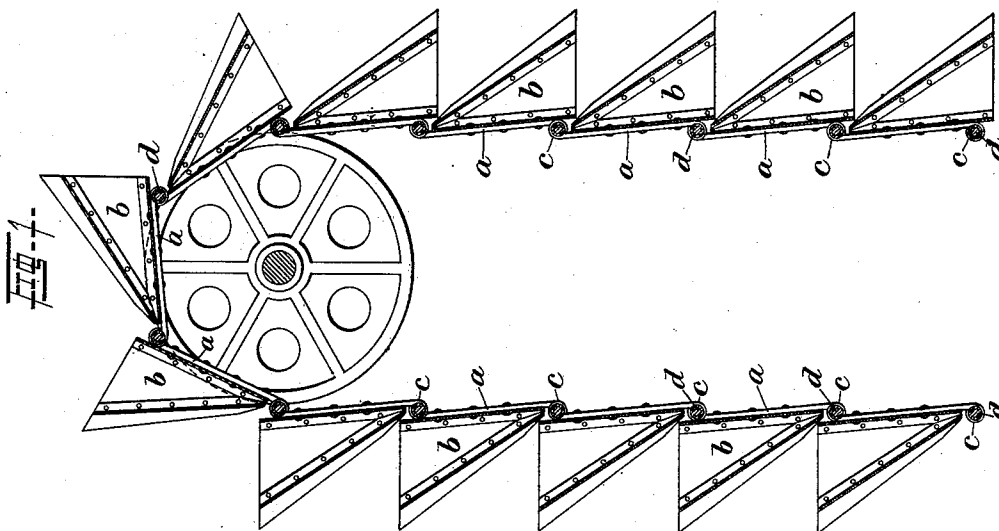
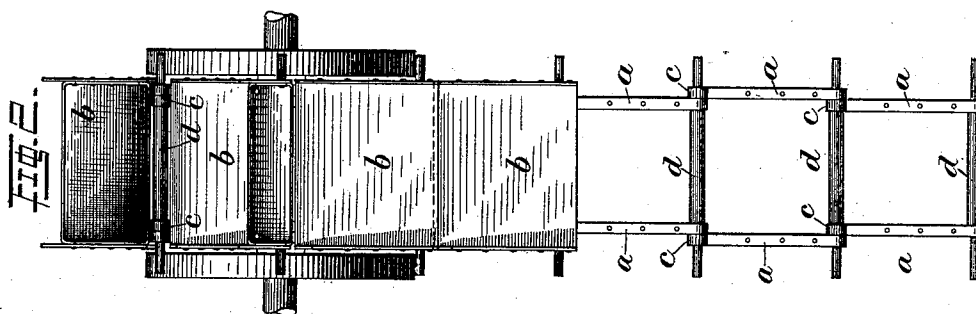
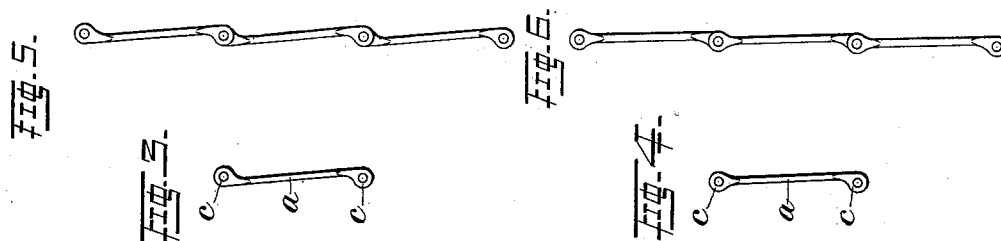


(No Model.)

G. LAUDER.
ELEVATOR CHAIN.

No. 375,366.

Patented Dec. 27, 1887.



WITNESSES.

H. L. Gill
N. B. Corwin

INVENTOR.

George Lauder
by W. Baskwell & Sons
his Attorneys

UNITED STATES PATENT OFFICE.

GEORGE LAUDER, OF PITTSBURG, PENNSYLVANIA.

ELEVATOR-CHAIN.

SPECIFICATION forming part of Letters Patent No. 375,366, dated December 27, 1887.

Application filed July 21, 1887. Serial No. 244,954. (No model.)

To all whom it may concern:

Be it known that I, GEORGE LAUDER, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Elevator-Chains; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to an improvement in elevator-chains which are used in elevator-bucket systems with coal and ore washing machines and for other purposes, its object being to simplify and make more secure the arrangement of the elevator-buckets on the chains.

Elevator-buckets are made of iron or steel, and are arranged in series on an endless chain which is driven by suitable pulleys, so as to pass within the receptacle or pile containing the matter to be lifted. As the buckets rise, they take up their load, and as they pass over the pulley-wheel at the top of their course and come down on the other side they discharge it. The buckets are set quite close together on the chain, and unless some provision is made to prevent it they would not clear each other in passing over the pulley, and the chain would therefore bind. To avoid this it has been the practice in setting the buckets on the chain to hold the upper end or mouth of each bucket out from the chain by means of bits of wood secured in place between the bucket and the chain, and in this way clearance is provided for the buckets, and the upper end or mouth of the bucket does not interfere with the base of the adjacent one, as it otherwise would. The disadvantage of this arrangement is that the interposition of the wooden pieces loosens the connection between the bucket and the chain, the buckets are apt to become displaced, and, generally, they make the bucket system less capable of doing its proper work. My invention has for its object to provide an improved arrangement in this regard, whereby the buckets are held in their proper positions by the links of the chain without the necessity for interposing blocks, &c. The construction is in this way simplified and the connection of the buckets and chains strengthened.

I will now describe my improvement with reference to the accompanying drawings, wherein—

Figure 1 is a side view of an elevator-chain and buckets illustrating my invention. Fig. 2 is a front elevation thereof, some of the buckets being removed to more clearly show the construction of the chain; and Figs. 3 and 4 are detail views illustrating the construction of two different forms of the links, Fig. 3 illustrating the link which is shown in Figs. 1 and 2, and Fig. 4 illustrating a modified form of the link constructed on the same principle and also embodying my invention. Fig. 5 is a side view of three adjacent links of the form shown in Fig. 3, shown in the position which they assume when connected together in series to form the chain; and Fig. 6 is a similar view showing the form of link illustrated in Fig. 4.

Like symbols of reference indicate like parts in each.

In the drawings, *a a* are the links which form the chains of an elevator-bucket system, and *b b* are the buckets which are bolted thereto. Instead of being constituted by links fastened together end to end in an unbroken line, the chain is composed of links having bosses *c* at their ends, arranged alternately on opposite sides of the links, so that when the links are placed end to end, with the usual rods or pins *d* passing through the eyes of the bosses and connecting them together in parallel series, each side of the double chain so constituted shall be formed in steps, as shown in the side view, Fig. 1, and when the buckets are fastened to the links the mouth of each bucket shall be held by the bosses *c* out of line from the base of the bucket next above it.

In Figs. 1 and 3 I show the links *a a*, made by flattening the ends of iron rods, having the bosses on opposite sides of the rods. In Fig. 4 the flattened part at one end of the rod is in line with the body of the rod, and the flattened part at the other end is out of line with it. It will thus be apparent that the links can be made in many different forms without departing from the spirit of my invention, which requires only that the chains of the bucket system shall be arranged in steps, so as to hold the mouth of each bucket out from the base of the next adjacent bucket, these steps being formed by the bosses. The bosses of adjacent links, which are side by side and connected by the pins or rods *d*, are either turned in oppo-

site directions, as shown in Figs. 1, 2, and 5, or the boss on the end of one link projects to one side of the link, while the adjacent boss of the next link is in line with the link, as shown in Fig. 6. In either case the effect is to produce a stepped chain and to hold the mouth of each bucket out from the base of the next bucket, and it is obvious that both these forms of my invention which I show are identical in principle, the adjacent bosses of the several links being arranged in varying directions in both cases. I shall therefore embody both these modifications in the following first claim, wherein the conformation and arrangement of the links are distinguished from the prior state of the art by the words "arranged in varying directions." The second claim refers specifically to the form of link shown in Fig. 3.

20 My invention is susceptible of some further modifications, such as will suggest themselves to those skilled in the art.

The advantages of this arrangement of the

buckets are that they are held to the chains with great security, and by merely setting them on the chains they remain in proper position without further adjustment.

I claim—

1. An elevator-chain formed of a series of links, the adjacent bosses of the links being arranged in varying directions and constituting a stepped chain, in combination with buckets set on the links, substantially as and for the purposes described.

2. An elevator-chain formed of a series of links, said links being provided with bosses which project in varying directions, in combination with buckets set on the links, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 13th day of July, A. D. 1887.

GEORGE LAUDER.

Witnesses:

H. J. LINDSAY,
JAMES LIPPINCOTT, Jr.