

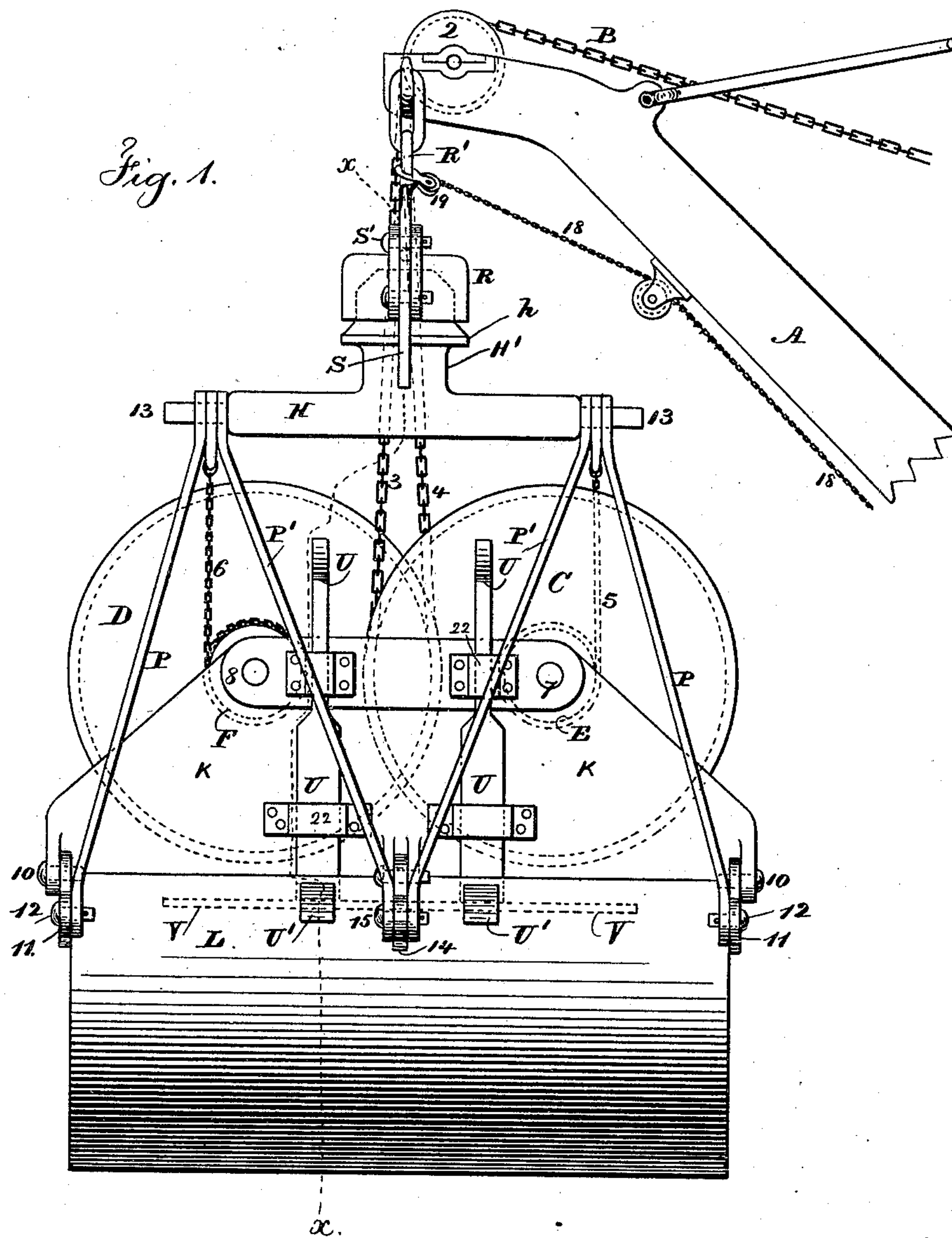
(No Model.)

2 Sheets—Sheet 1.

C. A. MORRIS.
DREDGING BUCKET.

No. 368,729.

Patented Aug. 23, 1887.



Witnesses

Chas. H. Smith
J. Staib

Inventor

Charles A. Morris
for Lemuel W. Terrell

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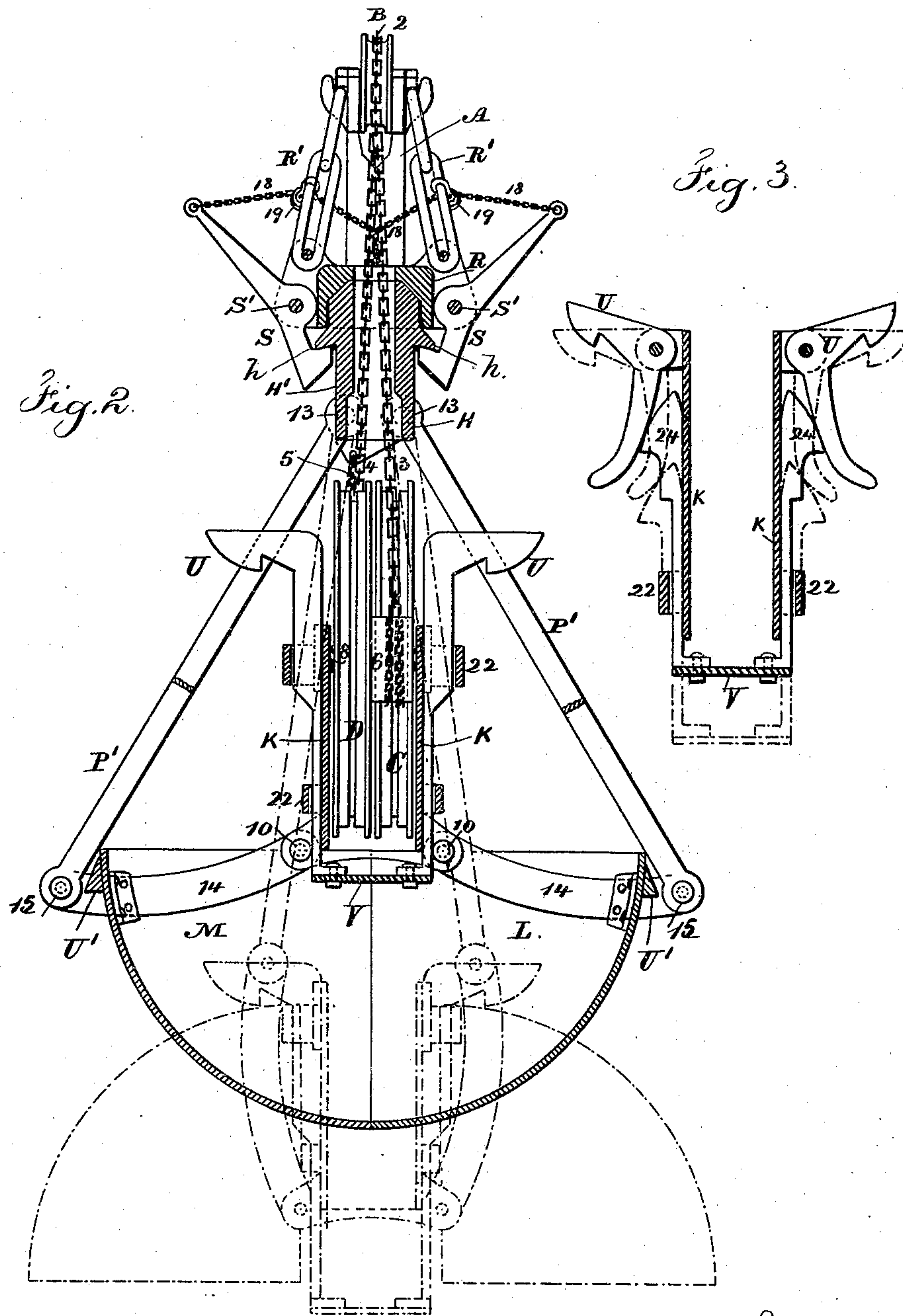
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UNITED STATES PATENT OFFICE.

CHARLES A. MORRIS, OF BLOOMFIELD, NEW JERSEY.

DREDGING-BUCKET.

SPECIFICATION forming part of Letters Patent No. 368,729, dated August 23, 1887.

Application filed August 25, 1886. Serial No. 211,786. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. MORRIS, of Bloomfield, in the county of Essex and State of New Jersey, have invented an Improvement in Dredging-Buckets, of which the following is a specification.

This invention relates to that class of dredging or excavating buckets known as "clam-shell excavators," and in which two or more sections of a cylinder are hinged together and swung open to discharge the contents and drawn together to scoop up the material to be excavated, and thereby fill the bucket.

The bucket itself may be of any desired character; but I have shown a form especially adapted to my improvements. The bucket is closed by the hoisting-chain that acts upon chain wheels and drums similar to those in buckets heretofore made use of, and there is a runner through which the chain passes, provided with latches that hold the head-block of the bucket, so that the bucket will be opened by lowering upon the hoisting-chain, and there are sliding latches that catch and hold the bucket-sections when the same are opened, and these sliding latches are disconnected by a foot-plate that rests upon the mud, sand, or other material to be excavated when the bucket is lowered. The latches upon the runner are disconnected by a chain or rope actuated by hand when the bucket is to be lowered.

In the drawings, Figure 1 is a side elevation of the bucket and part of the hoisting-boom. Fig. 2 is an elevation of parts of the apparatus, with the frame-work and bucket in section at the line *xx*; and Fig. 3 represents a modification of the latches for holding the bucket-sections open.

A portion of the end of the hoisting-boom is represented at A, and upon this is the pulley 2, over which passes the hoisting-chain B. This is forked near the end, and the respective portions 3 and 4 pass to the respective grooved chain-wheels C D, and adjacent to and connected with these chain-wheels are the chain-drums E and F, and from the chain-drums the chains 5 and 6 pass up to the head-block H. These parts correspond generally to the devices heretofore employed in this class of excavating apparatus.

The chain-wheels C and D are parallel to

each other and lap, as represented in Fig. 1, and they are between the plates K, that form a frame that is parallel with and at each side of the chain-wheels, and the shafts or axles 7 8 of the respective chain-wheels and drums pass across through this frame K, and upon the same the wheels and drums revolve.

The bucket itself is formed of the two quarter-cylindrical segments L M, of ordinary character, except in the particulars hereinafter named.

At the ends of the frame K are the joints 10, that connect to the said frame the respective bucket-segments L M, and it is preferable to make use of joint-bars 11, riveted upon the ends of the bucket-segments, and these pass in between the jaws of the joints 10 upon the frame K, and at their outer ends these joint-bars 11 are hinged at 12 to the toggle-bars P, which toggle-bars converge and are united at the hinges 13 to the head-block H, and it is preferable to make use of intermediate joint-bars, 14, hinged at their inner ends to the sides of the frame K and in line with the joints 10, and attached near their outer ends to the respective bucket-segments L M; and there are secondary toggle-bars, P', passing from the joints 15 at the outer ends of the intermediate joint-bars, 14, up to the head-block H at the hinges 13.

It is now to be understood that the bucket is opened when the head-block H is held in a fixed position and the hoisting-chain B lowered, in which case the weight causes the bucket to descend, and the chains 5 and 6 upon the respective drums rotate said drums and the grooved chain-wheels and wind the chains 3 and 4 upon the respective chain-wheels; and when the hoisting-chain is drawn upon, it first rotates the grooved chain wheels and drums, and by the chains 5 and 6 draws down the head-block H, and by the toggle-bars P P' the bucket-segments L M are closed and the material to be excavated scraped into the same.

The toggle-bars P P', converging in pairs to the ends of the head-block, allow for the use of a shorter head-block than is necessary where the bars are parallel, and the chains 5 and 6 are nearly vertical, and are connected at their upper ends to the head-block, directly at the joints of the pairs of toggle-bars, so that the closing power acts directly, and the toggle-

bars, being diagonal, form braces to prevent the head-block moving endwise above the frame and buckets.

The hoisting-chain B passes through a central opening in the head-block H, and at this place there is an upwardly-projecting cylinder, H', with a flange or ring, h, and the upper end of this cylinder H' is tapering or conical, so as to pass freely into the runner R, that surrounds the hoisting-chain B, and upon this runner R the latches S are pivoted at S'. These latches are adapted to catch beneath the flange h of the cylinder H' upon the head-block H and suspend the said head-block while the hoisting-chain is lowered upon to open the bucket and discharge the contents. These latches are thrown into place by gravity or by springs, and when it is desired to disconnect the latches from the head-block for lowering the bucket the same is accomplished by the chain or rope 18, passing over suitable pulleys, 19, and bifurcated, and attached to the upper ends of the respective latches. This chain or rope is actuated by hand at the proper time. The runner R is suspended by loops or chains R' from the boom A, and by varying the length of these links or chains the length of the runner may be changed so as to regulate the place at which the dumping operation may be performed.

In consequence of the part H' being cylindrical the same properly holds the runner and latches, so that the one cannot shift laterally in relation to the other, as is the case when a cone alone is made use of, because there must be considerable looseness or play to insure the proper operation of the catches.

If the parts heretofore described alone were made use of, the bucket would close by the action of the chains and the weight as soon as the latches S were liberated from the head H. To prevent this I employ the latches U, that catch the projections U' upon the bucket-segments L M. These latches U are preferably made to slide within the guide-loops Z Z upon the frame K, and these sliding latches U are connected to a foot-plate, V, that is below the frame K, and when the bucket-segments are opened into the positions shown by dotted lines in Fig. 2 they are held by these latches U catching over the projections U'; but the foot-plate V projects below the buckets and is of a sufficient size to rest upon and not sink into the mud or other material that is being excavated; hence the weight of the bucket will carry the same down as the parts are lowered, and the buckets will unlatch from the latches U, and said bucket-segments will be closed

and the material scooped up into the same by the action of the parts as soon as the hoisting-chain is drawn upon, as before described.

In place of the latches U sliding, they may be pivoted, as shown in Fig. 3, and unlatched by cam-shaped projections 24, that are connected with the foot-plate V.

I claim as my invention—

1. The combination, with the bucket-segments, of the frame K above the said bucket-segments and having joints at its ends, the joint-bars 11 and 14, connected with the bucket-segments and the frame, the toggle-bars P and P', connected to such joint-bars and converging so as to come together in pairs at their upper ends, the head-block H to the ends of which the toggle-bars are hinged, the hoisting-chain, the chain wheels and drums, and the chains connecting the drums to the joints at the ends of the head-block, substantially as set forth.

2. The combination, with the bucket-segments, toggle-bars, head-block, chains, chain-wheels, drums, and frame, of latches, and a runner to which the latches are pivoted, and a flange, h, and cylinder H', projecting upwardly upon the head-block, with which the latches engage, and a rope or chain for liberating the latches, substantially as set forth.

3. The combination, with the bucket-segments, the frame to which they are hinged, and the mechanism, substantially as set forth, for opening and closing the bucket-segments, of two latches upon the frame and catches on the bucket-segments to hold them open while being lowered, substantially as set forth.

4. The combination, with the bucket-segments and mechanism, substantially as specified, for hoisting, lowering, opening, and closing said bucket-segments, of latches for holding the bucket-segments open while being lowered, and the foot-plate for unlatching the buckets, substantially as set forth.

5. The combination, with the hinged segmental buckets, the frame to which they are connected, and the hoisting and opening mechanism, of latches to hold the buckets open, a foot-plate below the frame connected with the latches, and loops upon the frame for holding and guiding the sliding portions of the latches, substantially as specified.

Signed by me this 18th day of August, A. D. 1886.

C. A. MORRIS.

Witnesses:

WILLIAM G. MOTT,
HAROLD SERRELL.