

No. 661,136.

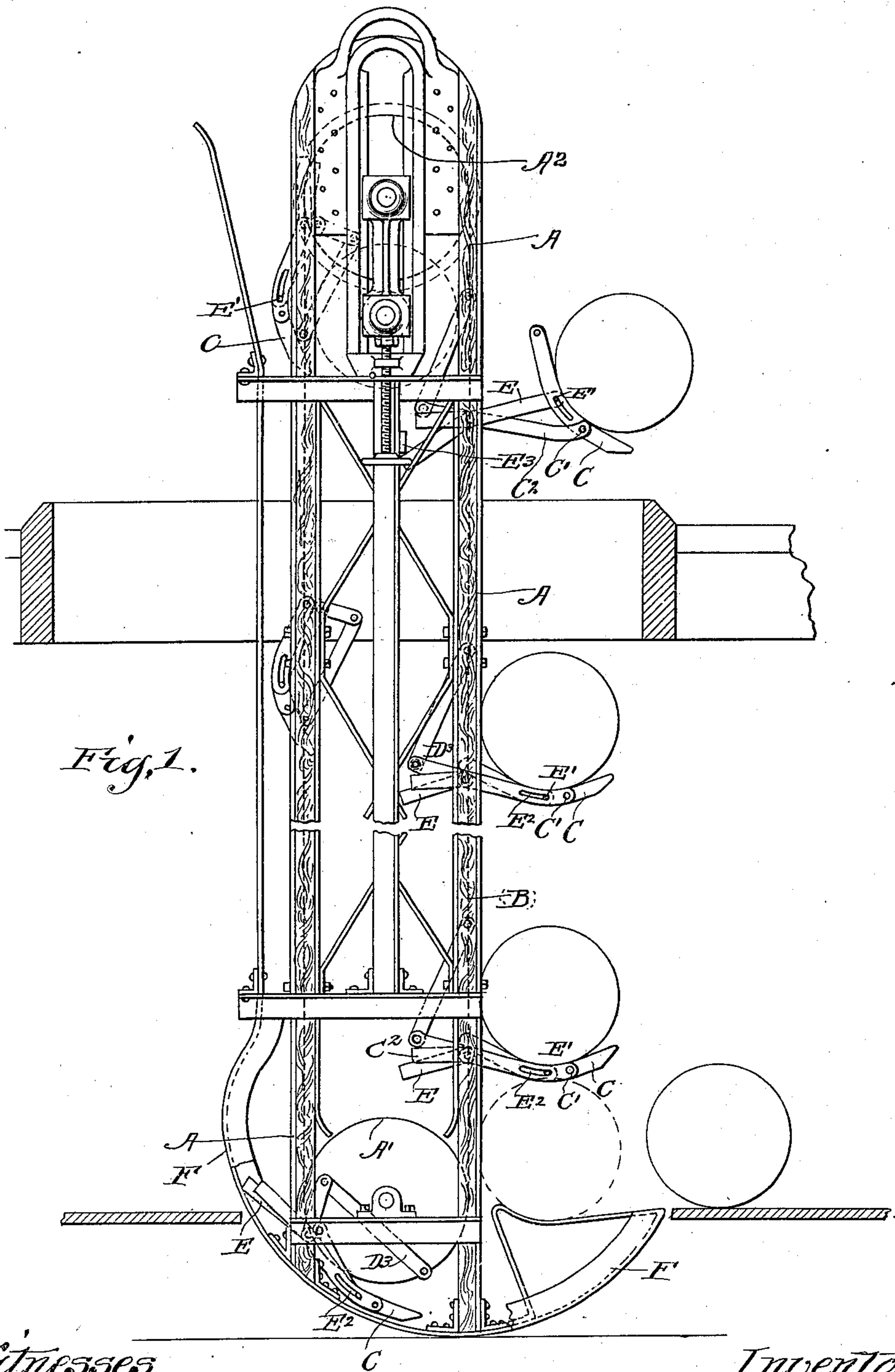
Patented Nov. 6, 1900.

R. ARDELL.
ELEVATOR.

(Application filed Oct. 23, 1899.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses
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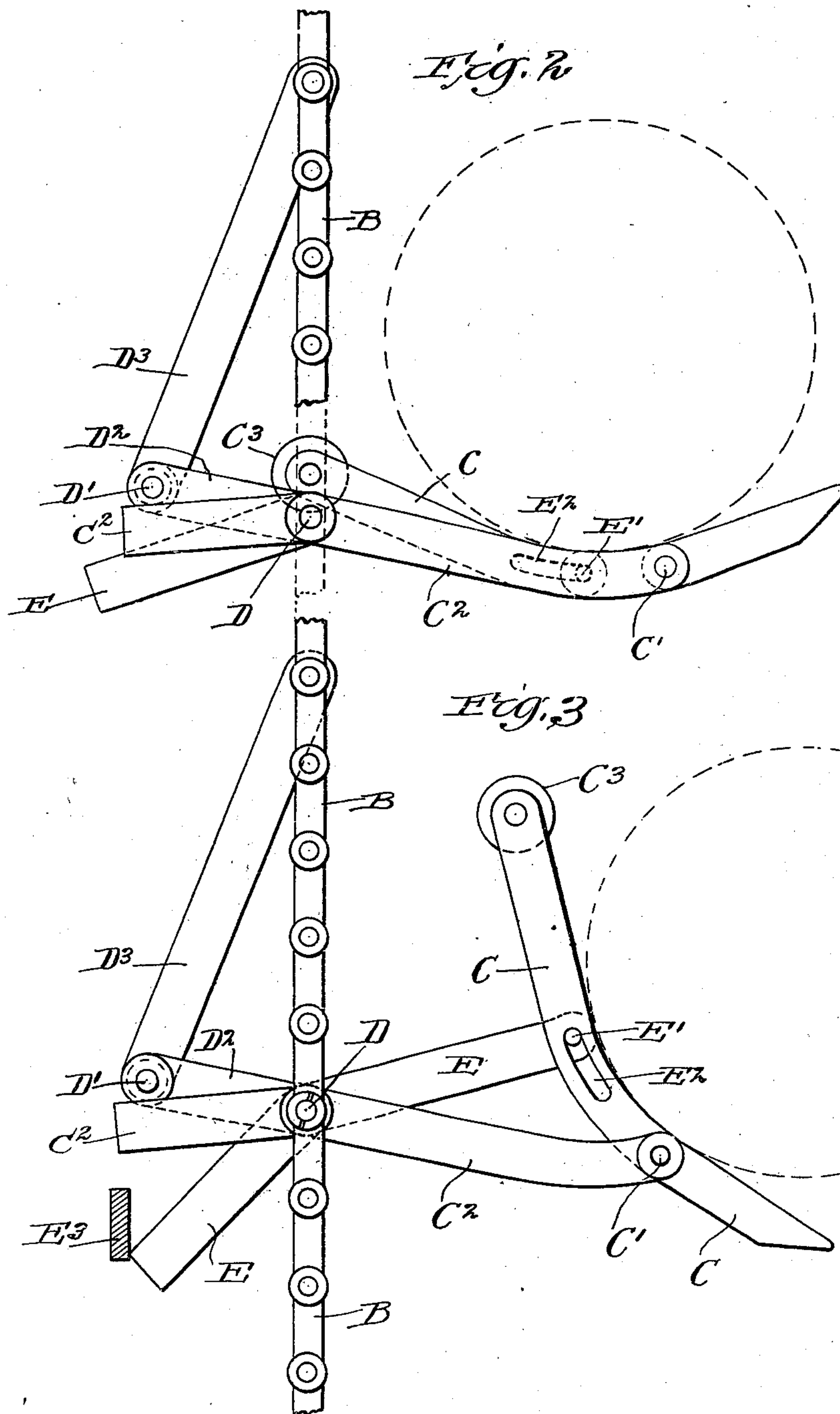
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3 Sheets—Sheet 2.



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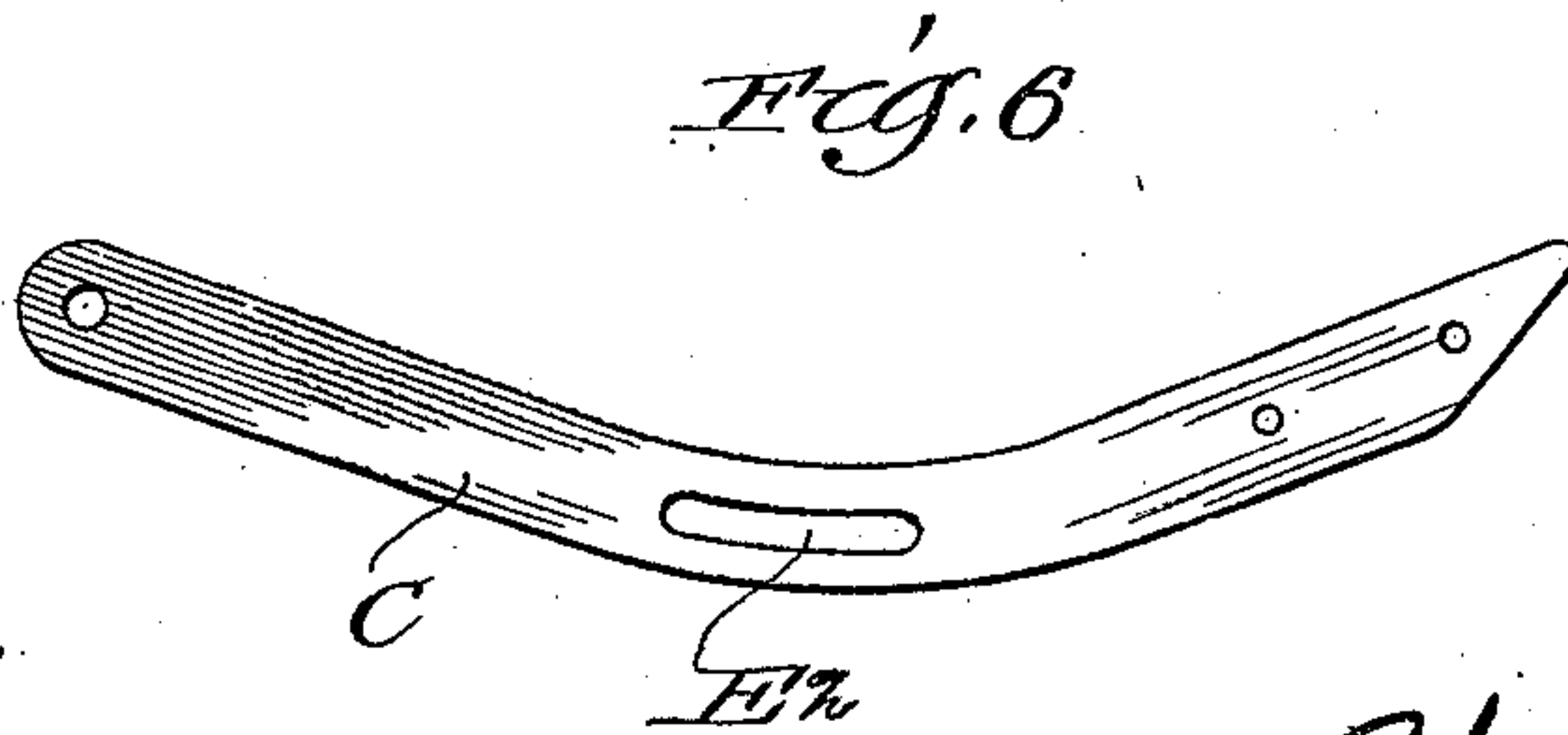
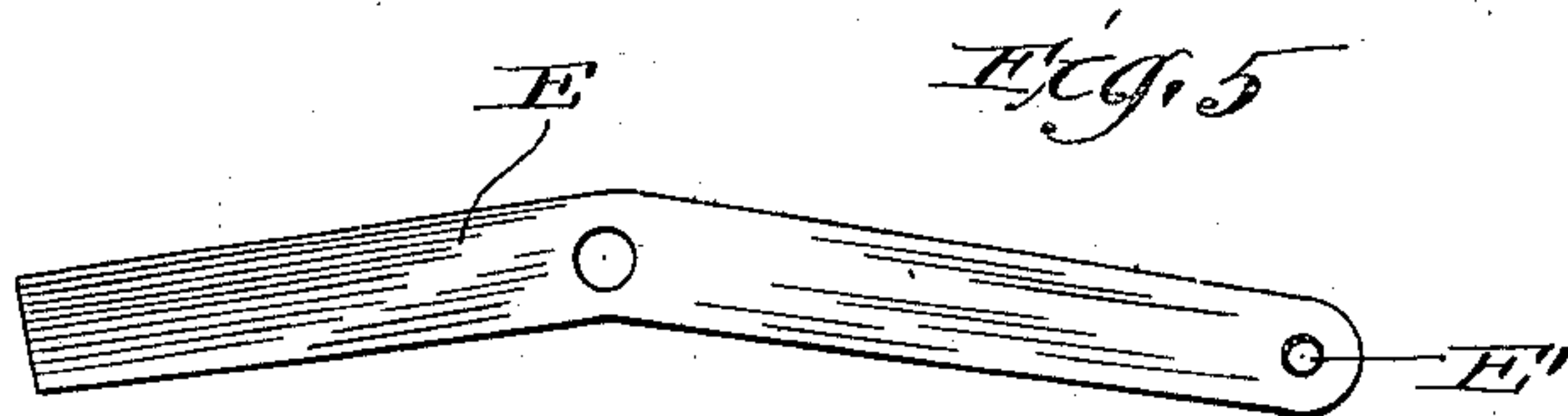
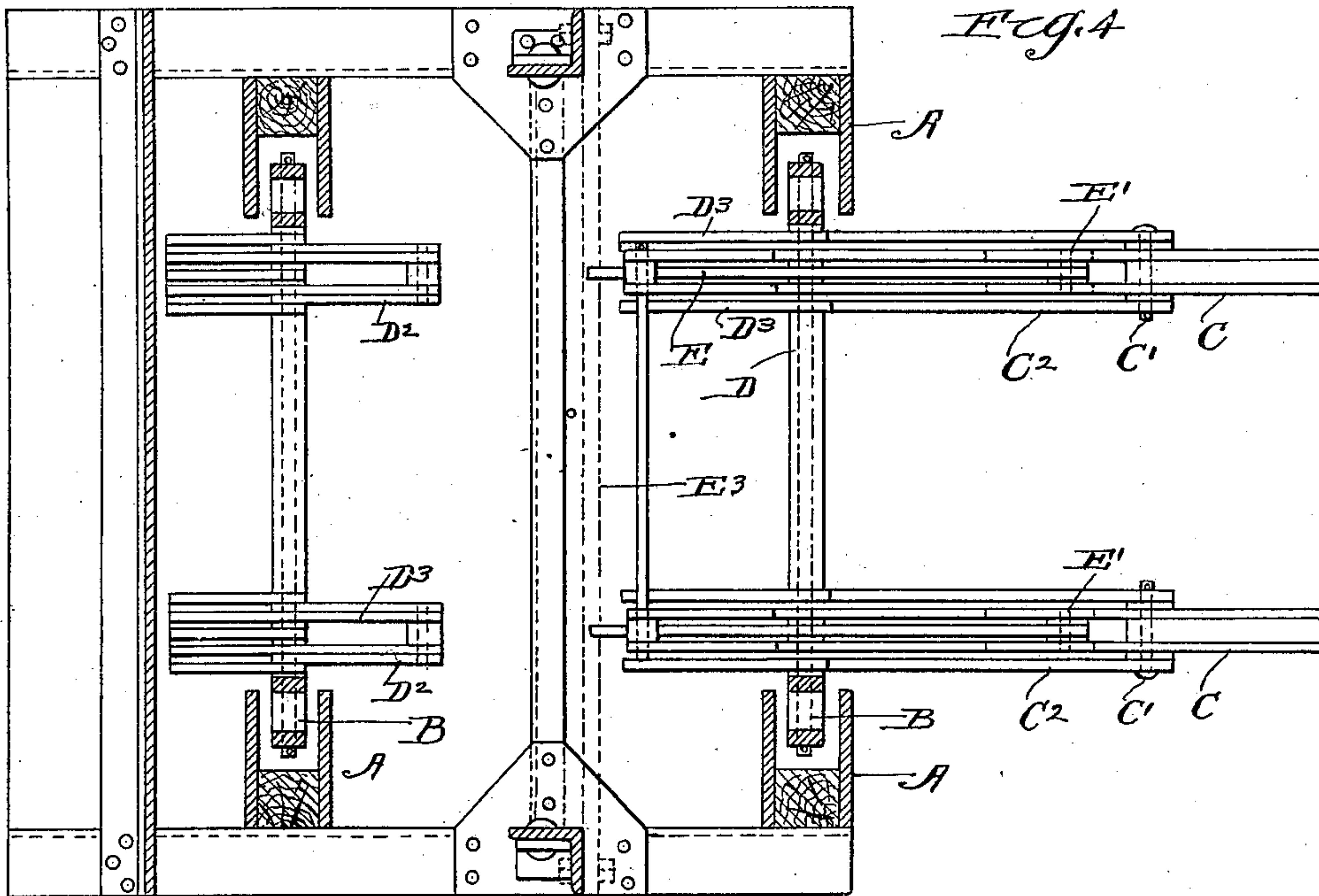
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(No Model.)

3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

ROBERT ARDELL, OF ROTTNEROS, SWEDEN, ASSIGNOR TO THE LINK BELT MACHINERY COMPANY, OF CHICAGO, ILLINOIS.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 661,136, dated November 6, 1900.

Application filed October 23, 1899. Serial No. 734,597. (No model.)

To all whom it may concern:

Be it known that I, ROBERT ARDELL, a citizen of Sweden, residing at Rottneros Bruk, Rottneros, Sweden, have invented a certain new and useful Improvement in Elevators, of which the following is a specification.

My invention relates to devices for moving barrels, sacks, packages, or the like from one level to another, and has for its object to provide a new and improved device for this purpose.

My invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a side view of one form of device embodying my invention. Fig. 2 is an enlarged side view of the engaging arm upon which the material or device operated upon is supported. Fig. 3 is a view of Fig. 2 with the parts in position to discharge the device or material from the engaging arm. Fig. 4 is a cross-section of the device of Fig. 1 with parts omitted. Fig. 5 is a view of one of the tripping-levers. Fig. 6 is a view of one of the holding-arms.

Like letters refer to like parts throughout the several figures.

The device is provided with any suitable frame A, carrying a movable supporting device B, to which is attached one or more of the engaging arms which engage the material to be handled. These engaging arms are suitably spaced, and it is of course evident that any desired number may be employed. I have not described the framework of my device in detail for the reason that the construction of such framework may be greatly varied, the details of such construction being no part of my present invention. The movable supporting device to which the engaging arms are attached may be of any suitable construction. When the form of my device herein illustrated is used, I prefer to use the ordinary link chain for the movable supporting device.

The engaging arms are illustrated in Figs. 2 and 3 and are so constructed as to automatically discharge the material at any desired point and are adapted to be automatically folded when moving in one direction, so as to occupy a very small space. In the construction illustrated I have shown two similar engaging arms placed at some distance from

each other and adapted to engage barrels or sacks, the arms being connected to two endless belts or chains which pass over suitable pulleys A' A², supported by the frame A. Each engaging arm is provided with a tripping-arm C, pivoted at C' to a holding-arm C², which is pivotally connected with a rod D, attached to the movable supporting device, which is in this case the two chains and which support a similar arm in substantially the same plane. The inner end of said tripping-arm is normally supported by this rod D and is preferably provided with a washer C³, the purpose of which is to prevent noise when the arm is automatically folded. The holding-arm C² projects beyond the rod D and when the parts are in their operative position normally engages a cross-piece D', which extends between the two chains. This cross-piece is connected by suitable links D² with the rod D and is connected by braces D³ with the chains or movable supporting device carrying the engaging arms. It will be seen that these braces D³ instead of projecting beyond the chains, so as to increase the width of the device, are contained within the outer boundary of the chains or the frame. This construction permits the engaging arms to be folded, so as to occupy very little space. The holding-arms C², which engage the cross-piece D', when in their operative position are held in this operative position by the braces D³. Said holding-arms are, however, free to move in the opposite direction, so that they may be properly folded. A tripping-lever E is pivotally connected with the rod D and is also pivotally connected with the tripping-arm C at the point E'. The engagement of the tripping-lever with the tripping-arm is such that they may be moved one along the other in addition to the pivotal movement. This result is obtained by providing the tripping-arm with a slot E², through which the pivotal pin connected with the tripping-lever passes. The inner end of the tripping-lever projects beyond the cross-piece D' and a suitable engaging device E³ is associated with the frame at the point where the material is to be discharged, the engaging device so positioned that it engages the tripping-lever and moves the parts to the position shown in Fig. 3. It is of course evident that this engaging de-

vice may be located at any point desired and that several such devices may be used, so that the arm may be tripped at various points. In this event the devices would be removable or constructed so as to be rendered inoperative, so that the tripping-lever would only be actuated when the arm arrived at the proper position. When the ordinary elevating devices having projecting arms are used, a suitable space must be allowed for the projecting arms as they pass around the lower pulleys, and the material to be elevated must be raised above the floor, so as to be substantially on a line with the center of said lower pulleys, or a pit must be provided into which the end of the device is lowered. In many instances, as when the device is used in boats, it is impossible to provide a pit, and hence the material must be elevated before it can be operated upon. When the construction herein shown is used, this evil is practically obviated. At the bottom of the frame A are suitable guides F, which engage the ends of the engaging arms as they move around the bottom of the frame, thus preventing them from unfolding until they have started on their upward journey. This construction allows the arms to be moved around the lower pulleys in a much smaller space than if the arms were left free. The braces being at all times within the frame are entirely out of the way. In the construction shown it will be seen that the pivotal point C' of the tripping-arm—that is, the arm upon which the material is directly supported—is near the outer end thereof and is so located as to be on the outside of the center of gravity of this material, so that the material or article itself tends to hold the parts in their operative position. The construction whereby the engaging arms are braced one way and are free to move the other way permits said arms to automatically fold when they pass over the upper pulleys, as shown in Fig. 1, thus allowing them to be passed downwardly in a very small space. This construction very materially reduces the space occupied by the elevator and has numerous advantages that will readily occur to those versed in the art.

In operating the device the barrel, sack, or other material is placed in a position where it will be engaged by the engaging arms as they move along the frame. When the barrel or other article has reached the proper level, the tripping-lever E comes in contact with the engaging device E³ and the parts are moved so as to discharge said barrel from the engaging arms. The parts return to their normal position after the barrel is discharged and on passing over the upper pulleys automatically fold, as shown in Fig. 1, and remain in this folded position until they reach the bottom of the frame.

I have described a particular construction in order to make my invention clear; but it is, of course, evident that the parts may be va-

ried in form, construction, and arrangement without in any manner departing from the spirit of my invention. I therefore do not limit myself in any manner to such construction.

I claim—

1. A device for conveying articles from one level to another, comprising a movable supporting device, a series of arms pivotally connected therewith, bracing attachments for said arms so that they project outwardly when in their operative position, a tipping device associated with said arms to cause them to tip and discharge the article at the proper point, a folding device associated with said arms to cause them to fold when in their inoperative position.

2. A device for conveying articles from one level to another, comprising a movable supporting device, a series of arms pivotally connected therewith, bracing attachments for said arms so that they project outwardly when in their operative position, a tipping device associated with said arms to cause them to tip and discharge the article at the proper point, a folding device associated with said arms to cause them to fold when in their inoperative position, the several devices for bracing, tipping and folding the arms situated so that they are substantially wholly within the movable supporting device when the arms are folded.

3. A device for conveying articles from one level to another, comprising a flexible movable supporting device, a series of engaging arms movably connected therewith, a portion of each of said arms projecting inwardly past the movable supporting device, a brace for each arm connected with the movable supporting device and associated with the inwardly-projecting part of the arm, so as to be contained within the space bounded by said movable supporting device.

4. A device for conveying articles from one level to another, comprising a suitable frame, a movable supporting device mounted thereon, an engaging arm connected with said movable supporting device, a brace pivotally connected with said arm and connected with said movable supporting device, said brace contained within the outer boundaries of said frame.

5. A device for conveying articles from one level to another, comprising a frame, a movable supporting device mounted thereon, an engaging arm connected with said movable supporting device comprising a tripping-arm, a holding-arm movably connected therewith and connected with said movable supporting device, a brace associated with said holding-arm and connected with said movable supporting device, so as to be wholly contained within the outer boundaries of said frame, and a tripping-lever for said tripping-arm.

6. A device for conveying articles from one level to another, comprising a frame, a movable supporting device mounted thereon, an

engaging arm movably connected with said supporting device and projecting outwardly therefrom when in its operative position, said arm provided with an inwardly-projecting part, a brace connected with said supporting device and free and unconnected with said arm, said brace so positioned as to be engaged by the inwardly-projecting part of said arm when the arm is in an operative position.

10 7. An engaging apparatus for devices for conveying articles from one level to another, comprising a tripping-arm upon which the article rests, a holding-arm pivotally connected thereto and adapted to be movably
15 connected with a movable supporting device, said holding-arm provided with an inwardly-projecting part, a brace adapted to be connected with the supporting device and so positioned as to engage the inwardly-projecting
20 part of said holding-arm so as to prevent its movement in one direction, and a link con-

necting said brace with said holding-arm, whereby the arm may be automatically folded, substantially as described.

8. A device for conveying articles from one 25 level to another, comprising a frame, a flexible movable supporting device mounted thereon, suitable direction-changing devices near the top and bottom of said frame, about which said flexible supporting device passes, a fold- 30 ing arm movably connected with said supporting device and adapted to automatically fold in passing over one of said direction-changing devices, and a guide in proximity to the other direction-changing device and 35 adapted to engage said arm so as to retard the unfolding thereof.

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Witnesses:

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