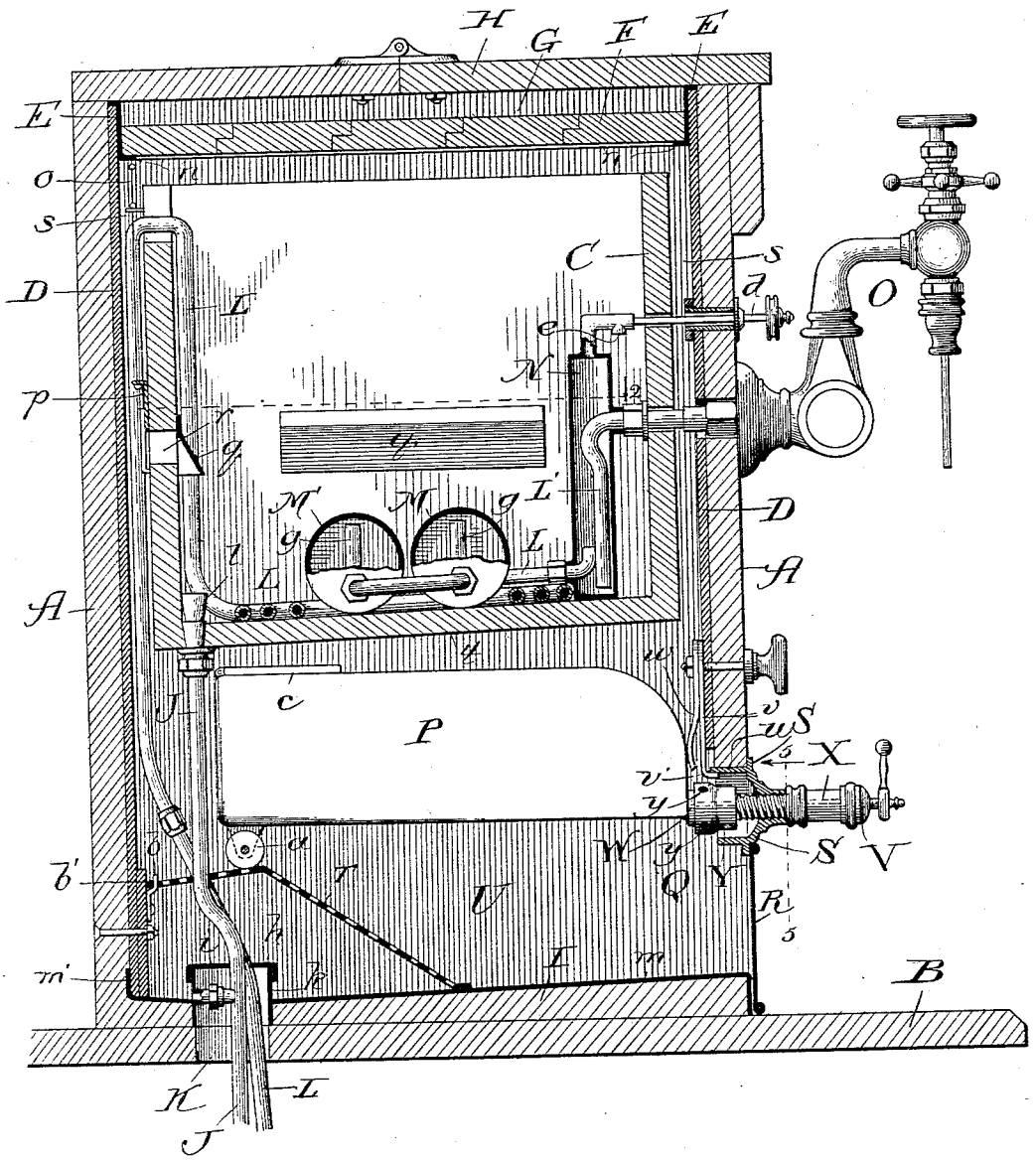
(No Model.) 2 Sheets—Sheet 1.

O. ZWIETUSCH.

SODA FOUNTAIN.

No. 476,589. Patented June 7, 1892.

Fig. 1.



Witnesses:
Chas. E. Gaylord,
Clifford H. White.

Inventor:
Otto Zwietusch,
By Dyenforth and Dyenforth.
Attys

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

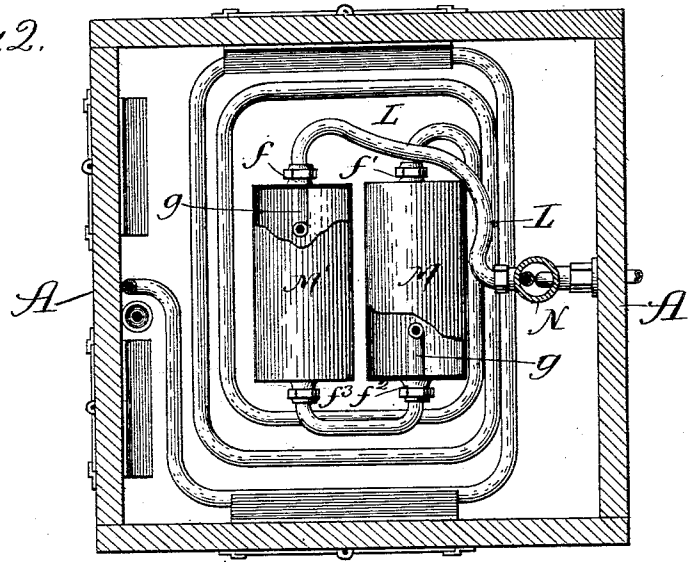

Fig. 3.

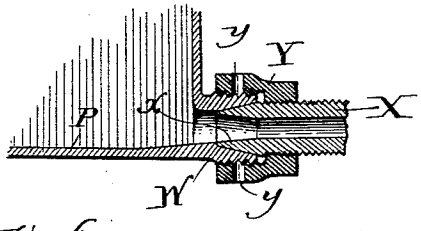

Fig. 4.

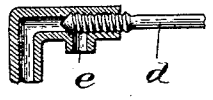

Fig. 6.

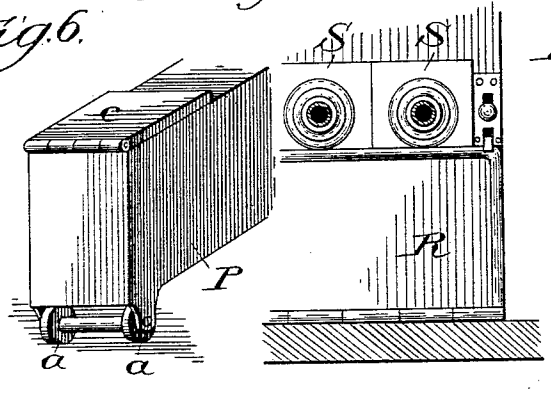

Fig. 5.

Witnesses:
Chas. E. Taylor,
Clifford A. White.

Inventor:
Otto Zwietusch,
By Dyerforth and Dyerforth.
Attorneys.

UNITED STATES PATENT OFFICE.

OTTO ZWIETUSCH, OF MILWAUKEE, WISCONSIN.

SODA-FOUNTAIN.

SPECIFICATION forming part of Letters Patent No. 476,589, dated June 7, 1892.

Application filed October 31, 1891. Serial No. 410,458. (No model.)

To all whom it may concern:

Be it known that I, OTTO ZWIETUSCH, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Soda-Fountains, of which the following is a specification.

The object of my invention is to overcome certain defects in soda-fountains as heretofore constructed and to produce a soda-fountain of a generally improved character.

The term "soda-fountain" is intended to include a fountain suitable for both soda-water and the various mineral waters; but since the appliances for the several mineral waters would involve merely a multiplication of the same features that are used for the carbonated water employed for soda-water I have omitted from the drawings all pipes and reservoirs except those employed for soda-water.

By the construction of my fountain I aim to get the fullest possible effect from the ice employed; also, to prevent sweating of the marble; also, to provide the most convenient and effective means for inserting, retaining, and removing the sirup-cans; also, to insure prompt and effective drainage; also, to avoid lost space, to the end that the whole interior of the fountain may be made available for useful purposes, and also to provide various improved details of construction.

The mechanism by which the foregoing objects are fulfilled will be readily understood from the following description, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of the fountain, taken from front to rear; Fig. 2, a horizontal section of the same, taken on the line 2 2 of Fig. 1 and viewed in the direction of the arrow; Fig. 3, a sectional view showing the manner of attaching the faucet to each sirup-can; Fig. 4, a sectional view of the venting-valve; Fig. 5, a broken sectional view taken on the line 5 5 of Fig. 1 and viewed in the direction of the arrow, and Fig. 6 a broken perspective view of a sirup-can.

A A are the outer walls of the fountain, formed of marble, as usual. B is the counter upon which it stands, and C is the ice-receptacle supported within the fountain and provided with an inclined bottom *t*. Between the ice-receptacle and the inner walls of the fountain an air-space *s* intervenes on all sides to permit the free descent of cold air, and I prefer generally to employ cold-air escapes *r* in the side and rear of the ice-receptacle, leading from the interior into the spaces *s*. The air-escapes *r* I make usually in the form of slots, as shown, and to prevent the ice from entering them I provide inclined shields *q*, secured to the inner walls of the ice-receptacle and under which the cold air passes on its way to the spaces *s*, or incline the openings *r* upward and outwardly, when shields need not be applied. The air-passages *r* need only be employed when the cold air which passes over the outer edges of the ice-receptacle C and down by way of the air-space *s* is not sufficient to keep the sirup-cans adequately cool. Hence I provide the passages *r* with slide-valves *p*, which may be raised and lowered at will by rods or chains *o*.

Much difficulty has been encountered heretofore by the "sweating," so called, of the outer walls of the fountain. This is due partly to the exudation of moisture from the marble and partly to condensation upon the cold exterior of vapor from the surrounding atmosphere. The sweating, from whichever cause, I wholly prevent by lining the inner walls with a non-conducting material D, impervious to moisture. The impervious character of the lining prevents exudation from the marble, while its non-conductive property prevents the marble from becoming reduced in temperature by the ice to a degree low enough to cause condensation of the vapor of the atmosphere.

The non-conducting and water-repellent lining may consist of any material having the requisite properties and formed in sheets—such, for example, as india-rubber; but I prefer to employ sheets of asbestus about one-eighth of an inch in thickness treated in the manner described for stoneware in Letters Patent granted to me on the 9th day of May, 1874—that is to say, I take a heated solution of paraffine, spermaceti, or other similar material kept at boiling-point, and in this I place the asbestus sheet to be treated and there allow it to remain until all atmospheric air is driven out of the pores by the heat, which result will have been reached when bubbles no

longer pass upward through the solution. The solution will then have filled all pores of the asbestus and will remain there, and when cooled the article will be found to be perfectly impervious to moisture. In preparing the solution of paraffine or the like I sometimes add a small quantity of caoutchouc or beeswax. The effect of this treatment is not only to render the substance water-repellent, but it also overcomes all liability to attack and injury by acids, thus giving it an advantage over other non-conducting and water-repellent materials that might be employed. The lining D is secured in place to the marble walls at the top and toward the bottom. At the top it is secured by means of flanged metal strips E, the flanges *n* of which perform the additional function of supporting a wooden inner cover F above the top of the ice-receptacle C, thus leaving a space for the passage of cold air over the edges of the ice-receptacle and into the air-space *s*. The inside wooden cover F is so placed in the fountain as to leave an air-space G above it and below the hinged top H of the fountain, the purpose of which is to aid in keeping the interior cool.

The bottom I of the fountain inclines in the same direction as the bottom *t* of the ice-receptacle—that is, from front to rear—and is covered with a zinc sheathing *m*. On all sides except the front the zinc sheathing *m* extends for a short distance up the inside walls of the fountain, as at *m'* in Fig. 1, and the lining D by extending to the bottom overlaps that portion of the sheathing which is turned up. The effect of this is to prevent any moisture trickling down the face of the lining from finding any crevice into which it can pass, thus causing the whole of it to be deposited upon the inclined zinc sheathing *m* and drained off.

J is a drainage-pipe, which carries off water produced by the melting ice and also the moisture which accumulates upon the inclined zinc bottom *m*. The upper end of the pipe J extends above the lowest part of the bottom *t* of the ice-receptacle C as shown at *l*, for a purpose that will be referred to farther on, and passes thence downward through a large opening K, extending through the bottom I of the fountain and counter B. Surrounding the opening K and projecting above the zinc sheathing *m* is a metal flange or rim *k*, soldered to the sheathing *m*, so that no leakage can occur, and through this rim a branch pipe *i* connects the lowest point of the inclined metal sheathing *m* with the drainage-pipe J, whereby the moisture accumulating upon the inclined bottom finds ready egress. The rim *k* is surmounted by a cap *h* of india-rubber, through which the drainage-pipe J passes, tightly fitting the opening provided for it, and through which also the pipes conveying soda-water or mineral waters to the interior of the fountain likewise pass. By this construction the couplings are readily made in the first instance and all escape of cold air through the bottom of the fountain is prevented.

L is the pipe for conveying carbonated water to the interior of the fountain. Since the overflow *l* is above the level of the coil L, the latter will always be immersed in the cold water formed by the melting ice.

M M' are reservoirs interposed in the pipe L and through which the liquid passes on its way to the outlet. The arrangement of the pipes is such that the liquid takes a circuitous course through the reservoirs—that is to say, the internal pipes *g* extend from the openings at *f* and f^2, which of course are near the bottom, since they must be in the plane of the coil nearly to the top of the interior of each reservoir. Thus the liquid entering the reservoir at *f'* is discharged into the lower part of the reservoir and passes out at the upper part through f^2, thence enters the lower part of the reservoir M' at f^3, and thence passes out from the upper part through *f*. This is because the internal pipes *g* are continuations of the pipe L, extending inward and upward from the points *f* and f^2. By drawing the water from the upper part of the reservoir the latter is always filled and the gas and air are carried out with the flow of the water. This is not the case where the water is drawn from the bottom of the reservoir, and the result is sputtering and less thorough cooling. After leaving the reservoir M' the pipe L enters the upright reservoir N, and thence it passes by way of the pipe L to the faucet O, from which it is drawn. It will be observed that the pipe L discharges upward into the reservoir N and that the pipe L' withdraws the liquid from that reservoir from a point below that at which the liquid enters it. The purpose of the reservoir N is to produce a steady flow from the faucet O by serving as a collector of the air and free gas, from which it may be discharged before drawing liquid from the faucet O. The air and free gas accumulate, of course, in the upper part of the reservoir N, and the discharge is effected by means of the vent *e*, controlled from the outside by means of the screw-valve *d*. This construction discharges the waste through the vent *e* into the ice-receptacle (whence it may be drawn off with the drip from the melting ice) and permits the operation to be performed from the outside of the fountain by simply turning the handle of the screw-valve *d*, and is thus a great improvement over constructions for a like purpose which discharge upon the outside of the fountain or which discharge upon the inside, but which also are operated from the interior.

P is a sirup-can forming one of a series reaching from side to side of the fountain. It is provided with a hinged door *c* in its upper face, preferably at the rear, for the introduction of sirup, and this door may or may not be provided with a lock or catch. Of course any opening with means for closing it may be

substituted for the door *c*. The sirup-cans P are to be inserted through the opening Q, extending across the front of the fountain toward its lower end, and then raised above the bottom of the fountain, thus bringing them near the ice-receptacle, and supported there. The opening Q is provided with means R for closing it, either in the form of a hinged trap-door of metal or other material or similar doors folding together or slabs of marble or other material arranged to be inserted and removed at will; but the closing means do not extend to the top of the opening, a space being left above, which is closed by metal flanged plates S, connected to the sirup-cans. To raise and support the rear end of the sirup-cans when inserted through the opening Q, I employ the metal plate T, forming an inclined plane leading to a ledge horizontal, or nearly so. The plate T is perforated throughout to permit a free circulation of air and is supported in bearings *b* at the rear of the fountain by means of pins *b'*, projecting laterally from its rear edge. It is thus readily adjustable and removable when the sirup-cans are out, giving easy access to the interior for all purposes. This is an advantage in setting up the fountain, since the guide-plate T need not be placed in position until after the couplings have been made, when it is easily inserted.

In order that the pipes J and L and the plate T shall not interfere with each other, the pipes are caused to enter the fountain at one of the rear corners, the opening K and rim *k* being suitably located to permit this arrangement. In order that the rear ends of the sirup-cans P may slide easily up the inclined plane formed by the plate T, I prefer to provide them with one or more rollers *a* at the rear end. The rollers by extending below the plane of the bottom of the can perform a function additional to the one named above, since in conjunction with the flanged plate S they form a support for the sirup-can that will permit it to stand level upon a plane surface, such as a counter.

The flanged plate S is cast rigid with the faucet of the sirup can or is made detachable by screw-threads, and its purpose is twofold: first, to complete the closing of the opening Q, as before stated, and, secondly, to form a means, in conjunction with other agents, for supporting the forward end of the sirup-can. The part *u* of the flanged plate S extends inward beyond the marble constituting the front wall when the sirup-can is in place.

Secured to the inner front wall of the fountain, above the opening Q, is a series of metal strips *v*, bent forward at their lower ends to about a right angle, as shown at *v'*, and extending below the upper edge of the opening Q to a distance about equal to the thickness of the part *u* of the flanged plate S. Just behind each strip *v* and secured with it to the marble wall of the fountain at its upper end is a spring-strip *w*. To place a sirup-can P in proper position, it is inserted through the opening Q, pushed up the inclined plane of the plate T, its forward end being lifted meanwhile until the flanged plate S brings up against the top of the opening Q. The curved forward end prevents the spring *w* from interfering with this movement. It is then drawn slightly forward against the resistance of the spring *w* until the part *u* passes the flange *v'*, when the action of the spring *w* draws it backward, causing the part *u* to lodge upon the flange *v'*. To remove the sirup-can, it is drawn slightly forward against the resistance of the spring *w* to free the part *u* from the flange *v'* and then lowered and withdrawn.

It will be seen that the raised position of the sirup-cans P leaves an available empty space U below them, accessible through the opening Q by removing the closing device R. This space may be used as a receptacle for any substance requiring to be kept cool—such, for example, as the cream to be employed in the fountain and certain medicinal compounds. The space U is an important and valuable feature of the invention.

It is essential that the faucet V of each sirup-can shall be coupled to the can by means of a tight joint and also that it shall discharge vertically downward when the can is in place. To secure these ends, I have provided the coupling illustrated in Figs. 1 and 3 of the drawings. The sirup-can is provided with an externally-threaded nipple W, with a flaring interior to receive the conical end *x* of the tube X, which is provided on its exterior with a finer screw-thread than that upon the exterior of the nipple W. The collar Y is provided on its interior with differential screw-threads matching, respectively, the screw-threads on the nipple W and the fine threads on the tube X, and this collar is provided with suitable means, as at *y*, for the application of a wrench. To make the connection, the collar is screwed upon the nipple W almost but not quite home. The tube X, which is the faucet-pipe and which is rigid with the flanged plate S, is then screwed into the collar Y until it is nearly home in the flaring part of the nipple W, and is left in such a position that the discharge-orifice of the faucet will discharge vertically downward. It is then held in this position while force is applied to the collar Y by means of a wrench. The effect of this final turning of the collar Y is to carry it forward upon the nipple W, and since by reason of the differential character of the screw-threads the collar is not carried along the tube X with the same speed that it is carried along the nipple the tube is drawn inward by the collar, causing the conical part *x* to wedge tightly within the flaring portion of the nipple.

When my fountain is employed for mineral waters as well as for soda-water, a separate pipe corresponding with the pipe L is introduced for each particular water, with a suit-

able tap in the front of the fountain, provided with the venting device above described, the same as in the case of soda-water.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a soda-fountain, the combination, with the walls A and cover thereof, of an ice-receptacle C, supported therein and terminating below the top of the fountain and smaller in diameter than the interior of the fountain, whereby air-spaces *s* intervene, a lining D, of non-conducting material impervious to moisture, secured directly against the marble forming the inner walls of the fountain and constituting the interior surface of the fountain-walls, and means for conveying the liquid to be cooled through the ice-receptacle to the outlet, substantially as described.

2. In a soda-fountain, the combination, with the walls A and cover thereof, of an ice-receptacle C, supported within the fountain below the top thereof and of smaller diameter than the interior of the fountain, whereby an air-space *s* intervenes between the ice-receptacle and the inner walls of the fountain, and provided in its walls with passages *r*, leading from the interior into the passages *s*, plates *q*, secured to the inner walls of the ice-receptacle above the openings *r* and inclining downward therefrom, thereby shielding the said openings, and means for conveying the liquid to be cooled through the ice-receptacle to the outlet, substantially as described.

3. In a soda-fountain, the combination, with the walls and cover thereof, of an ice-receptacle C, of smaller diameter than the interior of the fountain, supported within the fountain below the top thereof, pipe L, leading from without the fountain to the bottom of the ice-receptacle and coiled therein, reservoirs M and M′, interposed in the pipe L and provided with the pipes *g*, reservoir N, provided with a vent *e* and valve for opening and closing the same, pipe L′, leading from the interior of the reservoir N to the exterior of the fountain, and faucet O upon the pipe L′, substantially as described.

4. In combination with the walls A of a soda-fountain and impervious non-conducting lining D therefor, the rim E, securing the upper end of the lining to the fountain and provided at its lower edge with the flange *n*, serving as a support for the inner wooden cover F, substantially as described.

5. In combination with a soda-fountain having an opening K extending through the bottom thereof, the metal sheathing *m*, provided with the rim *k*, surrounding the opening K, and cover *h* for the rim, having openings through it for the passage of pipes, substantially as described.

6. In combination with a soda-fountain having an opening K extending through the bottom thereof, the metal sheathing *m*, provided with the rim *k*, surrounding the opening K, cover *h*, of india-rubber, pipe J, draining the ice-receptacle of the fountain and extending through the cap *h* and opening K, and branch pipe *i*, leading through the rim *k* and into the pipe J, substantially as described.

7. In combination with a soda-fountain provided with an opening Q in the lower portion of its front wall, the sirup-cans P, each provided with a faucet projecting from the lower part of its forward end and with a flange to aid in closing the upper part of the opening Q, means for supporting the can above the bottom of the fountain, and means for opening and closing at will the lower portion of the opening Q, whereby the accessible cooling-space U below the sirup-cans is provided, substantially as described.

8. In combination with a soda-fountain provided with an opening Q in the lower portion of its front wall and means for partly closing the same, the angle-plate T, forming an inclined plane and ledge toward the rear of the fountain to raise and support the rear end of the sirup-can, and means for supporting the forward end of the sirup-can, substantially as described.

9. In combination with a soda-fountain with an opening Q in the lower portion of its front wall and means for partly closing the same and with the sirup-can P, provided on its faucet extension with the plate S, having the flange *u*, the angle-plate T for raising and supporting the rear end of the can and strip *v* and spring *w* for supporting the forward end of the can through the medium of the flange *v′* and retaining it in place, substantially as described.

10. In combination with a soda-fountain provided with an opening Q in the lower portion of its front wall and means for partly closing the same and with the sirup-can P, the angle-plate T, detachably connected to the rear wall of the fountain and serving as a medium for raising and supporting the rear end of the can, and means for supporting the forward end of the can in about the same horizontal plane with the rear portion, substantially as described.

11. In combination with a soda-fountain, substantially as described, the sirup-can P, having the internally-flaring and externally-threaded nipple W, faucet-tube X, provided on its extension with screw-threads finer than those on the nipple W and tapering at its inner end to fit the interior of the nipple, and collar Y, threaded internally to match the differential screw-threads on the nipple and faucet-tube, substantially as and for the purpose set forth.

12. In combination with a soda-fountain, substantially as described, the sirup-can P, faucet-tube X, means for coupling them together, flange-plate S, rigid with the faucet-tube, means for supporting the rear end of the sirup-can above the bottom of the soda-fountain, and means for supporting the forward end of the sirup-can from the wall above it, substantially as described.

13. In a soda-fountain, the combination of

a drip-pan located in the lowest part of the interior thereof and provided with an outlet, an ice-receptacle supported above the drip-pan, whereby a cooling-space is formed between the bottom of the ice-receptacle and bottom of the fountain, one or more air-passages connecting the interior of the ice-receptacle with the cooling-space, and a non-conducting water-repellent lining for the fountain, terminating at its lower end in the interior of the drip-pan, whereby all drip and accumulating moisture are collected and carried off, substantially as described.

OTTO ZWIETUSCH.

In presence of—
J. N. HANSON,
M. J. FROST.