No. 822,529. PATENTED JUNE 5, 1906.

J. H. W. LIBBE.

EXCAVATING DIPPER.

APPLICATION FILED DEC. 9, 1905.

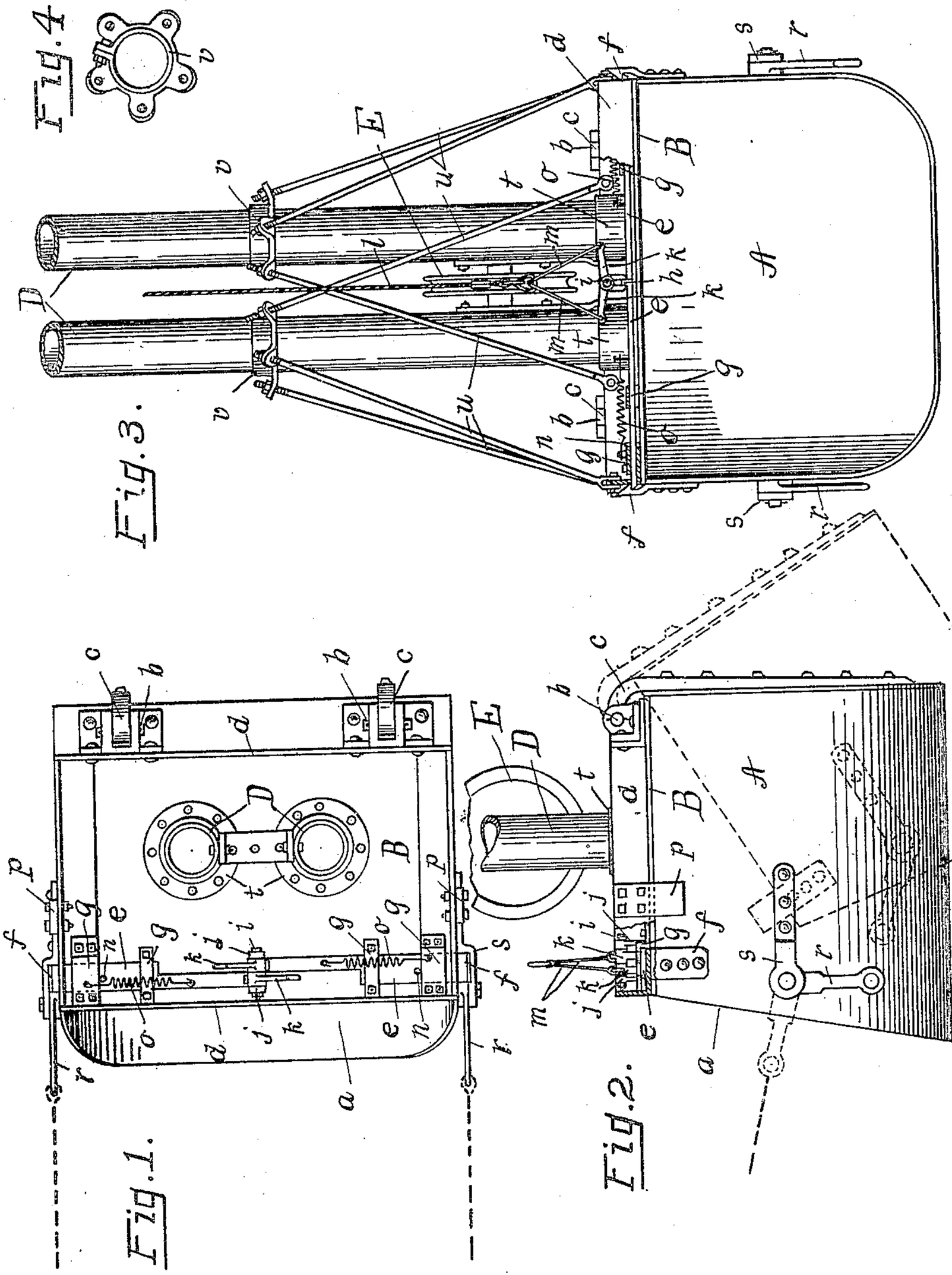

Fig. 3.

Fig. 4.

Fig. 1.

Fig. 2.

WITNESSES:

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EXCAVATING-DIPPER.

No. 822,529. Specification of Letters Patent. Patented June 5, 1906.

Application filed December 9, 1905. Serial No. 291,032.

To all whom it may concern:

Be it known that I, JOHN H. W. LIBBE, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Excavating-Dippers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to dippers or shovels of the class employed in connection with excavating apparatus, steam-shovels, and the like the operation of which is such as to enable the contents of the dipper or shovel to be discharged from the mouth or receiving end thereof, and is especially designed for use in connection with the excavating apparatus described in my applicaion No. 290,062, filed December 4, 1905.

The object of my invention is the provision of an improved form of dipper the major or body portion of which is so constructed and connected to the side thereof to which its stick is secured as to enable such portion to be released and to have a pivotal movement away from the side to which the stick is secured, whereby to effect a discharge of the dipper contents from the mouth or receiving end thereof.

A furhter object of my invention is the provision of improved means for tripping or releasing the relatively movable parts of the dipper, whereby its discharge or opening movement is easily effected by the operator at a desired position of its movement.

To this end the invention consists of certain novel features of construction, combination, and arrangement of the parts, as will hereinafter be more fully described and finally claimed.

In the accompanying drawings, forming a part of the specification, Figure 1 is a top plan view of the dipper embodying my invention; Fig. 2, a side elevation thereof with a portion of its stick broken away and showing in dotted lines the body portion of the dipper opened away from its fixed side. Fig. 3 is a front elevation of the dipper with the upper or outer ends of the two sticks broken away, and Fig. 4 is a top plan view of one of the collars used on the dipper-sticks and to which one end of the rods bracing the dipper are secured.

Referring to the drawings, A represents the body of the dipper, the front end only of which is open, as shown at *a*, to form the receiving end or mouth thereof, which receiving end is preferably shaped to form a digging-nose at its lower edge. This dipper-body is provided at its upper rear portion with suitable brackets or bearing-arms *c*, which are hinged, as at *b*, to a head B, fixedly carried by the dipper-sticks D, which head forms the upper side of the dipper-body when said body is in closed position and is provided around its edges with a strengthening-flange *d*. The body A is normally retained in closed position relative to the head B by the two bolts or sliding members *e e*, which are disposed transversely of the head adjacent its forward end and have their outer ends projecting through openings in the flange *d* at opposite sides of the head in position to coact with registering depressions in the ledges or shoulders *f*, which ledges or shoulders are fixed to the sides of the dipper-body. The bolts or sliding members *e e* are each retained in sliding contact with the head surface by straps *g g* and have their inner ends lying side by side and each formed with a spur *h*, arranged in juxtaposition to the spur of the other bolt. Mounted above the spurs *h* on a pivot *i*, which transversely spans the bolts or sliding members *e e* and is supported at its ends by brackets *j*, are two bell-crank levers *k k*. These levers have their power-arms horizontally disposed and extending in opposite directions from their common fulcrum, and each has its weight-arm extending downwardly in position to loosely engage the side of the spur *h* of the bolt or sliding member *e*, disposed thereunder, so that as the end of the power-arm is raised an inward movement is imparted to the associated bolt to effect a release of its outer end from engagement with the ledge or shoulder *f*. The levers *k* are caused to move in unison to effect a simultaneous release of each bolt *e* from its engaging ledge or shoulder by reason of each having its power-arm connected to the end of a common trip-cord *l* through the medium of a link *m*. Each bolt *e* has its outward movement limited by a stop-pin *n*, thereon positioned to coact with one of the retaining-

straps *g g*, and is actuated to normally maintain a shot or extended position by a contraction-spring *o*, the opposite ends of which are fixed to the bolt and one of the straps *g*. The bolts *e* and engaging ledges or shoulders *f* have their ends oppositely beveled, as shown, to effect a self-locking thereof as the top closes against the body of the dipper. It will thus be seen that the strain occasioned by the load in the body of the dipper will be equally distributed to the forward side edges of the head B and to its points of connection with the bearing brackets or lugs *c* at the rear thereof. A tongue *p* is secured to each side of the head B and projects downwardly therefrom in position to abut the outer surface of the contiguous dipper side adjacent its upper edge to prevent a spreading of such sides due to the weight of the dipper contents and a consequent releasing of the bolt ends from the ledges or shoulders previous to a withdrawal of the bolts. Links *r*, to which the draft-cables are attached, are pivoted to brackets *s*, secured in proper position to each side of the dipper near its forward end, as shown.

D represents one or more dipper-sticks, which have their ends firmly fixed within sockets *t*, secured to the upper surface of the head B at approximately a central point thereon. These sticks are further strengthened and braced relative to the head by a plurality of rods, cables, or the like *u*, which have their lower ends secured to the flange *d* on the head and their upper ends attached to a collar *v* on their respective sticks. E represents a sheave which is mounted on a horizontal spindle between the sticks D adjacent their lower ends and under which the elevating-cable (not shown) of the dipper passes.

It is obvious from the above that a tripping of the dipper is effected by a pulling of the cord *l*, which imparts opposite oscillation to each lever *k* and a simultaneous withdrawal of the ends of the bolts *e* from engagement with the ledges or shoulders *f*, thereby permitting an opening movement of the dipper-body for the purpose of discharging its contents, which movement is downwardly from the dipper-sticks.

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

1. In combination, a dipper comprising a body portion and a relatively fixed part to which the body portion is hinged and which forms one side of the dipper, a plurality of spring-bolts contiguously mounted on said part, ledges or shoulders on the sides of the body portion with which said bolts normally engage, reversely-positioned bell-crank levers mounted on the part adjacent the bolts, and movable to impart a releasing movement to the bolts, and a trip having direct connection with the levers for effecting a movement thereof.

2. In combination, a dipper comprising a body portion and a relatively fixed part to which the body portion is hinged, a plurality of spring-bolt members disposed side by side on the fixed part and having their opposite or outer ends projecting beyond the side edges of said part, ledges or shoulders on the body portion with which the bolt members normally engage to retain the body portion closed against the fixed part, independent levers for imparting a releasing movement to each bolt member, said levers having a common pivot, and common means for operating the levers.

3. In combination, a dipper comprising a body portion and a relatively fixed head to which the body portion is hinged, two independently-movable bolts carried by the head, ledges or shoulders on the sides of the body portion with which the bolts normally engage, two levers mounted on the head and movable to effect opposite releasing movements of the bolts, and trip means having direct connection with the levers for imparting simultaneous releasing movements thereto.

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

JOHN H. W. LIBBE.

Witnesses:
C. W. OWEN,
MARY I. SHAY.