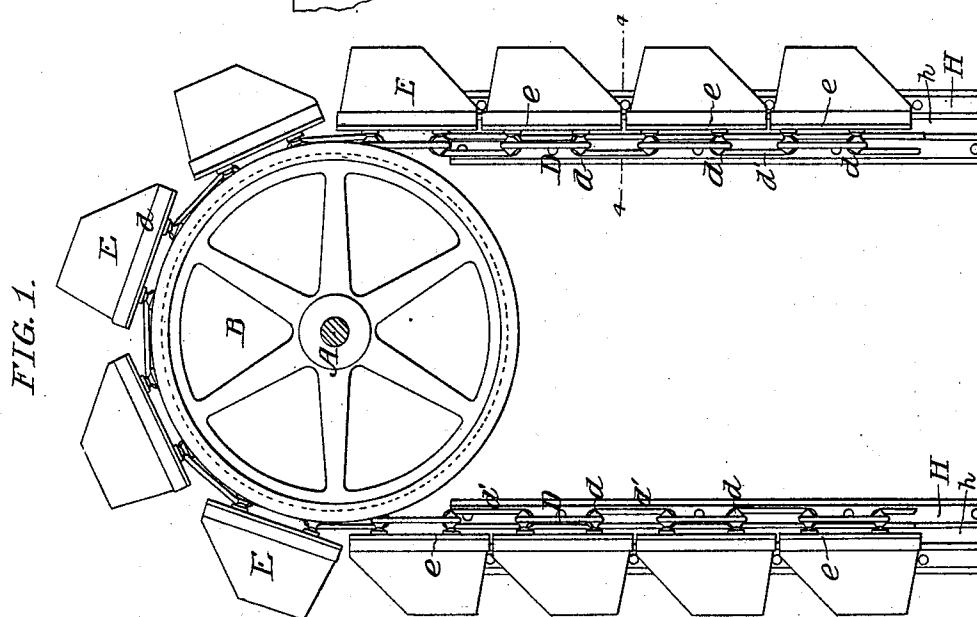
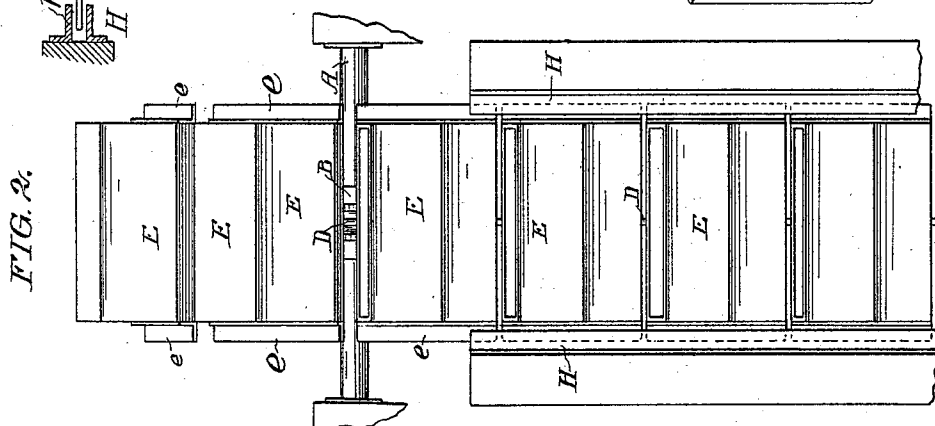
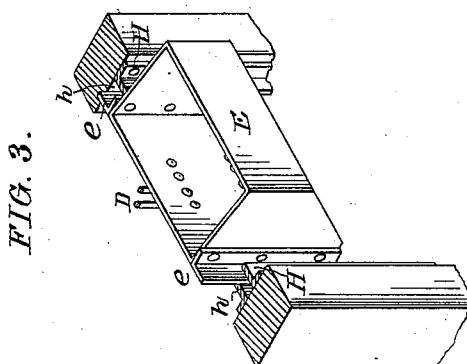
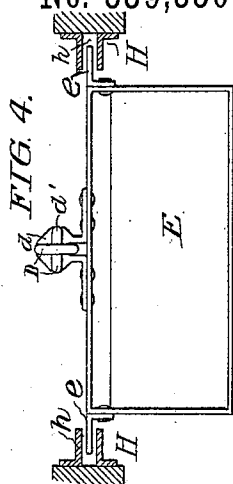


(No Model.)

# J. CAVANAGH. BUCKET ELEVATOR.

No. 539,350.

Patented May 14, 1895.



Witnesses  
H. D. Goodwin.  
Will. A. Barr.

Inventor:  
Joseph Cavanagh,  
by his Attorneys  
Horn & Horn

# UNITED STATES PATENT OFFICE.

JOSEPH CAVANAGH, OF ASHBOURNE, ASSIGNOR TO THE LINK BELT ENGINEERING COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

## BUCKET-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 539,350, dated May 14, 1895.

Application filed November 8, 1894. Serial No. 528,198. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH CAVANAGH, a citizen of the United States, and a resident of Ashbourne, Montgomery county, Pennsylvania, have invented certain Improvements in Bucket-Elevators, of which the following is a specification.

The object of my invention is to so construct a bucket elevator that the buckets will be guided and will not fall in the event of the chain parting, but will simply rest one upon another as fully described hereinafter, reference being had to the accompanying drawings, in which—

Figure 1 is a side view illustrating my invention. Fig. 2 is a front view. Fig. 3 is a perspective view of one of the buckets adapted to the guides; and Fig. 4 is a sectional plan view on the line 4 4, Fig. 1.

A is the driving shaft.

B is the driving wheel having in its periphery a groove; adapted to receive the blocks *d* of the chain D. This chain is known as the "Dodge" chain. The links *d'* of the chain, in the present instance, do not bear upon the wheel, the contact being simply with the block *d*. The driving wheel B has a smooth face, the sprockets usually employed to engage the chain being dispensed with and the chain is driven by friction.

It has been found in practice, that particles of coal or rock will become fastened in the links of the chain and will jam in the sprockets of the sprocket wheel when used; and the wear upon the sprockets of the wheel will be such that in a very short time the sprockets will break, but by driving the elevator by friction, this difficulty is entirely overcome.

The conveyer is what is termed a single chain conveyer, that is, the buckets E are hung upon a single chain, the blocks having wings which are secured to the buckets. A single chain bucket will have the tendency to swing and I preferably mount at each side of the elevator guides H H, forming slide ways *h h* and I secure to each side of each bucket,

in the present instance, angle iron *e* forming flanges which extend into the guide ways *h*, of the guides H; so that the buckets will be confined and will not twist either on the upward or downward run.

The angle irons *e* extend preferably from the bottom to the top of the buckets E, and the buckets are so arranged that there is very little clearance between them. The object of this is that, in the event of the chain parting, the buckets will simply drop a very short distance, and rest one upon another in the guide ways, and if the break should occur on the elevating run, the part below the break will fall a slight distance and the upper portion will be carried over until the buckets rest one upon another in the descending run, and the portion of the conveyer still resting upon the friction wheel will not be jammed as the wheel will simply turn without moving the conveyer. Thus, this device will prevent serious accidents which might occur if the buckets were not so arranged that they would rest one upon another in guide ways when the chain parts, and by having a smooth drive wheel the chain will not be thrown over the wheel and jammed, as would be the case if a sprocket wheel was used.

It will be understood that the wheel may be of a different design from that shown in the drawings and short guiding flanges may be used, the buckets in this event resting one upon another, or the flanges on the buckets may be made of simple plain bars, or may be extensions of the back plate of the bucket without departing from my invention.

I claim as my invention—

1. The combination in a bucket elevator, of the smooth driving pulley, a chain adapted to be driven thereby, upright guides on each side of the elevator, buckets carried by the chain, and extensions on the buckets adapted to the guides whereby the buckets are prevented from falling out of line should the chain part, substantially as described.

2. The combination of the smooth drive pulley, a chain adapted thereto and to be

driven thereby, buckets secured to said chain,  
flanges on each side of the buckets, upright  
guides within which the flanges travel, said  
flanges extending the full height of the bucket,  
5 so that the series of buckets will be supported  
by the flanges if the chain should part, sub-  
stantially as described.

In testimony whereof I have signed my  
name to this specification in the presence of  
two subscribing witnesses.

JOSEPH CAVANAGH.

Witnesses:

WILL. A. BARR,  
JOSEPH H. KLEIN.