

F. B. VANDERHOEF.
HAT PRESS.
APPLICATION FILED JUNE 25, 1912.

1,059,238.

Patented Apr. 15, 1913.

3 SHEETS-SHEET 3.

Fig. 5.

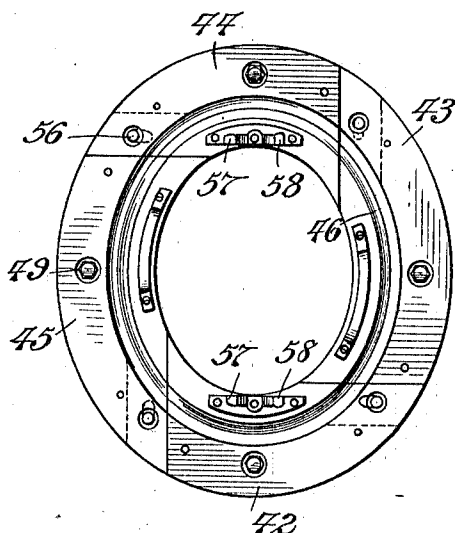


Fig. 6.

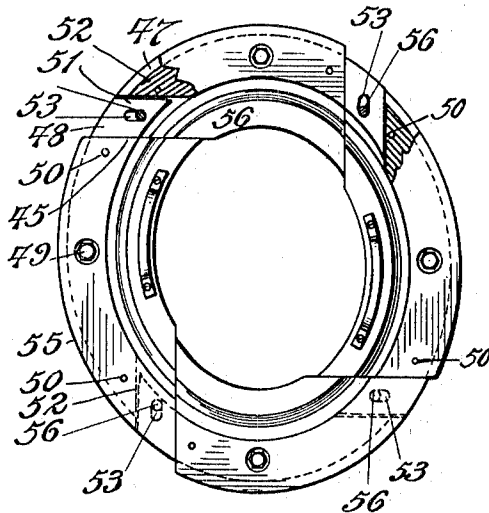
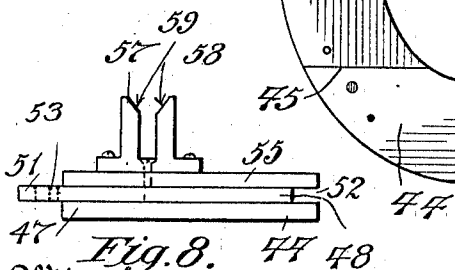
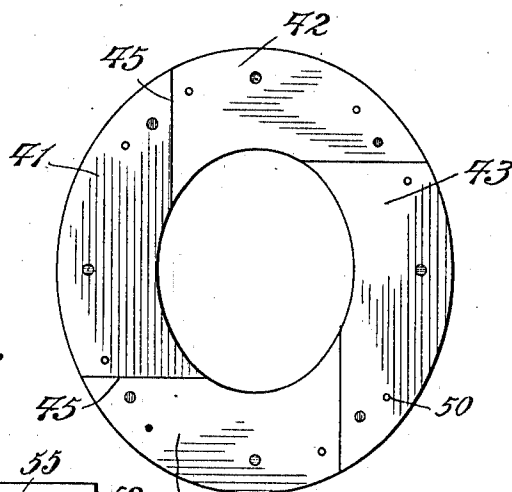


Fig. 7.



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HAT-PRESS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANCIS BAILEY VANDERHOEF, citizen of the United States of America, residing at New York city, in the county and State of New York, have invented certain new and useful Improvements in Hat-Presses, of which the following is a specification.

This invention relates to a press for hats by means of which the hats can be conveniently standardized, *i. e.*, brought to exactly the desired internal and external dimensions and form with great precision and uniformity.

In the manufacture of straw hats great difficulty has been encountered in bringing the product to the exact internal and external shape and size desired, so that the hats may be conveniently standardized, and hats of the same number and size given a uniform fitting effect.

According to one method it has been the custom to form the hats within an external mold or press, the walls of which are maintained at a suitable temperature to cause the hat to take permanently the form in which it is pressed or molded. To support the hat from within a flexible pad, as a bag filled with water, has been used. The hat is thus compressed from without against a support which will yield at any point where the straw has a tendency to swell or bulge toward the inner side of the hat. Though it is not impossible to make in this way a hat of any given internal dimensions, hats manufactured according to this method are more or less irregular as to the form of the inside surface, and the operative portion of this surface, *i. e.*, that upon which the band rests, has various ridges, humps and protruding portions. For this reason hats of the same size often fail to have the same fitting effect and must be stretched, padded and reformed to fit the purchaser.

By use of the machine or press which is the subject of my invention, I am able to produce hats having the exact internal form and dimensions desired, and to so mold or press the internal surface that in the finished hat it is smooth and regular without the undesirable ridges and protrusions to which I have referred.

An important feature of the press is that it determines positively the internal as well

as the external dimensions and form of the hat. To this end it comprises a rigid internal former which conforms to the dimensions to which the hat is to be finished, and means for pressing the hat externally so that a high degree of pressure is applied to it radially at all points simultaneously, whereby it is forced into intimate contact with the internal former throughout its lateral surface. While the machine is in operation, the former and mold are heated and maintained at pressing temperature so that the hat is caused to take and retain internal dimensions and shape exactly similar to the dimensions and shape of the former. The external shape and dimensions of the hat are at the same time brought to exact conformity to the shape of the external mold.

Described in general terms, the machine of my invention consists in an external sectional mold, a corresponding internal mold or former, the sections being mounted so that they may be moved to contract or expand the mold, and means for forcing the sections inward to contract the mold and press them toward or against the former.

Preferably the sections of the mold are mounted on a support to move radially or laterally. The internal former is mounted on the same support and the mold sections are provided with inclined or wedging surfaces. The device for forcing the sections together and contracting the mold is preferably in the form of a member having an inclined portion or surface to engage the corresponding inclined portions or wedging surfaces of the sections, and a support for the same, one support being mounted to move toward and from the other on the line of the axis of the mold, so that the closing member can be forced against the mold, causing it to contract, whereby the inner surfaces of its sections press against the external surface of the former.

The drawings show a machine constructed in accordance with the preferred form of my invention.

Figure 1 is a top plan of the mold when expanded. Fig. 2 is a bottom plan of the same. Fig. 3 is a top plan of the mold in contracted position. Fig. 4 is a vertical, central cross-section of the press, the standards, etc., being broken away for convenience in illustration. Fig. 5 is a top plan of a modi-

fied form of my mold in closed position. Fig. 6 is a similar view of the mold when expanded. Fig. 7 is a bottom view of the same. Fig. 8 is an elevation of one mold section.

Referring to the drawings, the machine, as shown, consists of an external, annular mold 1 made in a plurality of separate, arcuate sections 2, 3, 4 and 5, mounted to move laterally and contract and expand the mold, and having inclined or wedge surfaces 6, a support 7 therefor preferably in the form of a steam-table having a steam-chamber 8, an internal former 9 resting on the table within the mold, an external wedge or closing member 10 preferably with a heating-ring as 11 encircling the same, a support 12 for the closing-member or external wedge, the table 7 being mounted on guides 13 so that it may be moved toward and from the closing-member 10 on the line of the axis of the mold, the guides being parallel to said axis.

The arcuate sections 2, 3, 4 and 5 of which the mold is formed, are placed end to end, the end faces of the sections, as shown, being plane surfaces, and the end faces 14 and 15 of each section being preferably at right angles one to the other, though they may be otherwise placed. The mold sections are free to be moved toward and from each other, whereby the mold is contracted and expanded. Preferably each member 2, 3, 4 and 5 is of L-shaped cross section, the base of the L being a flat arcuate plate 18, and the upright portion or arm 16 being on the inner edge of the plate and on the inner periphery of the assembled annulus. This upright 16 has its inner surface 17 substantially vertical, *i. e.*, at about right angles to the plate and substantially elliptical in plan, or of any outline to conform to the shape of the head. This surface 17 is the mold surface known here as the external mold surface. The outer surfaces 6 of the upright portions 16 are inclined, as stated, upward and inward in radial planes of the mold.

Overlying the plate 18 and outside the upright portion 16, is an interlocking or guiding ring 19 formed in four arcuate sections 20, 21, 22 and 23, to correspond to the sections 2, 3, 4 and 5 in which the mold is formed, each ring section being secured to the corresponding section of the annular mold. These sections are placed end to end and cut away at each extremity along the inner circumference at 25 at one end, and along the outer circumference at 26 at the other end, the arcuate section in each case being reduced to about one half of its full width, forming overlapping or interlocking internal and external circumferential arms at each end of each section, the arm 27 at one end conforming as to its external face to the external circumference of the ring, and

the arm 28 at the other end of the same section conforming as to its internal face to the internal circumference of the ring.

The internal face of the external arm 27 at one end of each section is formed with surfaces in two, preferably vertical, planes. These surfaces are indicated by reference characters 29 and 30, and they are placed at an obtuse angle one to the other. The external face of the internal arm 28 at the other end of the same section is likewise formed with surfaces in two vertical planes. These surfaces are indicated by reference characters 31 and 32, and are at an obtuse angle one to the other. The plane surface 29 on the external arm 27 is shown as at right angles to the plane surface 31 on the internal arm 28 at the other end of the section, and the remaining plane surfaces 30 and 32, the first being nearer on the external arm and the second being more remote on the internal arm, also being at right angles to each other. The neighboring sections interlock, the external arm 27 of one overlapping the internal arm 28 of the next and the remote plane surface 29 on the external arm of one section contacting with the nearer plane surface 31 on the cooperating arm of the adjacent section, so that the plane surfaces slide one on the other. These surfaces act as guides to the mold sections in closing and opening. When the segments or sections of the mold approach their closed positions, the remote plane surface 32 of the internal arm 28 engages the nearer plane surface 30 of the external arm 27. In this way the mold sections are accurately positioned. The ends 14 and 15 of the mold sections, when the mold is closed, position the parts as do the end surfaces 35 of the interlocking arms and the corresponding surfaces 36 of the ring sections.

It will be noted that the tip ends 33 of the internal arms, when they have been withdrawn to a predetermined extent, come in contact with the outer surfaces 6 of the upright portions 16 of the mold, and the extent to which they can be withdrawn is thus limited. It will also be noted that the interlocking arms 27 and 28 of each mold section overlie the adjacent mold section. Thus the sections in their preferred form are so connected that they cannot be separated one from the other either by withdrawing them circumferentially or in the direction of the axis of the mold, but they may be moved radially and simultaneously or otherwise to contract and expand the mold.

In the operation of my invention the hat to be pressed is placed on the table 7 inclosing the internal mold or former 9. The external mold is expanded slightly beyond the outside dimension of the hat and placed over the hat, its bottom surface resting on top of the hat brim. The support 7 is then moved

up in the direction of the axis of the mold so that the mold approaches the closing member 10 or the closing member and molds are otherwise moved relatively to bring the inclined surface 37 into engagement with the inclined surfaces 6 of the mold. The external mold is thus contracted and the mold sections brought together, and thus the mold surfaces are forced inward against the hat, pressing it throughout its periphery into close contact with the internal former 9. The molds are, when applied to the hat, at the desired pressing temperature and are conveniently maintained at this temperature by means of any suitable heating fluid in the chamber 8 and the ring 11. Both the internal and the external surfaces of the hat thus take the exact form of the corresponding surfaces of the mold, and all projections, ridges and protuberances on the hat, both on its internal or external surface, are flattened and pressed out, forming the hat with a smooth, flat and regular internal and external surface. Thus hats treated as described by means of my improved press can be conveniently standardized and hats of the same number given exactly the same size and fit.

In Figs. 5, 6, 7 and 8 I have shown a modified form of mold. This is made in four sections, 41, 42, 43, and 44 corresponding and similar to the sections 2, 3, 4 and 5 of the mold first described. These sections together form an annulus and their end surfaces 45 are at right angles as previously described. The annulus is also of L-shaped cross-section, the upright portion of the "L" having an inclined or wedging surface 46 corresponding to the wedge surface 6 of Fig. 4. Overlying the flat plate 47 which forms the base of the L-shaped cross-section, is a guide ring formed of arcuate sections 48, the sections of the ring corresponding to the sections of the mold. The guide ring sections 48 are placed each on the corresponding mold section, each ring section extending beyond its mold section at one end 51 and falling short of the end of the section at the other end 52, so that the end 51 of the guide ring section 48 overlaps the adjacent end of the neighboring mold section. Each end 51 is slotted at 53, the slot and the end of the guide ring section both being parallel to the adjacent end surface 45 of the mold section. The end surfaces 51 and 52 of the guide ring sections abut and are parallel to each other, both surfaces, as heretofore described, being parallel to the adjacent end surfaces 45 of the mold sections. Overlying the arcuate bars or bands 48 are cover ring sections 55, one for each mold section. These ring sections are cut to the length of the corresponding mold section, and their end surfaces are continuous with the end surfaces 45 of the mold sections. They are held in place by

means of bolts 49 which pass through the cover ring, guide ring and the mold section, and by pins 56 which engage the slots 53 and pass through all three sections as well as by other pins or screws 50. It will be apparent that the sections thus interlocked and connected would slide one relatively to the other in the direction of the contacting end surfaces 45 of the mold sections, and that in so moving the mold is contracted and expanded. To position the mold sections I may provide upright dogs 57 and 58 with inclined inner surfaces 59. These dogs are spaced apart and engage and receive between them a corresponding dog 60 on the wedge support 12, and serve to guide and position the mold surfaces as they are brought into contact with the closing wedge. It will be apparent that the mold which I have just described may be placed on the table 7 and operated in connection with the closing wedge or locking ring 10 as heretofore set forth.

I have thus described specifically two forms of my invention in order that its nature, function and operation may be clearly understood; however, the specific terms herein are used in their descriptive rather than in their limiting sense, and the scope of the invention is defined in the claims:

I claim—

1. An annular mold made in sections, the ends of the sections being substantially at right angles, a support for the mold upon which the sections are mounted to move laterally to contract and expand the mold, the end surfaces serving as stops or positioning means when the mold is closed, a guide ring made in sections, each section secured to a section of the mold, the sections having interlocking arms with contacting surfaces to guide the mold sections to confine the motion of the parts in closing to a radial path.

2. In a hat press an internal former, a sectional ring mold, the sections being movably mounted to contract and expand the mold and placed end to end each section having at each end a guiding arm, the arms having contacting guide surfaces to guide the sections as they move.

3. In a hat press, an internal former, a sectional ring mold, the sections being placed end to end, movably mounted to contract and expand the mold and having interlocking guiding arms, the arms having contacting guide surfaces extending in the direction of a tangent to the ring and adapted to guide the sections in a radial path and means for closing the mold.

4. In a hat press, an internal former, a sectional mold, the sections being movably mounted to contract and expand the mold, and placed end to end and having interlocking guiding arms, the arms having con-

tacting guide surfaces to guide the sections in a radial path as they move, and positioning surfaces to locate the sections when the mold is closed, the mold sections having inclined wedging surfaces, a closing member having a cooperating wedging surface, a support for the mold and former, a support for the closing member, a guide extending in the direction of the axis of the mold, one support being movably mounted to travel on the guide.

5. A hat press, an internal former, a sectional mold inclosing the former, the sections being movably mounted to contract and expand the mold, and placed end to end, the end surfaces contacting and acting as positioning surfaces, interlocking arms on the sections having contacting guide surfaces to guide the sections as they move, and positioning surfaces to locate the sections when the mold is closed, the mold sections having each an inclined wedging surface, a closing member having a cooperating wedging surface, a support for the mold and former, a support for the closing member, a guide extending in the direction of the mold axis, one support being movably mounted to travel on the guide.

6. In a hat press, an internal former, a sectional mold consisting of segments placed end to end and having interlocking arms, one at each end of each segment, each arm overlying the adjacent section and overlapping the neighboring arm, the arms having contacting guiding surfaces extending in the direction of a tangent to the ring at the point at which they occur, and means

for limiting the motion of each section relative to the next section and preventing the sections from being completely disengaged from each other, and means for forcing the mold sections inward against the former.

7. In a hat press, an internal former and a mold ring consisting of sections and means in the form of overlapping arms connecting with the sections, limiting their relative motion and acting as guiding means for each section, and means for contracting and expanding the mold ring.

8. A hat press consisting of a rigid internal former in combination with a flexible external former, the external former being sectionally divided and provided with means to secure their cooperative movement in the same plane with means to simultaneously move the external former sections radially toward the internal former.

9. A hat press consisting of a rigid internal former in combination with a flexible external former, the external former being sectionally divided and provided with means to secure their cooperative movement in the same plane with means consisting of oppositely disposed beveled surfaces to simultaneously move the external former sections radially toward the internal former.

Signed by me at New York city, county and State of New York, this 8th day of May, 1912.

FRANCIS BAILEY VANDERHOEF.

Witnesses:

CHAS. D. EDWARDS,
FLORENCE ATEN IVES.