

No. 736,795.

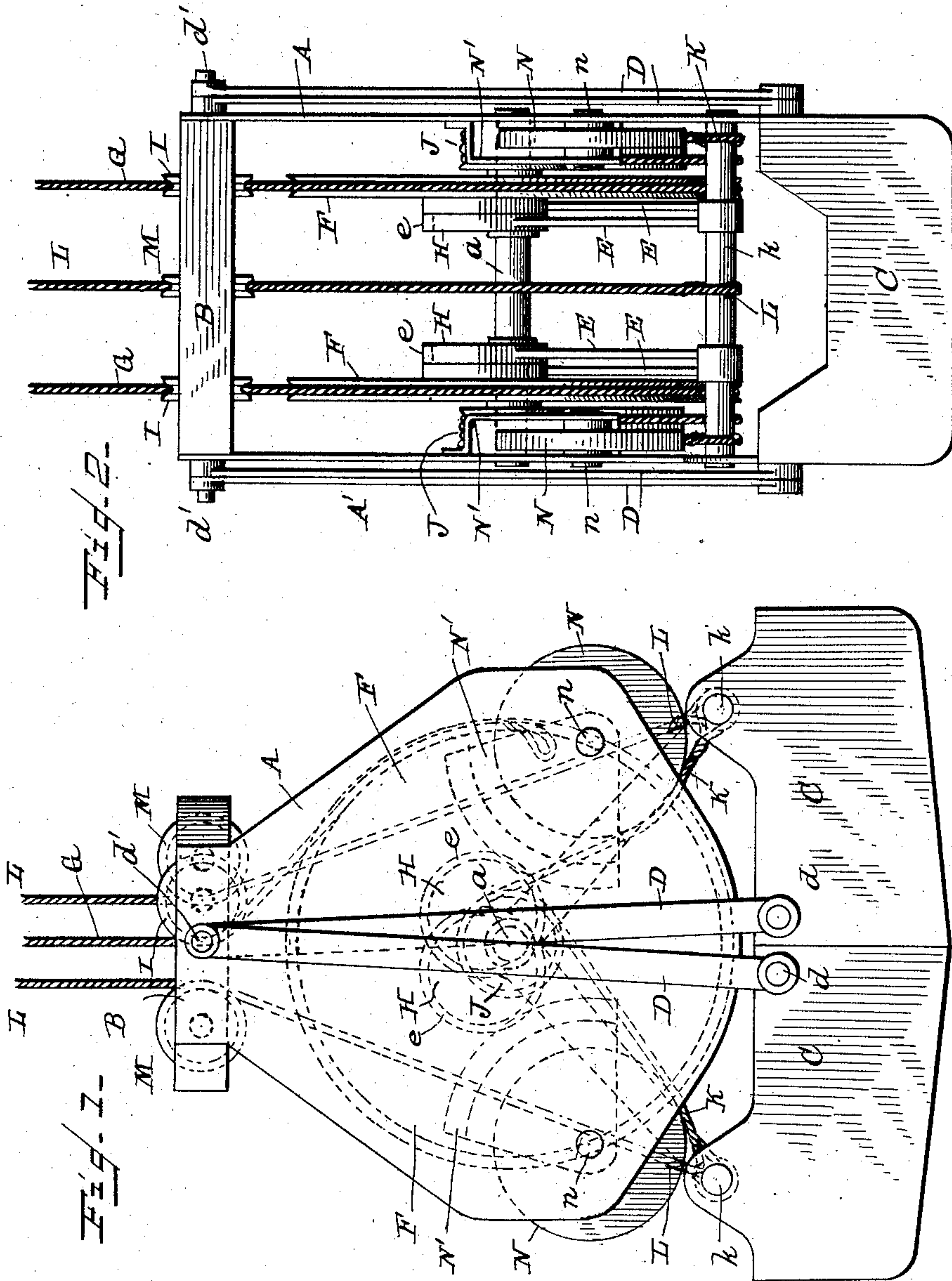
PATENTED AUG. 18, 1903.

J. C. SLOCUM.
CLAM SHELL BUCKET.

APPLICATION FILED JAN. 26, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES

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INVENTOR

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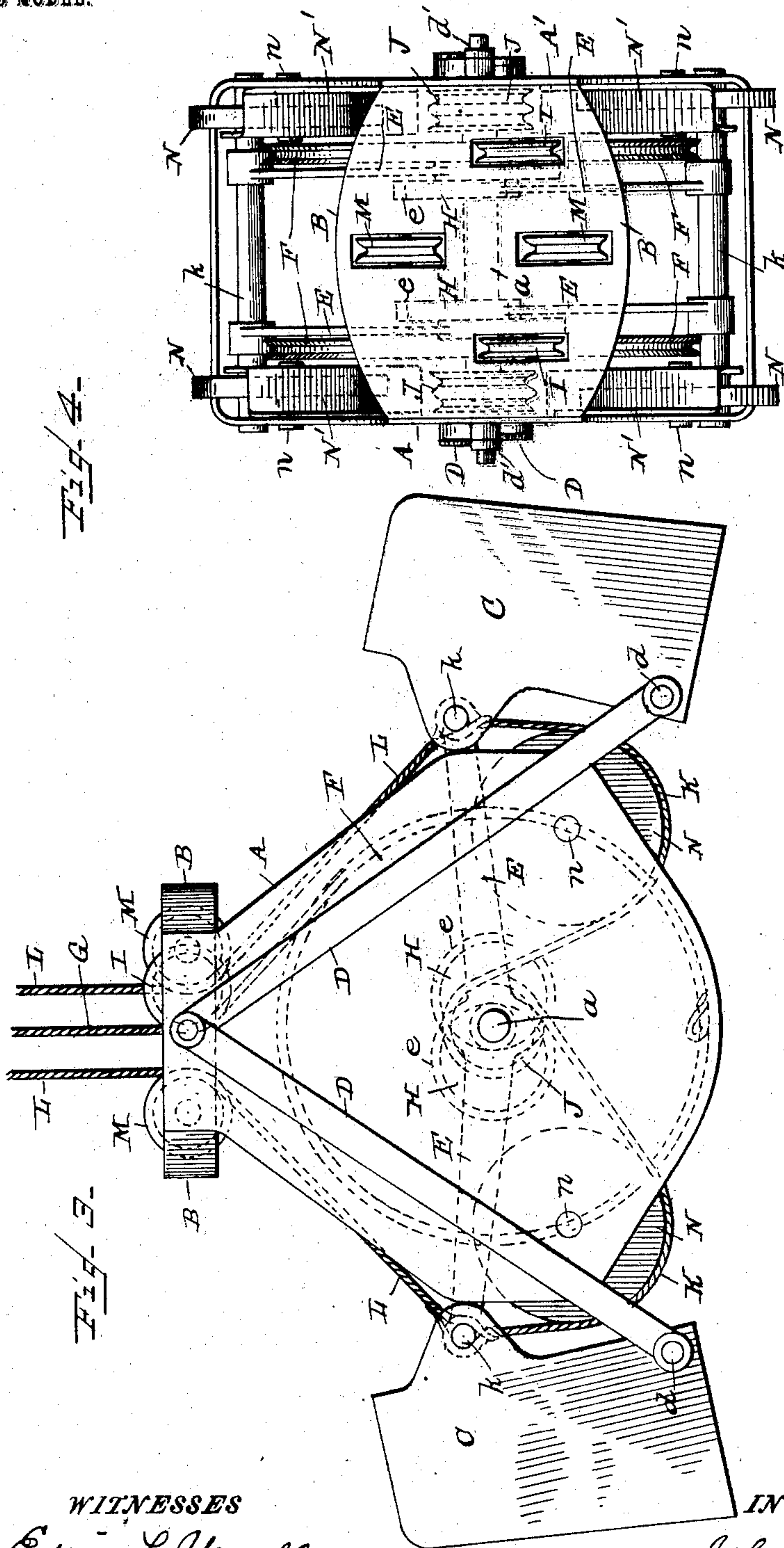
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UNITED STATES PATENT OFFICE.

JOHN C. SLOCUM, OF COLUMBUS, OHIO, ASSIGNOR TO JOSEPH A. JEFFREY,
OF COLUMBUS, OHIO.

CLAM-SHELL BUCKET.

SPECIFICATION forming part of Letters Patent No. 736,795, dated August 18, 1903.

Application filed January 26, 1903. Serial No. 140,614. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. SLOCUM, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Clam-Shell Buckets, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a side elevation of a two-part scoop and elevating-bucket and its supporting and actuating devices embodying my improvements. Fig. 2 is an end elevation of the devices in Fig. 1. Fig. 3 is a side view showing the positions of the parts when the two halves or parts of the bucket are separated. Fig. 4 is a plan view showing the parts in their closed position, as in Fig. 1.

In the drawings a frame or main support is shown, it having the side plates or bars at A A', with the joining-plate at the top, (indicated by B.) The space between the two vertically-arranged plates or parts A A' of the frame is left almost entirely open, so far as the framework is concerned, except at the lines where the several shafts, respectively, are placed.

The two parts or halves of the bucket are respectively indicated by C C, they being of any suitable or preferred shape as to the details of their form, though preferably constructed substantially as illustrated. When they are in their closed position, their edges come together in a substantially common vertical plane, as shown in Fig. 1. They are suspended and supported in a peculiar manner. The support is provided entirely by means of bars or links, in contradistinction from the supports heretofore provided so far as known to me. Sometimes the bucket-halves have been bodily supported at a common axis, around which axis each and every point of each bucket-half is rotated in an approximately true circle. Again, they have been so arranged as to move bodily not in true circles, but in such way that while the forward end or a point near said forward end should move in a true circle around a remote center the heel or rear end of each half or a point near said heel was caused to move through another true circle described around

another remote center, this path sometimes resulting from two crossed links, as illustrated in the patent to A. C. Both, No. 138,227, April 29, 1873, and sometimes resulting from a single swinging link at the front end of the scoop or bucket-half and a rotary cam-like device on a fixed center and pivoted to the heel of the scoop, as illustrated, among others, in Patent No. 696,444 to F. E. Hulett, April 1, 1902. Difficulties have been incident to the operation of mechanisms of either of the above two sorts, and these I have succeeded in overcoming. I suspend and support the forward end of each scoop or bucket-half by a link moving around a fixed remote center, but carry the heel end upon a device which not only supports it, but also provides a top thrusting and pulling action for the heel or rear end of the scoop, this device consisting of a pitman or connecting-rod E, which is pivoted to the bucket at its heel for supporting it and which at its inner end engages, by means of a strap e, with a rotary eccentric, such as shown at H. The peculiar results incident to such a set of devices and their arrangement will be referred to more fully below.

The apparatus as a whole is suspended first by means of the ropes G and then by the ropes L. The ropes G pass down from a supporting and winding device above (which may be of any usual or preferred character) to the frame of the bucket and are carried through the top of this frame, bearing against grooved sheave-wheels I I, and the lower end part of each rope is carried part way around and rigidly secured to the periphery of one of the wheels F. These wheels are secured to the shaft a, mounted in the frame parts A A', this being the shaft to which are also attached the eccentrics H H, above described, which impart draft and thrust to the pitman E. Upon this shaft are also placed power-transmitting wheels J, to which are connected cables or ropes K, that extend downward to and are secured to the heels or rear ends of the bucket-sections C, they being preferably fastened to shafts or rods k, which extend across the bucket-sections and are secured thereto. The ropes or cables L L also extend down from the elevated supporting and winding

mechanism, they, too, being carried to the top of the frame A A' B, at which top they bear against the peripheries of the sheaves M M and extending thence to the rods or bars k, above described, at the heels or rear ends of the scoops. When the ropes G G are relieved of strain and draft is exerted upon those at L L, all of the illustrated parts will be sustained by the said ropes, and they will act to open or separate the bucket-halves and bring them to their most remote position, as shown in Fig. 3. When, on the other hand, the strain upon the ropes L L is released and draft is exerted upon those at G, the illustrated parts will tend to move downward somewhat and the wheels F F to rotate. Such rotation turns the transmitting-wheels J, and these exert draft in turn upon the buckets through the cables or ropes at K, and at the same time a peculiar outward thrust is exerted upon the heel or outer ends of the bucket-sections by means of the pitman E. The noses of the scoops start to cut into the ore, coal, or other material on approximately vertical lines; but shortly after entering it the pitmen thrust the heels outward, causing them to rapidly approach an approximately horizontal position, so that the cutting or entering action of the scoops is facilitated. By referring to Fig. 3 it will be seen that the rope K exerts its draft upon the bucket in a line approximately parallel to the line of action of the bucket as it enters the ore or coal, and therefore all of the power is economized and applied to great advantage.

In some mechanisms heretofore proposed and above referred to rotary cams or circular peripheries mounted upon fixed centers were suggested; but in such mechanisms when the rope begins to exert its draft it draws upon the heel end on the line approximating the horizontal and almost at right angles to the bottom wall of the bucket-section, this rotary cam upon a fixed center being also depended on to throw the heel of the bucket outward. I have succeeded in greatly economizing the power by applying the draft in the way aforesaid—that is, upon lines approximately parallel to the bottom wall of the bucket-section—and then employ the pitman as a thrust device, which in no way interferes with the application of the power by means of the cable. In order to cause the rope K thus to apply the power at all times on lines substantially

or approximately parallel to the bottom of the bucket-section, I employ rope-guides, as shown at N, these being entirely independent of the scoops or bucket-sections themselves and not arranged so as in any way to support them or interfere with the action of the parts which do provide entirely such support. These rope-guides N are mounted upon short shafts n, secured to the framework or casing and having their inner ends supported by bracket-plates N', fastened to the inner sides of the parts at A A'.

What I claim is—

1. The combination of the frame, the power-transmitting mechanism, the scoop-sections, the pitmen pivoted to the outer or heel ends of the scoop-sections and supporting said ends, and means for thrusting the said pitmen endwise, the links which support the inner or front ends of the scoops, the ropes connected to the outer ends of the scoop-sections for opening them and lifting the apparatus, the ropes connecting the buckets to the power mechanism, the ropes for actuating the power mechanism and lifting the apparatus and the rope-guides N arranged substantially as set forth to exert draft downward upon the heels of the buckets when they commence to close, the buckets being disconnected from said guides and supported independently thereof, substantially as set forth.

2. The combination of the frame, the scoop-sections, the main power-shaft, the pitmen pivoted to the outer or heel ends of the scoop-sections, the eccentrics on the power-shaft engaging with the inner ends of the pitmen and arranged to positively move them endwise, the links which support the inner or front ends of the scoop-sections, the ropes connected to the outer ends of the scoop-sections for opening them, the upwardly-extending ropes for operating the power-shaft, the ropes connecting the power-shaft with the outer ends of the scoop-sections and suitable rope-guides for the last said ropes, the scoop-sections being supported and guided independently of the said rope-guides, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN C. SLOCUM.

Witnesses:

H. C. CROSS,
JOHN L. V. BONNEY.