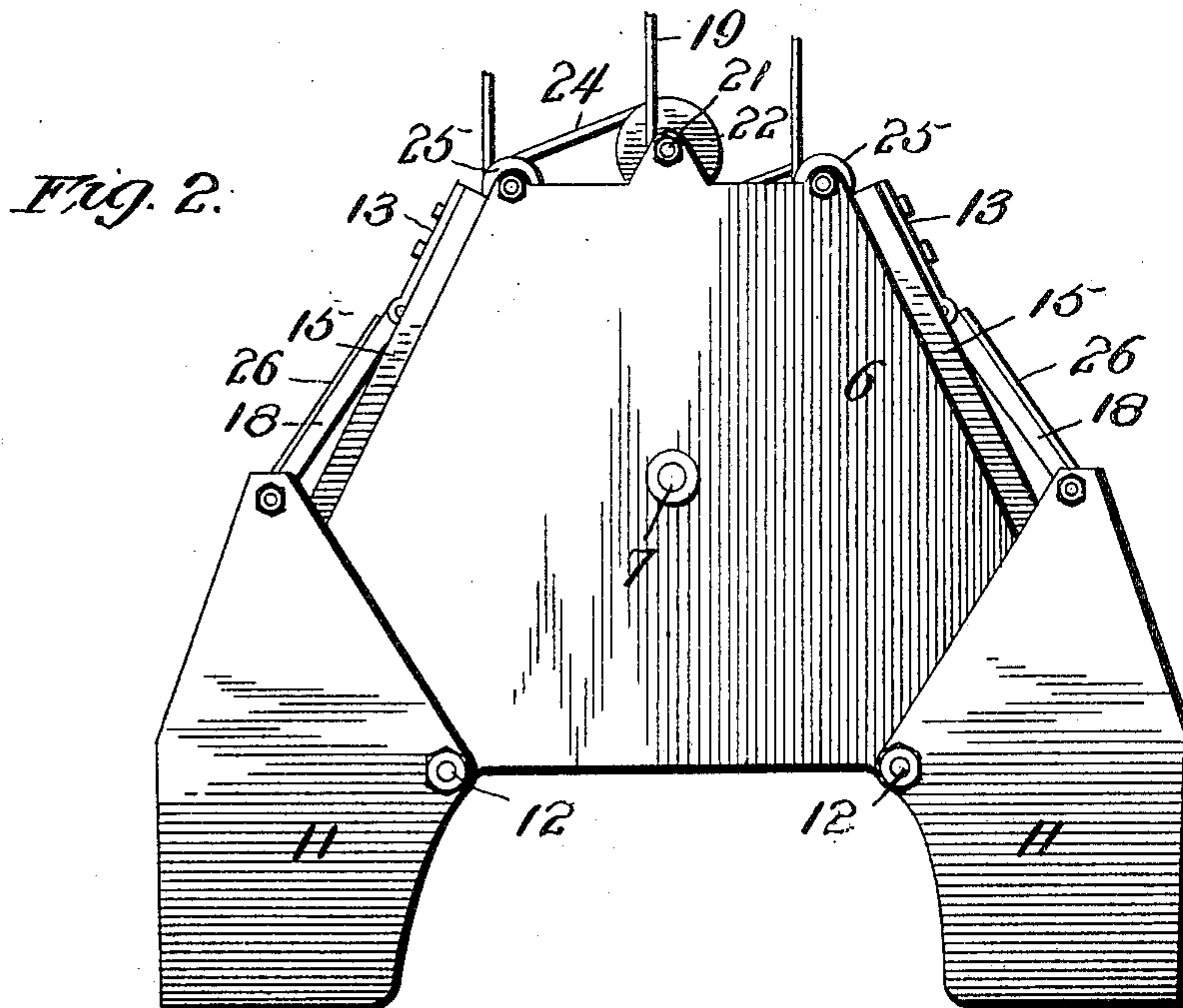
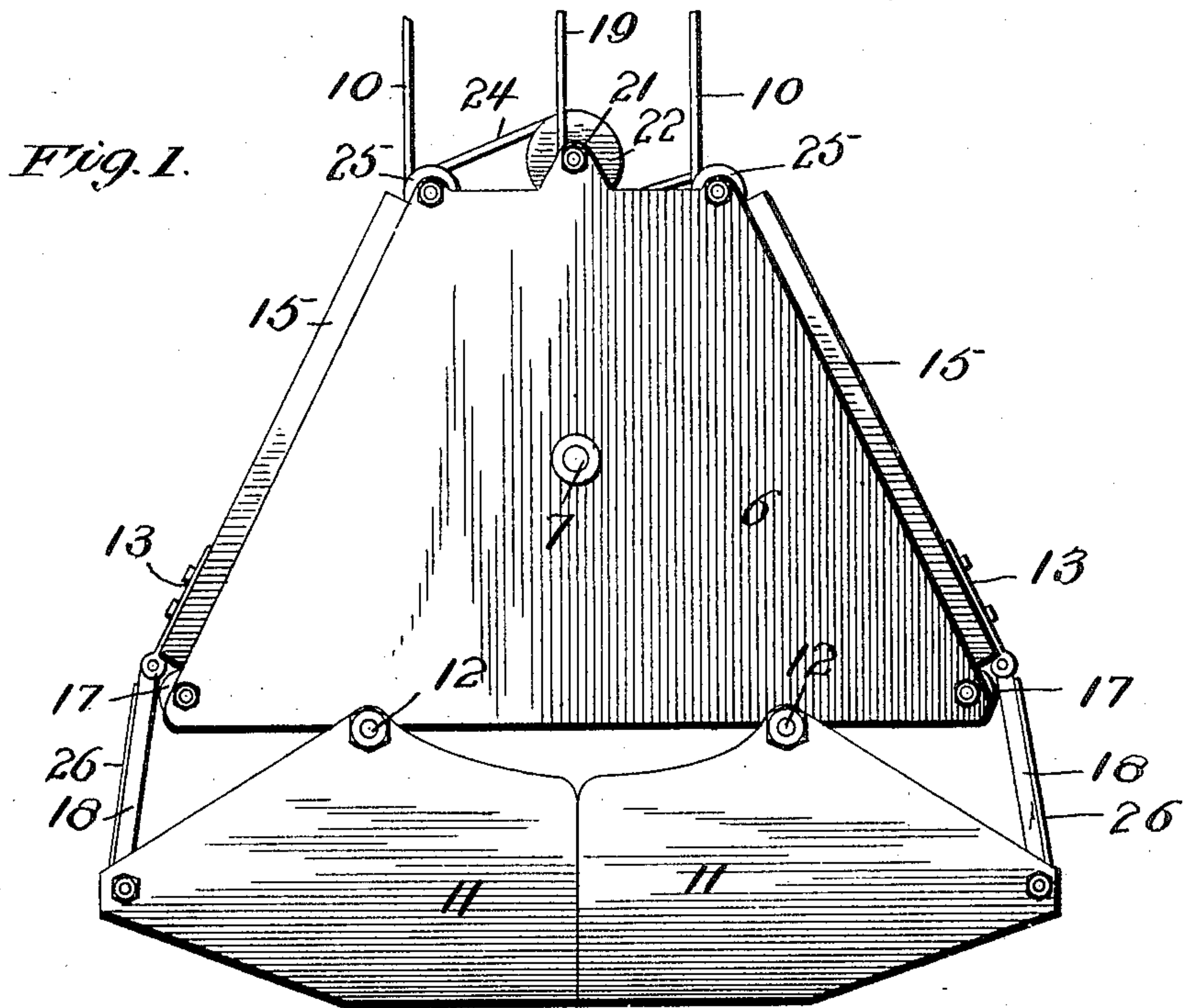


No. 804,268.

PATENTED NOV. 14, 1905.

W. B. ROBERTS.
CLAM SHELL BUCKET.
APPLICATION FILED JUNE 19, 1905.

2 SHEETS—SHEET 1.



WITNESSES:
M. F. K. Co.

Geo. E. Tew

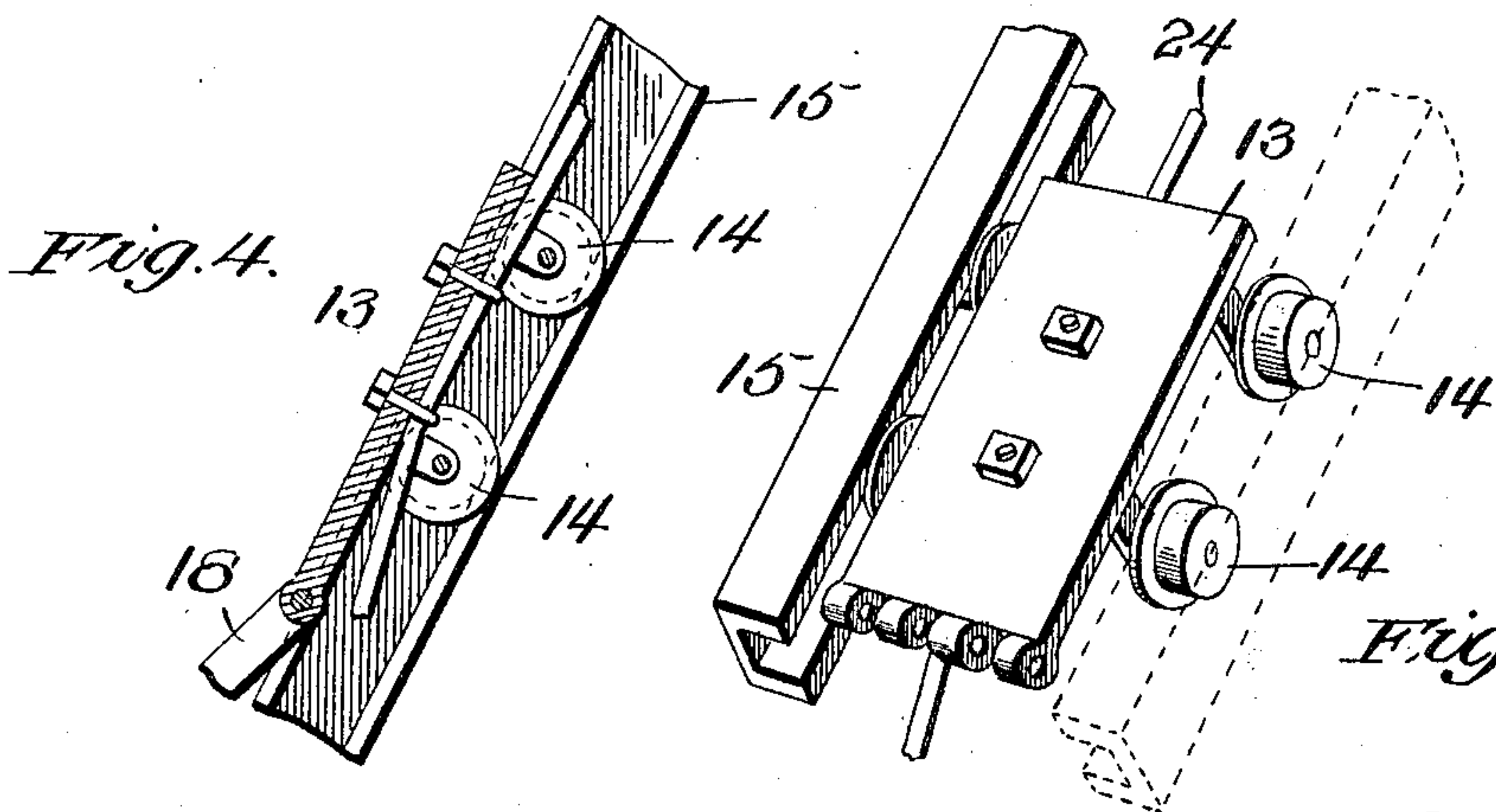
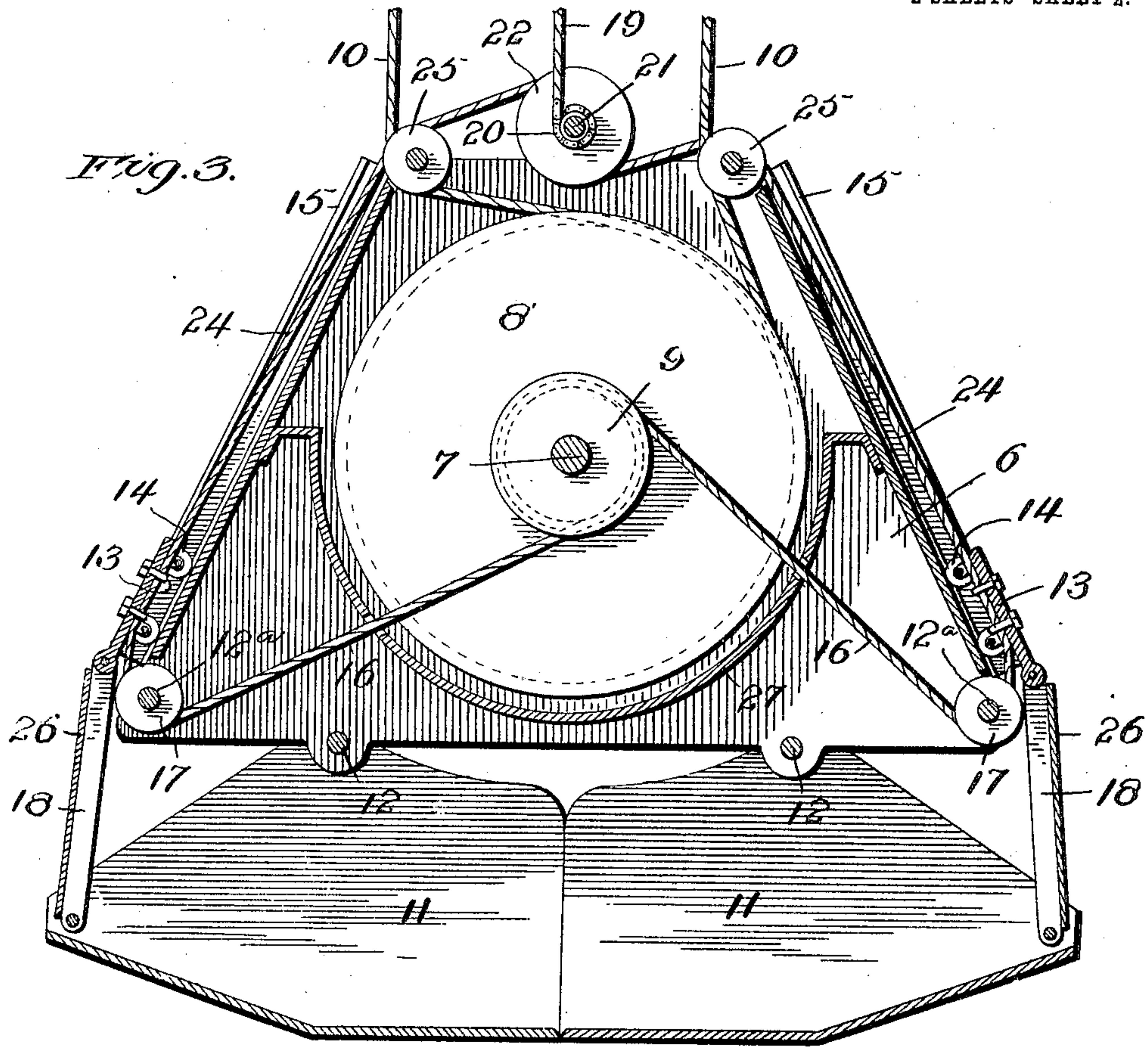
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WILLIAM B. ROBERTS, OF ASHTABULA, OHIO.

CLAM-SHELL BUCKET.

No. 804,268.

Specification of Letters Patent.

Patented Nov. 14, 1905.

Application filed June 19, 1905. Serial No. 265,908.

To all whom it may concern:

Be it known that I, WILLIAM B. ROBERTS, a citizen of the United States, residing at Ashtabula, in the county of Ashtabula and State of Ohio, have invented new and useful Improvements in Clam-Shell Buckets, of which the following is a specification.

This invention is especially an improvement on the grab or clam-shell bucket shown in my Patent No. 760,250, dated May 17, 1904.

The main object of the present invention is to prevent to a large extent the drop or jerk of the bucket when it unloads. This drop is due to the release of the closing or hoisting cable and the application of the brake to the unloading or opening cable, which causes the bucket to shift its weight from one cable to the other, and this is attended by a drop incident to opening the jaws, which drop is objectionable on account of the jerk and strain and also apt to be dangerous because of possible injury or jam of the bucket.

A further object of the invention is to improve the construction of the sliding block shown in the patent referred to by the substitution of a roller-carriage therefor, to which the thrust-arms which close the bucket-sections are connected.

A further object of the invention is to provide an improved rear section or pan to form a tight back to the bucket.

A further object of the invention is to provide such other improvements in construction as may be apparent from the following description and the accompanying drawings.

In the drawings, Figure 1 is a side elevation showing the bucket closed. Fig. 2 is a similar view showing the bucket open. Fig. 3 is a cross-section. Figs. 4 and 5 are details in section and perspective of the carriage to which the thrust-arms are connected.

Referring especially to the drawings, 6 indicates the casing of the bucket in which the operative parts are located and mounted. Mounted within this casing is the main shaft 7, having fixed therein a sheave 8 and drums 9. The loading and hoisting cables 10 are connected to this sheave and operate to turn the sheave and drum and close the buckets at the commencement of the hoist.

The bucket-sections are indicated at 11, hinged at a point about midway between the lower corners of the casing and the middle of the bottom by pivots 12, on which said sections swing.

13 indicates carriages mounted upon wheels 14, which run in channel-irons 15, located on the outer opposite sides of the casing 6. The wheels have wide flanges to hold them in place and prevent binding. These carriages are connected to the short closing-cables 16, which extend around sheaves 17 on the shaft 12^a at the lower corners of the casing to connection with the drums 9. The carriages 13 are also pivotally connected to the rear of the buckets by thrust-arms 18, which act as toggles to close the buckets in the manner indicated in my former patent.

The opening or dumping cable 19 is connected to a sprocket-chain section 20, which is secured to a shaft 21, extending across the casing at the top thereof. This shaft also carries a sheave 22, fixed thereon. The length of the circumference of the sheave 22 is preferably a little greater than the length of the slide of the carriages 13, and the sheave is connected to said carriages by short cables 24, which pass intermediately over guide-sheaves 25 at the upper corners of the casing. These parts form a reducing-gear and reduces the drop which would occur if the cables were directly connected to the opening-cable 19.

26 indicates a detachable back or pan secured to the thrust-arms 18 and extending across the back of the bucket. This back works freely with the arms, so that when the bucket is in closed position, at which time the bucket-sections are substantially horizontal, this back-piece is nearly vertical and automatically forms a tight back which prevents the escape of matter out of the back of the bucket and still does not prevent the bucket-sections from swinging open or up to the full extent when the bucket is unloaded, as shown in Fig. 2. A guard 27 is fastened at its ends to the casing 6 and extends around the lower half of the sheave 8 and serves to prevent clogging or obstruction of the sheave and cable by the material in the bucket.

In operation when the bucket is loaded the cables 10 are pulled, which turns the sheave 8 and winds the cables 16 on the drums 9. This pulls down the carriages 13, and by the thrust-arm connection the buckets 11 are forced down and into the material and closed, as shown. It is to be noticed that the pivotal point 12 of the buckets is located some distance within the line of the track or travel of the carriage 13, so that great leverage is produced, much more than with the con-

struction shown in my patent referred to above. This gives a greater power in closing the buckets and digging into hard or unyielding material.

5 To unload, the brake is applied to the opening-cable 19 and the hoisting-cables 10 are released, which puts the weight on the opening-cable. At the same time the bucket-sections swing open by gravity and the carriages
10 13 slide to the top of the tracks 15. The cables 24 wind on the sheave 22, and the chain 20 at the end of the opening-cable unwinds from the shaft 21. The sheave 22 takes up most of the drop which would otherwise occur,
15 as the bucket drops only the short distance required for the large sheave 22 to take up the cables 24. Inasmuch as the chain is wound on a shaft of comparatively small diameter, the distance the bucket drops is but
20 a small fraction of the total movement of the slides 13. After being dumped, when the bucket is again loaded the chain 20 winds up on the shaft 21 and the cables 24 unwind from the sheave 22 as the buckets close.

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

1. The combination with a casing and bucket-sections, of closing and opening cables, and a reducing-gear and tackle between
30 the opening-cable and the sections constructed to take up the tackle and decrease the drop of the bucket when unloaded.

2. The combination with a casing and bucket-sections, of closing and opening cables connected to the bucket-sections, and
35 means between the opening-cables and the sections to decrease the drop of the bucket when the closing-cable is released.

3. The combination with a casing and a
40 pair of bucket-sections, of a reducing-sheave and its shaft journaled on the casing, a closing-cable operatively connected to the sections, a pair of cables connected between the said sheave and the sections, and an opening-
45 cable connected to the shaft of said sheave.

4. The combination with a casing and a pair of bucket-sections, of a shaft journaled on the casing and having a sheave thereon, a pair of cables connected between the sheave

and the sections, an opening-cable attached 50 to the shaft and adapted to wind thereon, and a closing-cable operatively connected to the sections.

5. The combination with a casing, and bucket-sections pivoted thereto, of tracks on 55 opposite sides of the casing, wheeled carriages movable on said tracks, thrust-bars pivotally connected at opposite ends of the carriages and the sections, and opposing opening and closing cables operatively connected 60 to the carriages.

6. In a clam-shell bucket, the combination with a casing having channeled tracks thereon, of carriages having wheels which travel in 65 said channels, thrust-bars between the carriages and the bucket-shells, and opening and closing cables connected to the carriages.

7. In a clam-shell bucket, a bucket-section having a back hinged to the main part thereof. 70

8. In a clam-shell bucket, bucket-sections having thrust-bars pivotally attached to the rear thereof and connected to opening and closing cables, and back-plates for the sections mounted on the said bars, substantially 75 as described.

9. In a clam-shell bucket, in combination, a casing containing a sheave and drums connected to the closing-cable and to buckets pivoted to the lower end of the casing, and a 80 guard between said sheave and the buckets.

10. The combination with a casing, of bucket-sections hinged to the lower edge thereof at points at a distance inwardly from the outer corners of the casing, carriages 85 which travel on opposite sides of the casing, opening and closing cables operatively connected to said carriages, and thrust-bars between the outer ends of the buckets and the carriages. 90

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM B. ROBERTS.

Witnesses:

M. A. SOULES,
GEO. D. PANEN.