

No. 667,249.

Patented Feb. 5, 1901.

M. POIRRIER & J. EDWARDS.

REFRIGERATOR.

(Application filed July 27, 1900.)

No Model.)

2 Sheets—Sheet 1.

FIG. 1.

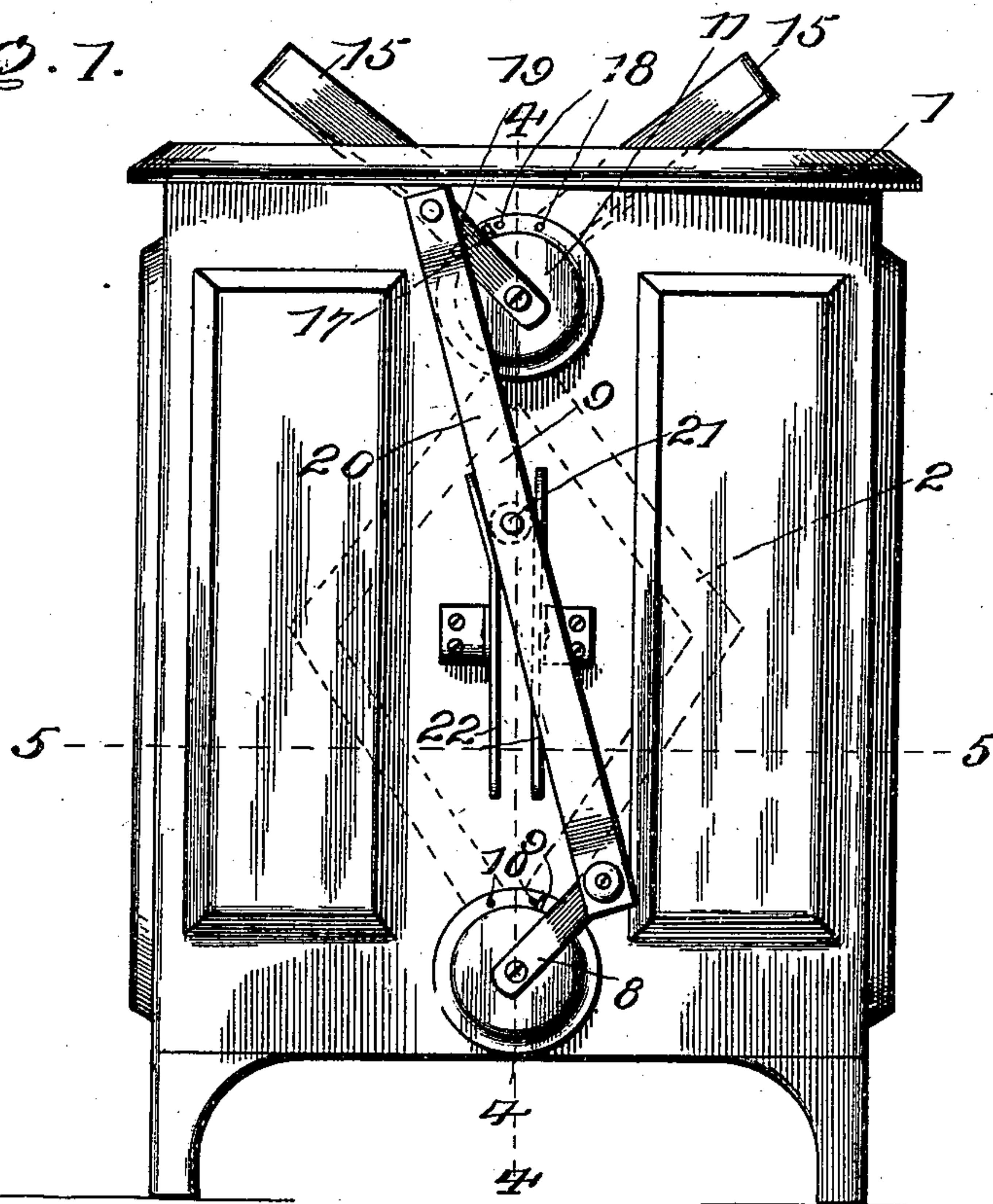
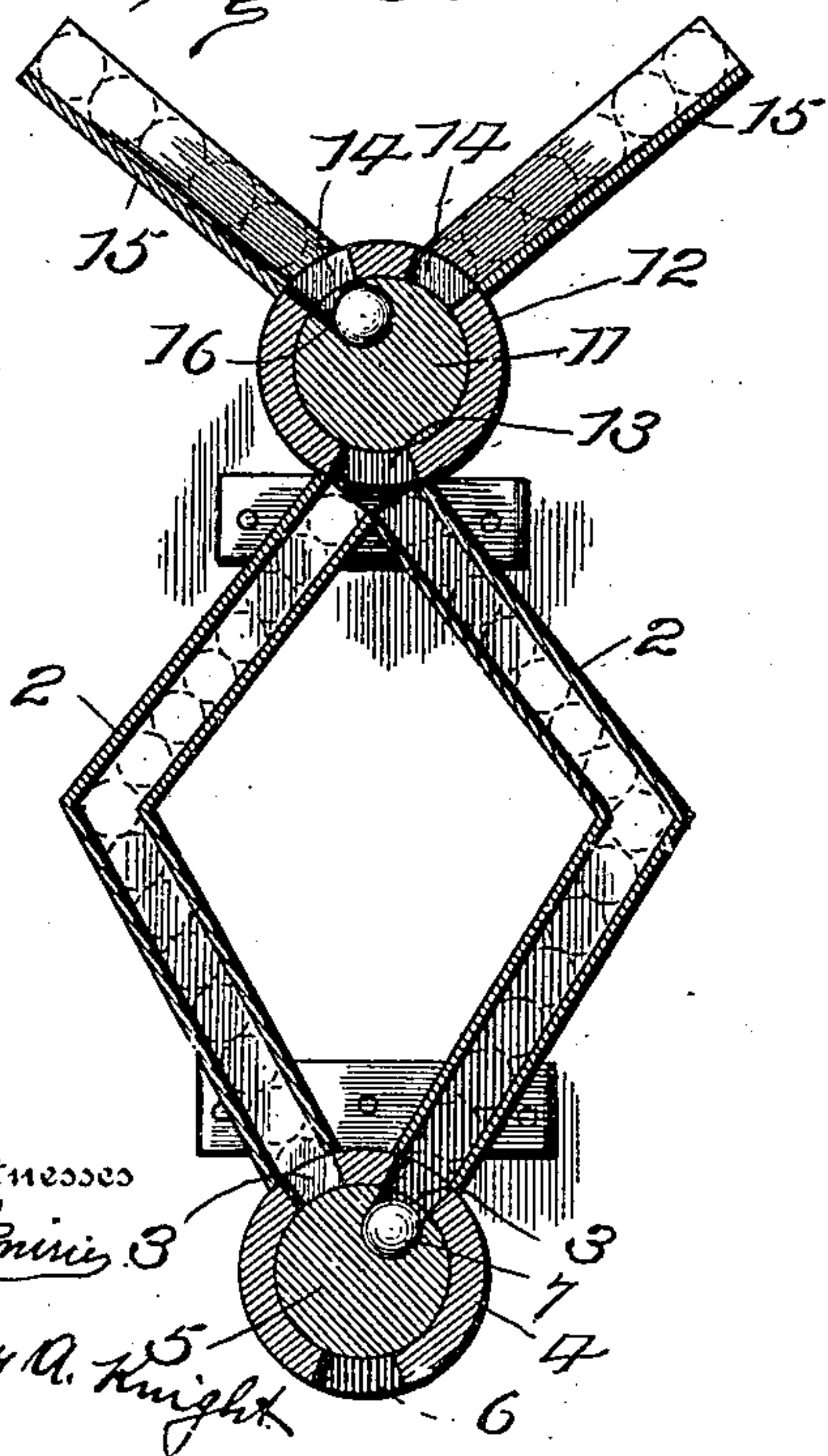
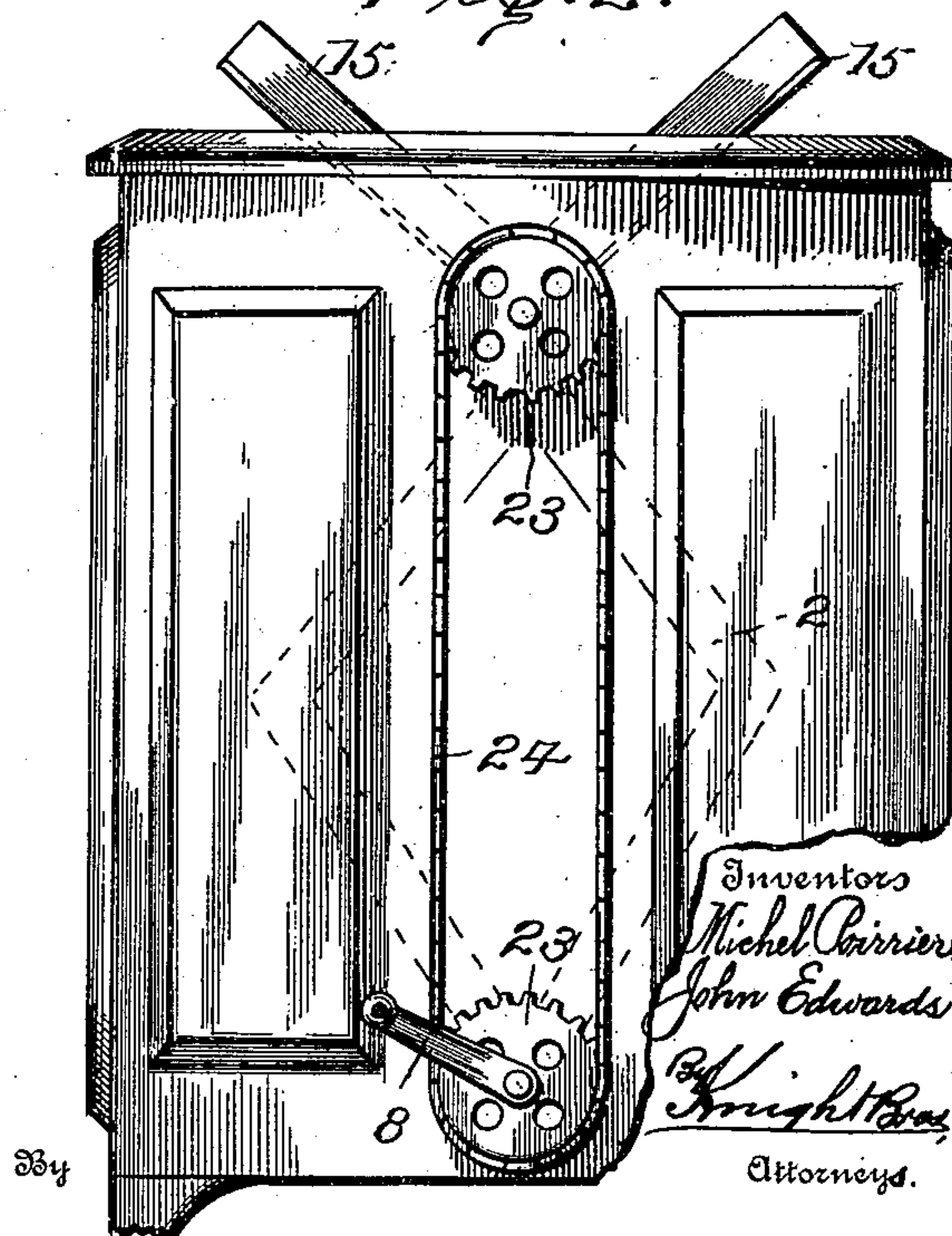


FIG. 3.



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FIG. 2.



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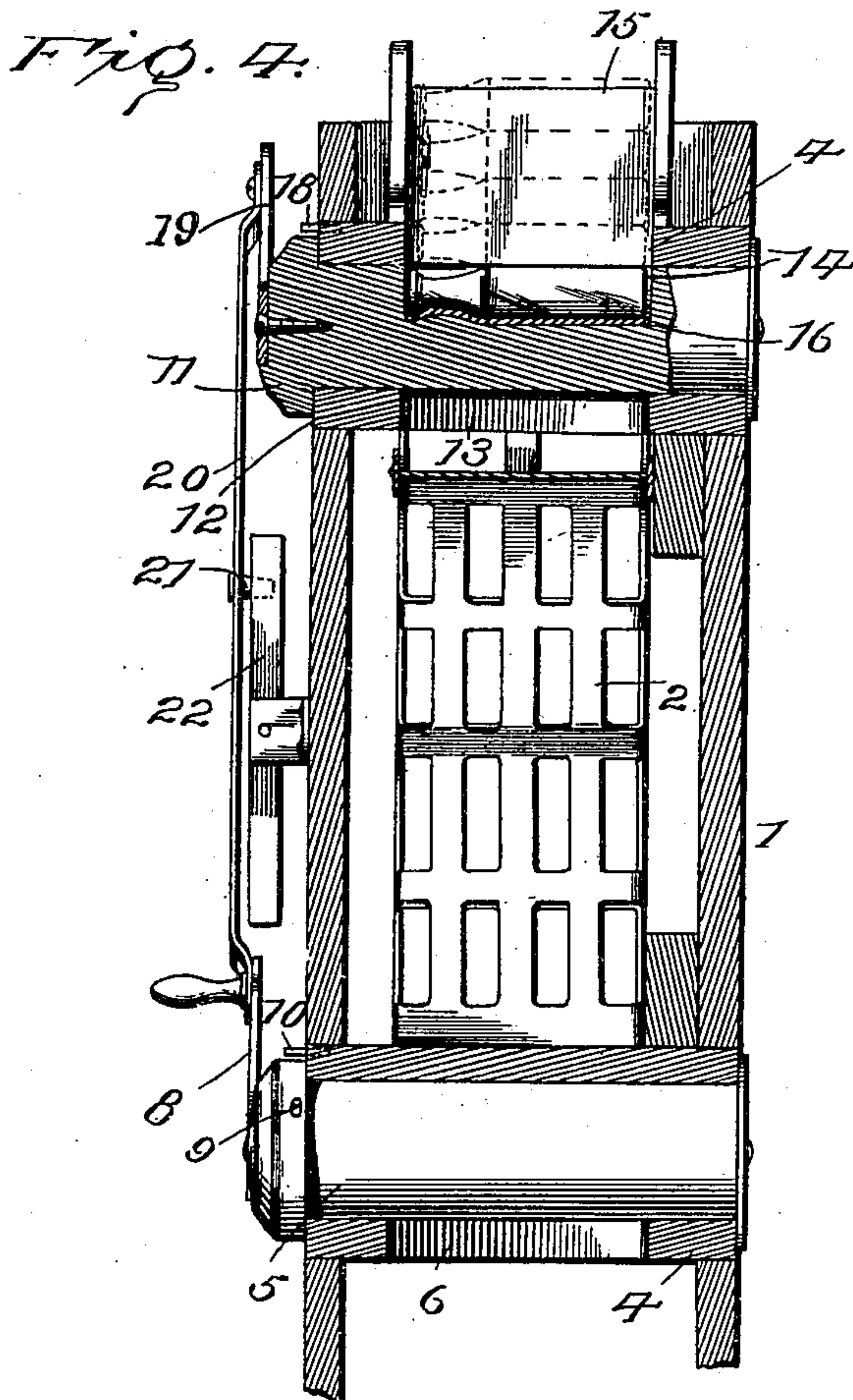
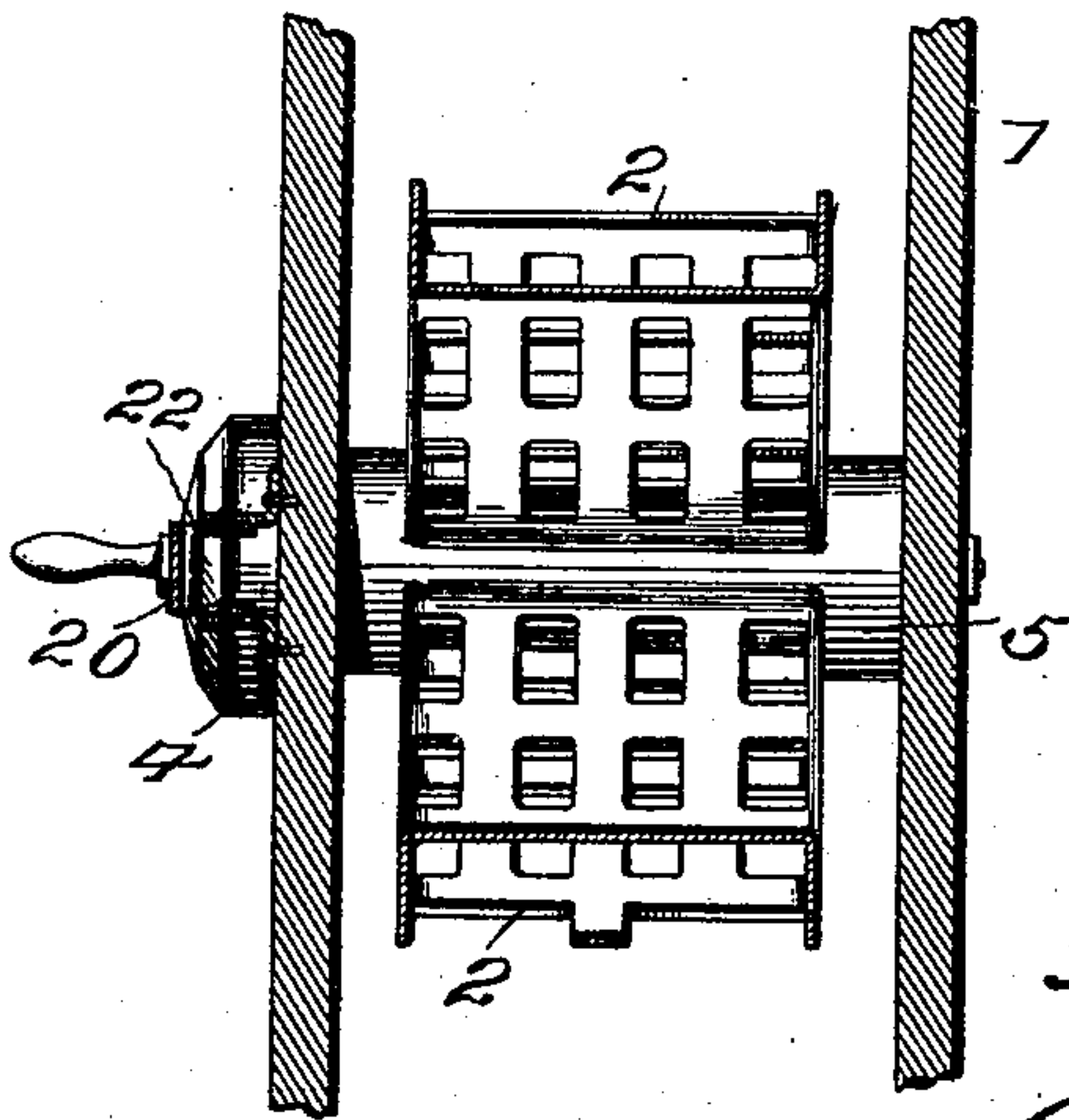


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

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REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 667,249, dated February 5, 1901.

Application filed July 27, 1900. Serial No. 25,043. (No model.)

To all whom it may concern:

Be it known that we, MICHEL POIRRIER, a citizen of the United States, and a resident of St. James, in the parish of St. James, State of Louisiana, and JOHN EDWARDS, a citizen of France, and a resident of Marseilles, in the Republic of France, have invented certain new and useful Improvements in Refrigerators, of which the following is a specification.

Our invention relates more particularly to refrigerators or ice-boxes intended for use in cooling articles that are being sold or dispensed from time to time; and the object of our invention is to provide an apparatus in which the withdrawal of the article or both the introduction and the withdrawal thereof may be effected without opening the apparatus, so that the loss of the cooling effect ordinarily resulting from opening and closing refrigerator-doors is entirely avoided.

In its broadest conception our invention consists in combining with an ice-chest or refrigerator or other suitable form of closure in which articles may be cooled means for receiving and holding articles to be cooled in a manner to permit their withdrawal one by one and a valve or gate, preferably in the form of a rotating cylinder, which will receive the articles in a pocket or pockets formed therein and transfer them from the receiving to the discharging point of the valve or gate without opening the closure in which they have been cooled.

Further steps in the development of our said invention involve the use of the valve or gate not only for the withdrawal of the article, but also for its introduction into the refrigerating-chamber to avoid the introduction of warm air from the outside in charging as well as discharging; also, the use, in connection with the charging valve or gate, of a hopper which will hold a number of articles and deliver them successively to the charging valve or gate as the latter is operated; also, means whereby the charging and discharging valves or gates are operated simultaneously and an article introduced each time one is removed, so as to keep the refrigerating-chamber filled; also, the multiplication of the elementary idea, so that a plurality of kinds of articles may be separately handled and

dispensed at will, a common gate or valve serving for the introduction and a like gate or valve serving for the withdrawal of all the different kinds and selection being exercised by the particular movements imparted to the valve, as will hereinafter more fully appear.

In the accompanying drawings, forming part of this specification, Figure 1 is a elevation of a suggestive form of ice-box to which one embodiment of our invention is applied. Fig. 2 is a similar view showing a slight modification in means employed for simultaneously actuating the two valves or gates. Fig. 3 is a vertical sectional view illustrating the operation of the supply-hoppers, the charging-valve, the holding and directing chutes, and the discharging-valve. Figs. 4 and 5 are respectively a vertical section on the line 4 4, Fig. 1, and a horizontal section on the line 5 5, Fig. 1.

1 represents any suitable type of refrigerator, ice-box, or cooling-chamber.

2 represents means, such as a chute or conduit within the refrigerator, for holding articles, such as bottles, in an orderly manner and discharging them or delivering them to a discharge point or opening successively. There will be as many of these "chutes," as we shall hereinafter call them for convenience, as there are kinds of articles to be handled, and the construction of said chutes or their formation will vary according to the latter circumstance. If the apparatus is simply to embody the broadest idea of our invention, the chute may be in the form of a simple hopper, terminating at a given discharge-point, so as to deliver the bottles or other articles one by one.

3 represents the discharge-openings of the chutes 2, which are formed in the shell 4 of a discharge valve or gate 5, arranged to rotate in said shell. The shell has a discharge-opening 6 at the bottom, and the gate has a pocket 7, that may be moved opposite either discharge-opening 3 of the chutes to receive a bottle therefrom and then by the turning of the gate made to discharge said bottle through the opening 6. By this means the contents of the refrigerator may be withdrawn at will without permitting the ingress of warm air from the outside.

In the broadest embodiment of our invention it is assumed that the chutes are filled with the articles through a suitable door or opening of ordinary construction each time the chutes are emptied. The diverging and converging shape of the chutes illustrated is recommended, because it offers facility for surrounding the articles by the cooling medium and also offers greater capacity than a straight chute or chutes. The gate 5 may be conveniently turned by a crank-arm 8, and when used in connection with two chutes the gate is arrested by a stop 9 projecting from the gate coming in contact with stops 10 on the shell of the gate. In this preferred embodiment of our invention we likewise employ a gate 11 for introducing the articles, said gate working in a shell 12, discharging through an opening 13 into the chutes 2, and having openings 14 to which the articles are delivered by hoppers 15, a pocket 16 in the gate 11 being moved opposite either opening 14 to receive an article and then over the discharge-opening 13 to deliver said article to the chutes. Gate 11 is likewise controlled in its movement by a projection 17 on the gate coming into contact with stops 18 on the shell. The upper gate is moved by a crank-arm 19 in Figs. 1 and 4, and to insure corresponding movement of the gates 5 and 11 the cranks 8 and 19 are connected by a rod 20. The rod 20 carries a stud 21, that works in a guide 22 and acts as a fulcrum for the rod 20 in throwing the upper crank beyond the dead-center when the apparatus is operated through the lower crank. By this means the cranks have symmetrical opposite movements, and the article introduced into the left-hand hopper 15 is delivered to the right-hand chute 2. Simultaneous movement of the upper and lower gates may be accomplished by providing said gates with sprocket-wheels 23 and connecting the latter by a chain 24, as shown in Fig. 2. In this case the movements of the two gates will be similar and not opposite.

The operation of this apparatus is as follows: If the refrigerator is to be employed for handling a plurality of kinds of articles, the respective kinds are arranged in the several hoppers, the chutes being filled. Then whenever an article is withdrawn by the lower gate 5 the upper gate 11 will be moved until its pocket receives an article of the same kind and delivers it into the opening 13. The chutes 2 having been previously filled, the article will naturally pass to the chute from which an article has just been withdrawn by the lower gate, the latter action having caused the whole column of articles to settle in that chute. If the working connections shown in Figs. 1 and 4 are employed, the articles will be placed in hoppers opposite to the chutes from which the articles are to be withdrawn; but if the working connections shown in Fig. 2 are employed the articles are placed in hoppers corresponding to the chutes from which they are to be withdrawn. Obviously the

apparatus will operate quite as well and with equal convenience with articles of a single kind, the gates being simply moved from side to side in the ordinary operation. It is also obvious that the apparatus will operate quite as well with a single chute.

We do not limit ourselves to the particular number of hoppers and chutes employed, for it is obvious that these might be multiplied, the gates being increased in number accordingly, or the same number of hoppers and chutes might be employed, but two pockets used in the upper gate, and the upper converging ends of the chutes spaced apart and provided with separate shell-openings, so that each pocket could be employed for transmitting the article from its own hopper to the corresponding chute and not necessitate depending on one of the chutes being filled and the other partially empty to determine the direction of the movement of the article from the opening 13.

Having thus described our invention, the following is what we claim as new therein and desire to secure by Letters Patent:

1. A refrigerator comprising a chute, a shell located at the upper end of the chute and formed with a receiving-opening and a discharging-opening, a rotary introducing-valve located in the upper shell and having a combined receiving and discharging pocket adapted to register with openings of the upper shell, a shell located at the lower end of the chute and formed with a receiving-opening and a discharging-opening, and a rotary discharging-valve located in the lower shell and having a combined receiving and discharging pocket adapted to register with the openings of the lower shell.

2. A refrigerator comprising a pair of chutes, a shell located at the upper end of the chutes and formed with two receiving-openings and a discharging-opening, a rotary introducing-valve located in the upper shell and having a combined receiving and discharging pocket adapted to register with the openings of the upper shell, a shell located at the lower end of the chutes and formed with two receiving-openings and a discharging-opening, and a rotary discharging-valve located in the lower shell and having a combined receiving and discharging pocket adapted to register with the openings of the lower shell.

3. A refrigerator comprising a pair of chutes, a shell located at the upper end of the chutes and formed with two receiving-openings and a discharge-opening, a rotary introducing-valve located in the upper shell and having a combined receiving and discharging pocket adapted to register with the openings of the upper shell, a shell located at the lower end of the chutes and formed with two receiving-openings and a discharging-opening, a rotary discharging-valve located in the lower shell and having a combined receiving and discharging pocket, adapted to register

with the openings in the lower shell, hoppers connected with the receiving-openings of the upper shell, and operative connections between the introducing and discharging valves whereby an article is introduced and an article is discharged simultaneously.

4. A refrigerator comprising a pair of chutes, a guide, a shell located at the upper end of the chutes, and formed with two receiving-openings and a discharge-opening, a rotary introducing-valve located in the upper shell and having a combined receiving and discharging pocket adapted to register with the openings of the upper shell, a shell located at the lower end of the chutes and formed with two receiving-openings and a discharging-opening, a rotary discharging-valve located in the lower shell and having a combined receiving and discharging pocket adapted to register with the openings of the

lower shell, crank-arms secured to the upper and lower valves respectively, and a rod connected to the crank-arms, and having a stud working in the guide.

5. In combination with a refrigerator, chutes extending through said refrigerator, gate-shells having openings communicating with the ends of both chutes, hoppers delivering articles to one of the shells, gates rotating in the shells and having pockets by which the articles are transferred through the shells in passing to and from the chutes, and working connections through which one of said shells is operated from the other.

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