

C. B. CARSTENS.

HUMIDOR.

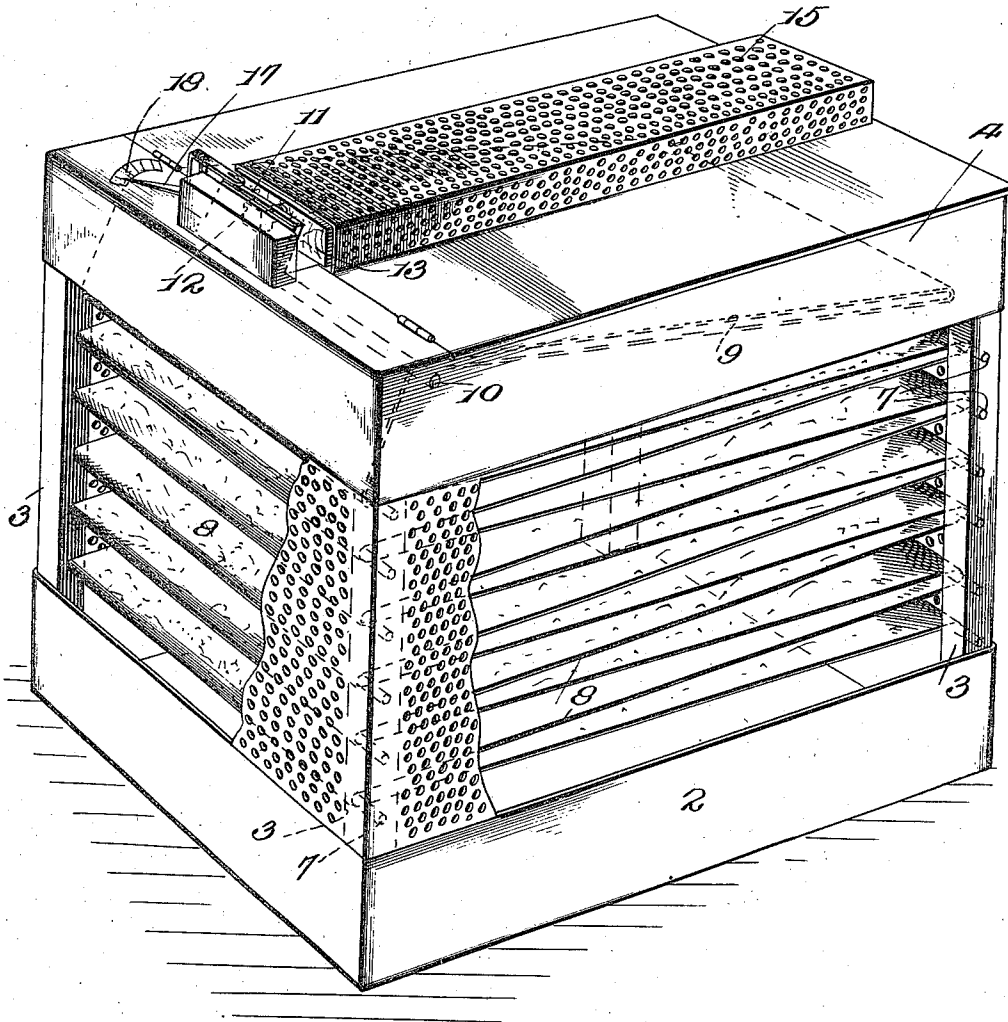
APPLICATION FILED JUNE 21, 1909.

976,150.

Patented Nov. 22, 1910.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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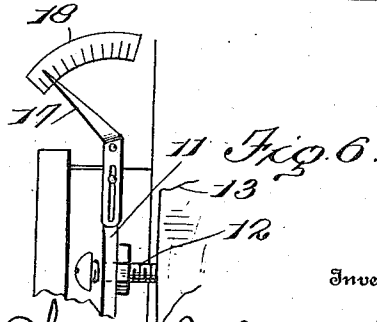
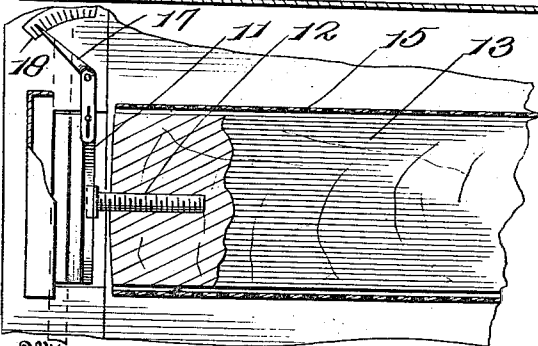
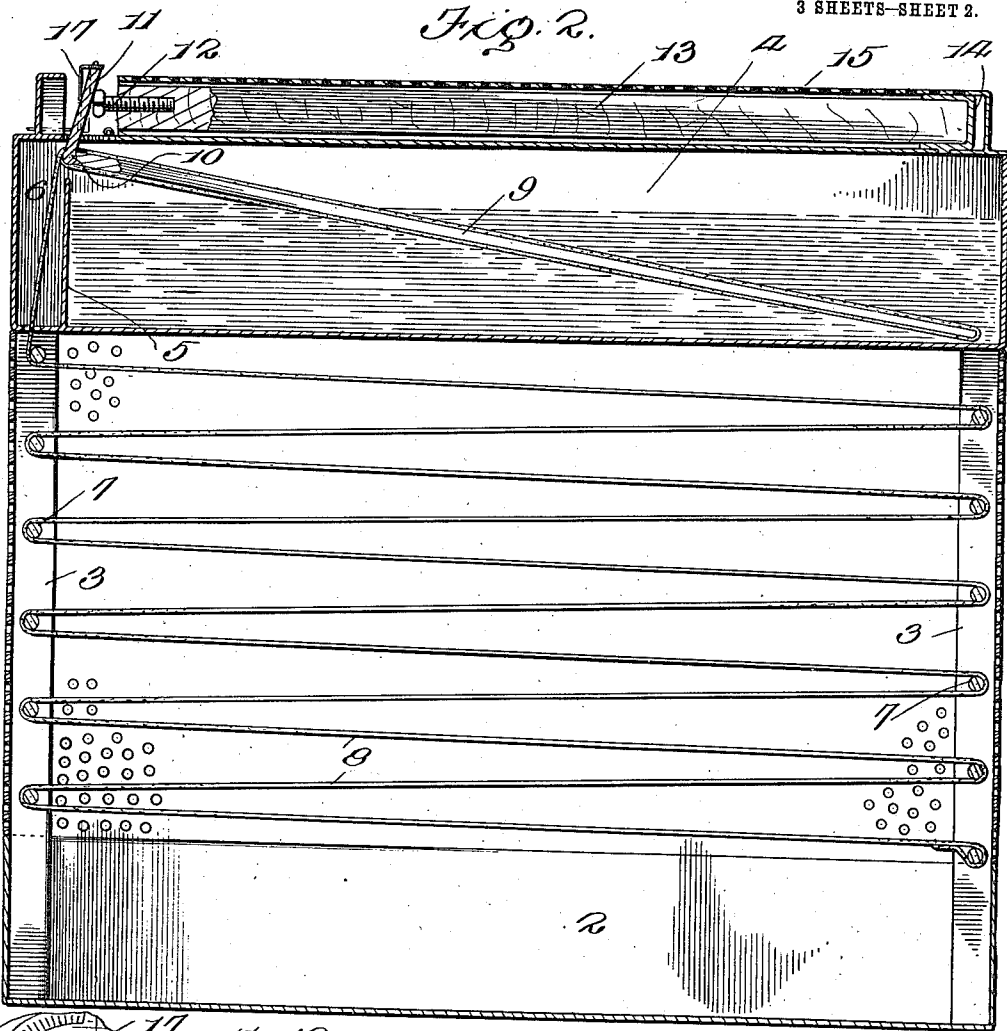
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3 SHEETS-SHEET 2.

Fig. 2.



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Fig. 3

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3 SHEETS-SHEET 3.

Fig. 4.

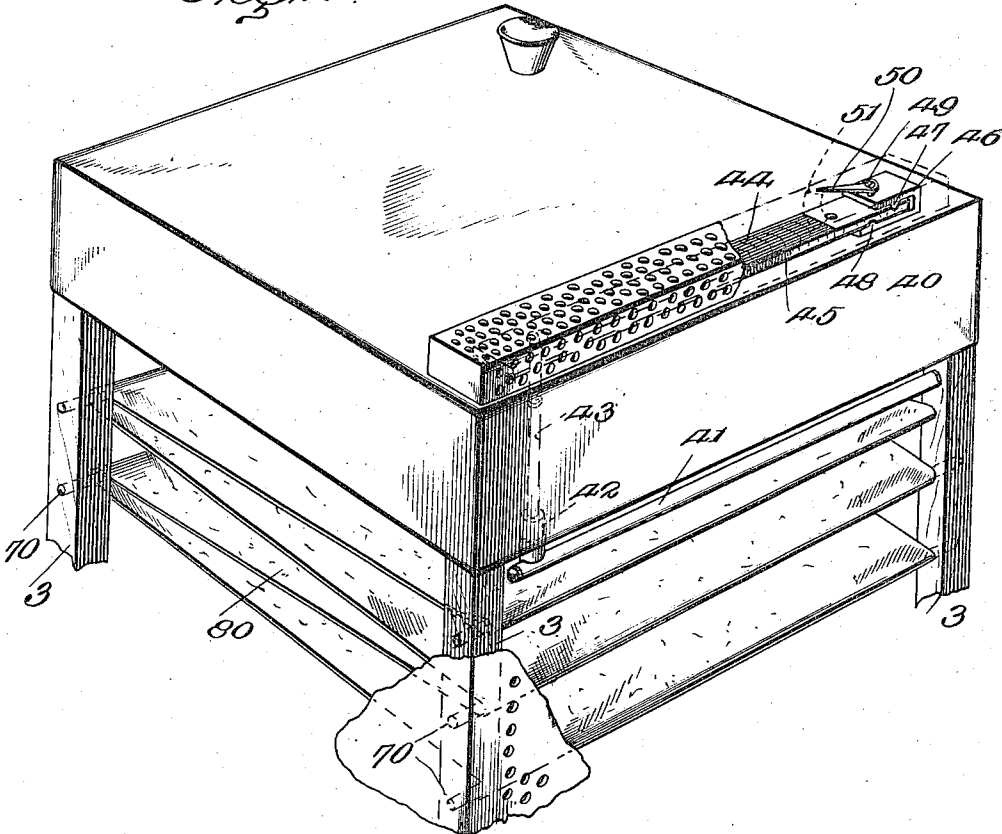
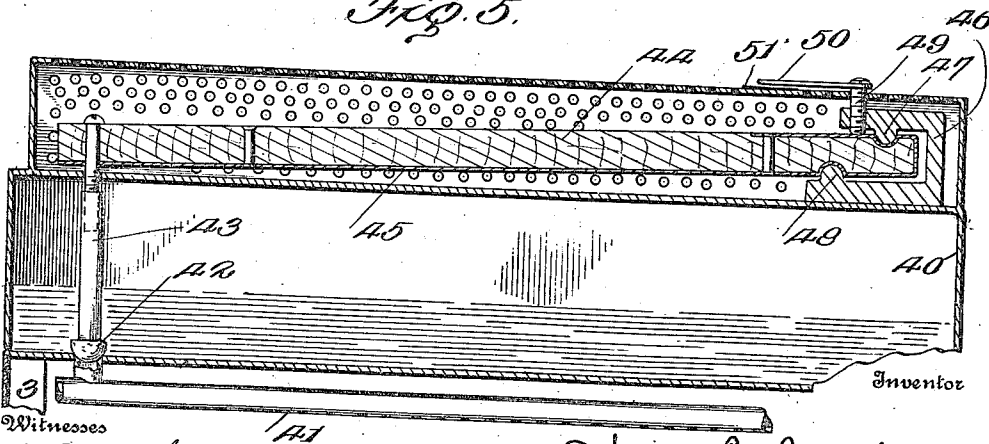


Fig. 5.



Witnesses

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34

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UNITED STATES PATENT OFFICE.

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HUMIDOR.

976,150.

Specification of Letters Patent.

Patented Nov. 22, 1910.

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To all whom it may concern:

Be it known that I, CHARLES B. CARSTENS, a citizen of the United States, residing at Grafton, Ozaukee county, Wisconsin, have invented certain new and useful Improvements in Humidors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in humidors and the like; and the objects and nature of my invention will be readily understood by those skilled in the art in the light of the following explanation of the accompanying drawings illustrating what I consider my preferred embodiments from among other formations and arrangements within the spirit and scope of my invention.

The invention consists in certain novel features in construction or in combinations and arrangements of parts as more fully and particularly pointed out hereinafter.

Referring to the accompanying drawings:—Figure 1, is a perspective view of a construction in accordance with my invention. Fig. 2, is a vertical longitudinal section, dotted lines indicating parts in different positions from the positions indicated by full lines. Fig. 3, is a top plan view, parts being broken away. Fig. 4, is a perspective view showing another construction in accordance with my invention. Fig. 5, is a longitudinal vertical section through a portion of the structure of Fig. 4. Fig. 6, is a detail view of the sensitive controlling element.

In the construction of species of Fig. 1, 2, is an open-top bottom or drip pan from the corners or ends of which rise vertical spaced pairs of posts or frame uprights 3, at their upper ends fixed to and supporting the elevated horizontal usually-elongated water supply tank 4. If so desired, this tank 4, can be interiorly provided with a false end or partition 5, near one end thereof to form the passage way 6, vertically through an end of the tank opening into the top of the space inclosed by the four uprights 3. Each pair of uprights is provided with a vertical series of transverse parallel spaced pins or rods 7.

8, is a sheet, web or band of absorbent material such as any suitable fabric of the desired absorbent quality and providing surfaces for the free and ready evaporation of water carried by the fabric. At its lower end, this web is usually suitably secured to the bottom pin 7, of one of the series of pins and from thence the web is carried upwardly and back and forth between the two series and over the pins thereof to form the zig-zag arrangement of longitudinal plies of the web within the open frame formed by said uprights. From the topmost longitudinal ply, the web is carried vertically through the passage 6, and then laterally over the pivoted or fulcrumed end, and longitudinally, of a swinging (or otherwise vertically movable) dip blade, frame or member 9, arranged longitudinally of and within the water tank 4. The web is stretched over said frame 9, and is suitably confined thereto and exposed at the surface thereof and if so desired can be extended longitudinally of both faces thereof and passed over the free edge thereof. The blade or dip frame 9, swings on a transverse axis arranged a distance above the water line in the tank, said axis if so desired, being arranged immediately above the upper edge of partition 5. The dip frame can be carried by pintles 10, forming the transverse axis on which the frame swings, said pintles being mounted in the side walls of the tank.

The frame 9, is designed to dip into the water or other liquid in the tank and thereby wet the web carried by said frame, whereby said web will by capillary action draw liquid from the tank and carry the same throughout the entire length of the web and maintain the same soaked with the liquid. The convolutions of the web stretched back and forth between the pins 7, are exposed to the atmosphere and form and constitute extended areas of evaporating surfaces. In the event that moisture is drawn up from the water tank in excess of evaporation, the drip or surplus moisture will be caught up by the drip pan 2.

The device is intended for use in cigar or other cases or inclosures wherein it is desirable to maintain the humidity of the air at a certain degree. It is hence desirable to

provide means for controlling the feed or flow of moisture to the evaporating surfaces of the web to prevent excess of moisture in the air as well as to maintain the humidity of the air up to the desired degree.

In the specific example illustrated, I control the supply of moisture fed to the evaporating surfaces, by dipping the upper end of the web in or by raising the same entirely from the body of water in the supply tank through the medium of the dipping frame 9, and I control the position of said frame by means exposed to the air in the case and sensitive to the degree of humidity thereof. For instance, I show the fulcrumed end of the frame 9, rigid with an upwardly projecting about right-angle actuating heel or projection 11, extending above the top of the supply tank, and held loosely against the head of a screw 12, forming the stop limiting downward movement of frame 9, and longitudinally adjustable in the outer end of sensitive expansion bar 13, arranged longitudinally at the top of the tank. The bar 13, is rigidly secured at its outer end to the tank by fixed clip or bracket 14, so that the bar is free to longitudinally expand and contract and thereby move its free end carrying screw 12, longitudinally or toward and from the controlling projection 11, of the dip frame 9.

The sensitive member 13, is composed of such material as to be sensitive to the condition of the air as regards humidity or moisture. In other words, when the air becomes dry and the humidity thereof drops below the desired degree, the sensitive member becomes dry and contracts longitudinally, drawing back the screw 12, and permitting the frame 9 to drop by gravity into the water in the tank so that the web can soak up moisture and feed the same to the evaporating surfaces to saturate the same to the desired extent. When through evaporation from said surfaces, the air in the case has been sufficiently moistened, and is of the desired humidity, the sensitive member responds by absorbing moisture and gradually expands, forcing the screw against projection 11, and lifting frame 9, and the web thereon from the liquid in the tank and thereby cutting off the liquid feed to the evaporating surfaces.

In the specific example illustrated, the sensitive member is composed of a block of wood, for instance, basswood or linden, cut across the grain so as to expose the ends of the grain of the wood, although I do not wish to so limit my invention.

If so desired, the sensitive member can be inclosed by a reticulated or perforated metal protective casing 15.

The screw 12 forms an adjustable abutment between the sensitive member and the projection of the frame 9, whereby the

movement of the sensitive member necessary to raise the frame 9 from the water can be increased or diminished, thereby enabling the operator to adjust the device to cut off the water feed at any suitable predetermined degree of humidity. For instance, if the screw is turned to increase its projection beyond bar 13, a lower degree of humidity will cause expansion of the bar sufficient to raise the frame 9, than if the screw be turned in the opposite direction to lessen its projection beyond the bar.

17, is a pointer or index finger exposed at the top of the tank and moving with the projection 11, and over scale 18 at one end indicating "dry" and the other "wet."

In the other species shown, the upper water supply tank and the bottom drip pan are employed with the evaporating cloth arranged between the tank and pan and stretched back and forth between the horizontal pins or wires. However, in this species I show the pins 70, arranged longitudinally of the open frame formed by the uprights 3, and the downwardly inclined convolutions or plies of the web 80, extending transversely of the frame instead of extending and inclined longitudinally thereof as in the first described species. The absorbent evaporating web does not extend into the tank but a horizontal perforated liquid spraying or drip pipe 41, is arranged above the top ply or convolution of the evaporating web and is supplied by a pipe connection opening into the tank 40, through the floor thereof. Hence when said connection is open liquid will flow from the tank into feed or drip pipe 41, and will drip therefrom onto the top portion of the web so that the entire web will become saturated with moisture and through evaporation will supply the desired amount or degree of moisture to the air of the case or inclosure containing the humidifier. The feed or supply of moisture to the drip or feed pipe can be controlled and cut off by a vertically movable valve 42, arranged in the water tank to move down and close the outlet to pipe 41, or to move up and open said outlet to permit feeding flow of moisture from the tank. This valve is carried by a stem 43, extending through the tank to the top thereof and is actuated or operated by a suitable sensitive expansible controlling device or element arranged at the exterior of the tank and open or exposed to the air within the casing or inclosure containing the humidifier and caused to expand or contract by the condition of said air in the matter of moisture.

The upper end of the valve stem 43 can be fixed to the free end of the sensitive member to move vertically therewith. In this species, the free end of said member can be arranged to move laterally, vertically, instead of longitudinally to move the valve to

closed and open positions. This can be accomplished by employing a composite or combination bar or block of wood and metal. For instance the soft or absorbent wood bar or elongated cross grain block 44, has the flat metal spring 45, secured thereto and arranged longitudinally thereof and tending to hold the bar straightened out in its normal straight condition holding the valve in opened position. When the air contains the required amount or degree of moisture, the sensitive wood bar absorbs moisture and begins to expand and consequently warps or bends against the tension of the spring plate secured thereto, and thereby moves the free end of the bar vertically in a direction to move the valve to closing position to stop the liquid feed to the evaporating cloth or other surface. As the air becomes dry, the bar dries and gradually assumes its normal position, assisted by the tension of the spring, until the valve is raised and the liquid feed to the evaporating cloth is again resumed. The wood bar is secured at one end and the metal plate fixedly secured to and longitudinally of the bar, say, at its under face, prevents the longitudinal expansion of the under side of the bar, and hence the bar will swell or expand at its remaining exposed surfaces, and the bar will thereby slightly bow or buckle and depress its free end. The opposite or secured end of the bar can be inserted in an approximately U-shaped bracket or clip 46, fixed to the tank top and having depending retaining rib or boss 47, entering a depression in the top face of the bar near its end, and an upwardly projecting fulcrum rib or boss 49, entering a corresponding depression in the under face of the bar and located nearer the free end of the bar than the rib 47, so that said rib 48 can act as a fulcrum on which the bar can rock in the bracket to permit slight vertical adjustment of its free end to vary the extent of movement of the bar necessary to close the valve. This adjustment can be accomplished by vertical screw 49, bearing on the bar in rear of its fulcrum and adjustable through the top arm of the bracket and carrying exposed pointer 50, moving over exposed graduated scale 51. If the index or pointer is moved to "wet," the free end of the bar will be raised and a greater movement of the bar will be required to close the valve than if the pointer is moved to "dry" which adjustment will depress the free end of the bar.

It is evident that various changes, modifications and variations might be resorted to without departing from the spirit and scope of my invention and hence I do not wish to limit myself to the exact constructions and arrangements disclosed.

What I claim is:—

1. In a humidor, in combination, a capil-

lary web having exposed evaporating surfaces, a supporting frame, a water supply tank, means for moving a portion of said web into and from water feeding relation with respect to the water in said tank, and controlling and actuating devices for said means.

2. In a humidor, in combination, a supporting frame, a water supply tank, a capillary web forming an evaporating surface exposed to the atmosphere and having a water feeding portion movable into and from the water in said tank, and means for moving said portion into and from feeding position said means comprising an expansion member sensitive to varying degrees of atmospheric humidity, and provided with adjusting means and an indicator.

3. In a humidor, in combination, a frame, a water supply tank, a capillary web having evaporating surfaces arranged in said frame and exposed to the atmosphere, a dipping blade carrying a portion of said web and movable to dip the same into or raise the same from the water in said tank, said blade having an operating projection, and an expansion bar arranged in operative relation to said projection to move the blade, said expansion bar sensitive to varying degrees of atmospheric humidity to expand or contract.

4. In a humidor, in combination, an evaporating surface, means for maintaining a body of liquid, a device for intermittently feeding liquid from said body to said surface, said device being movable to and from operative position dipping into said body, and an expansive member, for actuating said device, sensitive to atmospheric conditions to expand or contract according to the humidity of the atmosphere.

5. In a humidor, in combination, an evaporating surface, a source of liquid supply, a device for feeding liquid from said source to said surface provided with a capillary feeding portion adapted to be dipped into and withdrawn from the liquid, and a member for actuating said device.

6. In a humidor, in combination, an evaporating surface, a source of liquid supply, a vertically swingable carrier provided with a capillary portion adapted to feed liquid from said source to said surface, and an actuating and controlling member for said carrier, and whereby the carrier is adapted to dip said portion into or raise the same from the liquid.

7. In a humidor, a liquid receptacle, a carrier having an operating projection and provided with capillary material adapted to feed liquid for evaporation, said carrier being swingable vertically to carry said material into and from the liquid in said receptacle, and an expansion member capable of expanding or contracting according to

atmospheric humidity and coöperating with said projection to determine the vertical position of said carrier.

8. In a humidor, in combination, a liquid receptacle, a carrier at one end mounted to swing its free end into and from the liquid in said receptacle, a capillary evaporating web arranged exteriorly of said receptacle, said carrier provided with capillary liquid-feeding material arranged to supply said web with fluid from said receptacle and adapted to be dipped into and lifted from the liquid by said carrier, an expansive member adapted to expand or contract according to the humidity of the atmosphere, and means whereby the vertical position of said carrier is determined by the expansion and contraction of said member.

9. In a humidor, in combination, a frame, an upper liquid receptacle, having a cover, a carrier pivotally hung to swing into and from the liquid in said receptacle and having an upwardly extending operating projection whereby the vertical position of said carrier is determined, an expansion member on said cover and arranged in operative relation with respect to said projection to determine the vertical position of the carrier, and an evaporating web arranged below said receptacle and having a liquid feeding capillary portion carried by said carrier into and from the liquid in said receptacle.

10. In a humidor, in combination, a liquid receptacle having a vertically swingable cover, a carrier provided with capillary material adapted to feed liquid from said receptacle for evaporation, said carrier mounted independently of said cover to carry said material into or from the liquid in said receptacle and having an operating projection, and a controlling member arranged on said cover in operative position with respect to said projection to determine the vertical position of said carrier.

11. A humidor having liquid feed means comprising a movable member, and an expansion block at its free end having a longitudinally adjustable abutment in normal operative engagement with said member, said block being sensitive to expand and contract under variations in atmospheric humidity and being fixed at one end against longitudinal movement and being free at its opposite end carrying said abutment to

move under expansion and contraction and thereby control the position of said member.

12. A humidor comprising a movable member, and an expansion block sensitive to expand or contract under variations in atmospheric humidity and controlling the position of said member, said block being fixed at one end against bodily longitudinal movement and being free at its opposite end to move under the expansion and contraction of the block to determine the position of said member, an adjusting screw for determining the normal position of said member without varying the position of said block longitudinally, an indicator actuated by the adjusting movement of said screw, and an indicating scale for said indicator, substantially as described.

13. A humidor having an actuated member, and a controlling expansion block therefor, said block being sensitive to expand and contract under variations in atmospheric humidity, and being fixed against bodily movement longitudinally and at one end portion free to move under expansion and contraction and thereby actuate or control said member, adjusting means for varying the normal or starting position of said member without bodily shifting said block longitudinally, a movable pointer shifted by the adjustment of said means, and a scale for said pointer indicating whether said means is in position to retard or advance the starting position of said member.

14. In a humidor, a frame, a liquid receptacle arranged thereon and having a top, an evaporating web arranged in the frame below said receptacle, means for feeding liquid from said receptacle to said web comprising a movable element whereby said means is controlled to stop and start the liquid feed, and an expansion block for controlling and moving said element, said block being sensitive to atmospheric humidity and exposed and secured on said receptacle top and having a portion free to operatively move under expansion and contraction.

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

CHARLES B. CARSTENS.

Witnesses:

THEO. CARSTENS,
A. O. McBEAN.