No. 673,320. Patented Apr. 30, 1901.

C. W. LEVALLEY.

BUCKET ELEVATOR.

(Application filed Apr. 24, 1900.)

(No Model.)

Fig. 5.

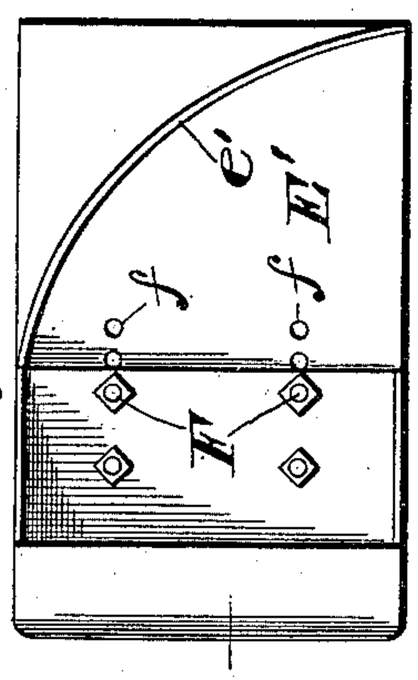


Fig. 6.

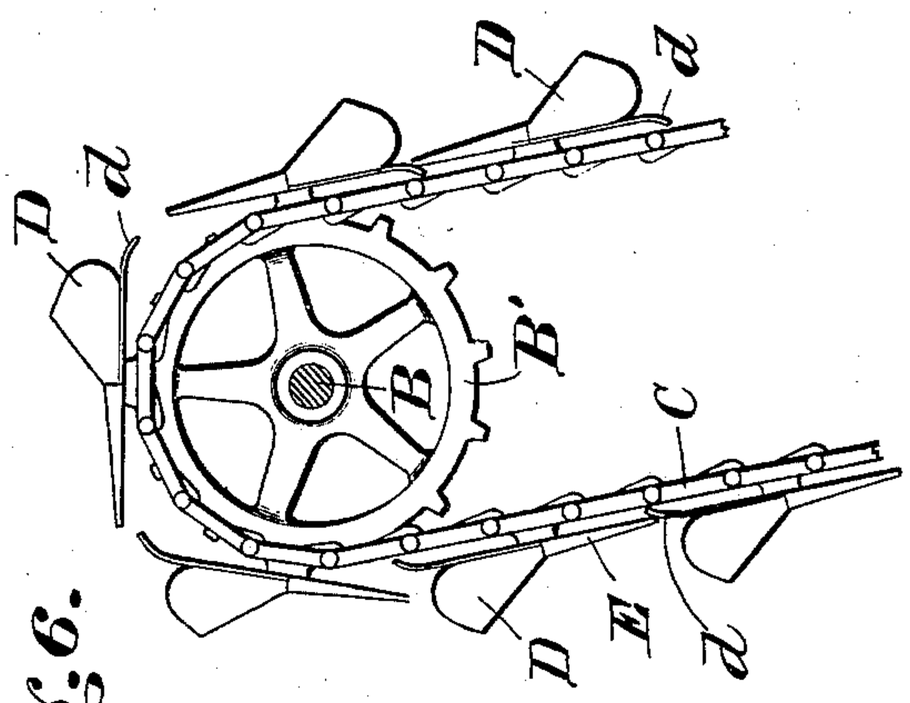


Fig. 2.

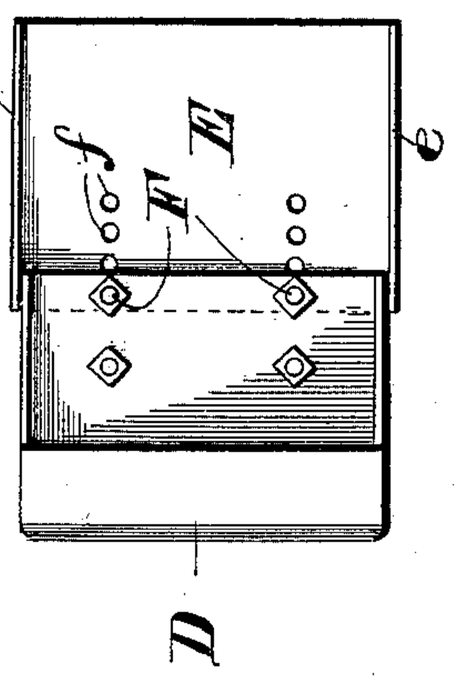


Fig. 3.

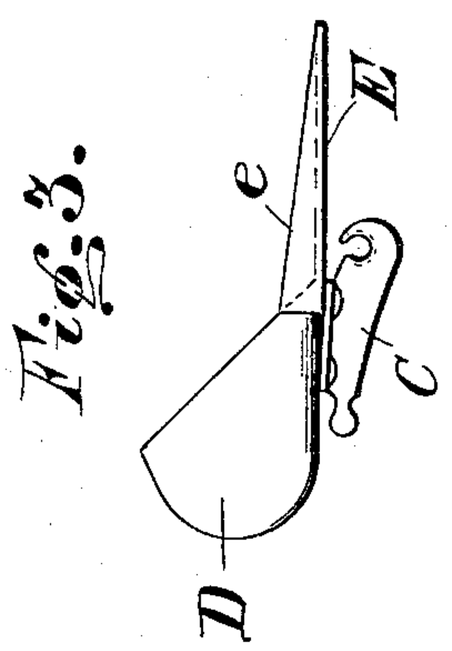
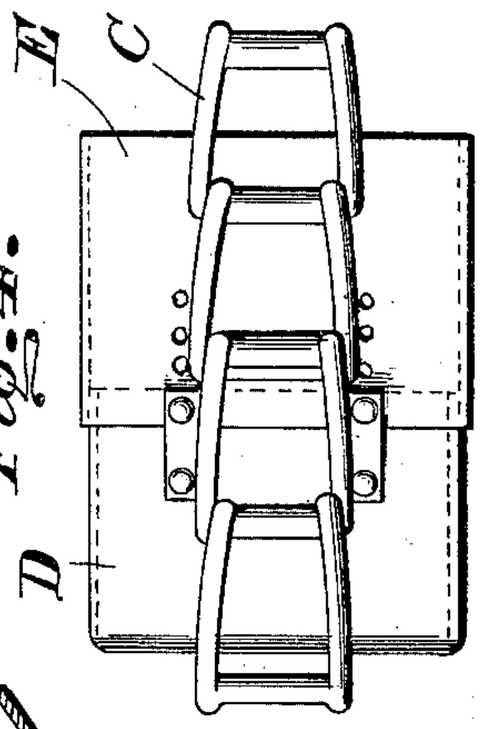


Fig. 4.



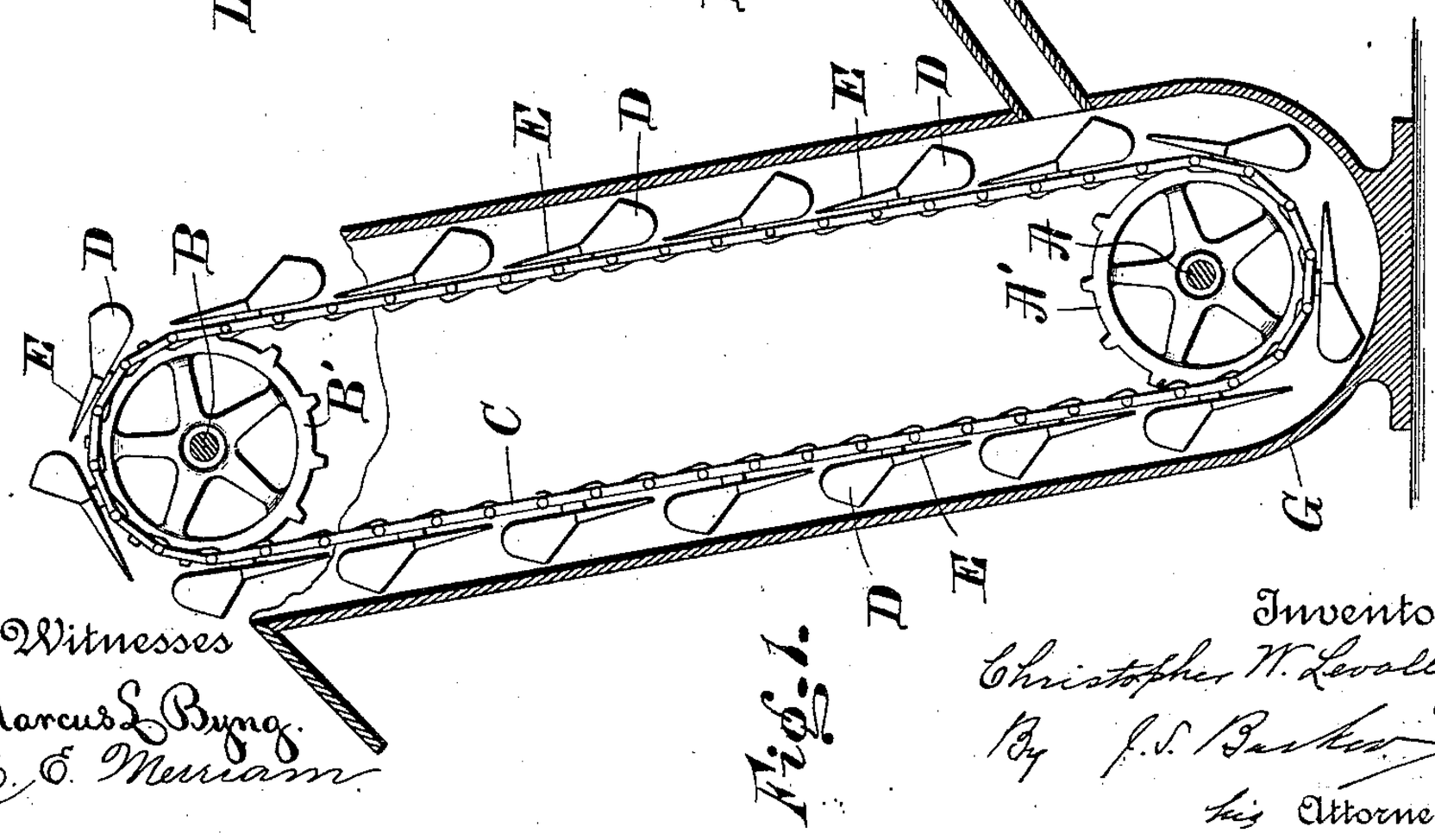


Fig. 1.

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UNITED STATES PATENT OFFICE.

CHRISTOPHER W. LEVALLEY, OF MILWAUKEE, WISCONSIN.

BUCKET ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 673,320, dated April 30, 1901.

Application filed April 24, 1900. Serial No. 14,144. (No model.)

To all whom it may concern:

Be it known that I, CHRISTOPHER W. LEVALLEY, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Bucket Elevators, of which the following is a specification.

In the use of bucket elevators as usually heretofore constructed much difficulty has been experienced from the fact that the contents of each bucket in turning the wheel at the top of the elevator was to a greater or less extent emptied or spilled upon the back of the preceding bucket, with the result that more or less of the material was diverted from its desired course and spilled upon the chains to which the buckets were attached, and this is especially true when the elevator is running slowly, as is required in elevating some materials, such as coarse coal, broken stone, and the like. The result of this is that the effectiveness of the device as an elevating medium is not fully secure, the material being more or less scattered and often injured by reason of its contact with the elevating machinery or gearing. Another defect of elevators as now ordinarily constructed is experienced at the inchute or inlet-spout, through which the material to be elevated is delivered to the elevator. It is found that much of the material fed to the elevator is shot through the links of the chain intervening between the buckets, and thus comes into contact with the gearing.

My present invention has for its object to overcome both of the defects above pointed out; and it consists in combining with the elevator-bucket an extension plate, shield, or spout which is adapted to overlap the space between the bucket with which it is combined and the one next to it and which is so arranged as to properly direct the material in the bucket when it is discharged so that it shall clear the other parts of the elevator and which shall also serve to prevent the material as it is being delivered to the elevator from coming into contact with the gearing.

In the drawings, wherein my invention is illustrated, Figure 1 is a sectional elevation of an elevator embodying my improvements. Fig. 2 is a top plan view, enlarged, of an elevator-bucket provided with an extension plate or spout. Fig. 3 is a side view of the parts shown in Fig. 2 and also of a chain-link, to which the bucket is secured. Fig. 4 is a bottom plan view of the parts shown in Figs. 2 and 3, several of the elevator-chain links being shown. Fig. 5 is a top plan view of a different form of my invention from that illustrated in the other figures, the bucket there shown being arranged for side delivery. Fig. 6 is an elevation illustrating a somewhat different form of the invention from that shown in Fig. 1.

In the drawings, A represents the foot-shaft, and B the head-shaft, of an elevator such as is employed for transferring grain.

A′ represents the sprocket wheel or wheels upon the foot-shaft; B′, a like wheel on the head-shaft, and C the chain or chains traveling over said wheels. But one chain is shown, though it will be understood that with buckets of considerable width two chains are employed for supporting and carrying the buckets.

D represents the buckets, which are secured to the chain-links, these buckets being so separated upon the elevator-chain as to leave one or more open links between each pair of buckets. Where the elevator is considerably inclined, the buckets will empty their loads as they pass over the head without interference from the buckets immediately preceding; but where the elevator is vertical or nearly vertical, as is usually necessary, each bucket tends to discharge more or less of its contents upon the bucket immediately preceding, with the result that the material is more or less scattered, as has been pointed out before. To obviate this defect, I combine with each bucket an extension plate or spout E, which is of such length as to substantially bridge or cover the space between the bucket to which it is secured and the one immediately preceding and which is so disposed as to overlie the intervening links between such buckets. The extension-plate is preferably secured to the bucket by being bolted to the front edge thereof, as represented in Fig. 2, and I prefer to form it with side flanges *e*, which form practically continuations of the side walls of the bucket. The extension-plate is preferably made ad-

justable relative to the bucket—as, for instance, by providing it with a series of holes *f*, through any one of which the connecting-bolts F may be passed. This permits of the bucket and its extension-plate being used with chain-links of different lengths. With this construction it is evident that so long as the buckets are on the ascending or descending reaches of the chain the extension-plates will lie flat against and cover the links, but as they pass over the head-wheel of the elevator the plates will open away from the chain, as represented in Fig. 1, until they assume such position as to cause the material being discharged from the buckets to shoot over and entirely clear of the preceding bucket. In passing around the sprocket-wheel A′ at the foot of the elevator and through the trough of the boot G the plates E will also open away from the links; but in such instance they will lie directly behind the preceding bucket and will not interfere with the scooping up of the load. As the buckets pass the inchute or inlet H, through which the material is delivered to the elevator-boot, the plates E will lie flat against the links and form, with the buckets, a practically unbroken wall to prevent the incoming material from shooting through the chain and into contact with the sprocket-wheels. To secure this, the plates E are of a width to completely cover the underlying chain or chains.

My invention is adapted for use in connection with side-delivery elevators, and in Fig. 5 I have shown a bucket and extension-plate E′, adapted to deliver at the side. In this form of my invention the side flanges *e* are omitted and instead the plate is provided with an oblique and preferably curved flange *e′*, which extends across the face of the plate, so as to direct the material discharged from the bucket over the side edge of the plate. The rectangular shape of the plate E′ is retained in this form of my invention for the purpose of covering and protecting the underlying chains.

In the form of my invention illustrated in Fig. 6 each bucket is shown as being provided with a rearward-extending plate *d*. This plate may be either formed integral with the extension-plate E, in which case it would extend under the bucket D and preferably be secured thereto, or it might be made integral with the bucket, or it might consist of an independent plate attached to the bucket. Its purpose is to entirely bridge the space between the forward edge of the extension plate or spout E and the rear portion of the elevator-bucket immediately preceding. The rear portion or edge of this plate *d* is preferably curved, as represented in Fig. 6, to insure that the forward edge of the plate E shall always lie outside of or on top of the plate *d*.

My invention is adapted for use in connection with elevators adapted for working upon many different kinds of material, and may be used in connection with buckets and chains different in construction from those shown without departing from its essential features of novelty and utility.

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

1. In a bucket elevator, the combination with the chain, of buckets secured to certain of the links of the chain, one or more links intervening between each bucket-carrying link, and extension-plates secured to the front edges of the buckets and arranged to overlie the said intervening links, substantially as set forth.

2. In a bucket elevator, the combination with the chain, of the buckets carried thereby, having side walls, and the extension-plates secured to the forward edges of the buckets and provided with side flanges *e* adapted to form practically continuations of the side walls of the buckets, whereby the said extension-plates constitute delivery-chutes for the buckets, substantially as set forth.

3. In a bucket elevator, the combination with the chain and the buckets carried thereby, of extension-plates extending practically from bucket to bucket, and of a width to entirely overlie (transversely) the chain, whereby the said plates constitute shields to protect and guard the chain between the buckets, the said extension-plates being secured to and carried by the buckets, and free from the chain, substantially as set forth.

4. In a bucket elevator, the combination with the chain, the buckets carried thereby and the inchute or feed spout, through which material is delivered to the lower portion of the elevator, of shields carried by the buckets, and extending from one bucket to the next over the chain, and arranged to occupy a position between the said feed-spout and the chain as the chain passes the spout, whereby the material delivered is kept from contact with the chain and gearing, substantialy as set forth.

5. In a bucket elevator, the combination with the chain and buckets, of an extension-plate extending in advance of each bucket and means for adjusting the said plate, substantially as set forth.

6. In a bucket elevator, the combination of the chain C, the buckets D secured to certain links of the chain, the extension-plates E provided with a series of holes *f*, and the bolts F adapted to pass through the holes *f* in the extension-plates, and through holes in the edge of the buckets whereby the extension-plates and buckets are connected, substantially as set forth.

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