G. S. NEY.

GRAIN DOOR.

APPLICATION FILED MAR. 17, 1909.

931,467.

Patented Aug. 17, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

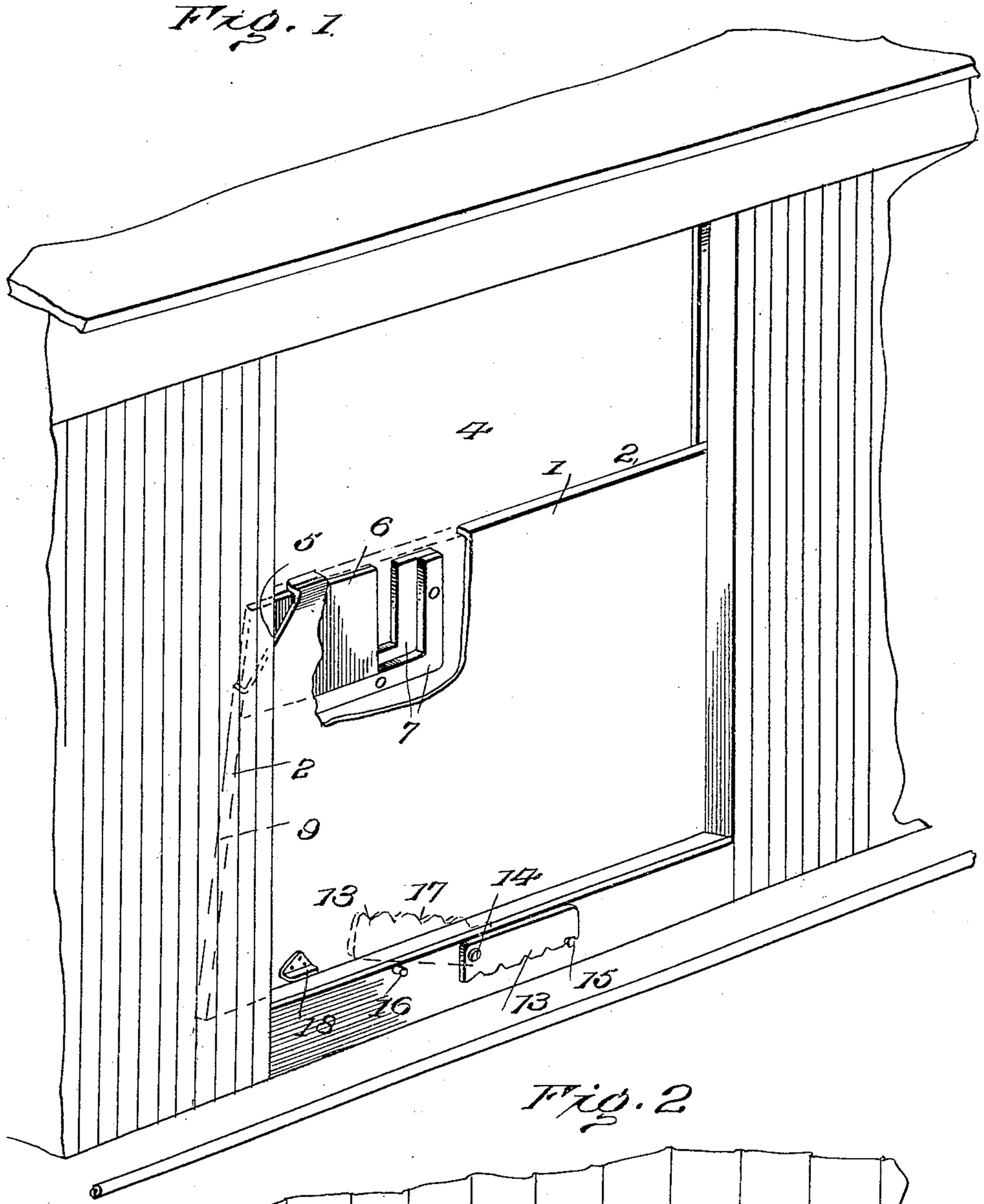
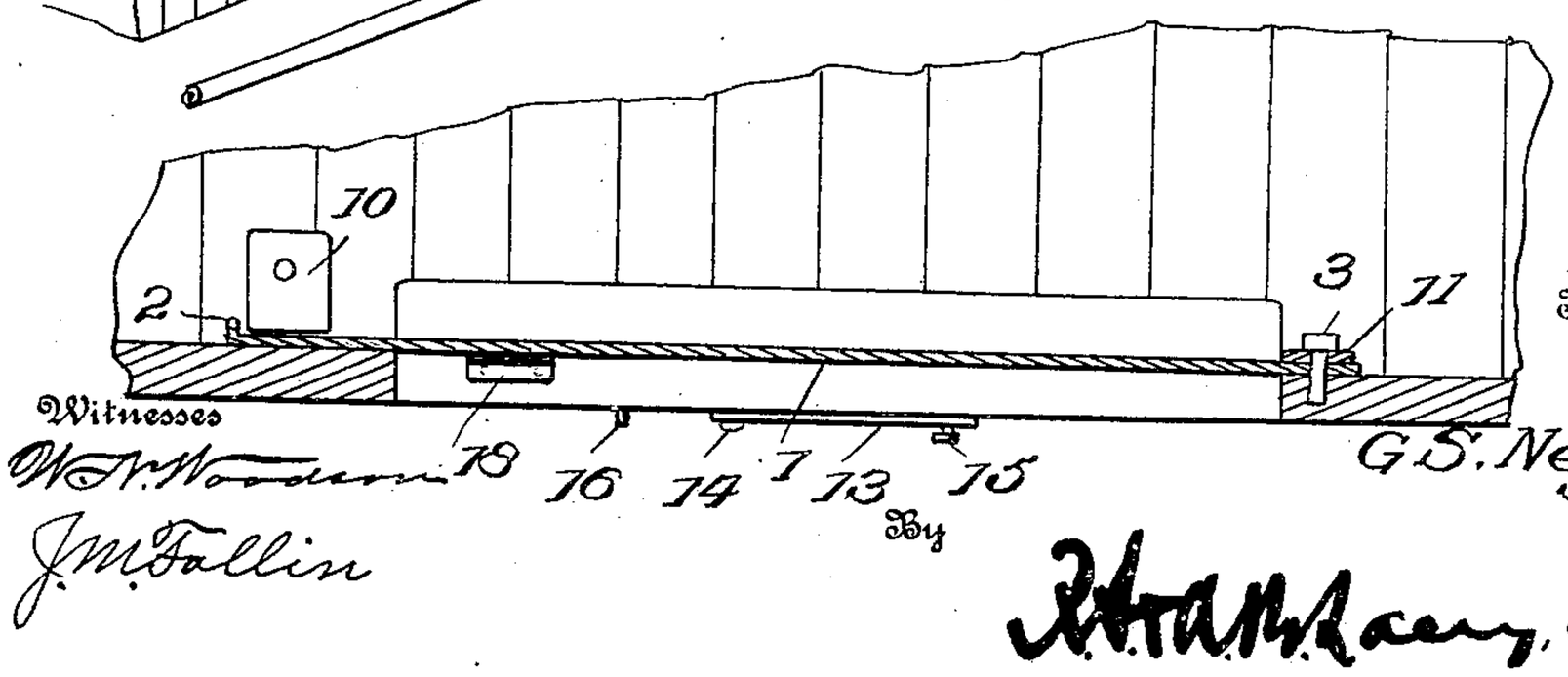


Fig. 2.



Witnesses

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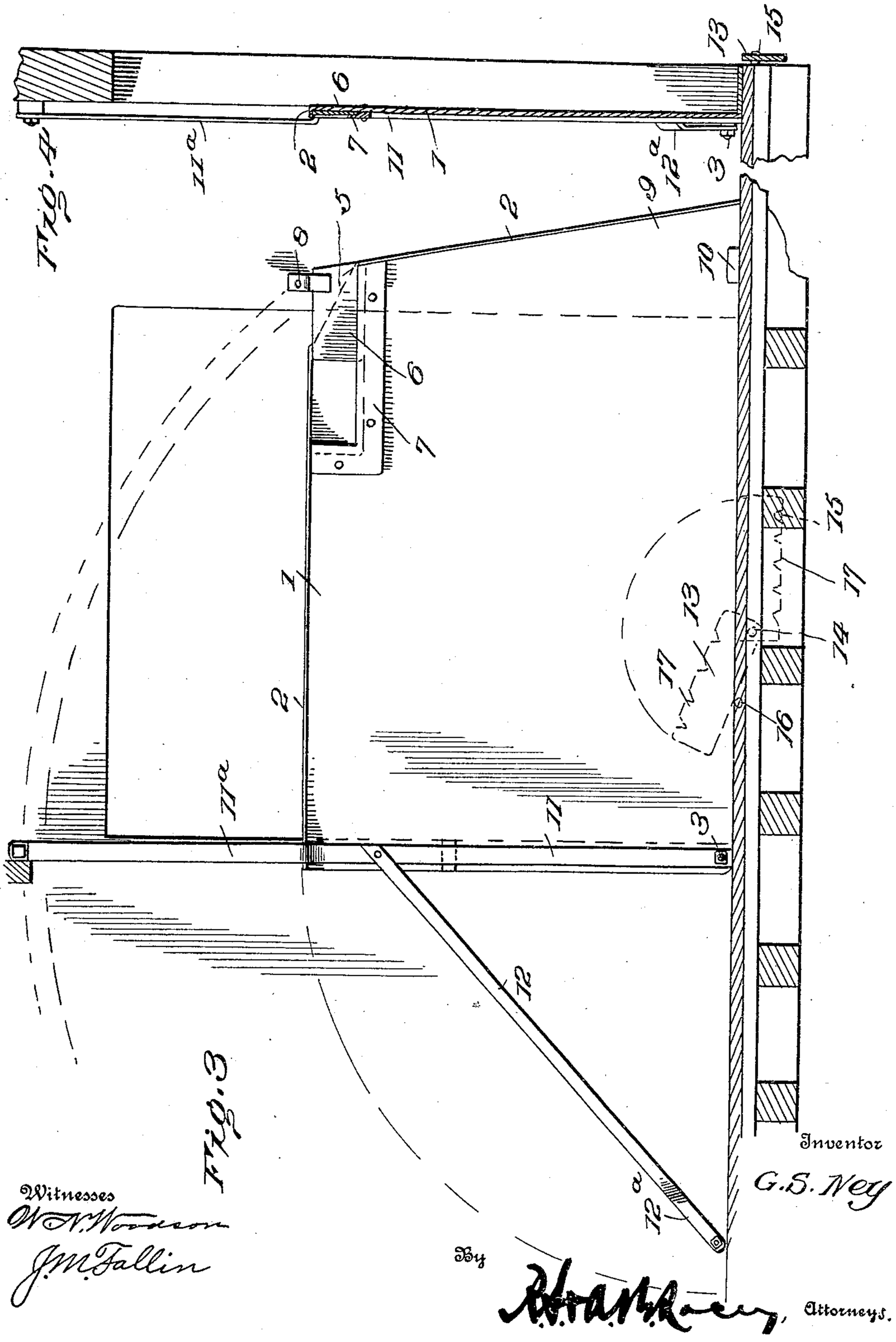

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE S. NEY, OF PORT HURON, MICHIGAN.

GRAIN-DOOR.

No. 931,467. Specification of Letters Patent. Patented Aug. 17, 1909.

Application filed March 17, 1909. Serial No. 483,907.

To all whom it may concern:

Be it known that I, GEORGE S. NEY, a citizen of the United States, residing at Port Huron, in the county of St. Clair and State of Michigan, have invented certain new and useful Improvements in Grain-Doors, of which the following is a specification.

This invention comprehends certain new and useful improvements in doors for freight cars and relates particularly to grain doors.

The invention has for its primary object an improved practically one piece door of durable and light construction which is so arranged that it may be swung upwardly and away from the door opening in a plane parallel with the side of the car, the door being so constructed and arranged that when in closed position it will extend out at its normal free edge considerably beyond the door opening so as to possess the characteristic of considerable strength as against the outward pressure of the grain, while at the same time it may be swung to an open position and freely pass the car roof in its opening movement.

With this and other objects in view, my invention consists essentially in a grain door for freight cars which is pivotally mounted at one lower corner and which has its radius shortened, taking the hinge at one lower corner as the center of a circle, by cutting away the diagonally opposite corner of the door and providing at such point an extension piece movably mounted in any desired way to move away from the beveled or cut off corner, as the door is tilted toward the open position.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a perspective view of a car door constructed in accordance with my invention, parts being broken away and others being shown in dotted line. Fig. 2 is a horizontal sectional view through the door. Fig. 3 is a side elevation taken from the inside of a car; and Fig. 4 is a transverse vertical section.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawings, the numeral 1 designates my improved grain door which is preferably constructed of a single plate of relatively light sheet steel, flanged at its edges as indicated at 2 to increase its strength and pivotally mounted at one lower corner upon a bolt or stud 3, to swing or tilt over or away from the doorway 4 in a plane parallel with the side of the car.

It is to be particularly noted that the radius of the doorway, taking the hinge as the center of a circle, is shortened, as by cutting off the diagonally opposite corner of the door along a line at an oblique angle to both the upper edge and the adjacent relatively free beveled side edge of the door, as indicated at 5, so that the relative length of the door may be increased while at the same time the door will clear the roof of the car when the door is tilted upwardly and backwardly toward the open position. In order to fill in this clipped off corner 5, I have provided a panel 6 which is mounted in any desired way to move over and beyond the inclined edge 5 or rearwardly within the margin thereof, the said panel in the present instance being arranged to slide within the flanges 7 secured in any desired way to the door 1.

8 designates a keeper of any desired construction and design which is arranged to engage the panel 6 in projected position when the door is closed, whereby the panel 6, when slid outwardly, not only serves the function of closing the otherwise open space which would be produced by the inclined edge 5, but serves the additional function of a latch.

The relatively free edge of the door 1 is gradually extended or beveled from the edge 5 downwardly as indicated at 9 so as to increase the length of the door and provide an increased bearing surface against the door casing, it being also manifest that the construction and arrangement of the parts just described provide that some portion of the door will continually bear against the door casing as the door is tilted toward the open

position, thereby preventing the grain from pressing the door outwardly through the door way, which would tend to injure the door or the support to which it is hinged. In the closed position of the door, the relatively free lower corner passes behind a preferably beveled keeper 10 which is secured to the floor of the car and which is designed to bear comparatively tightly against the door to prevent the same from buckling under the pressure of the grain.

A vertically disposed retaining bar 11 is secured at its upper and lower ends to the inner side of the car at one side of the doorway 4, the lower end of said bar being in the present instance mounted upon the bolt 3 upon which the door is hinged. The upper portion of the bar 11 is offset as indicated at 11^a to permit the ready passage of the uppermost flange 2 and the guide flanges 7 with the panel 6, and if desired, the bar 11 may be braced by the obliquely extending bar 12, the lower end of which is outwardly deflected as indicated at 12^a to accommodate the upper flange 2 when the door is swung upwardly to open position.

In order to facilitate the opening of the door, I have provided a fulcrum plate 13 which is fitted to the outer side of car below the door sill as indicated at 14 and which is designed in an inoperative position to rest with its upper edge below the margin of the door upon a stud or pin 15, the said plate being designed to rest in an operative position inclined above the doorway upon a stud or pin 16, as clearly illustrated in the drawings. That edge of the plate which is uppermost in the swung up position of the plate is formed with a series of notches 17 designed to constitute fulcra for a crowbar or other device in the operation of prying the door open. To effect the initial opening movement, the door may be provided on its outer face with a cleat or lug 18 under which, if desired, the tool may be placed.

From the foregoing description in connection with the accompanying drawings, it is manifest that by shortening the radius of the door as by clipping off the corner thereof diagonally opposite the point of pivotal connection, means are provided for increasing the length of the door relative to the doorway while at the same time the door will pass under the roof in the tilting movement of the door over or away from the doorway. Furthermore, it is clear that by extending the door lengthwise as before described, the door will at all times in its tilting movement bear against the door casing and be in no wise liable to be forced by the pressure of the grain outwardly from the doorway, this lengthening of the door being also advantageous in arresting the outward pressure of the grain when the door is closed. The panel 6 which in the closed position of the door normally fills out the cut away corner thereof after it has been slipped backwardly to release or unlatch the door, automatically swings into a retracted position as the door is tilted upwardly and backwardly permitting the door to freely pass beneath the car roof. It will thus be seen that I have provided what is practically a one piece grain door which may be cheaply constructed and easily applied to a freight car and which may be formed of relatively light material without detracting from the strength of the door, the lightness of the door and its simplicity making it easy to handle.

Having thus described my invention, what I claim as new is:

1. The combination with a car provided with a doorway, of a door hinged at one lower corner to swing over and away from the doorway in a plane parallel with the plane thereof, the door being formed at its corner diagonally opposite its hinged corner with an inclined edge describing an oblique angle with respect to the upper edge and relatively free side edge and intersecting the same, and a movable panel mounted upon the door at such corner and arranged to project beyond the said inclined edge, as and for the purpose set forth.

2. The combination with a car provided with a doorway, of a door hinged at one lower corner to swing over and away from the doorway in a plane parallel with the plane thereof, the door being formed at its corner diagonally opposite its hinged corner with an inclined edge describing an oblique angle with respect to the upper edge and relatively free side edge and intersecting the same, and a movable panel mounted upon the door at such corner and arranged to project beyond said inclined edge with the side edge of the panel forming a continuation of the relatively free side edge of the door proper, said latter edge being beveled as shown.

3. The combination with a car provided with a doorway, of a door hinged at one lower corner to swing over and away from the doorway in a plane parallel with the plane thereof, the door being formed at its corner diagonally opposite its hinged corner with an inclined edge describing an oblique angle with respect to the upper edge and relatively free side edge and intersecting the same, and a movable panel mounted upon the door at such corner and arranged to project beyond said inclined edge, the relatively free side edge of the door proper being beveled and the panel being arranged in closed position to form with its side edge a continuation of the beveled side edge of the door proper and with its upper edge a continuation of the upper edge of the door proper.

4. The combination with a car provided with a doorway, of a door hinged at one

lower corner to swing over and away from the doorway in a plane parallel with the plane thereof, the door being formed with a cut-away corner diagonally opposite its hinged corner, a movable panel mounted upon the door at the cut-away corner thereof, and a keeper secured to the car and arranged for engagement by said panel, whereby the panel subserves the double function of a latch and a closure for the cut-away corner.

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

GEORGE S. NEY. [L. S.]

Witnesses:
ED. J. RODGERS,
R. B. MILLS.