

No. 622,840.

Patented Apr. 11, 1899.

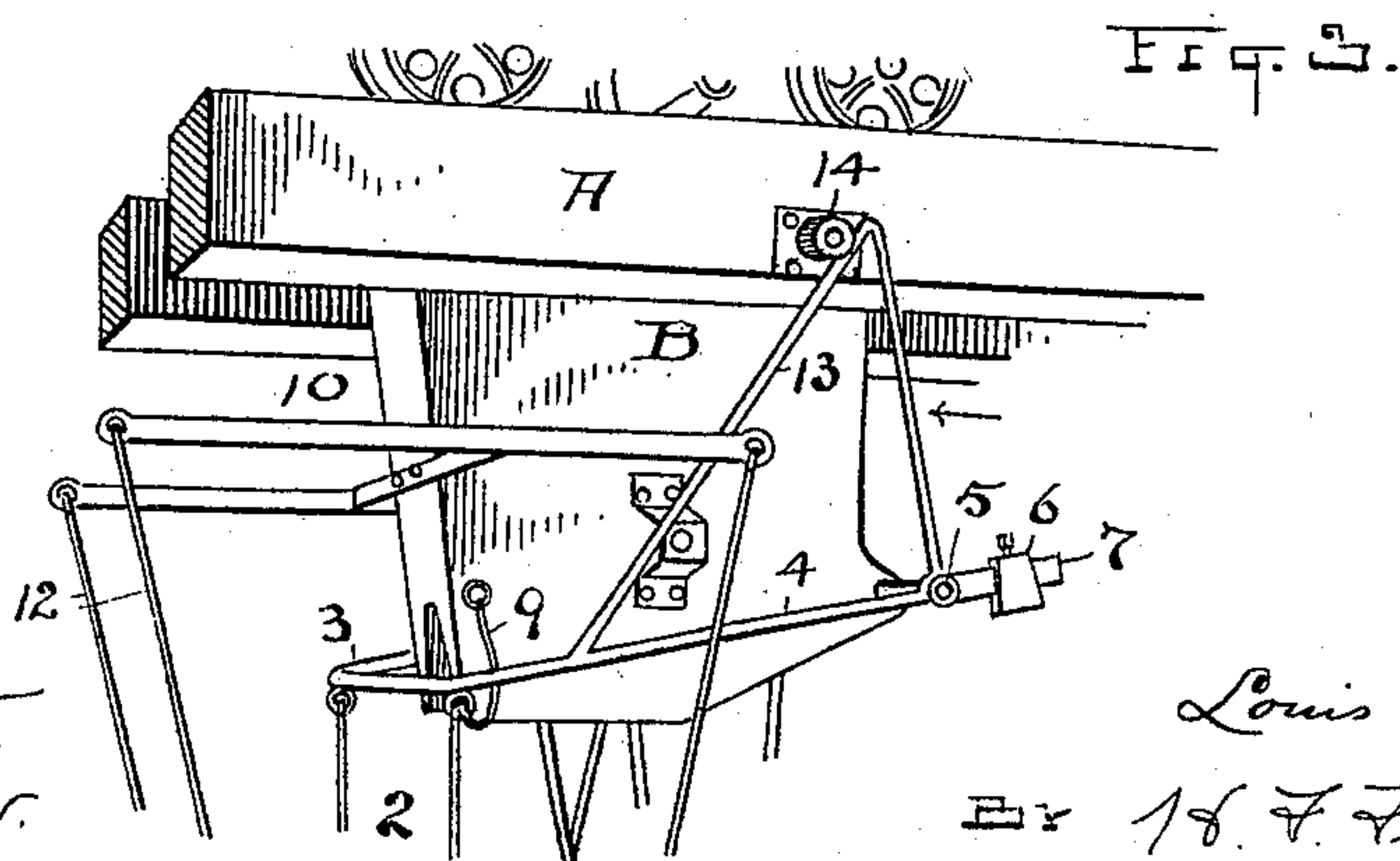
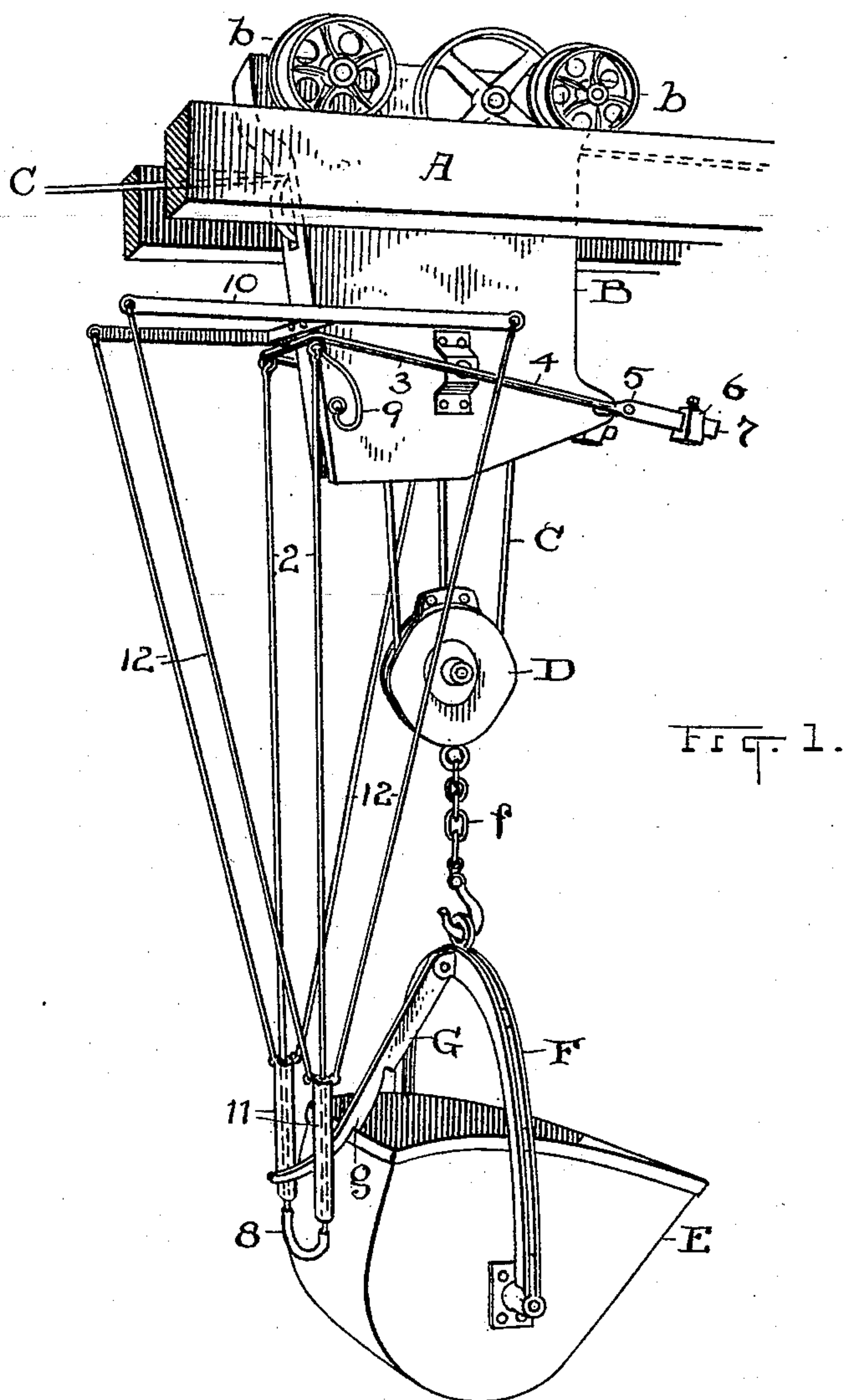
L. A. COOK.

MEANS FOR TRIPPING BUCKETS.

(Application filed Dec. 10, 1898.)

(No Model.)

2 Sheets—Sheet 1.



ATTENT

R. B. Moser

H. E. Medras.

INVENTOR

Louis A. Cook

Mr 18. F. Fisher

ATTY

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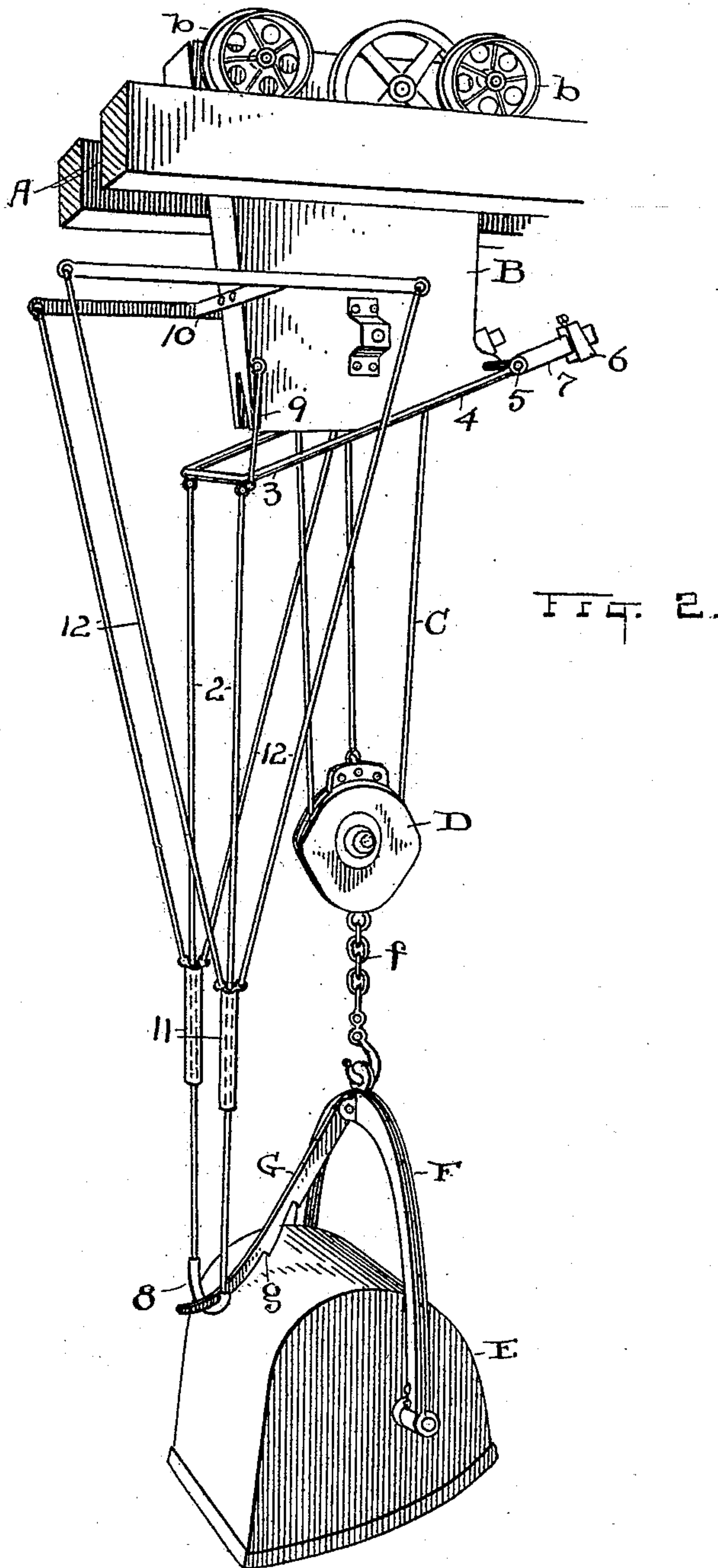
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2 Sheets—Sheet 2.



ATTEST.
R. B. Moser
H. E. Mydra.

INVENTOR.
Louis A. Cook

By H. F. Fisher
ATTY

UNITED STATES PATENT OFFICE.

LOUIS A. COOK, OF CONNEAUT, OHIO, ASSIGNOR OF THREE-EIGHTHS TO
GEORGE HUNT HUTCHINSON, OF PITTSBURG, PENNSYLVANIA.

MEANS FOR TRIPPING BUCKETS.

SPECIFICATION forming part of Letters Patent No. 622,840, dated April 11, 1899.

Application filed December 10, 1898. Serial No. 698,866. (No model.)

To all whom it may concern:

Be it known that I, LOUIS A. COOK, a citizen of the United States, residing at Conneaut, in the county of Ashtabula and State of Ohio, have invented certain new and useful Improvements in Means for Tripping Buckets; and I do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to means for tripping the buckets in hoisting and conveying machines; and the invention consists in the construction and combination of parts, substantially as hereinafter described, and more particularly pointed out in the claims.

The objects of the invention are, first, to provide means for tripping buckets at any point or distance from the operator; second, to provide absolute security against premature tripping of the bucket, and, third, to bring the bucket within such close relation to the surface of the car or other place of dumping that unnecessary spilling or spreading of the material dumped is avoided.

This invention, furthermore, is designed to be used in connection with that class of hoisting and conveying machines which have buckets suspended from traveling carriers and which convey the material to be dumped a considerable distance from where it is received, and to this end the carriers are caused to travel back and forth on overhead tracks by cable connections operated from a conveniently-located power-station, and the operator or engineer is stationed at this point, where he can control the travel of the carrier and the hoisting and lowering of the bucket.

I am of course aware that tripping devices of different kinds have been used in connection with carriers and buckets and operated by the engineer at a distant point to trip the bucket; but I am not aware of a tripping device embodying the construction and certain operation of the present invention or which will surely prevent a premature tripping of the bucket—such, for example, as is often caused by the rapid travel of the carrier and the swaying of the bucket or the extreme

delicacy of the tripping mechanism necessary to trip the bucket, especially when lowering the same into a railway-car to a position where dumping can be obtained without spreading or spilling the material over the sides of the car.

In the accompanying drawings, Figure 1 is perspective view of a portion of a track with a carrier thereon and having the bucket suspended and in traveling position with the tripping mechanism in working relation, but still free from the latch of the bucket. Fig. 2 is a similar view, but showing the bucket tripped and the latch engaged by the trapeze. Fig. 3 is a detail perspective view of a modification.

A represents the overhead tracks, with the carrier B in traveling position thereon, the carrier having flanged wheels *b* at each side to guide and carry the same. This carrier has the usual sheaves and cable connections C, by which it is caused to travel backward and forward, as well as the usual pulley-block D, bucket E, bail F, and chain *f*. The bucket E is pivoted to the bail F in such relation thereto that the greater weight of the bucket is at the front when loaded or unloaded, and a latch G, pivoted to the center and upper part of the bail F, has notches *g*, which engage the rear upper edge of the bucket E and prevent the same from tipping unless the latch G is tripped or raised. This tripping of the latch is accomplished at any desired time by the lowering of the bucket by the operator who controls the movement of the carrier and bucket, but is not occasioned until the tripping mechanism is fully brought into play. This tripping mechanism consists of a trapeze suspended from the longer arms 3 of a balancing-bar 4, which is pivoted at 5 to the lower part of the carrier B. Adjustable weights 6 on the short arms 7 serve to normally keep the trapeze 2 in raised position and also balance the whole to avoid resistance, so that only a slight pressure is needed to draw the trapeze down when desired. This play or free movement of the trapeze is necessary to avoid a premature tipping of the bucket, because the curved outer end of the latch G comes within the trapeze and oftentimes en-

gages the cross-bar 8 of the same. This is especially true when the carrier is traveling, the rapid hoisting of the bucket and starting of the carrier causing the bucket to swing
 5 back and forth. The slack of the cables after the bucket has been raised and started drops the bucket again a slight distance, and if no delicate take-up or balancing mechanism was provided the latch would be released
 10 and the bucket would dump its contents prematurely. This has often occurred, and heavy material, such as ore, falling from the elevated position of the bucket has often caused loss of life. Then, again, it is desirable that
 15 the bucket shall come down a considerable distance before the latch is tripped to avoid spilling or spreading of the material, especially when dumping into a car, and to this end a take-up mechanism which is always in position to engage the latch and will trip the same
 20 when the bucket is at its lowest position is most desirable. The balancing-bar 4 and its trapeze 2 furnishes this means for taking up the loose play and the bucket is not tripped
 25 until it has been lowered a sufficient distance by the operator to draw the trapeze down until the slack in the short cable 9, fastened to the carrier and the end of the arm 3, is taken up. The slight resistance of the counterbal-
 30 anced trapeze against the latch up to this time has not been perceptibly felt, the weight of the bucket and its contents being sufficient to bind and keep the latch in place; but when the trapeze is down to the limit allowed by
 35 the short cable 9, as seen in Fig. 2, the latch G is raised and the bucket dumps its contents.

Other essential features to this invention are the bracing and guiding parts, which hold the trapeze 2 and its cross-bar 8 in work-
 40 ing relation to the latch G. These parts consist of an H-shaped frame 10, fastened to the carrier B, and tubes 11, suspended from this frame by wire cables 12. The tubes 11 are hung just above the cross-bar 8 when the
 45 trapeze is in normal position and they form guides for the trapeze-cables. These tubes, taken in connection with the cables 12, serve as braces to keep the trapeze from swaying and hold the cross-bar 8 in place, where the
 50 latch G can engage the same when the bucket is lowered.

A modification of the balancing-bar 4 is shown in Fig. 3, in which an additional angular arm 13 is utilized to engage a lug or
 55 roller 14 on the side of the track when the carrier B travels to the left. This lug or roller 14 is placed at any point on the line of travel wherever it is desired to dump the bucket, the arm 13 striking the roller and

raising the bar 4 and trapeze 2, thus lifting 60 the latch of the bucket.

What I claim as new, and desire to secure by Letters Patent, is—

1. A bucket-tripping device for hoisting and conveying machines comprising a bal- 65 ancing-bar and a trapeze suspended therefrom, means to limit the movement of said parts, and guiding and bracing members for the trapeze, in combination with the bucket and the latch, substantially as described. 70

2. In a hoisting and conveying machine, a carrier and a bucket operated and suspended through said carrier, and a latch for said bucket, in combination with a balancing-bar 75 pivoted to said carrier, a depending member attached to said bar, said bar and member having a restricted up-and-down movement, and guiding and bracing means for said member, substantially as described.

3. In a hoisting and conveying machine, a 80 carrier and a bucket operated and suspended through said carrier, and a latch for said bucket, in combination with a balancing-bar having long and short arms, weights for the short arms and a trapeze suspended from the 85 long arms, means to limit the movement of said bar and trapeze, guides for said trapeze, and braces for said guides and trapeze suspended from said carrier, substantially as described. 90

4. In a hoisting and conveying machine, a carrier and bucket, a latch for said bucket, a counterweighted balancing-bar, a tripping member suspended from said bar and engag- 95 ing said latch, said bar and member having a free unrestricted movement in either direction after said latch has been engaged, and means to limit the movement of said bar and member to trip the latch, substantially as described. 100

5. In a hoisting and conveying machine, a carrier and a bucket operated and suspended through said carrier, and a latch for said bucket, in combination with a balancing-bar 105 pivoted to said carrier and having a suspending member to engage said latch, a counterweight to balance said bar and member to prevent a premature tripping of the latch when the bucket is traveling or first lowered, and means to limit the free movement of said 110 bar and member to finally trip the latch, substantially as described.

Witness my hand to the foregoing specification this 17th day of November, 1898.

LOUIS A. COOK.

Witnesses:

H. T. FISHER,
 R. B. MOSER.