(No Model.)

A. ROLL.

COAL LIFTER.

No. 483,791. Patented Oct. 4, 1892.

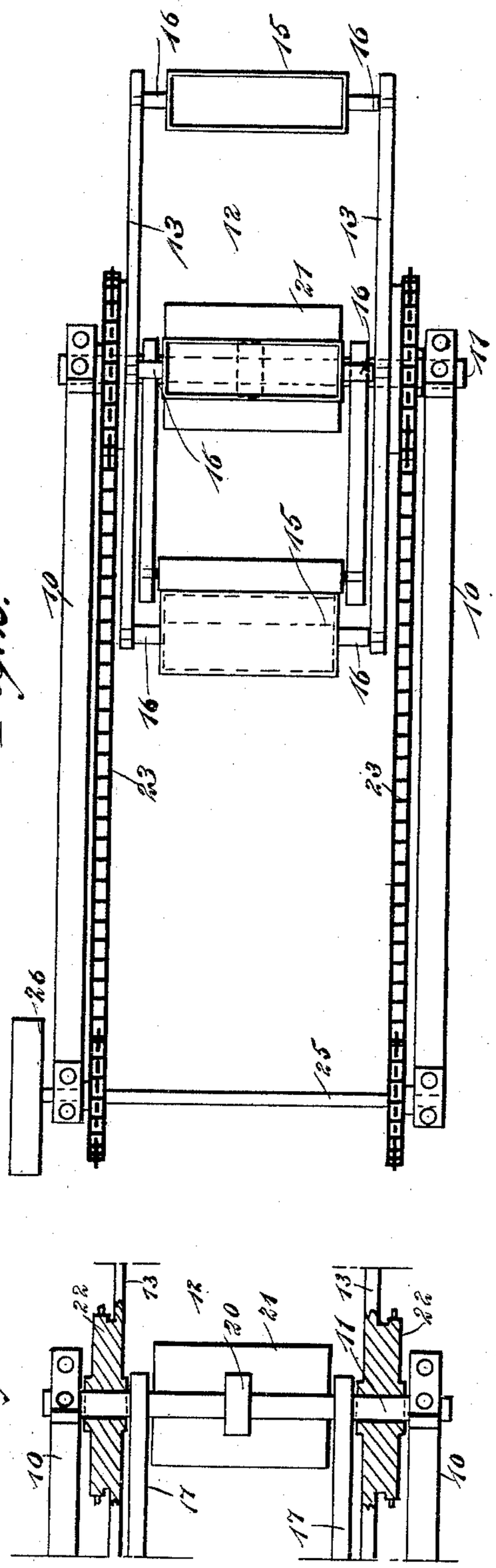

Fig. 2.

Fig. 3.

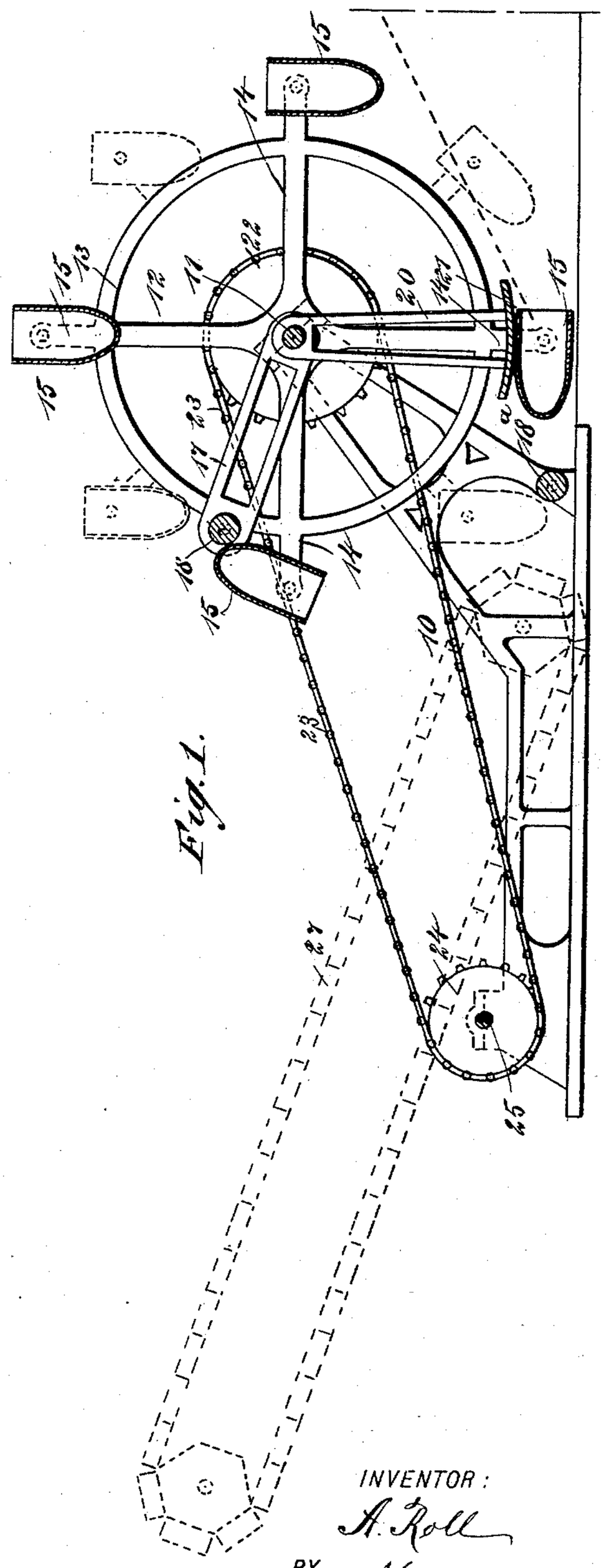

Fig. 1.

WITNESSES:

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ALBERT ROLL, OF SOUTH AMBOY, NEW JERSEY.

COAL-LIFTER.

SPECIFICATION forming part of Letters Patent No. 483,791, dated October 4, 1892.

Application filed December 19, 1891. Serial No. 415,647. (No model.)

To all whom it may concern:

Be it known that I, ALBERT ROLL, of South Amboy, in the county of Middlesex and State of New Jersey, have invented a new and Improved Coal-Lifter, of which the following is a full, clear, and exact description.

My invention relates to improvements in coal-lifters and in lifters which are adapted to lift other loose material; and the object of my invention is to produce a simple apparatus by means of which coal or other material may be rapidly lifted from a pile and delivered into a conveyer and by means of which, also, the coal may be raised without materially breaking it. This latter feature is one of the main points of my invention, as the ordinary lifters break the coal to a very great extent.

To this end my invention consists in certain features of construction and combinations of the same, as will be described and claimed hereinafter.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a sectional elevation of the improvement embodying my invention. Fig. 2 is a plan view of the same; and Fig. 3 is a broken sectional plan of the main wheel, its supporting-shaft, and certain parts connected therewith.

The apparatus is provided with a substantial overhanging frame 10, in the front upper portion of which is supported a stationary shaft 11, on which turns loosely a wheel 12, comprising the connected circular side pieces 13. The wheel 12 is provided with parallel radially-extending arms 14, the arms being arranged in pairs and four pairs of arms being preferably employed, although a greater or less number may be used. Pivotally suspended between each pair of arms is a deep narrow bucket 15, having a rounded bottom, and the bucket has end trunnions 16, which are journaled in the arms 14. The buckets will thus extend across the face of the main wheel, and when the wheel revolves they will scoop coal or other material at the base of the wheel, and as the buckets rise the weight of the material within them will cause them to maintain a vertical position.

Extending laterally from the main shaft 11 and fixed to the shaft are arms 17, which project slightly upward and which are connected at their outer ends by a roller 18, the roller being journaled in the arms, and the length of the arms is such that the roller will extend into the path of the buckets 15 and a little beyond the center of the buckets. This will cause the buckets to be tipped over, as shown in Fig. 1, as they come successively in contact with the roller, the roller striking the outer portion of the bucket and causing it to be held stationary, or nearly so, while the upper portion of the bucket travels downward. It will be seen that the roller must be a little outside of the center of the bucket at the bottom, but inside of the path of the bucket-trunnions.

A roller 18^a is pivoted in the frame 10 near its base, so as to strike the buckets inside of their center near the bottom, and thus tip them over flatwise, as shown in Fig. 1, so that they will be placed in the right position to scoop up the coal or other material which is to be raised. Keyed to the center of the main shaft 11 is a depending arm 20, which extends downward to a point just outside of the face of the wheel 12, and the arm terminates at its lower end in a segmental guide-plate 21, which is arranged a little in front of the roller 18^a and a little above the same, and the buckets when tipped by the roller 18^a pass flatwise beneath the plate 21, thus easily filling with the material to be raised, and the plate prevents the buckets from tipping up.

Rigidly fixed to the ends of the wheel 12 are sprocket-wheels 22, which are driven by means of chains 23, extending rearward over sprocket-wheels 24, carried by a shaft 25 at one end of the frame 10, and the shaft has a suitable driving-pulley 26 and when revolved imparts motion to the wheel 12. A conveyer 27 of the usual kind is arranged so as to receive the material dumped by the buckets 15, as shown by dotted lines in Fig. 1, and the conveyer may be used to carry the material to any desired point.

The operation of the lifter is as follows: The machine is arranged adjacent to a pile of coal and when the wheel 12 is revolved the buckets 15 will be carried around with the wheel, and each bucket as it reaches a point near the bottom of the wheel will be tipped by the roller 18^a, so as to pass beneath the guide-

plate 21, and the plate will hold it in a horizontal or nearly-horizontal position until it is filled. As the buckets fill they will be carried upward and over the wheel, and as they reach the roller 18 they will be successively tipped over, so as to dump their contents upon the conveyer 27. It will be seen that this mechanism provides for lifting the coal very rapidly, and as the buckets are simply dipped into the pile the coal will be lifted without being much broken.

If desired, the frame 10 may be mounted upon any common form of revoluble platform or turn-table, so that the wheel may be conveniently brought into position for use, and the wheel may be used for raising dirt, grain, or any loose material.

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

1. A lifting-machine comprising a revoluble wheel having radially-extending arms thereon, buckets pivotally suspended between the arms, arms secured to the wheel-shaft and projecting radially therefrom, and a roller carried by the shaft-arms and arranged in the path of the bucket-arms, substantially as described.

2. The combination, with a revoluble wheel having buckets pivoted thereon, of a roller mounted near the bottom of the wheel in the path of the bucket-bottoms and a stationary guide-plate held adjacent to the roller and adapted to engage the buckets, substantially as described.

3. A coal-lifter comprising a revoluble wheel having radially-extending arms, buckets pivotally suspended in the arms, a roller mounted in the path of the buckets, and a guard-plate supported adjacent to the bottom of the wheel and adapted to engage the buckets, substantially as described.

ALBERT ROLL.

Witnesses:
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