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PATENTED FEB. 12, 1907.

C. DUKELOW, M. J. KIER & H. A. JAEGER.
REFRIGERATOR.

APPLICATION FILED JAN. 2, 1906.

2 SHEETS--SHEET 1.

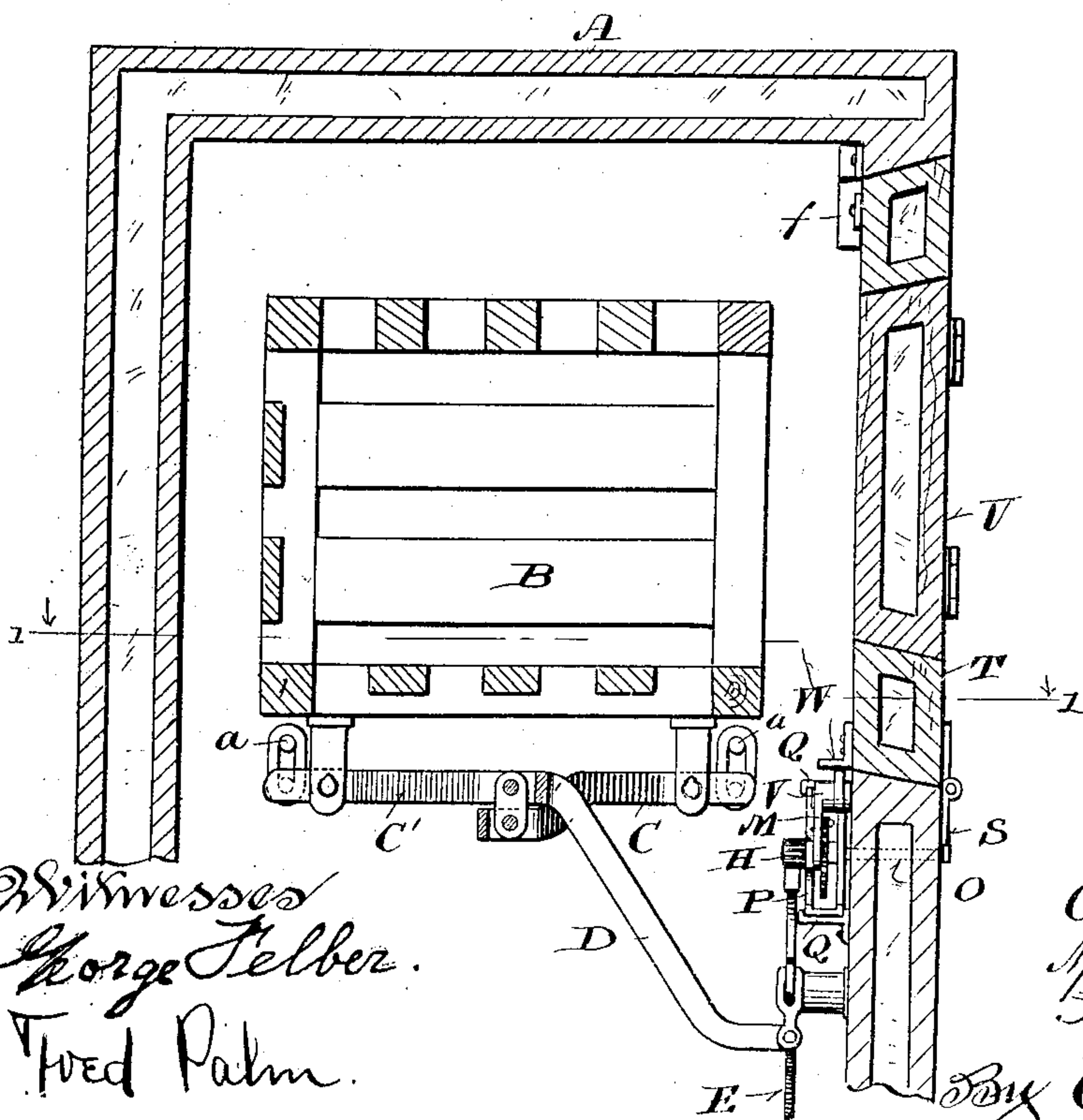
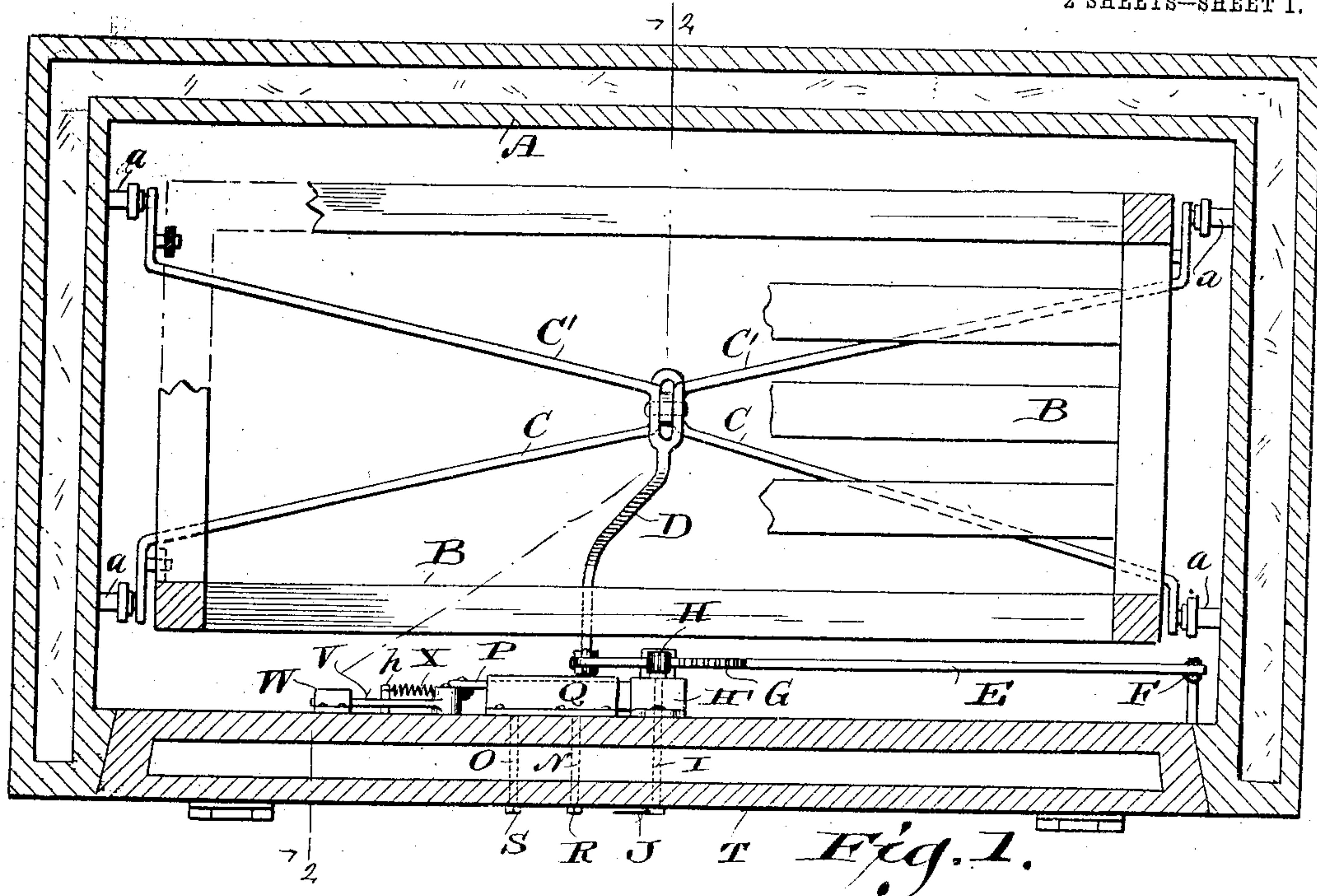


Fig. 2.

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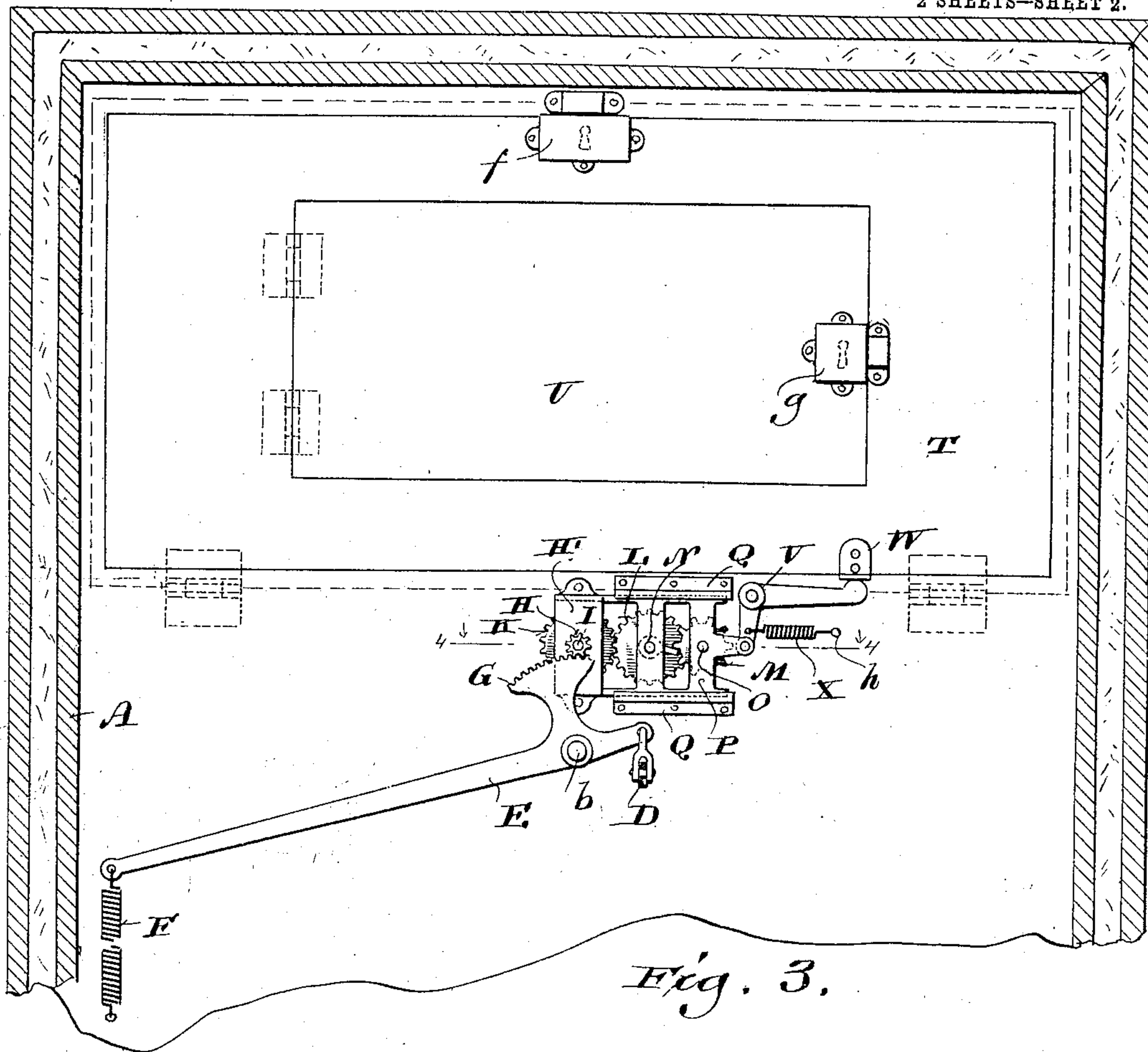


Fig. 3.

Fig. 4.

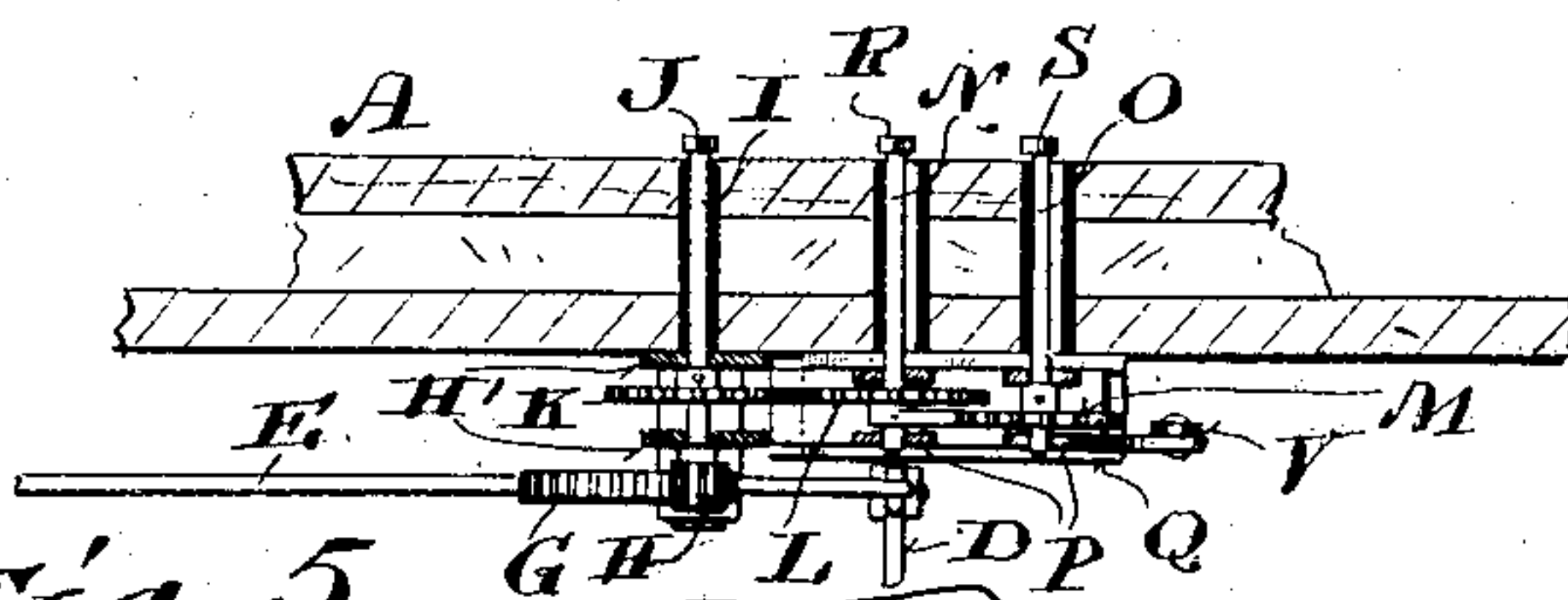
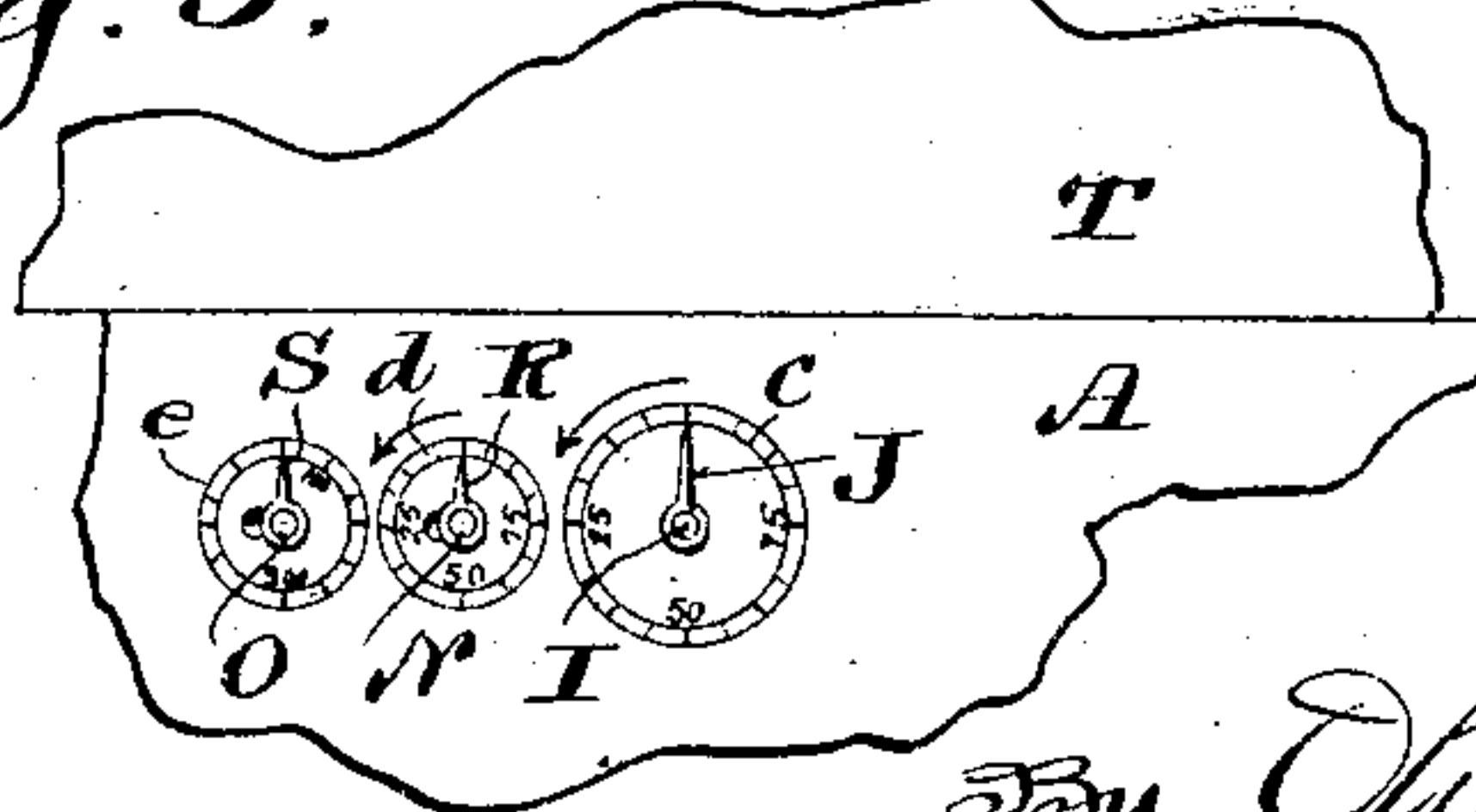


Fig. 5.

Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES DUKELOW, MARTIN J. KIER, AND HERMAN A. JAEGER, OF
OCONOMOWOC, WISCONSIN.

REFRIGERATOR.

No. 843,668.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed January 2, 1906. Serial No. 294,090.

To all whom it may concern:

Be it known that we, CHARLES DUKELOW, MARTIN J. KIER, and HERMAN A. JAEGER, citizens of the United States, and residents of Oconomowoc, in the county of Waukesha and State of Wisconsin, have invented certain new and useful Improvements in Refrigerators; and we do hereby declare that the following is a full, clear, and exact description thereof.

The object of our invention is to provide a refrigerator with registering means whereby the initial weight of ice deposited therein is indicated, the register mechanism being so arranged as to show thereafter the exact amount of shrinkage of the ice caused through atmospheric conditions or use.

Said invention consists in certain peculiarities of construction and combination of parts, as hereinafter fully set forth, with reference to the accompanying drawings, and subsequently claimed.

In the drawings, Figure 1 represents a sectional plan view of the ice-chamber of a refrigerator, showing the ice-receptacle arranged in accordance with our invention, the section being indicated by line 1 1 of Fig. 2; Fig. 2, a cross-section of the same, indicated by line 2 2 of Fig. 1; Fig. 3, a sectional elevation of the refrigerator looking toward the door side, illustrating the register mechanism and its connections upon the inner face of the front wall of said refrigerator; Fig. 4, a detail section of the same on line 4 4 of Fig. 3; and Fig. 5, a face view of a fragment of the front refrigerator-wall, showing the register-dials.

Referring by letter to the drawings, A indicates the refrigerator-body, and B the ice-chamber, which is supported upon a system of scale-levers C C', the latter being mounted upon pins *a*, extending from the walls of said refrigerator-body. The lever C' has a forward arm D in link connection with the short arm of a scale-beam E, which beam is pivoted to the front wall of the refrigerator by a stud *b*, its long arm being connected to said wall by a counterpoise-spring F, as best illustrated in Fig. 3 of the drawings. The scale-beam E has a toothed segment G extending radially from its pivot for engagement with a pinion H, which is secured to the

spindle I of the register mechanism. The said spindle I extends through the front wall of the refrigerator, at which point it carries an index-finger J, there being a spider H' secured to the rear face of said wall in which the aforesaid spindle has its bearing. Secured to the spindle I between the arms of spider H' is a gear-wheel K, through which motion is transmitted to a pair of register-gears L M, and the latter are secured to spindles N O, respectively, said spindles being mounted in a bracket P, which is arranged to be reciprocated in guide-strips Q, fast to the face of the refrigerator-wall. The spindles N O are similar to the spindle I in that they carry index-fingers R S at their ends projecting through the refrigerator-wall; but owing to the fact that these spindles are reciprocated with the bracket the openings in said wall through which they project are slightly elongated.

Graduated indicator-dials *c d e* are arranged upon the outside of the refrigerator in connection with the index-fingers, so as to show at all times the amount of ice in pounds which the refrigerator contains as well as the amount previously used.

The register mechanism, as shown, being of the well-known multiplying type, forms no part of our invention and may be varied in structural detail, one of the essential features of our invention, however, being the provision for automatic engagement or disengagement of the train of register-wheels from the unit or drive spindle I, whereby the said spindle, together with its index-finger, may be actuated either independently or in connection with those of said train. The mechanism for accomplishing the above result and its object is fully set forth hereinafter.

The filling-door T is hinged to the front wall of the refrigerator and serves as a closure for an opening in the same through which access is had to the ice-chamber for filling purposes. This door is provided with a lock *f*, the key of which is in possession of the party whose duty it is to supply the refrigerator with ice. In order that access may be had to the ice for the purpose of using the same, the aforesaid door T is provided with an opening which is closed by a dispensing-door U in

hinge connection with the first-named door and also secured by a lock or catch *g*, as best illustrated in Fig. 3 of the drawings. The reciprocating bracket *P* is secured to one arm 5 of a bell-crank *V*, its other arm being disposed in the path of a lug *W*, which is fast on the inner face of the filling-door *T*, and the latter when closed causes said lug to strike the bell-crank, and thereby force the bracket *P* forward, which movement permits the register-gear *L* to mesh with its corresponding gear-wheel *K*, secured to the unit or drive spindle. The bell-crank *V* is held down by the lug *W* in opposition to a spring *X*, fast to said bell-crank, and a pin *h*, projecting from the refrigerator-wall. When the filling-door is opened, it will be seen that the spring is free to exert a pressure to retract the bracket, and thus disengage the register-gears.

While we have shown and described a bell-crank and spring to operate in conjunction with the filling-door for throwing the register in and out of gear, it will be understood that we may employ any suitable mechanical means to be controlled by said door for accomplishing the same result without departing from the spirit of our invention, and we may in some instances substitute an equalizing-weight for the spring shown in connection with the scale-beam.

Assuming that the register index-fingers are all in gear and that the refrigerator is to be loaded with ice, the filling-door *T* is unlocked and swung down. This causes the gear 35 *L* of the permanent recording-register to disengage the gear-wheel *K* on the units-spindle *I*, and when ice is placed in the chamber *B* its weight will cause the free ends of the scale-levers to sink, thereby imparting movement to the scale-beam against the tension of the equalizing-spring, and this motion in turn is transmitted to the spindle *I* through the segment *G* and pinion *H*, causing the index-finger *J* (see Fig. 5 of the drawings) to revolve in the direction of the arrow until the weight of the ice equalizes the scale-beam resistance, at which time the index-finger stops, thereby showing the amount of ice, as indicated by the dial. The filling-door is then closed and 50 locked, which movement causes the gear of the permanent recording-register to be pushed into mesh with its corresponding gear *K* of the units-spindle. If it is desired to remove a piece of ice from the chamber, the dispensing-door *U* (which is the only general means of access thereto) is opened, and when the ice is removed the difference in weight immediately causes the units-spindle *I* to retract from the point, as previously stated. This 60 motion, owing to the register-gears being meshed, revolves spindle *N* and its index-finger in the direction of the arrow (as indicated in Fig. 5 of the drawings) from zero to a point

indicating upon its dial the amount of ice taken out. Said index-finger will then remain 65 until the shrinkage of ice in the chamber causes it to gradually continue in the same direction until all the ice has been utilized, at which position it will remain, thus showing the exact amount of ice in pounds which was 70 originally put into the chamber and thereafter used. The index-fingers *J R* also show at a glance the amount of ice used and the amount remaining in the chamber, their combined registration being the amount originally placed therein. The third index-finger 75 *S* is simply a hundreds-register, which is actuated one-tenth of a revolution with each complete turn of the second tens index-finger *R* and may be dispensed with or added, as the case may require. 80

By the use of separate doors for filling and dispensing the ice from the refrigerator it will be seen that the register mechanism is not disturbed when the dispensing-door is 85 opened, and consequently with the system of keys described it is impossible to remove ice without a registration. The arrangement thus serves as a check to both the supply agent and dispenser, which is particularly advantageous where the refrigerator is used for 90 other than domestic purposes. In the latter case the locking feature may be dispensed with.

While we have shown and described the 95 register mechanism as being attached to the inner wall of the refrigerator, said mechanism may be placed between the partition-walls, so as to protect it from moisture, or any suitable cover may be placed over the register to accomplish the desired result. 100

We claim—

1. In a refrigerator, an ice-chamber, scale-supporting mechanism for the same, a register in connection with the scale-supporting 105 mechanism for indicating the initial weight of ice, and a supplementary register arranged to be thrown into gear with the first-named register, whereby the amount of ice consumed is registered. 110

2. In a refrigerator, an ice-chamber, scale-supporting mechanism for the same, a communicating door for the chamber, a fixed register mechanism in permanent gear connection with the scale mechanism, a supplementary register mechanism for engagement 115 with the first-named register, and means in connection with the supplementary register and ice-chamber door, whereby the said supplementary register is thrown into engagement 120 with the fixed register when the door is closed.

3. In a refrigerator, provided with a filling-door and a dispensing-door, a suspended ice-chamber, scale-supporting mechanism therefor, a fixed register mechanism in per- 125

manent gear connection with the scale mechanism, a supplementary register for engagement with the fixed register, and means in connection with the supplementary register
5 and filling-door, whereby said supplementary register is thrown into engagement with the fixed register when the door is closed.

In testimony that we claim the foregoing we have hereunto set our hands, at Oconomowoc, in the county of Waukesha and State of Wisconsin, in the presence of two witnesses.

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MARTIN J. KIER.

HERMAN A. JAEGER.

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