

(No Model.)

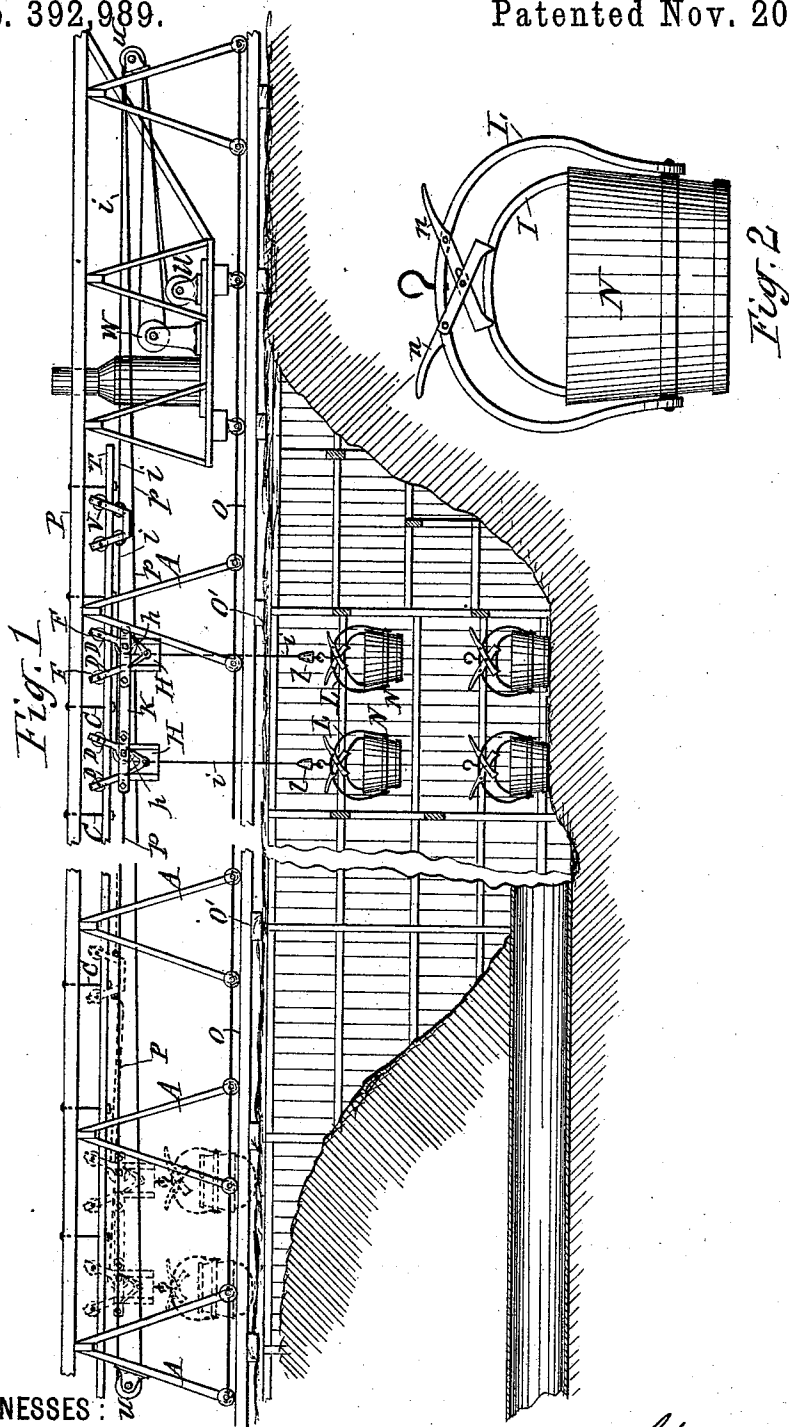
2 Sheets—Sheet 1.

C. D. CLARK.

APPARATUS FOR CONSTRUCTING SEWERS.

No. 392,989.

Patented Nov. 20, 1888.



WITNESSES:

C. L. Bendixon,
H. R. Denison,

INVENTOR,

Charles H. Clark,
BY

Smith, Laaso & Smith
ATTORNEYS,

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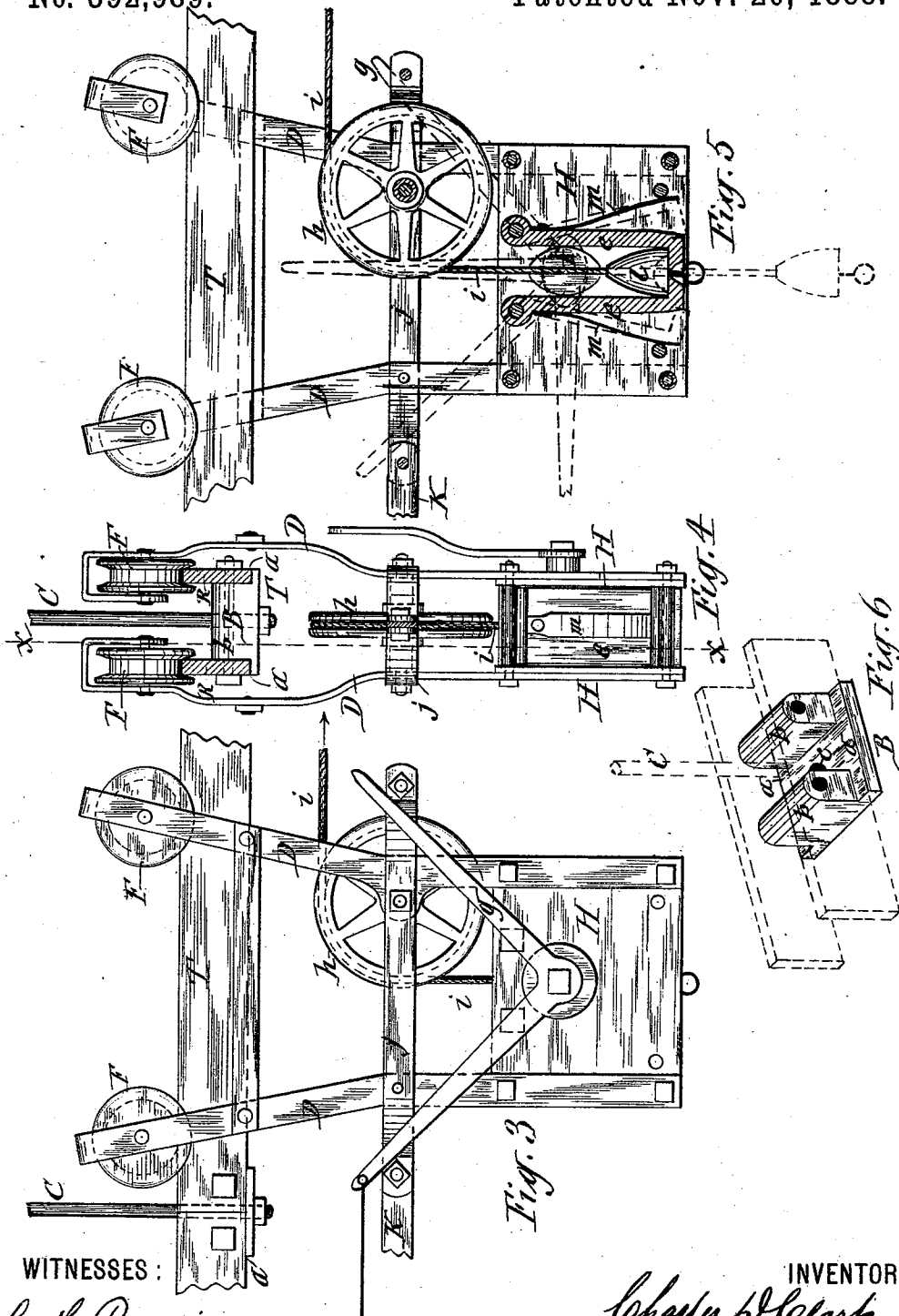
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UNITED STATES PATENT OFFICE.

CHARLES D. CLARK, OF ELMIRA, NEW YORK.

APPARATUS FOR CONSTRUCTING SEWERS.

SPECIFICATION forming part of Letters Patent No. 392,989, dated November 20, 1888.

Application filed January 6, 1888. Serial No. 260,009. (No model.)

To all whom it may concern:

Be it known that I, CHARLES D. CLARK, of Elmira, in the county of Chemung, in the State of New York, have invented new and useful
5 Improvements in Apparatus for Constructing Sewers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of apparatus in which the excavated earth is hoisted
10 in buckets out of the trench and transported by carriers traveling on an elevated track and carrying the buckets in a suspended position to the place where the buckets are to be
15 dumped.

The invention consists, first, in a novel construction of the aforesaid elevated track having two rails secured parallel side by side and suspended from suitable supports above the
20 track; secondly, in a novel construction of the carrier traveling on the aforesaid track and provided with a hoisting-pulley and with a clutch for retaining the hoisting-cable in its raised position; thirdly, in the employment of
25 a track terminating in opposite directions from the excavation and means for moving the carriers on the said track to and from the excavation; and, fourthly, in novel devices for locking the bucket to the pivoted bail, so as to retain the bucket in its upright position during
30 the period of raising and transporting the same, all as hereinafter more fully described, and specifically set forth in the claims.

In the annexed drawings, Figure 1 is a vertical longitudinal sectional view of the earth
35 hoisting and transporting apparatus arranged over a sewer in process of construction. Fig. 2 is a side view of the bucket. Fig. 3 is a side elevation of the traveling carrier. Fig. 4 is
40 an end elevation of the same. Fig. 5 is a vertical longitudinal section on line *x x*, Fig. 4; and Fig. 6 is a detached perspective view of the block by which the track-rails are supported and spliced.

45 Similar letters of reference indicate corresponding parts.

A A represent trestles mounted on stringers O O, running lengthwise the trench in process of being excavated and refilled, said stringers resting on top of beams O' O', placed across

the top of the trench. Upon the top of the trestles A A is secured a longitudinal beam, P, from which is suspended the elevated track T, which terminates in opposite directions
55 from the excavations. This track I form of two rails, R R, arranged parallel side by side and supported by blocks B at the ends of the rails and at other points, if necessary. The block B is formed with horizontal longitudinal
60 ledges *a a* at opposite sides and with lugs *b b* between the ledges and perforated transversely in relation to the track, and the center of the block is provided with a vertical eye, *c*, through which passes the rod C, by which the block is suspended from the beam P. The
65 rails R R ride edgewise on the ledges *a a*, and are secured to opposite sides of the lugs *b b* by bolts passing through the rails and through the perforations of the lugs.

The carrier which travels on the aforesaid
70 track I form of stout metallic suspenders D D D D, extending around the outer sides of the track-rails and above the same and having pivoted to their upper ends the grooved wheels F F F F, which are mounted on the
75 track-rails. To the lower ends of the said suspenders are firmly secured the side plates, H H, between which are arranged the jaws *e e*, which are pivoted in a suspended position to the said plates, and are thus caused to fall by
80 gravity into a closed position, as shown in Fig. 5 of the drawings. In order to cause the jaws to act more quickly, suitable springs, *m m*, may be arranged to press against the backs of the jaws. A short distance above the plates
85 H H are longitudinal straps *j j*, secured to the suspenders D D D D. These straps are bent toward each other at each end, so as to adapt them to receive between them either coupling straps or bars K K, by which to connect
90 the carrier with companion carriers, as shown, or the draft-cables *p p*, by which to move the carrier on the track. Bolts passing transversely through the ends of the straps *j j* permit of the attachment of either the coupling-bars *k k* or the cables *p p*. *h* represents a grooved pulley pivoted on the carrier-frame, between the suspenders D D D D thereof, and preferably to the straps *j j*, which receive
95 from the cable *p* a draft in opposite direction
100

from that in which the cable *i* is drawn in the operation of hoisting the bucket, said hoisting-cable running over the pulley *h* and having one end connected to a traveler, *V*, mounted on the track *T*, and which in turn is connected by a draft-cable with a winding-drum, *U*, which is arranged at one end of the excavation or trench and operated either by steam or other suitable power. The opposite end of the hoist-cable *i* passes from the pulley *h* down between the jaws *ee* and has affixed to it a stop, *l*, of the form of a conical block having its apex upward, so as to allow it to enter between the aforesaid jaws from beneath and pry the same apart. The jaws close automatically and retain the stop *l* in its raised position after it has passed with its base above the gripping or clutching ends of the jaws, as represented in Fig. 5 of the drawings. The hoisting-cable is provided below the stop *l* with either an eye or hook, by which to connect it to the bucket *N*.

Between the jaws *ee* is a cam, *f*, pivoted to one of the side plates, *H*, and having its journal extending through said plate and a hand-lever, *g*, secured to the outer end of the journal to permit of turning the cam, and by the latter operation the jaws *ee* can be pried apart to release the stop *l*, and thus allow the bucket hung on the cable *i* to descend to the place where it is to be loaded. Upon arriving thereat the cable can be detached from the bucket and connected to another bucket previously loaded, and then by turning the winding-drum *U* the loaded bucket is raised until the stop *l* rises above the jaws *ee*, and is clamped thereby, so as to retain the cable in its raised position. The loaded bucket is thus suspended from the carrier, and is in this position transported to the place where it is to be dumped. The means of moving the carrier on the track *T* consist of the draft-cables *p p*, extended from the carrier in opposite directions and passing over the carrying-pulleys *uu* at opposite ends of the track, and secured to a winding-drum, *W*, at the same end at which the winding-drum *U* is located, and preferably driven by the same power. The cables *p p* are wound on the drum *W* in such directions that in winding up one cable the other is unwound, and thus by reversing the motion of the drum the carriers can be run back and forth on the track.

The bail *L*, by which the bucket is suspended from the hoist-cable *i*, is pivoted to opposite sides of the bucket a suitable distance below the point of equilibrium to cause the bucket to turn automatically into an inverted position; and in order to retain the bucket in its upright position there is usually connected to one end of the bail *L* a latch engaging a catch on the side of the bucket; but this arrangement brings the latch so near to the pivot or fulcrum of the bail as to subject the latch to considerable strain in sustaining the loaded bucket in its upright position. To obviate this defect, I secure to the bucket a stationary bail, *I*, and pivot to the central portion of the

bail *L* a latch, *n*, adapted to interlock with the stationary bail.

In order to further facilitate the dumping of the bucket, I employ two latches, *n n*, pivoted in reverse positions on the bail *L* and having their lower or gripping ends crossing each other and coupled together by a pin projecting from the side of one latch through a longitudinal slot in the other latch, so that in operating either latch the other is compelled to co-operate with it. The manipulating ends of the two latches extending toward opposite sides of the bucket renders the manipulation of said latches very convenient.

The operation of the apparatus is as follows: There is usually a train of two or more carriers mounted on the track *T* and double that number of buckets employed, so that one set of buckets can be loaded while the other set is being transported and dumped and returned to be reloaded. While lowering the buckets to be loaded and raising the loaded buckets the draft-cables are to remain dormant. After the loaded buckets are drawn up until the stops *l* of the hoisting-cables become clutched between the jaws *ee* of the carrier, the winding-drum *U* of the hoist-cable is to be released to allow it to freely revolve and pay out its cable. Then the drum *W* is to be rotated to cause the draft-cable *p* to propel the carriers to the place where the buckets are to be dumped. Then the rotation of the drum *W* is to be stopped while the attendant operates the latches *n* to allow the buckets to tilt, as represented in Fig. 1 of the drawings. After they are dumped the attendant restores them to their upright positions, and then the drum *W* is to be revolved in the direction opposite to that in which it previously moved until the carriers, with the bucket suspended therefrom, are brought back over the place where the buckets are to be loaded. The buckets are then lowered in the manner hereinbefore stated.

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

1. The combination of the block *B*, formed with the ledges *aa* at opposite sides, the perforated lugs *bb* between the ledges, and the eye *c* at the center, the rails *R R*, resting on the ledges *aa* and bolted to the aforesaid lugs, and the suspension-rod *C*, passing through the central eye, *c*, substantially as described and shown.

2. The combination, with the suspended two-rail track, of the carrier composed of the suspenders *D D D D*, extending around the outer sides of the track-rails and above the same, the wheels *F F F F*, pivoted to the inner sides of said suspenders, the side plates, *H H*, secured to the lower ends of the suspenders, the jaws *ee*, pivoted in a suspended position to the inner sides of said side plates, the cam *f*, pivoted to one of said side plates and having its journal protruding at the outside thereof, the lever *g*, attached to the protruding end of said journal,

the pulley *h*, pivoted on the carrier-frame, the cable *i*, running on the pulley and having its free end passing through the jaws *e e*, and a stop, *l*, secured to the cable, substantially as
5 described and shown.

In testimony whereof I have hereunto signed my name, in the presence of two witnesses, at

Elmira, in the county of Chemung, in the State of New York, this 18th day of August, 1887.

CHARLES D. CLARK. [L. S.]

Witnesses:

JAMES H. COSTELLO,
THEO. G. SMITH.