

No. 713,237.

Patented Nov. 11, 1902.

H. W. NASH.
REFRIGERATOR.

(Application filed Aug. 28, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 2.

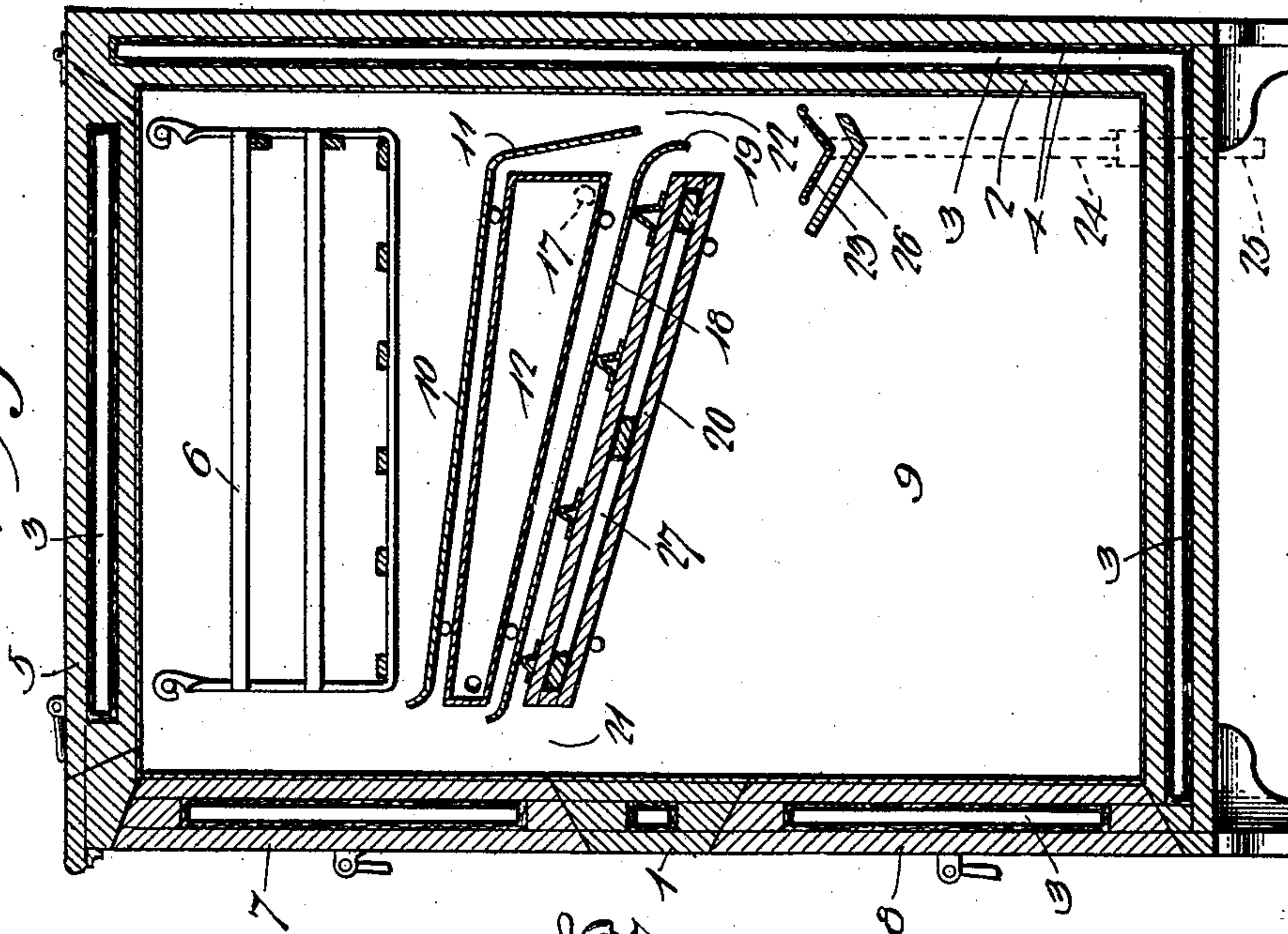
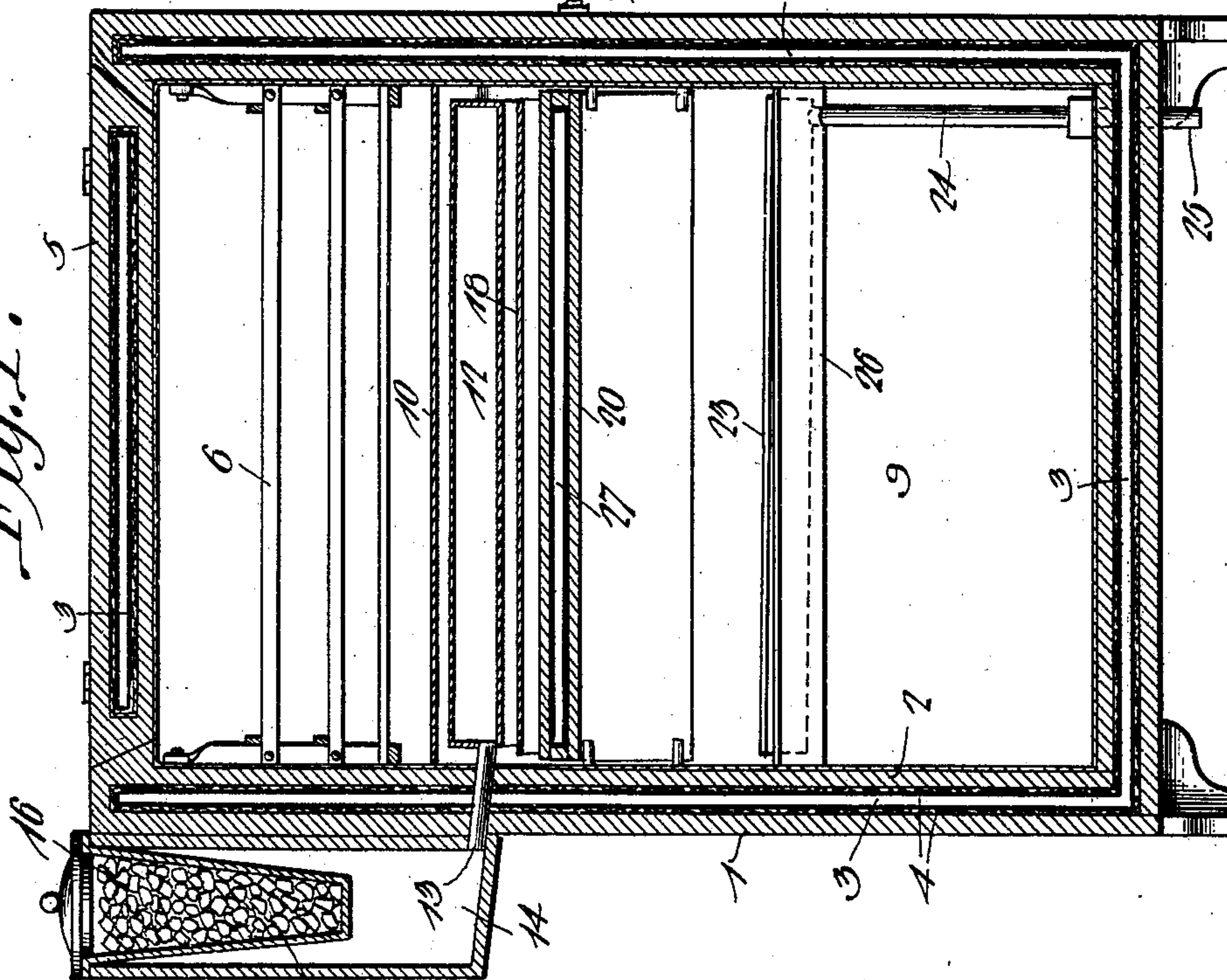


Fig. 1.



Witnesses

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2 Sheets—Sheet 2.

Fig. 4.

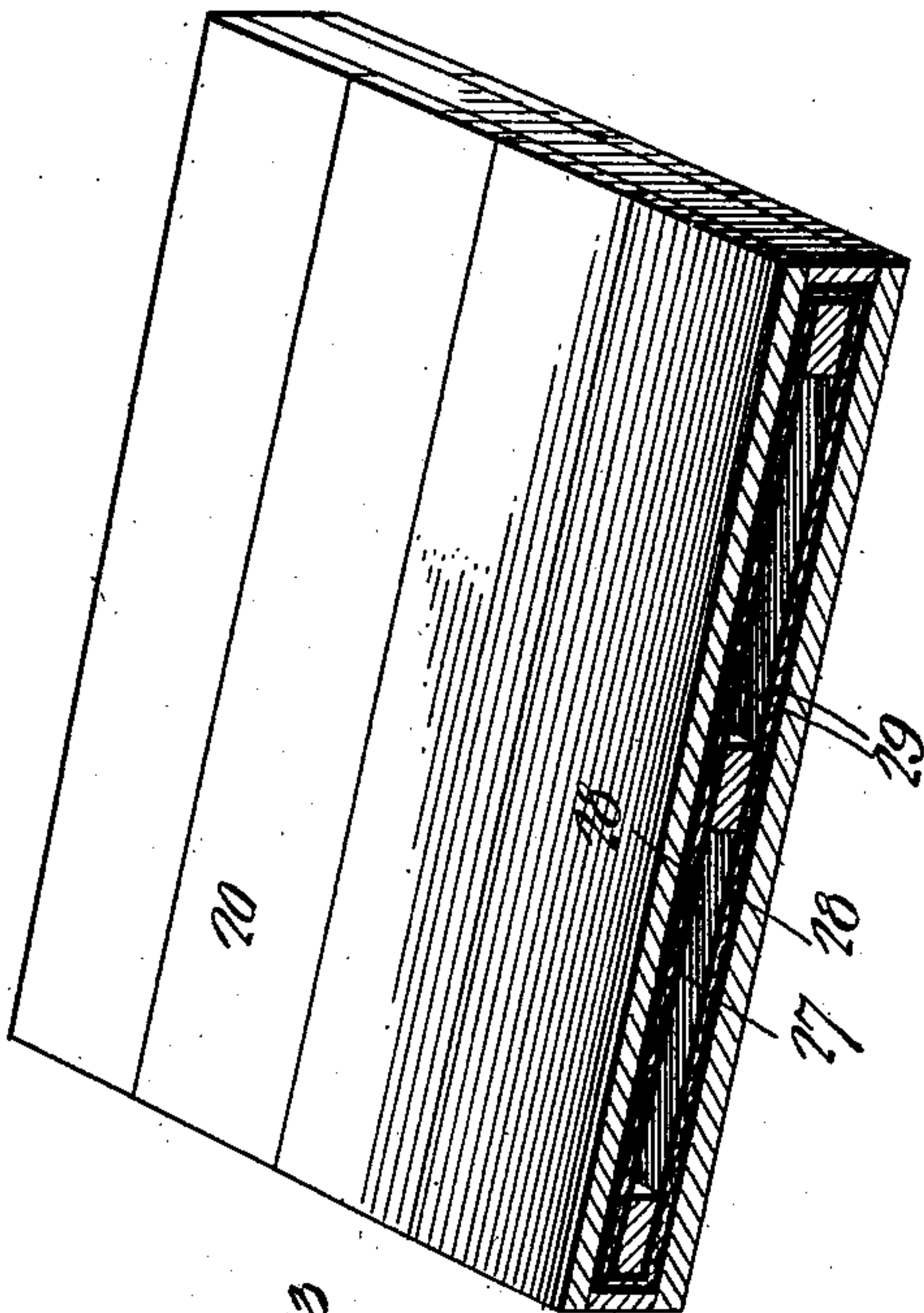


Fig. 6.

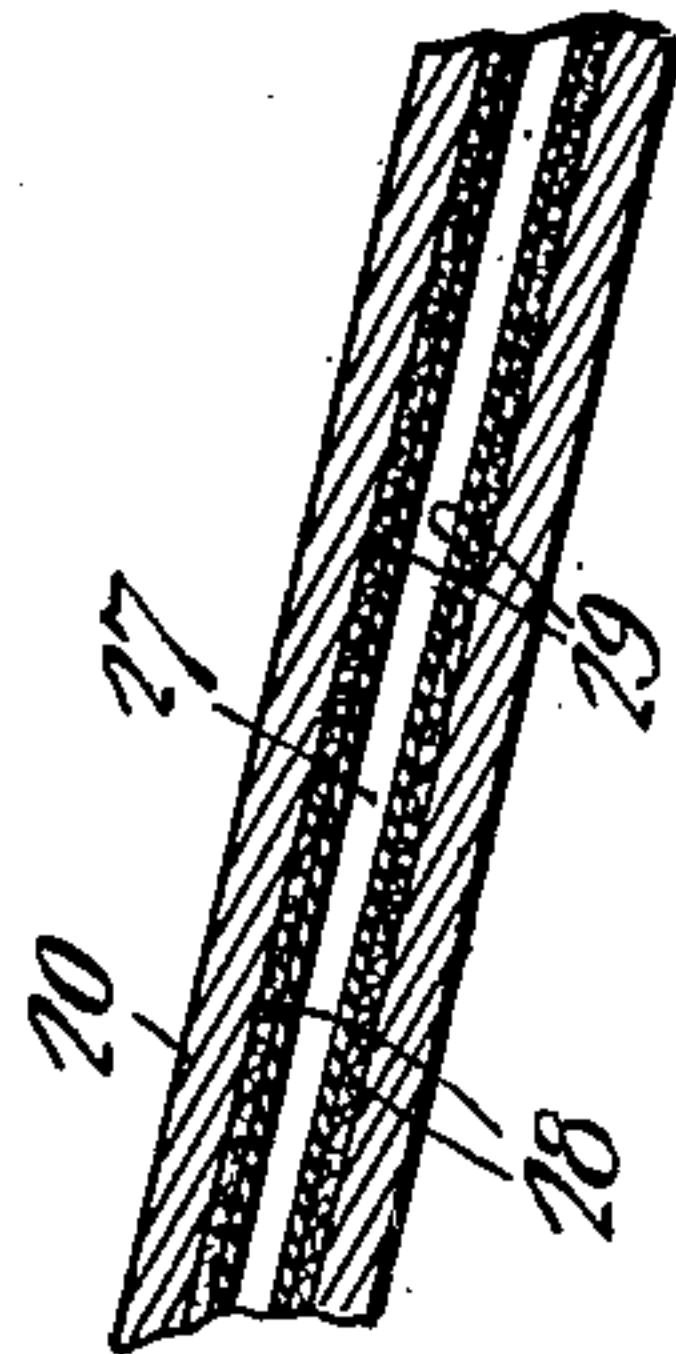


Fig. 5.

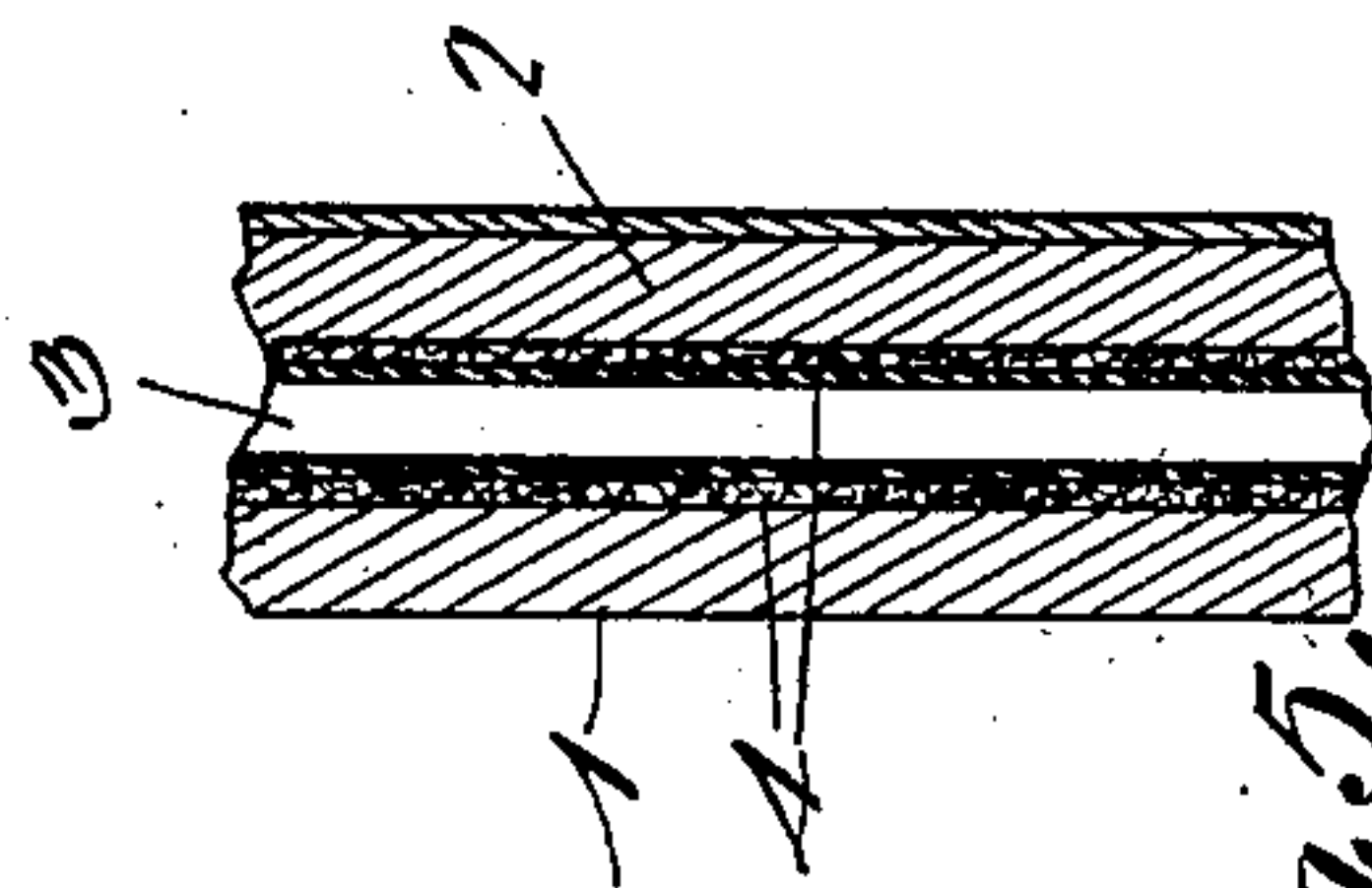
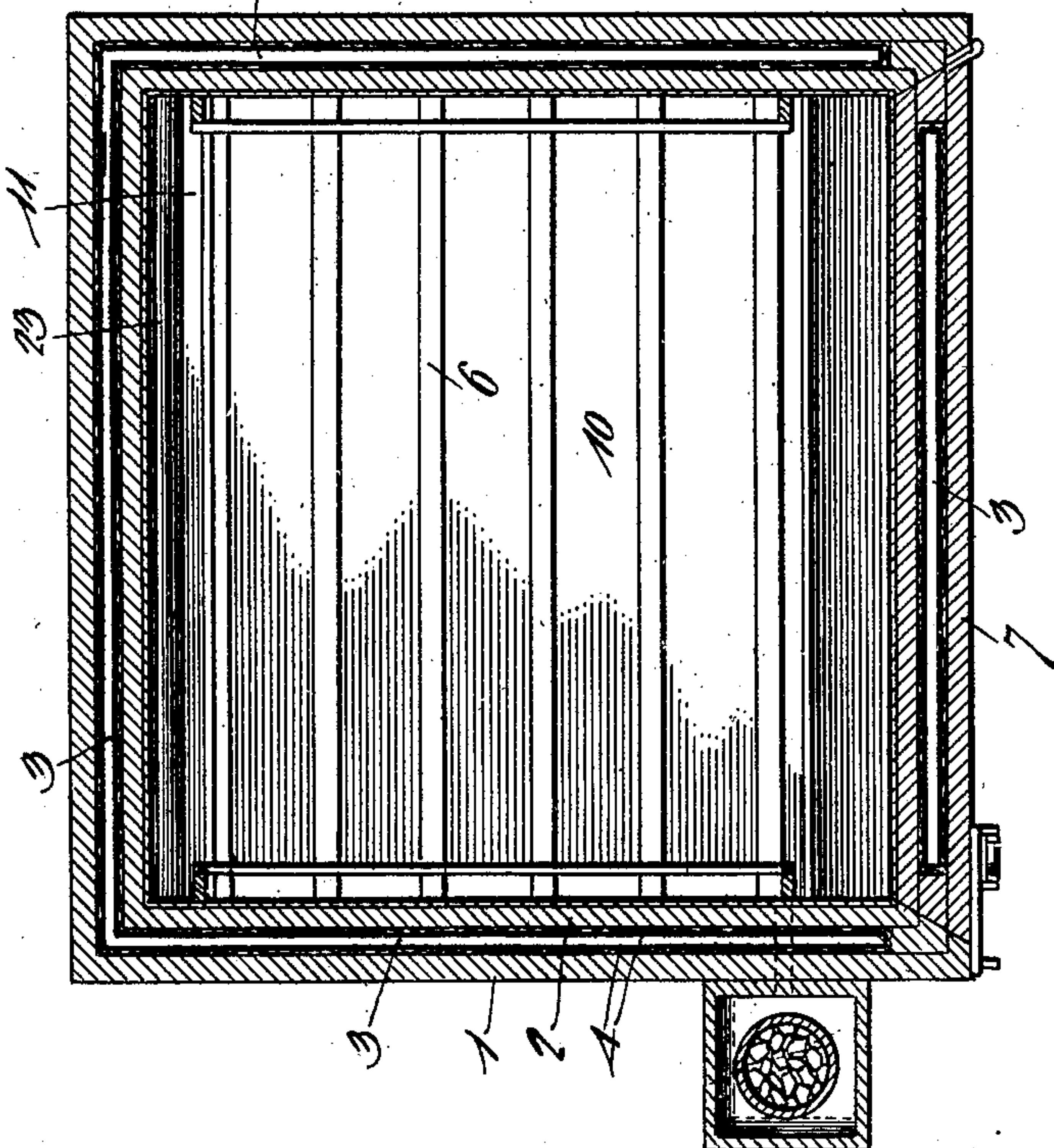


Fig. 3.



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UNITED STATES PATENT OFFICE.

HARVEY W. NASH, OF AMSTERDAM, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CARL STOECKER, OF AMSTERDAM, NEW YORK.

REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 713,237, dated November 11, 1902.

Application filed August 28, 1901. Serial No. 73,615. (No model.)

To all whom it may concern:

Be it known that I, HARVEY W. NASH, a citizen of the United States, residing at Amsterdam, in the county of Montgomery and State of New York, have invented a new and useful Refrigerator, of which the following is a specification.

This invention relates to refrigerators, and contemplates the construction and preparation of a refrigerator in such manner as to preserve articles of food in a more healthful condition and without contamination by foul odors.

As ordinarily constructed refrigerators are lined with metal, slate, tiling, glass, porcelain, or some substance which when cold will permit watery vapors laden with exhalations from articles placed in the storage chamber or compartment to condense upon such exposed surfaces, both lining and working parts, and this condensation soon forms a coating of filth which gives off a foul fetid odor when the door to said chamber or compartment is opened and when closed contaminates the air surrounding and in contact with articles of food stored in said chamber or compartment, and thereby injures the said food, renders the same unhealthful for dietary purposes, and necessitates a constant watchfulness and frequent scrubbing, scouring, and airing out of the refrigerator to maintain it in a moderately healthful condition. A continuance of this condensation of the watery vapors on the surfaces exposed thereto will cause said surfaces to become so permeated with the unpleasant filthy smell carried by said vapors that the food itself will soon have a similar flavor by absorption, thus showing that the air in the refrigerator will only be cold and not be constantly cleansed and purified, as it should be to make food products clean, wholesome, and healthful and be proper material with which to resupply the wastage constantly going on in the human body in order to make good, pure, healthy blood.

The object of the present invention is to remedy the disadvantages heretofore set forth, to the end that all food products stored in a refrigerator shall be not only cool, but the air which surrounds them be constantly purified,

so that they can be kept in their natural healthful condition.

The construction which is used to remedy the trouble heretofore referred to and embodying the features of the present invention is to use a wood lining in the shell or case particularly selected for its odorless qualities, to form a dead-air chamber in the said shell or case, and to use for insulating purposes cotton-wool, which shall completely incase all air-cavities, so that no unguarded air-space can be found at any time in the interstices of the said shell or case. The use of odorless wood for the lining of the refrigerator-shell prevents any possible taint or taste being imparted to the food placed in the refrigerator food-chamber. It also becomes necessary to provide means by which the air inclosed within the provision-chamber shall be constantly purified and no deposits of exhalations whatever permitted to gather anywhere upon the lining, working parts, or in nooks and corners, as they do in refrigerators constructed in the usual manner. With this end in view the present refrigerator embodies a combined vapor-guide, anticondensation-guard, and temperature-regulator which guides vapors laden with exhalations from articles kept in the provision-chamber directly into the ice-chamber, where they are condensed upon the surface of the ice and carried out of the refrigerator with the drip-water in the form of slime by means of an outlet provided for this purpose. The said guide is also insulated by cotton-wool packing and formed with an inclosed chamber, having said packing serving as the lining, so that the air-spaces are carefully guarded and cannot get foul by condensation of vapors upon the surface of the guide and cannot absorb any bacterial or particulate material within itself, thereby keeping the walls and working parts of the refrigerator entirely free from the lodgment of any putrefactive matter upon them. By moving the said combined guide, guard, and regulator backward or forward the lifting power and flight of the vapors can be changed so as to raise or lower the temperature of the air inside of the refrigerator a number of degrees in the event of some substance within

the refrigerator more delicate than the usual food products may be properly preserved.

In the drawings, Figure 1 is a longitudinal vertical section of a refrigerator embodying the features of the invention. Fig. 2 is a transverse vertical section of the same. Fig. 3 is a horizontal section thereof taken above the plane of the bottom of the ice-rack. Fig. 4 is a detail perspective view, partially in section, of the improved combined vapor-guide, anticondensation-guard, and temperature-regulator employed in the improved refrigerator. Fig. 5 is an enlarged sectional view in detail of a portion of the shell or case of the refrigerator, showing the arrangement of a lining therefor applied to the walls of the dead-air space. Fig. 6 is a detail sectional view of a portion of the guard, guide, and regulator, showing the lining therefor as applied to the walls of the dead-air space therein.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

In the accompanying drawings the features of the improvement have been shown applied to one form of refrigerator to illustrate a practical application of the same, and hereinafter the refrigerator as shown will be described as containing certain entrances to the ice and provision or storage chambers and also a simple form of suspended rack for supporting the ice within the refrigerator-inclosure; but it will be understood that the same features of construction may be equally well applied to any other arrangement of refrigerator and that no precise door or entrance arrangement is necessary for the practical consummation of the operation desired, and, furthermore, any form of ice rack or support may be employed which will permit the air-currents from the provision or storage chamber to flow over and contact directly with the ice. The shape, size, proportions, and minor details may be varied at will within the scope of the invention, and a variation in the change of position of certain parts may also be resorted to without affecting the principle involved. In view of this preliminary explanation a practical embodiment of the invention will be now set forth.

The numeral 1 designates the shell or casing of the refrigerator which is formed, preferably, of wood of such nature as to resist wear and external absorption and has an inner lining 2 of wood selected for its odorless qualities. The shell or casing is formed with a dead-air space 3, having the walls thereof covered first by a layer of cotton-wool 4, over which is placed a non-rotting layer of rubberoid or some other insulating substance to hold the cotton firmly in position, and in view of this covering for the walls of the air-space the latter is completely inclosed at all points to thereby protect the air-space and prevent any particulate matter finding its way into said space or going through the shell or casing. The cotton has the property of arrest-

ing the particulate matter and prevents the latter from passing therethrough, and consequently no putrefaction can occur in the air-space, nor can any culture-ground be had for microbes, germs, or bacteria within the air-spaces or interstices of the shell or casing of the refrigerator. The refrigerator as shown is provided with an opening top portion 5, leading to an ice-rack 6, suspended within the refrigerator below the said top portion, and also with upper and lower doors or closures 7 and 8 to respectively render the ice and provision or storage chambers accessible, the top portion 5 and the doors or closures 7 and 8 having the dead-air spaces therein similar to the remaining portions of the shell or casing of the refrigerator, so that the same advantages and protective means may reside in the said opening parts. In some instances the top of the refrigerator will be permanently closed and access had to the ice-rack 6 solely through the door or closure 7, the latter being shown located at the front of the refrigerator, though it could be equally well constructed in either end of the refrigerator. The ice-rack 6, as shown, is open and accessible from the front or the top for disposing the ice therein, the said open structure of the ice-rack permitting the air-currents rising from the provision or storage chamber 9 and laden with exhalations from the food products to contact directly with the ice and be condensed, and thus precipitate the impurities and cause them to be carried off by the drip-water in the form of slimes. At a suitable distance below the bottom of the ice-rack is a drip-pan 10, inclined from the front edge downwardly toward the rear of the same and provided with a rear inclined apron or guard 11. Next below the drip-pan 10 is a water tank or chamber 12, which is also inclined downwardly from the front toward the rear of the refrigerator and gradually increased in vertical extent toward the rear side of the same, a water supply or inlet pipe 13 being connected to the front portion of one end of the tank or chamber 12 and running through the shell or casing 1 from an outer supply-tank 14, having an earthenware or other filter-receptacle 15 removably mounted therein and adapted to receive charcoal 16 or the like, the filter-receptacle extending downwardly only partially through the vertical extent of the supply-tank. The purifying and cleansing effect of charcoal on water which is permitted to pass therethrough is well known; but to render charcoal effective in this purpose it must be removed after a few weeks and a fresh supply placed in the receptacle 15. For convenience in this operation the receptacle 15 is made easily removable from and applicable to the supply-tank 14, and the said supply-tank and receptacle, as well as the tank 12, are wholly separated from the odors or exhalations resident in a refrigerator, because the tank 12 is wholly inclosed in relation to the interior of the refrigerator, and

the water passing from the exteriorly-located supply-tank 14 thereinto is cooled by the proximity of the tank 12 to the ice-rack or is placed at such elevation as to be influenced by cool currents passing around the same and emanating from the ice in the rack.

The pipe 13 is intended to be formed of block-tin or earthenware to prevent injury to the water passing therethrough, and the water is taken from the tank 12 by a pipe 17, running from the rear enlarged end thereof at the lowest point, as shown by dotted lines in Fig. 2, the said pipe 17 passing out through the casing of the refrigerator to a suitable point on the exterior, where it will be supplied with a faucet or the like. The tank 12 is shielded by the drip-pan 10, so that no drippings from the ice above can fall thereon, and said drip-pan is spaced apart from the upper side of the tank 12, so that cold-air currents may freely circulate between the said drip-pan and the tank. The tank 12, as well as the drip-pan, will be supported by any suitable means, and the said means may be of such nature as to permit the said parts to be easily removed from the refrigerator. The said drip tank and pan are also so located as to avoid interference with the air-currents passing to and from the ice-rack, and immediately below the said tank is a second drip-pan 18, having a rearward and downward inclination and a rear extremity 19, which depends in a curved line slightly inside or to the front of the plane of the lower terminal of the apron or guard 11 of the pan 10. The object of the pan 18 is to catch and carry off the water of condensation from the tank 12, and below the said pan 18 is the improved combined guard, guide, and temperature-regulator 20, the said pan 18 having the function to prevent the water of condensation from the tank above from falling onto the said combined device 20. To cause the water or drippings to move rapidly over the surfaces of the pans 10 and 18, it is proposed to coat the said surfaces with some suitable substance that will render them slippery or so that they will have a substantially glazed surface at the points where they receive the water or moisture. The combined device 20 is held on suitable supports and is movable in relation to the latter, the said device 20 extending from end to end of the interior portion of the refrigerator, but is of considerably less width than the refrigerator, so as to form passages 21 and 22 between the front and rear sides of the said device 20 and the corresponding sides of the refrigerator for the free circulation or movement of the air-currents through said passages in passing to and from the ice-chamber and storage or provision chamber. The pan 18 is supported above the upper surface of the device 20 to allow the air to circulate between said devices and the said pan, the device 20 forming the upper limit for the storage or provision chamber 9, that portion of the refrigerator above the said

device 20 forming what may be termed the "cooling or ice chamber." The pans 10 and 18 and the tank 12 are also approximately of the same width as the device 20, with the exception of the apron 11 of the pan 10 and the rear curved extremity 19 of the pan 18, and by this approximation in width the passages at the front and rear, as at 21 and 22, are continued upwardly to the ice-rack to permit an unretarded circulation of the air-currents. In the rear portion of the provision or storage chamber 9 a drip-trough 23 is located and extends the full length of the refrigerator directly under the lower edges of the apron 11 and the rear curved terminal 19, respectively, of the pans 10 and 18 to catch the drip-water, which is conveyed from the said trough by a pipe 24, adapted to have a suitable trap and an outlet 25 exterior of the bottom of the refrigerator. Disposed under the drip-trough is a shield 26, which prevents the water dripping into the said trough from splashing over into the storage or provision chamber 9.

The combined guard, guide, and temperature-regulator 20 is formed with an inclosed dead-air space 27, having a lining of cotton-wool, as at 28, Fig. 6, and an inner covering of rubberoid or the like, as at 29, the said lining or covering performing the same function and having the same advantage in relation to the device 20 as in the shell or casing 1, and in both the shell or casing and the device 20 all the joints and interstices or crevices will be completely closed by the lining and its covering for the purpose mentioned in connection with the description of the said lining and covering for the dead-air space of the shell or casing. The reason for using cotton-wool as an insulating material is that it is an effectual preventive of any particulate material in the air either from without or from within the refrigerator from passing through it, and thereby overcome any tendency toward the production of putrefaction or decay or foul the air confined in the air-spaces of the shell or casing and the device 20, so that nothing can generate within said air-spaces which can give forth anything to befoul the air adjacent to or within the refrigerator. A further reason for the use of such material is that it is an excellent article to prevent heat from passing through to the inner portion of the refrigerator, and thus economize in the use of and prevent wastage of ice.

The device 20 in serving its function as a guide will throw the vapors rising thereagainst forwardly and upwardly toward the front of the refrigerator, so that said vapors may rise through the passage 21 from the chamber 9 and deposit their impurities on the ice in the rack 6. The said device in serving its function as a guard prevents the vapors rising from the chamber 9 getting chilled as they ascend, because if they do get chilled their rising power becomes diminished proportionate to the degree of chilling they re-

ceive. It thus becomes evident that the under surface of this device 20 must not be chilled to such an extent as to cause the vapors to condense and leave or deposit their load of food particles upon the lower surface of said device to ferment, sour, mold, and decay, and thereby create a fetid and obnoxious odor at the upper portion of the storage-chamber and foul the air surrounding the food products stored in said chamber. By the arrangement set forth condensation on the lower side of the device 20 is prevented and the storage-chamber is kept sweet and clean by preventing the air that circulates therethrough from coming in contact and being saturated with noxious material. The object of having the device 20 movable has been partially explained, and it is mainly the purpose of such movement of the device 20 to raise or lower the temperature a number of degrees and form a regulator for the storage-chamber 9 without changing the quantity of ice in the ice-chamber.

Many other advantages will become apparent from time to time in the use of the improved refrigerator, and it will be seen that provisions have been made for not only storing and cooling articles of food, but also to relieve such articles from the injurious contamination of obnoxious odors and vapors and prevent a deposit of particulate matter at any point within the refrigerator and an avoidance of bacterial generation.

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

1. A refrigerator comprising a casing having an upper ice-chamber and a lower storage-chamber, means for holding ice in the ice-chamber, an intermediately-located combined guard and temperature-regulator arranged at an inclination and spaced from the front and rear walls of the casing to form passages, said guard and temperature-regulator being constructed of non-heat-conducting material, whereby the ascending vapors are prevented from being materially condensed until they reach the ice-chamber, a water-tank located above the guard and temperature-regulator

and spaced from the same and from the means for holding the ice, the upper and lower inclined plates located above and below the tank and projecting in advance and in rear of the same and spaced from the tank and the combined guard and temperature-regulator and having their front edges extended into the front passage and bent upward, the rear edges of the plates being extended into the rear passage and being bent downward, and means located below the lower edges of the plates for carrying off the drip-water, substantially as described.

2. In a refrigerator having an upper ice-chamber and a lower storage-chamber, the combination of means for holding ice in the ice-chamber and an intermediately-located combined guide, guard and temperature-regulator which is movable and inclined downwardly and rearwardly and forming the top portion of the provision-chamber, said combined guide, guard and temperature-regulator being of hollow form and provided with a lining of wool, passages being provided between the front and rear sides of the said combined device and the adjacent portions of the interior walls of the refrigerator.

3. A refrigerator having an upper ice-chamber and a lower storage-chamber, combined with an intermediately-located movable flat device to serve as a guide, a guard and a temperature-regulator, the latter being located below the lower terminal of the ice-chamber, the said device having an inclosed wool-lined dead-air space and operating to prevent chilling the ascending vapors too rapidly and thereby prevent condensation of the said vapors on the under side of the said device and deposits of particulate and bacterial matter on said side of the device.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HARVEY W. NASH.

Witnesses:

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J. H. HANSON.