No. 702,408. Patented June 17, 1902.

J. H. COOK.

CONVEYER.

(Application filed Dec. 23, 1901.)

(No Model.) 2 Sheets—Sheet 1.

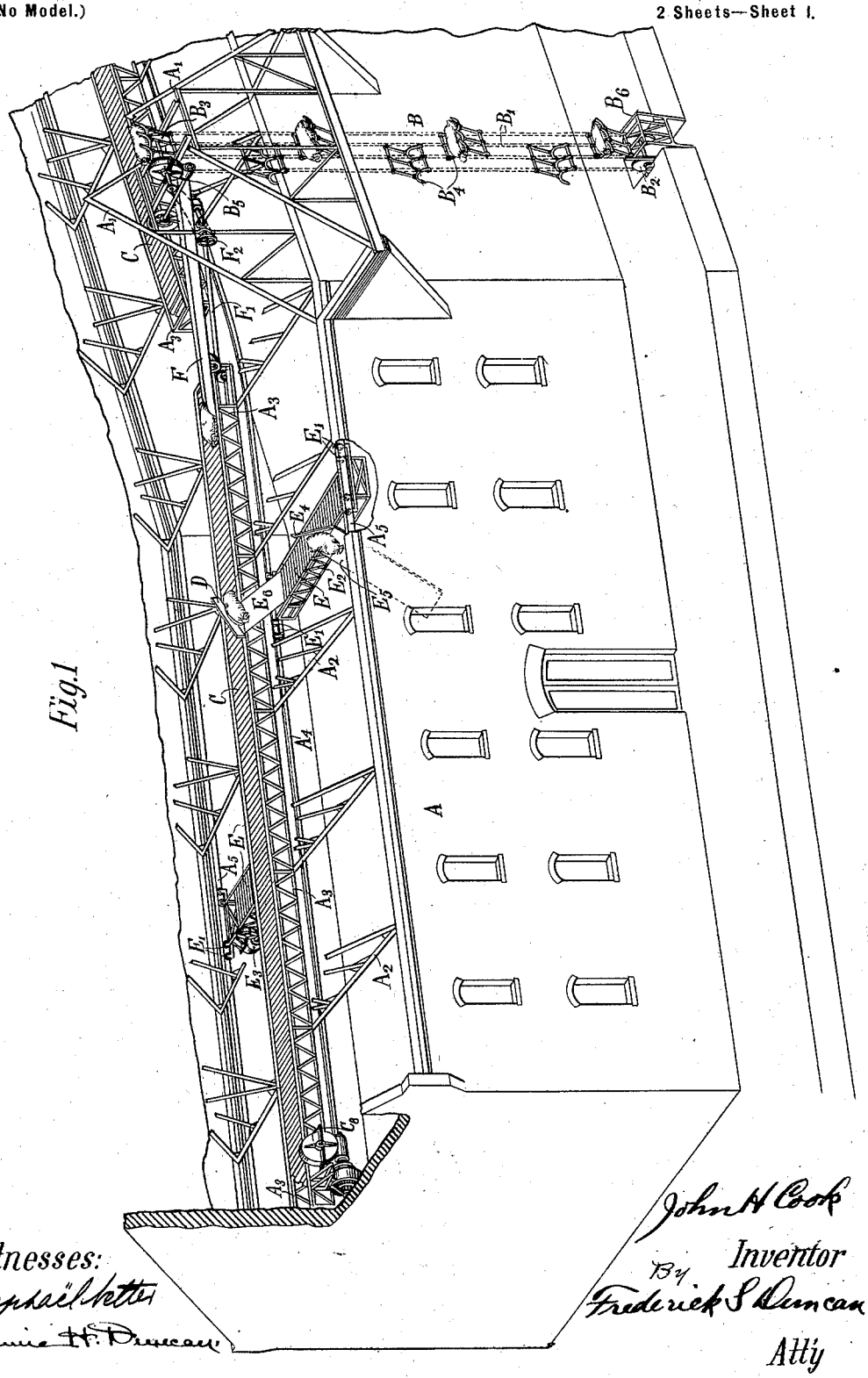


Fig. 1.

Witnesses:
Raphael Netter
Annie H. Duncan

John H. Cook
Inventor
By Frederick S. Duncan
Atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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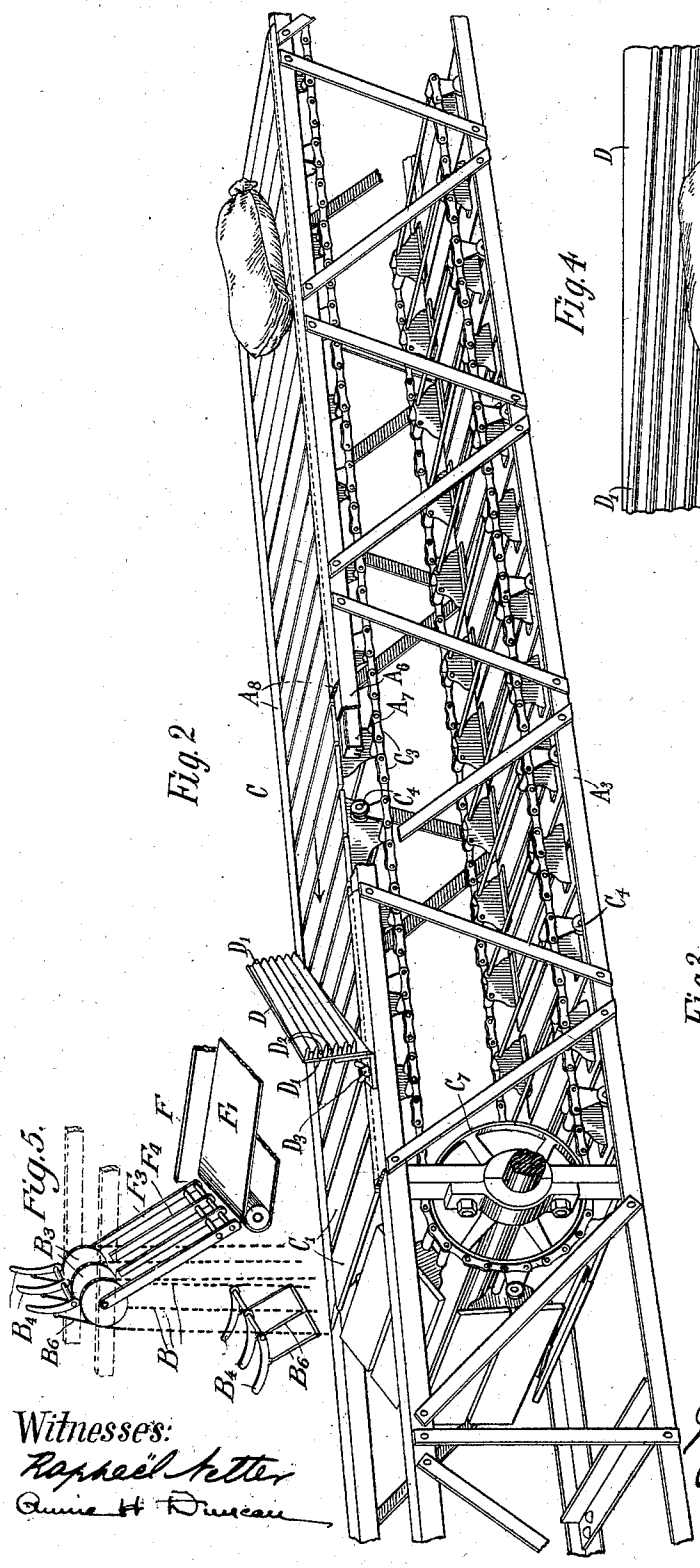


Fig. 2

Fig. 5.

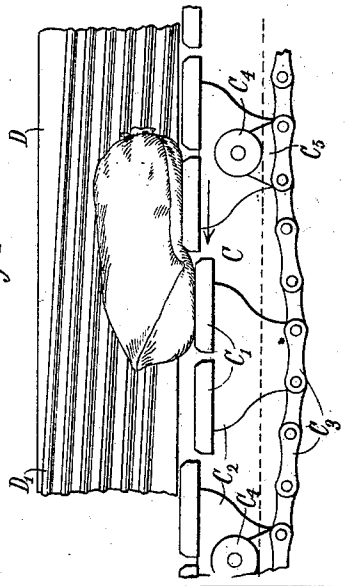


Fig. 4

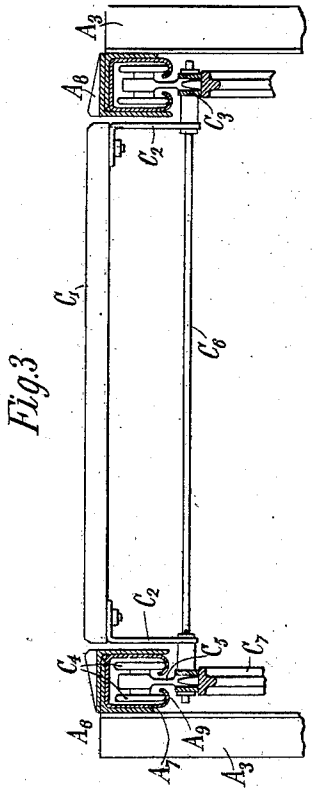


Fig. 3

Witnesses:
Raphael Netter
Quincy H. Duncan

John H. Cook Inventor
By Frederick S. Duncan
Atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN H. COOK, OF BROOKLYN, NEW YORK, ASSIGNOR TO HENRY B. NEWHALL, OF PLAINFIELD, NEW JERSEY.

CONVEYER.

SPECIFICATION forming part of Letters Patent No. 702,408, dated June 17, 1902.

Application filed December 23, 1901. Serial No. 86,897. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. COOK, a citizen of the United States, and a resident of New York city, in the county of Kings and State of New York, have invented certain new and useful Improvements in Conveyers, of which the following is a specification, taken in connection with the accompanying drawings, forming part of the same.

This invention in the embodiment shown in the drawings relates to conveyers more particularly adapted to distribute material throughout a storage-building.

In the accompanying drawings, in which the same reference characters refer to similar parts in the various figures, Figure 1 is a view in perspective showing my conveyer as set up in a building. Fig. 2 is a detailed perspective view of part of the conveyer, and Figs. 3, 4, and 5 are detail views of the same.

This conveyer comprises, in general terms, the hoist B for raising the material, contained, for instance, in bags, and supplying it to the upper end of the chute F. This chute conducts the bags to one of the feeder-conveyers C, running longitudinally of the building. The bags, carried along by the slats of the feeder-conveyer, are thrown from this conveyer by the ejector or throw-off board D and pass down the chute E^6 to the transverse distributer-conveyer E. They are carried along this conveyer until they are ejected from the conveyer and upon a chute E^5 by the throw-off board E^4. The distributer-conveyers on either side of the feeder-conveyer are bodily movable longitudinally of the building.

The storage-building A is provided at one side of the same with the overhanging supporting-trusses A', which serve to support the upper end of the hoist B. This hoist is composed of a series of parallel sprocket-chains B', passing over the sprocket-wheels B^2 at the lower end and over corresponding sprocket-wheels B^3 at the upper end of the hoist. The sprocket-wheels B^3, which are supported by the trusses A', are rotated by suitable driving-gear B^5. The series of carriers B^4, mounted upon the sprocket-chains B', are in this manner moved continuously and serve to transport packages of material (indicated in the drawings as bags) from the slatted platform B^6 at the lower part of the hoist and to deposit the bags in the upper end of the inclined trough F. As is shown in detail in Fig. 5, the carriers are composed of a series of arms B^4, pivoted to bars mounted transversely on the sprocket-chains B'. These bars are pivoted to links B^6, which are similarly connected to the sprocket-chains. A series of inclined guides are mounted adjacent wheel B^3, the outer guides F^3 being suitably supported from the sprocket-shaft or by any other desired means, while the inner guides F^4 are not supported at their upper ends, but are made short enough to allow the bars upon the sprocket-chains to pass them. It will be seen that by these means the bags or other articles as they are carried up on the carriers B^4 are thrown by these carriers upon the inclined guides and thereupon pass down upon the chute F, along which they are carried by the belt F'. This trough is mounted so that it may supply bags to the feeder-conveyer C, with which this trough is shown as coöperating, or with the feeder-conveyer on the other side of the building. The trough-belt F' operates in the trough and is driven by suitable driving-gear F^2, connected with the hoist driving-gear, and in this manner the trough-belt serves to feed the bags down the trough in a regular manner.

Instead of the particular construction of hoist here indicated any other desired hoisting means may be employed.

Near the middle of each one of the roof-trusses A^2 are secured the longitudinal girders A^3, which serve to support on either side the feeder-conveyer C.

Referring to Fig. 3, it will be seen that the trolley-track A^7 is supported in a rigid frame A^6, extending longitudinally of the girders A^3 at the upper end of the same. This trolley-track is of the D formation shown, and since the guide-grooves A^9 at the lower part of the track are rounded the trolley and track are self-alining and the track serves to guide the trolley-wheels C^4, so as to prevent lateral displacement of these wheels. If desired, any other means of maintaining these trolley-wheels in lateral alinement can be used. The conveyer-slats C' are rigidly secured to the

brackets C^2, and these brackets are fastened at their outer ends to the sprocket-chains C^3, extending longitudinally of the conveyer. A trolley C^5 is rigidly secured to every alternate bracket, as is indicated in Fig. 4, and the two trolley-wheels C^4 are pivotally mounted on either side of each of these trolleys. The two brackets C^2 which support a single slat are connected together by means of a spacing-rod, which serves to keep the lower ends of these brackets at the proper distance apart. If desired, the slats may be supported by any other desired means, and, indeed, any other form of conveying-surface may be supported from the trolleys. It is preferable, however, that part of the slats shall be rigidly supported and that the rest of the slats shall be supported in a yielding manner, so that they may assume a position below the rigidly-supported slats. The chains C^3 pass over the large sprocket-wheels C^7 at either end of the conveyer, and the driving-gear C^8, which consists, preferably, of an electric motor with suitable reducing-gear, operates the sprocket-wheel C^7 to move the conveyer at the proper speed. It will be noted by reference to Figs. 2 and 3 that the facing A^8 is secured adjacent the conveyer-slats and substantially on the same level with them, so as to give a supporting edge on either side of the slats.

The ejector or throw-off board D is secured in an inclined position upon the conveyer by clamps D^8 of any suitable construction, by which the ends of the board are rigidly clamped upon the conveyer-girders. This board is formed with a series of inclined guides D′, which extend along the face of the board and are arranged in the diagonal manner indicated in the drawings. A second set of vertically-inclined guides D^2 are provided, if desired, of slightly less height than the first and interspersed with them. Instead of forming the throw-off board with the vertically-inclined guides indicated the throw-off board may be formed, if desired, with a facing-belt preferably vertically inclined in the same manner and either positively actuated or allowed to move freely under the action of the bags engaging the board. A series of wheels might be employed on the board, if desired, to lessen the friction of the material against the board. This throw-off board, as will be apparent, may be clamped in any desired position upon the conveyer and serves to engage the bags of material fed along the conveyer and to crowd these bags laterally from the conveyer upon the chute E^6. The operation of this throw-off board may be readily understood by reference to Fig. 4. The bag or other equivalent package of material which is carried along upon the conveyer-slats E′ is shown resting partly upon a double slat at the right of the figure, which is provided with a supporting-trolley C^5, and thus is maintained at all times at the same height, since the trolley-wheels C^4 are supported by the track. (Indicated in dotted lines.) The front portion of the bag rests, however, upon the double slat, which is not provided with a supporting-trolley. The bracket upon which this slat rests is supported solely by the sprocket-chain C^3, and the weight of the bag causes considerable sag of the chain at this point, so that the front portion of the bag is supported in a lower position than the rear of the same. It will be seen that in this manner a considerable ledge is formed by the forward end of the rigidly-supported slat and that this engages the bag, so as to prevent to a very considerable extent the slipping of the bag back along the conveyer. The bag is fed along in this manner and engages the incilned throw-off board D, by which it is crowded laterally off the conveyer. The vertically-inclined guides upon the throw-off board engage the forward edge of the bag and materially aid in this operation, since they tend to raise the forward end of the bag to some extent as the bag passes along the throw-off board. This renders it practically impossible for the bag to become wedged under the throw-off board, which would be undesirable. As the bag is crowded off the conveyer it is supported at the edge of the same by the facing A^8, which prevents any injurious contact of the ends of the conveyer with the bag. Although in practice some slight slip of the bag occurs along the conveyer after the bag engages the throw-off board, this has not been found a serious objection. The forward edge of the rigidly-supported slats finally engages the bag and prevents the backward slip of the bag, and thus crowds the bag off. In some cases the bag is not entirely thrown off the conveyer, but hangs suspended from the facing. In such a case the succeeding bag as it engages the throw-off board serves to entirely disengage the first bag and throw it upon the chute.

The trolley-tracks A^4, preferably similar in construction to the trolley-tracks A^7 just described, are rigidly secured to the roof-trusses A^2. These tracks, in connection with similar tracks A^5, secured to the outer walls of the building, serve to support the trolleys E′, secured at either end of the girders E^2 of the transverse distributer-conveyers E. In this manner the distributers are bodily movable longitudinally of the building, so that they may coöperate with the feeder at any desired point, the throw-off board D upon the feeder being adjusted to correspond. The distributers E are of substantially the same construction as the feeder, which has been described in detail, and they are provided with throw-off boards E^4, which have a similar operation to crowd the bags off the conveyer and upon the chute E^5. These throw-off boards may be adjusted at various points along the distributers, so as to crowd the bags off at any desired place. The distributer-conveyers are operated by the driving-gear E^3. By this means the bags of material may be distributed as desired within the building, since the

distributers may be moved to any desired point and would operate to discharge the bags upon the chutes E^5, which may be placed at any desired point along the distributers. In this way the whole building may be filled with bags of material, and since the conveyer mechanism occupies but little of the storage-room below the roof-trusses very little of the valuable storage-room of the building is unavailable.

Numerous changes may be made in the construction of this conveyer without departing from the spirit of my invention. Furthermore, parts of this invention may be employed without using all of the same, and parts of this invention may also be employed in connection with other conveying means. I do not, therefore, wish to be limited to the disclosure which I have made in this case; but what I wish to secure by Letters Patent is set forth in the appended claims.

I claim—

1. In a conveyer system, a feeder-conveyer extending longitudinally of a building mounted in a substantially central position therein upon the roof-trusses of the same, said feeder-conveyer comprising slats supported by trolleys and sprocket-chains, an inclined throw-off board adjustably mounted upon said feeder-conveyer and bodily-movable distributer-conveyers provided with throw-off boards on either side of said feeder-conveyer.

2. In a conveyer system, a hoist, an inclined trough communicating with said hoist, two feeder-conveyers with either of which said trough may communicate extending longitudinally of a building, ejectors adjustably mounted on said feeder-conveyers, distributer-conveyers bodily movable longitudinally of said feeder-conveyers to receive material therefrom and ejectors adjustably mounted on said distributer-conveyers.

3. In a conveyer system, a feeder-conveyer, an ejector adjustably mounted on said feeder-conveyer to eject material therefrom, a distributer-conveyer bodily movable longitudinally of said feeder-conveyer to receive material ejected from said feeder-conveyer and an ejector mounted on said distributer-conveyer to eject material therefrom.

4. In a conveyer system, a feeder-conveyer comprising self-alining trolley-tracks, facings secured to said trolley-tracks, sprocket-chains, conveyer-slats, brackets secured at either end of said conveyer-slats, said brackets being secured to said sprocket-chains, trolleys secured to part of said brackets and engaging said trolley-tracks and an inclined throw-off board adjustably mounted upon said conveyer, said throw-off board being provided with inclined guides.

5. In a conveyer, sprocket-chains, brackets having slats rigidly secured thereto and connected to said sprocket-chains, means to support part of said brackets rigidly and means to yieldingly support the rest of said brackets and an inclined throw-off board adjustably mounted with respect to said conveyer to engage material upon said slats and to eject the same from said conveyer, said material being engaged by the front edge of said rigidly-supported slats to prevent said material slipping back along said slats.

6. In a conveyer, a series of slats, means to move said slats forward in unison, means to rigidly support part of said slats, means to yieldingly support the rest of said slats, an ejector adjustably mounted to coöperate with said slats to remove material laterally from said slats, said material being engaged by the front edge of said rigidly-supported slats and being forced thereby into contact with said ejector.

7. In a conveyer, a series of slats, means to horizontally move said slats in unison, means to rigidly support part of said slats, means to support the rest of said slats to allow them to assume a position below the rigidly-supported slats, a stationary facing adjacent the ends of said slats and a throw-off board adjustably mounted in an inclined position to coöperate with said slats.

8. In a conveyer, a series of slats, means to move said slats in unison, an ejector mounted adjacent said slats to crowd material off the same, means to rigidly support part of said slats during their movement and means to yieldably support the rest of said slats during their movement.

9. In a conveyer, conveying means and an inclined throw-off board adjustably mounted with respect to said conveying means, said throw-off board being provided with a series of upwardly-inclined guides upon its face to engage an article and crowd the same laterally from said conveying means.

10. In a conveyer, a series of slats, means to move said slats in unison, an inclined throw-off board mounted adjacent said slats to engage articles on said slats, and means on said throw-off board to raise said articles as they are being forced laterally from said slats.

11. In a conveyer, a series of slats, means to move said slats and an inclined throw-off board adjustably mounted with respect to said slats to engage material and crowd the same laterally from said slats, said throw-off board being provided with vertically-inclined guides.

12. In a conveyer, self-alining trolleys and tracks, a series of connected slats supported by said trolleys, facings secured to said tracks adjacent said slats and an ejector to coöperate with said slats to force material laterally therefrom.

13. In a conveyer, self-alining trolleys and tracks, a series of slats supported by said trolleys, and means to force material laterally from said slats.

14. In a conveyer, self-alining trolleys and tracks, and a series of conveying-slats mounted between said tracks and supported by said trolleys.

15. In a conveyer, trolley-tracks, trolleys

to engage said tracks, means to maintain the lateral alinement of said trolleys and tracks, a series of slats supported by said trolleys and means to force material laterally from said slats.

16. In a conveyer self-alining trolleys and tracks and a conveying-surface mounted between said tracks and supported by said trolleys.

JOHN H. COOK.

Witnesses:
HARRY L. DUNCAN,
JAMES N. CATLOW.