

No. 744,224.

PATENTED NOV. 17, 1903.

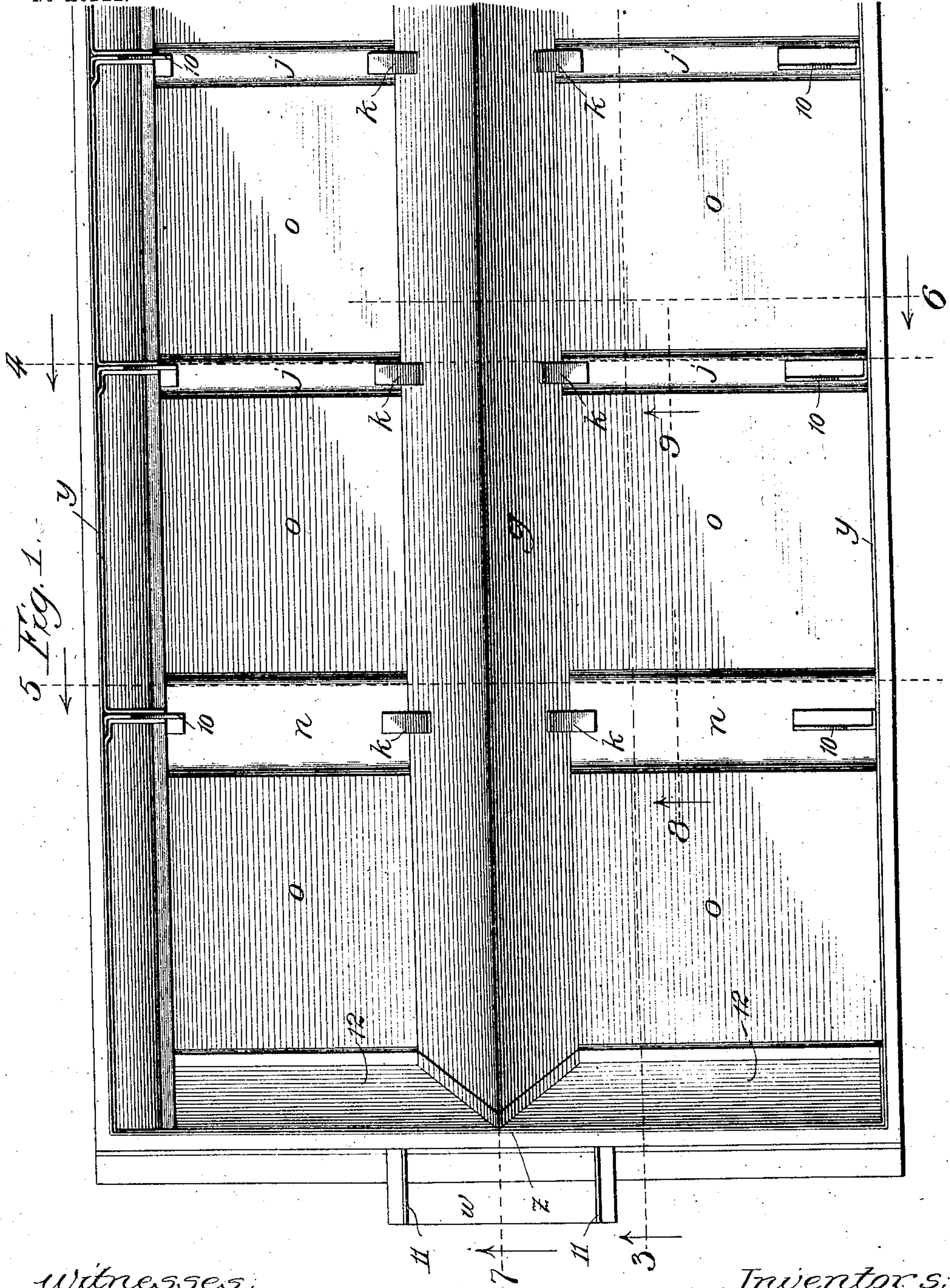
S. OTIS & G. B. MALTBY.

METAL DUMP CAR.

APPLICATION FILED JAN. 5, 1903.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses:
Charles Gaylord,
John Enders, Jr.

Inventors:
Spencer Otis
George B. Maltby,
By Thomas F. Sheridan,
Att'y.

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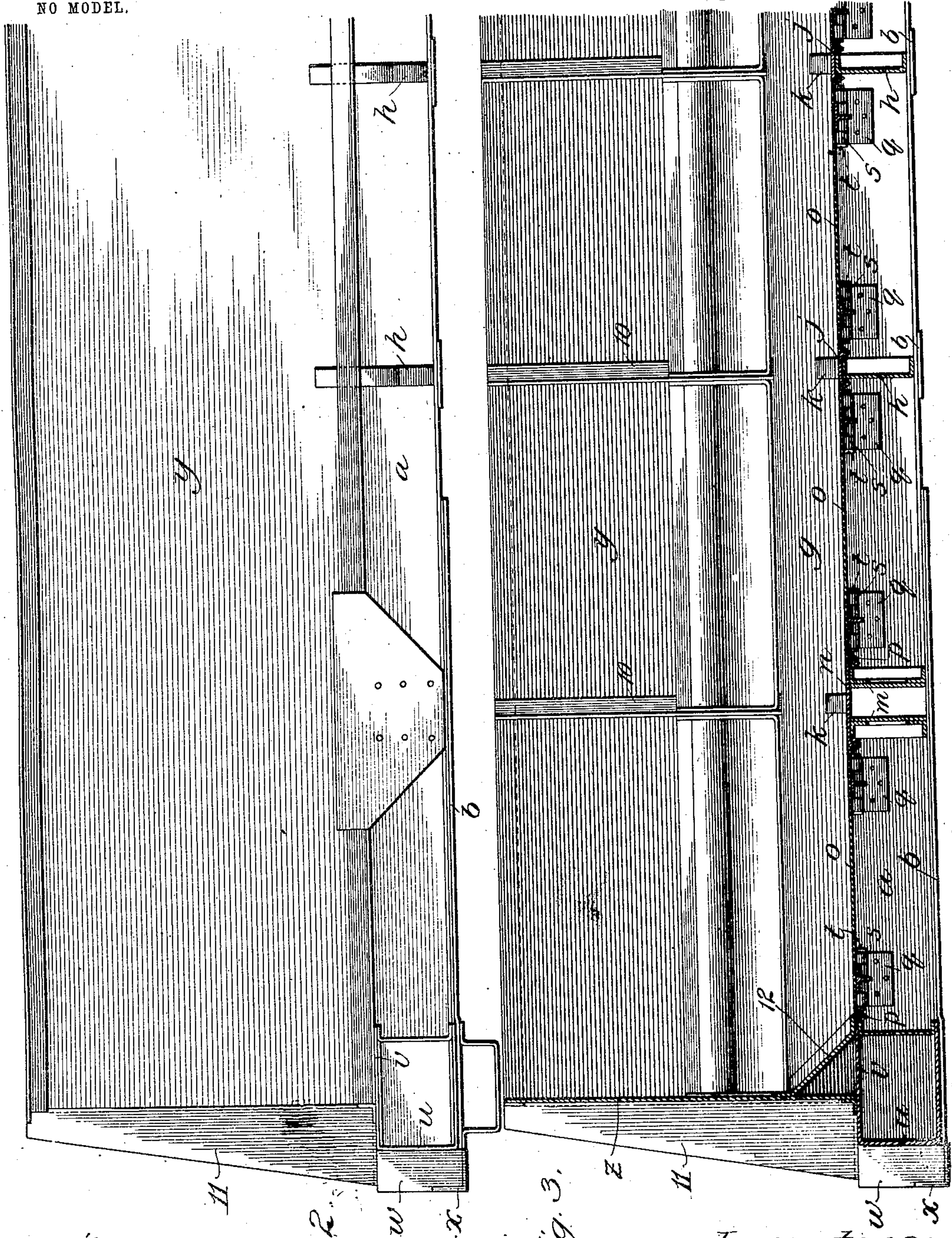
S. OTIS & G. B. MALTBY.

METAL DUMP CAR.

APPLICATION FILED JAN. 5, 1903.

4 SHEETS—SHEET 2.

NO MODEL.



Witnesses:
E. J. Gaylord,
John Enders Jr.

Fig. 2.

Fig. 3.

Inventors:
Spencer Otis and
George B. Maltby,
By Thomas F. Sheridan,
Att'y.

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4 SHEETS—SHEET 3.

Fig. 4.

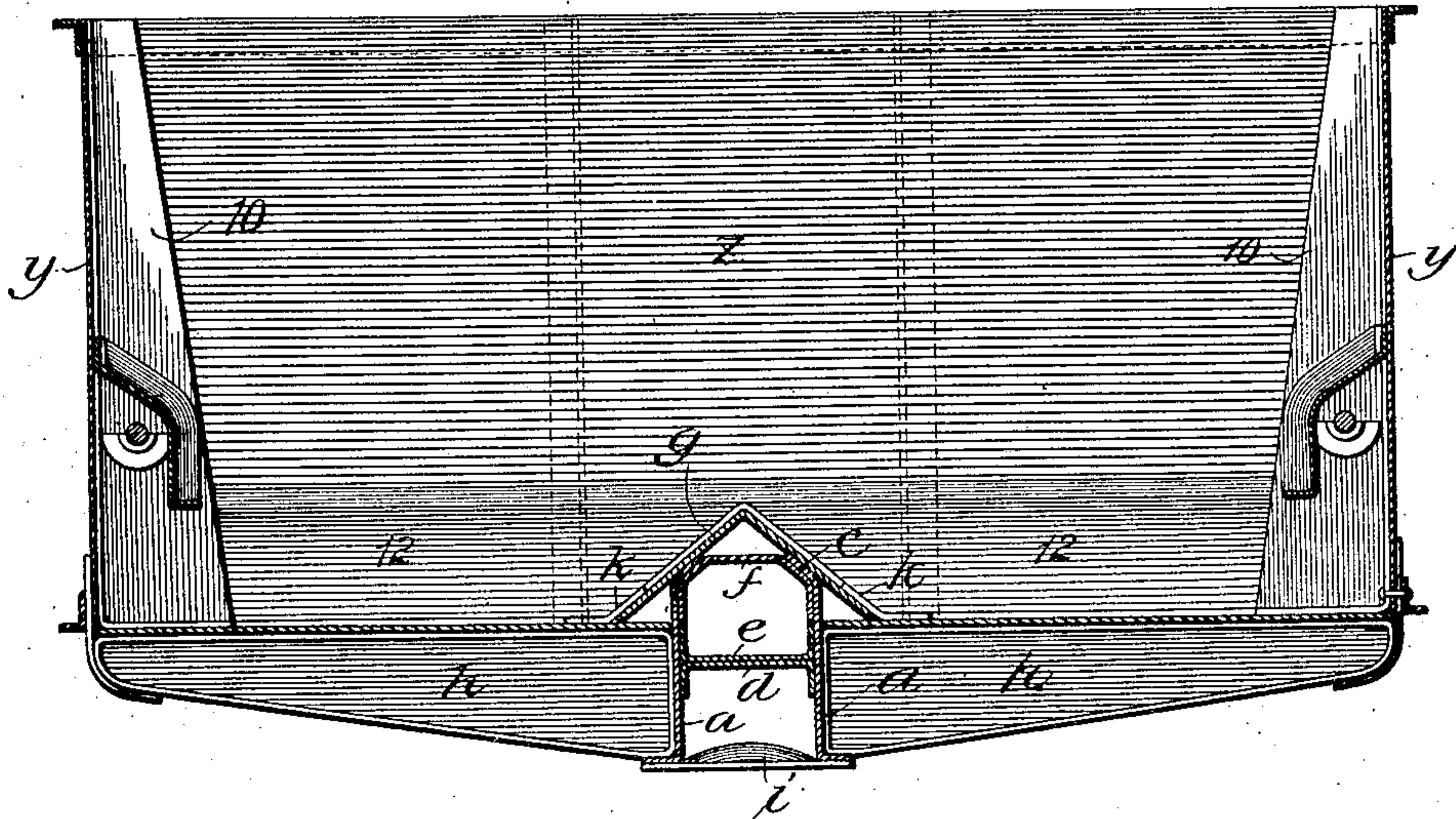
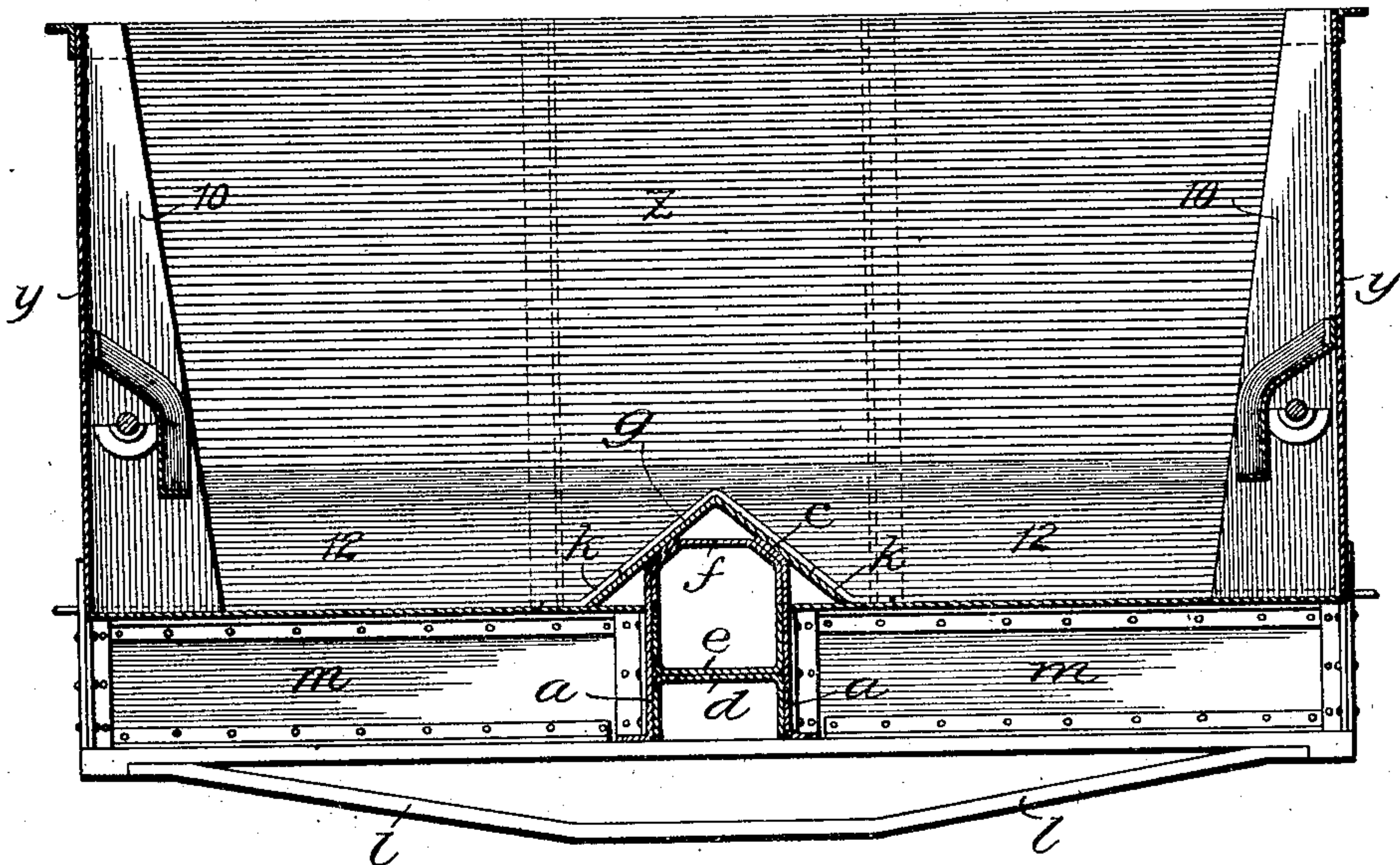


Fig. 5.



Witnesses:
E. C. Gaylord.
John Enders Jr.

Inventors:
Spencer Otis and
George B. Maltby,
By Thomas F. Sheridan,
Att'y in

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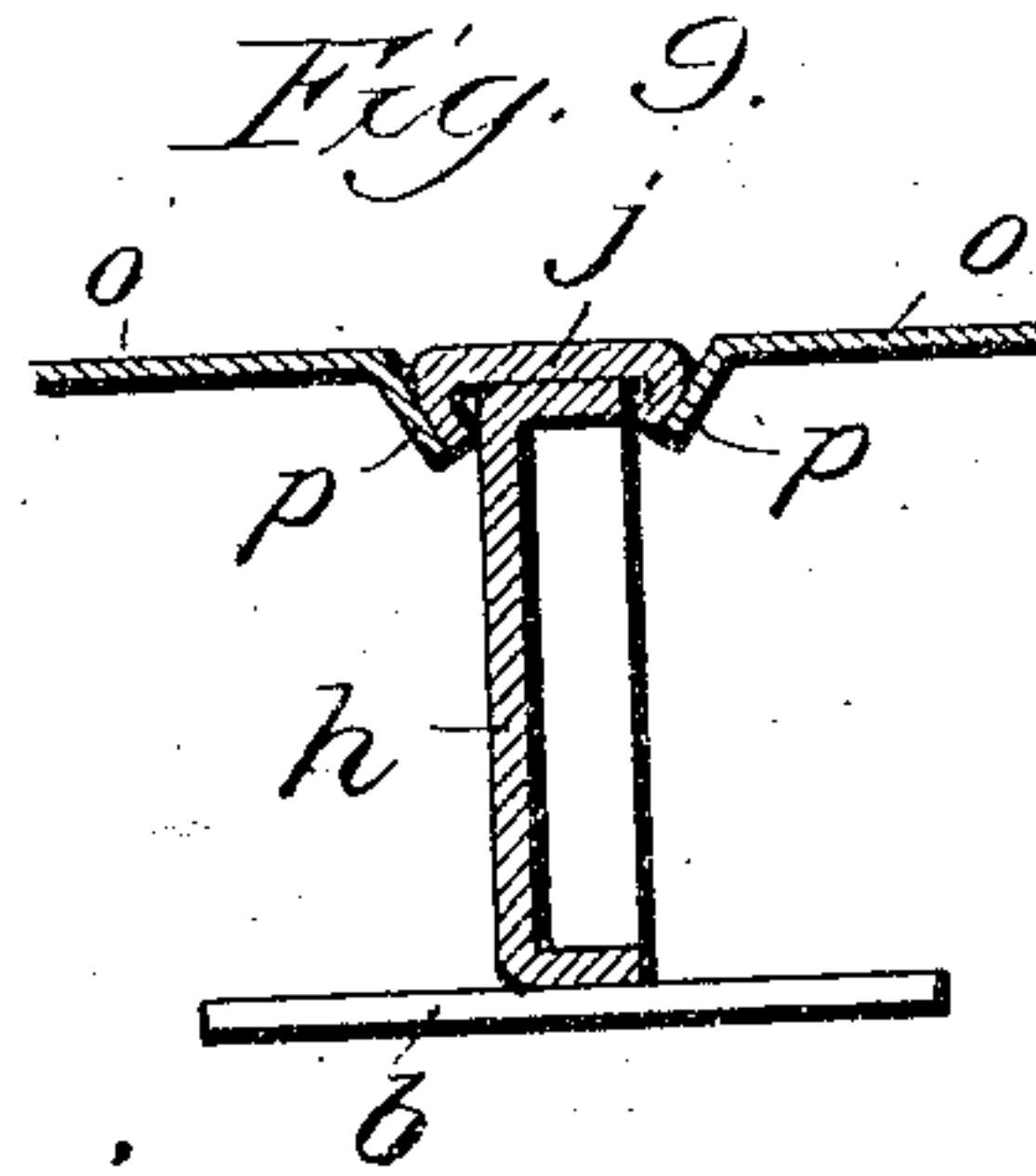
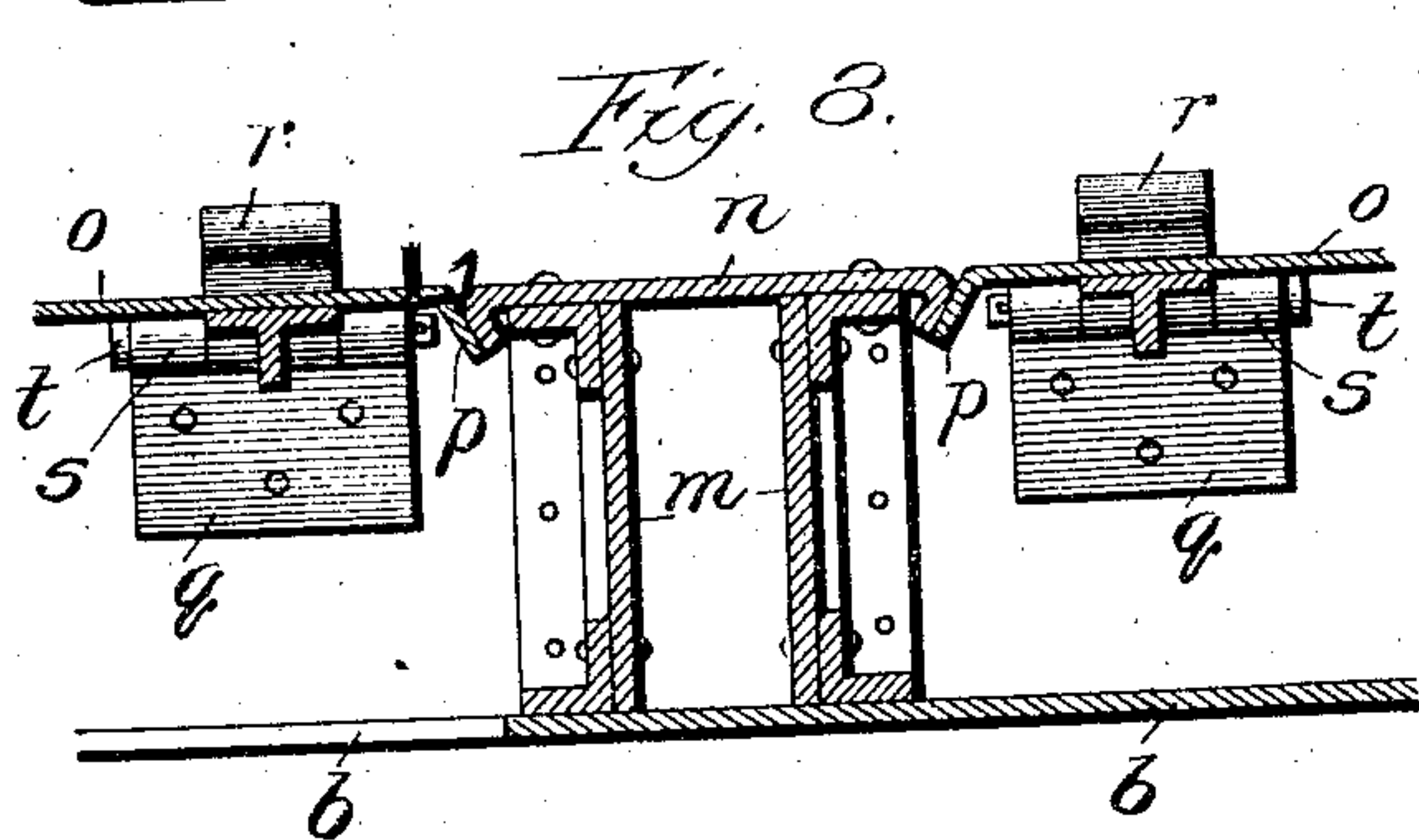
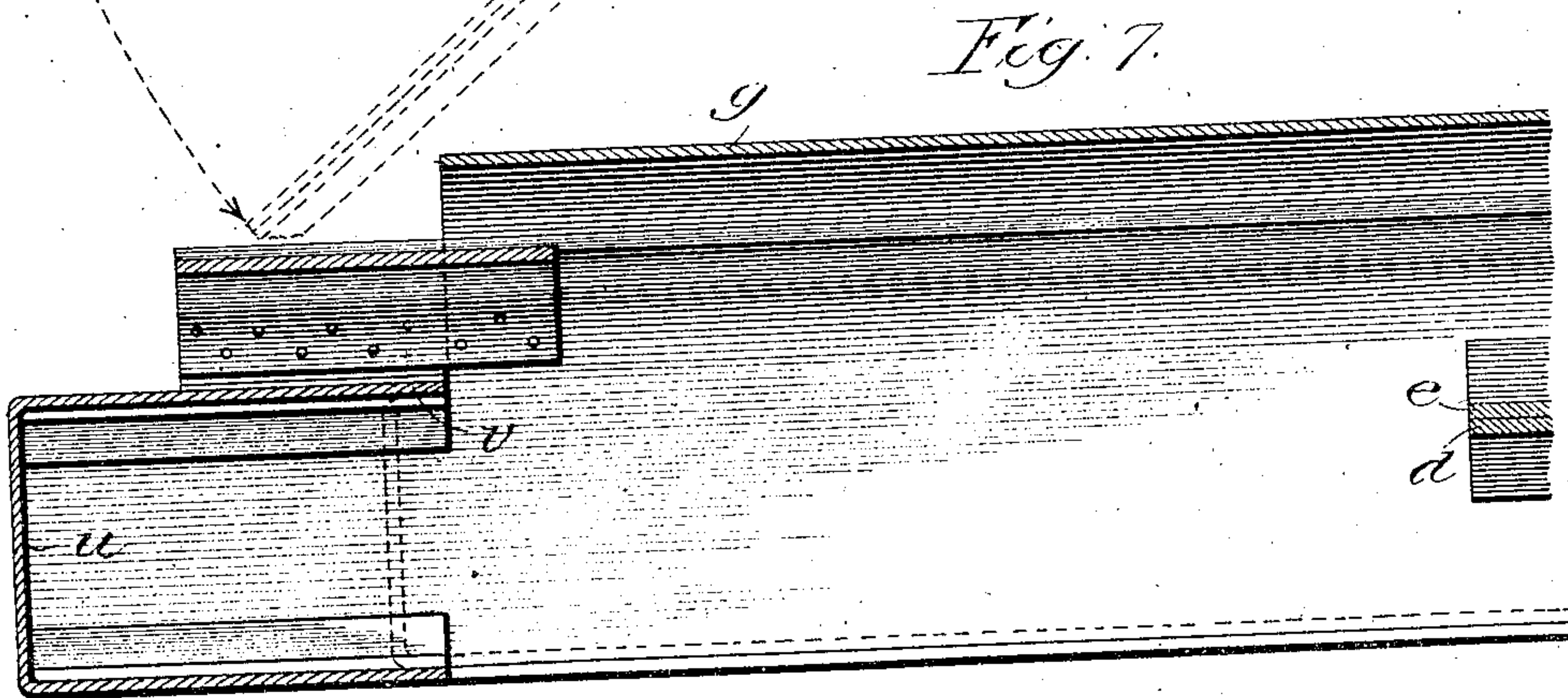
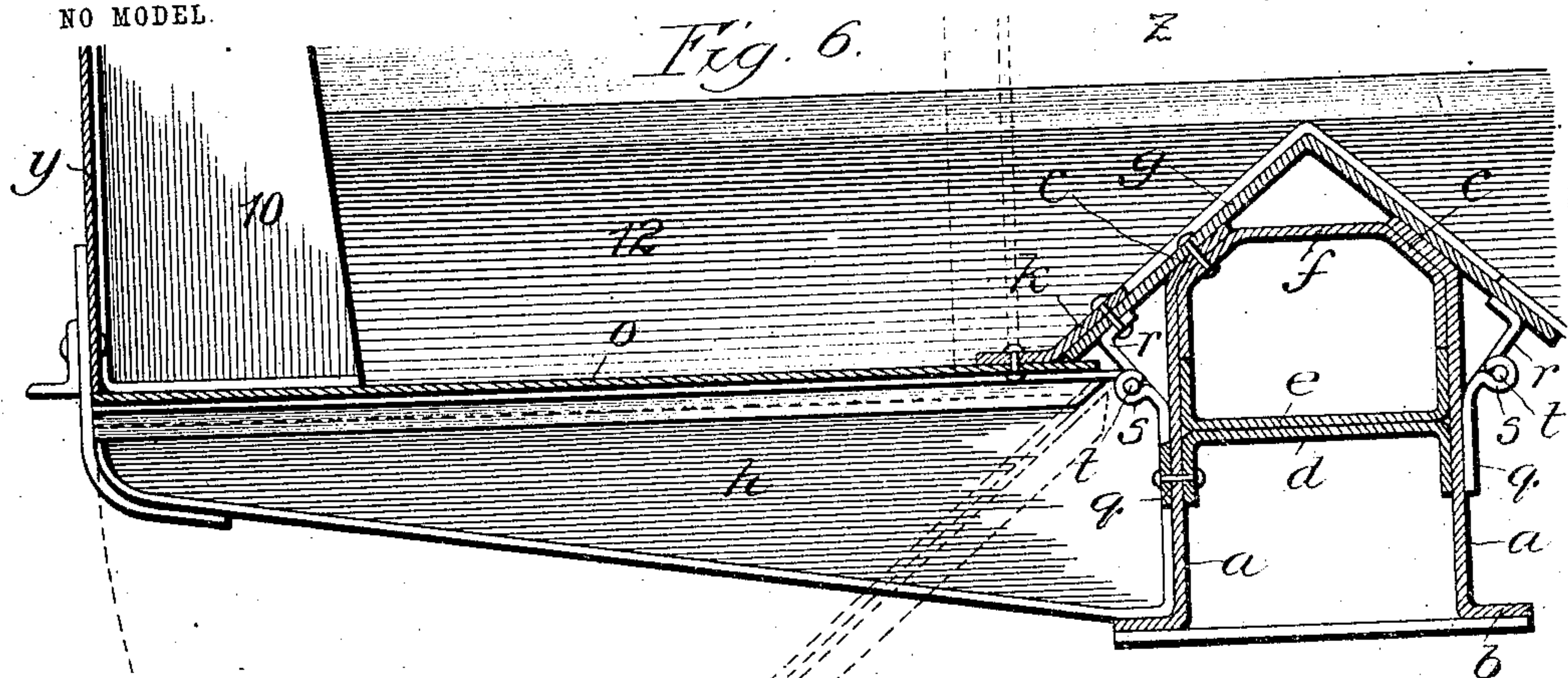
S. OTIS & G. B. MALTBY.

METAL DUMP CAR.

APPLICATION FILED JAN. 5, 1903.

4 SHEETS—SHEET 4.

NO MODEL.



Witnesses:
Eas. C. Claydon,
John Enders Jr.

Inventors:
{ Spencer Otis
George B. Maltby.
By Thomas F. Sheridan,
Att'y.

UNITED STATES PATENT OFFICE.

SPENCER OTIS AND GEORGE B. MALTBY, OF CHICAGO, ILLINOIS, ASSIGNORS
TO NATIONAL COAL DUMP CAR COMPANY, OF RAPID CITY, SOUTH DAKOTA,
AND CHICAGO, ILLINOIS, A CORPORATION OF SOUTH DAKOTA.

METAL DUMP-CAR.

SPECIFICATION forming part of Letters Patent No. 744,224, dated November 17, 1903.

Application filed January 5, 1903. Serial No. 137,921. (No model.)

To all whom it may concern:

Be it known that we, SPENCER OTIS and GEORGE B. MALTBY, citizens of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Metal Dump-Cars, of which the following is a specification.

This invention relates to that class of cars known as "dump-cars"—that is, cars used for the carrying of coal and similar materials which may be dumped or discharged through the action of the car-bottom portions, and it has particular reference to the construction and arrangement of parts, all of which will more fully hereinafter appear.

The principal object of the invention is to provide a simple, economical, and efficient metal dump-car of such construction and arrangement as will enable it to withstand the stress and strains incident to ordinary use.

Further objects of the invention will appear from an examination of the drawings and the following description and claims.

The invention consists principally in a metal car in which there are combined a center sill formed of flanged side members, a plurality of strengthening-pieces inserted therebetween, and a plurality of cross-sills secured to and extending out from each side thereof.

The invention consists, further, in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a plan view of one end of a car looking at it from above; Fig. 2, a side elevation of the same; Fig. 3, a longitudinal sectional elevation taken on line 3 of Fig. 1 looking in the direction of the arrow; Fig. 4, a cross-sectional elevation taken on line 4 of Fig. 1 looking in the direction of the arrow; Fig. 5, a similar view taken on line 5 of Fig. 1 looking in the direction of the arrow; Fig. 6, an enlarged cross-sectional elevation taken on line 6 of Fig. 1 looking in the direction of the arrow; Fig. 7, an enlarged sectional detail taken on line 1 of Fig. 1 looking in the direction of the arrow; and Figs. 8 and 9, enlarged sectional details taken on lines 8 and 9, respectively, of Fig. 1.

In the art to which this invention relates

it is well known that it is very desirable to provide metal cars of such construction and arrangement that they may be formed as largely as possible of commercial structural iron or metal—that is, iron or metal which may be purchased in the open market and which as a consequence saves largely in the time necessary to construct a car and in the expense of materials, both as to original construction and repairs.

The principal object, therefore, of this invention is to provide a simple, economical, and efficient metal car which will distribute throughout the entire supporting frame or structure thereof the stress and strains incident to usage and formed of such structural materials as may be obtained through the ordinary commercial channels, all of which will be understood and appreciated by those skilled in the art.

In constructing a car in accordance with these improvements I provide a car-frame whose principal member is a center sill extending longitudinally the entire length of the car and to which the underframing or supporting structure of the car is secured. This center sill is formed of a pair of metal side members having web portions *a*, outwardly-extending lower flanges *b*, and inclined inwardly and upwardly extending upper flanges *c*. These side members are secured together by a plurality of flanged metal portions *d*, *e*, and *f*, which are riveted thereto and arranged at points opposite the cross-sills and bolster-fillers hereinafter described, and a plurality of lower tie-pieces *i*, having arched inner web portions and secured to the lower flanges of the side members. The center sill is also provided with an A-shaped metal cap portion *g*, riveted thereto and to the interposed strengthening-pieces and extending longitudinally thereof, with its lateral depending edges extending downwardly and outwardly from the sill proper for other securing and strengthening purposes, as will more fully hereinafter appear. To provide for the economical and efficient strengthening of the frame, a plurality of cross-sills *h* is provided, formed of metal channel-pieces. (Shown particularly in Fig. 9.) These cross-sills are con-

nected with the web portions of the side sills
 and extend outwardly from the outer sides
 thereof to the extreme outer side of the car
 and, as shown in Figs. 4 and 6, are substan-
 5 tially parabolic in shape. In order to pro-
 vide for a portion of the filler-sections of the
 car and for a tapered or wedging joint for
 the swinging doors, hereinafter described,
 each cross-sill has a metal channel-beam *j*,
 10 having downwardly and inwardly inclined
 flanged portions straddling the upper part of
 each, as shown particularly in Figs. 3 and 9.
 These cross-sills, as well as their flanged caps,
 are secured to the A-shaped central portion
 15 of the sill by means of a plurality of strips *k*.
 (See Fig. 6.) To further provide for the un-
 derframing of the car, a body-bolster *l* is
 passed under and secured to the lower flanges
 of the center sill, and interposed between the
 20 upper surface thereof, the floor section of the
 car, and the center sill on the outer sides of
 the car is a subbody bolster or filler formed
 in two sections and by means of channel-
 pieces *m*, the lower and upper flanged portions
 25 of which are formed of angle-irons secured to
 the web portions, to the body-bolster, and to
 the deck-section, as hereinafter set forth.
 The deck or floor sections of these subbody-
 bolsters are formed of a metal channel por-
 30 tion *n*, provided with downwardly and in-
 wardly extending flanged portions, which are
 also secured to the A-shaped portion of the
 center sill.

In order to provide means for dumping coal
 35 or other material carried in the car, a plural-
 ity of swinging doors *o* is provided, hinged at
 their inner ends to the sill portion and pro-
 vided with lateral edges *p*, inclined down-
 wardly and outwardly, as shown in Figs. 8
 40 and 9, to form a tapered joint where such
 doors meet the deck or floor-sections proper.
 To make a satisfactory hinge for such doors
 an integral metal plate is provided, formed
 of a body portion *q*, split so as to form an up-
 45 wardly-extending integral center portion *r*,
 which is riveted to the under surface of the
 A-shaped sill-cap, as shown in Fig. 6, and
 with loop portions *s* at each lateraledge, form-
 ing eyes for the pivot-pins *t*. It will be seen,
 50 therefore, that these hinges not only form the
 usual hinge, but also a strengthening-brace
 for the parts described.

To provide satisfactory end sills for the dis-
 tribution of the stress and shocks incident to
 55 use, U-shaped metal members *u* are provided,
 with their flanged portions *v* extending in-
 wardly toward the center sills, to which they
 are secured. Arranged outside of these end
 sills are the buffing-blocks or dead-wood *w*,
 60 reinforced at the lower portion by means of
 the angular plates *x*. To form the box of the
 car, vertical side boards *y* and end boards *z*
 are provided, made of commercial metal
 plate, and to hold these side and end boards
 65 in position a plurality of side posts *10* is pro-
 vided made of flanged metal of any desired
 cross-section and secured to the upper por-

tions of the cross-sills and to the inner face
 of the side sills, while a plurality of end
 posts *11* is provided and secured to the end
 70 sills and to the outer faces of the end boards,
 all of which insures the satisfactory distribu-
 tion of the strains and the holding of the
 freight material in the box-compartment.

To provide for further bracing the inner
 75 ends of the car, an inclined brace *12* is pro-
 vided, formed of metal plates secured to the
 lower inner ends of the end boards and to
 the inner upper ends of the end sills, as shown
 particularly in Fig. 3, which acts as a satis-
 80 factory brace to the parts and assists some-
 what in the dumping or discharging of the
 material.

We claim—

1. In a car of the class described, the com-
 85 bination of a center sill formed of two metal
 members flanged outwardly at their lower
 ends and inwardly at their upper lateral
 edges, a plurality of flanged metal strengthen-
 ing-pieces inserted therebetween and a metal
 90 A-shaped cap secured to the upper flanges
 and extending longitudinally thereof, and a
 plurality of flanged metal cross-sills connect-
 ed with and extending out from each side,
 substantially as described. 95

2. In a car of the class described, the com-
 bination of a flanged metal center sill, a plu-
 rality of flanged metal cross-sills connected
 with such center sill, a channel-beam with
 downwardly and inwardly inclined flanges
 100 secured to and straddling the upper portion
 of each cross-sill, and a plurality of swinging
 door portions having downwardly and in-
 wardly inclined lateraledge forming inclined
 joints where they contact the tapered portions
 105 of the channel-beams, substantially as de-
 scribed.

3. In a car of the class described, the com-
 bination of a center sill formed of two flanged
 metal members, flanged metal strengthening-
 110 pieces inserted therebetween and an A-shaped
 metal cap secured thereto and longitudinally
 therewith, a plurality of flanged metal cross-
 sills connected with and extending out from
 the outer sides thereof, a channel-iron cap
 115 having downwardly and inwardly inclined
 flanges secured to and straddling each cross-
 sill, and swinging doors hinged at their inner
 ends between each pair of cross-sills and pro-
 vided with downwardly and outwardly in-
 120 clined lateral edges, substantially as de-
 scribed.

4. In a car of the class described, the com-
 bination of a center sill formed of two metal
 side members having outwardly-extending
 125 lower flanges and upwardly and inwardly ex-
 tending upper flanges, a plurality of strength-
 ening-pieces inserted therebetween and an A-
 shaped metal cap secured thereto and extend-
 ing longitudinally therewith, a plurality of
 130 flanged metal cross-sills connected with and
 extending out from the outer sides thereof,
 a body-bolster at or near each end of the car
 secured to the lower flanges of the center sill,

a subbody bolster or filler secured to the upper portion of the body-bolster and to the outer sides of the center sill formed of a pair of flanged metal members, a channel-iron cap 5 having downwardly and inwardly inclined flanges secured to and straddling each cross-sill and subbody-bolster, and a plurality of downwardly - swinging doors arranged between each pair of the cross-sills and the sub- 10 body-bolster having downwardly and outwardly inclined lateral edges, substantially as described.

5. In a car of the class described, the combination of a center sill formed of a pair of 15 flanged metal members joined together, a plurality of flanged metal cross-sills connected with and extending out from the outer sides thereof, a body-bolster at or near each end of the car secured to the lower face of the center 20 sill, a subbody bolster or filler secured to and arranged above each body-bolster and secured to and extending out from the outer sides of the center sill, a channel-iron cap straddling such cross-sill and subbody-bolster, a downwardly-swinging door hinged at 25 its inner end and arranged between each pair of cross-sills and subbody-bolsters, and a U-shaped metal end sill at each end of the car with its flanges extending inwardly, substantially as described. 30

6. In a car of the class described, the combination of a center sill formed of a pair of 35 flanged metal members joined together, a plurality of flanged metal cross sills connected with and extending out from the outer sides thereof, a body-bolster at or near each end of the car secured to the lower face of the center sill, a subbody bolster or filler secured to and 40 arranged above each body-bolster and secured to and extending out from the outer sides of the center sill, a channel-iron cap straddling such cross-sill and subbody-bolster, a downwardly-swinging door hinged at its inner end and arranged between each pair of cross-sills 45 and subbody-bolsters, a U-shaped metal end sill at each end of the car with its flanges extending inwardly, side and end boards formed of metal plates, side posts secured to the cross-sills and the inside of the plate, and end posts 50 secured to the end sills and the outside of the plates, substantially as described.

7. In a car of the class described, the com-

bination of a center sill formed of a pair of flanged metal beams, cross-sills secured thereto and extending out therefrom, U-shaped 55 metal end sills with inwardly - extending flanges, vertical side and end boards formed of metal plates, side and end posts secured to the cross and end sills and such side and end boards, respectively, and inclined metal braces 60 secured to the lower inner faces of the end boards and end sills, substantially as described.

8. In a car of the class described, the combination of a center sill formed of a pair of 65 metal side members outwardly flanged at the lower portion and inclined upwardly and inwardly at the upper lateral edges, a plurality of flanged metal strengthening-pieces inserted therebetween and an A-shaped metal cap portion secured to the inclined upper flanges and 70 with its lateral edges extending downwardly and outwardly therefrom, a plurality of flanged metal cross-sills connected with and extending out from the outer sides thereof, 75 a plurality of swinging doors arranged between each pair of cross-sills, and hinges for such swinging doors formed of an integral metal plate with the body portion secured to the center sill an upwardly-extending central 80 portion secured to the A-shaped metal cap and loop portions at the lateral edges forming eyes for the pivot-pin, substantially as described.

9. In a car of the class described, the combination of a center sill formed of a pair of 85 flanged metal side members secured together, a plurality of flanged metal cross-sills secured thereto and extending from the outer side thereof, U-shaped metal end sills with their 90 flanges extending inwardly, vertically - arranged side and end boards formed of metal plates, a plurality of posts secured to the cross-sills and end sills and side and end plates respectively, and reinforcing angle - irons arranged outside of and secured to the upper 95 and lower portions of the side and end boards, substantially as described.

SPENCER OTIS.

GEORGE B. MALTBY.

Witnesses:

HARRY I. CROMER,

ANNA L. SAVOIE.