

No. 886,472.

PATENTED MAY 5, 1908.

H. G. BROWN.
TRANSPORTING SYSTEM.
APPLICATION FILED MAR. 8, 1907.

4 SHEETS—SHEET 1.

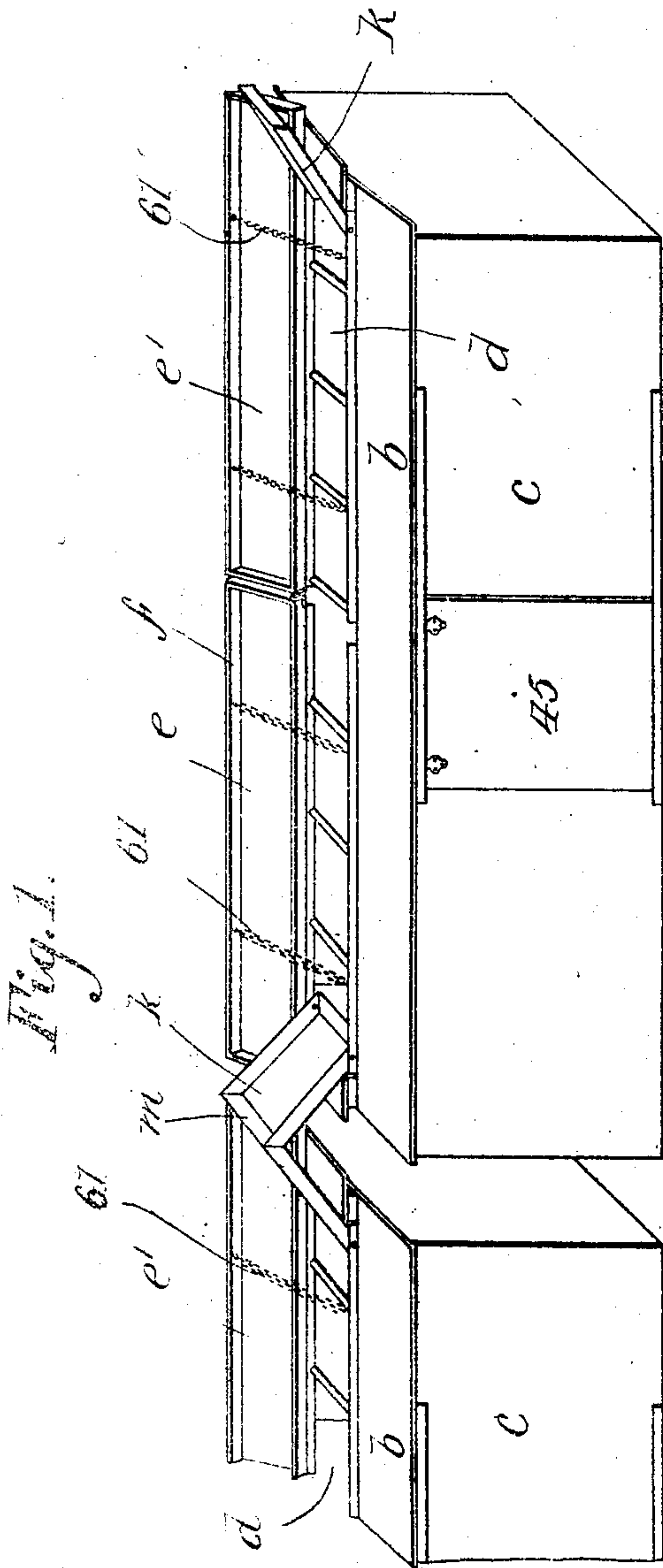


Fig. 4.

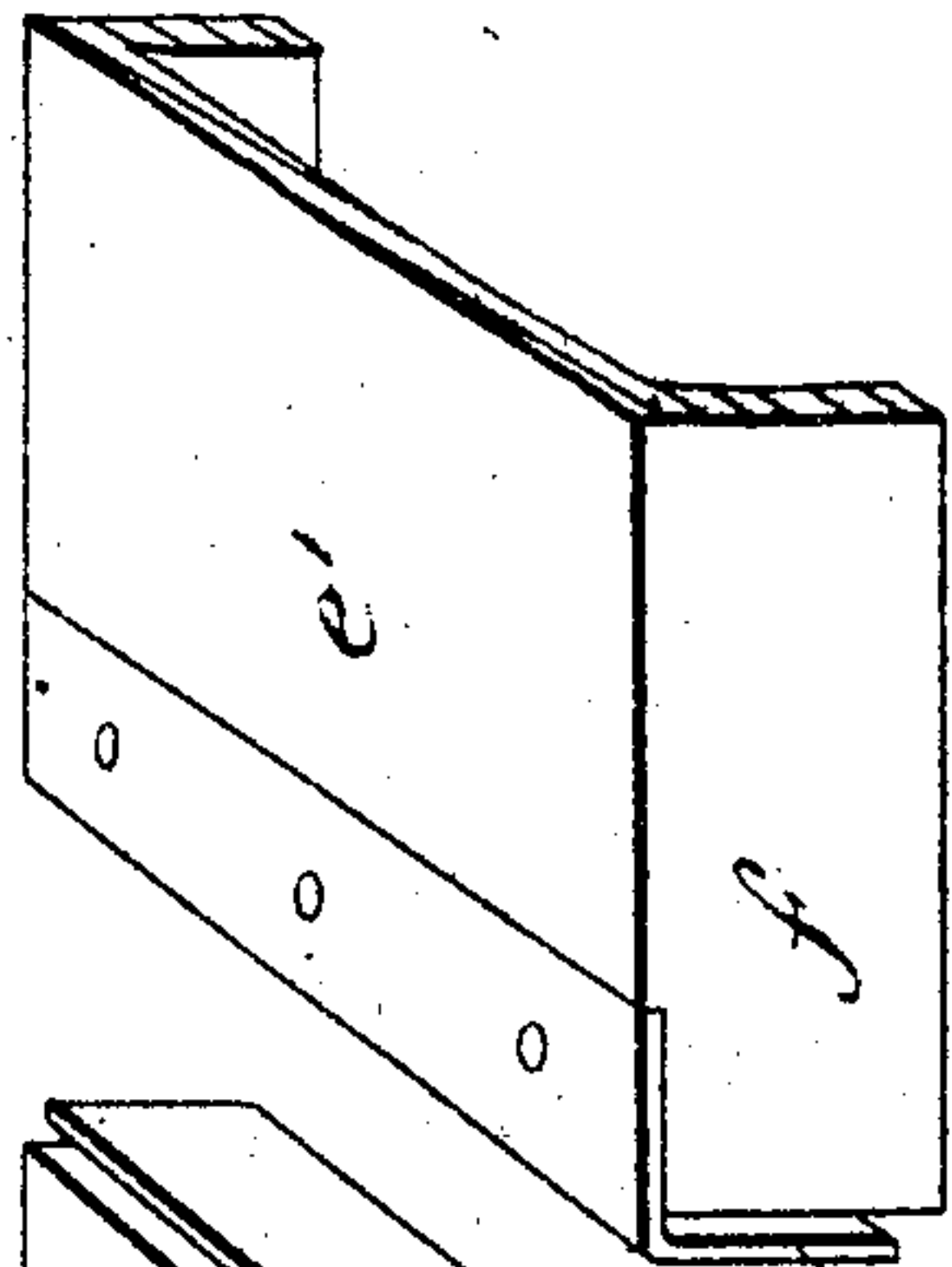
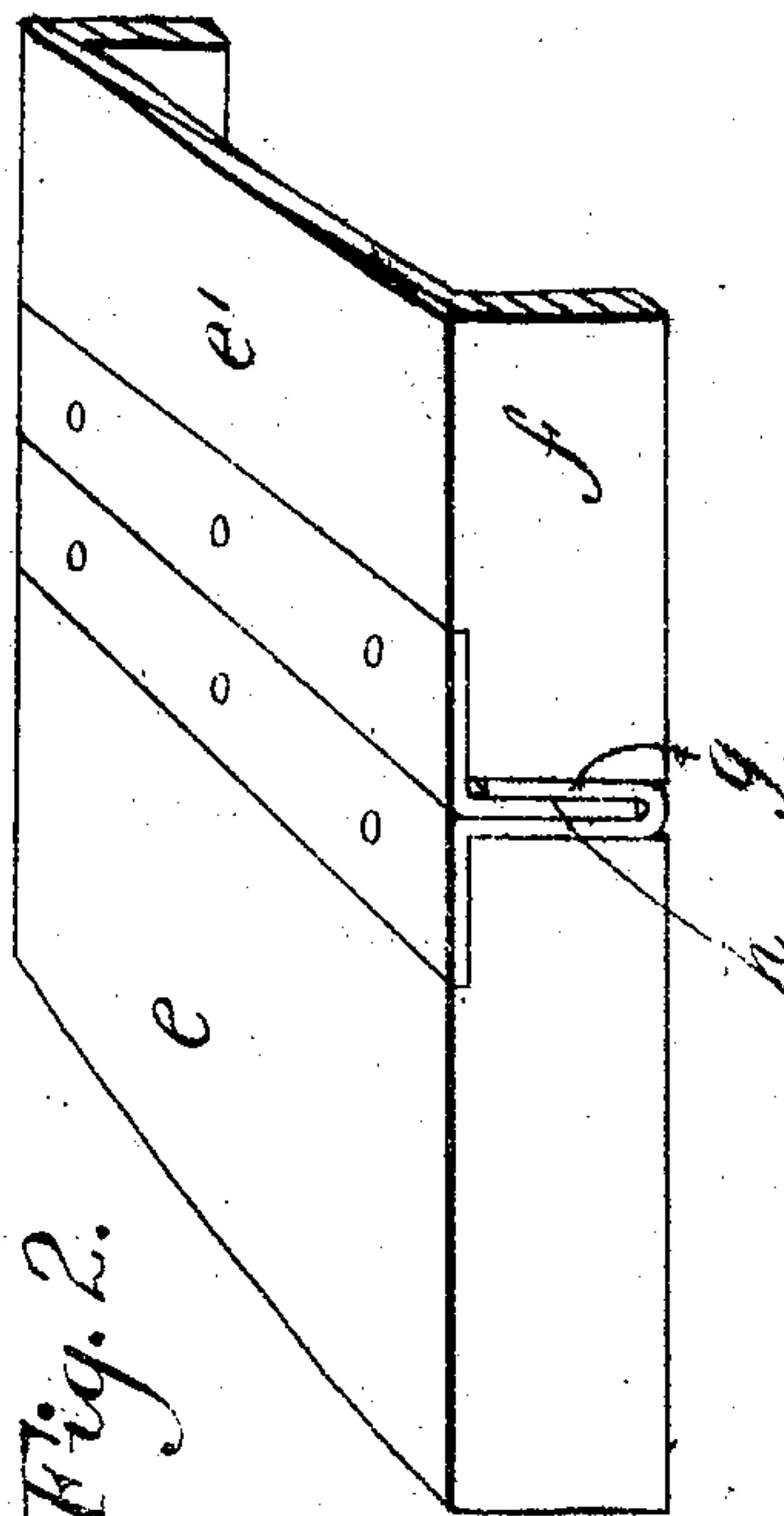
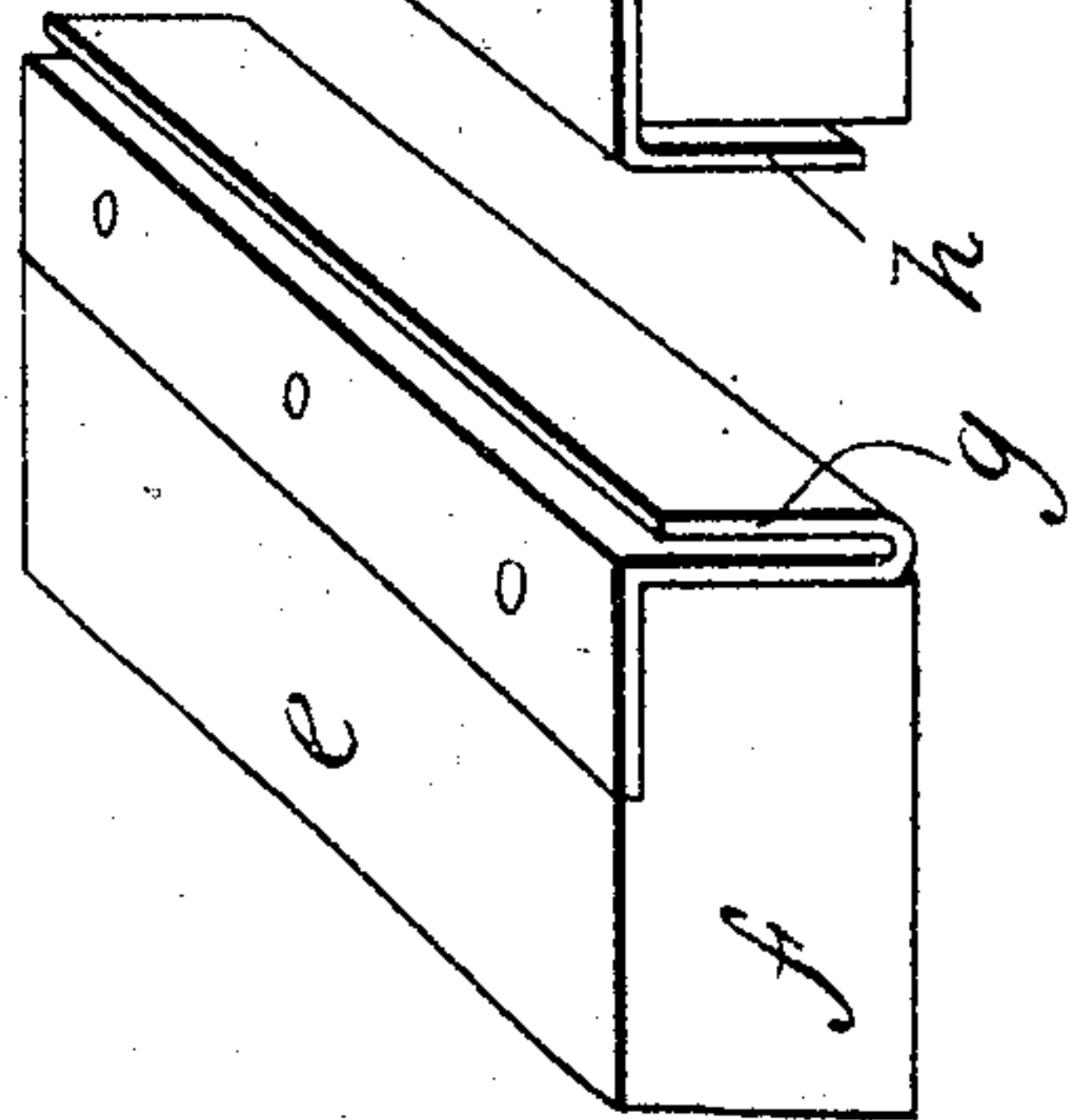


Fig. 3.



Witnesses

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4 SHEETS-SHEET 2.

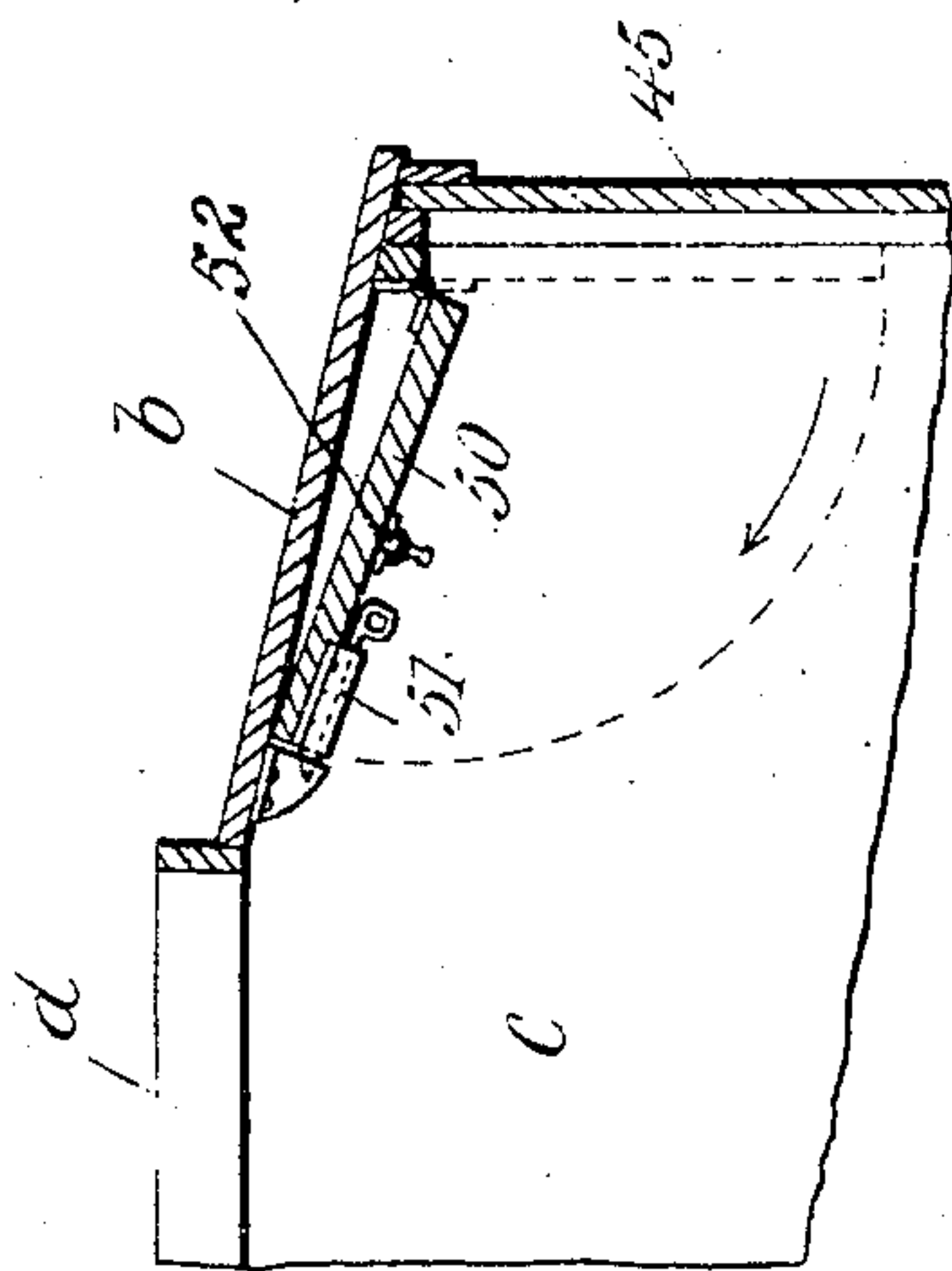
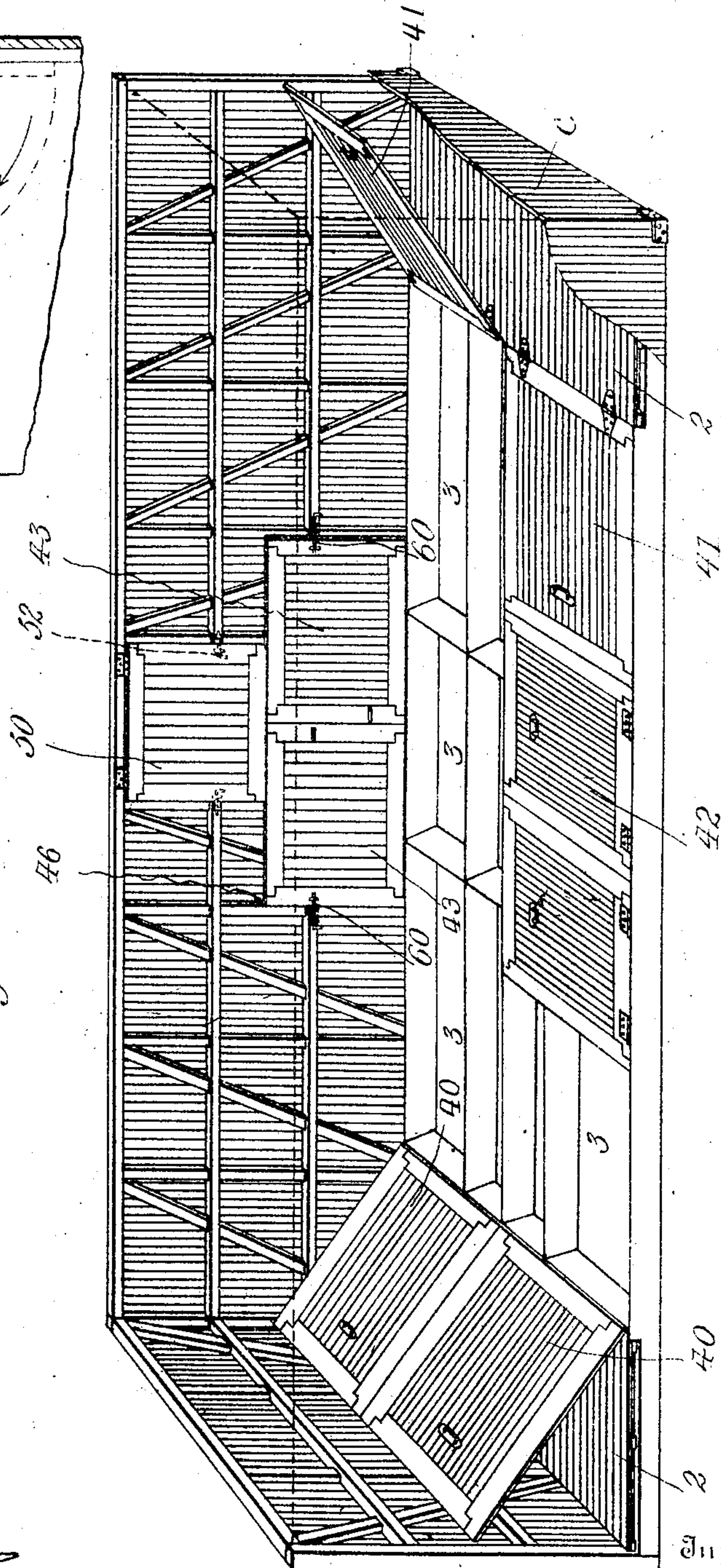


Fig. 17.

Fig. 5.



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4 SHEETS—SHEET 3.

Fig. 6.

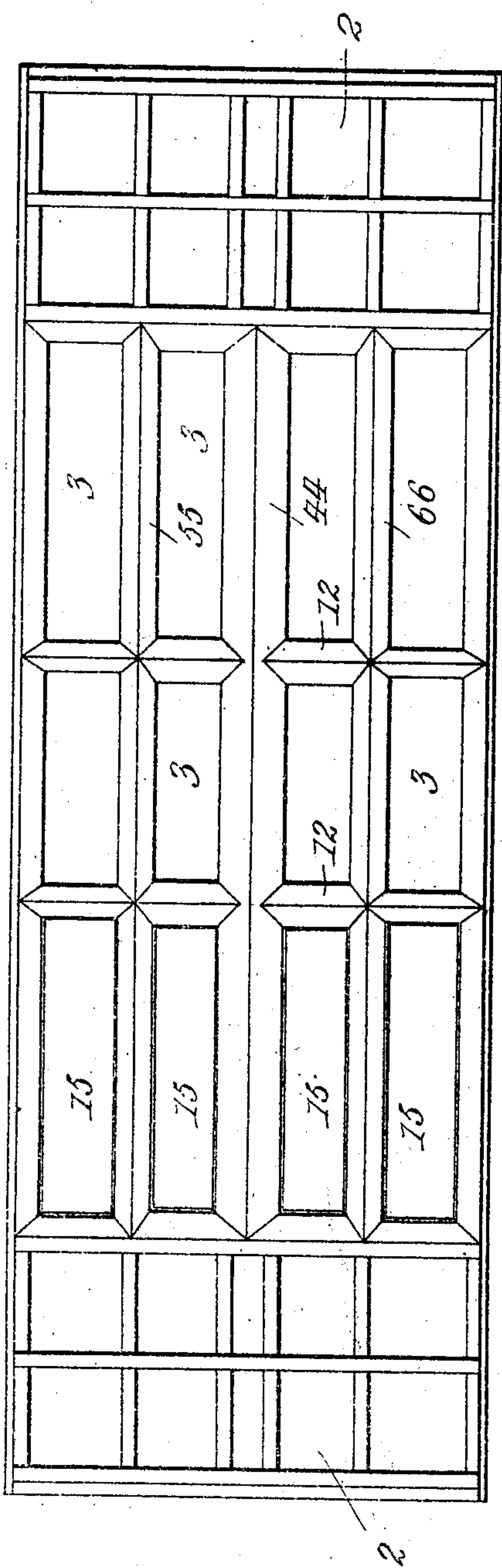
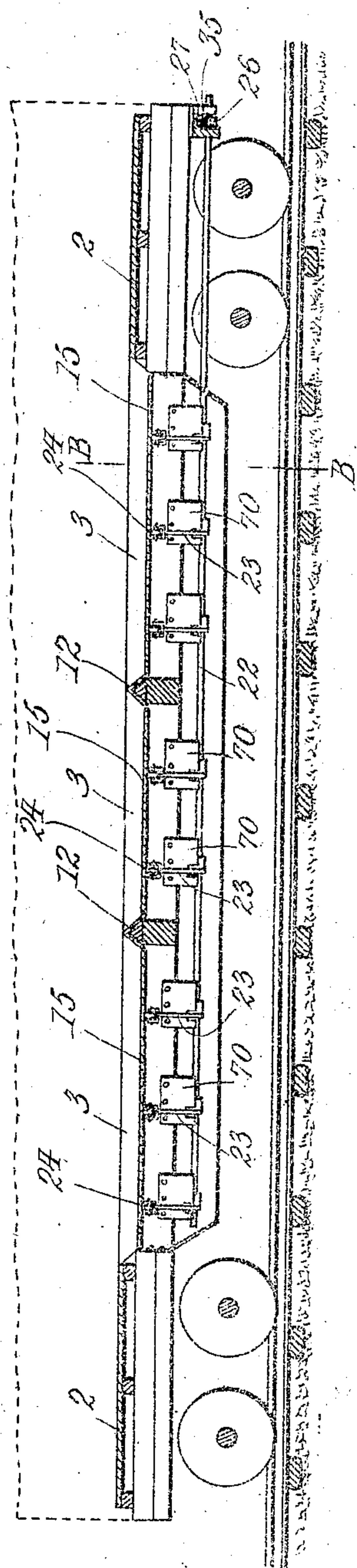


Fig. 7.



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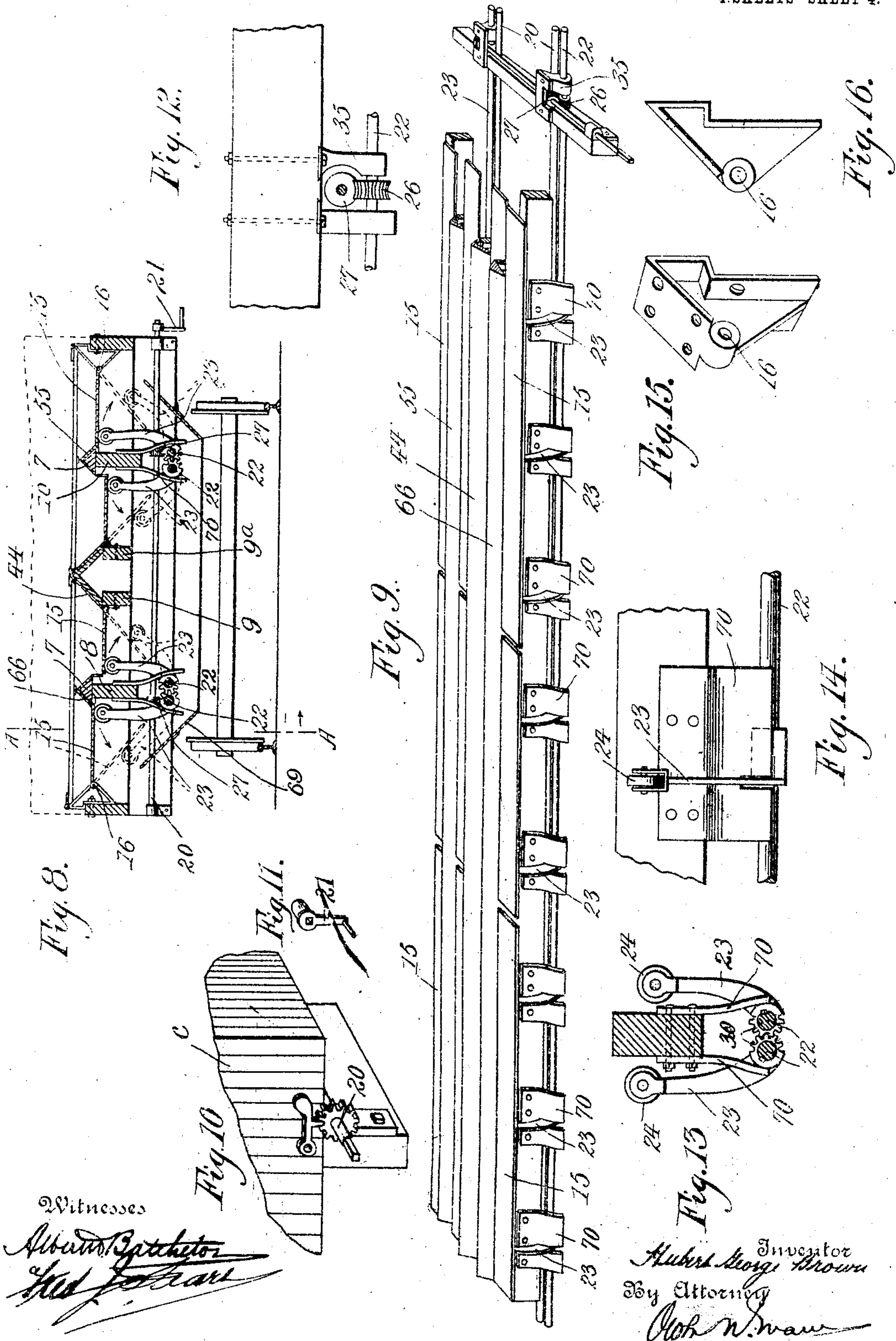
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4 SHEETS—SHEET 4.



Witnesses

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UNITED STATES PATENT OFFICE.

HUBERT GEORGE BROWN, OF MONTREAL, QUEBEC, CANADA.

TRANSPORTING SYSTEM.

No. 886,472.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed March 8, 1907. Serial No. 361,366.

To all whom it may concern:

Be it known that I, HUBERT GEORGE BROWN, of the city of Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Transporting Systems; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates particularly to the transportation of grain, coal, ore and the like, and it has for its object to facilitate the transportation of such loose commodities and enable them to be received and discharged with greater despatch.

The invention may be said, briefly, to consist of a plurality of members coupled to travel together and each provided with a receiving device, the devices of each contiguous pair of members communicating with one another and being adapted, when the coupled members are caused to pass a point of delivery, to receive the commodity and guide it into the interior of the members; while the intercommunicating portions of the said receivers when in the act of passing the delivery point guide the commodity consecutively into the member last filled and the next to be filled, thus enabling all the members to be filled successively without checking the flow of the grain, coal, ore or other commodity.

A further feature of the invention consists of a particular construction of a railroad car whereby the same can be utilized either as an ordinary freight car, a car for the transportation of horses or cattle, or a grain car.

For full comprehension, however, of my invention, reference must be had to the accompanying drawings, forming a part of this specification, in which similar reference characters indicate the same parts and wherein

Figure 1 is a perspective view of a pair of combined grain and freight cars coupled together and provided with my invention; Fig. 2 is a perspective view of the abutting ends of a pair of covers closing the receiving device of one of the cars; Figs. 3 and 4 are perspective views of the contiguous ends of a pair of the covers, separated; Fig. 5 is a perspective view of the interior of one of the cars, the roof being removed; Fig. 6 is a plan view of the bottom of a car with the permanent end floor sections and some of the trap doors removed; Figs. 7 and 8 are longitudinal and transverse vertical sectional views respectively of the bottom of my improved car taken on lines A A and B B upon the

respective figures; Fig. 9 is a detail perspective view illustrating the dumping doors and the means for operating the same; Fig. 10 illustrates the means for locking the door operating means; Fig. 11 is a perspective view of the handle for operating the said means; Fig. 12 is a detail elevation of the bearings in which are mounted the shafts for supporting the means for operating the doors; Fig. 13 is a detail view of the means for opening and closing the doors; Fig. 14 is a detail side elevation of the door operating means and the guard plates for protecting the same; Figs. 15 and 16 are detail views of one of the hinge bearing brackets; Fig. 17 is a detail view illustrating the means for supporting the upper grain door in its raised position.

The embodiment of my invention I am about to describe consists of an ordinary freight car with the invention adapted thereto. I do not however limit myself to such a construction as the new principle can be applied with advantage to other types of carriers for grain, coal and the like without departing from the spirit of my invention.

The roof *b* of the car *c* is formed with an elongated hatch *d* extending from within a short distance of one end to within a short distance of the other end of such roof, this hatch having a pair of covers *e e'* hinged at one side to one side of the hatch and provided with a rim *f* adapted to fit over the latter for the purpose of preventing leakage of rain, or water from melting snow into the car. The contiguous end edges of these covers are made rain proof by providing one end with a plate curved upwardly as at *g* to receive the downwardly bent edge *h* of a second plate secured to the other cover. When these covers are closed water falling between the contiguous edges thereof will be caught in the plate *g* and conducted over each side edge of the hatch while the comparatively loose fit of the plates allows for the expansion and contraction of the covers. The opposite ends of the hatch are provided with chutes *k* hinged at one end to the inside thereof and with their free ends beveled as at *m* at an angle to lie flat against a like chute carried by the hatch of an adjoining car. These chutes are constructed to fit into the hatch and have the covers close over and protect them.

The car is intended to be filled to the hatches and to facilitate unloading and prevent access of the grain or the like, to the

door spaces the bottom of the car is preferably divided into three main sections, viz: the end sections 2, 2, beneath which the usual trucks (not shown) are located, and the intervening section is subdivided into, preferably, twelve hoppers 3, by longitudinal angular members formed by supporting three series of pairs of oppositely inclined plates 44, 55, and 66, upon filler pieces 7 mounted upon the usual main longitudinal stringers 8, 9 9^a and 10 respectively of the car. The longitudinal spaces thus established are divided into hoppers by similar plates 12 supported upon fillers mounted upon the usual transverse stringers of the car. If desired this particular arrangement of hoppers can be varied but, however the arrangement, it is advantageous to divide the hopper space and consequently the load and transmit a larger proportion of the latter to the sides and ends of the car frame. The mouths of these hoppers are controlled by gravity drop trap doors 15 hinged (as at 16) at their sides, and the doors on each side of the center are collectively controlled independently of the doors on the other side. The means for operating these doors consists of a pair of main shafts 20, operated by crank handles 21, and two pairs of counter shafts 22 with arms 23 mounted at one end of these arms, rigidly thereon and having anti-friction rollers 24 in their free ends adapted to act upon the underside of the doors and either raise the same and retain them closed or be depressed and allow the doors to open. One counter shaft 22 of each pair has a worm wheel 26 (Fig. 7) mounted rigidly thereon and driven by a worm 27 upon the main driving shaft 20, and in order to have the doors of each series operate in unison I dispose the corresponding levers for the respective doors in close proximity to one another and form the base of each with gear teeth 30 adapted to intermesh with the teeth of the other; one of the counter shafts of each pair serving solely as a support for and does not operate the arms mounted thereon, the latter being as above pointed out connected operatively direct to their companion arms. The main and counter-shaft are carried in bearing brackets 35 (Fig. 12) secured to the underside of the car. This grain car is convertible into a car for the transportation of horses and cattle, or for the transportation of freight generally by, two pairs of end floor members 40 and 41, respectively, hinged to the edges of the floor members 2, 2, and two pairs of side floor members 42 and 43, respectively, hinged to the bottom of the portions of the sides of the car in which the usual doors 45 (Fig. 1) are set.

The end floor members 40 and 41 are adapted to be swung back and rest diagonally upon the ends of the car (as shown in Fig. 5) where they are held by the load in

the car, and the side floor members 42 and 43 are adapted to be swung up against the sides of the car over the lower portions of the door openings where they are embedded in recesses 46 for the purpose.

The upper portions of the door openings are closed by doors 50 hinged to the tops of such openings and, when the car is not being used as a grain carrier, supported close to the roof by latches 51 carried by the doors, and catches, engaged thereby, carried by the roof (Fig. 17) while bolts 52 carried also by these doors afford means for locking them in their closed positions.

When the car is to be used as a grain car the movable end floor sections are thrown back to their diagonal positions, the side floor sections are shut up against the sides of the car and locked in place by bolts 60 carried by the sides of the car and fitting into sockets in these floor sections. The covers are then thrown back and held in their open positions by chains 61, and the chutes are thrown into position lying against each other, after which the train man leaves the car through the open upper portion of one of the doors and he then trips the latches supporting the doors 50 thus dropping the same and finally shoots the bolts of the latter on the outside. The outer doors 45 can then be closed and sealed as usual. The series of hoppers communicate with a general hopper 69, and the grain or the like is prevented from falling upon the gearing for operating the trap doors, by guard plates 70 secured to the timbers of the car and hanging over such gearing.

This car is particularly adapted for use with others of its kind as a train for the transportation of grain, coal, ore, or other loose commodities. And when a number of them are coupled together in a train with their covers open and chutes in contiguity, they can be run slowly beneath a delivery member say, for instance, the leg of a grain elevator, and filled one after another without shutting off the supply from the time the loading is commenced until the last car of the train is filled. During this loading operation the engine driver is signaled to move the train along as the cars are filled. As a car charged to, practically, its full capacity is being moved away and the next is following it into position the chutes guide the grain first into one car and then the other, thus allowing of the continuous filling of the whole train without loss of the commodity as the space between hatches is passing the point of delivery.

During transportation the inclined sides of the mouths of the hoppers relieve the trap doors of almost all the load thereby allowing much lighter gear to be used and preserving the life of the car while allowing the same to be filled to the fullest capacity.

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When the train reaches its destination, the levers are operated and the gravity trap doors allowed to fall to delivering positions, and the contents of the cars flow out with despatch. If it should be required to deliver a part of a car only the trap doors may be partially opened, and readily closed again when the desired quantity has been discharged.

10 With all the floor sections closed down the false flooring is complete, and when the doors 50 are latched to the roof an ordinary freight car is produced; while with a similar arrangement, and the end floor sections thrown back the hoppers thus disclosed can be utilized as fodder bins and an ideal horse or cattle car is produced.

What I claim is as follows:—

20 1. A carrier for grain, coal, ore and like loose commodities, comprising a plurality of members coupled to travel together and each provided with a receiving device and means for closing the same; and means for guiding into either receiving device, of a pair 25 of contiguous members the commodity falling in a line between the said members.

30 2. A railway train for grain, coal, ore, and like loose substances, comprising a plurality of box cars coupled to travel together and each having a scuttle extending along the middle of its roof, and means for closing the same, the roof and closing means being constructed to when required, present a completely closed roof, and such closing device 35 being adapted when in open position to act as a chute to guide the substance into the scuttle.

40 3. A railway train for grain, coal, ore, and like loose commodities, comprising a plurality of cars coupled to travel together and each having a receiving device extending along the top thereof and means for closing the said receiving device, and means for guiding into either receiving device, of a pair 45 of contiguous cars, the commodity falling in a line between the said cars.

50 4. A railway train for grain, coal, ore, and like loose commodities, comprising a plurality of cars coupled to travel together and each having a scuttle in its roof and chutes carried by the scuttles for guiding into either scuttle, of a pair of contiguous cars, the commodity falling in a line between the said cars.

55 5. A railway train for grain, coal, ore, and like loose commodities, comprising a plurality of cars coupled to travel together and each having a scuttle in its roof and hinged chutes carried by the scuttles for guiding into either scuttle, of a pair of contiguous 60 cars the commodity falling in a line between the said cars, and a cover for each scuttle and the chutes hinged therein.

65 6. In a grain car, a plurality of spaced transverse and longitudinal members supported at their ends by the side and end

members of the car and formed to constitute portions of the inclined sides of a plurality of hoppers for the purpose of distributing the load among the said transverse and longitudinal members and side and end members 70 the longitudinal members being disposed one centrally of the width of the car and the others spaced from and at the opposite sides of the said central member, a plurality of horizontal trap doors hinged to the longitudinal 75 members at the opposite sides of the central member, and means for opening and closing the said trap doors.

7. In a grain door, a plurality of spaced transverse and longitudinal members supported at their ends by the side and end 80 members of the car and formed to constitute portions of the inclined sides of a plurality of hoppers for the purpose of distributing the load among the said transverse and longitudinal 85 members and side and end members, the longitudinal members being disposed one centrally of the width of the car and the others spaced from and at the opposite sides of the said central member, a plurality of 90 horizontal trap doors normally in horizontal position and adapted to, when opened, form continuations of the inclined sides of the hoppers, the said doors being hinged to the longitudinal members at the opposite sides 95 of the central member, and means for opening and closing the said trap doors.

8. A grain car the bottom whereof has a plurality of hoppers therein, trap doors controlling the said hoppers, and means for 100 opening and closing the said trap doors comprising a main shaft, two pairs of counter-shafts, means effecting an operative connection between the main shaft and one of the counter-shafts of each pair, a plurality of 105 lever arms mounted rigidly upon each counter shaft and supporting the said trap doors, and means effecting an operative connection between the levers on one counter-shaft and those upon the counter shaft adjacent thereto, and means for operating the main shaft. 110

9. The combination with a car having a series of floor receptacles, floorings for supporting horses at the opposite ends of the car, end floor members covering the portions 115 of the receptacles adjacent to the end floorings and hinged to the said floorings to be swung back and lie diagonally over the latter, and middle floor members between the said hinged end floor members and hinged 120 to the sides of the car whereby the said car can be converted into a grain car, or a horse car.

10. A car having a central longitudinal scuttle, and a cover therefor constructed and 125 arranged to guide a flowing loose commodity into the scuttle.

11. A car with doors in its sides and having a hopper bottom; stationary end floor sections; movable end floor sections hinged to 130

the said stationary sections; movable side floor sections hinged to the side edges of the bottom and adapted to be shut up against the sides of the car over the lower portions of the doors; the said movable end and side floor sections collectively covering the said hopper bottom; means securing the said movable side floor sections in their raised positions, a central longitudinal scuttle through which grain, coal, ore and other loose commodities are received into the car.

12. A car with doors in its sides and having a hopper bottom; stationary end floor sections; movable end floor sections hinged to the said stationary floor sections; movable side floor sections hinged to the side edges of the bottom and adapted to be shut up against the sides of the car over the lower portions of the doors; the said movable end and side floor sections collectively covering the said hopper bottom; means securing the said movable side floor sections in their raised positions, grain doors hinged at the top of the car doors and adapted to close the upper portions of the said car doors; means fastening the said grain doors to the roof; a central longitudinal scuttle through which grain, coal, ore and other loose commodities are received into the car, a cover for such scuttle, the said cover being hinged to the side of the scuttle and constructed and arranged to guide the flowing commodity into the said scuttle.

13. A car with doors in its sides, a bottom divided into a plurality of hoppers; means controlling the said hoppers; a general hopper with which all of the said plurality of hoppers communicate; stationary end floor sections; movable end floor sections hinged to the said stationary floor section; movable side floor sections hinged to the side edges of the bottom and adapted to be shut up against the sides of the car over the lower portions of the doors; the said movable end and side floor sections collectively covering the said hopper bottom; and means securing the said movable side floor sections in their raised positions.

14. A car with doors in its sides, a bottom divided into a plurality of hoppers; means controlling the said hoppers; a general hopper with which all of the said plurality of hoppers communicate; stationary end floor sections; movable end floor sections hinged to the said stationary floor sections; movable side floor sections hinged to the side edges of the bottom and adapted to be shut up against the sides of the car over the lower portions of the doors; the said movable end and side floor sections collectively

covering the said hopper bottom; and means securing the said movable side floor sections in their raised positions, grain doors hinged at the top of the car doors and adapted to close the upper portions of the said car doors; means fastening the said grain doors to the roof, and means through which grain, coal, ore and other loose commodities are received into the car.

15. A car with doors in its sides and having a hopper bottom; stationary end floor sections; movable end floor sections hinged to the said stationary floor sections; movable side floor sections hinged to the side edges of the bottom and adapted to be shut up against the sides of the car over the lower portions of the doors the said movable end and side floor sections collectively covering the said hopper bottom; means securing the said movable side floor sections in their raised positions, and a scuttle in the roof of the car through which grain, coal, ore and other loose commodities are received into the car; chutes hinged in the opposite ends of the scuttle; a two-part cover adapted to inclose the scuttle and the chute therein, and means preventing the leakage of water between the parts of the cover.

16. In a grain car having a plurality of hoppers in its bottom, longitudinal members supporting such hoppers, a plurality of trap doors closing the said hoppers, means for operating the trap doors, brackets supporting the said trap doors and each of said brackets consisting of a triangular flanged member with its base arranged in a vertical plane and having an offset portion arranged to rest upon the longitudinal member, and a bearing in the apex of each bracket.

17. In a grain car having a plurality of hoppers in its bottom, longitudinal members supporting such hoppers, a plurality of trap doors closing the said hoppers, means for operating the trap doors, brackets supporting the said trap doors and each of the said brackets consisting of a triangular flanged member with its base arranged in a vertical plane and an offset portion arranged to rest upon the longitudinal member, a bearing in the apex of each bracket, and the inclined portion of the bracket above the bearing extending in the same plane as the contiguous side of the hopper.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

HUBERT GEORGE BROWN.

Witnesses:

WILLIAM P. McFEAT,
ARTHUR H. EVANS.