

978,312.

3 SHEETS--SHEET 1.



Witnesses:
W. A. Hutton
John D. Gumples

Asher Lambert,  Inventor
By his Attorneys *Kenny & Kenyon*

A. LAMBERT.
HOISTING AND CONVEYING APPARATUS.
APPLICATION FILED FEB. 10, 1909.

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Patented Dec. 13, 1910.

3 SHEETS—SHEET 2.

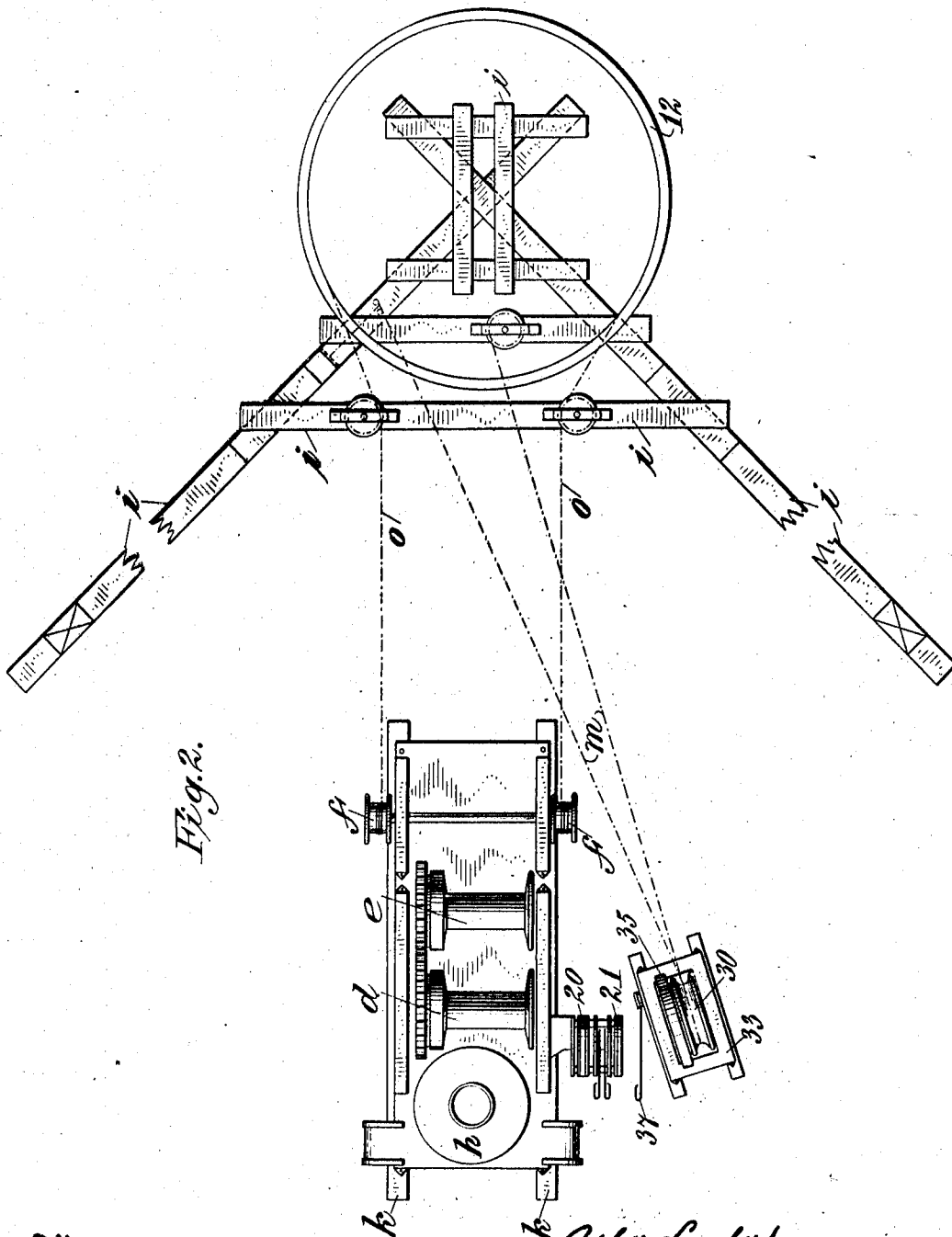


Fig. 2.

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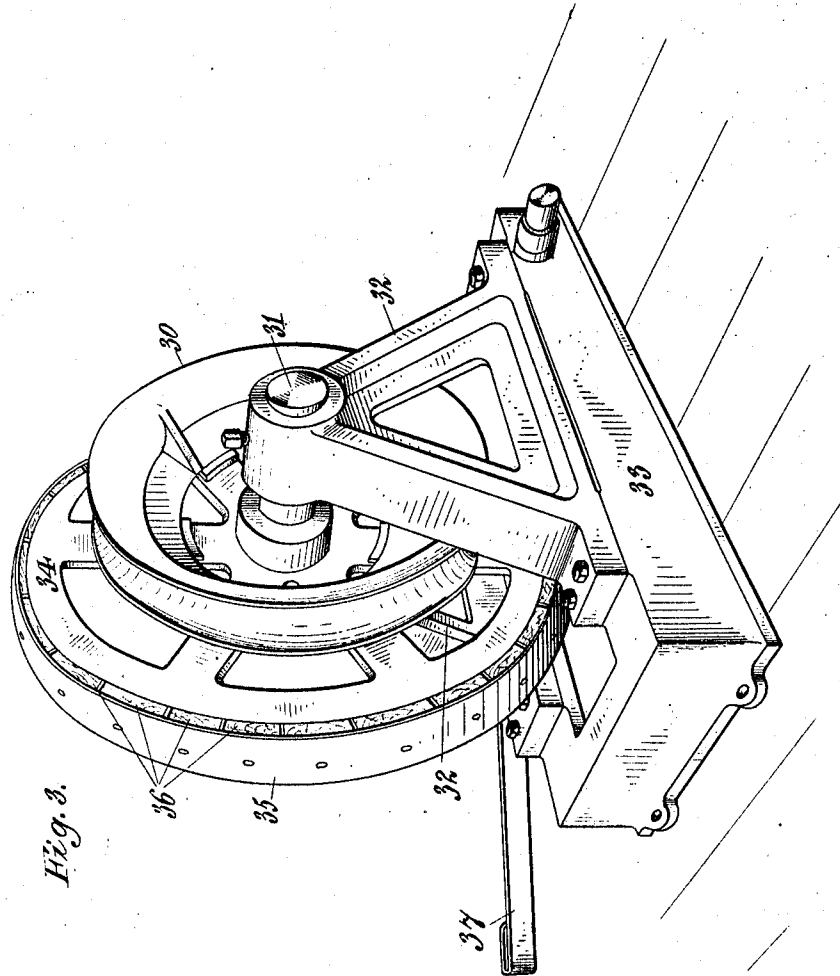
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3 SHEETS—SHEET 3.



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W. A. Hutton
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UNITED STATES PATENT OFFICE.

ASHER LAMBERT, OF NEWARK, NEW JERSEY.

HOISTING AND CONVEYING APPARATUS.

978,312.

Specification of Letters Patent.

Patented Dec. 13, 1910.

Original application filed May 3, 1906, Serial No. 314,929: Divided and this application filed February 10, 1909. Serial No. 477,157.

To all whom it may concern:

Be it known that I, ASHER LAMBERT, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have made certain new and useful Improvements in Hoisting and Conveying Apparatus, of which the following is a full, clear, and exact description.

This invention relates to automatic apparatus employing buckets for excavating, filling, hoisting, removing, and discharging earth, coal or other materials, and in the method of operating such buckets.

The object of the invention is to obviate the evil effect of heat generated by friction in lowering the bucket and to provide a separate independent detached means but operating in connection with the hoisting engine so that said means may be replaced or shifted about as occasion may require.

The improvement in the method of operating the bucket consists in employing two ropes which are fixed to the bucket, one being a closing and hoisting rope, the other an opening and lowering rope. The hoisting rope is connected with one drum of a hoisting engine, the lowering rope is connected to a separate independent means which is detached from the engine. The bucket is then hoisted by one rope, its support shifted to the second rope, the load discharged and the bucket lowered while supported by said second rope.

The accompanying drawings illustrate the invention.

Figure 1 is a side elevation of the bucket, hoisting engine, a derrick, and the independent means for lowering the bucket. Fig. 2 is a top plan view. Fig. 3 is a perspective view of the separate detached independent means for gradually lowering the bucket.

In Fig. 1, there is a hoisting engine *h* having rotating drums *d*, *e*, and *f*. The derrick has a vertical mast 10, a swinging boom 11, a turn table therefor 12, and a stiff leg or brace 13. The bucket *b* is shown of the clam shell pattern. The rope *r* passes around the pulley *p*; when supported by the rope *r* the bucket is automatically closed. The rope *m* is the lowering rope and is connected to the joint or hinge *j* of the bucket *b*; when supported upon the rope *m* the bucket automatically opens and discharges its load. The rope *r* passes over the pulley *t*

and is operated by one of the drums either *d* or *e*. The rope *n* is operated by one of the drums *d* or *e* and is reeved through the pulleys 15, 16 and 17, its outer end being fixed at the point 18; this rope when operated raises and lowers the boom 11. The rope *o* passes around the winches *f*, *f*; the function of the rope *o* and winches *f* is to turn the bull wheel or turn table 12. There are a series of framing or foundation timbers *i* laid in position and secured together to support the derrick, and there is a frame *k* upon which the hoisting engine is fixed. There are controlling devices 20 and 21 by which the drums of the engine are thrown into gear and started and checked in their movement in a well known manner.

A means for operating the lowering and opening rope *m* is shown in Fig. 3; this consists of a pulley 30 on a shaft 31 in suitable bearings carried by the brackets 32. There are a pair of these brackets and they are located upon an independent foundation 33. There is a brake wheel 34, a strap friction brake 35 with wooden contact blocks or shoes 36 and a controlling lever 37 designed to be operated by the foot. This device may be located on the frame *k* of the engine as shown in Fig. 1 or may be separately supported in a detached position as shown in the plan view, Fig. 2. It is composed of comparatively light material so as to be easily portable and it may be easily substituted by a duplicate device if it becomes heated or injured. The opening and lowering rope *m* passes over the pulleys *s*, *g* and *w* to the pulley 30, thence over the pulley 40 supported from the stiff leg 13 and is fixed to a point 41 on the stiff leg 13. On the rope *m* between the points 40 and 41 there is a weight *x* having a pulley 42. This pulley takes up the slack in the rope *m* as the hoisting rope *r* raises the bucket *b*.

The operation is as follows: The bucket *b* is in contact with the earth or broken stone to be removed. The engine is started to hoist on the rope *r*, the pulley *p* is thus turned and the bucket is closed to grab the earth and is hoisted to the desired height. The boom 11 is turned and hoisted to bring the bucket *b* over the desired discharge point; the weight *x* takes up the slack in the rope *m*, it is now desired to discharge the bucket, the friction brake 37 is operated by the foot, the rope *m* is held, the hoisting

rope *r* is slacked, the weight of the bucket is thrown onto the rope *m*, the bucket *b* automatically opens and discharges and while the bucket *b* is supported by and from the rope *m*, the friction brake 37 is so manipulated as to allow the bucket to gradually descend. In this manner the heat and friction due to applying the brake to the hoisting drum is avoided. By the use of the means described and the method of operation described the hoisting and lowering may be continued rapidly and indefinitely without heating the operating parts of the hoisting drum and without generating sufficient accumulated heat in the means for lowering the bucket to cause trouble or inconvenience.

By the use of the means described a two drum engine which is commonly carried in stock and is available at short notice may be made to perform the duties of a three drum engine.

What I claim and desire to secure by Letters Patent is:

1. The combination of a self opening bucket, a hoisting rope, a controlling rope,

means for hauling on one of said ropes to raise the bucket, means for shifting the weight of the bucket from one rope to the other and a separate, independent means for lowering said bucket while supported upon said second rope.

2. The combination of a self opening bucket, a hoisting rope, a controlling rope, means for hauling on one of said ropes to raise the bucket, means for shifting the weight of the bucket from one rope to the other and a separate independent means for gradually lowering said bucket while supported upon said second rope.

3. The combination of a self opening bucket, a hoisting rope, a controlling rope, means for hauling on one of said ropes to raise the bucket, means for shifting the weight of the bucket from one rope to the other and a separate detached means for gradually lowering said bucket while supported upon said second rope.

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Witnesses:

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