

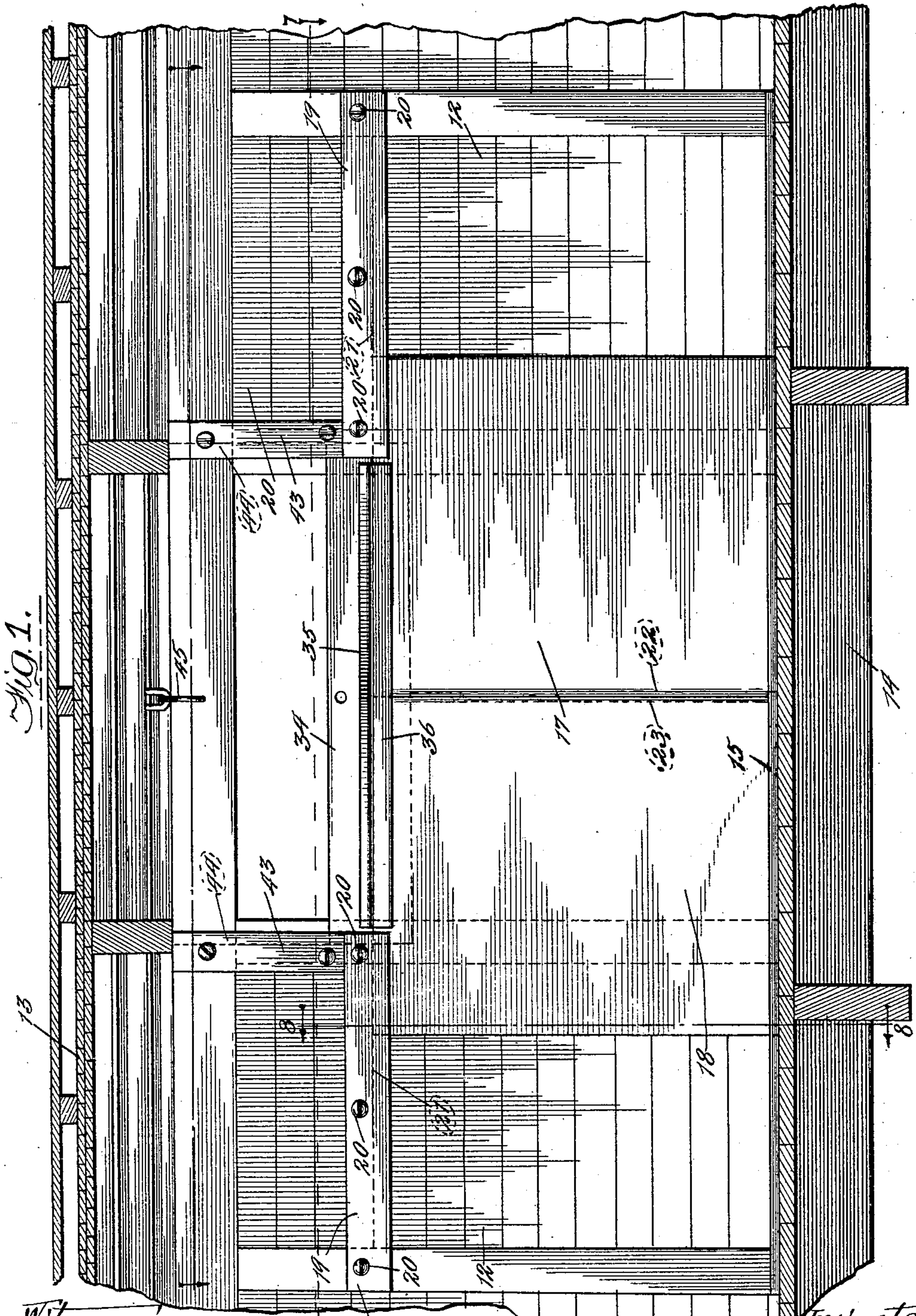
No. 868,097.

PATENTED OCT. 15, 1907.

M. KENNEDY.  
GRAIN DOOR.

APPLICATION FILED APR. 15, 1907.

3 SHEETS—SHEET 1.



Witnesses:

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*L. V. Donnan Jr.*

Inventor:

*Martin Kennedy.*  
*by Buckley, Duane & Drury*  
*his attorneys.*



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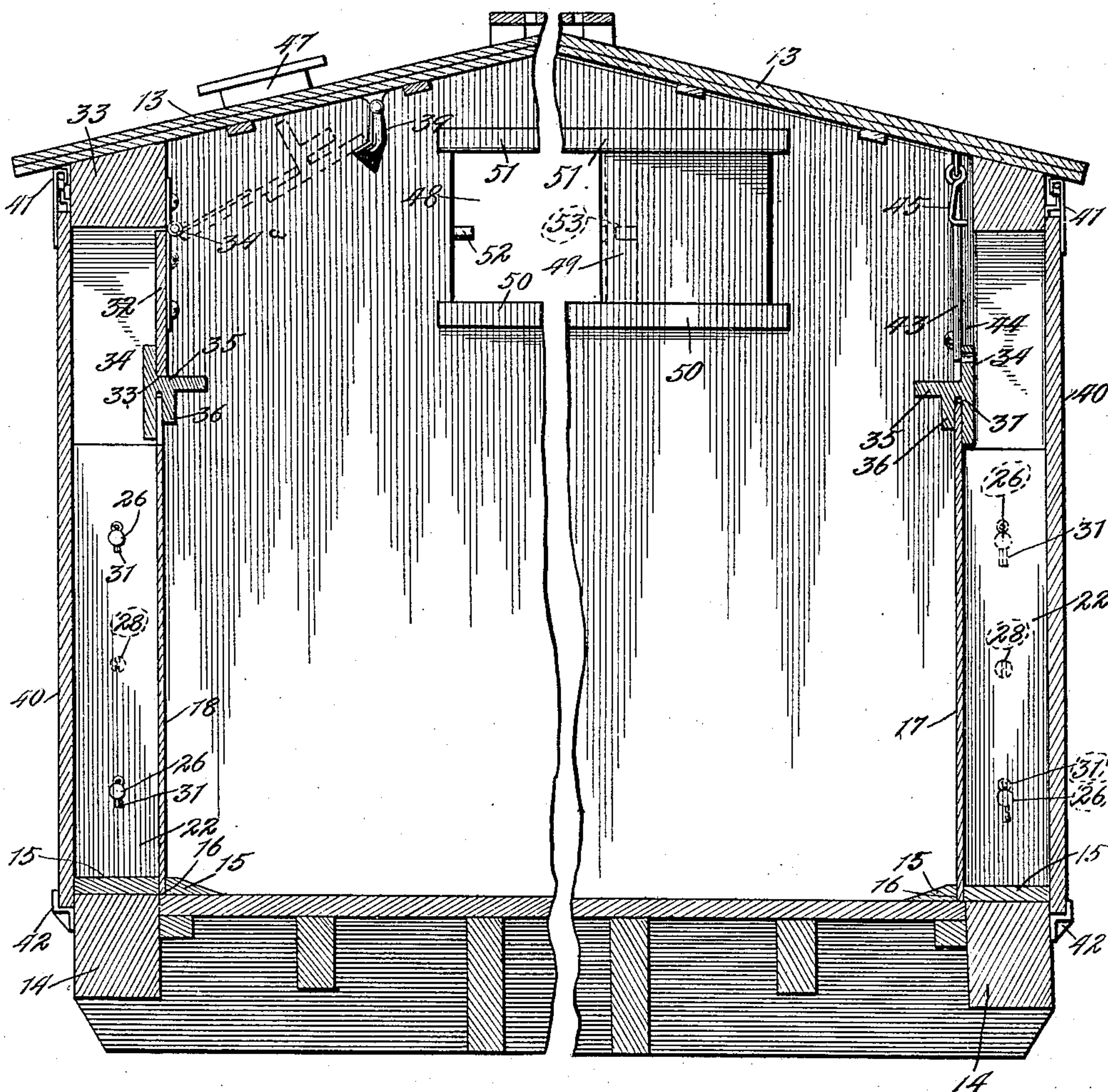
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3 SHEETS—SHEET 2.

Fig. 2.

Fig. 3.



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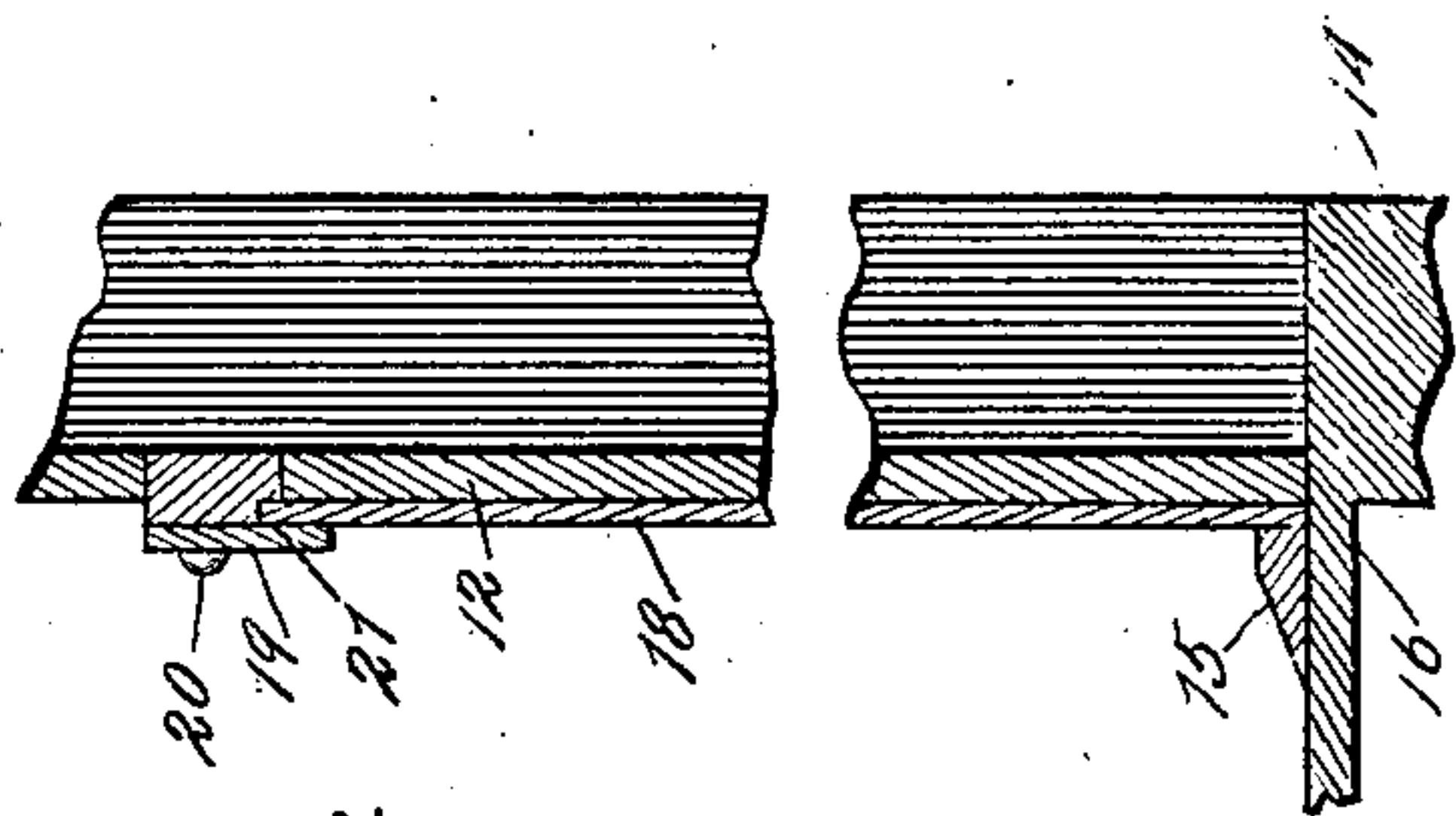
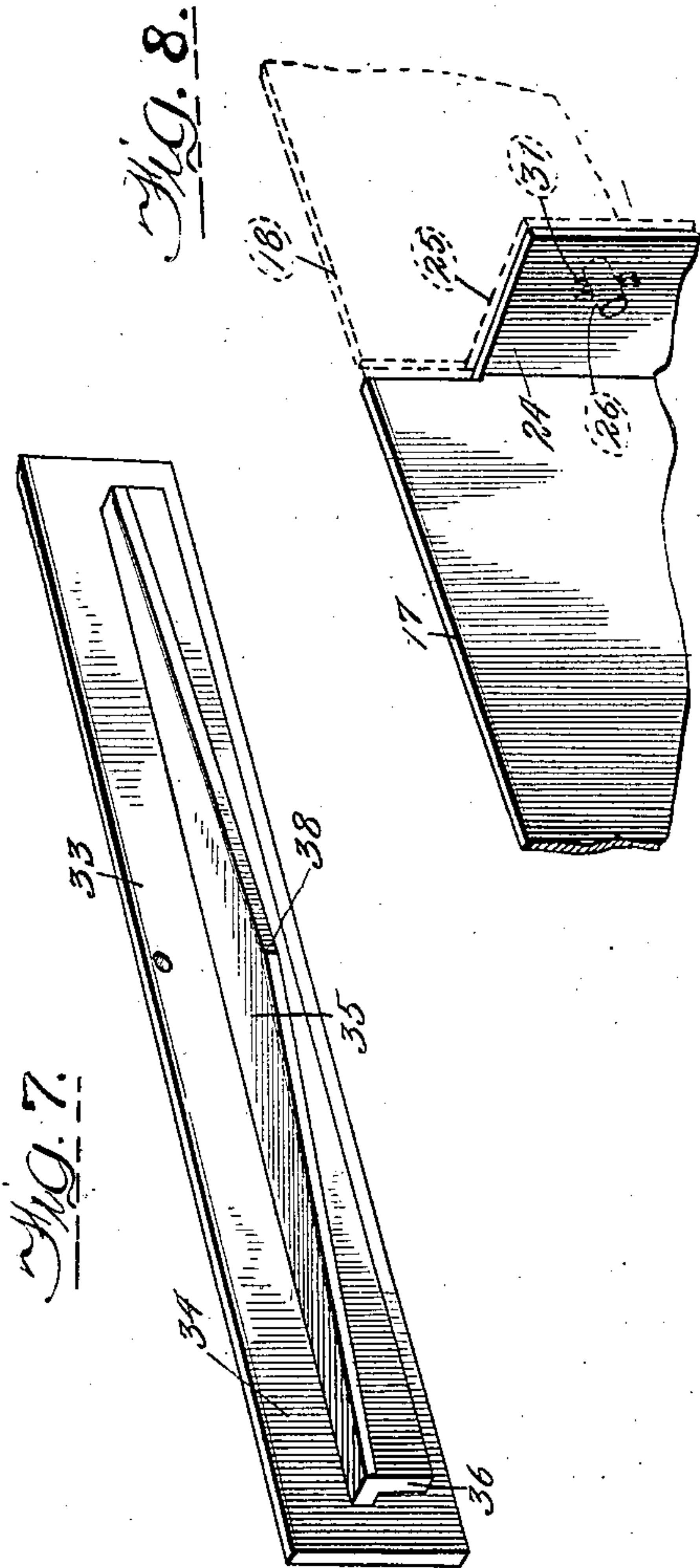
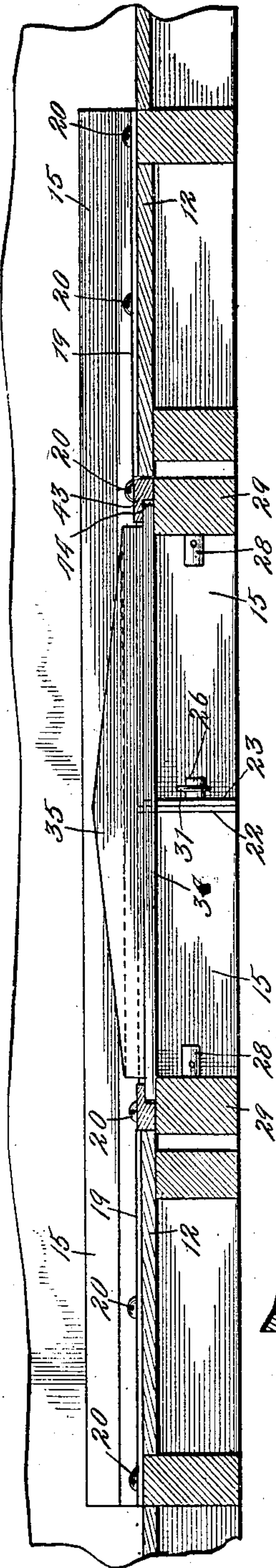
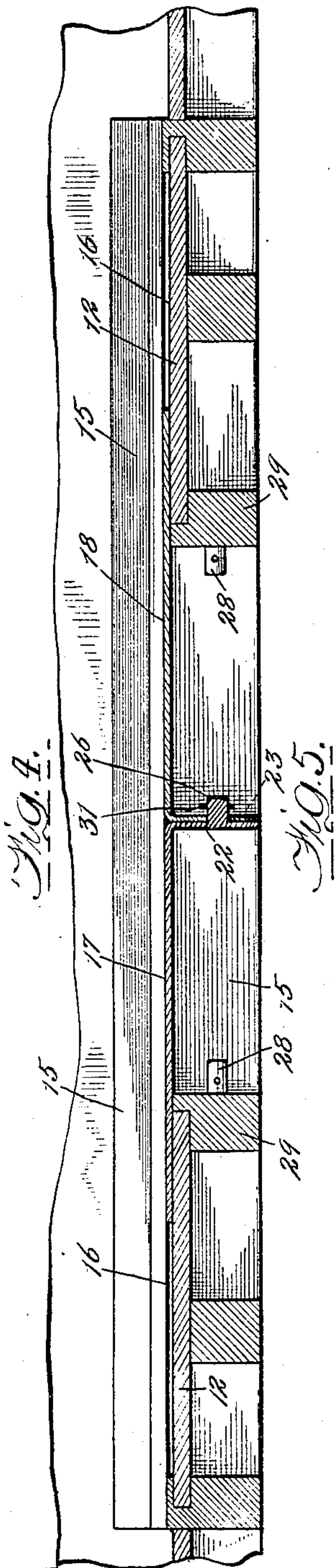
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3 SHEETS—SHEET 3.



*Fig. 8.*

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# UNITED STATES PATENT OFFICE.

MARTIN KENNEDY, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO WILLIAM F. RENSCHAW, OF CHICAGO, ILLINOIS.

## GRAIN-DOOR.

No. 868,097.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed April 15, 1907. Serial No. 368,216.

*To all whom it may concern:*

Be it known that I, MARTIN KENNEDY, a citizen of the United States of America, and a resident of Chicago, Cook county, Illinois, have invented a certain new and useful Improvement in Grain-Doors, of which the following is a specification.

My invention relates to improvements in the construction of grain doors used in connection with railway freight cars, and has for its object the production of a door that can be readily opened and closed, and one that will be entirely out of the way when not in use.

A further object is the production of a door which will be strengthened against the internal and external strain, and one that will be especially strong and durable.

A further object is the production of a door that can be cheaply constructed and easily applied to the existing style of freight cars.

These, and such other objects as may hereinafter appear, are attained by my device, embodiments of which are illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation of my device showing the inside of the car. Fig. 2 represents a sectional view through the center of Fig. 1. Fig. 3 represents a sectional view through the center, showing the upper portion hinged. Fig. 4 represents a cross sectional view through the center of Fig. 3. Fig. 5 represents a cross sectional view on the line 7—7 of Fig. 1, looking in the direction indicated by the arrows. Fig. 6 represents a vertical sectional view on the line 8—8 of Fig. 1, looking in the direction indicated by the arrows. Fig. 7 represents a perspective view of my improved brace. Fig. 8 is an enlarged perspective detail showing the lower doors in place.

Like numerals of reference indicate like parts in the several figures of the drawings.

11 represents an ordinary freight car; 12 the inner sheathing thereof; 13 the top of the car; 14 the sills; 15 the threshold; 16 the grooves within which the doors 17—18 are adapted to slide; 19 represents braces secured to the inside of the car by means of bolts 20, so positioned with respect to the inner studding as to leave channels 21 within which the upper portion of the door slides when they are pushed away from the door opening. The lower inner doors 17—18 are preferably provided with flanges 22—23 extending outwardly. These flanges are cut away at the top, leaving a clear space between the tops 24—25 of the flanges and the top of the doors proper. The reason for this will be explained later. These doors are secured together by means of a series of pins 26—26 extending outwardly from the outer face of one flange, and through a corresponding opening 27 in the other flange, and are secured

in place against the sides of the car when not in use by means of similar pins 28 secured to the inner faces of the door posts 29, and adapted to pass through corresponding openings 30 in the flanges. These pins are provided with openings through which cotter pins 31 are passed in order to hold the doors either open or closed, as desired. This construction is fully explained in my previous application Serial No. 354,956, filed January 31st, 1907. An upper inner door 32 preferably extending entirely across the door opening is secured to the top sill 33 of the car by means of suitable hinges 34<sup>a</sup>—34<sup>a</sup>. Secured to the bottom of the door 32 is a brace or lock 33<sup>a</sup>. This brace comprises a strip 34, having an offset 35 at right angles thereto, and a downwardly projecting flange 36. This downwardly projecting flange forms with the bottom of the strip 34 a groove 37—37. The offset 35 is preferably extended outwardly at the center 38, serving to strengthen the construction and tapers inwardly until it is flush at the ends with the flange 36. When the doors 17, 18 are slid back the upper door is swung downwardly into place, the upper edge of the doors register with the channel 37 and the doors are then slid together, traveling within the channel. When the doors are not in use, the upper door 32 is swung upwardly and secured to the top of the car by means of a hook 39, or in any well known manner. It is intended to use these inner doors in connection with the ordinary outer door 40 running on the hangers 41, and held in position by means of the ordinary brackets 42.

In the modification illustrated in Figs. 2, 3, and 4, the upper door is preferably dispensed with. Flanged side strips 43 on opposite sides of the door opening are secured to the posts, forming grooves 44 extending from the top of the doors 17—18 to the top of the car. The strip 34 of the brace or lock 33<sup>a</sup> is adapted to slide within these grooves, and when not in use, is held in its upper position in any ordinary manner, as, for instance, by a hook 45 in the top of the car, or in the top sill. When the lower inner doors 17—18 are tightly closed, and the brace or lock 33<sup>a</sup> released from its upper position, it slides downwardly in grooves 44 until the top of the door enters within the groove 37, the bottom of the strip 34 practically resting on the top 24—25 of the flanges. This serves to lock the doors in position against internal or external pressure or strain. In this form of my device when the brace or lock 33<sup>a</sup> is in position an opening 46 is left between the top of the strip 34 and the upper sill of the car. The car is also provided with a covered hatch 47 preferably located near the middle of the car. In the construction of these doors, braces and locks, metal is preferably employed both for the reason that it is much stronger than wood, and also that it occupies much less space.



With the ordinary grain door, closing about one-half the door opening, it is only possible to fill the car half full. With the heavy equipment now in use it becomes possible to transport cars completely full of grain.

5 With the car completely filled with heavy grain, such for instance as corn or wheat, the tremendous internal pressure is exerted against the doors with a consequent liability of buckling or distorting. The use of the flanges 22—23 as shown in the lower doors 17—18, and

10 as shown on the device illustrated in my previous application above referred to, great additional strength is given to the doors; but by the use of my present device a much greater strength is imparted to the construction. The brace or lock fitting tightly over the

15 doors forms a brace to prevent any displacement of the doors. This construction obviates the use of any openings in the doors proper and permits the loading of the grain through the opening 46, if desired. Or, as contemplated, the cars can generally be loaded through

20 the open hatch 47. If desired, the strip 34 of the brace bar or lock 33<sup>a</sup> may be made of such a width as to completely close the space between the top of the lower doors and the upper sill. In either of these constructions great strength is attained, as well as great simplicity in both construction and operation. The only

25 additional parts required in the car being the grooved threshold 15 and the strips 19 and 43. It is a very simple operation to close the openings, it being simply necessary to slide the lower doors out of place and then

30 release the upper door or brace, as the case may be, which then falls into position across the door opening and the lower doors are then moved within the grooves 37 until the flanges 22—23 meet, the pins pass through the corresponding openings and are then locked in

35 place.

I find that the value of a car equipped with my construction is often enhanced by the use of an end door similar in construction to that shown in the construction of the lower inner door. Such a construction is shown

40 in Figs. 4 and 5, in which the door opening is represented by 48. A metal door 49 is provided to completely close the opening 48. This door slides between grooves formed by strips 50—51 above and below the opening. On either side of the opening I provide pins

45 52—53 which are adapted to register with a corresponding opening in the door 49. The door is secured in

place either opened or closed by means of cotter pins, the same as shown in 31. The metal door overlaps the opening under the strips 50—51 at the top and bottom on either side, and is preferably provided with flanges 50 similar to those shown on the inner lower doors. The fact that these doors overlap the sides of the car prevents their displacement from pressure exerted from within, while any ordinary pressure from without is resisted by the locking pins 52, as well as the strips 50—51. The

55 construction being all of metal, very little of the internal capacity of the car is taken up thereby, the doors sliding back within the grooves and fitting snugly against the sides of the car; the doors serving rather to strengthen the car in either position occupied by them. 60

I claim:

1. In a car, the combination of horizontally sliding doors with a vertically sliding brace, adapted to fit over said doors and to secure them against internal or external pressure. 65

2. In a car, the combination of lower, inner, horizontally sliding flanged metal doors, a grooved threshold, grooves within which the upper edges of said doors slide, vertical flanged strips on either side of the doorway above the lower doors, and a sliding metallic brace adapted to slide within channels formed by said strip and to engage the top of said lower doors to secure them against internal pressure. 70

3. In a car, the combination of lower, inner, horizontally sliding, flanged metal doors, a grooved threshold, grooves within which the upper edges of said doors slide, vertical flanged strips on either side of the doorway above the lower doors and a sliding metallic brace adapted to slide within channels formed by said strip and to engage the top of said lower doors to secure them against internal pressure, said brace being provided with a stiffening strip at right angles thereto. 75

4. In a car, the combination of lower, inner, horizontally sliding flanged metal doors, a grooved threshold, grooves within which the upper edges of said doors slide, vertical flanged strips on either side of the doorway above the lower doors, and a sliding metallic brace adapted to slide within channels formed by said strip and to engage the top of said lower doors to secure them against internal pressure, said brace being provided with a stiffening strip widest at the center and tapering towards the ends and located at right angles to said brace. 85

Signed by me at Chicago, Cook county, Illinois, this 8th day of April 1907. 90

MARTIN KENNEDY.

Witnesses:

F. H. DRURY,  
S. LEWIS.