

Oct. 14, 1941.

A. JENSEN

2,258,954

HAT-BLOCKING MACHINE

Filed Feb. 1, 1940

5 Sheets-Sheet 1

Fig. 8

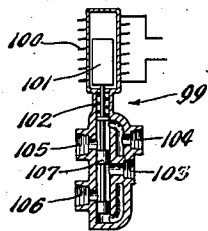
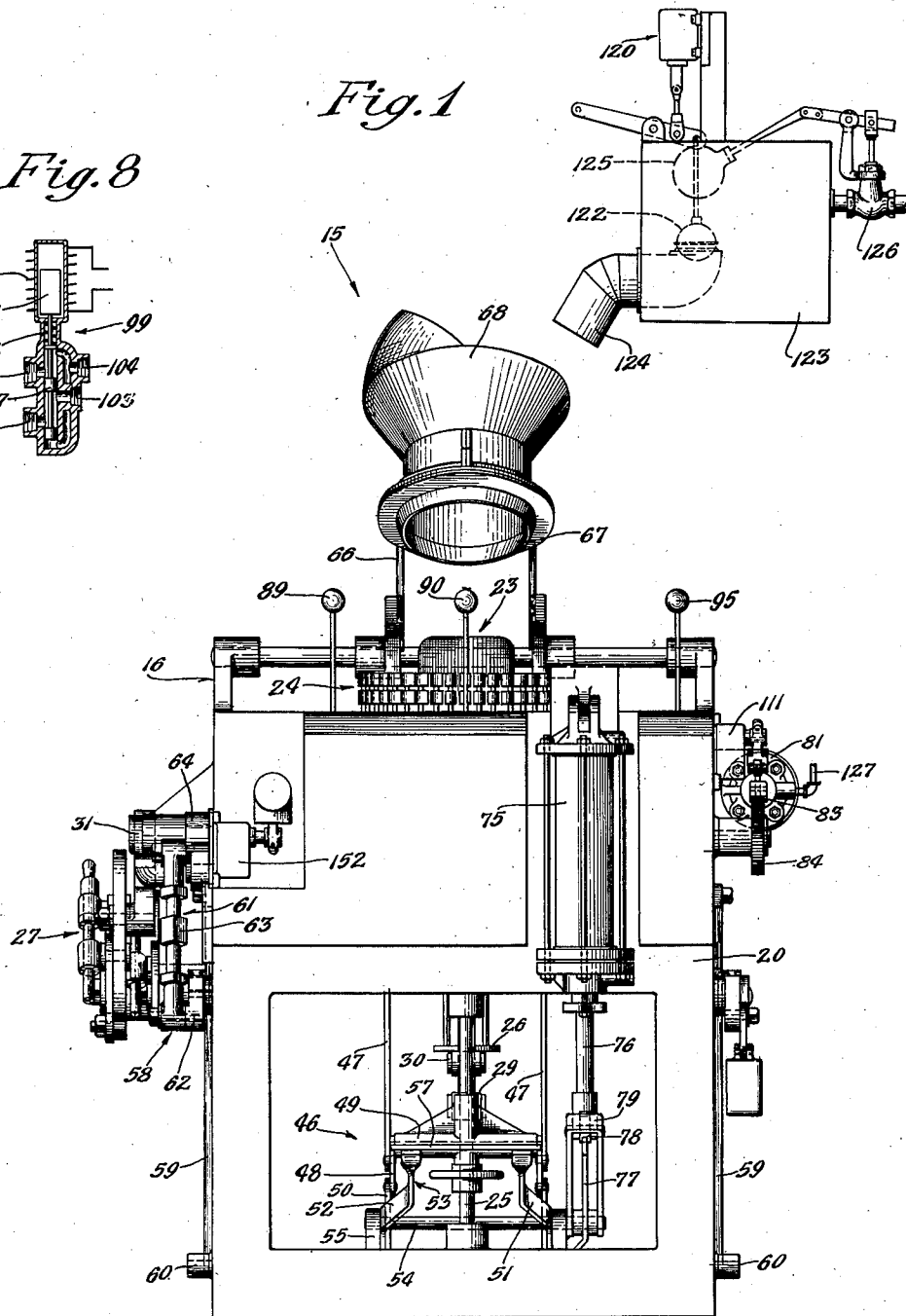


Fig. 1



INVENTOR
AXEL JENSEN

BY *Feyrer and Mack*
ATTORNEY

Oct. 14, 1941.

A. JENSEN

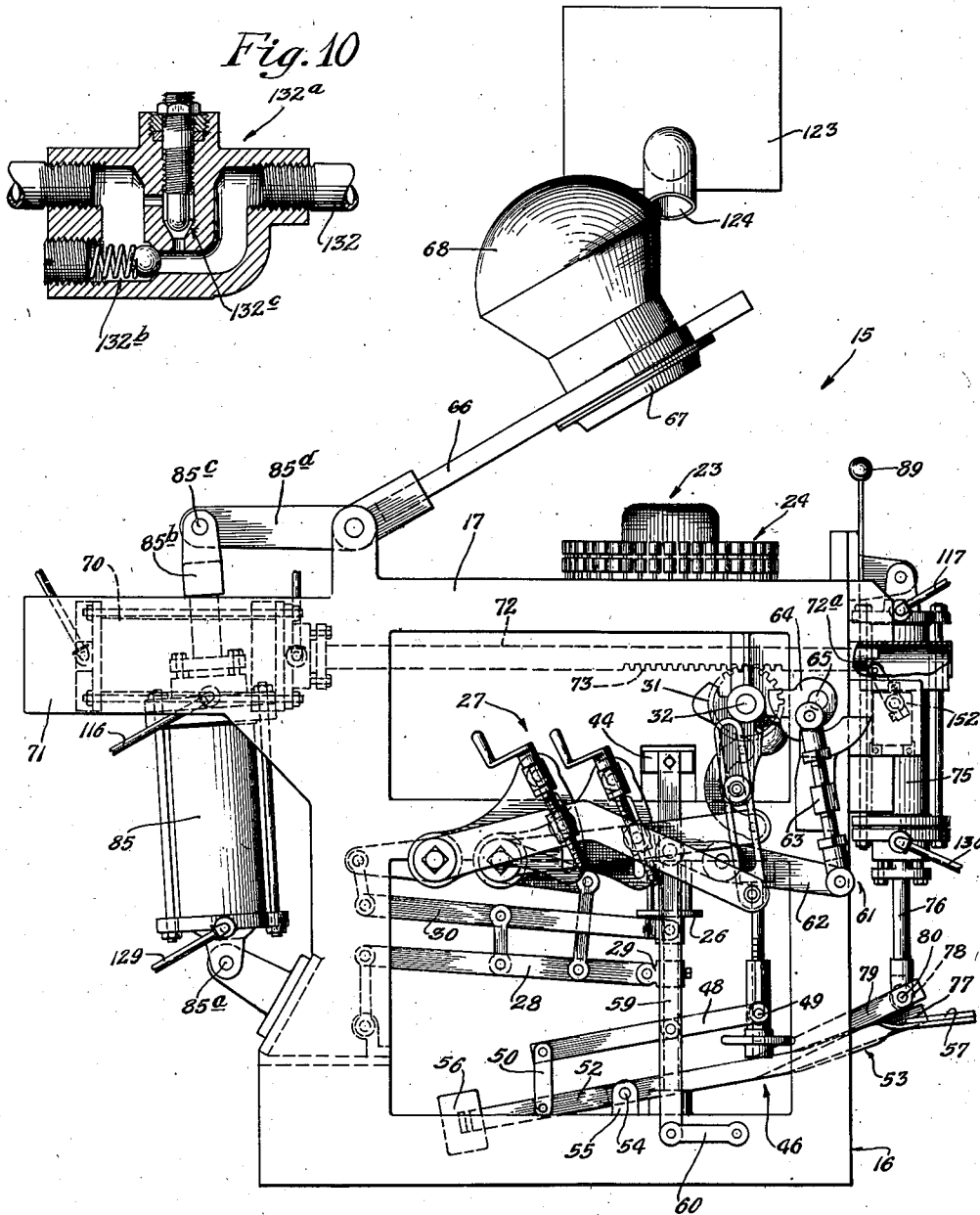
2,258,954

HAT-BLOCKING MACHINE

Filed Feb. 1, 1940

5 Sheets-Sheet 2

Fig. 2



INVENTOR
AXEL JENSEN
BY *Feyrer and Mack*
ATTORNEY

Oct. 14, 1941.

A. JENSEN

2,258,954

HAT-BLOCKING MACHINE

Filed Feb. 1, 1940

5 Sheets-Sheet 3

Fig. 3

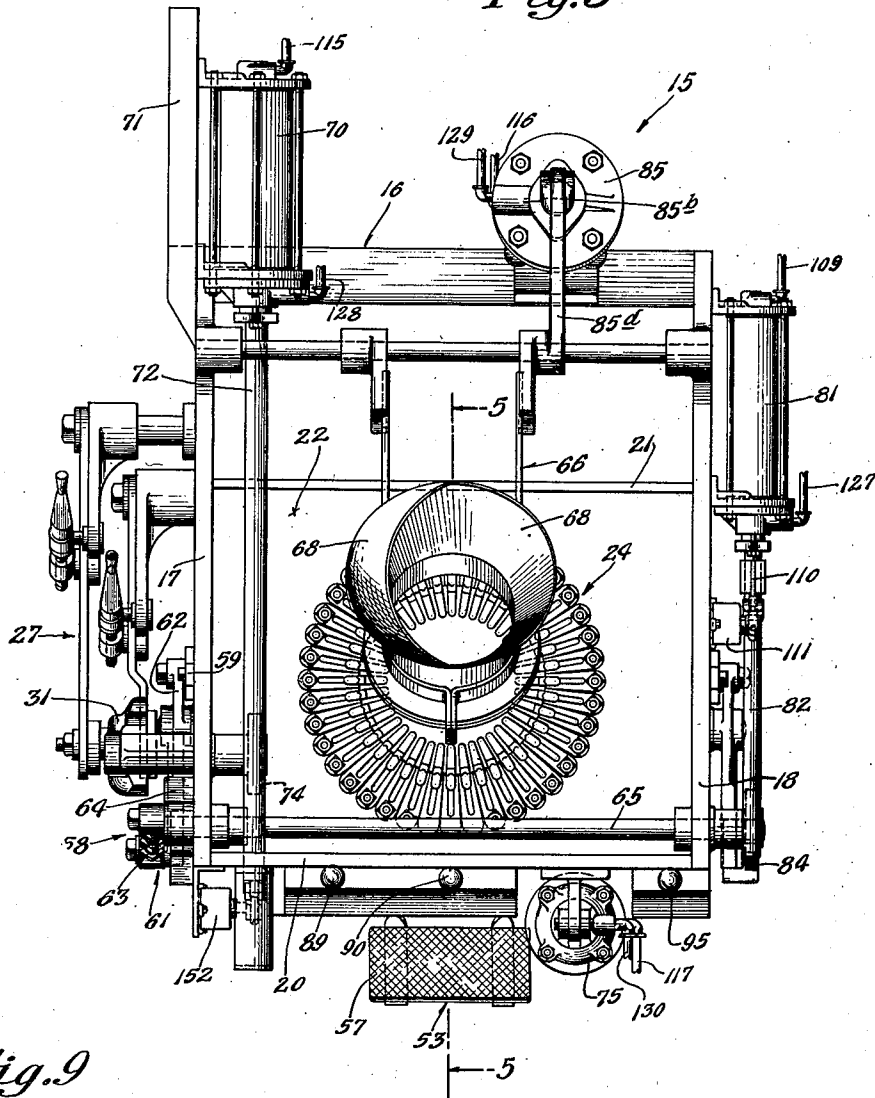
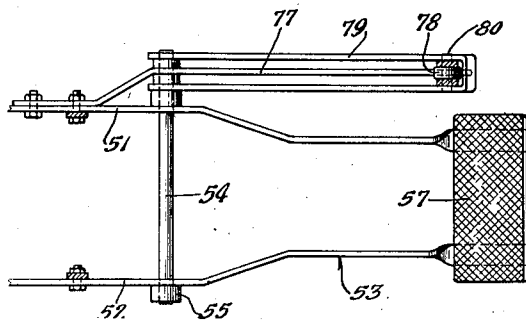


Fig. 9



INVENTOR
AXEL JENSEN
BY *Feyrer and Mack*
ATTORNEY

Oct. 14, 1941.

A. JENSEN

2,258,954

HAT-BLOCKING MACHINE

Filed Feb. 1, 1940

5 Sheets-Sheet 4

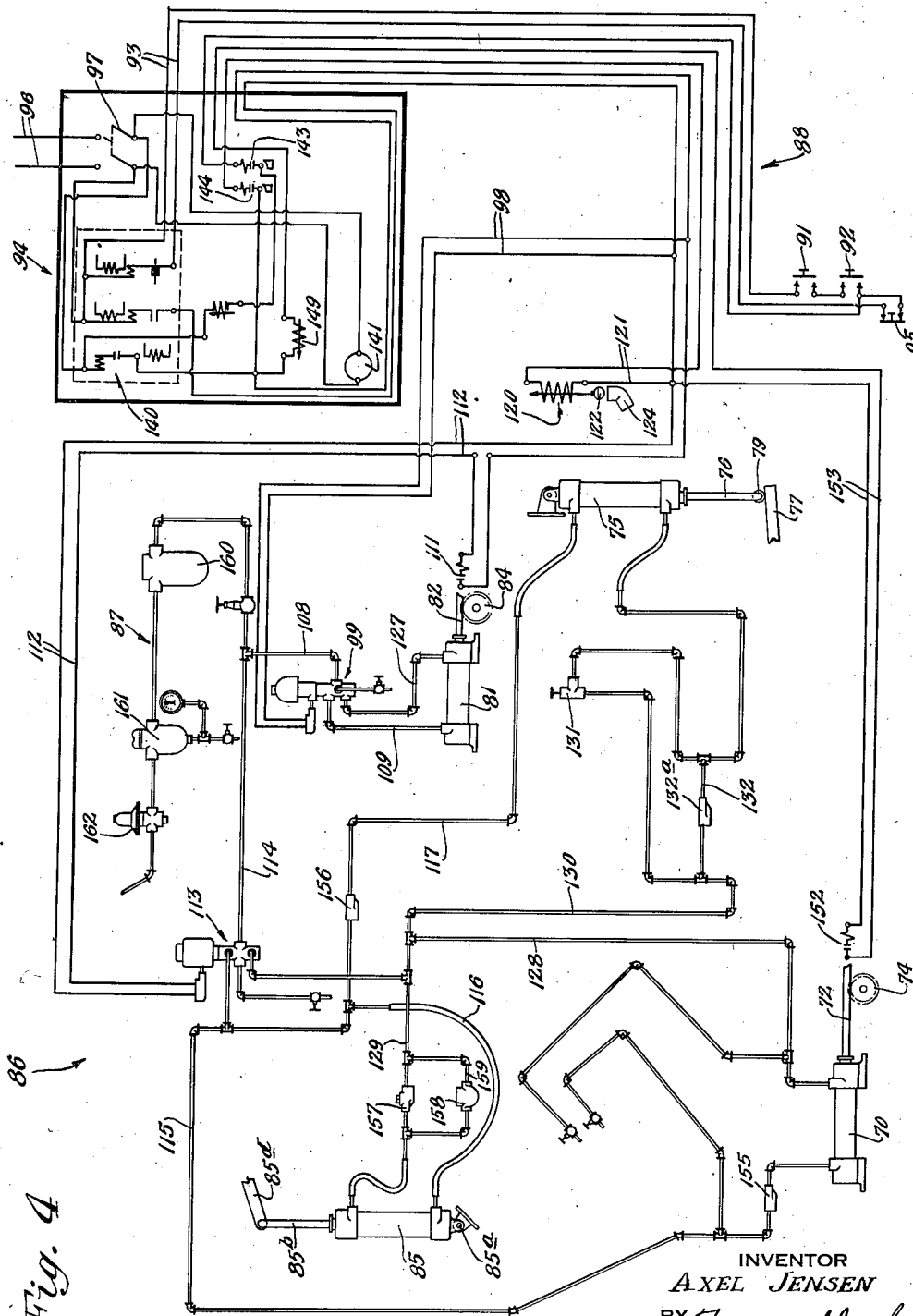


Fig. 4

INVENTOR
AXEL JENSEN
BY *Freyer and Mack*
ATTORNEY

UNITED STATES PATENT OFFICE

2,258,954

HAT-BLOCKING MACHINE

Axel Jensen, Danbury, Conn., assignor to Hat Corporation of America, Norwalk, Conn., a corporation of Delaware

Application February 1, 1940, Serial No. 316,707

5 Claims. (Cl. 223—7)

This invention relates to improvements in hat-blocking machines.

It is an object of the invention to provide a hat-blocking machine for use in the finishing of hats, which when once started will automatically perform a plurality of related mechanical blocking or finishing operations on a hat and will then automatically flow a predetermined amount of water on the hat before it is removed therefrom.

In machines now in general use there are provided a plurality of means for performing related finishing or blocking operations on a hat, as for example, a hat block which may be elevated and/or expanded, gripping jaws which are operable to engage a hat brim and then expand or stretch the same outwardly, and a banding ring which is adapted to be moved downwardly from an inoperative to an operative position relative to the hat. However, with these prior machines, a separate manual operation is required in the actuation of each of these plurality of means.

Thus, in operating a prior machine such as described above, and after a hat has been immersed in a hot-water tank, the operator must: first, manually operate a means, usually a foot treadle, to expand the brim-gripping jaws; second, place a hat on the hat block; third, release the foot treadle to return the gripping jaws to a retracted position; fourth, manually operate a lever to lock the gripping jaws on the brim; fifth, may pour hot water over the hat; sixth, manually operate a lever to actuate the block to swell the hat crown; seventh, manually operate a lever to place a banding ring over the hat crown; eighth, again press on the foot treadle to move the gripping jaws to a brim expanding or stretching position; ninth, manually turn on and control cold water to be directed on the hat; tenth, manually operate a lever to release the banding ring from the crown; eleventh, manually operate a lever to release the gripping jaws from the brim; and twelfth, remove the hat from the machine and place the same in a cold-water tank.

In blocking a hat on a machine embodying the novel automatic control features of the present invention, and after the hat has been placed on the block with the hat brim loosely confined between the gripping jaws, it merely is necessary for the operator to actuate a starting control to close the gripping jaws on the brim, and then automatically the banding ring is moved into an operative position with respect to the crown, the hat block is operated to swell the crown and the gripping jaws are moved outwardly to expand or stretch the brim, a predetermined amount of cold

water is flowed on the hat, and then automatically the hat block is retracted and the gripping jaws are opened, the banding ring is raised and the machine is in condition to permit the ready removal of the shaped hat and the insertion of another hat body for another cycle of operations on the machine.

With a machine embodying the novel features of the present invention, therefore, not only is there achieved a material reduction in the manual operations and also the costs involved in the usual blocking of a hat on machines now in general use, but also there is effected a predetermined control of the several operations whereby a more uniform and superior product is made possible.

Moreover, as a feature of the present invention, pertaining to the broad automatic feature above described, there are provided advantageous controlled fluid-pressure means for operating the several hat-shaping mechanisms.

Another feature of the invention resides in the novel and advantageous manner in which the main control means, the fluid-measuring-operating means and the regular operating means of the hat-blocking machine are interconnected to achieve the controlled and automatic operation of the latter.

Other objects and features will hereinafter appear.

In the drawings, wherein there is illustrated a present preferred embodiment of the invention:

Figure 1 is a front view of a hat-blocking machine embodying the novel features provided by the present invention.

Fig. 2 is a side view of the machine.

Fig. 3 is a top view of the machine, certain elements thereof being omitted for clarity of illustration.

Fig. 4 is a diagrammatic view showing the novel automatic control features of the present invention.

Fig. 5 is a fragmentary sectional view taken on the line 5—5 of Fig. 3.

Fig. 6 is a detail view showing certain mechanism included in the main control unit of the present invention.

Fig. 7 is an end view of the mechanism shown in Fig. 6.

Fig. 8 is a detail view showing one of the solenoid valve units.

Fig. 9 is a fragmentary detail view showing the manner in which the treadle and control mechanism therefor are associated.

Fig. 10 is a detail view of one of the valve units used in the conduit system.

Before describing the present improvements and mode of operation thereof in detail it should be understood that the invention is not limited to the details of construction and arrangement of parts shown in the accompanying drawings, which are merely illustrative of the present preferred embodiments, since the invention is capable of other embodiments, and the phraseology employed is for the purpose of description and not of limitation.

Referring more particularly to the drawings there is shown a hat-blocking machine 15 embodying the novel features of the present invention. It includes a main frame 16 having side pieces 17 and 18 with a transverse bed plate 19 secured thereto intermediate the upper and lower ends thereof, and with front and rear plates 20 and 21 also secured thereto and extending upwardly from the bed plate 19 to provide a compartment 22.

Associated with the main frame in the compartment 22 is an expansible hat block 23, and brim-clamping and stretching means 24. This hat block and this clamping and stretching means may be of any usual or well-known construction.

A vertically reciprocable elevating rod 25 may be employed for raising the hat block to stretch the crown to a desired height and a usual vertically movable expanding slide 26 may be utilized for operating expanding mechanism of the hat block. Interconnecting the elevating rod 25 and slide 26 for conjoint operation in proper timed relation is a system 27 of levers, including a lever 28 pivotally connected with a collar 29 secured to the elevating rod, a lever 30 pivotally connected to the slide 26 which is movable longitudinally of the rod 25, and terminating in a lever 31 mounted on a shaft 32, see Figs. 1, 2 and 3; suitably mounted on frame 15 at one side thereof. The illustrated system 27 of levers utilized for interconnecting elevating rod 25 and expanding slide 26 is fully disclosed and described in Patent No. 1,683,790 and reference is made to that patent for a more complete explanation of the construction and operation thereof.

The brim-clamping and stretching means 24, as shown in Figs. 1, 2, 3 and 5, includes a plurality of levers 33 and clamp bars 34, the levers 33 each being pivotally secured on an annular supporting plate 35 fixed to the frame 15 above the bed plate 19 and each being formed with an upwardly extending arm 36 and a downwardly and inwardly extending arm 37. On the upper end of each of the arms 36 there is formed a gripping jaw 38 at the outer end of which is an outwardly projecting guide sleeve 39. On the lower free end of each of the arms 37 is a finger 40 extending into a peripheral socket 41 provided in a hub 42 which is movable longitudinally on a fixed sleeve 43 encompassing the elevating rod 25 and mounted on the bed plate 19.

Positioned beneath the supporting plate 35 and concentric with the hub 42 is a lifting ring 44 to which are pivoted the lower ends of the clamp bars 34, each of which is associated with a lever 33 in such a way that the upper end thereof extends slidably through the guide sleeve 39 on the lever. A clamping jaw 45 is fixed on the upper end of each clamp bar 34 to cooperate with the jaw 38 on the lever 33 associated therewith.

From the foregoing, it is, therefore, apparent that while upward and downward movement of

the hub 42 serves to swing the clamping jaws 38 and 45 away from and toward the hat block 23, upward and downward movement of the ring 44 serves to move the clamping jaws 45 out of and into operative gripping relation with respect to the clamping jaws 38.

The mechanism 45 for effecting movement of the hub 42 which causes the jaws 38 and 45 to swing toward and away from the hat block, as shown, may include links 47 connected at their upper ends to the hub and at their lower ends to levers 48 pivotally connected to opposite sides of an adjustable fulcrum 49 secured to the frame 16. Links 50 connect the levers 48 with opposite sides 51 and 52 of a foot treadle frame 53 which is pivoted on a shaft 54 carried by brackets 55 secured to the lower part of the main frame 16. A counterbalancing weight 56 may be provided at the rear end of the treadle frame to bias the latter to the position shown in Fig. 2. A treadle plate 57 may be provided at the forward end of the treadle frame as a convenient means by which the levers 47 may be raised to swing the gripping jaws 38 and 45 away from the hat block.

The mechanism 46, briefly described above, is substantially identical with the mechanism disclosed in Patent No. 1,819,256 and reference is made to that patent for a more complete understanding of the construction and operation thereof.

The mechanism 58 for effecting the movement of the ring 44 which causes jaws 45 to move into and out of operative gripping engagement with the cooperating jaws 38, as shown, may include lift bars 59 which are preferably disposed at opposite sides 17 and 18 of the main frame, are connected at their upper ends to the ring 44, and are connected at their lower ends to anchor links 60 pivotally connected to the frame. Movement of the bars 59 is achieved by a lever mechanism 61 including levers 62 pivotally connected by a link means 63 to an actuating eccentric 64 fixed to a rock shaft 65 carried by the side pieces 17 and 18 of the frame.

The mechanism 58, briefly described above, is of the same construction as mechanism fully illustrated in Patent No. 1,819,256 and for a more complete understanding of the operation thereof reference is made to that patent.

Also included in the machine 15, and as is conventional in the hat-blocking art, see Patent No. 1,683,790, there is a usual banding lever 66 to which is attached a banding ring 67. As shown, a water shield 68 is preferably associated with the banding lever to direct water onto a hat body in a manner and for reasons well understood by those skilled in the art.

The individual operation and construction of the system 27 of levers for effecting an elevation and expansion of the hat block, the mechanism 46 for effecting movement of the brim-gripping jaws 38 and 45 toward and away from the hat block, the mechanism 58 for moving the brim-gripping jaws into and out of operative gripping engagement, and the banding lever 66, are, as above explained, well-known in the art. Accordingly, the specific construction of these individual mechanisms form no part of the present invention, it being appreciated that the details thereof may be modified without effecting a change in their ultimate function.

Of importance, however, the present invention does provide a novel arrangement and interconnection of these several mechanisms, individually old and well-known in the hat-blocking art,

whereby the operation thereof may be effected automatically and with a high degree of efficiency.

Thus, for effecting an operation of the system 27 of levers for controlling the hat block 23, there is provided a pressure cylinder 70 suitably secured to an extension 71 on the frame side piece 17, having a piston rod 72 extending toward the front of the machine and provided at its forward end with gear teeth 73 adapted to mesh with a spur gear 74 fixed to the shaft 32 on which the lever 31 is fixed. Movement of the piston rod 72, therefore, will rock the lever 31 and through the system 27 of levers cause the hat block to be moved upwardly and downwardly and to be expanded and contracted.

For effecting an operation of the mechanism 46 for controlling movement of the brim-gripping and stretching jaws 38 and 45 toward and away from the hat block, there is provided another pressure cylinder 75 suitably attached to the front of the frame 15 and having a piston rod 76 extending downwardly toward the foot treadle frame 53 to effect downward movement thereof. Preferably, and as shown most clearly in Figs. 1, 2 and 9, for operatively associating the piston rod 76 with the treadle frame, there is provided a connecting bar 77, suitably fixed to the treadle frame and extending forwardly and upwardly to underlie a roller 78 secured to the lower end of the piston rod. If desired, a guide 79 may be advantageously provided for maintaining the piston rod 76 and connecting bar 77 in proper relation. As shown this guide 79, which may be in the form of a yoke, is pivotally mounted on a side extension of the treadle frame shaft 54 and is likewise pivotally associated at 80 with the lower end of the piston rod 76.

With the construction above described, it will be readily appreciated that while downward movement of the piston rod will effect a downward movement of the treadle frame and a corresponding outward or spreading movement of the gripping jaws, downward and also upward movement of the treadle frame may be effected independently of the piston rod. The advantage of this latter feature will appear hereinafter in the general description of the operation of the machine.

For effecting operation of the mechanism 58 for controlling movement of the jaws 45 into and out of gripping engagement with the jaws 38, there is provided a third pressure cylinder 81 secured to the frame side piece 18 and having a piston rod 82 extending forwardly therefrom, formed with gear teeth 83 adjacent the forward end thereof adapted to operatively engage with a spur gear 84 fixed to one end of the shaft 65 on which the actuating eccentric 64 is secured. Forward and rearward movement of the piston rod 82, therefore, causes the mechanism 58 to achieve a closing and an opening of the brim-gripping jaws.

For effecting movement of the banding ring 67 into and out of operative association with the hat block, there is provided a fourth pressure cylinder 85 which, as shown, is pivotally connected at 85a to the rear of the main frame, and from which there extends upwardly a piston rod 85b pivotally connected at 85c to a rearwardly extending arm 85d on the banding lever 66.

While as shown, the several pressure cylinders 70, 75, 81 and 85 are particularly adapted to be operated by air pressure, it will be appreciated

that they may be operated by any other suitable fluid-pressure means, that they may be of any well-known construction and that they operate to move each of the piston rods in opposite directions in a manner well understood by those in the pressure cylinder art.

For coordinating the operation of the pressure cylinders there is provided by the present invention a novel interconnected control system 86, see Fig. 4, including a conduit system 87 for transmitting air under pressure to and away from the cylinders and a system 88 of electric circuits for controlling the operation of divers solenoid operated valves which determine the flow of air to and from the cylinders.

In the operation of the machine the operator first subjects a hat to the action of hot water, as by immersing the same in a hot-water tank in the usual manner, and then places the hat on the hat block 23. By pressing down on the foot treadle 57 the gripping jaws 38 and 45, which are initially in an open or inoperative position, are expanded or moved outwardly from the hat block. This permits the hat brim to drop onto inwardly extending fingers 38a on the lower gripping jaws 38. Upon releasing the treadle, the weight 56 causes the latter to move upwardly and return the gripping jaws to their initial inward position, as shown in Fig. 5. The hat brim is now properly located between the gripping jaws 38 and 45 and the automatic operation of the machine is then effected.

For starting the automatic operation of the machine there preferably are provided a pair of starting buttons 89 and 90, see Fig. 3, preferably spaced apart a sufficient distance to require operation with both hands and conveniently located at the front of the machine. These starting buttons operate switches 91 and 92 controlling an electric circuit 93 to a main control unit 94, shown diagrammatically in Fig. 4. While two starting buttons are disclosed and are preferably included, one button only may be utilized. The use of the two widely spaced buttons, however, is advantageous because by making the starting of the machine a double operation, the operator is fully warned and because of the wide spacing of the starting buttons he is required to use two hands on the outside of the machine. With this arrangement, therefore, the chances of him getting his hands or arms caught in the machine are thus substantially eliminated. A special cut-out switch button 95 may also be provided in the circuit 93 for use in an emergency.

With the closing of the starting switches 91 and 92 in the circuit 93 to the main control unit 94 which may be connected to a main electric circuit 96 by a conventional switch 97, the main control unit causes current to flow in a circuit 98 to a solenoid valve unit 99. As shown in detail in Fig. 8, the unit 99 may be of a well-known construction including a solenoid coil 100, a solenoid core 101 normally urged in a downward direction by a spring 102, a valve body having inlet and exhaust passages 103 and 104 and having passages 105 and 106 respectively adapted to be connected to opposite ends of a pressure cylinder, and a movable control member 107 adapted to selectively connect the inlet passage 103 with passages 105 and 106 and also the exhaust passage 104 with the passages 106 and 105.

Energization of the solenoid valve unit 99 causes the latter to connect an inlet air line 108

with a line 109 to pressure cylinder 81 whereby piston rod 82 through the gear 84 actuates mechanism 58 to close the gripping jaws 38 and 45 on the hat brim. When the piston rod 82 reaches substantially the terminus of its travel, it, through a cam plate 110 thereon, closes a switch 111 normally biased to an open position, and closes a circuit 112 to a second solenoid valve unit 113. This latter unit may be identical in construction and operation with the unit 99 first described.

Energization of this second solenoid valve unit 113, causes the latter to connect the inlet air line 114 with lines 115, 116 and 117 leading to pressure cylinders 70, 85 and 75 which in proper relation through movement of the piston rods 85b, 76 and 72 cause the banding ring 67 to be lowered, and the brim to be stretched and the crown to be swelled.

To effect an automatic application of cold water on the hat after the performance of the operations described above, there is provided a solenoid unit 120 connected by a circuit 121 with the main control unit 94. Energization of the solenoid unit 120 causes a dump valve 122 in a water tank 123 suitably mounted above the machine, to move upwardly and permit water to flow from an outlet pipe 124 onto the hat.

Water in the tank 123 normally is maintained at a predetermined level by a float 125 which in a usual and well-known manner controls a valve 126 in a water supply line. Accordingly, when the dump valve 122 is opened a predetermined amount of water is flowed on the hat. The main control unit 94 automatically de-energizes the solenoid unit 120 after a predetermined period of time to effect a closing of the dump valve so that excess water is not flowed on the hat.

After the flowing of the water onto the hat upon the completion of the hat-shaping and stretching operations, the main control unit 94 automatically opens the circuits 98 and 112 to the solenoid valve units 99 and 113 to thereby cause the latter to return to their initial position so as to connect the air inlet line with a line 127 to the cylinder 81 and with lines 128, 129 and 130 to cylinders 70, 85 and 75. With the air lines so connected the piston rods 82, 72 and 85b are moved back to their initial positions to respectively open the hat-brim-gripping jaws, lower and retract the hat block, and raise the banding ring.

Preferably and as shown in Fig. 4, however, the automatic control of the machine is such that the de-energization of the solenoid valve unit 113 does not automatically cause air to flow from the line 130 into the cylinder 75 to return the piston rod 76 to its initial upward position. This result is achieved by providing a means, such as a normally closed manually operable valve 131, in the line for resisting the flow of air into the cylinder 75. A valve unit 132a in a bypass 132 is provided for permitting the release of air from the cylinder 75 into the line 130 while resisting the flow of air into the cylinder 75 from the line 130. This valve unit 132a, as shown in detail in Fig. 10, may include a conventional check valve portion 132b and a reducing valve portion 132c, which latter portion is adjusted to permit a very slight or no passage of air therethrough.

With this arrangement the gripping jaws are retained in expanded position after the cycle of operations on the machine has been completed. The blocked hat thus may be easily removed from and a new hat inserted on the hat block

without manually pressing down on the treadle as was necessary in the case of the first hat.

When the new hat has been positioned on the hat block with the brim thereof resting on the inwardly extending fingers 38a on the lower gripping jaws 38, the valve 131 may be manually operated to permit air from the line 130 to flow into the cylinder and thus cause the piston rod to move upwardly. The treadle then freed from the restraining action of the piston rod 76 will be swung upwardly by the weight 56 to effect an inward movement of the gripping jaws. The machine is thus set for a new cycle of operations on the newly inserted hat and upon the closing of the starting switches 91 and 92 the automatic operation of the machine again begins.

The main control unit 94, see Figs. 4, 6 and 7, whose function heretofore has been described, includes a magnetic relay 140, an electric motor 141 connected to a shaft 142 by suitable speed-reducing means, a pair of circuit-controlling switches such as the mercury switches 143 and 144 mounted for controlled rocking movement by timing cams 145 and 146 on a shaft 147 which may be operatively connected to the shaft 142 by a clutch 148, and a solenoid unit 149 mounted on the motor and through a link 150 and lever 151 adapted to control the clutch 148.

With this main control unit 94, when the starting switches 91 and 92 are closed the circuit 98 to the solenoid valve unit 99 is completed through the magnetic relay 140. As the piston rod 72 controlling the elevation and expansion of the hat block reaches the end of its travel, a shoulder 72a thereon operates a switch 152 to close a normally open circuit 153 to the clutch controlling solenoid unit 149 which engages the clutch 148 to start the rotation of the shaft 147 and associated time control cams 145 and 146.

The time control cams are so designed and the time control switches 143 and 144 are so associated therewith, that initially the switch 143 controlling the magnetic relay 140 is closed. After a predetermined period of time, as determined by the design of cam 146, the circuit 121 to the dump valve solenoid unit 120 is closed by the switch 144 causing water to flow from the tank 123 onto the hat.

Further rotation of the time control cams causes the switch 143 and the switch 144 to break the circuits controlled thereby to thus de-energize all of the solenoid units 99, 113, 120 and 149 and return the same to their initial positions. With these operations, the dump valve is closed, preventing an excess flow of water onto the hat, and the piston rods 72, 82 and 85b and the mechanisms operated thereby are likewise returned to their initial positions. Return of the time control cams 145 and 146 and associated switches 143 and 144 to their initial positions may be achieved by a spring 154 which reversely rotates the shaft 147 when the clutch is disengaged on the de-energization of the solenoid unit 149. Return of the piston rod 76, as heretofore explained, is delayed until the manually controlled valve 131 is operated.

It is to be understood that the details of the electrical connections and other elements in the main control unit 94 may be modified without effecting a change in the ultimate function of the unit. However, in order to better understand the function of this main control unit and its relation to the operating mechanism of the machine, one specific form of unit has been illustrated and briefly described above. Any suit-

able control unit, however, which will similarly serve to control the operation of the machine may be utilized.

Preferably, and as shown most clearly in Fig. 4, to slow down the movement of certain of the hat-blocking mechanisms into their respective operative and inoperative positions so as not to make their operation on the hat too severe, and so as to control their movement in a preferred sequence, there are provided in the conduit system 87 and in association with certain of the pressure cylinders a plurality of valve units 155, 156 and 157. These valve units may be of the same construction as the valve unit 132a, see Fig. 10, each including as does that unit a check valve portion which permits the flow of air away from a pressure cylinder but resist the flow of air into the pressure cylinder, and also a reducing valve portion. As distinguished from the valve unit 132a, however, the valve units 155, 156 and 157 are adjusted not to substantially stop the flow of air through the reducing valve portions but only to limit or retard the flow of air therethrough to a certain extent.

Thus, with this arrangement one valve unit 155 is placed in the line 115 to the pressure cylinder 70, another valve unit 156 is placed in the line 117 to the pressure cylinder 75 and no valve unit is placed in the line 116 to the pressure cylinder 85. Hence, the speed of operation of the cylinders 70 and 75 controlling the operative movements of the hat block elevating and expanding mechanism and of the gripping jaw expanding mechanism is reduced with respect to the speed of operation of the banding ring lowering mechanism. And, also with this arrangement one valve unit 157 is placed in the line 129 to the pressure cylinder 85 so as to reduce the speed of the return movement of the banding ring to an inoperative position with respect to the speed of movement of the other hat-blocking mechanisms to their inoperative positions. A conventional check valve 158 may be inserted in a bypass 159 around the valve unit 157 to facilitate the exhaust of air from the cylinder 85 and thus speed up the operation of the latter when operating to effect a lowering of the banding ring.

Also, to enable a more efficient operation of the conduit system, there may be included therein, as shown in Fig. 4, a conventional oiler 160, a conventional strainer 161 and a conventional air pressure regulator 162. It is to be understood, however, that the foregoing conventional units 160, 161 and 162 may be omitted and that the several reducing valve units 155, 156 and 157 may be omitted or may be adjusted in a manner other than in the manner hereinbefore described without departing from the broad novel features of the present invention.

From the foregoing, it will therefore be appreciated that there is provided by the present invention a machine in which the complete cycle of related operations for blocking and setting a hat may be performed automatically and in a highly efficient manner, thus not only appreciably reducing the time and cost involved in the case of the blocking machines now in general use where an operator must separately and manually actuate each of the several mechanisms included therein, but also enabling a predetermined and selected control of all of the operations whereby a more uniform and superior product may be achieved.

Variations and modifications may be made

within the scope of this invention and portions of the improvements may be used without others.

Having thus described the invention, what is claimed as new is:

1. In a hat-blocking machine the combination of crown-expanding means; banding means; brim-stretching means; fluid-pressure means for concurrently operating said crown-expanding, banding and brim-stretching means; and means for delaying operation of at least one of said means operated by said fluid-pressure means including a separate fluid-pressure-regulating means.

2. In a hat-blocking machine the combination of hat-expanding means; banding means; brim-gripping means; brim-stretching means; fluid-pressure means for operating the expanding, banding, gripping and stretching means; fluid-supply means for directing fluid on a hat; and means operable upon a predetermined movement of said brim-gripping means to control operation of the fluid-pressure-operating means for said hat-expanding, banding and brim-stretching means adapted to effect sequential operation of said fluid-pressure means and said fluid-supply means.

3. A hat-blocking machine comprising a plurality of means including crown-expanding means, banding means and brim-stretching means; fluid-pressure means for operating said plurality of means; means for flowing fluid on a hat; valve means for controlling the flow of fluid from said last-named means; and a main control means for effecting an operation of said fluid-pressure means to operate said crown-expanding means, banding means and brim-stretching means and for automatically effecting an opening of said fluid controlling valve for a predetermined period of time upon the completion of said plurality of hat-blocking operations by said plurality of means.

4. A hat-blocking machine including a plurality of means for performing a plurality of separate hat-blocking operations on a hat, each of said plurality of means having operative and inoperative positions and said plurality of means including hat-brim-gripping means movable into operative and inoperative brim-gripping positions and into operative expanded and inoperative retracted brim-stretching positions; manually operable means for actuating said hat-brim-gripping means; means for connecting said manually operable means to said brim-gripping means for movement of the latter from said retracted to said expanded position and return to facilitate the initial association of a hat brim with the brim-gripping means; power means; means for connecting said power means to each of said plurality of blocking means, said power-connecting means including a member associated with said manually operable means in such a way that the latter may be operated independently of the power means; and control means for effecting an automatic operation of said power means.

5. A hat-blocking machine including a plurality of means for performing a plurality of separate hat blocking operations on a hat, each of said plurality of means having operative and inoperative positions and said plurality of means including hat-brim-gripping means movable into operative and inoperative brim-gripping positions and into operative expanded and inoperative retracted brim-stretching positions; independently operable means for actuating said hat-brim-gripping means; means for connecting

said independently operable means to said brim-gripping means for movement of the latter from said retracted to said expanded position and return to facilitate the initial association of a hat brim with the brim-gripping means; power means; means for connecting said power means to each of said plurality of blocking means, said power-connecting means including a member associated with said independently operable means in such a way that the latter may be op-

erated independently of the power means and that the power means positively moves the brim-gripping means only from an inoperative to an operative brim-gripping position and return, and from a retracted to an expanded position; control means for effecting an automatic operation of said power means; and means for effecting a return of said brim-gripping means to a retracted position.

AXEL JENSEN.