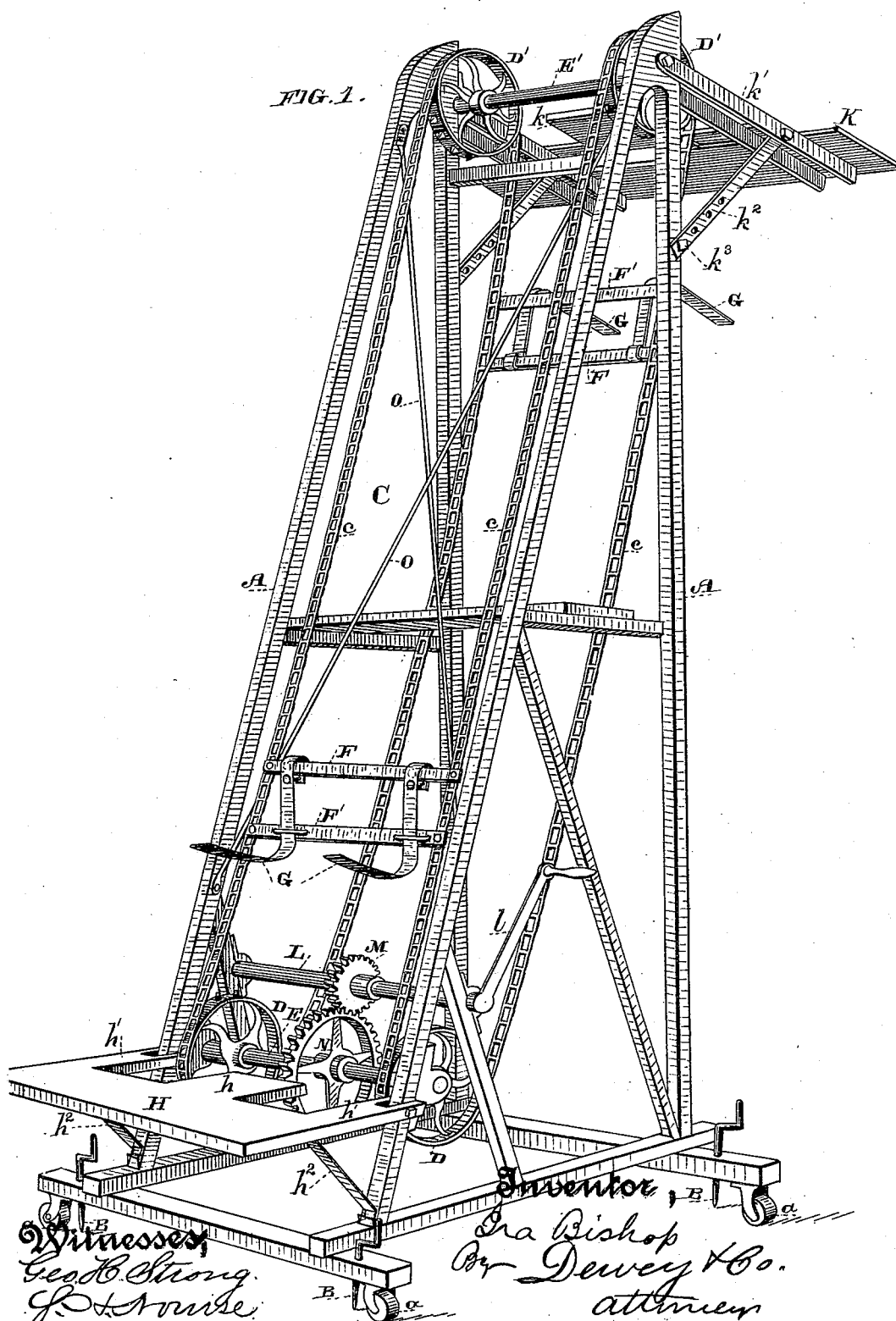


2 Sheets—Sheet 1.

No. 303,384.

Patented Aug. 12, 1884.



I. BISHOP.
ELEVATING APPARATUS.

No. 303,384.

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FIG. 2.

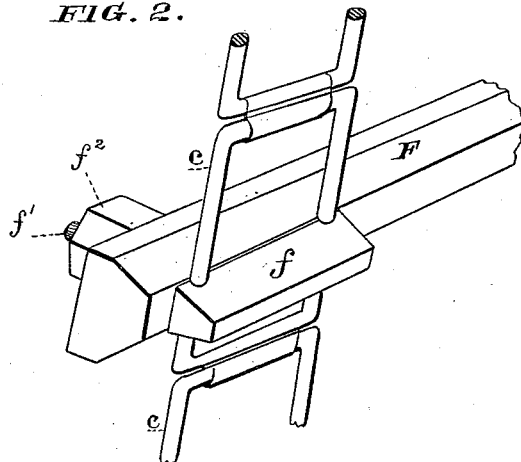


FIG. 3.

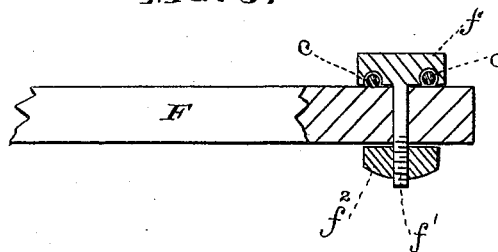
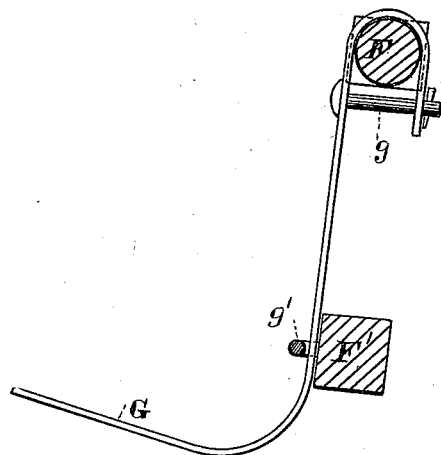


FIG. 4.



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UNITED STATES PATENT OFFICE.

IRA BISHOP, OF SAN FRANCISCO, CALIFORNIA.

ELEVATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 303,384, dated August 12, 1884.

Application filed June 20, 1884. (No model.)

To all whom it may concern:

Be it known that I, IRA BISHOP, of the city and county of San Francisco, and State of California, have invented an Improvement in Elevating Apparatus; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a new and useful elevating apparatus, the special object of which is to carry sacks or bags of material—such as grain—from a lower plane and deposit them on a higher plane—a result necessary to be accomplished in grain-warehouses, where the sacks have to be elevated to the floor above or to the top of a pile on the same floor.

The class of elevating apparatus to which my invention relates is exemplified by that apparatus for which Letters Patent of the United States No. 285,873 were issued to me October 2, 1883, and my present invention is an improvement in the line of said apparatus.

My invention consists in an endless chain belt or carrier having peculiar sack hooks or rests, and mounted by means of a suitable driving mechanism upon a portable frame, to which are attached top and bottom adjustable receiving and discharging aprons, as I shall hereinafter fully explain by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of my elevating apparatus. Fig. 2 is a perspective view of a portion of the chain *c* and cross-bar *F*, showing the manner of fastening. Fig. 3 is a horizontal section of same. Fig. 4 is a detail showing the connection of the hooks or rests *G* with bars *F* *F'*.

A is an upright frame mounted on casters *a*, whereby it is readily portable. Through the base of the frame, near its corners, pass sharp-pointed spurs *B*, which are adapted to be screwed down to enter the floor or ground and raise the frame off its casters, and thus secure and steady it in any desirable place.

C is the endless carrier, consisting of two flexible side chains, *c*, passing below around chain-pulleys *D* on shaft *E*; mounted in frame *A*, and above around chain-pulleys *D'* on shaft *E'*, mounted in the top of the frame.

F is a bar secured transversely between the two chains, and *F'* is a similar bar secured in like manner just below. The way in which

these bars are secured to the chains is shown in Figs. 2, 3. A cross-head or yoke, *f*, is notched, and extends across the back of a link of the chain, and the bars are bound or clamped against the front of the link by a bolt, *f'*, passing through them to the yoke, and tightened by a nut, *f''*.

G are the sack hooks or rests, consisting of bent or curved bars, the tops of which are curved or looped loosely around the upper bar, *F*, and held by a bolt, *g*, Fig. 4, thus forming a pivot or hinge-connection to allow for the necessary conformity as the chains pass around the pulleys. The hooks or rests are guided upon and past the lower bar, *F'*, by means of staples *g'*, loosely embracing them, and the said bar is slightly cut out to receive the hooks. The lower ends of the hooks or rests project outwardly from the bars, and have a slight upward tendency. I have here shown but two sets of hooks or rests, arranged with relation to each other in such manner that as one receives a sack below the other discharges it above, though it is obvious I might provide a greater number of these sets. The staples *g'* prevent the hooks or rests from falling away from their places, and yet allow them to move as they turn on their upper hinges, conforming themselves to the course of travel of the chains around the pulleys.

H is the lower or receiving apron, hinged by arms *h'* to the sides of frame *A*, and supported by legs or braces *h''*, bearing against said sides below. The apron is provided with an inwardly-projecting tongue portion, *h*, upon each side of which the hooks or rests *G* pass, and which enables the sack to be supported in position to be taken up by and upon the upwardly-moving rests. The object of hinging the apron is to permit it to be turned up out of the way when not in use—a necessity which exists to allow free passage when the apparatus is standing in the narrow alleys between the piles of sacks.

K is the upper or discharging apron. This is hinged by arms *k'* to the top of frame *A*, and its inclination may be varied by means of the supporting-braces *k''*, perforated as shown, whereby they are adapted to be secured at various points in their lengths by the bolts *k'''*. The apron is provided with a tongue portion,

• *k*, upon which the sack is deposited and supported while the hooks or rests leave it, passing down on each side of the tongue.

5 The object in providing for various inclinations of the upper apron is to adjust the grade to the top of whatever pile of sacks the apparatus is supplying.

10 The driving mechanism is all below, and it consists of the shaft *L*, pinion *M* on said shaft, and gear *N* on the pulley-shaft *E*. Any suitable power may be applied to shaft *L*, and I have here shown crank *l* for this purpose, adapting the apparatus for hand-power.

15 The operation is as follows: The sack is fed to apron *H* and pushed forward upon the tongue *h*, in which position its ends project over each side. The upcoming hooks or rests take it and carry it upward over the top and deposit it on the tongue *k* of apron *K*, where 20 they leave it. The sack then slips down the inclined apron to the pile or place of deposit. In order to prevent too great sagging of the carrier as it rises, I have the diagonal rods *O*, against which the carrier bears going up. 25 These rods serve also to brace and stiffen the frame *A*.

The entire apparatus is made light and strong, and it can readily be moved from place to place, and quickly fixed by its spurs.

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

1. An elevating apparatus consisting of the portable frame *A* and the endless traveling carrier *C*, mounted on said frame, and provided with hooks or rests *G*, substantially as herein described.

2. In an elevating apparatus, the endless traveling carrier *C*, consisting of the flexible side chains, *c*, mounted above and below on suitable pulleys, and the curved hooks or rests *G*, secured to cross-bars mounted between the chains, substantially as herein described.

3. In an elevating apparatus, the endless traveling carrier *C*, consisting of the flexible side chains, *c*, mounted above and below on suitable pulleys, the cross-bars *F F'*, secured transversely between said chains, and the curved hooks or rests *G*, pivoted or hinged by 45 their upper ends on cross-bar *F*, and guided loosely upon the cross-bar *F'*, whereby they adjust themselves in conformity with the travel of the chains around the pulleys, upon which said chains are mounted, substantially 50 as herein described.

4. In an elevating apparatus, the endless chains *c* of the carrier, and the cross-bars *F F'*, carrying the hooks or rests, in combination with the means by which said bars are secured to the chains, consisting of the bolt *f'* and nut *f''*, and the notched clamping-yoke *f*, fitting the back of a link of the chains, substantially as herein described.

5. The frame *A* of an elevating apparatus, the shafts *E E'*, mounted below and above in said frame, and the chain-pulleys *D D'* on said shafts, in combination with the endless

carrier *C*, consisting of the flexible chains *c*, mounted on said pulleys, and the curved hooks or rests *G*, secured to suitable cross-bars 70 mounted between the chains, substantially as herein described.

6. The frame *A* of an elevating apparatus, the shafts *E E'*, mounted below and above in said frame, and the chain-pulleys *D D'* on said shafts, in combination with the endless carrier *C*, consisting of the flexible chains *c*, mounted on said pulleys, and the curved hooks or rests *G*, secured to suitable cross-bars mounted between the chains, and the 75 means for driving said carrier, consisting of power-shaft *L*, pinion *M* on said shaft, and gear *N* on shaft *E*, substantially as herein described.

7. The frame *A* of an elevating apparatus, 85 provided with casters *a*, whereby it is moved about, and bearing the endless carrier by which the material is elevated, and the mechanism by which said carrier is driven, in combination with the vertically-moving spurs 90 *B* in the base of the frame, whereby said frame is fixed in position, substantially as herein described.

8. In an elevating apparatus, and in combination with the frame *A* and endless traveling carrier *C*, provided with hooks or rests *G*, the apron *H*, upon which the material to be elevated is placed, to be engaged by the hooks or rests of the carrier, substantially as herein 100 described.

9. In an elevating apparatus, and in combination with the frame *A* and endless traveling carrier *C*, provided with hooks or rests *G*, the receiving-apron *H*, secured to the frame, and having a tongue portion, *h*, upon which 105 the material to be elevated is supported in position to be engaged by the upcoming hooks or rests, substantially as herein described.

10. In an elevating apparatus, and in combination with the frame *A* and endless traveling carrier *C*, provided with hooks or rests *G*, the receiving-apron *H*, having arms *h'*, by which it is hinged to the frame, and legs or braces *h''*, by which it is supported, substantially as and for the purpose herein described. 115

11. In an elevating apparatus, and in combination with the frame *A* and endless traveling carrier *C*, provided with hooks or rests *G*, the upper inclined discharge-apron, *K*, secured to the frame, and upon which the carrier deposits its load, substantially as herein described. 120

12. In an elevating apparatus, and in combination with the frame *A* and endless traveling carrier *C*, provided with hooks or rests *G*, the upper inclined discharge-apron, *K*, secured to the frame, and having a tongue portion, *k*, upon which the load is deposited as the hooks or rests leave it, passing on each side of the tongue, substantially as herein described. 125

13. In an elevating apparatus, the frame *A* and endless carrier *C*, in combination with the discharge-apron *K*, hinged to the top of the frame, and means for varying and adjusting 130

the inclination of said apron, substantially as herein described.

14. In an elevating apparatus, the frame A and endless carrier C, in combination with
5 the discharge-apron K, having arms k' , pivoted to the top of the frame, and the perforated legs or braces k^2 , by which the inclination of said apron is varied and adjusted, substantially as herein described.

10 15. The frame A of an elevating apparatus, and the diagonal rods or bars O on the front of the frame, for preventing the sagging of the carrier C, in combination with said carrier, substantially as herein described.

15 16. An elevating apparatus consisting of

the portable frame A, endless carrier C, provided with hooks or rests G, suitable pulleys for mounting said carrier, and mechanism for driving it, the hinged receiving-apron H, near the bottom of the frame, and the hinged adjustable discharge-apron at its top, all arranged and operating substantially as herein described.

In witness whereof I have hereunto set my hand.

IRA BISHOP.

Witnesses:

CHAS. H. DODGE,
J. H. BLOOD.