

(No Model.)

2 Sheets—Sheet 1.

J. M. DODGE.
CONVEYER TROUGH BOTTOM.

No. 446,436.

Patented Feb. 17, 1891.

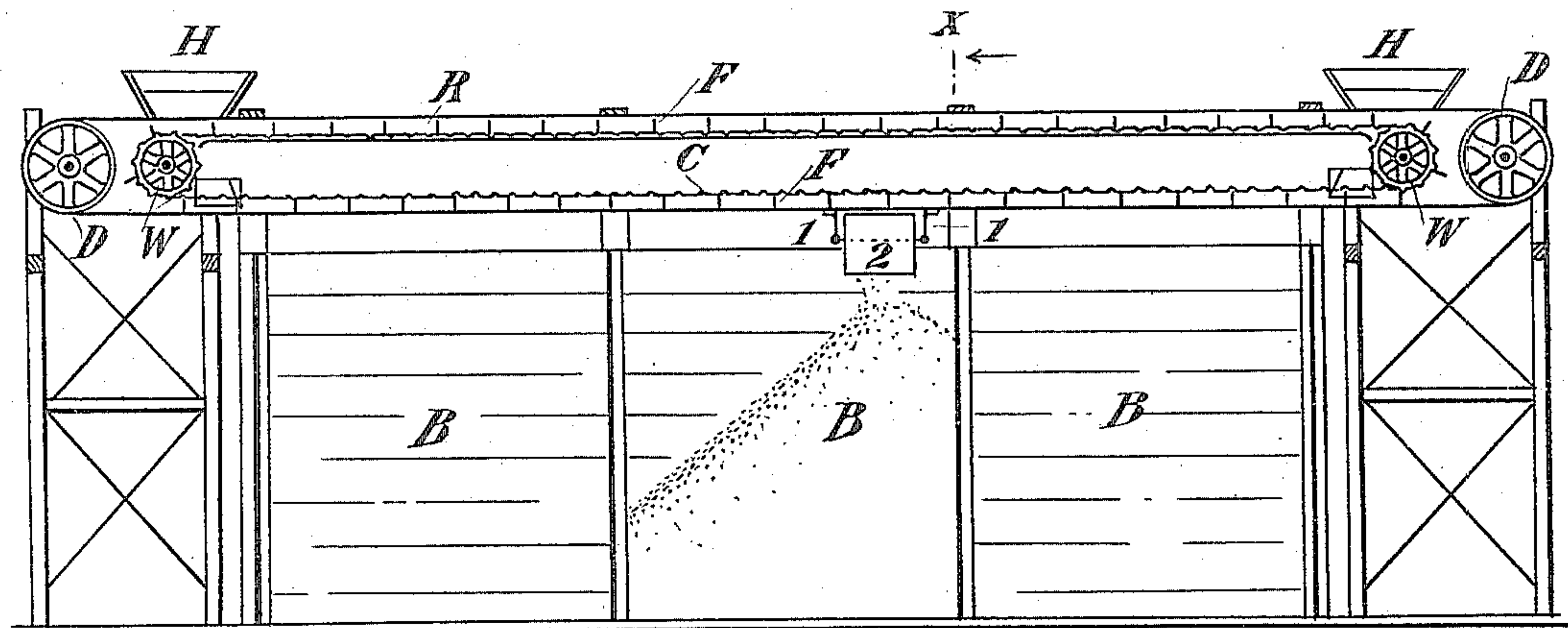


Fig. 1

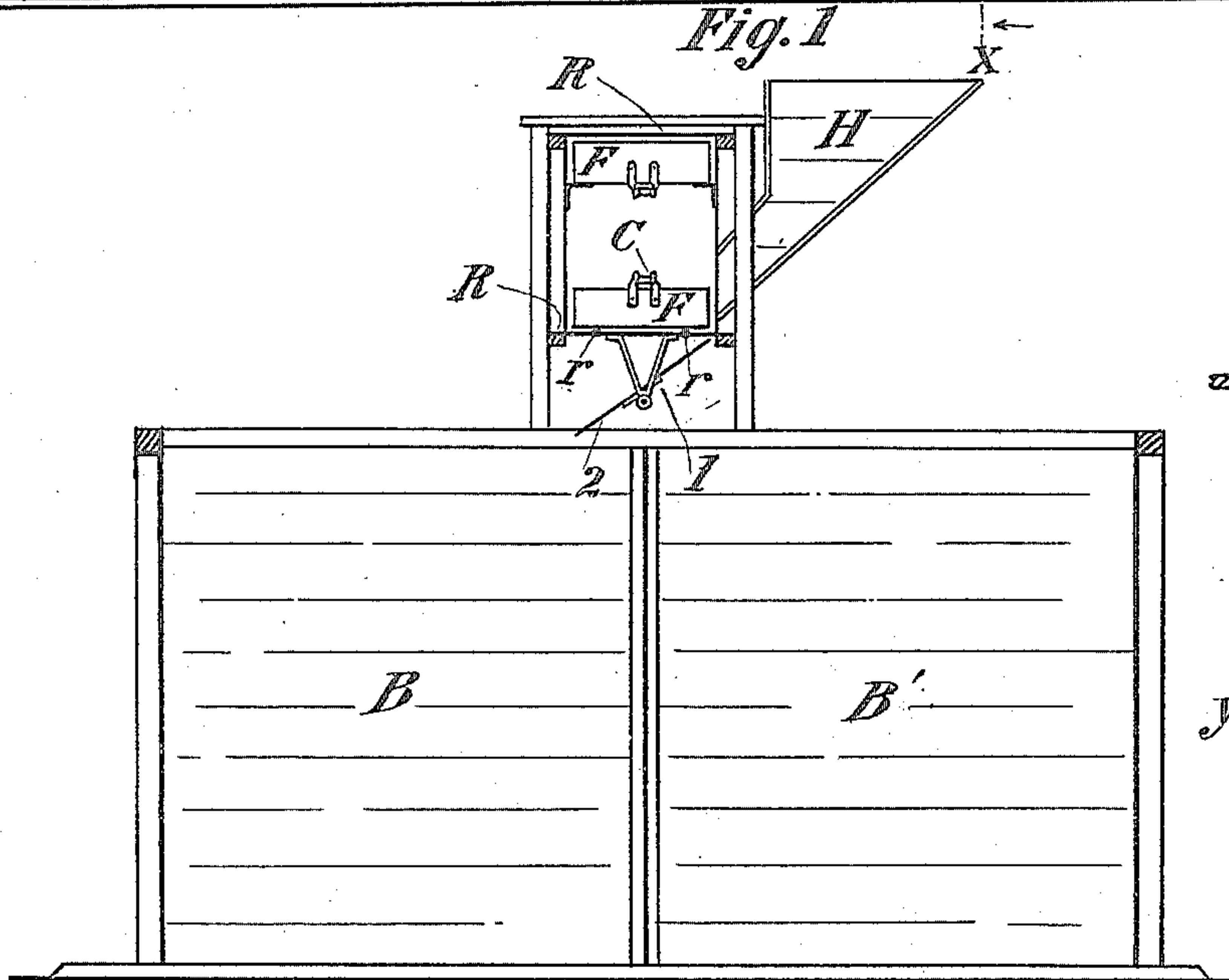


Fig. 2

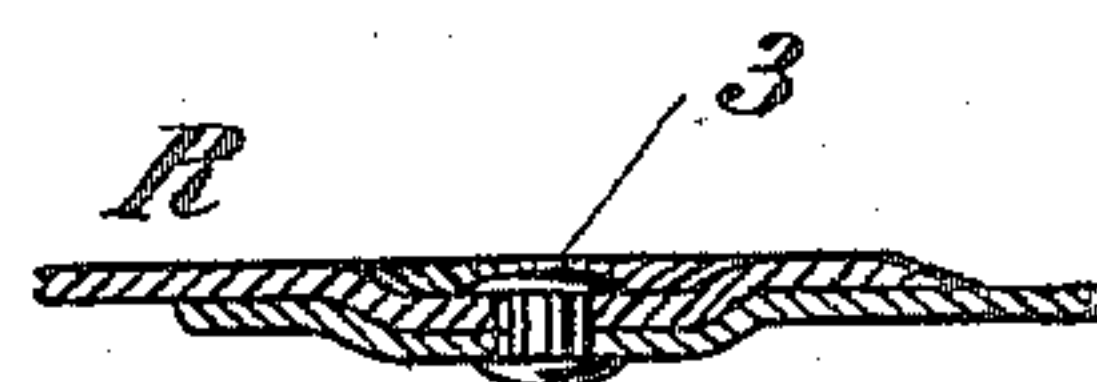


Fig. 5.

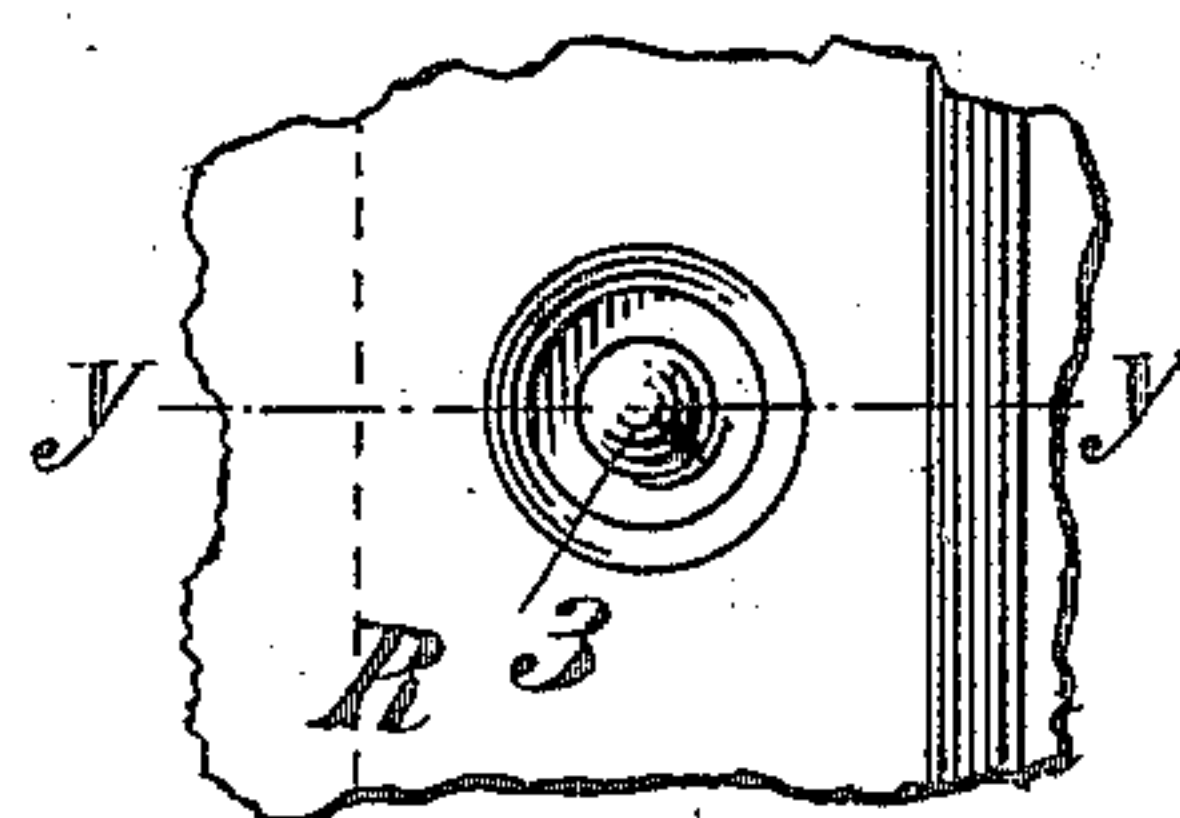


Fig. 4.

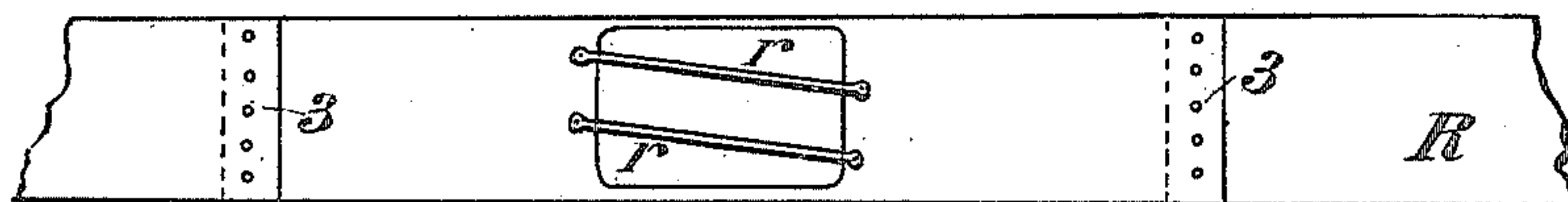


Fig. 3.

Witnesses

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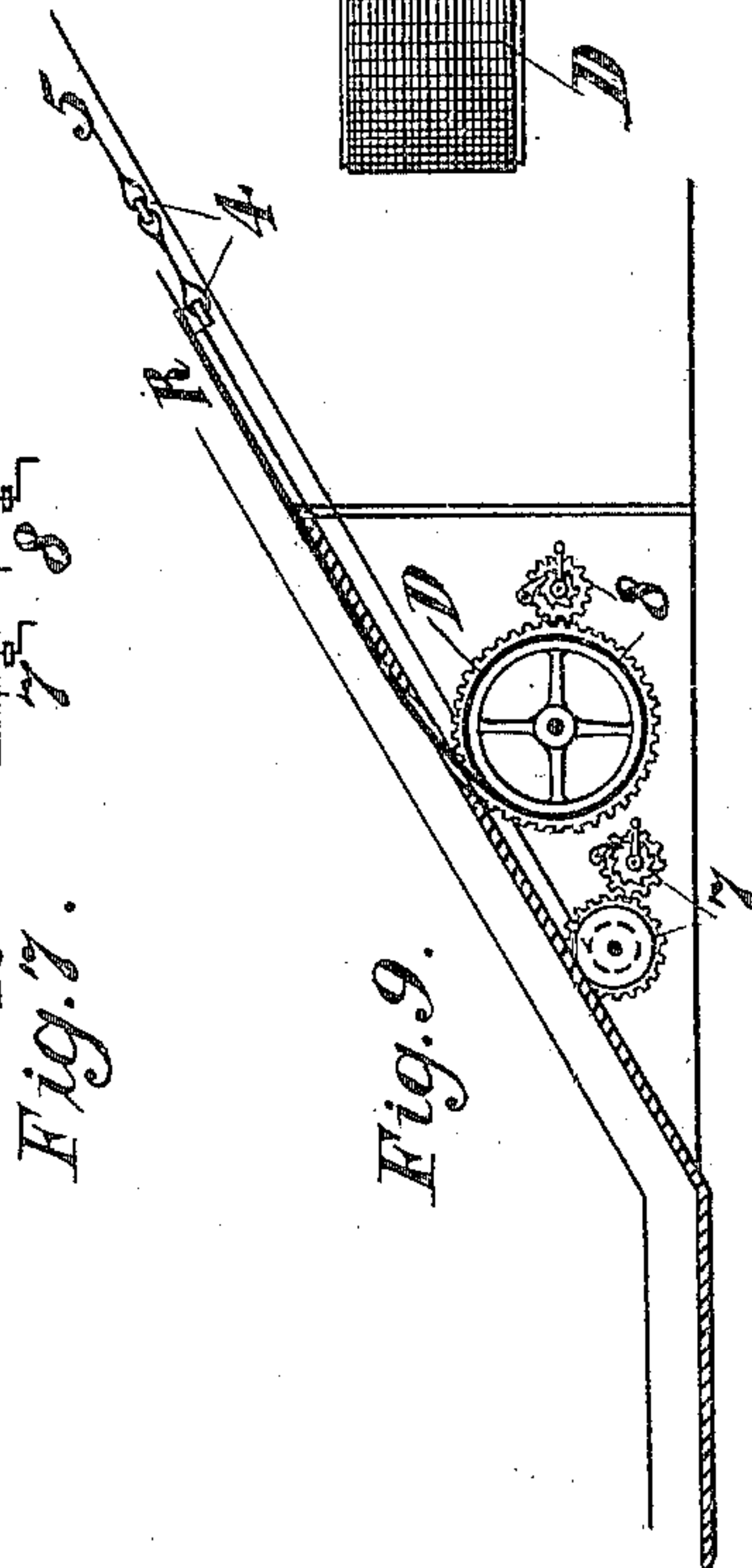
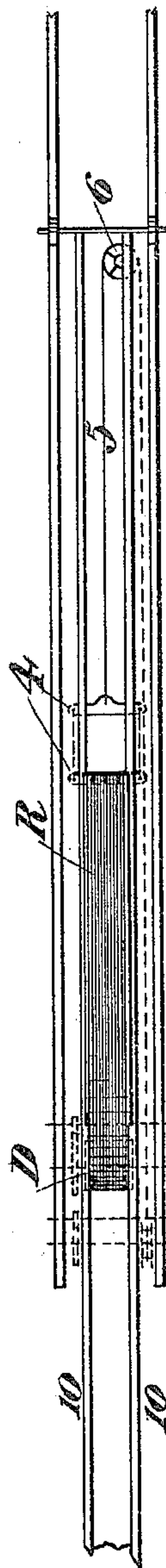
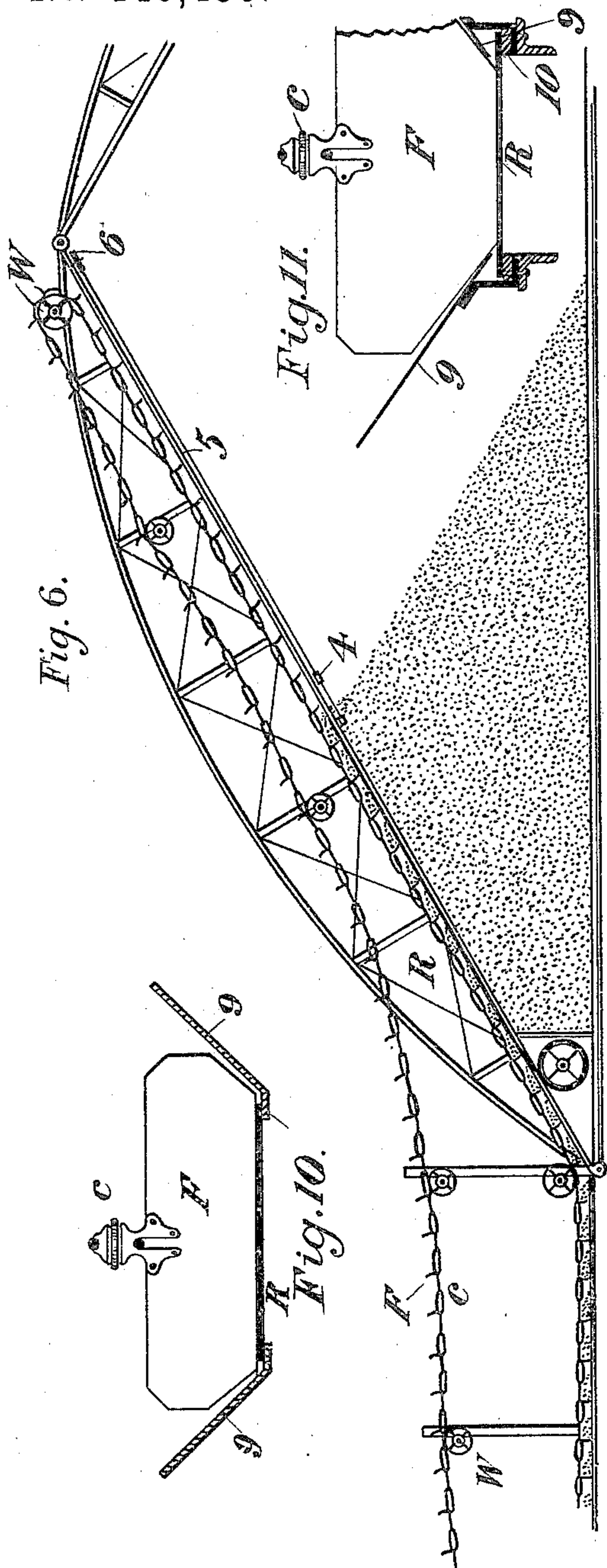
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2 Sheets—Sheet 2.

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WITNESSES:

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BY

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UNITED STATES PATENT OFFICE.

JAMES M. DODGE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
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CONVEYER-TROUGH BOTTOM.

SPECIFICATION forming part of Letters Patent No. 446,436, dated February 17, 1891.

Application filed May 12, 1890. Serial No. 351,539. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. DODGE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Conveyer-Trough Bottoms, of which the following is a specification.

My invention relates particularly to improvements in the construction of bottoms of troughs for conveyers from which the material is to be delivered at various points along their course, and its principal object is to furnish a discharge-opening whose location is adjustable lengthwise of the conveyer.

My invention consists, primarily, in adapting to the uses of a conveyer-trough bottom a strip of metal, preferably sheet-steel, and called a "ribbon," suitably supported at the sides and arranged to be adjusted lengthwise of the conveyer, so that the end of the ribbon or a discharge-opening in the body of the ribbon can be moved back and forth to suit the required location for the discharge of the material.

The invention consists, secondarily, in a particular method of fastening together comparatively short strips of metal to form the long ribbon required; also, in combining with the longitudinal adjustment of the discharge-opening a shifting lateral discharge spout or chute, as more fully described hereinafter.

In the construction of conveyers running over a series of bins, where it is desired to discharge the material into different bins or compartments at different times—as, for instance, in storing coal, ores, &c., of different sizes or grades—it has been customary to arrange slides or gates of various kinds in the bottom of the trough, adapted to be opened and closed, as occasion demanded. These were, however, permanent in their location, and a separate slide or gate was required for each discharge-point. The expense and inconvenience of this arrangement often led to the use of but one discharge-opening for each bin, and considerable labor in so-called "trimming" by hand became necessary when it was desired to fill the bins above the angle of repose of the pile of material as discharged. A discharge opening or end whose position is readily adjustable lengthwise of the conveyer dispenses

with much of the necessity for hand-trimming in bins or the holds of vessels, as the discharges can be made successively at different locations in the length of the bin or hold covered by the conveyer. The employment of this device is especially desirable in cases where the material would be injured commercially or otherwise by breakage, and where pains must be taken to prevent, as far possible, an abrupt fall. In such cases arrangements are often made for forming the initial pile in the bin by sliding the material down an incline, and then the balance of the material can be deposited on the inclined sides of the pile, which in turn can be extended lengthwise of the bin by successive readjustments of the position of the discharge-opening. This use of the steel ribbon as a trimmer is advantageously employed in carrying out my process of piling coal, for which Letters Patent No. 409,636 were granted to me August 20, 1889, the ribbon serving as an adjustable intervening anti-friction plate in a trussed coal-piling apparatus more fully described in an application filed by me, and numbered 371,455. In this process I build up a conical pile by successive additions of charges of coal delivered to a constantly receding and rising apex, from which the charges roll or slide down the inclined sides. The conveying machinery is supported by the truss structure of the coal-piling apparatus mentioned above, and the steel ribbon supported at the side on ledges in this structure acts as an anti-friction plate interposed between the charges of coal and the pile over which they are carried up to the receding apex above mentioned. It is evident that a ready adjustability of this intervening plate is very desirable, and in the accompanying drawings I have illustrated one of the methods of adjustment, which I have successfully employed.

To enable those skilled in the art to which my invention relates to understand and practice the same, I will now proceed to describe my invention more fully, referring to the accompanying drawings, which form part of this specification, and in which similar parts are designated by similar numbers and letters of reference throughout the several views.

Figure 1 is a longitudinal cross-section through the middle of a double row of bins provided with a reversible conveyer located over the partition between the rows, said conveyer employing my steel-ribbon trough-bottom, which has a tilting discharge-plate suspended under the opening in the ribbon for the purpose of directing the discharge into the bins on either side of the partition at will. This figure also illustrates in the background hoppers feeding material to the conveyer at either end to be carried in one direction or the other to the discharge-opening. Fig. 2 is a cross-section on the line *xx* of Fig. 1, looking in the direction of the arrow and showing in the intermediate background the suspended tilting discharge-plate, and farther back the outlines of the hopper at the left end of Fig. 1, all being illustrated on an enlarged scale. Fig. 3 illustrates one method of forming the long steel ribbon out of shorter strips, showing the ends lapped and riveted together, also illustrating details of the discharge-opening in the ribbon. Fig. 4 shows, on an enlarged scale, the depression made in the metal to accommodate the head of the rivet; and Fig. 5 is a cross-section of Fig. 4 on the line *yy*. Fig. 6 is a longitudinal cross-section of a portion of a sheer-truss coal-piling apparatus employing my steel ribbon as an intervening anti-friction plate. Fig. 7 is a top view of a portion of Fig. 6, illustrating the ribbon with its supports and the devices by which it is moved back and forth in the truss structure. Fig. 8 shows the ribbon on an enlarged scale, illustrating its relations to the supporting sides where it enters the truss structure. Fig. 9 shows details of arrangements for adjusting the location of the end of the ribbon lengthwise of the truss-leg, being a cross-section similar to that shown in Fig. 6, but on a larger scale and including no machinery but that used in adjusting the ribbon. Figs. 10 and 11 illustrate different positions of the ribbon relative to the inclined sides which support the conveyer-flights when the ribbon is not extended the full length of the truss-leg, Fig. 10 showing the ribbon resting on ledges formed by turning the inner edges of the inclined sides for the purpose, and Fig. 11 showing the ribbon resting on ledges which are supported by the truss structure underneath the inner edges of the inclined sides.

C is the conveyer chain or rope.

F F are the laterally-projecting flights or scrapers attached to the same.

W W are wheels for the chain or rope.

B B are bins on the front side of the partition in Fig. 1.

B' is a bin on the rear side of the partition and shown at the right-hand side of Fig. 2.

H is a hopper discharging into the conveyer.

R is the sheet-metal ribbon.

D D are drums around which the ribbon passes or is wound.

r r are rods extending across the opening

in the ribbon, used to support the flights when they run in troughs having vertical sides, as in Fig. 2, and arranged to be oblique to the line of travel of the flights to distribute the wear on them.

1 are hangers suspended from the ribbon to carry tilting discharge-plate 2.

3 are rivets for fastening the ends of the strips together in forming the ribbon.

In Figs. 6, 7, and 9 the frame-work for connecting the adjusting rope or chain 5 with the end of the ribbon is marked 4.

6 is the small sheave around which rope 5 passes at or near the apex of the truss.

7 is the winding mechanism for operating rope 5.

8 is the mechanism for operating the winding-drum D, which carries the ribbon.

9 are the inclined sides which support the conveyer-flights.

10 are the ledges on which the ribbon rests.

The operation of my invention will be largely understood from the above description and the drawings.

In Figs. 1, 2, and 3 I have employed an endless ribbon with a discharge-opening in the body of it, the ribbon passing around drums at each end of the conveyer, which are adapted to be revolved in either direction, so as to move the position of the discharge-opening longitudinally. A discharge-opening in the body of the ribbon is particularly applicable to use with a reversible conveyer. In Figs. 6, 7, and 9 I have shown a ribbon, one portion of which is wound around a drum, the other portion being extended under the conveyer which discharges its load at the end of the ribbon, provision being made for unwinding and paying out the ribbon or winding it up again, as the desired location of the discharge end may require. The discharge over the end of the ribbon is applicable to conveyers which are not reversible, the end of the ribbon in such a case serving as a discharge-opening, and hereinafter so designated. These two general forms are of course capable of various modifications in the details of arrangement, using at will one or two ribbons and one or more drums, the drums being located at convenient points for the particular purpose, whether at or near the ends of the conveyer, or so placed that the adjustable ribbon bottom shall be used for only a portion of the length of the conveyer.

The ribbon is preferably supported on strips or ledges at the sides, or may be carried on rollers suitably located for the purpose; but whatever support is used arrangements should always be made for leaving room enough crosswise and lengthwise for the proper discharge of the material.

Various forms of inclined tilting or swiveling discharge chutes, plates, or spouts may be attached to the ribbon or arranged to cooperate with it for shifting the discharge into whatever direction may be desired, thus af-

fording lateral as well as longitudinal adjustment to the final discharge of the material, and reducing still more the necessity for hand-trimming.

5 The conveying machinery sometimes rests directly on the ribbon bottom, as in Figs. 2 and 10; but it may be supported in any other suitable manner—as, for instance, that shown in Fig. 11.

10 Of course various kinds of conveyers can be used with my adjustable trough-bottom without departing from my invention.

The ribbon can be made in one long strip, or shorter strips may be welded together; but
15 a cheap method which I have devised for the connection of the ends of the short strips is that shown in Figs. 3, 4, and 5. I make depressions in the metal with a set-punch sufficiently deep to bring the tops of the rivets
20 below the surface of the surrounding metal, the result being that I save them from wear and prevent the flights catching on them. Where the conveyer is to be reversible, the end of the strip which laps over its neighbor
25 should be beveled off somewhat, as shown in

Fig. 5, to prevent the flights catching at the joint when motion is reversed.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a conveyer-trough, a sheet-metal bottom adjustable longitudinally to vary the location of the discharge-opening, substantially as set forth. 30

2. In a storage-conveyer, a flexible sheet-metal bottom adjustable longitudinally to vary the discharge-point as the pile accumulates. 35

3. An adjustable conveyer-bottom composed of sheets of flexible metal provided with depressions in the sheets at the joints to protect the rivets or bolts from wear, substantially as described. 40

4. A longitudinally-adjustable conveyer-trough bottom provided with a shifting discharge-chute, as and for the purpose described. 45

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Witnesses:

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