

**No. 677,352.**

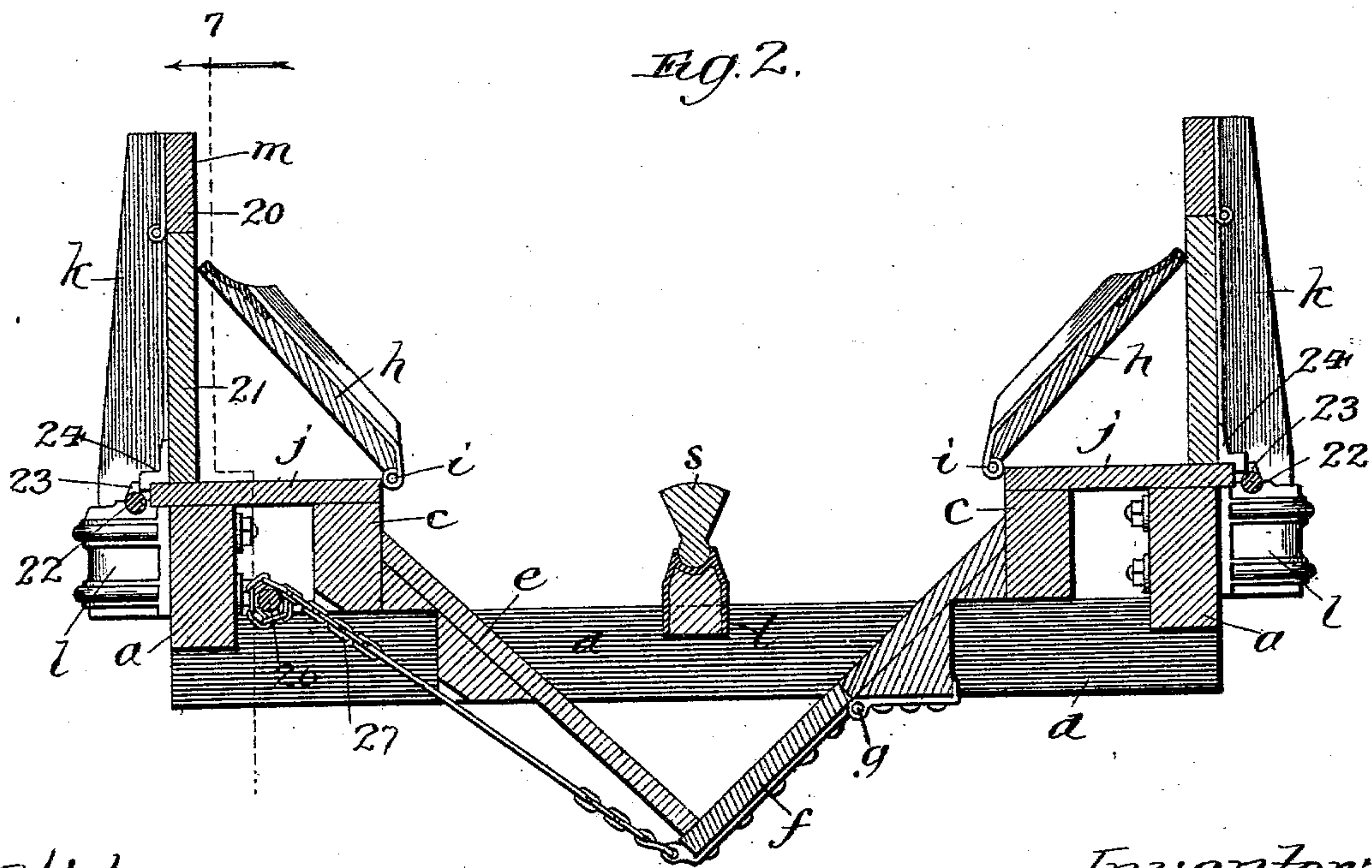
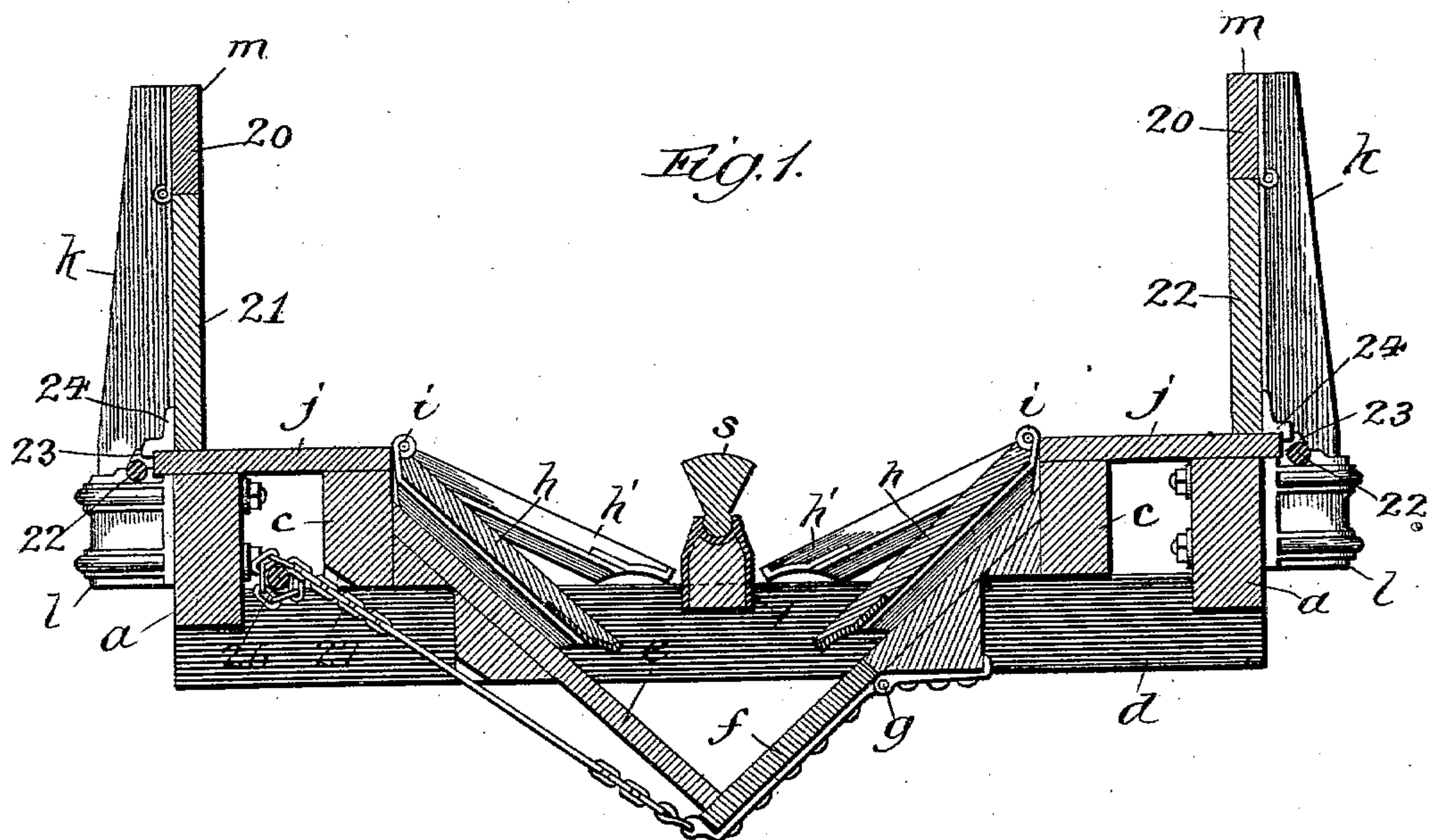
**Patented July 2, 1901.**

**H. S. HART.**  
**CONVERTIBLE DUMP CAR.**

(Application filed Mar. 22, 1901.)

(No Model.)

**6 Sheets—Sheet 1.**



Witnesses:  
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Inventor:  
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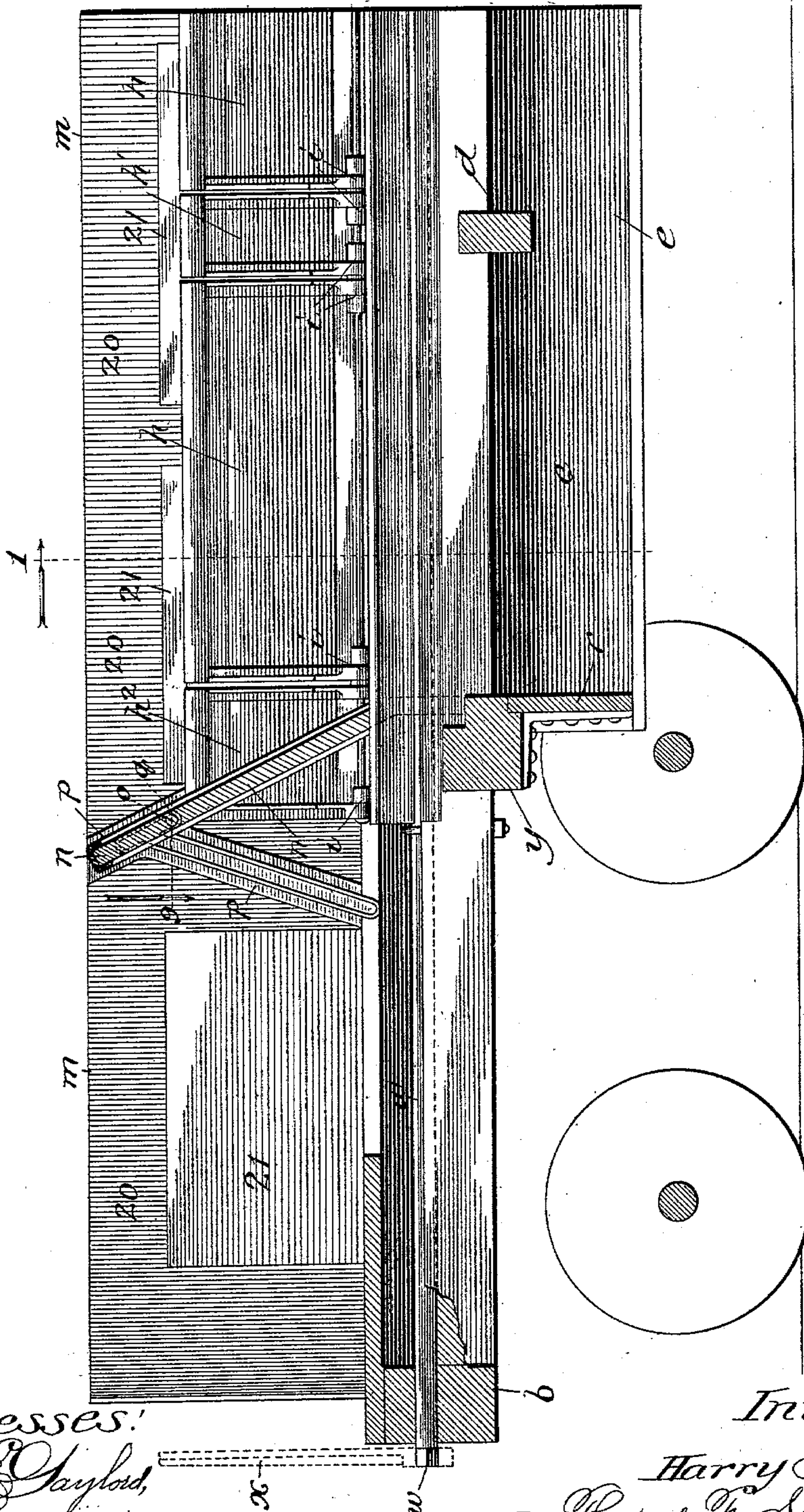
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(No Model.)

6 Sheets—Sheet 2.

Fig. 3



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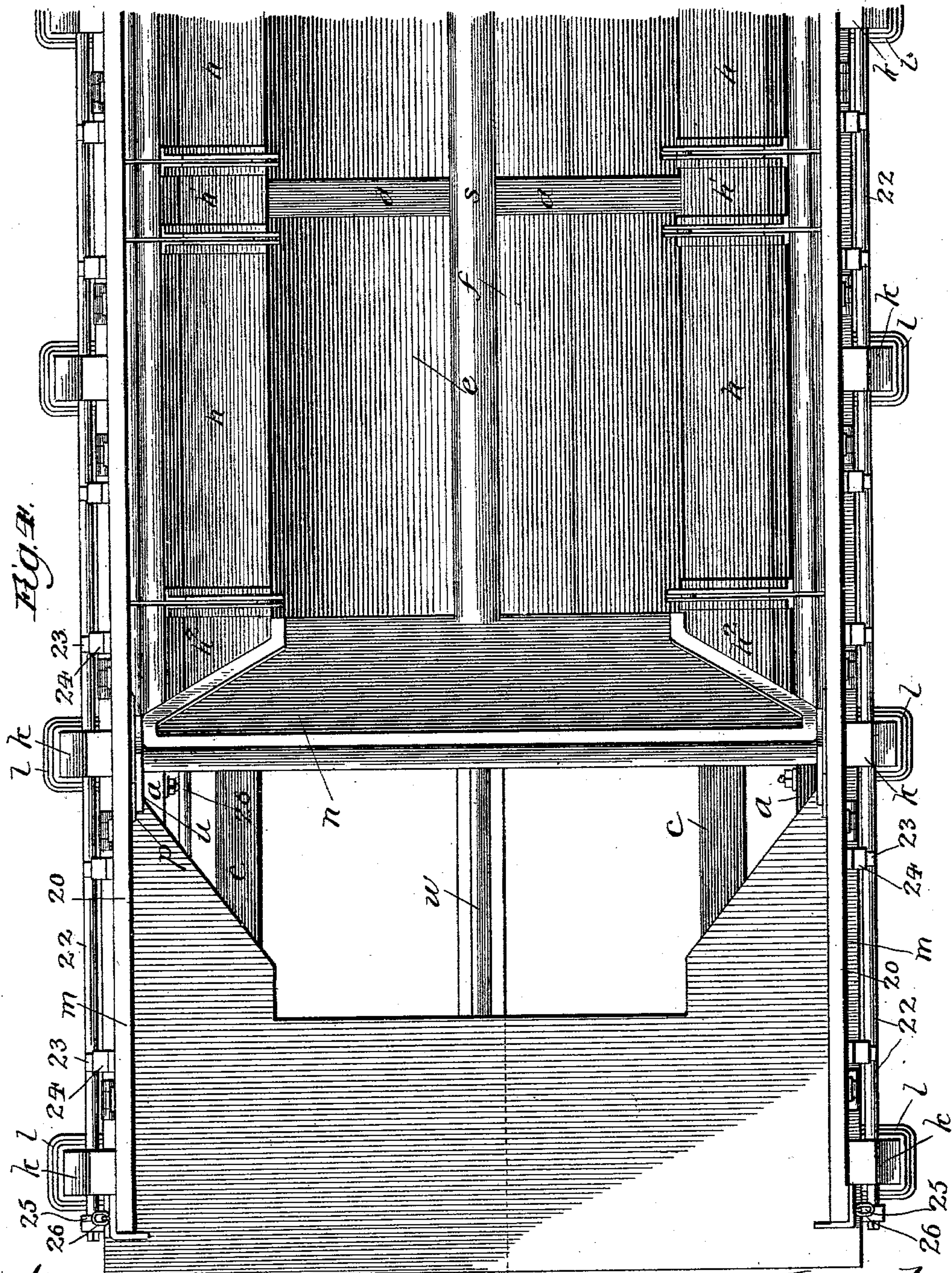
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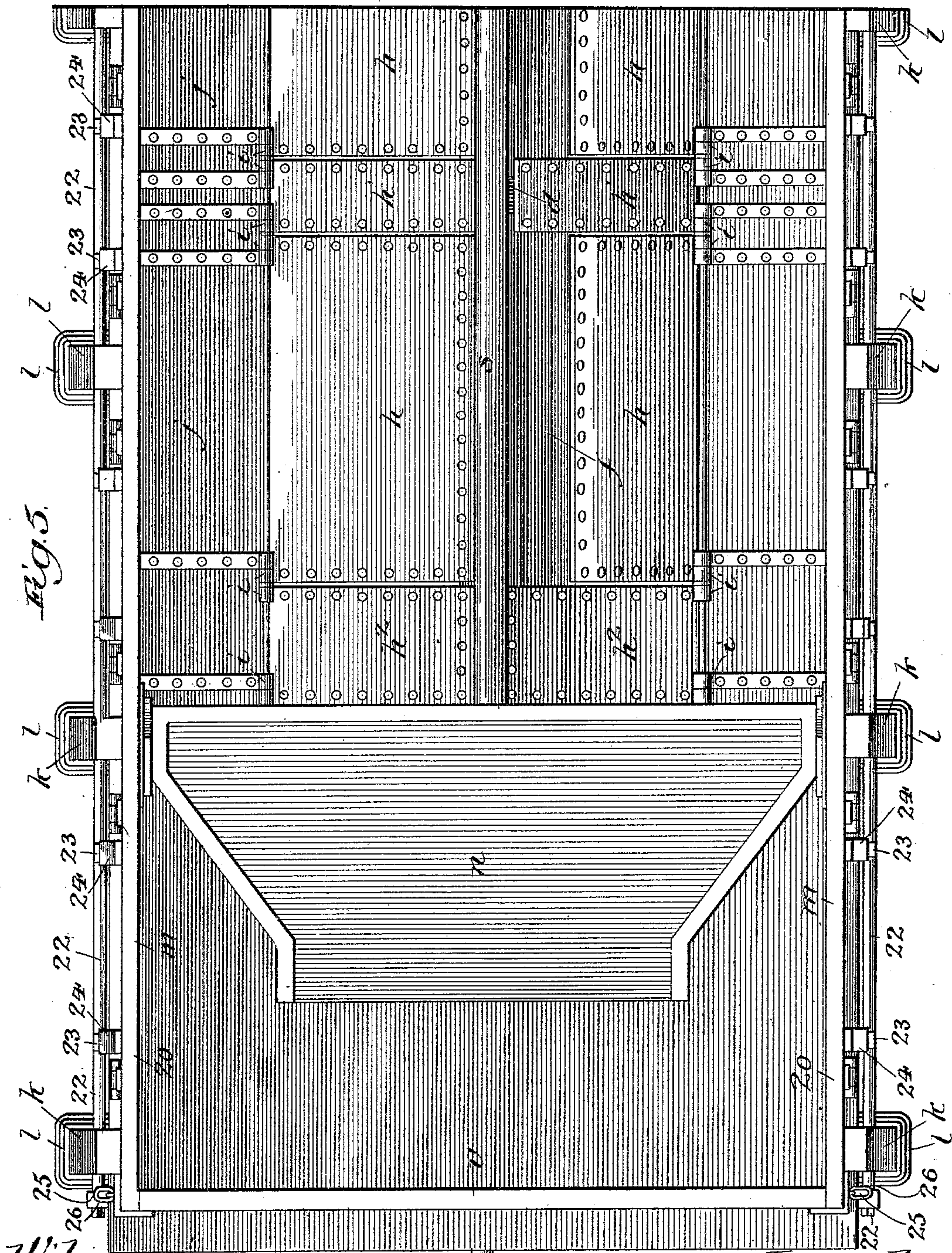
Patented July 2, 1901.

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(Application filed Mar. 22, 1901.)

(No Model.)

6 Sheets—Sheet 4.



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**No. 677,352.**

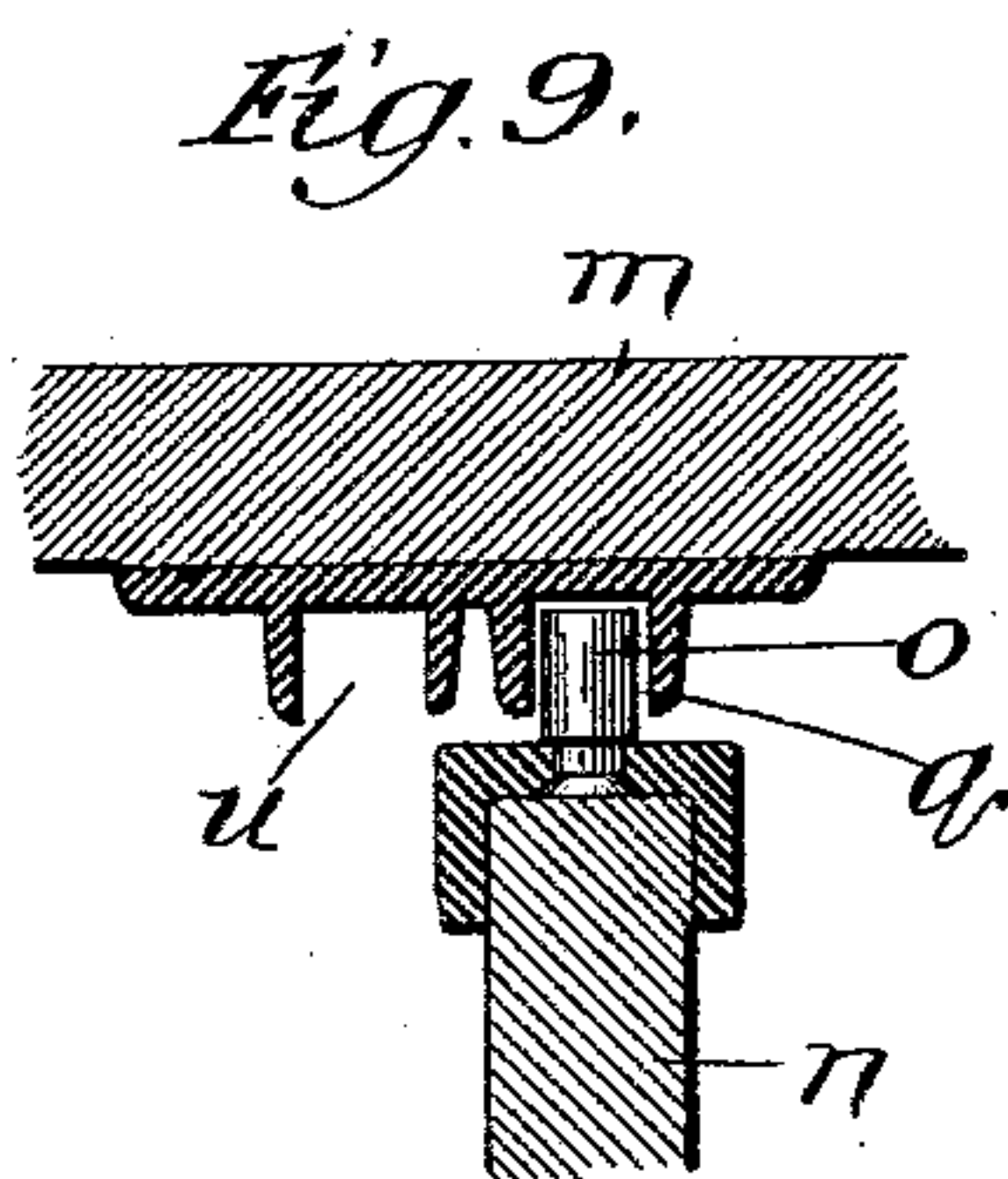
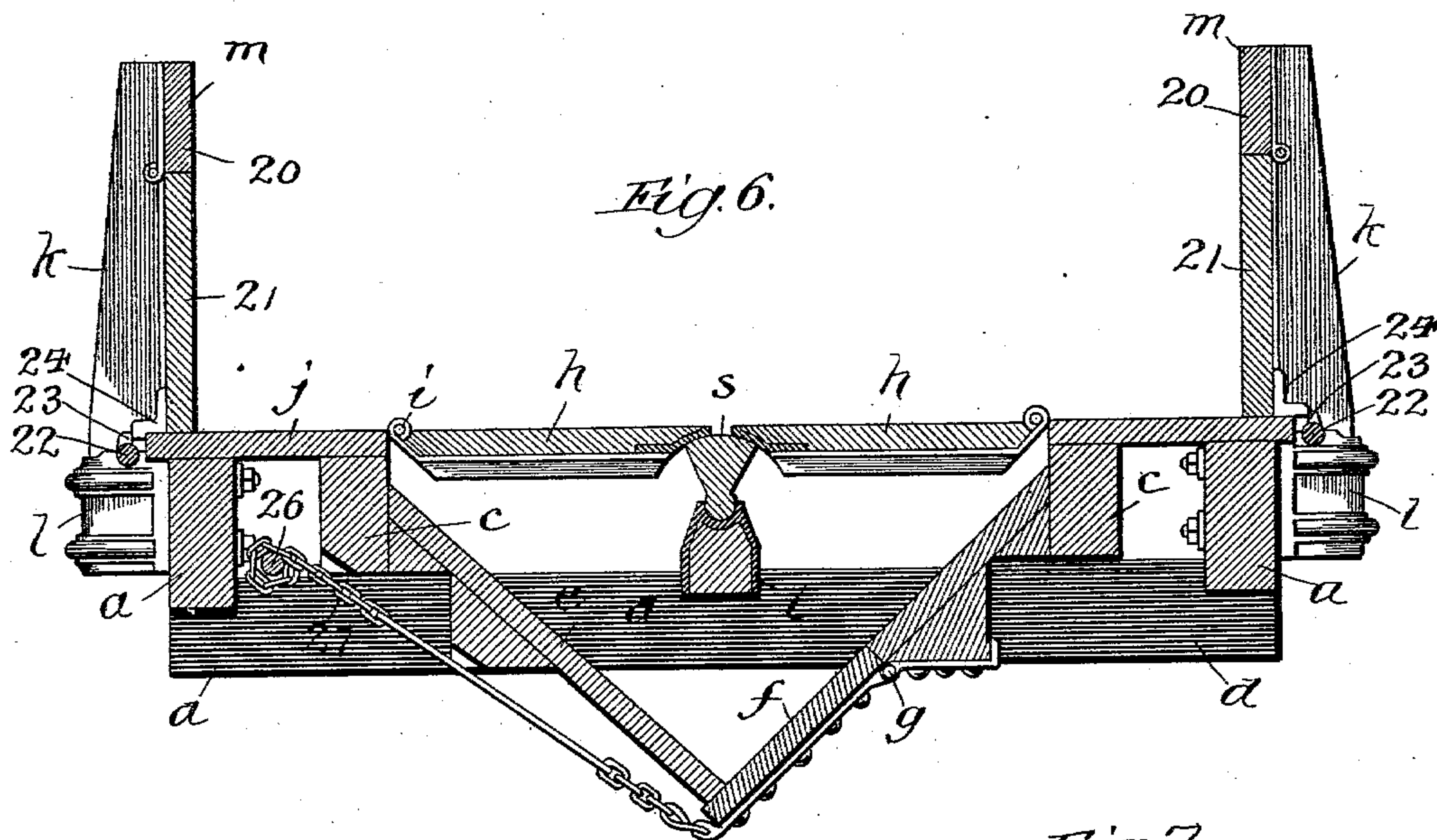
**Patented July 2, 1901.**

**H. S. HART.**  
**CONVERTIBLE DUMP CAR.**

(Application filed Mar. 22, 1901.)

(No Model.)

**6 Sheets—Sheet 5.**



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H. S. HART.  
 CONVERTIBLE DUMP CAR.

(Application filed Mar. 22, 1901.)

(No Model.)

6 Sheets—Sheet 6.

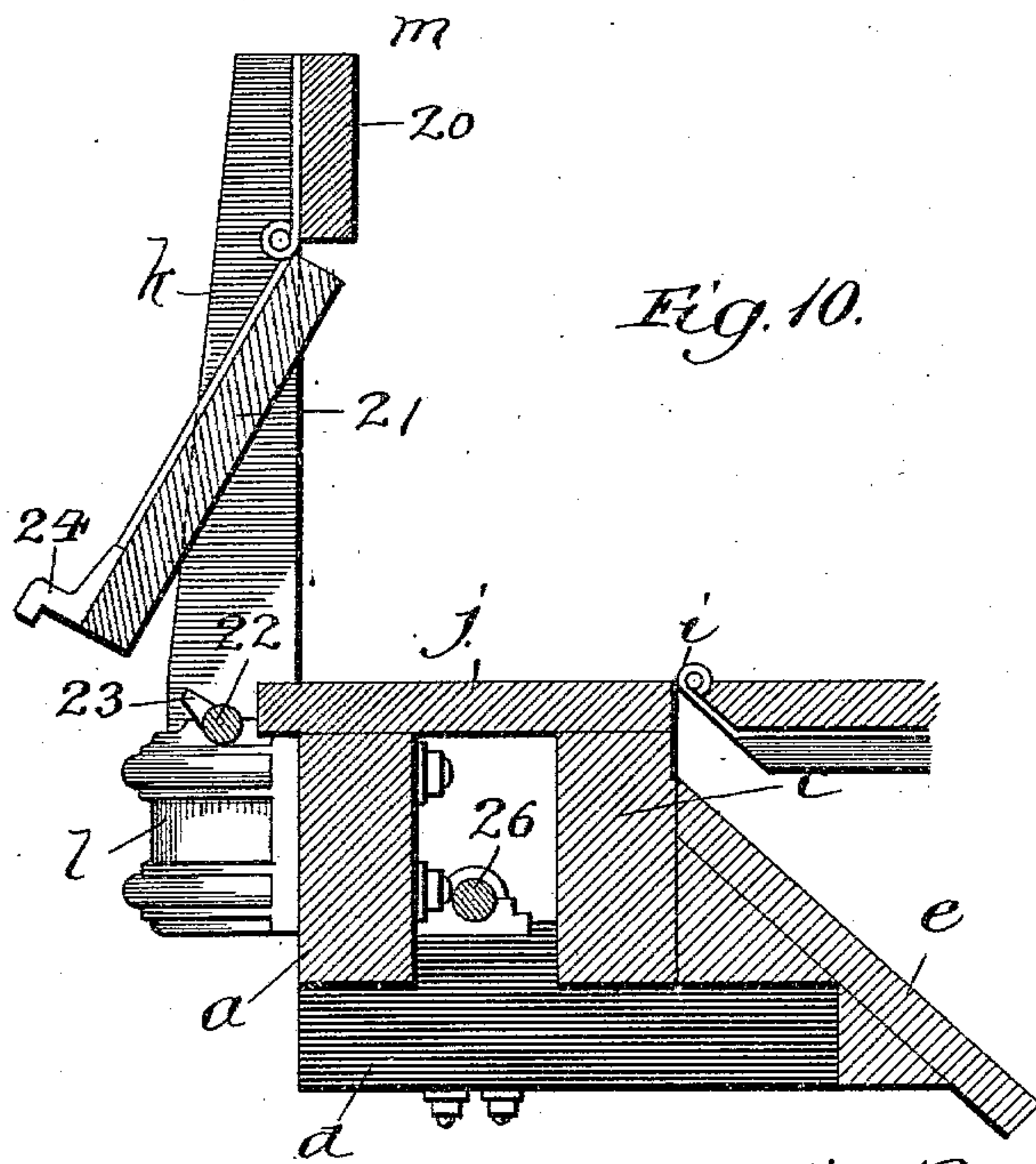


Fig. 10.

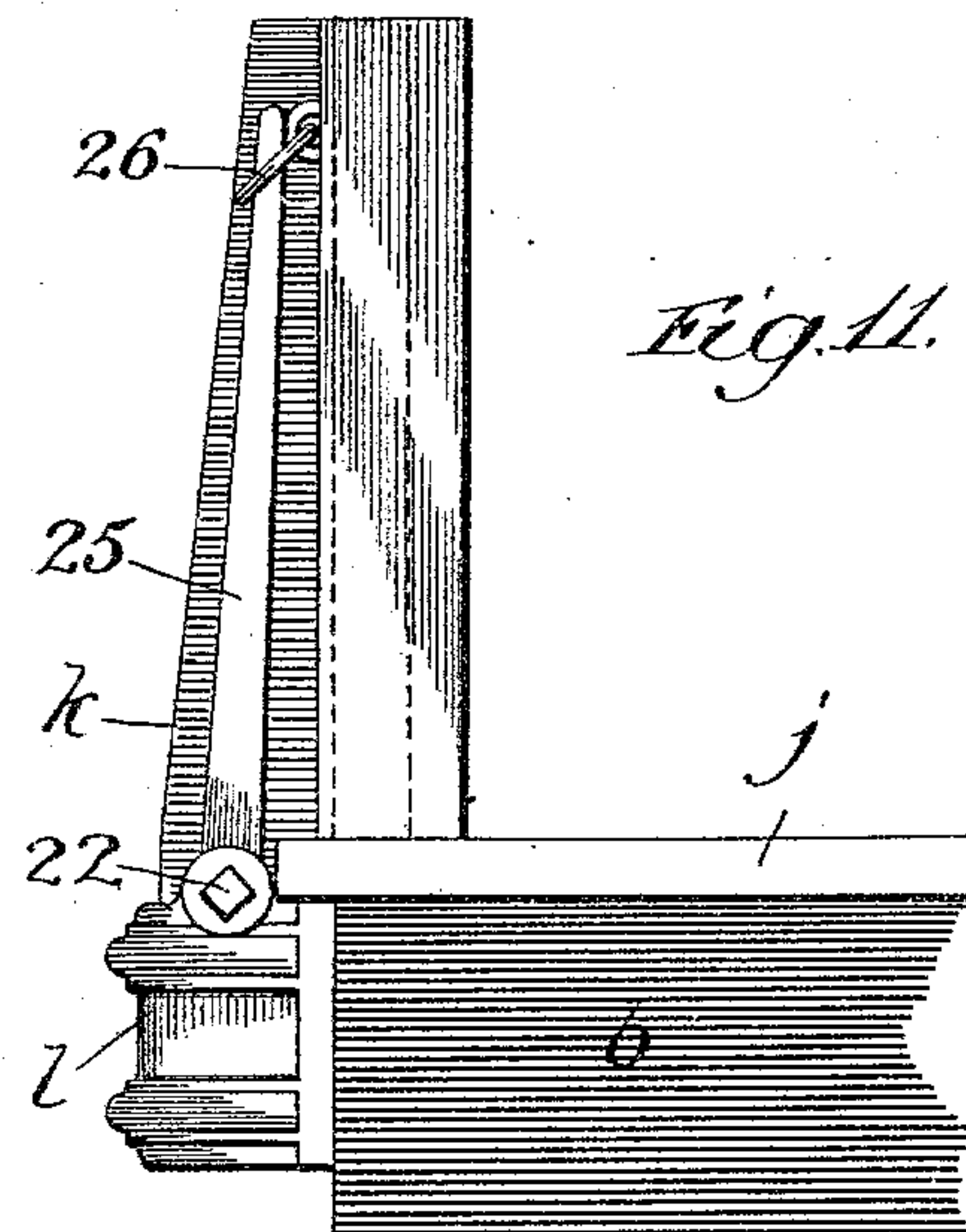


Fig. 11.

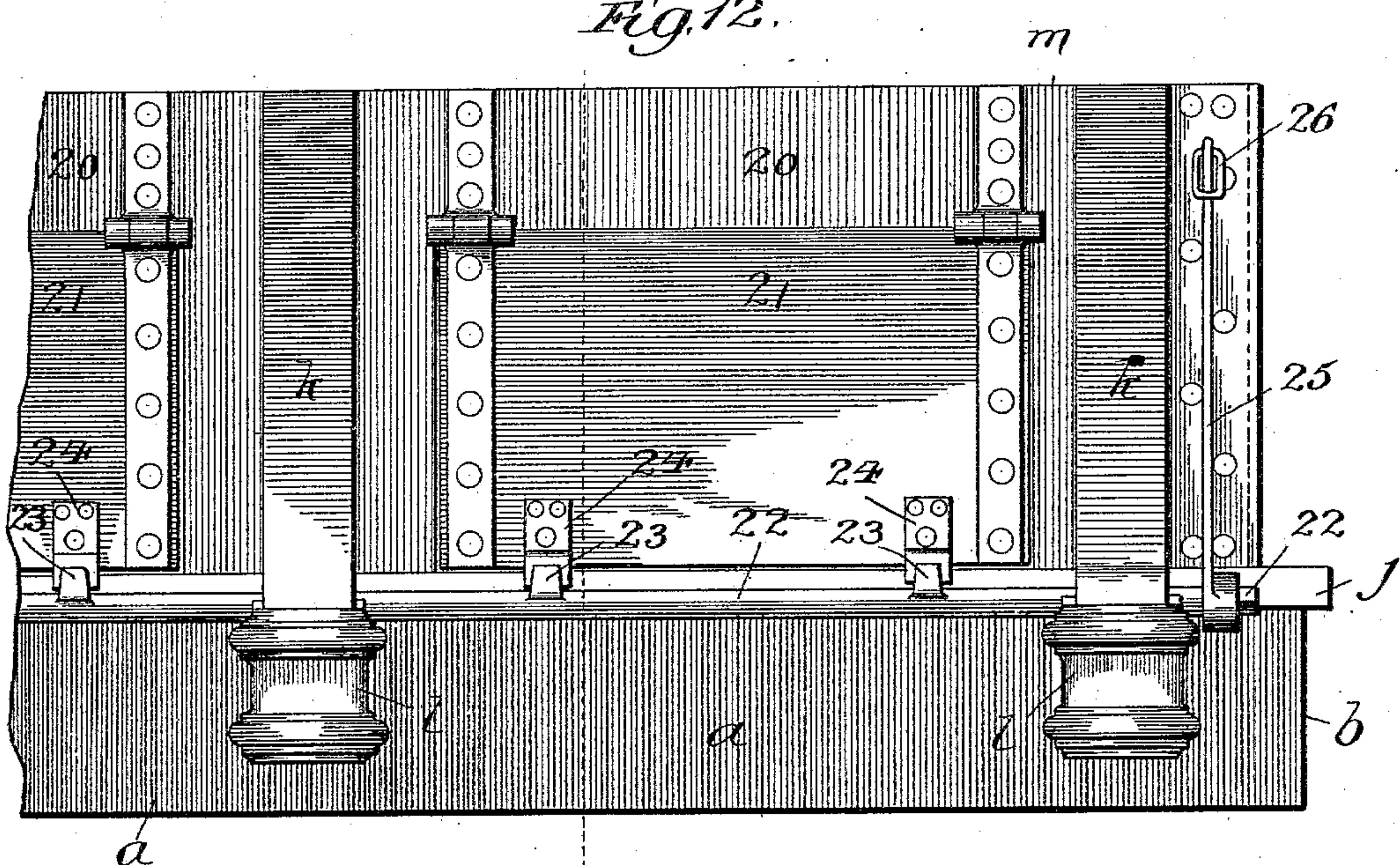


Fig. 12.

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# UNITED STATES PATENT OFFICE.

HARRY STILLSON HART, OF CHICAGO, ILLINOIS, ASSIGNOR TO RODGER BALLAST CAR COMPANY, OF SAME PLACE.

## CONVERTIBLE DUMP-CAR.

SPECIFICATION forming part of Letters Patent No. 677,352, dated July 2, 1901.

Application filed March 22, 1901. Serial No. 52,327. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY STILLSON HART, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Convertible Dump-Cars, of which the following is a specification.

My invention relates to that class of cars which is adapted to be used as a dump-car—*i. e.*, a hopper-car—and which is arranged to be converted into a gondola car—a car with a flat bottom and vertical sides—and particularly to the means by which the movable sections that form the inclined hopper sides at one time and the floor-bottom at another time are held in position, all of which will more fully hereinafter appear.

The principal object of the invention is to provide a simple, economical, and efficient convertible dump-car; and the invention consists in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a transverse sectional elevation of the body of a car constructed in accordance with my improvements, showing the movable sections in one position to form a dumping gondola car and taken on line 1 of Fig. 3 looking in the direction of the arrow; Fig. 2, a similar view showing the parts in position to form a hopper-car; Fig. 3, a longitudinal sectional elevation of one end of a car as it appears when constructed in accordance with these improvements and arranged to form a hopper-car, taken on line 3 of Fig. 4; Fig. 4, a plan view of one end of the car as it appears when constructed in accordance with these improvements and with the parts in position to form a hopper-car looking at it from above; Fig. 5, a similar view of the parts arranged to form a gondola car or car with a flat dumping-bottom; Fig. 6, a cross-sectional elevation of a car constructed in accordance with these improvements and showing the movable sections in position to form a flat-bottom gondola car; Fig. 7, a detail view of the side frame portion, showing the slotted guiding-plate for holding the inclined end sections in position; Fig. 8, an elevation of the end of one of the inclined end sections; Fig. 9, a lon-

gitudinal sectional detail taken on line 9 of Fig. 3, showing a portion of the side, slotted guiding-plate, and inclined end section with its supporting-trunnion; Fig. 10, an enlarged sectional detail showing one of the vertical swinging sides of the car in an open position; Fig. 11, a similar view showing it in its closed position; and Fig. 12, a side elevation of a portion of the side of the car, showing the sectional swinging vertical sides.

In the art to which this invention relates it is well known that there is a demand for a class of convertible cars which at certain seasons of the year can be used as ballast-cars—*viz.*, a car with inclined hopper sides arranged to carry and deposit ballasting material between the tracks in piles, so that it will not interfere with the running of the train—and that the car should be so constructed as to be capable of being used at other times as a flat-bottomed or gondola car for carrying coal and other materials. It is also desirable to have in this class of cars an arrangement by which the material in the gondola car can be discharged at each side thereof. In cases where it is desirable to carry and discharge gravel or similar material by means of a discharging-plow to form embankments the vertical sides of the car should be arranged to open in such a manner that as the plow is dragged from end to end of the car the material may be discharged at the sides. Again, gondola cars are also used for carrying coal, bearing ores, metal, and similar materials, and it is desirable to have the bottom arranged in such a manner that the material can be dumped therethrough.

The principal object, therefore, of the invention is to provide a convertible dump-car which will contain all the advantages above set forth—*i. e.*, a car that can be used as a dumping-hopper and gondola car or as a gondola car with swinging sides—all of which will more fully hereinafter appear.

In illustrating and describing these improvements it has been thought advisable to only show and describe so much as is old, in connection with what is new, as is necessary to properly disclose the invention, leaving out of consideration other and well-known



parts, which, if considered herein, would only tend to confusion, prolixity, and ambiguity.

In constructing a car in accordance with these improvements I provide a car having an underframing formed of two side sills *a*, tied together at their front ends by means of the end sills *b*, and which is also provided with intermediate sills *c*, running from end to end of the car. The car is also provided with transverse or needle beams *d*, which act to tie and support the side and intermediate sills together.

To provide for a ballast-car, I make a hopper portion which is formed of inclined sides made in two sections—one a fixed section *e*, forming the inclined sides of the lower portion of the hopper, with its apex arranged longitudinal of and at or near the center of the car, one side of which is provided with a single swinging door *f*, pivotally secured in position by means of the hinges *g*, and the other an upper inclined side *h* of the hopper, forming a movable side section thereof and which is provided with hinges *i*, hinged to the fixed flooring *j* of the car, which flooring is in turn secured in any usual manner to the side and intermediate sills. As shown in Figs. 2, 3, and 4, these parts are arranged to form a ballast-car, and while the inclined sides do not form a continuous incline it will be understood that they can be so arranged if it should seem desirable or necessary. To support the upper inclined sides in their open position, so as to form a ballast-car, the underframing is provided with side stakes *k*, arranged in the cast-iron sockets *l* and carrying the permanent side sections *m* of the car, as hereinafter more fully set forth. Where it is desirable, (and I will say I think it always preferable,) end portions *n* are provided and arranged at an incline at or near each end of the inclined sides, as shown particularly in Fig. 3, and at the upper portion thereof only. These end portions are provided (see Fig. 9) with trunnions *o*, which enter the grooves of a grooved holding and guiding plate *p* in the side of the car, as shown particularly in Figs. 3 and 7. When the parts are in the position shown in Figs. 3 and 4, these trunnions are in the offsets *q* of the grooved plate and act to hold and support the ends in an inclined manner. The ends of the lower portion of the hopper are closed permanently by means of end boards *r*, which are fixed thereto and held in the same position at all times.

When desired to use or convert the car into a gondola car, as shown in Fig. 6, the upper swinging sections of the hopper are folded inwardly, so as to rest upon a swinging center beam *s*, arranged longitudinally of the car and pivotally mounted in sockets *t*. The inclined end portions are first raised, so that they may be swung rearwardly toward the end of the car, and then lowered as the trunnions slide downwardly in the straight portion *u* of the grooved plate until they lie in a flat plane, as shown in Fig. 5, and cover

the opening 28 (Shown at the same place in Fig. 4.) The end of the car is provided with permanent ends *v*, as shown in Fig. 5, which are secured to the ends of each of the sides and which act to practically complete the gondola car.

It is desirable that means be provided by which any material in a gondola car may be dumped through the bottom thereof. To accomplish this result, the swinging center beam *s* is provided, having a bar or rod *w* extending out from either end thereof to the end of the car and at one end carrying a hand-lever *x*. By swinging this hand-lever first in one direction the swinging center beam is moved, so that one of the swinging sections *h* may drop down into the position shown in Fig. 1. By swinging the hand-lever now in the opposite direction the other swinging section *h* may also drop down and all of the material in the car descends into the hopper, from which it may be discharged through the door *f*, as in the case of a ballast-car. It is highly desirable that these swinging upper hopper side portions be made in several sections, so that the parts over the needle-beams, as shown at *h'* in Figs. 1 and 5, can strike the needle-beams and yet not act to prevent the other sections of the doors from swinging down against the lower fixed portion of the hopper to rest or be supported thereon; otherwise it will be seen that the load would not be discharged as efficiently as possible and that there would be too much of a load on the unsupported portions thereof. Other portions, as the swinging sections *h''*, which form the ends of the upper hopper portion, are arranged so as to remain in a flat plane on account of contacting cross-beams *y*, which are arranged at or near each end of the hopper. It is also desirable that means be provided when the car is used as a gondola car for the discharging of material through the sides of the car for the purpose of forming embankments or for any other purpose. In order to provide for this, the vertical side sections of the gondola car are made of two parts—one a fixed upper section 20, which is rigidly secured to the upper ends of the side stakes, and the other a lower portion arranged in the shape of sectional doors 21 and hinged to the upper portion. These vertical swinging side sections are arranged, as shown in Figs. 10, 11, and 12, to swing outwardly, and to hold them in locked position rock-shafts 22 are provided, having lugs 23 thereon adapted to engage with projections 24 on the swinging sides when in closed position and hold such doors locked, as shown in Figs. 1 and 2, but which may be rocked to release such projections, as shown in Fig. 10, and permit the doors to be swung outwardly. It will be seen that when the car is used as a gondola car and to discharge material through the sides the permanent ends may be removed and a discharging-plow drawn through the car, which acts to force the material out through the sides thereof.



To hold these rock-shafts in locked position and operate them whenever desirable or necessary, one end of each is provided with a hand-lever 25, which may be engaged by a link 26, fixed to one of the upper boards 20. The raising of this link permits the hand-lever to be moved outwardly to unlock the swinging side sections.

The discharging-door *f* at the bottom of the hopper is held in its locked position by means of a rotating shaft 26, around which is wound a chain 27, which is connected to the lower end of the discharging-door, as shown in Figs. 1, 2, and 6. This rotating shaft may be provided at one end with a ratchet and pawl (not shown) for holding it in its locked position.

I claim—

1. In a car of the class described, the combination of a supporting-frame portion, a hopper portion with its inclined sides made in two sections—one a fixed section forming the lower part of the hopper and provided with a discharging-door and the other an upper movable section arranged when in one position to form the upper portion of the inclined hopper side and in the other to form a flat dumping-platform, substantially as described.

2. In a car of the class described, the combination of a supporting-frame portion, a hopper with its apex arranged longitudinally of the car and its inclined sides made in two sections—one a fixed section forming the lower portion of the hopper secured to the frame and provided with a discharging-door and the other an upper movable section arranged in one position to form the upper portion of the inclined hopper sides and in another position to form a flat dumping-platform, and means for supporting such movable sections in both positions, substantially as described.

3. In a car of the class described, the combination of a supporting-frame portion, a hopper portion having its apex arranged longitudinally of the car near its center portion with the inclined sides thereof made in two sections—one a lower section rigidly secured to the frame portion and the other foldably secured thereto so that it may be laid in a flat plane to form a dumping platform or bottom of a car or inclined to form a portion of the hopper sides, and means for supporting this foldable section in a flat plane and permitting it to swing downwardly to discharge the material therethrough, substantially as described.

4. In a car of the class described, the combination of a supporting-frame portion, a hopper portion having its apex arranged longitudinally thereof near the center of the car with its inclined side portions made in two sections, the lower rigidly or immovably secured to the frame of the car and provided with a discharging-door forming a portion of the incline and the upper foldably secured thereto at or near the floor-level so that it

may be laid in a flat plane to form the bottom of a car or inclined to form a portion of the hopper, and movable means for supporting the foldable side sections in a flat plane to form a floor or permit them to drop down and discharge material therethrough or between them, substantially as described.

5. In a car of the class described, the combination of a supporting-frame portion, a hopper portion having its apex arranged longitudinally of the car and near the center thereof and with a discharging-door at its lower portion, the inclined sides thereof being made in two sections foldably secured together and the upper section arranged to be laid in a flat plane to form the bottom of a car or inclined to form a portion of the hopper, and a rocking center beam arranged longitudinally of and near the center of the car by which the movable sections of the hopper are supported to form a flat bottom and which may be rocked to one side or the other to permit such sections to drop downwardly and discharge the material between them, substantially as described.

6. In a car of the class described, the combination of a side supporting-frame portion, a hopper having its apex arranged longitudinally thereof near the center with its inclined sides made in two sections, the lower rigidly or comparatively immovably secured to the frame of the car and provided with a discharging-door forming a portion of the incline and an upper section foldably secured thereto so that it may be laid in a flat plane or inclined to form the upper portion of the hopper, a rocking center beam arranged longitudinally of and near the center of the car to support the foldable sections of the hopper in a flat plane and which can be swung from side to side to permit them to drop down and discharge material between them, and inclined end portions movably secured to and in the car sides, substantially as described.

7. In a car of the class described, the combination of a side supporting-frame portion, a hopper having its apex arranged longitudinally thereof near the center with its inclined sides made in two sections—a lower section rigidly or immovably secured to the frame of the car and provided with a discharging-door forming a portion of the incline and an upper section foldably secured thereto so that it may be laid in a flat plane to form the bottom of a car or inclined to form a portion of the hopper side, vertical sides secured to the car-frame and provided with grooved guiding portions therein, and inclined end portions provided with projections engaging the grooved portions of the vertical sides to hold them in an inclined upper position to complete the hopper and permit such ends to be moved and laid in a flat plane, substantially as described.

8. In a car of the class described, the combination of a supporting-frame portion, vertical sides secured thereto and provided with



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 swinging sections adapted to be swung outwardly, means for locking and holding such sections in closed position, a hopper portion having its apex arranged longitudinally of the car near its central portion with its sides made in two sections—a lower section immovably secured to the car-frame and provided with a discharging-door forming an inclined part thereof and upper sections foldably secured to the latter sections to complete the flat floor in one position and inclined to form a portion of the hopper sides in the second position, and inclined ends movably secured to the vertical sides of the car, substantially as described.

9. In a car of the class described, the combination of a supporting-frame portion provided with immovable floor-sections, vertical sides made in two sections—an upper fixed section and a lower swinging section arranged to be swung outwardly, means for holding the swinging sections of the vertical sides in their closed position, a hopper portion having its apex arranged longitudinally of the car near its central portion with its inclined sides made in two sections—a lower section immovably secured to the car-frame and provided with a discharging-door forming an inclined part thereof, and an upper section foldably secured thereto to complete the floor portion in one position and inclined to form a portion of the hopper in the second position, and a rocking center beam to support the swinging sections of the hopper in a flat plane and arranged to be rocked from side to side to permit such swinging sections to

drop down and discharge such material between them, substantially as described.

10. In a car of the class described, the combination of a supporting-frame portion provided with immovable floor-sections, vertical sides made in two sections—an upper fixed section and a lower swinging section arranged to be swung outwardly, means for holding the swinging sections of the vertical sides in their closed position, a hopper portion having its apex arranged longitudinally of the car near its central portion with its inclined sides made in two sections—a lower section immovably secured to the car-frame and provided with a discharging-door forming an inclined part thereof and an upper section foldably secured thereto to complete the floor portion in one position and inclined to form a portion of the hopper in a second position, a rocking center beam to support the swinging sections of the hopper in a flat plane and arranged to be swung from side to side to permit such sections to drop down and discharge such material between them, grooved guiding portions secured to the vertical sides of the car near each end and at the inner side thereof, and inclined hopper ends provided with projections engaging the grooved guiding portions of the vertical sides by which they are supported and in which they are moved from an inclined to a flat plane or vice versa, substantially as described.

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