(No Model.) 2 Sheets—Sheet 1.

T. F. MOORE.

BUCKET HOISTING AND CONVEYING APPARATUS.

No. 524,806. Patented Aug. 21, 1894.

Fig. 1.

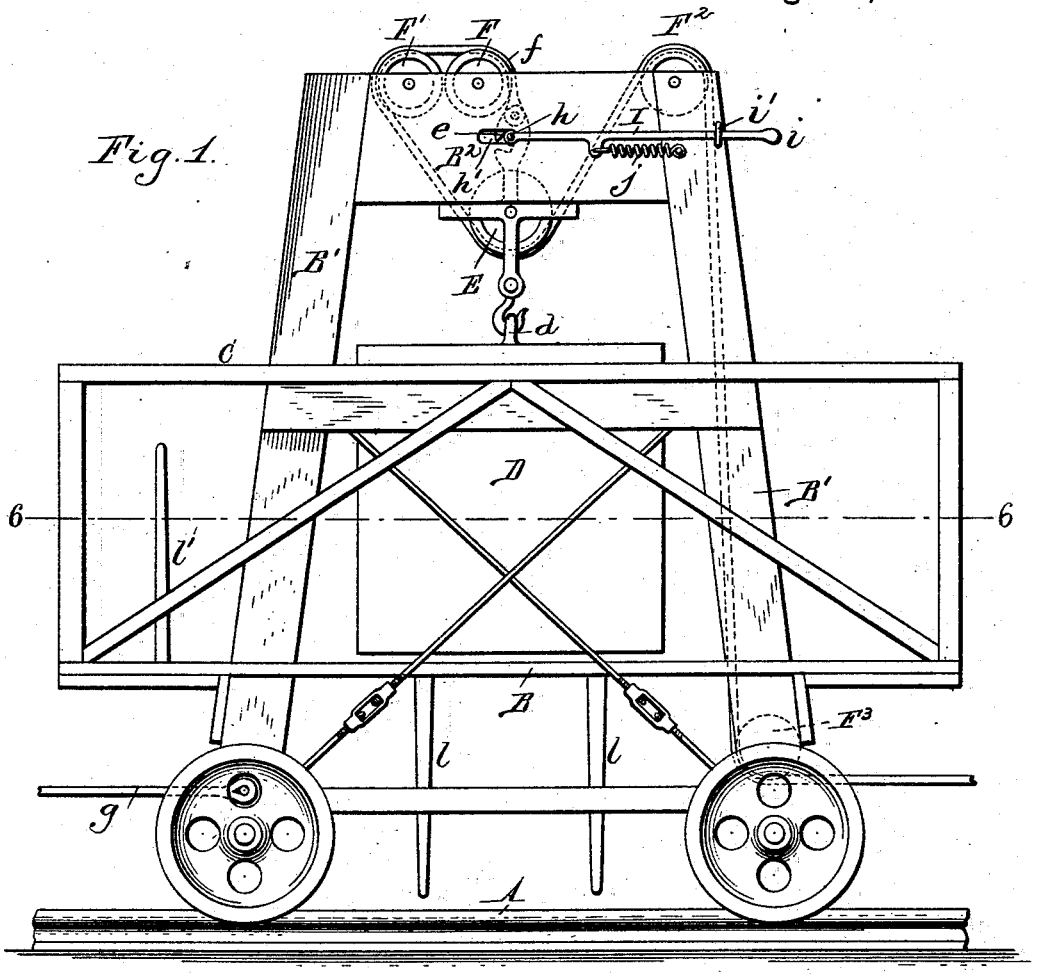
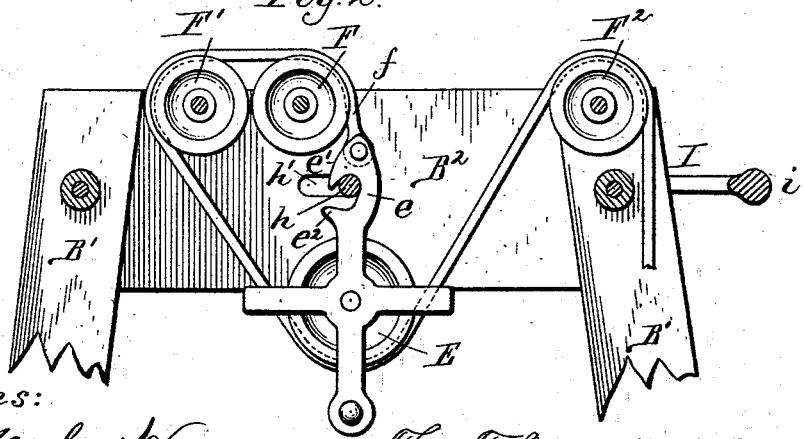


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

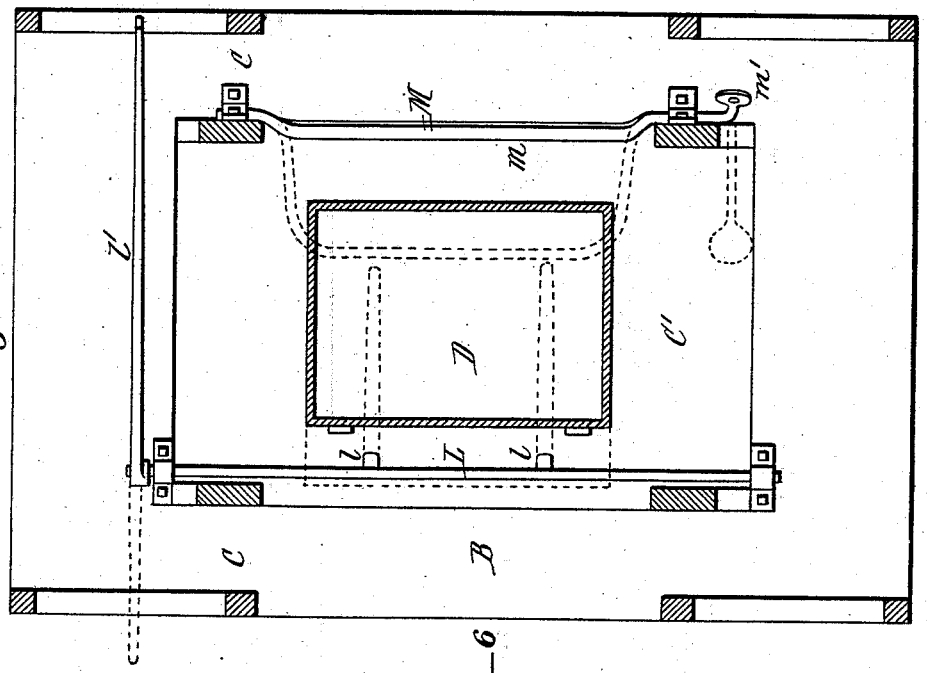
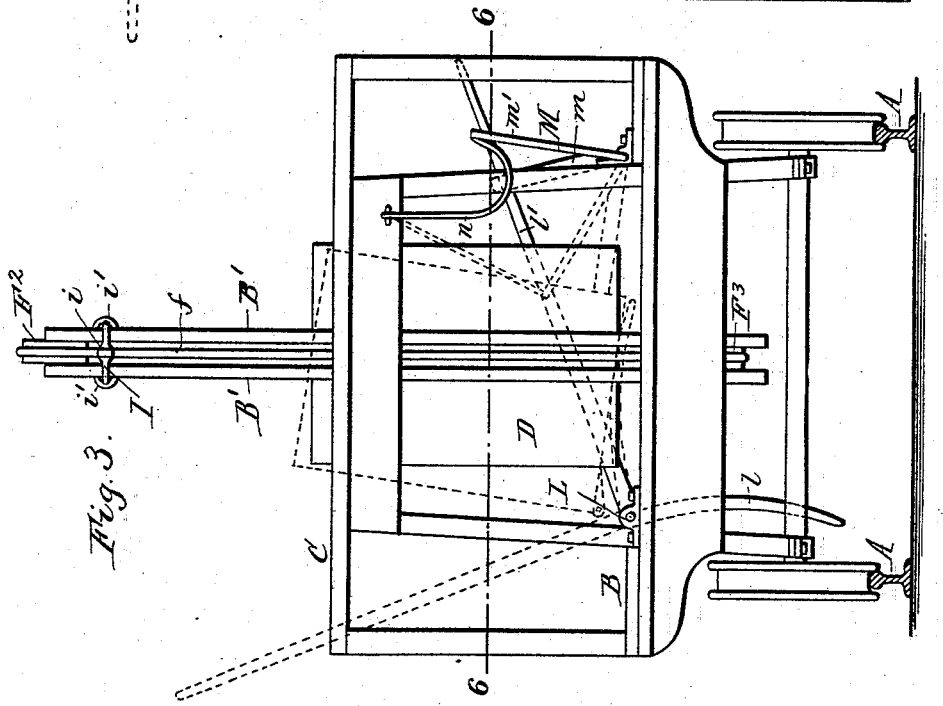


Fig. 3.



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Attorneys.

UNITED STATES PATENT OFFICE.

THOMAS F. MOORE, OF BUFFALO, NEW YORK.

BUCKET HOISTING AND CONVEYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 524,806, dated August 21, 1894.

Application filed November 1, 1893. Serial No. 489,735. (No model.)

To all whom it may concern:

Be it known that I, THOMAS F. MOORE, a citizen of the United States, residing at the city of Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Bucket Hoisting and Conveying Apparatus, of which the following is a specification.

This invention relates more particularly to improvements in that class of hoisting and conveying apparatus which is employed in digging sewer trenches, and which consists essentially of a bucket conveying car or truck running upon portable tracks and suitable hoisting and draft mechanism for raising the filled bucket and moving the conveying car back and forth over the trench.

One of the objects of my invention is to improve the construction of the means whereby the fall block of the hoisting mechanism is supported on the conveying car.

Another object is to provide the conveyer car with simple and efficient means for closing the bottom of the bucket and for holding the bucket from swinging during the operation of closing its bottom.

In the accompanying drawings, Figure 1 is a side elevation of a conveying car containing my improvements. Fig. 2 is a sectional elevation of the upper portion of the car, on an enlarged scale. Fig. 3 is an end view of the car. Fig. 4 is a horizontal section of the car, in line 6—6, Figs. 1 and 3.

Like letters of reference refer to like parts in the several figures.

A represents the tracks on which the bucket conveying car runs and which are preferably supported upon a portable trestle not shown in the drawings. The conveyer car may be of any suitable construction, but consists preferably of a platform B mounted upon wheels or trucks and uprights B′ rising from said platform and connected at their upper ends by a pair of longitudinal bars or plates B^2.

C is a railing or guard extending around the platform. A rectangular aperture C′ is formed centrally in the platform for the passage of the bucket D. The bucket is provided with a bail or yoke *d* having a central eye, whereby it is attached to the hook of a fall block or hoisting pulley E. The frame of this fall block is provided at its upper end with a hook *e*, to the upper end of which is attached a hoisting rope or cable *f*. In the construction shown in the drawings, this hoisting cable passes from the upper hook of the fall block over guide pulleys F F′ journaled in the connecting plates B^2, on the rear side of the fall block, thence around the pulley of the fall block, thence around a guide pulley F^2 journaled in the connecting plates B^2 on the front side of the fall block and thence downward around a guide pulley F^3 journaled in the lower front portion of the car. By this arrangement, the cable *f* serves both as a hoisting cable and as a draft cable for drawing the car toward the advancing end of the sewer trench.

g is the cable for drawing the car in the opposite direction. Any other suitable arrangement of the cables may be employed, if preferred.

h is a transverse supporting pin arranged on the connecting plates B^2, with which the upper hook *e* of the fall block is adapted to engage for supporting the bucket after the same has been elevated. This supporting pin slides with its end portions in longitudinal slots *h*′ formed in the plates B^2. The latter are arranged at a sufficient distance apart to permit the hook *e* to ascend between them and engage with the supporting pin. To the projecting ends of the latter is attached a horizontal yoke or frame I, which embraces the upper portion of the supporting frames B′ B^2 and terminates at its outer end in a handle *i* whereby the yoke may be moved for shifting the supporting pin in its slots. The side bars of this yoke are guided with their outer portions in loops or eyes *i*′ secured to the uprights B′.

j is a spiral spring attached at its rear end to a lug of the yoke I and at its front end to one of the uprights B′. This spring tends to hold the supporting pin at the front end of its slots, in engagement with the hook of the fall block. The upper portion of this hook is inclined, as shown at *e*′. Upon hoisting the bucket, the incline of the hook, striking the supporting pin, forces the same toward the rear ends of its guide slots until the nose of the hook rises above the pin, when the latter is drawn into the bight of the hook by the spring pulling the yoke I forward. The

bucket is now supported by the pin alone, thus relieving the hoisting rope. When it is desired to lower the bucket, the fall block is first lifted sufficiently to allow the supporting pin to clear the nose of the hook *e* and the pin is then pushed backward out of engagement with the hook by means of the yoke I.

e^2 is a guard or lip arranged on the front side of the hook *e*, below its nose and projecting laterally beyond said nose. This guard is arranged a sufficient distance below the nose of the hook to allow the supporting pin to enter the bight of the hook. The guard e^2 limits the upward movement of the hook *e* by striking the under side of the supporting pin and thereby prevents the hook from mounting the adjacent guide pulley and causing the hoisting cable to leave the same.

The bucket is preferably provided with a downwardly swinging bottom hinged at one end and locked in its closed position by a latch of any ordinary construction.

L represents a longitudinal rock shaft journaled upon the platform of the conveyer car, and *l* are lifting arms or fingers secured to said rock shaft and adapted to bear against the under side of the hinged bottom of the bucket and swing the same into its closed position, preparatory to locking the same. This rock shaft is provided with a hand lever *l'* for turning it. In their normal position, the lifting arms hang vertically, so as to clear the bucket and allow the same to rise and fall freely. When it is desired to close the open bottom, the rock shaft is turned in the proper direction to cause the lifting arms to raise the bottom to its closed position.

M is a stay device for preventing swinging of the bucket in closing its bottom. This stay device consists of a horizontal rock shaft journaled on the car platform on the side of the platform aperture opposite to that on which the lifting fingers are arranged, and having its central portion offset or made in the form of a crank as shown at *m*, while at one end it is provided with a foot lever *m'*. The offset portion *m* is made of such width that when it is swung down into a horizontal or nearly horizontal position, as shown by dotted lines in Figs. 3 and 4, it bears against the adjacent side of the bucket and thus holds it from swinging away from the lifting fingers. The stay shaft M is held against the bucket by means of its foot lever. While the bucket is thus firmly held in position, and its bottom kept closed by the lifting fingers, the bottom is locked, and after this has been accomplished, the finger shaft is released, so as to swing out of the way, and the stay shaft is swung upward into the position shown by full lines in Figs. 3, and 4 in which position it clears the aperture in the car platform, permitting the bucket to be lowered and elevated without restraint.

The downward movement of the stay shaft beyond the position shown by dotted lines in Figs. 3 and 4 of the drawings is preferably limited by a rope or chain *n* attached at its lower end to the shaft and at its upper end to the upright frame of the conveyer car.

I claim as my invention—

1. The combination with a conveying car having parallel upright plates separated by a space and provided with longitudinal slots, of a transverse supporting pin arranged in said slots and capable of sliding toward either end thereof, a yoke or frame for shifting the pin in the slots, a spring whereby the pin is drawn toward one end of said slots, and a fall block provided with a hook adapted to engage with the portion of said supporting pin between said upright plates, substantially as set forth.

2. The combination with a conveying car having parallel upright plates separated by a space and provided with longitudinal slots, of a transverse supporting pin arranged in said slots and capable of sliding toward either end thereof, a guide pulley journaled on the conveying car above said pin, a fall block carried by a rope or cable passing over said guide pulley, and a hook attached to the upper end of said fall block, adapted to engage over said supporting pin and provided below its nose with a laterally projecting guard adapted to strike said supporting pin for limiting the upward movement of the hook, substantially as set forth.

3. The combination with a bucket conveying car having hoisting tackle, and a platform having an aperture for the passage of the bucket, of a movable stay device arranged on the car on one side of said aperture, and a lifting device for closing the bottom of the bucket, arranged on the opposite side of said aperture, substantially as set forth.

4. The combination of a bucket conveying car having hoisting tackle and a platform having an aperture for the passage of the bucket, a horizontal shaft journaled on one side of said aperture and having a foot lever and an offset portion adapted to bear against one side of the bucket, and a horizontal rock shaft journaled on the opposite side of said aperture and having lifting arms for closing the bottom of the bucket and a lever for operating said shaft, substantially as set forth.

Witness my hand this 5th day of September, 1893.

THOMAS F. MOORE.

Witnesses:
CARL F. GEYER,
JNO. J. BONNER.