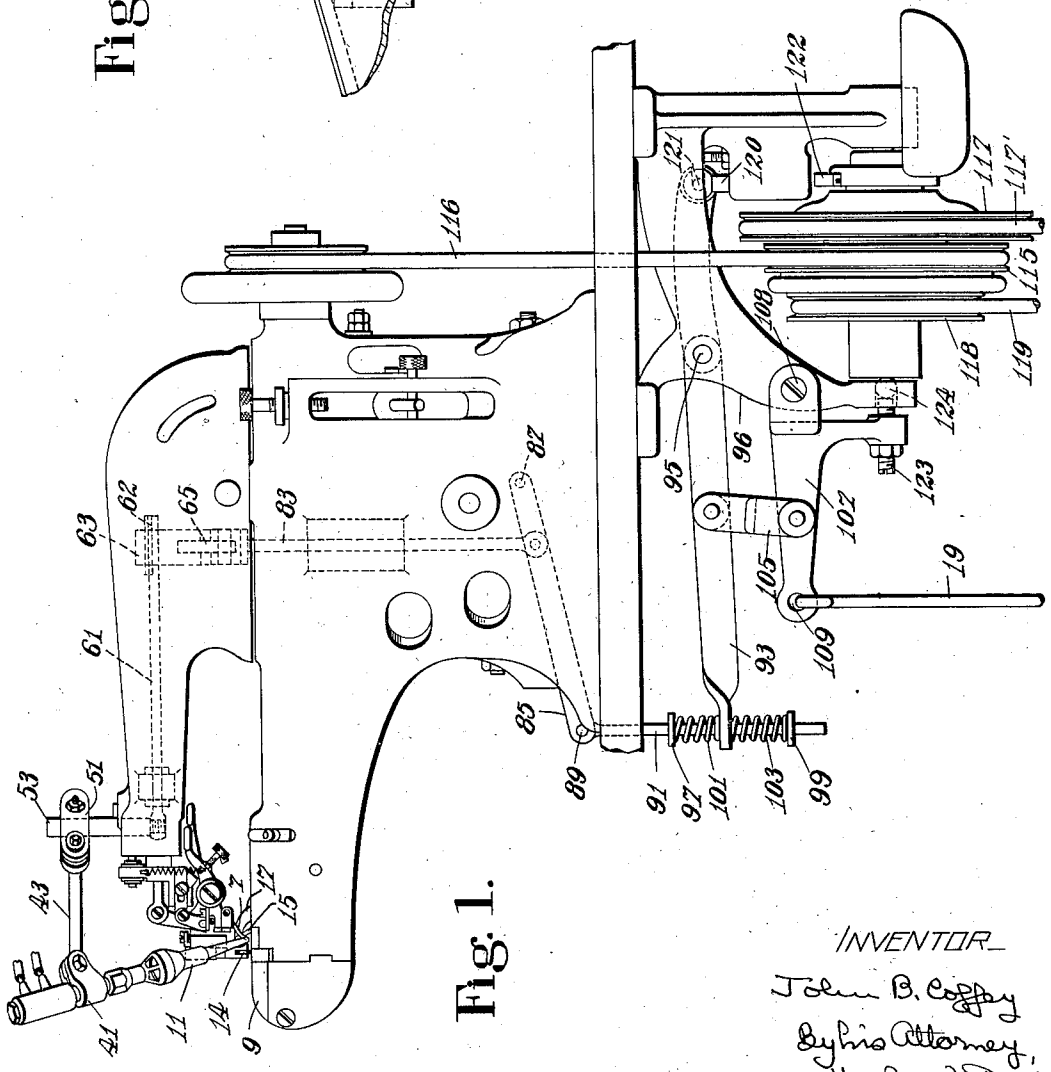


Fig. 1.

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Sept. 17, 1935. J. B. COFFEY 2,014,469

FOLDING MACHINE

Filed Aug. 13, 1931 4 Sheets-Sheet 2

Fig. 4.

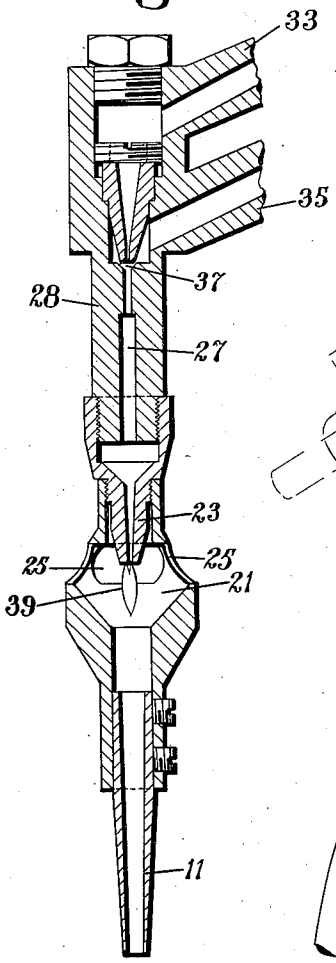


Fig. 5.

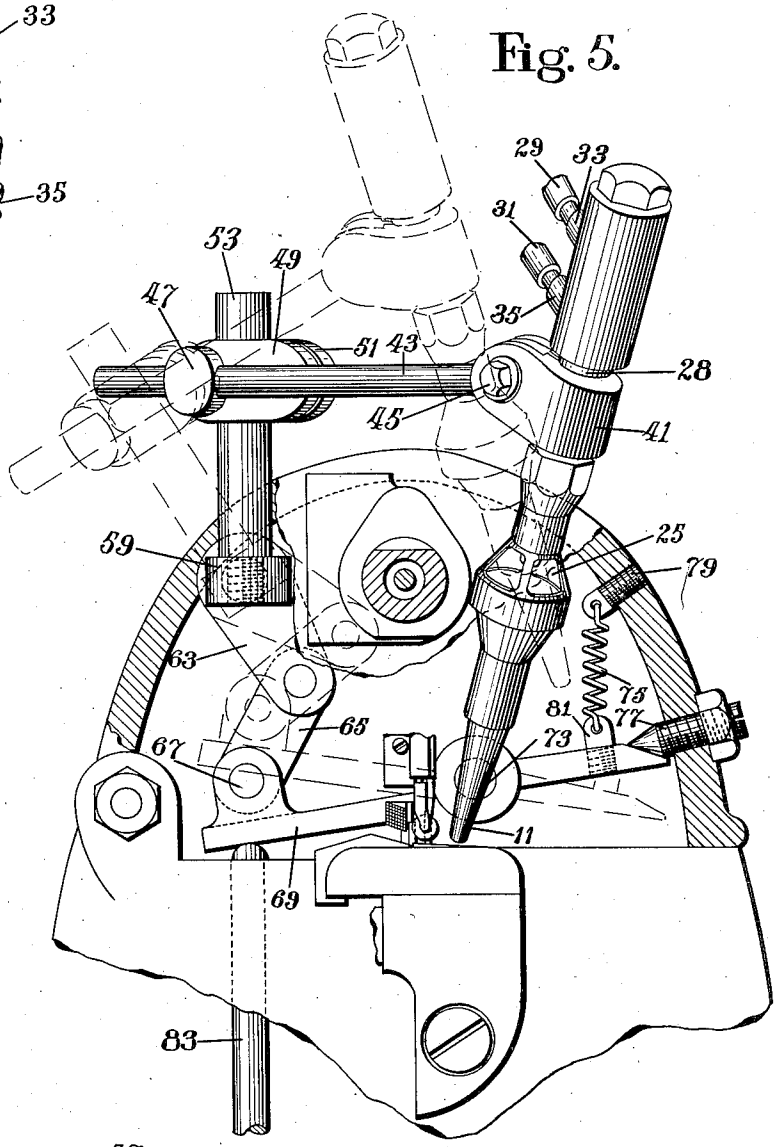
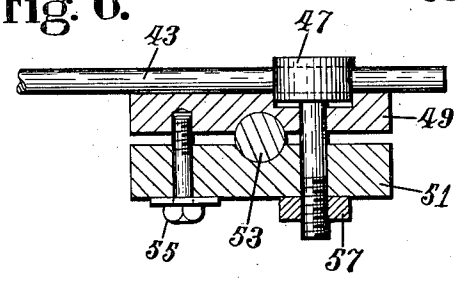


Fig. 6.



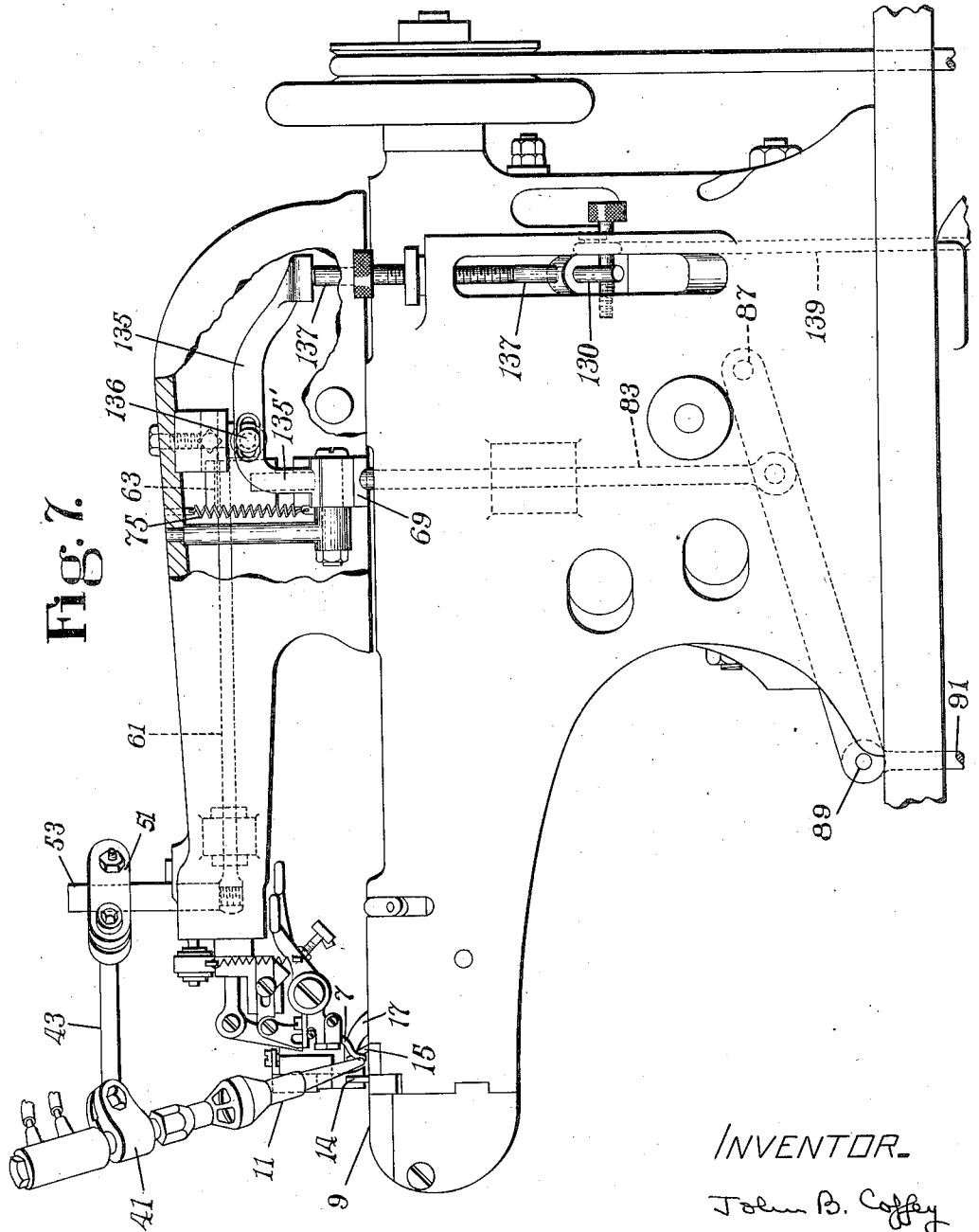
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FOLDING MACHINE

Filed Aug. 13, 1931 4 Sheets-Sheet 3

Fig. 7.



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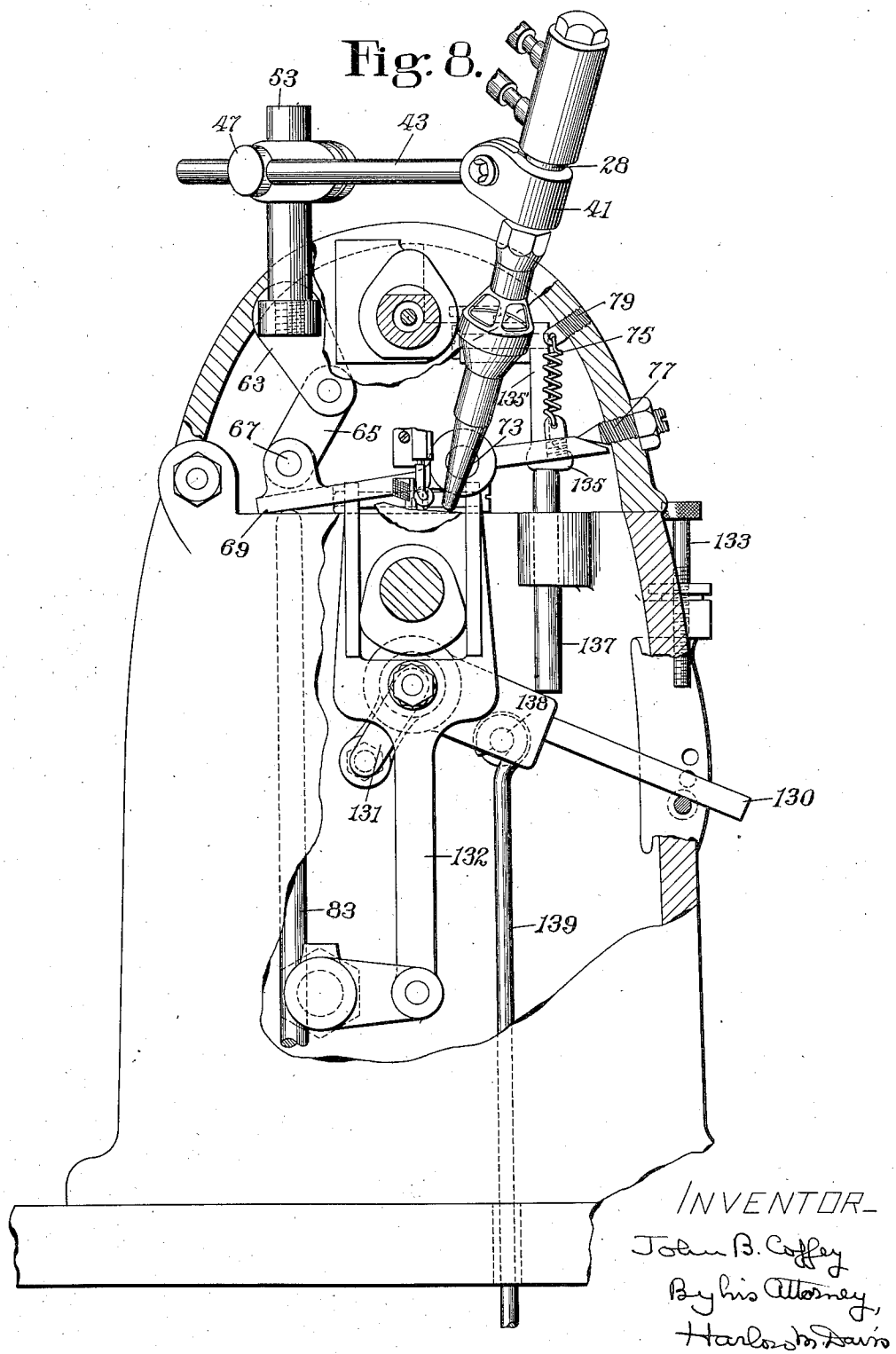
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Sept. 17, 1935. J. B. COFFEY 2,014,469

FOLDING MACHINE

Filed Aug. 13, 1931 4 Sheets-Sheet 4

Fig. 8.



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UNITED STATES PATENT OFFICE

2,014,469

FOLDING MACHINE

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Application August 13, 1931, Serial No. 556,764

26 Claims. (Cl. 12—55)

This invention relates to machines and devices for operating upon parts of boots and shoes which are subjected to heat during manufacture, and is herein illustrated as embodied in a machine for folding shoe parts the margins of which are coated with a thermoplastic cement which is normally non-sticky but becomes sticky when subjected to heat.

In the manufacture of boots and shoes it is customary in some cases to finish the edges of parts of uppers, such for example as vamps and quarters, by fastening to a shoe part along an edge thereof a strip of ribbon or tape, commonly known as French binding, and thereafter folding the free portion of the binding about the edge of the shoe part and pressing it down upon the body portion of the part, this binding ribbon or tape carrying a coating of thermoplastic cement which is normally non-sticky but is rendered sticky before it is pressed into place by a device for directing upon it a current of hot air. During the folding of a piece of work the operator may desire to stop the machine for short intervals, for example, to pull out a portion of the French binding into proper position to be folded; and at such times it is desirable that the heating means be rendered ineffective, since otherwise too much heat might be applied to the coating of cement in the particular locality on the stationary piece of work to which the heat was being applied. In order to provide for this and similar conditions, and in accordance with one feature of the invention, the effectiveness of the heating device is controlled by operator-controlled means for starting and stopping the machine in such manner that starting the machine renders the heating device effective and stopping the machine renders the heating device ineffective. In the illustrated machine, in which a current of hot gas is directed through a nozzle upon the work, the nozzle is movable, being so connected with operator-controlled means for starting and stopping the machine that it is normally held up in inoperative position when the machine is at rest but is brought down into operative position when the machine is started.

Folding machines are usually equipped with operator-controlled means for varying the rate of feed of the work so that, for example, the work may be fed at a maximum rate when straight edges are being folded and at a slower rate when curved edges are encountered. In machines in which the feed is continuous, a single operator-controlled means commonly varies the rate of rotation of the driving shaft of the machine; and such a means is sometimes used in machines in which the feed is intermittent. In machines in which the feed is intermittent, it is common, however, to provide two operator-controlled means either of which may be used, one of which varies the rate of rotation of the driving shaft of the machine and the other of which varies the length of the steps of the intermittent feed mechanism. In any case, it is desirable to vary the amount of heat applied to the coating of cement in accordance with the rate of feed of the work. To this end, in accordance with another feature of the invention, operator-controlled means for varying the rate of feed of the work is so connected with the heating means that the amount of heat applied to the work varies in accordance with the rate of feed. In the illustrated machine this is accomplished by causing the nozzle to be located nearer to the work when the rate of feed is fast and to be located farther from the work when the rate of feed is slow.

According to another feature of the invention, there is provided novel and improved means for directing hot gas upon the coating of cement on the margin of the work. To this end there is provided, means for causing a current of hot gas to be directed upon the work which comprises a nozzle through which the current is applied, a combustion chamber freely open to the atmosphere with which the inlet end of the nozzle is connected, a gas burner for directing a jet of flame into the chamber, and means for supplying gas under pressure to the burner. In the illustrated construction an inflammable mixture of oxygen and acetylene is supplied to the burner which extends into the combustion chamber, this chamber having large openings in its wall, and an elongated nozzle of small cross-section is located to receive the hot air from the chamber mixed with the products of combustion and direct them upon the coating of cement. With this construction, the flame is maintained inside the tool so that only the mixture of hot gases reaches the work.

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

Referring now to the accompanying drawings,

Fig. 1 is a front elevation of a machine in which the present invention is embodied;

Fig. 2 is an end elevation of a portion of the machine showing a piece of work in process of

being operated upon, and with the nozzle raised into a position corresponding to a slower rate of feed of the work;

Fig. 3 is a detail showing a piece of work in section and the nozzle in full lines in its completely lowered position corresponding to a maximum rate of feed of the work, the nozzle being shown in broken lines in position for a slower rate of feed;

Fig. 4 is a longitudinal section through the device for heating air and directing it upon the work;

Fig. 5 is an end elevation of a portion of the machine, part of the cover having been broken away;

Fig. 6 is a detail, principally in section, showing more particularly part of the mounting of the heating device;

Fig. 7 is a view principally in elevation of a modified form in which the position of the heating device is controlled in accordance with the extent of the intermittent feed movements of the work; and

Fig. 8 is a view partly in section and partly in elevation of the construction shown in Fig. 7.

The folding machine chosen for illustration is of an old and well-known type, being substantially like that shown in United States Letters Patent No. 1,702,598, granted February 19, 1929, upon an application filed in the name of Perley R. Glass. The present machine differs from the patented machine principally by reason of being particularly adapted to fold French binding work, such as that shown in Figs. 2 and 3, comprising a piece of leather or other sheet material **100** having attached to it by means of stitches **300** a narrow fabric ribbon or tape **200** which carries a coating of thermoplastic cement. The principal constructional difference between the present machine and the patented machine is that the plow and the gage of the patented machine have been replaced by the gage **7** (Fig. 1) which engages the edge of the leather at its junction with the binding. It will be understood that the work is fed away from the observer, as viewed in Fig. 1, over a work support **9** with the gage **7** in engagement with the edge of the leather. As the work progresses, the cement on the binding is softened and rendered sticky by directing upon it a current of hot gas through a nozzle **11** presently to be described. The binding with its softened cement is bent up about a creaser foot provided with a roller **14** by a reciprocating folding finger **15**, and finally the bent-up binding is pressed down upon the body portion of the work by a hammer **17**, the hammer and a cooperating anvil serving also to feed the work intermittently. A treadle, not shown, attached to a treadle rod **19** operates a transmitter, presently to be referred to, beneath the bench on which the machine is mounted to start the machine at a certain speed when depressed a certain distance and, upon further depression to increase the speed of the machine. It will be understood that the rate of feed of the work depends upon the rate of rotation of the driving shaft of the machine imparted to said shaft through the transmitter. No further description of the folding machine will be given, since its details of construction form no part of the present invention and any suitable machine may be used.

The nozzle **11** (Fig. 4) leads from a combustion chamber **21** into which extends a gas burner **23**, said chamber having large openings **25** in its wall through which air is drawn. The burner is supplied with gas under pressure through a small conduit **27** in a member **28**, the lower end of which is threaded into the upper end of the burner. Any suitable inflammable gas may be supplied to the burner; and, in the illustrated construction, there is supplied a mixture of oxygen and acetylene or other inflammable gas, the two gases being conducted respectively from the usual pressure tanks, in which they are stored, through flexible tubes **29**, **31** connected to nipples **33**, **35**. The gases meet in a small chamber **37** where they are thoroughly mixed and pass from thence to the burner **23**. The small intensely hot jet of flame **39** under pressure thus extends into one side of the combustion chamber into which air is drawn and in which it is heated; and, from the opposite side of the chamber, the nozzle **11** receives the hot air and the products of combustion and conducts them to whatever locality on a shoe part is to be heated. In the illustrated construction, as has been explained, the current of hot gas is directed upon the thermoplastic coating of cement on the binding **200** prior to the pressing operation.

In order to support the heating device for movement into different positions, a split collar **41** is fastened rigidly to the member **28** of the device and also to one end of a rod **43** by means of a pinch screw **45**. The rod **43** (Fig. 6) is slidable for adjustment through a bore in the head **47** of a clamping bolt, the stem of which passes through adjacent ends of spaced clamping plates **49**, **51** which have complementary rounded recesses to receive an upright rod **53**. Passing through the plate **51** and threaded into the plate **49** is a clamping screw **55**. By tightening this clamping screw and a nut **57** threaded on the end of the stem of the bolt **47**, the plates are clamped rigidly in adjusted position to the upright rod **53**, and at the same time the rod **43** is clamped to the plate **49**. When the nut **57** is loosened, the rod **43** may be adjusted.

The upright rod **53** has its lower end of reduced diameter threaded into an eye **59** on the outer end (Fig. 1) of a rock shaft **61**. The inner end of the rock shaft has teeth **62** on its periphery which engage complementary teeth formed in a bore in the upper end of a link **63** so that, when the link is swung to rock the shaft **61**, the heating device (Fig. 5) is swung from full line to dotted line position or from dotted line to full line position. The link **63** is pivoted at its lower end to the upper end of a link **65**, the lower end of which is pivoted at **67** to an ear on a lever **69**. The lever **69** is pivoted at **73** to the frame of the machine and is acted upon at all times by a small tension spring **75** which tends to hold the beveled end of the lever up against the conical end of an adjusting and stop screw **77** threaded through the cover of the machine. The tension spring **75** is fastened at its upper end to the head of a small screw **79** carried by the cover and at its lower end to the head of a small screw **81** carried by the lever **69**.

The lever **69** is swung from full line to dotted line position by a vertically slidable push rod **83** which is connected in a manner presently to be described with a treadle. In the position of parts shown, the treadle is being held depressed against the force of the usual treadle spring which is much stronger than the small tension spring **75**. If now the treadle is released, the push rod will swing the lever in a clockwise direction about its pivot **73** and thus swing the heating device into the raised inoperative position shown in dotted lines in Fig. 5. The machine will then be at rest.

Turning now to Fig. 1, the vertically slidable push rod 83 is pivoted at its lower end to an arm 85 which in turn is pivoted at 87 to the frame of the machine. The free end of this arm is pivoted at 89 to the upper end of a rod 91, the lower end of which is yieldingly connected to the outer end of an arm 93 pivoted to a stationary bracket 96 on the frame at 95, the yielding connection comprising two spaced collars 97, 99 fast to the rod 91 and two compression springs 101, 103. Connected by a link 105 to the arm 93 is a second arm 107 pivoted at one end at 108 to the bracket 96 and at the other end at 109 to the upper end of the treadle rod 19. This treadle rod is connected at its lower end to the usual treadle (not shown) normally held up by the usual comparatively heavy spring (also not shown).

As has been explained, movement of the treadle rod 19 controls the rate of rotation of the driving shaft of the machine through a transmitter. Any suitable transmitter may be employed, and consequently, the one illustrated will be only briefly described. It comprises a driving pulley 115 connected by a belt 116 to a pulley on the driving shaft of the machine, a low speed pulley 117 driven by a belt 117' from a constantly rotating counter-shaft, not shown, and a high speed pulley 118 driven by a belt 119 from the same counter-shaft. Between the low speed pulley 117 and the driving pulley 115 is a one-way clutch of the Horton type which is ineffective until the treadle is depressed to rock the arm 93 about its pivot 95 sufficiently to withdraw the lower end of a stop, in the form of a plunger 120 pivoted at 121 to one end of the arm 93, out of the path of an abutment 122 on the cage of the clutch. As soon as the arm 93 has been rocked counter-clockwise far enough to release the cage, the Horton clutch becomes effective, and the machine is driven at low speed. Between the high speed pulley 118 and the driving pulley 115 is a friction clutch which is normally ineffective, but becomes effective when the arm 93 is rocked still further counter-clockwise into the position shown. When the arm 93 is rocked counter-clockwise, the arm 107 is also rocked in the same direction, and presently, through an abutment screw 123 and a ball 124, pushes the high speed pulley 118 to the right whereupon the friction clutch between that pulley and the driving pulley 115 becomes effective to rotate the driving pulley 115 faster. This is the position of parts shown, the increased rate of rotation of the driving pulley being permitted by reason of the fact that the one-way Horton clutch then overruns. By increasing and decreasing the pressure applied to the friction clutch, and thereby causing it to slip more or less, a still further variation in speed may be obtained.

With regard to the heating device, it should be noted that the combustion chamber is large and that the size of this chamber and the large openings 25 insure a sufficient supply of air so that any tendency to the accidental production of a jet of flame at the delivery end of the nozzle may be obviated.

Assuming that the treadle has been released and that the heating device is in its raised, ineffective position shown in broken lines in Fig. 5, an operator presents a piece of work to the folding mechanism and depresses the treadle whereupon the work is fed through the machine and the coating of cement is progressively softened by the current of hot gas prior to the pressing or hammering operation. When straight edges are encountered, the treadle is held down to its extreme limit, during which time the rate of feed of the work is at a maximum and the nozzle 11 is close to the work, as shown best in Fig. 3. When sharply curved edges are encountered, the treadle is permitted to rise somewhat to reduce the rate of feed of the work and to permit the nozzle 11 to move away from the work into the position shown in Fig. 2. If, at any time, it is necessary to stop the feeding of the work so that the operator may, for example, manipulate a portion of the binding, the treadle is released, whereupon the heating device rises again to its inoperative position and remains in that position until the treadle is manipulated again to cause the work to be fed through the machine.

As has been explained above it is common in some machines in which an intermittent feed mechanism is employed to vary the rate of feed of the work by lengthening or shortening the extent of the movements of the intermittent feed members. In Figs. 7 and 8 there is shown a machine in which this sort of mechanism is so connected with the heating device that, when the work is being fed rapidly by comparatively long intermittent feed movements, the heating device is held close to the work, and, when the intermittent feed movements are shortened, the heating device is moved into and held in a position farther from the work.

The folding machine shown in these figures is substantially the same in most particulars as that shown in Figs. 1 to 6 inclusive. The work supporting, feeding and folding instrumentalities are the same as also is the heating device and its mounting; and the parts of the two machines which are the same have been given the same reference numerals. In this machine the rod 83 may be connected to a transmitter like that of the machine of Figs. 1 to 6 but will preferably be connected to a simple friction transmitter of usual form which will merely start the machine, run it at high speed and stop it. When, therefore, the treadle is held depressed, the parts will be in the positions shown in Fig. 8, with the right-hand end of the lever 69 held up against the stop screw 77, the machine running at high speed, and the nozzle of the heating device close to the work. In this machine, the extent of the intermittent feed movements of the hammer and its cooperating anvil is determined by the position of a small pivoted arm 130 through linkage, a portion of which is indicated at 131 which controls the extent of swinging movement of a pivoted forked lever 132. When the small arm 130 occupies its lowermost position, as shown, the extent of the intermittent feed movements of the work is at a maximum; and, when it is swung up, this extent is decreased until a minimum is reached when the small arm 130 encounters a stop screw 133. The details of this mechanism for varying the extent of the intermittent feed movements will not be described here, reference being made to the patent. Connections are provided, however, in the present machine whereby varying the extent of the intermittent feed movements of the work, moves the heating device away from the work when the extent of said movements is decreased and causes the heating device to be moved toward the work when the extent of said movements is increased.

To this end a member is provided for pushing down the right-hand end (Fig. 8) of the lever 69 when the arm 130 is swung up to decrease the extent of the intermittent feed movements. This member (best shown in Fig. 7) is a lever 135

pivoted at 136. It has a down-turned forward end 135' which rests upon the top of the lever 69. The rear end of the lever 135 is also down-turned and has at its end an enlarged portion which rests upon the top of a vertical pin 137. This pin passes loosely through a vertical bore in a lug on the frame and rests with its lower end upon the small arm 130. When, therefore, this arm is swung up to decrease the extent of the intermittent feed movements, the lever 135 is rocked to push down the right-hand end (Fig. 8) of the lever 69 and thereby raise the heating device from the position which it occupies in Fig. 8. And when the small arm 130 is swung down, the spring 75 raises the lever 69 once more to the position shown. In order to provide for ready manipulation of the small arm 130 to vary the rate of feed of the work by varying the extent of the intermittent feed movements and at the same time to apply more or less heat to the work, there is pivoted to the arm 130 at 138 a treadle-rod 139 connected at its lower end to a treadle, not shown, the construction being such that depression of the treadle pushes the treadle-rod up.

With this construction the preferred operation of the machine is as follows:

The treadle connected to the treadle-rod 83 is depressed to start the machine, whereupon the spring 75 swings the lever 69 to the position shown and thereby moves the heating device from inoperative position to the position shown. The machine is now running at full speed, and the extent of the intermittent feed movements of the work is at the maximum if now a curved edge of the work is encountered, the treadle attached to the treadle-rod 139 is depressed to raise that rod. This swings up the small arm 130 to decrease the rate of feed of the work by shortening the extent of the intermittent feed movements, and, through the vertically sliding pin 137 and the lever 135, swings the lever 69 to move the heating device farther from the work.

Although the nozzle 11 has been shown as directing the blast of hot gas directly upon the binding 200, this nozzle may be adjusted into different operative positions by reason of its mounting upon the rod 43. Thus, instead of being positioned to direct the blast of hot gas upon the coated margin, it may be positioned to direct the blast upon the margin of the body portion of the work thereby heating this portion so that the cement on the binding will be softened when it contacts with the heated portion.

Although the invention has been illustrated as embodied in a folding machine for folding a particular kind of work, it should be understood that it may be embodied in other machines or devices for applying a current of hot gas to shoe parts and that it is not limited in the scope of its application to the particular machine, nor to use with the particular machine, which has been shown and described.

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

1. A machine of the class described having, in combination, a support for a shoe part, means for feeding the shoe part over the support, a member manipulation of which starts and stops the machine, and means responsive to movement of said member for instantly applying heat to the shoe part when the machine is started and for instantly stopping the application of heat when the machine is stopped.

2. A machine of the class described having, in combination, means for operating upon a shoe part, means for feeding the part past the operating means, means for heating the part, a member manipulation of which starts and stops the machine, and means connected with said member for invariably rendering the heating means ineffective with respect to a shoe part which is in the machine when the machine is stopped and for rendering the heating means effective when the machine is started whereby the machine may be stopped at any time without applying too much heat to that portion of the shoe part which is near the heating means.

3. A machine of the class described having, in combination, means for operating upon a shoe part, means for feeding the part past the operating means, means including a nozzle for directing a hot non-inflammable gas upon the part, a member manipulation of which starts and stops the machine, and means connected with said member for moving the nozzle away from the part when the machine is stopped and for moving the nozzle toward the part when the machine is started.

4. A machine of the class described having, in combination, means for operating upon a piece of work having thereon a coating of thermoplastic cement, means for feeding the work past the operating means, means for applying to the cement an amount of heat sufficient to soften the cement and insufficient to injure the work, a member manipulation of which starts and stops the machine, and means connected with said member for invariably rendering the heating means ineffective when the machine is stopped and for rendering said heating means effective when the machine is started.

5. A machine of the class described having, in combination, means for operating upon a piece of work having thereon a coating of thermoplastic cement, means for feeding the work past the operating means, means including a nozzle for directing a hot non-inflammable gas upon the cement to soften it, a member manipulation of which starts and stops the machine, and means connected with said member for moving the nozzle away from the work when the machine is stopped and for moving the nozzle toward the work when the machine is started.

6. A machine of the class described having, in combination, a support over which a piece of work is fed having a coating of thermoplastic cement upon a margin thereof, means for folding the marginal portion of the work over the body portion thereof and for pressing the folded-over margin against the body portion, means independent of the pressing means for heating the coating of cement to soften it, operator-controlled means for starting and stopping the machine, and connections between the heating means and the operator-controlled means such that starting the machine renders the heating means effective and stopping it renders the heating means ineffective to soften the cement.

7. A machine of the class described having, in combination, a support over which a piece of work is fed having a coating of thermoplastic cement upon a margin thereof, means for folding the marginal portion of the work over the body portion thereof and for pressing the folded-over margin against the body portion, means for softening the coating of cement including a nozzle movable from inoperative to operative position, and operator-controlled means for starting the machine and at the same time moving the nozzle

into operative position and for stopping the machine and at the same time moving the nozzle into inoperative position.

8. A machine of the class described having, in combination, a support over which a piece of work is fed having a coating of thermoplastic cement upon a margin thereof, means for folding the marginal portion of the work over the body portion thereof and for pressing the folded-over margin against the body portion, means for softening the coating of cement including a nozzle mounted for swinging movement toward and from the work, operator-controlled means for starting and stopping the machine, and connections between the nozzle and the operator-controlled means such that the nozzle is held in inoperative position when the machine is at rest and is swung into operative position when the machine is started.

9. A machine of the class described having, in combination, a support over which a piece of work is fed having a coating of thermoplastic cement upon a margin thereof, means for folding the marginal portion of the work over the body portion thereof and for pressing the folded-over margin against the body portion thereof, a treadle manipulation of which starts and stops the machine, means for heating the cement to soften it, a rock-shaft for moving the heating device to operative or inoperative position, and means connected with the treadle for rocking the shaft.

10. A machine of the class described having, in combination, means for operating upon a piece of work having thereon a coating of thermoplastic cement, means for feeding the work past the operating means at varying rates, means comprising a nozzle adapted to deliver hot gas for heating the cement to soften it, and means for varying the distance between the nozzle and the work in accordance with the rate of feed of the work.

11. A machine of the class described having, in combination, a support over which a piece of work is fed having a coating of thermoplastic cement upon a margin thereof, means for folding the marginal portion of the work over the body portion thereof and for pressing the folded-over margin against the body portion, means for heating the coating of cement to soften it, operator-controlled means for varying the rate of feed of the work, and connections between the operator-controlled means and the heating means such that increasing the rate of feed increases the amount of heat applied to the coating of cement.

12. A machine of the class described having, in combination, a support over which a piece of work is fed having a coating of thermoplastic cement upon a margin thereof, means for folding the marginal portion of the work over the body portion thereof and for pressing the folded-over margin against the body portion, means for softening the coating of cement including an adjustable nozzle for directing a current of hot air upon it, and operator-controlled means for varying the rate of feed of the work and for simultaneously moving the nozzle nearer to or farther from the coating of cement on the work according to whether the rate of feed is increased or decreased.

13. A machine of the class described having, in combination, a support over which a piece of work is fed having a coating of thermoplastic cement upon a margin thereof, means for folding the marginal portion of the work over the body portion thereof and for pressing the folded-over margin against the body portion, means for softening the coating of cement including an adjustable nozzle for directing a current of hot air upon it, a member manipulation of which varies the rate of feed of the work, and connections between said member and the nozzle for adjusting the nozzle into different positions in accordance with the rate of feed.

14. A machine of the class described having, in combination, a support over which a piece of work is fed having a coating of thermoplastic cement upon a margin thereof, means for folding the marginal portion of the work over the body portion thereof and for pressing the folded-over margin against the body portion, and means for directing a current of hot non-inflammable gas upon the cement to soften it, said means comprising a nozzle through which the current is applied, a gas burner, and means for supplying to the burner an inflammable gas under pressure.

15. A machine of the class described having, in combination, a support over which a piece of work is fed having a coating of thermoplastic cement upon a margin thereof, means for folding the marginal portion of the work over the body portion thereof and for pressing the folded-over margin against the body portion, and means for directing a current of hot non-inflammable gas upon the cement to soften it, said means comprising a nozzle through which the current is applied, a gas burner, and means for supplying to the burner a mixture of oxygen and an inflammable gas under pressure.

16. A machine of the class described having, in combination, a support over which a piece of work is fed having a coating of thermoplastic cement upon a margin thereof, means for folding the marginal portion of the work over the body portion thereof and for pressing the folded-over margin against the body portion, and means for heating the coating of cement to soften it, said means comprising a burner, means for supplying gas thereto under pressure, a combustion chamber into which the jet of burning gas extends, said chamber being open to the atmosphere to permit air to be drawn into it to be heated, and a nozzle leading from the chamber constructed and arranged to receive the heated air and to direct it upon the coating of cement prior to the pressing operation.

17. A machine of the class described having, in combination, a support over which a piece of work is fed having a coating of thermoplastic cement upon a margin thereof, means for folding the marginal portion of the work over the body portion thereof and for pressing the folded-over margin against the body portion, and means for heating the coating of cement to soften it, said means comprising a burner, means for supplying to the burner an inflammable mixture of gases under pressure, a combustion chamber into which the burner extends, the wall of said chamber being open to the atmosphere to permit air to be drawn into it to be heated, and a nozzle of small cross-section located to receive the hot air and direct it upon the coating of cement prior to the pressing operation.

18. A machine of the class described having, in combination, a support over which a piece of work is fed having a coating of thermoplastic cement upon a margin thereof, means for folding the marginal portion of the work over the body portion thereof and for pressing the folded-over margin against the body portion, and means for heating the coating of cement to soften it, said

means comprising a gas burner, means for supplying gas thereto under pressure, a combustion chamber into one side of which the jet of burning gas extends, said chamber being open to the atmosphere to permit air to be drawn into it to be heated, and a nozzle of small cross-section leading from the opposite side of the chamber constructed and arranged to receive the hot air together with the products of combustion and direct them upon the coating of cement prior to the pressing operation.

19. A machine for applying heat to a shoe part having, in combination, a support for the part, means for feeding the part over the support, a heating member normally held in inoperative position, operator-controlled means for starting and stopping the machine, and connections between the heating member and said means such that manipulation of the means to start the machine moves the heating member into and holds it in stationary operative position to apply heat to the shoe part.

20. A machine of the class described having, in combination, a support for a shoe part, means for feeding the part over the support, means including a blast of gas for heating a portion of the shoe part, a member manipulation of which starts and stops the machine, and means connected with said member for rendering the heating means ineffective when the machine is stopped and for rendering the heating means effective when the machine is started.

21. A machine of the class described having, in combination, means for operating upon a shoe part having a coating of thermoplastic cement thereon, means for feeding the shoe part past the operating means, means including a blast of non-inflammable gas for heating the cement to soften it, a member manipulation of which starts and stops the machine, and means connected with said member for rendering the heating means effective or ineffective according to whether the machine is started or stopped.

22. A machine of the class described having, in combination, a support for a piece of work having thereon a coating of thermoplastic cement upon the margin thereof, means for folding the marginal portion of the work over upon the body portion thereof, means including a blast of non-inflammable gas for heating the work to effect softening of the cement, a member manipulation of which starts and stops the machine, and means connected with said member for rendering the heating means ineffective when the machine is stopped and for rendering the heating means effective when the machine is started.

23. A machine of the class described having, in combination, a support for a shoe part having thereon a coat of thermoplastic cement, folding mechanism, means for directing upon the shoe part a blast of heated gas to effect softening of the cement prior to the folding operation, a member manipulation of which starts and stops the machine, and means connected with said member for varying the temperature of the gas at the time that it strikes the shoe part according to whether the machine is running or at rest.

24. A machine of the class described having, in combination, a support for a shoe part, means for operating upon said part, means for feeding the part past the operating means, means including a blast of heated gas for delivering heat to the shoe part, and means for varying the amount of heat delivered by the blast to the shoe part in accordance with the rate of feed of the shoe part.

25. A machine for operating upon a shoe part having, in combination, means for feeding the shoe part, a member for applying heat along an edge thereof, said member being movable from operative to inoperative position, and vice versa, an operator-controlled member manipulation of which starts and stops the machine, and means connected with said operator-controlled member for moving the heating member into operative position when the machine is started, and for moving the heating member into inoperative position when the machine is stopped.

26. A tool for applying a blast of hot gas to a shoe part having, in combination, a burner, a conduit for an inflammable gas leading to the burner, a combustion chamber into one end of which the burner projects, said combustion chamber having a series of openings in its walls located around the tip of the burner, the walls of the lower portion of the chamber opposite to the tip being funnel shaped and terminating in a conduit of small cross-section, and a slender elongated nozzle leading from said last-named conduit whereby, when the gas is ignited, a current of hot gas of small cross-section is directed upon a selective locality of the shoe part.

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