

No. 708,698.

Patented Sept. 9, 1902.

J. M. DODGE.  
HORIZONTAL CONVEYER.

(Application filed Jan. 8, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

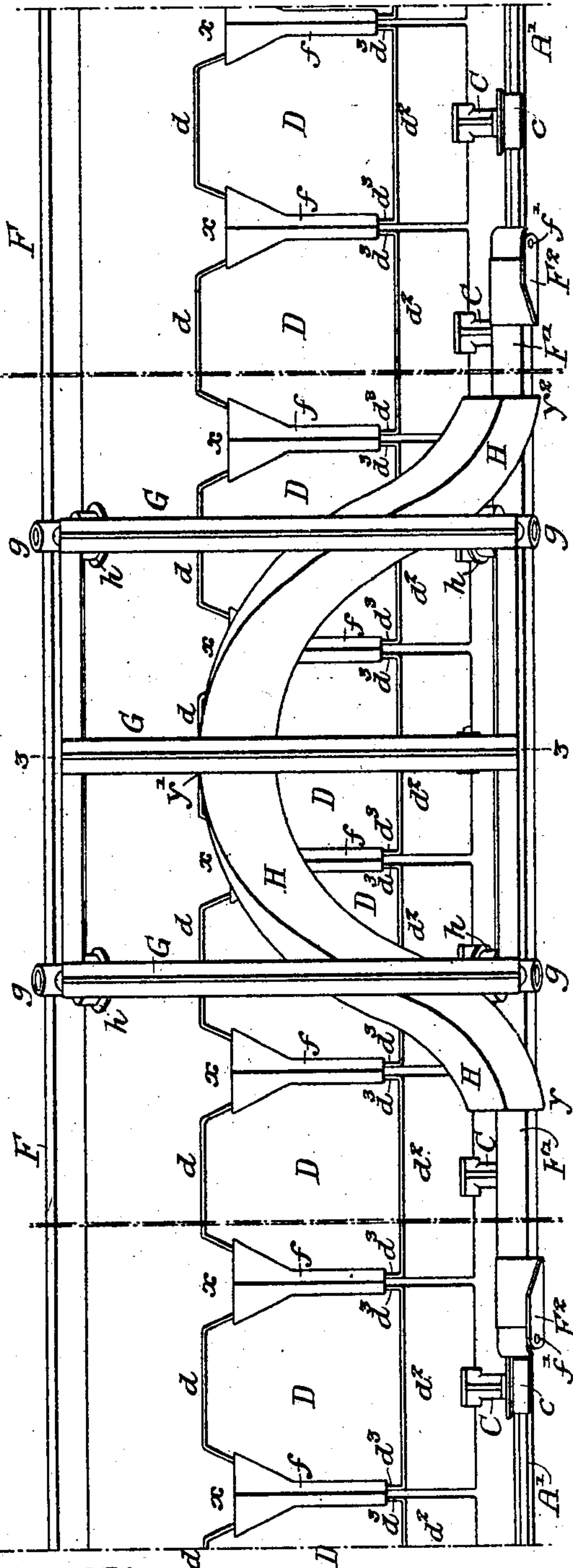
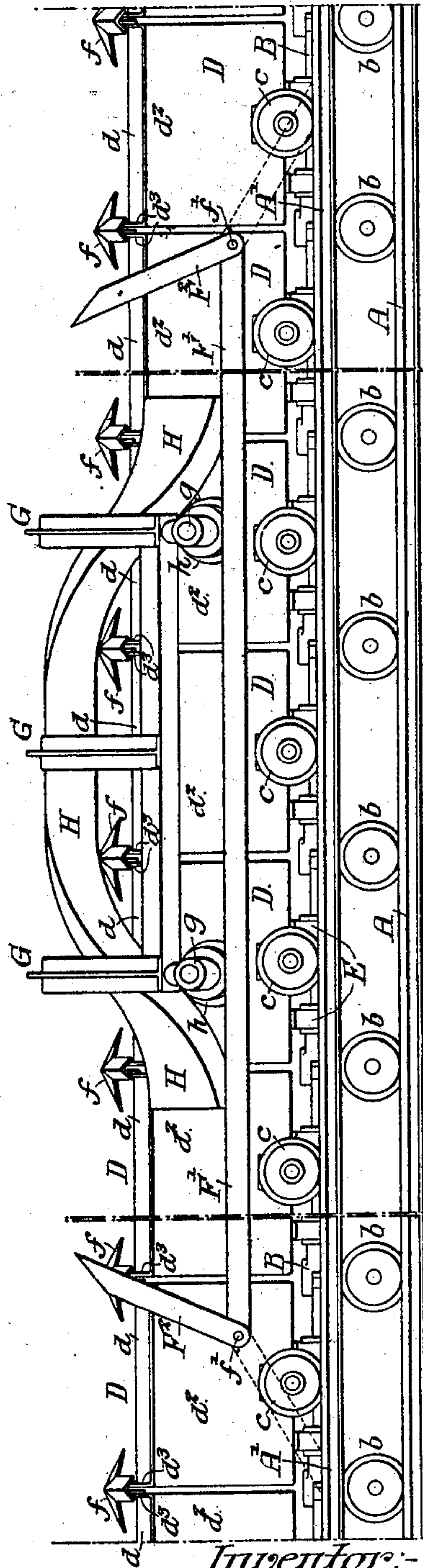


Fig. 2.



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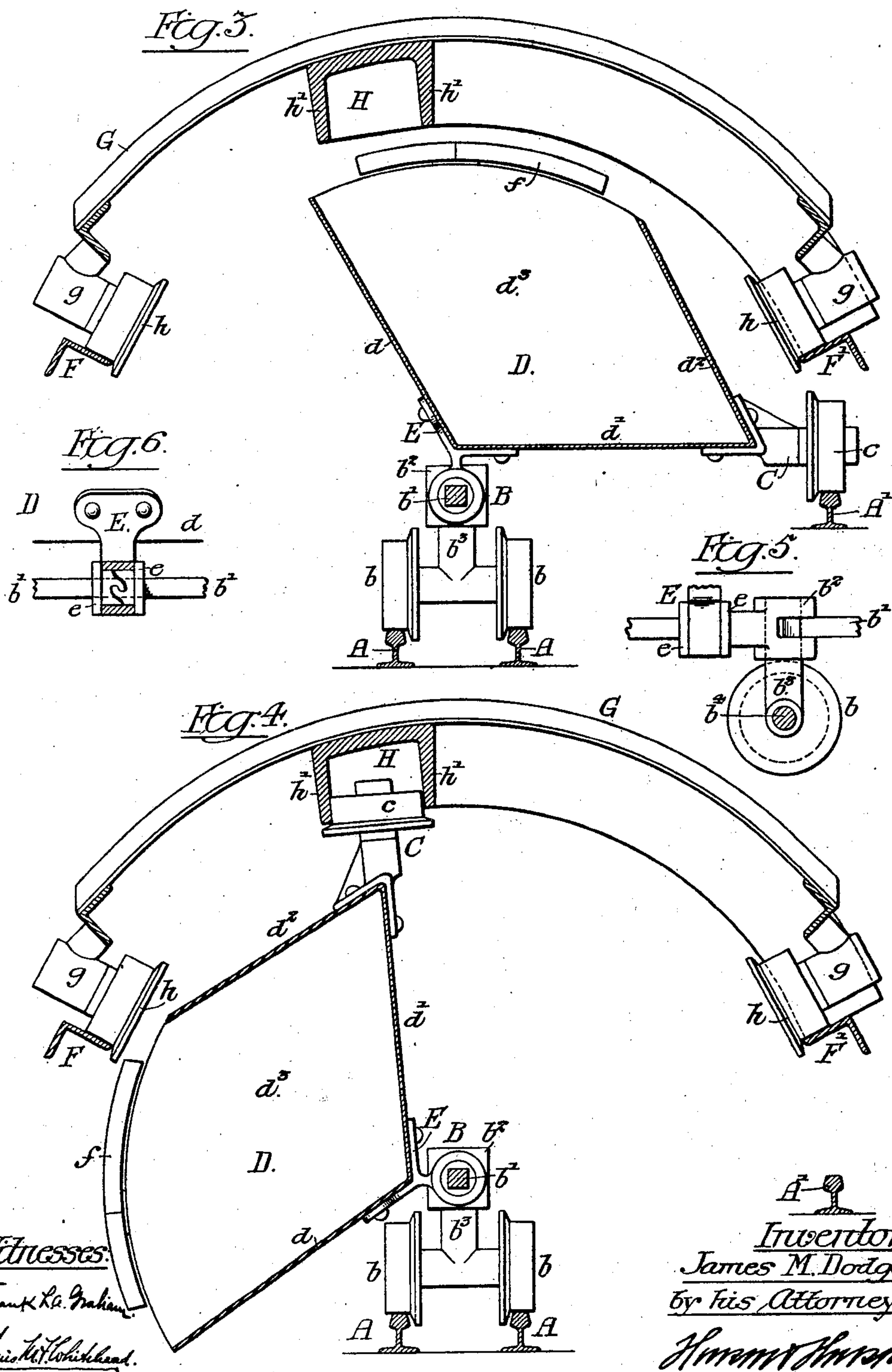
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*Witnesses:*

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# UNITED STATES PATENT OFFICE.

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## HORIZONTAL CONVEYER.

SPECIFICATION forming part of Letters Patent No. 708,698, dated September 9, 1902.

Application filed January 8, 1901. Serial No. 42,533. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES M. DODGE, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain  
5 Improvements in Horizontal Conveyers, of which the following is a specification.

My invention relates to certain improvements in endless-chain conveyers of the type in which the buckets or carriers are pivoted  
10 to the chain and so arranged that they can be discharged at any predetermined point.

The object of my invention is to simplify the conveyers of this type and to support the chain throughout its length, the support for  
15 the chain being the main support for the buckets, and to provide means whereby the buckets can be turned on the chain as a pivot to discharge at any predetermined point.

In the accompanying drawings, Figure 1 is  
20 a plan view of sufficient of an endless-chain conveyer to illustrate my invention. Fig. 2 is a side view of Fig. 1. Fig. 3 is a section on the line 3 3, Fig. 1. Fig. 4 is a view similar to Fig. 3, illustrating the bucket in the  
25 discharge position; and Figs. 5 and 6 are views of details of my invention.

A A are two rails upon which travel the wheels *b b*, mounted on the endless chain B.

A' is a rail upon which travels the wheel *c*, carried by the bracket C, secured to the bucket D. The rails A A A' support the conveyer as it is traversed.  
30

The endless chain I prefer to use is what is known as the "monobar" chain, being made  
35 of a series of single links *b'*, connected together by hinge-joints *b''*, so that the chain can readily turn corners, but is otherwise rigid. Depending from the head of each link is a bearing *b'''*, in which the axle *b''''* of the  
40 wheel *b* is mounted. Thus the chain B is supported at intervals throughout its length by the rails A. In fact, in the present instance each link of the chain has its support.

The buckets D are preferably made as shown  
45 in Figs. 1 and 3, each being quadrangular in shape and having an inclined front plate *d*, united to the bottom plate *d'* at a point directly above the chain B, and the back plate *d''* is inclined on the same line as the front  
50 plate *d*. The bracket C is attached at the

junction of the bottom *d'* and the back plate *d''*, and the bracket E is attached at the point where the front plate *d* unites with the bottom *d'*. This bracket is pivoted to the chain B. In the present instance I have shown two  
55 brackets on each link of the chain, and the two brackets are secured to a single bucket, as it will be understood that there is a bucket in the present instance for each link of the chain, although in some instances there may  
60 be an intermediate link to which a bucket is not pivoted; but for compactness I prefer the construction illustrated in the drawings. In the present instance the link of the chain is square in cross-section, as shown in Figs. 3  
65 and 6, and I mount on this square link a bushing *e*, made in halves, each having tongues which are coupled together, as shown in Fig. 6, and upon which the bearing E is pivoted. The two halves of the bushing are first placed  
70 in the bearing E and then slipped onto the square link. The sides *d'''* of the buckets are parallel for a certain distance and are contracted at the forward end, so as leave a space  
75 *x* between the outer end of each bucket to enable the conveyer to turn corners. The amount of space required will depend upon the abruptness of the turn.

In this type of conveyer the travel is intended to be upon a horizontal plane, the re-  
80 turn run traveling in the same plane as the carrying run, although in some instances the conveyer may be slightly inclined and the plane of the return run may be slightly below or above the plane of the carrying run; but  
85 where possible it is preferable to have the two runs on the same plane.

The upper edge of each side *d'''* of each bucket is curved on a radius taken from the chain as the center, and on one side of each bucket is  
90 a hood *f*, which overlaps the edge of the adjoining bucket, and the upper surface of this hood is inclined, as shown, so that any material which is discharged from a hopper or chute striking the hood will be deflected into  
95 either one or the other of the buckets. By using this hood a hopper from which the material continuously flows may be used without the liability of any material passing to waste between the buckets.  
100



By constructing the buckets in the manner shown the weight is distributed between the rails A A and the rail A', the major portion of the load, however, being carried by the two rails A A through the chain B; but in this manner I can construct a conveyer that can be traversed rapidly without the liability of tipping and one which can be readily tipped, however, when desired.

I will now describe the mechanism for discharging the bucket at any point throughout the length of the conveyer.

On each side of the conveyer, running parallel with the rails A A', are rails F F', made in the present instance of angle-bars. These rails F F' are above the line of the rails A A', and in the present instance the rail F' is directly above the rail A'.

G is a metal frame suitably braced and having bearings *g g* on each side, in which are mounted the axles of the flanged wheels *h h*. The bearing-face of the rails is preferably on an incline, so that when the wheel *c* is traversed from the rail A' to the rail F' it will have a full bearing on said rail, and the rail F' is preferably arranged to conform to the rail F'.

On the frame G is a curved channel H, made, preferably, of a casting, having flanges *h' h'* and curved from a point *y*, Fig. 1, at the rail F' to a point *y'* over the line of the bucket D and back again to the point *y*<sup>2</sup> at the rail F'. The channel is of sufficient width for the wheel *c* to travel in, as clearly shown in Fig. 4, and the curve is so proportioned that the bucket will be gradually tipped as the wheel *c* passes through the channel H.

At each end of the rail F' is a switch-rail F<sup>2</sup>. (Shown clearly in Figs. 1 and 2.) The switch-rail is pivoted at *f'* to the rail F' and is arranged to be turned down upon the rail A', and the rail F' is such a distance above the rail A that when the switch-rails are raised, as shown in Fig. 2, the conveyer will travel under the rail F' and the buckets will not be discharged; but if it is desired to discharge the buckets at this point the switch-rail is turned down, as shown by dotted lines in Fig. 2, and the wheels *c* of each bucket will be transferred from the rail A' up the inclined switch-rail F<sup>2</sup> upon the rail F', and as the curved channel-rail H is in line with the rail F' the wheel *c* will be transferred from the rail F' to the channel-rail H, and this channel-rail being curved, as described and shown, the movement of the wheel *c* along the channel-rail will gradually tip the bucket to the position shown in Fig. 4, so as to discharge its contents. By a continued movement of the conveyer the wheel passes from the channel to the rail F' and from the rail F' to the rail A', so that the bucket will assume its position again, as shown in Fig. 3. By raising the bucket to the rail F' the bucket is in position to be more readily tipped at the curved channel-rail H, and this channel-rail can therefore be made abrupt, as it takes very

little power to overbalance the bucket to discharge it.

By mounting the frame G, which carries the channel-rail H, on the wheels *h h* the channel-rail can be moved to any point desired on the rails F F', so that if the conveyer is used to load material into bins the rails F F' can be the length of the bins and the frame G can be moved along the bins to discharge the material carried by the buckets into any bin desired.

The above-described invention is of the same type as that described by me in an application for patent filed February 6, 1901, Serial No. 46,218, and in which I have broadly claimed a horizontal conveyer consisting of a chain with buckets or carriers and means for turning the buckets on the chain to any predetermined point.

By this invention I support the chain on suitable rails directly and support the buckets through the chains, the chains being simply an endless series of trucks, the inner end of each bucket, however, being supported on the guide-rail, and I provide a tipping means which can be moved to any point desired without discharging the buckets.

I claim as my invention—

1. The combination of a chain, a carrier therefor, buckets having one or more brackets pivoted to the chain, each bucket having a bottom extending from a point above the chain to one side thereof, a bracket secured to the inner end of the bucket, a wheel carried by the bucket, and a rail upon which the wheel travels, the outer end of the bucket being inclined and the inner end of the bucket being on the same incline as the outer end of the bucket, substantially as described.

2. The combination in an endless chain made up of a series of links, means for supporting the said chain, a series of buckets pivoted to the chain, a rail for supporting the bucket on one side of the chain, a second rail mounted above the first rail, a switch for transferring the bucket from the lower to the upper rail, and a discharge device for tipping the bucket, substantially as described.

3. The combination of an endless chain, supports therefor, buckets pivoted to the chain, a wheel on the inner end of each bucket, a rail on which the wheel travels so as to support the bucket on one side of the chain, a movable discharge device consisting of a frame mounted on longitudinal rails, and a curved channel-rail, with means for transferring the wheel of each bucket from the supporting-rail to the curved channel-rail, substantially as described.

4. The combination of two rails arranged side by side, an endless chain B, brackets depending from the chain, wheels having their axles mounted in the brackets, said wheels arranged to travel on the rails, a series of buckets pivoted to the chain so as to swing laterally on the chain, brackets on the inner



end of each bucket, a wheel carried by each bracket, a rail A' upon which the wheels travel so that the load is carried by the rails A and A', rails F and F', a frame mounted on the said rails F, F', a curved rail mounted on the frame, switch-rails for transferring the wheels from the rail A' to the rail F', so that the wheels of the buckets will travel on the rails F', and on the curved rail to turn the buckets on their pivots and discharge the same, substantially as described.

5. The combination of an endless chain, a support therefor, buckets longitudinally pivoted on the chain, a rail supporting the inner end of each bucket, a rail mounted above the said supporting-rail, switch-rails for transferring the buckets from the supporting-rail to the upper rail, a frame longitudinally movable, and a channeled tipping-rail carried by the said frame and arranged to turn each bucket on the chain to the discharge position, substantially as described.

6. The combination of an endless chain made up of a series of links, wheels mounted on each link of the chain, two rails upon which the wheels travel, a bucket pivoted to each link of the chain, a wheel mounted on the inner end of each bucket, a rail upon which the wheel travels so that the load is supported by the three rails, rails parallel with the supporting-rails, a frame having wheels arranged to travel on the said rails, a curved tipping-rail carried by the frame,

switch-rails at each end of the rail directly above the single supporting-rail so that the wheels at the rear end of the buckets will travel first on the supporting-rail, then upon the rail directly above the supporting-rail, and then upon the tipping-rail to the discharge-point, causing the contents of the buckets to be discharged, and back again to the supporting-rails, substantially as described.

7. The combination of an endless chain made up of a series of links, a bucket pivoted to each link, each bucket having one or more brackets, bushings on the links upon which the brackets are mounted, said bushings made in two parts coupled together, substantially as described.

8. The combination in an endless-chain conveyer, of a chain made up of a series of links pivoted together, the links being quadrangular in cross-section, a two-part bushing on each link, each part having a flange and a square opening adapted to the square link and means for coupling the parts together, a bucket, and a bracket on the bucket mounted on the bushing, substantially as described.

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

JAMES M. DODGE.

Witnesses:

WILL. A. BARR,  
JOS. H. KLEIN.