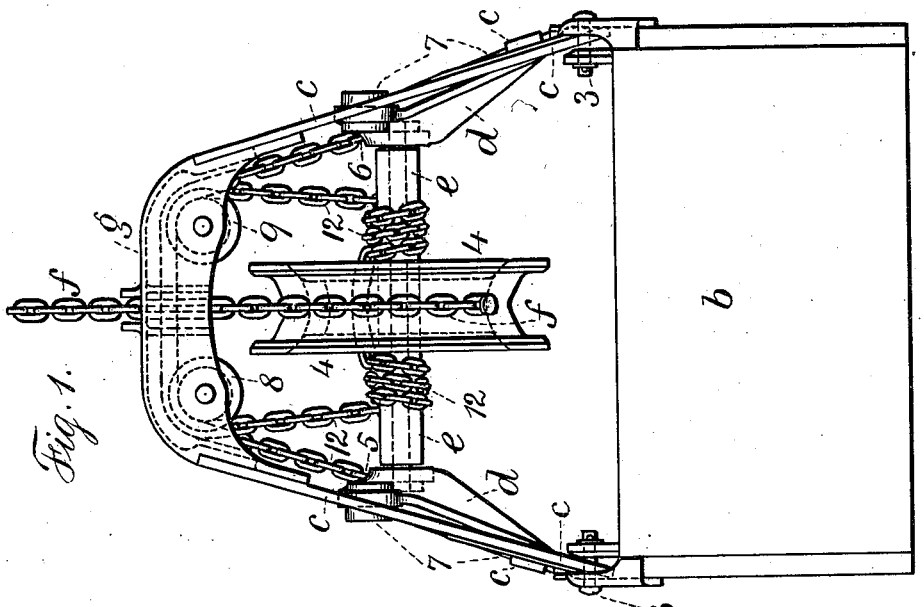
No. 649,246. Patented May 8, 1900.

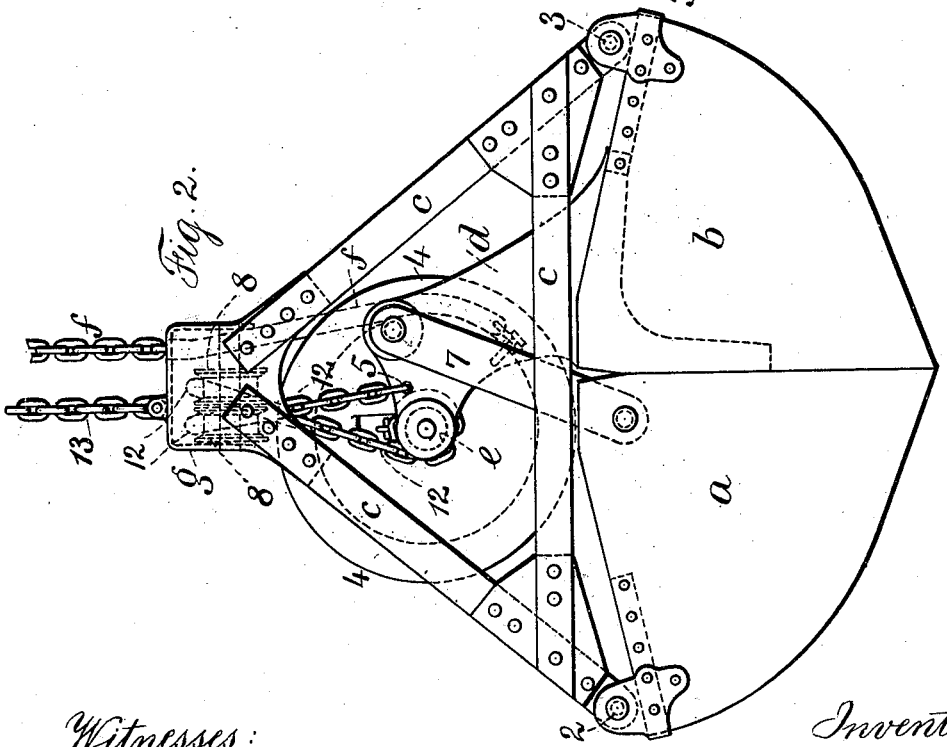
C. W. HUNT.

EXCAVATING BUCKET.

(Application filed July 6, 1899.)

(No Model.)





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UNITED STATES PATENT OFFICE.

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EXCAVATING-BUCKET.

SPECIFICATION forming part of Letters Patent No. 649,246, dated May 8, 1900.

Application filed July 6, 1899. Serial No. 722,933. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. HUNT, a citizen of the United States, residing at New York, (West New Brighton,) in the county of Richmond and State of New York, have invented an Improvement in Excavating-Buckets, of which the following is a specification.

This bucket is especially intended for excavating mud, sand, and similar materials; but it may also be used in excaving other comparatively-loose materials, whether in water or not.

The present invention relates to improvements in the chains, drums, and sheaves by which the scoops of a clam-shell bucket are forcibly closed together in digging material. In the present invention the chain which passes from the drum-barrels to the scoops is advantageously so arranged and applied that one chain actuates the two scoops, and hence there is uniformity in the action, and the chain accommodates itself to any inequalities in the construction of the bucket or such as may arise temporarily or otherwise in the use of the bucket, and a very powerful closing action is obtained for closing the scoops. The scoops open by their weight when the frame to which they are pivoted is suspended.

In the drawings, Figure 1 is an end view of the bucket, and Fig. 2 is a side view of the same.

The excavating apparatus is made of the two principal parts or scoops *a* and *b*, that are pivoted to the frame *c*. The scoop *a* is pivoted at 2 to the frame *c* and the scoop *b* is pivoted at 3 to such frame *c*, and the scoops are opened by their own weight when the triangular frames *c* are sustained and the scoops allowed to drop; but when the scoops *a* and *b* are drawn up, as hereinafter described, they are self-closing, the triangular frame *c* and connecting-head portion *g* becoming a resistance to the hoisting device. The brackets *d* of the scoop *b* support the drum *e*, and this drum *e* is made with a central spool 4, around which is wound the closing and hoisting chain *f*. The brackets *d* are permanently connected to the scoop *b*, and there are links 7, pivoted to the brackets *d* and extending therefrom to pivotal connections with the scoop *a*, so that the drum and the two scoops will move together as the chain *f* is raised to close the bucket or lowered to open such bucket.

The chain 12 is preferably arranged in the following manner: There is an opening in the spool 4 parallel with the drum *e*. Through this opening the chain 12 is drawn to the center of its length. The ends are then wrapped in opposite directions around the drum *e* a sufficient number of times to permit the opening of the bucket, and the ends of the chain are then carried in opposite directions over the pulleys 8 and 9 and the ends fastened to the brackets *d* of the scoops at 5 and 6. When the chain 13 is held fast by the drum on the hoisting-engine and the chain *f* slackened away, the weight of the scoops, spool, and drums will open the shovel, unwinding the chain 12 from the drums and winding up the chain *f* on the central spool. The bucket is closed by reversing the operation, hoisting with the chain *f* or slackening upon the chain 13. The opening through the spool 4 is such that the chain 12 can move freely, as may be needed to adjust the strain upon each side equally. The chain *f*, wound around the spool 4, passes up to the engine-drum or other supporting device. Hence when this chain *f* is drawn upon it is drawn off the spool 4, and the drum is thereby rotated so as to wind the tackle-chain 12 around the drum, and when the chain *f* is slackened and the weight of the apparatus taken by the chain 13 this chain *f* is wound upon the spool 4, and the tackle-chain 12 is given off, so as to allow the scoops to swing downwardly by gravity and open.

By the before-described construction and arrangement the chain *f* becomes the hoisting-chain, and before it can take the weight of the excavating apparatus and raise the same it has to draw off the spool 4 sufficiently to close the scoops, and the bucket is easily kept closed for hoisting by the chain *f*, because such chain *f* on the spool 4 has a leverage against the tackle-chain 12 that intervenes between the frame and the scoops, and in consequence of the tackle-chain 12 having its two ends fastened at 5 and 6 there will be a uniform tension upon the chain, because the portion of such chain that passes through the spool 4 is not confined; but the rotation of the spool causes such chain to be wound

up on the drum *e* or paid off from the same, according to the direction of rotation.

It will be observed that two separate chains can be used instead of the one continuous chain, each chain being fastened to the center of spool 4 or to the drum *e*, the action of the shovel in opening and closing being precisely similar to the first prescribed method, except that the chain must be adjusted to the correct length when the bucket is constructed.

I have herein spoken of the parts 13 and *f* as "chains;" but the improvement is not confined to chains, as it is evident that ropes could be used with the same mechanical efficiency.

By the foregoing improvement a powerful closing action and a uniformity of action are obtained, together with a uniformity of tension upon the tackle-chain, and the parts are very easy to construct and to put together or to repair. This improvement includes an open grab as well as a bucket adapted to mud or similar material.

I claim as my invention—

1. The combination in an excavating apparatus with a frame and scoops pivoted thereto, a hoisting-chain, a spool for said chain and a drum carrying said spool, of pulleys in the head of the frame placed longitudinal with the frame and transversely of the buckets, a tackle-chain connected centrally to the drum and passing over the pulleys and crossing in opposite directions with the ends of the chain fastened to one of the buckets, substantially as set forth.

2. The combination in an excavating apparatus, of a frame, scoops pivoted at their outer ends to the frame and connected together at their inner upper ends, a drum and a connected spool pivoted at the ends of one of the scoops, links connected with the other scoop, pulleys in the head of the frame, a tackle-chain passing from the joints between the scoops over the pulleys and around the drum, a hoisting-chain connected at one end to the spool of the drum and wound upon the same so that the tension upon the hoisting-chain will rotate the spool and drum and close the scoop, and a second chain to the frame for opening the scoops, substantially as set forth.

3. The combination in an excavating apparatus of a frame formed of rigid triangular side portions and a connecting-head, scoops pivoted at their outer ends to the respective ends of the frames, links pivoted at one end to the inner ends of one scoop, prolongations or brackets rising from the inner ends of the other scoop and to which the free ends of the said links are connected, bearings connected to said brackets, and a drum and spool pivoted at the ends to the said brackets, a hoisting-chain passing around the spool and a tackle-chain connected to the upper ends of said brackets, and pulleys in the head of the frame over which said tackle-chain passes and crosses with the center portion of the tackle-chain wound around and connected to the drum, substantially as set forth.

4. The combination in an excavating apparatus, of an inverted-**U** frame triangular in side elevation, scoops pivoted at their outer ends to the respective ends of the frame, rising portions connected to the inner ends of one scoop and connections therefrom to the inner ends of the other scoop, a drum and a spool thereon supported upon the rising portions of the one scoop, pulleys in the head of the frame, a hoisting-chain for operating the buckets, a tackle-chain passing in opposite directions over the pulleys with the middle part of the chain passing through the spool on the drum and wound around the drum with the ends passing in opposite directions over the pulleys to the rising portions of one bucket, substantially as set forth.

Signed by me this 30th day of June, 1899.

CHAS. W. HUNT.

Witnesses:

JAMES P. J. MORRIS,

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