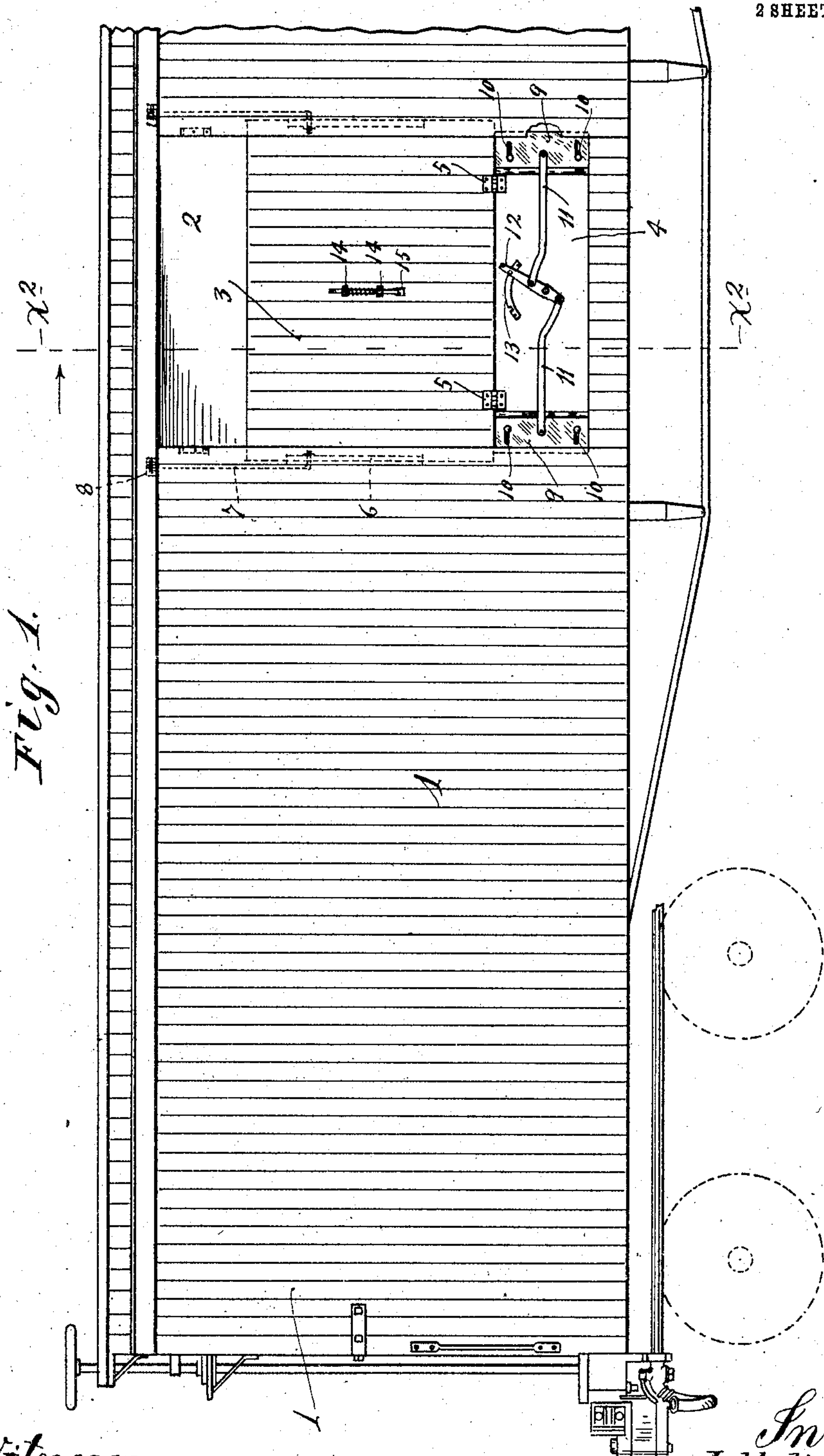


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APPLICATION FILED SEPT. 18, 1903.

2 SHEETS—SHEET 1.



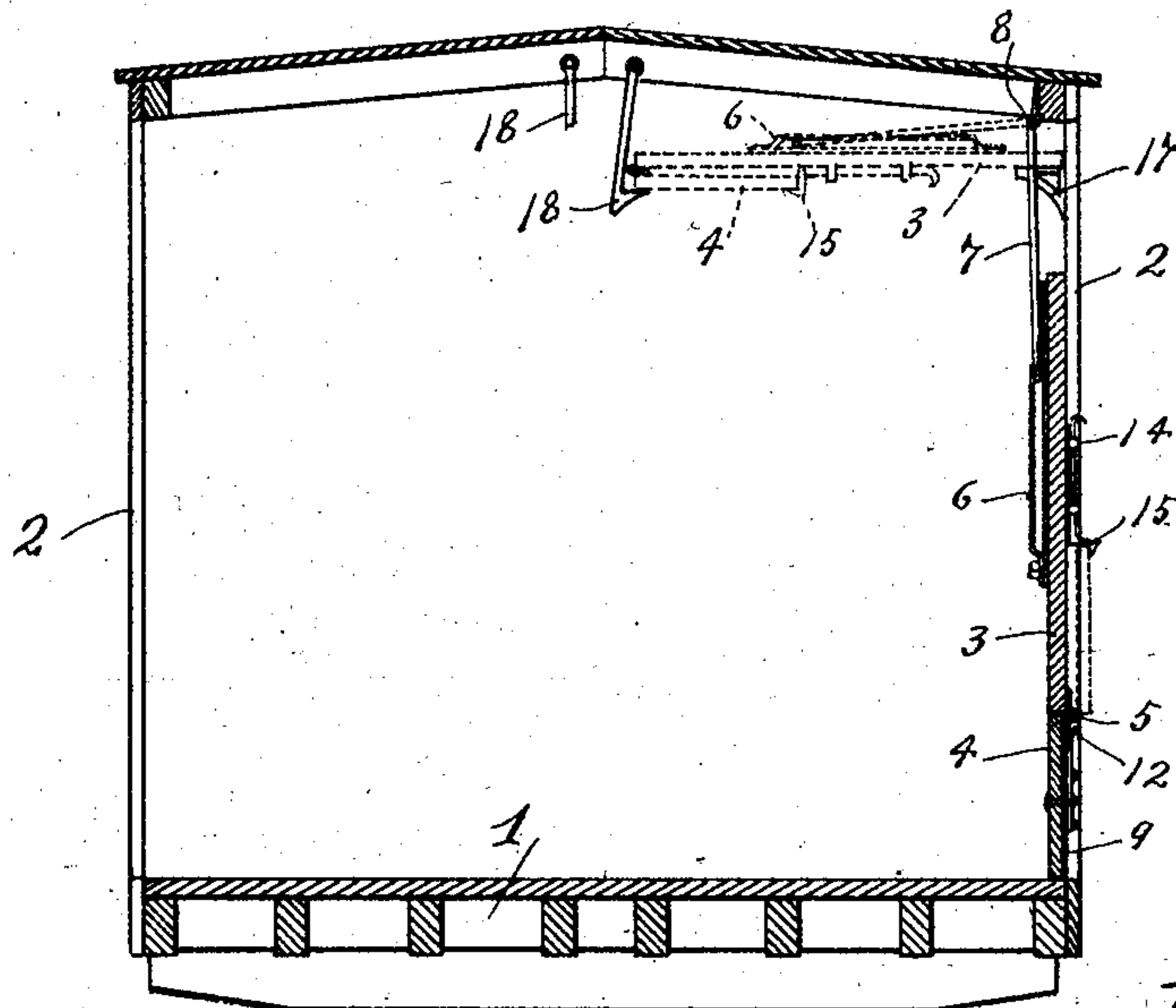
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A. H. Opsahl.  
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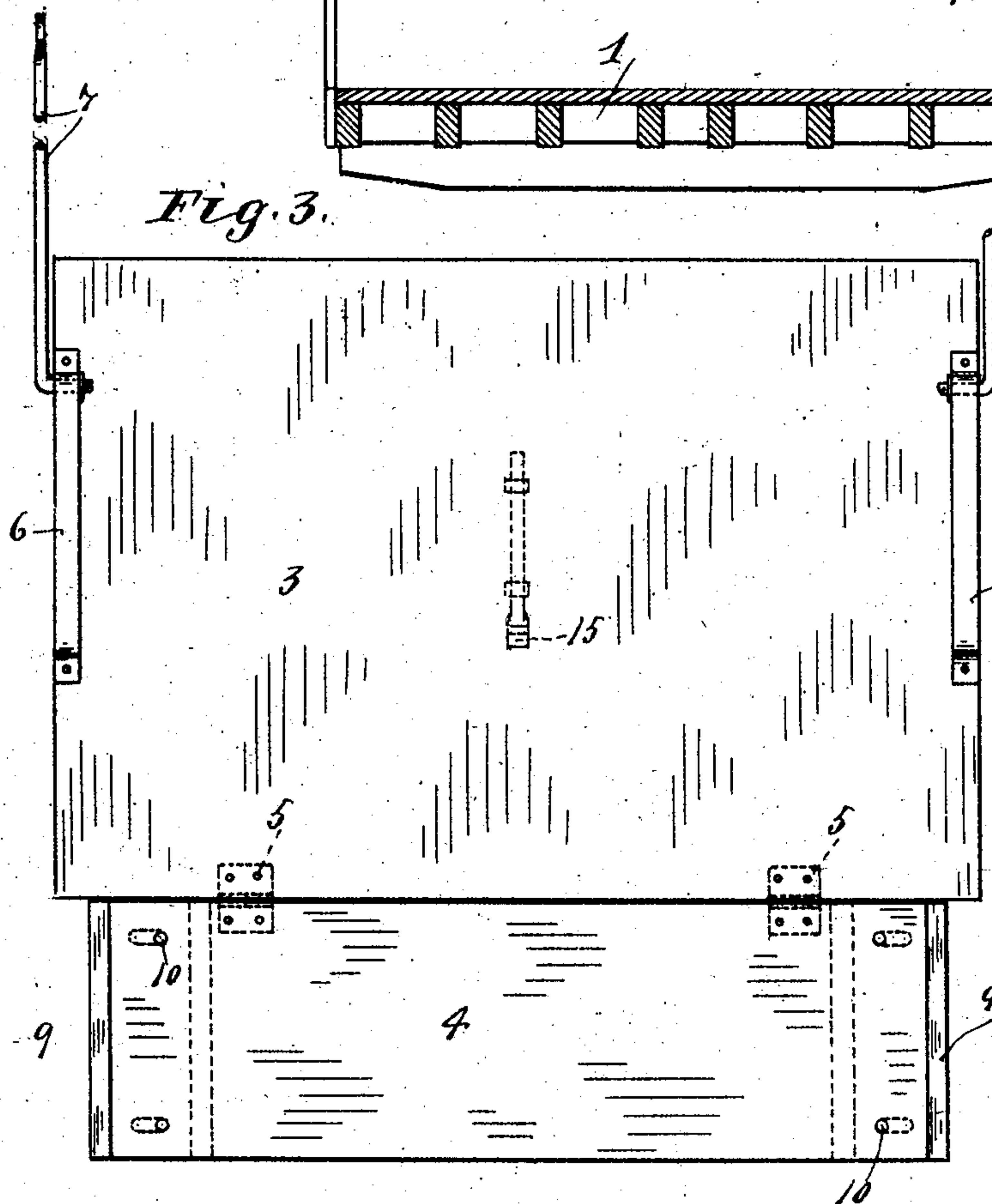
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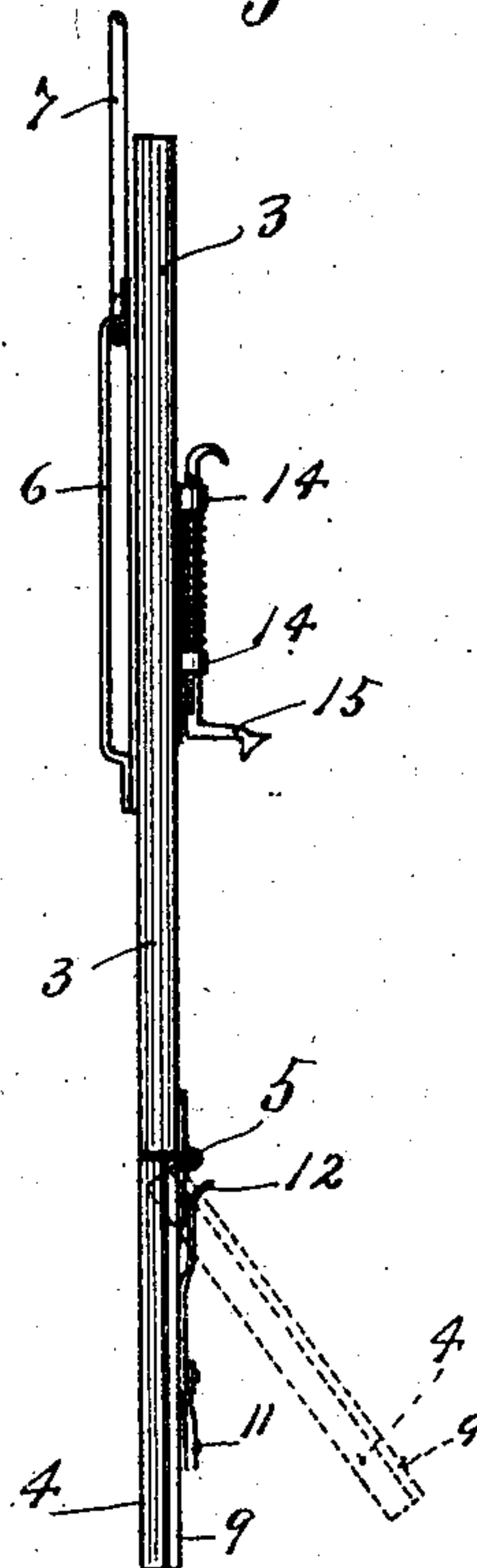
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

JOHN H. KENNEDY, OF MINNEAPOLIS, MINNESOTA.

## GRAIN-DOOR FOR CARS.

SPECIFICATION forming part of Letters Patent No. 778,250, dated December 27, 1904.

Application filed September 18, 1903. Serial No. 173,639.

*To all whom it may concern:*

Be it known that I, JOHN H. KENNEDY, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Grain-Doors for Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an improved grain-door for box-cars; and to this end it consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

It is a well-known fact that grain-doors as at present generally constructed and used on account of the difficulties of opening the same when under pressure from the grain within the car are very rapidly broken to pieces, so that the expense of their maintenance is a very considerable item. Hence in accordance with my invention I provide a grain-door having a hinged section adapted to swing outward when unlocked or released, so that the grain may run from the car and relieve the main section of the grain-door from the pressure of the grain, after which it may be readily moved into an inoperative position.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a view in side elevation, showing a box-car having one of my improved grain-doors applied thereto, parts of said car being broken away and other parts being indicated diagrammatically by dotted lines. Fig. 2 is a transverse vertical section on the line  $x^2 x^2$  of Fig. 1. Fig. 3 is a side elevation of the improved grain-door looking at the inner side of the same, and Fig. 4 is an edge elevation of the grain-door shown in Fig. 3 and also in Figs. 1 and 2.

The numeral 1 indicates the body of an ordinary box-car, the same, as is usual, having in its sides door-openings 2, which are adapted to be closed by grain-doors and also by usual outside sliding doors, the latter of which are not shown in the drawings.

My improved grain-door is made up of a primary section 3 and a supplemental section 4, the latter of which is connected to the former by suitable hinges 5 and is adapted to swing outward. The main or primary section 3 is wider than the doorway 2, so that its edges overlap with and bear against the side timbers of the said door. The hinged supplemental section 4 is of such length or transverse dimension that it will freely swing through the door-opening 2. On its inner side and near its side edges the main section 3 is provided with vertically-extended guide-straps 6, the intermediate portions of which are spaced inward from the said section 3, so as to afford guides or runways for the laterally-bent lower ends of hanger-rods 7, the upper ends of which rods are pivotally secured at 8 to the overhead framework or roof of the car. These hanger-rods 7 when the laterally-bent lower ends engage the upper portions of the straps 6 pivotally support the grain-door in position to close all but the extreme upper portion of the doorway 2 and with the lower edge of the supplemental section 4 close to but out of contact with the floor of the car, as best shown in Fig. 2.

The main section 3 will be held when under pressure from the grain within the car tightly pressed against the sides of the doorway, and hence cannot swing outward. To hold the hinged supplemental section 4 in a closed position—that is, against outward swinging movement—it is provided at its ends with laterally-movable lock-plates 9, shown as secured thereto by slot-and-bolt connections 10. When these lock-plates 9 are forced laterally outward, as shown in Figs. 1 and 3, they overlap with and engage the inner sides of the frame or sides of the doorway 2, and hence hold the said supplemental section 4 against outward swinging movement. When, however, the said lock-plates 9 are moved toward each other as far as permitted by the slot-and-pin connections 10, they will clear the sides of the doorway and permit the hinged supplemental sections 4 to swing outward.

To move the lock-plates 9 simultaneously, they are connected by links 11 to a lock-lever 12, which by a notched segment 13 is adapted



to be held in either of two positions. The lever 12 is pivoted to the supplemental section 4, and the lock-segment 13 is rigidly secured to the said section.

5 The lock-plates 9 not only serve as locks for the pivoted supplemental section of the grain-door, but they also form grain-tight joints between the ends of said supplemental section and the sides of the doorway, with which they  
10 overlap. This is an important feature of the device.

Mounted in suitable keepers 14 on the main sections 3 of the grain-door is a spring-pressed latch 15, having a beveled lower extremity or  
15 nose for engagement with the free edge of the supplemental hinged section 4 when the latter is turned straight upward into an inoperative position, and thus to hold the said section against the main section 3.

20 When the grain-door is not in use, it is supported as shown by dotted lines in Fig. 2, by reference to which it will be noted that the top edge of the main section 3 rests upon brackets 17, secured to the side of the car,  
25 while the inner and folded portion of the grain-door is supported by the depending end of a hook 18, which is pivoted to the roof-frame of the car. In connection with this dotted-line inoperative position of the  
30 grain-door it will be noted that in order to force the folded grain-door onto the brackets 17, and thereby cause the same to stand entirely at one side from the center of the car, it is necessary to slide the said folded door so  
35 that the guide-straps 6 move over the laterally-bent free ends of the hanger-rods 7. This action is made necessary by the fact that two of the grain-doors above described when thrown into inoperative positions must stand  
40 in the same horizontal plane, and hence must not extend beyond the center of the car.

With the grain-door described it is evident that the grain-pressure on the grain-door may be removed therefrom simply by releasing the  
45 hinged section 4, and thereby permitting considerable quantity of the grain in the vicinity of the grain-doors to run from the car through the opening thus afforded. Thereafter of

course the grain-door may be folded and swung into an inoperative position, as already 50 described. It is therefore evident that this improved grain-door may be opened without damage thereto, and hence will last for a great length of time. Great economy may  
55 therefore be effected in the long run by the use of grain-doors constructed as above described. The said grain-door is of course capable of modifications within the scope of my invention as herein set forth and claimed.

What I claim, and desire to secure by Letters Patent of the United States, is as follows: 60

1. The combination with a car-body having a doorway, of a grain-door, made up of upper and lower sections connected by hinges so that the latter may swing outward, lock-plates 65 slidably mounted on the ends of the lower outwardly-movable door-section, and engaging with the sides of the doorway, the guide-straps on the upper door-section, the hanger-rods pivoted to the upper portion of the car, 70 with their lower ends pivotally and slidably mounted in said straps, means for locking the two door-sections in positions folded together, and means for supporting the folded door in an elevated inoperative position, substantially 75 as described.

2. The combination with a car-body having the doorway 2, of a grain-door made up of the sections 3 and 4 connected by hinges 5 so that the latter may swing outward, lock- 80 plates 9 slidably mounted on the ends of said section 4, the guide-straps 6 on the door-section 3, the hanger-rods 7 pivoted to the upper portion of the car with their lower ends pivotally and slidably mounted in said straps 6, a 85 latch for locking the two sections 3 and 4 in folded positions, and means for supporting the folded door in an elevated position involving brackets or rests 17 and hook 18, substantially 90 as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. KENNEDY.

Witnesses:

ROBERT C. MABEY,  
F. D. MERCHANT.