

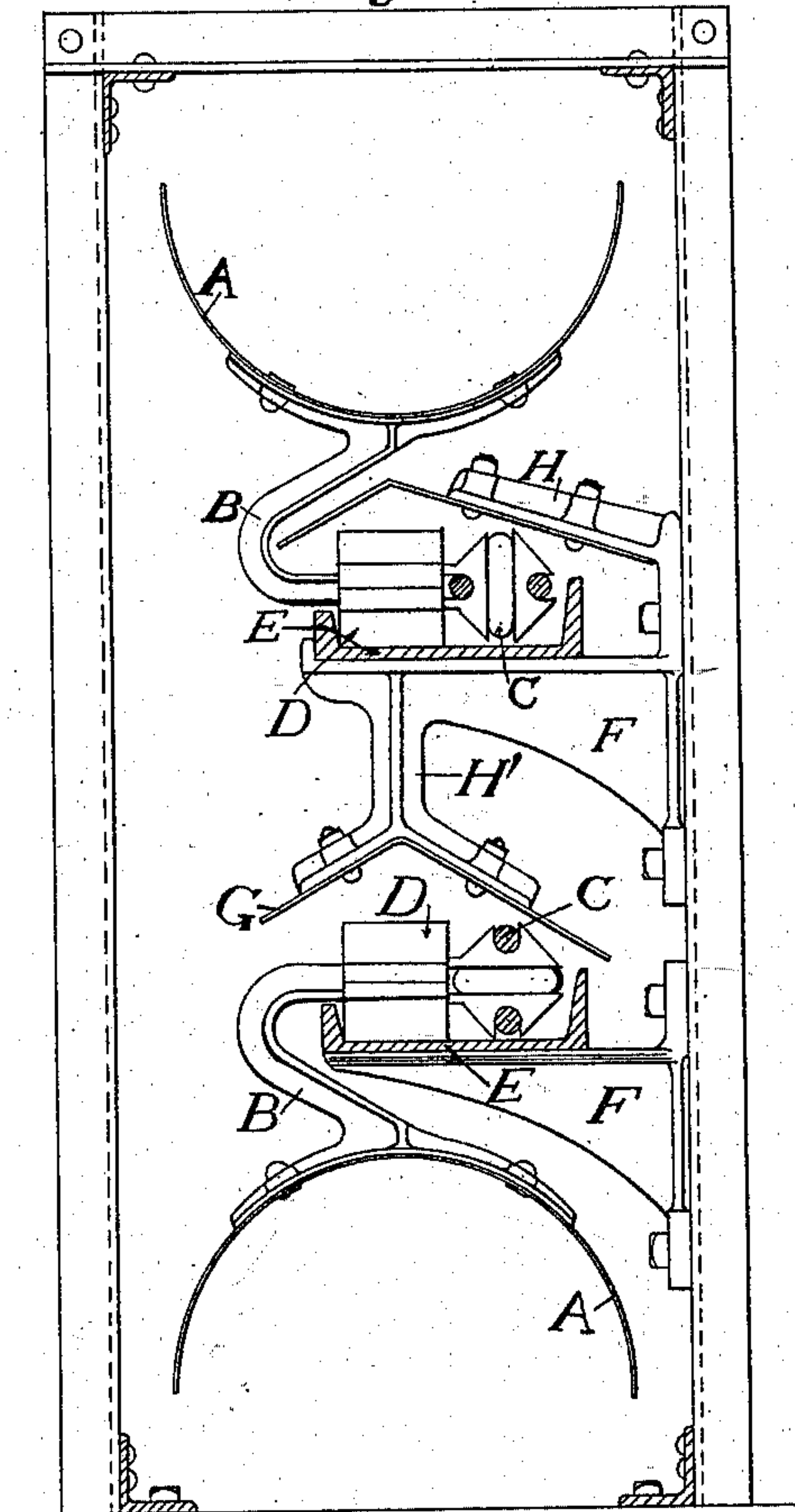
(No Model.)

J. M. DODGE.  
CONVEYER.

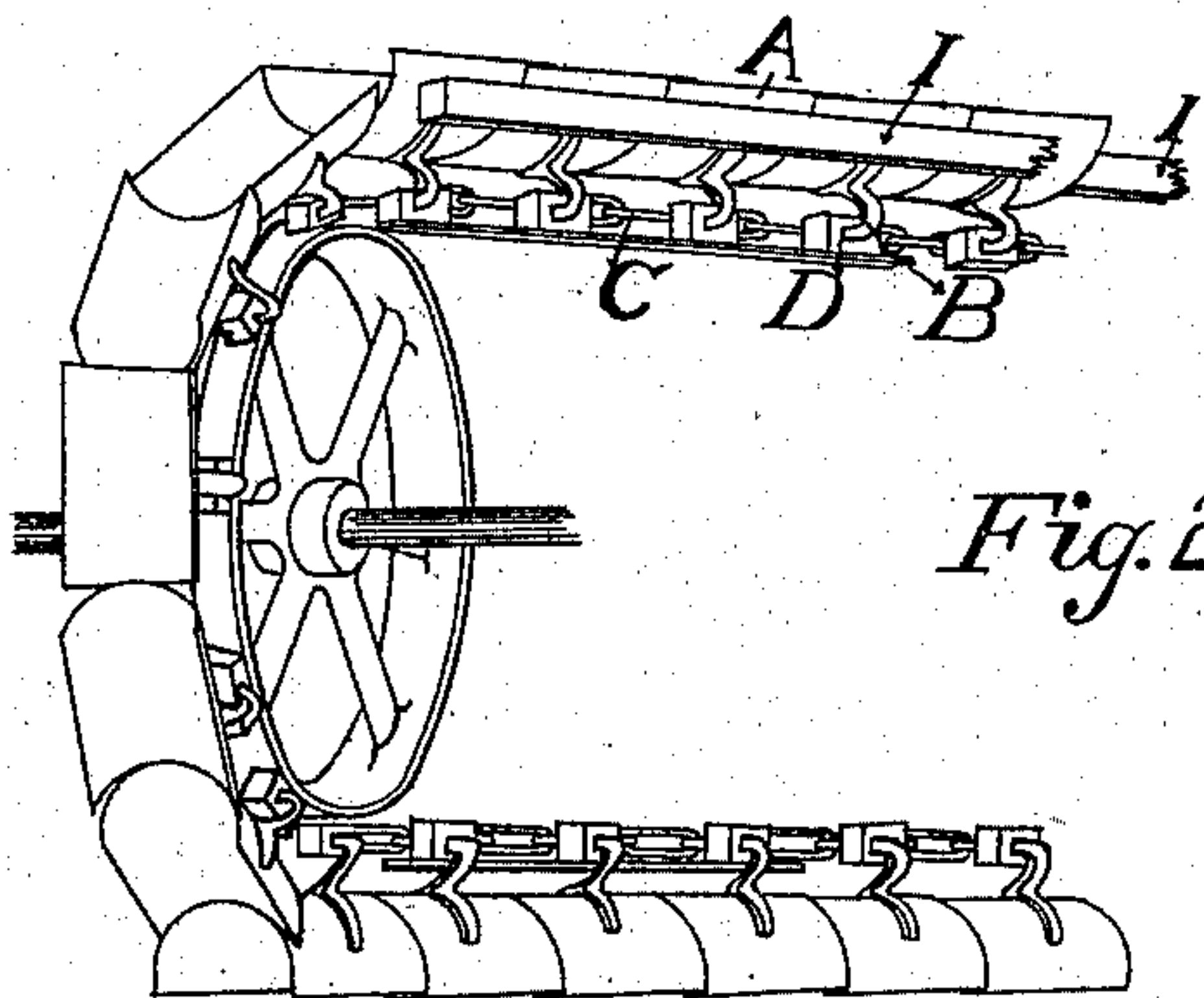
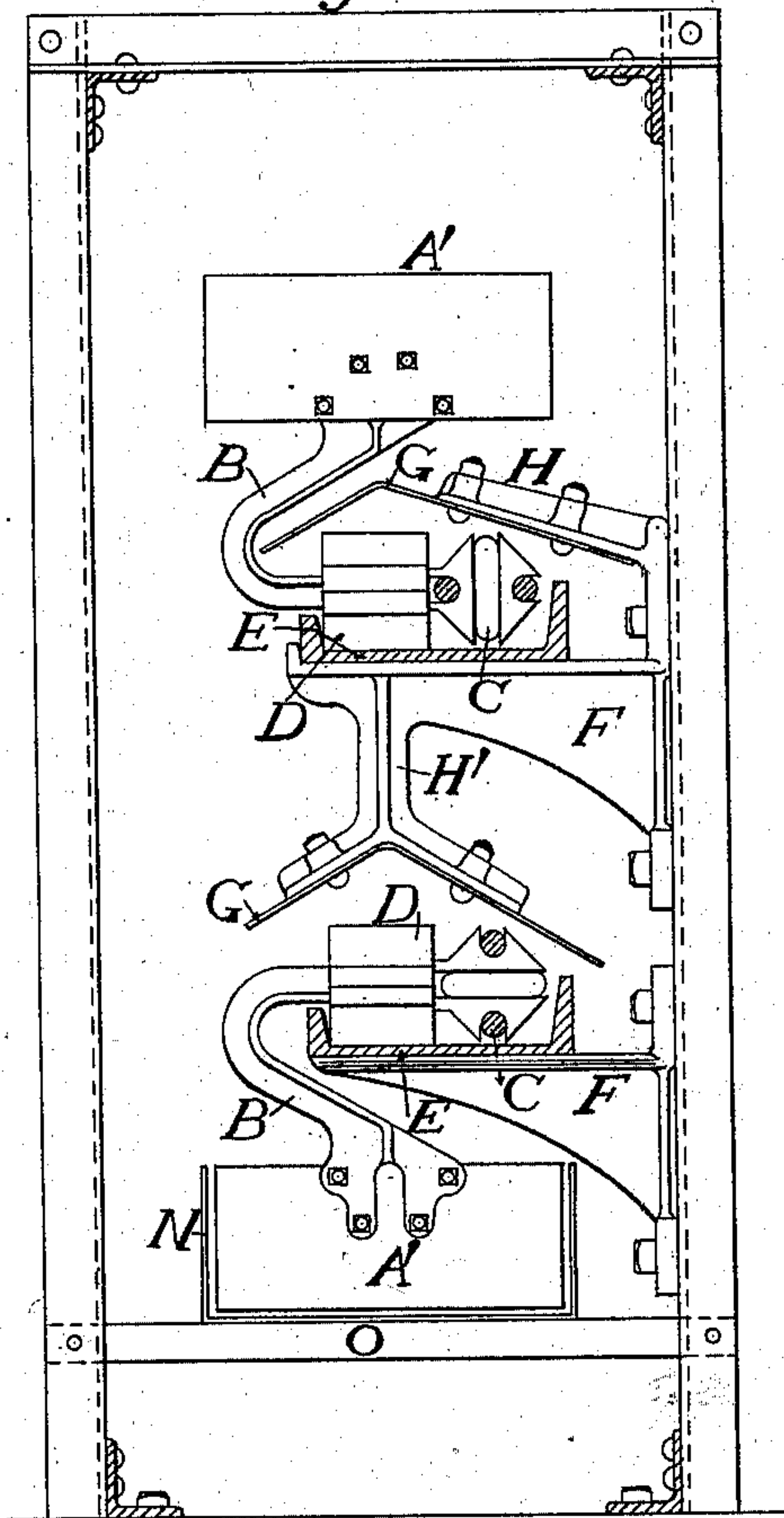
No. 559,371.

Patented May 5, 1896.

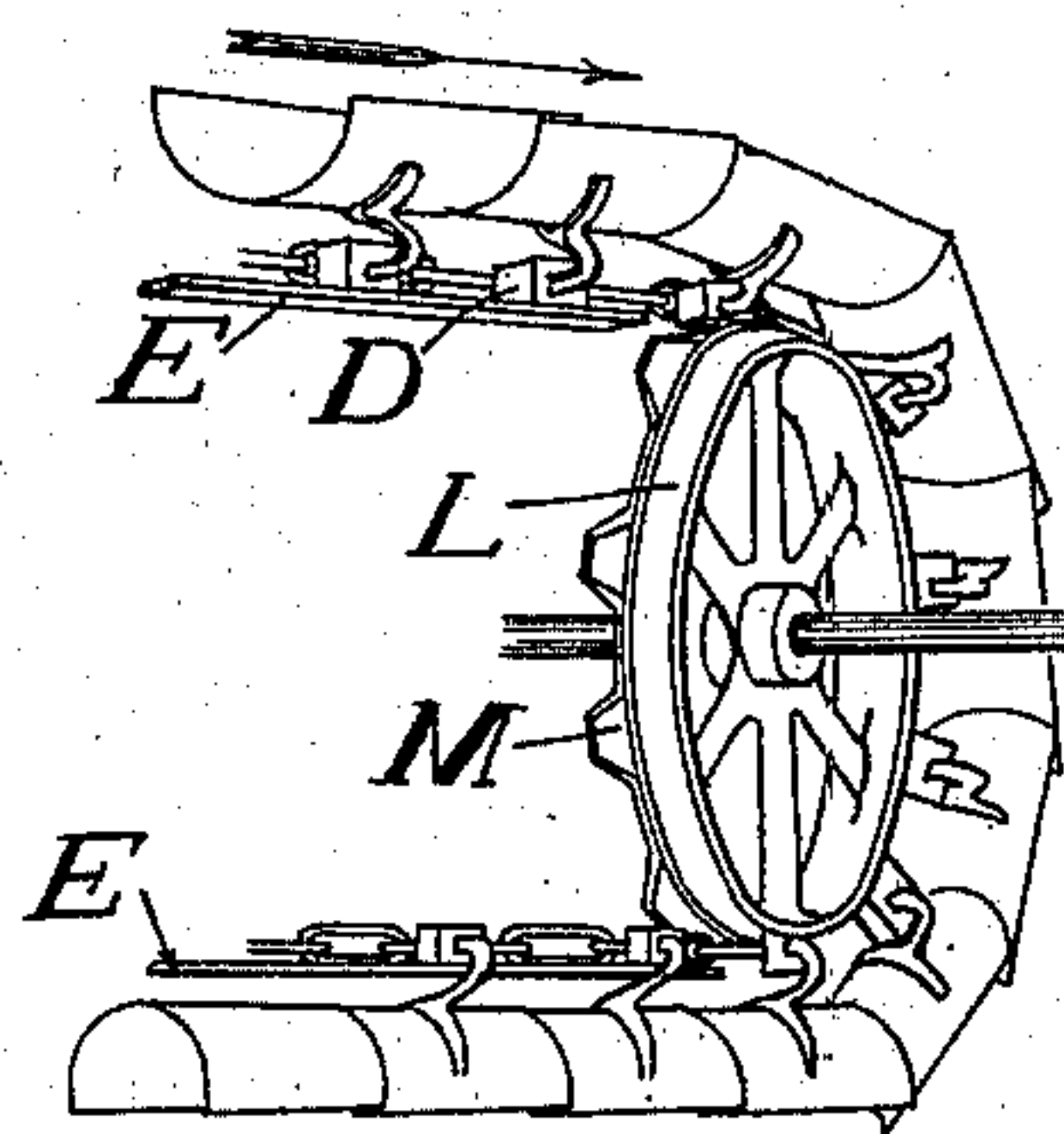
*Fig. 1.*



*Fig. 3.*



*Fig. 2.*



Witnesses

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By his attorney E. J. Ewart.



# UNITED STATES PATENT OFFICE.

JAMES M. DODGE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE  
LINK-BELT ENGINEERING COMPANY, OF SAME PLACE.

## CONVEYER.

SPECIFICATION forming part of Letters Patent No. 559,371, dated May 5, 1896.

Application filed October 5, 1891. Serial No. 407,672. (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 certain new and useful Improvements in Conveyers, of which the following is a specification.

Heretofore in the construction of single-strand endless trough conveyers, to which class my invention largely relates, it has been customary to employ rollers or other supports connected with the trough-sections or receptacles and projecting far enough beyond the sides of the same to reach tracks which would sustain their weight in returning underneath, or else to use independent supports over which the receptacles themselves were dragged back. In the former case suitable outriggers or trunnions and rollers were expensive and occupied extra space, while in the latter case if idler wheels or rollers were used to support the returning-run they with their shafts and journal-bearings formed a considerable item of expense, and if the pans were dragged back on carrying strips or ways there was considerable wear on the pans and loss of power from friction. Furthermore, it is often desirable to put into each pan a cross-brace for strengthening the pan or for preventing the load from sliding or tumbling back when going up an incline, and in the handling of some kinds of material it is necessary to close up the ends of the pans entirely, making them practically a series of independent open-topped receptacles. Of course in such cases the pans could not be returned advantageously on idlers or carrying-strips and the expensive outriggers or trunnions mentioned above would be necessary. To overcome these difficulties and provide an easy, simple, cheap, and efficient means of supporting a series of conveying devices in circumstances where the propelling band or cable must be above the said conveying devices, and to secure other advantages more fully set forth hereinafter, I have devised the improvements herein described and claimed, which may be said to consist, primarily, in providing crooked connections between the wearing-supports and the conveying devices, and, secondarily, in details of construction

more fully described hereinafter and specifically defined in the claims.

To enable those skilled in the art to which my improvements relate to understand and practice the same, I will now proceed to describe my invention more in detail, referring to the accompanying drawings, which form part of this specification, and in which similar letters designate similar parts throughout the several views.

Figure 1 is a cross-sectional elevation of a single-strand endless trough conveyer employing my improvements. Fig. 2 is a perspective view showing on the left the receiving end and on the right the discharging end of an endless trough conveyer employing my improvements, this being drawn on a smaller scale than Fig. 1. Fig. 3 is a view similar to Fig. 1 and drawn on the same scale, illustrating the application of my invention to a flighted conveyer.

A is a semicylindrical pan or trough-section carried by bent connecting-arm B, which in turn is supported by a wearing-block D, which is located below the center of gravity of the load, all being propelled forward by chain or cable C, suitably attached. Support D rolls or slides on a track or carrying-way E, which is conveniently secured to a projecting bracket F, which is attached to a general framework designed to carry the conveyer. In the form shown in the drawings, the propelling-band C and supports D are protected from falling dust or other injurious material by guards or sheds G, the upper one being held in position by bracket H and the lower one by bracket H'. Brackets H and H' are shown as formed integrally with F, but may be formed separately, if desired.

In Fig. 2 strips I are arranged on each side of the carrying-run at the receiving end to prevent the shock of the falling material tipping the receptacles sidewise.

The loaded pans or receptacles are held steadily in proper relative position going over head-wheel M, by reason of the support D resting on a flange L at the side of the regular rim of the wheel. This flange is of course designed to supplement track E and continue a support under the centers of gravity of the loaded receptacles until they are properly



emptied. The flange may of course be attached to or cast integral with the wheel-rim, or it may be a separate pulley-rim, if desired. In Fig. 3, which shows a modification of my invention, the flights or scrapers are marked A', the conveyer-trough in which they move is N, and the cross-piece to support same is O. The other parts are marked to correspond with similar parts in Fig. 1.

The construction and operation of my improvements will be largely understood from the foregoing description and the drawings. It is evident that the ultimate supports of the loaded receptacles, whether they be rollers or wearing-blocks, should extend on each side of a plane dropped vertically through the centers of gravity of the receptacles in order to preserve their equilibrium. It is also apparent that whatever tends to concentrate the load near its center of gravity will be of advantage in decreasing the necessary breadth of support. Heretofore it has been customary to use flat-bottom pans with sides extending upward vertically or at slight inclines from the vertical, and the common method of support has been the extension of outriggers or trunnions outside of vertical planes passed through the sides of the pans, which served not only to carry the loaded receptacles steadily, but furnished besides an opportunity for the use of tracks at the sides to carry the returning-run of conveyer without interfering with the suspended receptacles. By reason of the crooked connections which I make between the wearing-supports and the conveying devices I am enabled to interpose a track or carrying-way under the returning-line of wearing-supports and above and out of the way of the conveying devices themselves, while my use of the semicylindrical or circularly-curved sections or pans renders this more easy of accomplishment, and at the same time it concentrates the load near the center of gravity, decreasing the necessary width of supports.

These improvements, enabling me to use comparatively narrow supports located within the lateral lines of the conveyer, reduce the space occupied and simplify and cheapen the construction. An additional advantage in using the cylindrically-curved sections or pans is the ease and cheapness with which they can be shaped up in ordinary bending-rolls. It is of course not necessary that these should be complete semicylinders in every case; but they are most readily formed up if made as portions of cylinders.

It will be observed that my improvements also enable me to apply guards for the protection of the wearing-supports and the chain, as shown at G in Fig. 1; but as I fully explain and claim this feature in another application filed simultaneously with this and serially numbered 407,671, it is unnecessary that I should go more into detail with regard to it herein. Suffice it to say that for the purposes

of this invention the guards are not essential and may be used or dispensed with at pleasure.

In a flighted conveyer handling gritty material, where the flights or scrapers are dragged along the bottom of a stationary conveyer-trough by a chain or cable secured above them, the wear on the impinging edges of the flights is often very rapid; but by applying my improvements to this style of conveyer, somewhat as shown in the modification illustrated in Fig. 3, I am enabled to overcome this difficulty, keeping the weight off of the flights and preventing their engaging with the bottom of the conveyer-trough.

It is evident that the crooked connections between conveying devices and supports may be made in various forms, so long as provision is made for interposing the carrying-way or track under the supports for the returning-run of conveyer. I do not therefore wish to be limited to the exact forms and details shown in the drawings; but,

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

1. In a conveyer employing a series of conveying devices propelled by an endless chain or cable and provided with wearing-supports disposed under the said devices in the upper run of conveyer, crooked connections between said supports and said conveying devices adapted to permit the introduction of tracking beneath said supports in the lower run of conveyer, substantially as set forth.

2. In a conveyer, the combination of an endless series of receptacles suitably propelled, a series of wearing-supports so secured to said receptacles as to be below them in the carrying-run, and crooked connections between said receptacles and said wearing-supports adapted to permit the interposition of tracking below said wearing-supports in the returning-run of conveyer, substantially as set forth.

3. In a conveyer, the combination of conveying devices propelled by an endless band, wearing-supports suitably connected with said conveying devices, and tracking interposed between said wearing-supports and said conveying devices to carry the lower run of conveyer, substantially as and for the purpose set forth.

4. In a conveyer, a series of conveying devices suitably propelled, a series of wearing-supports vertically disposed with relation to the conveying devices, and connections between the conveying devices and wearing-supports crooked to permit the introduction of tracking or protecting devices between said conveying devices and wearing-supports, substantially as set forth.

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Witnesses:

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M. GETZ.