

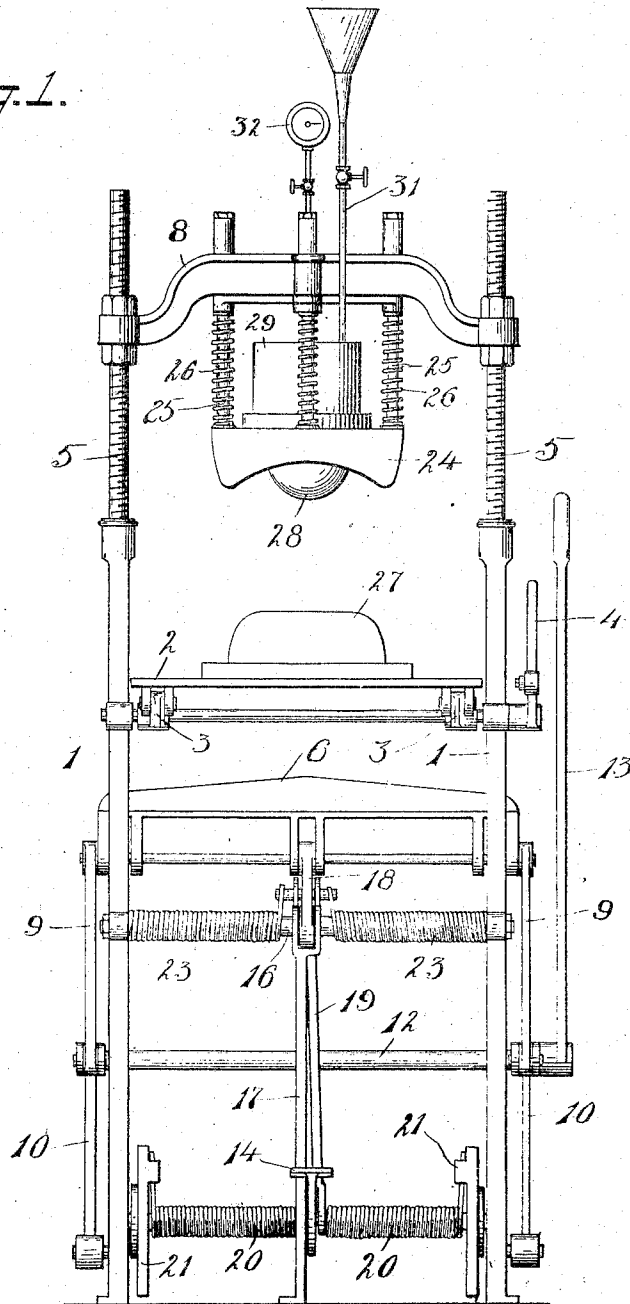
C. W. STEVENS.
HAT FORMING PRESS.
APPLICATION FILED SEPT. 25, 1907.

947,309.

Patented Jan. 25, 1910.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses
Charles Reed
Langdon Moore

Inventor
C. W. STEVENS
Charles Reed
Langdon Moore

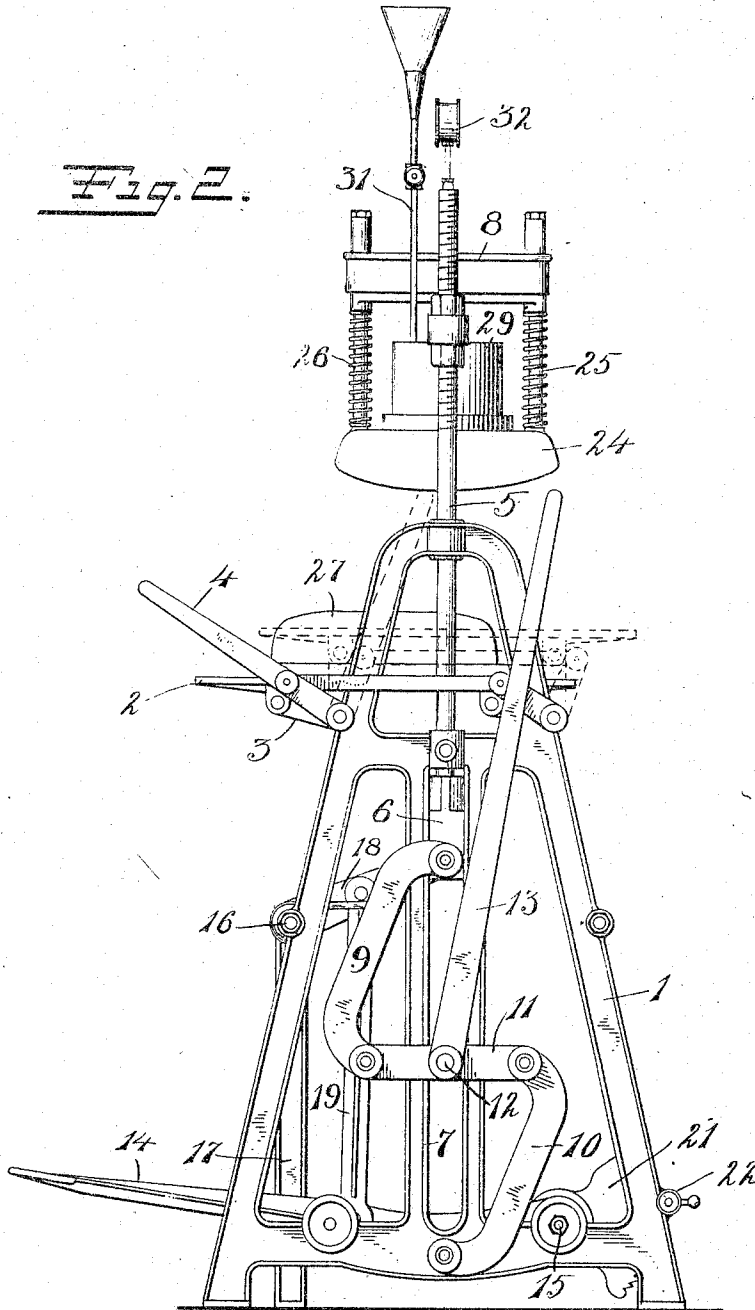
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4 SHEETS—SHEET 2.

Fig. 2.



Witnesses:
Chas. Reid
Langdon Moore

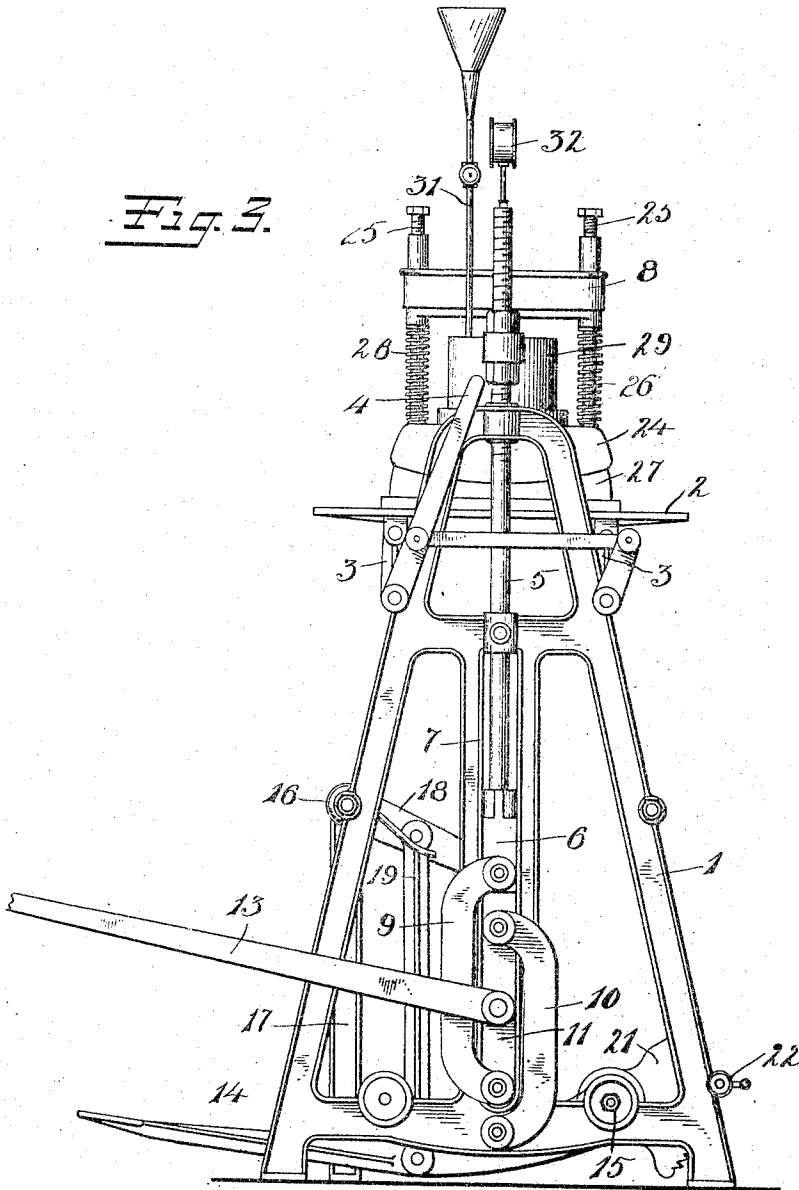
Inventor
 C. W. STEVENS
 By his Attorneys
Barclay Brinnes Mitchell

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4 SHEETS—SHEET 3.



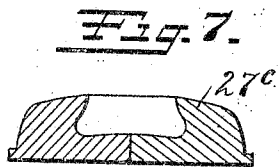
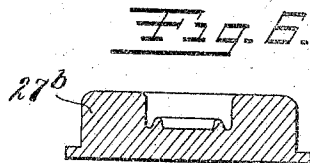
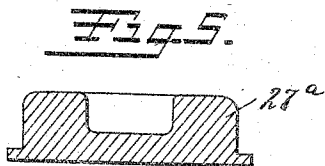
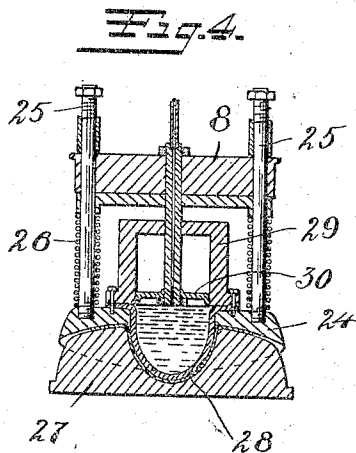
Witnesses:
Charles [Signature]
Langdon Moore

Inventor
C. W. STEVENS
By his Attorneys
Baileys, Brimmer & Mitchell

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4 SHEETS—SHEET 4.



Witnesses:
Chas. Reid
Raugan Moor

Inventor
C. W. STEVENS
By *his* Attorneys
Banker, Bunnell & Mitchell

UNITED STATES PATENT OFFICE.

CHARLES W. STEVENS, OF EAST ORANGE, NEW JERSEY.

HAT-FORMING PRESS.

947,309.

Specification of Letters Patent. Patented Jan. 25, 1910.

Application filed September 25, 1907. Serial No. 394,429.

To all whom it may concern:

Be it known that I, CHARLES W. STEVENS, a citizen of the United States, residing at East Orange, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Hat-Forming Presses, of which the following is a full, clear, and exact description.

This invention relates to hat forming machines, and more particularly to hand operated hat presses.

The objects of this invention are to allow more space than heretofore between the dies when the press is open; to assure a uniform pressure upon the hat forming material at each operation of the press; to lock the dies when the pressure has been fully applied and to accommodate the die opening springs to dies of different weights. These and other advantages will be more clearly understood by reference to the accompanying drawings, which illustrate the preferred form of the machine. However, minor changes may be made without departing from the scope of the invention.

Figure 1 is a view in front elevation of the complete machine, the dies being open. Fig. 2 is a view in side elevation of the same. Fig. 3 is a view in side elevation of the same, the dies being closed. Fig. 4 is a detail mainly in section of the upper and lower dies and related parts. Figs. 5, 6 and 7 are detail views in section of different forms of lower dies.

1—1 are the side members of the frame. 2 is a swinging table secured to the frame by the pivoted links 3.

4 is an operating lever adapted to swing the table from the upper central position shown in Fig. 3 to the lower forward position shown in Fig. 2.

5—5 are die supporting rods traveling through vertical bearings on each side of the frame and are secured at their lower ends to a cross head 6 operating in a vertical slot 7 in each side member 1.

8 is a die carrying frame adjustable upon the upper ends of the rods 5—5. The cross head 6 is operated by a double toggle on each side of the frame comprising the links 9 pivoted to the cross head 6, the links 10 pivoted to the side members 1 and the connecting bars 11 pivoted to the free ends of the links 9 and 10. Each of the connecting bars 11 is connected at the center to the corresponding

bar on the opposite side by the shaft 12 passing through the vertical slot 7, forming a floating pivot for the said bars 11.

13 is an operating bar for the toggle mechanism and is secured to the shaft 12.

14 is a treadle mounted on the shaft 15 connecting the side members 1 at the rear of the frame.

16 is a shaft connecting the side members 1 at the front of the frame. 17 is a central support therefor, which also acts as a guide for the treadle 14.

18 is an arm pivoted at one end on the shaft 16 and connected at the other end of the cross head 6.

19 is a pivoted link connecting the arm 18 to the treadle 14.

20—20 are springs surrounding the shaft 15 on each side of the treadle 14, and exert an upward pressure upon said treadle.

21—21 are toothed sectors mounted at each extremity of the shaft 15 and are secured to one end of the springs 20—20.

22—22 are detents mounted on the side members 1 and are adapted to engage the toothed portion of the sectors 21.

23—23 are springs surrounding the shaft 16 on each side of the arm 18 and exert an upward pressure upon the said arm. The upper hat forming die is carried by the frame 8, and in the form shown comprises a rigid brim forming member 24 secured to guide rods 25 slidably mounted in the frame 8.

26—26 are springs surrounding each rod 25, between the die member 24 and the frame 8.

27 is a rigid lower die member mounted on the swinging table 2 in line with the upper die member when the table is in the raised position. The upper crown forming die member is of the hydraulic type and consists of the flexible bag 28 secured to the rigid brim forming member 24.

29 is a cylinder secured to the member 24 above the bag 28.

30 is a piston in the cylinder 29 secured to the frame 8.

31 is a tube for admitting liquid to the bag 28.

32 is a pressure gage communicating with the interior of the bag 28.

When the press is open, as shown in Figs. 1 and 2, and it is desired to form a hat, the operation is as follows: The hat form-

ing material is placed upon the lower die member 27, the lever 4 moved to the position shown in Fig. 3, which swings the table 2 into the upper position and centers the dies. The treadle 14 is pressed down by the foot of the operator, which draws the cross head downward and consequently brings the upper die member into contact with the lower die member. Further depression of the treadle 14 causes the frame 8 to descend, increasing the tension of the springs 26 and forcing the die member 24 into more intimate contact with the hat material and moving the piston 30 downward in the cylinder 29, displacing the fluid therein so as to cause the bag 28 to bulge and force the hat material into conformity with the walls of the recess in the lower die member 27 to form the crown. The operation of the treadle performs still another function, for as the cross head moves downward the links 9 and 10 rotate the connecting bar 11 upon its floating pivot shaft 12 and bring the operating bar 13 within easy reach of the operator without his changing position. A final powerful set may be given by the manipulation of this bar 13. The adjustment of the frame 8 may be depressed to such an extent that the toggle links will be brought into line and practically self-locked (see Fig. 3). The links are so curved or shaped that they will not interfere with one another in this final closing movement. When the pressure is completed, the press will remain in this position until the bar 13 is lifted to throw the said links off center, whereupon the springs 20 and 23 will cause a lifting movement and restore the parts to their original position shown in Fig. 1. The springs 26 force the brim forming member 24 downward, reducing the pressure on the liquid in the bag 28. It is now only necessary to swing the lever 4 to the position shown in Fig. 2 to shift the table 2 toward the operator and to a lower level, thus facilitating the easy removal of the hat thus formed. The dies 24 and 27 being of solid material preferably metal serve in addition to shaping the hat material to "press" or finish both the upper and lower surface of the hat brim, while at the same time the walls of the crown receiving recess in the lower die 27 also "presses" or finishes the outer surface of the crown; hence, simultaneously with the shaping operation, all exposed surfaces of the hat are pressed or finished whereby subsequent operations for this purpose are eliminated.

In forming hats of different shapes, it is necessary to provide dies of different shapes and weight, and to accommodate the return springs 20—20 to the different weights of the upper dies the tension in the spring 20 may be adjusted by the sectors 21 and de-

tents 22. The operation of the upper die member is the same when used with different forms of lower die members, such as 27^a 27^b and 27^c shown in Figs. 5, 6 and 7. Of course the arrangement might be such as to cause the hydraulic pressure to extend over the brim as well as the crown.

While I have shown two toggle links 9 and 10, since superior results can be obtained thereby, in the broadest aspect this invention should not be understood as being limited thereto. It will be seen that by this or equivalent arrangement uniform pressure will be applied to the dies in each successive operation of the press.

What I claim is:—

1. In a hat press, two opposed dies, pressure mechanism connected with one of said dies, and means whereby the other of said dies may be moved into and out of the path of and toward and from the opposed die, independently of said pressure mechanism.

2. In a hat press, two opposed dies, pressure mechanism connected with one of said dies, a shiftable table supporting the other die, and means whereby the second die may be moved into and out of the path of and toward and from the opposed die, independently of said pressure mechanism.

3. In a hat press, two opposed dies, pressure mechanism connected with one of said dies, a swinging table carrying the other of said dies, and means whereby said table may be swung into and out of and toward and from the path of the opposed die, independently of said pressure mechanism.

4. In a hat press, a frame, a die member adjustably mounted therein, pressure mechanism for said die member, an opposed die member, and means operable independently of said pressure mechanism whereby said second die may be moved into the path of and toward said first die.

5. In a hat press, a frame, a die member adjustably mounted therein, pressure mechanism for said die member, an opposed die member and manually operable means independent of said pressure mechanism to move said second die into the path of and toward the first die.

6. In a hat press, a frame, a die member adjustably mounted therein, and means to apply pressure to said die member, a table mounted in said frame, a die member carried by said table, and means operable independently of said pressure mechanism for swinging the table outwardly and downwardly.

7. In a hat press, a frame, opposing die members, one of said members being reciprocable, means to reciprocate said member to apply initial pressure to all parts of the hat and additional means to apply pressure upon said member including toggles, and a toggle operating bar, said reciprocating

means partially operating said pressure means and moving said operating bar toward the operator.

8. In a hat press, a main frame, a relatively stationary die member, an opposed die member, reciprocating rods secured to the latter member, double self-locking toggles connecting said reciprocating rods to said main frame, and means to operate said toggles.

9. In a hat press, a frame, a relatively stationary die, a movable die, rods mounted to reciprocate in said frame and adjustably secured to said movable die, a double toggle adapted to reciprocate said rods, comprising a link pivoted to said rods, a link pivoted to said frame, and connecting bar pivoted at each end to the free ends of said links, and an operating bar secured to said connecting bar.

10. In a hat press, a frame, opposed die members, reciprocating rods mounted in said frame, one of said die members being carried thereby, a cross head operating in a slot in said frame and secured to said rods, a link pivoted at each end of said cross head, a link pivoted at each side of said frame, connecting bars for said links, a shaft movable in said cross head slot, said connecting bars being secured to said shaft, an operating lever for said parts.

11. In a hat press, a frame, opposed die members, reciprocating rods mounted in said frame, one of said die members being carried thereby, a cross head operating in a slot in said frame and secured to said rods, a link pivoted at each end of said cross head, a link pivoted at each side of said frame, connecting bars for said links, a shaft movable in said cross head slot, said connecting bars being secured to said shaft, an operating lever for said parts, and separate means for partially moving said toggle links in a direction to move the dies toward each other.

12. In a hat press, a frame, opposed die members, reciprocating rods mounted in said frame, one of said die members being carried thereby, a cross head operating in a slot in said frame and secured to said rods, a link pivoted at each end of said cross head, a link pivoted at each side of said frame, connecting bars for said links, a shaft movable in said cross head slot, said connecting bars being secured to said shaft, an operating lever for said parts, and separate means for, partially moving said toggle links in

a direction to move the dies toward each other, including a foot treadle and connecting devices.

13. In a hat press, a frame, opposing die members, one of said members being reciprocal, hand-operating means to move said member in one direction and effect pressure thereon, treadle-operating means to move said member in one direction, and adjustable means acting through said treadle-operated-means to move said member in the opposite direction.

14. In a hat machine, a press frame, a relatively stationary die member, a die-carrying frame, reciprocally mounted on said press frame, an hydraulic die member mounted thereon, and means to reciprocate and apply pressure to said hydraulic die member by one operation.

15. In a hat machine, a press frame, a relatively stationary die, a die-carrying frame mounted to reciprocate on said press frame, an hydraulic die, comprising a flexible member, and a cylinder secured thereto mounted to reciprocate on said die frame, a piston mounted in said cylinder, and means to reciprocate said die and apply pressure to said piston by one operation.

16. In a hat press, two die members, one of said die members including a rigid brim-forming part, a flexible crown-forming part and a fluid container, a movable die-carrying frame, the movable section of the die being yieldingly carried thereby, and a fluid displacer rigidly carried thereby.

17. A hat press, comprising a die member having rigid brim-shaping and outside crown-shaping portions, a cooperating die member having a rigid brim-shaping portion and a yielding expansible inside crown-shaping portion, die operating members constructed and arranged to move the rigid brim-shaping portions of said die members into engagement with the fabric between them, and yielding connections between said die operating members and said dies to permit continued operation of said operating members after such engagement and means carried by said die operating members to expand said expansible crown-shaping portion during such continued operation.

CHARLES W. STEVENS, *

Witnesses:

R. C. MITCHELL,
LANGDON MOORE.