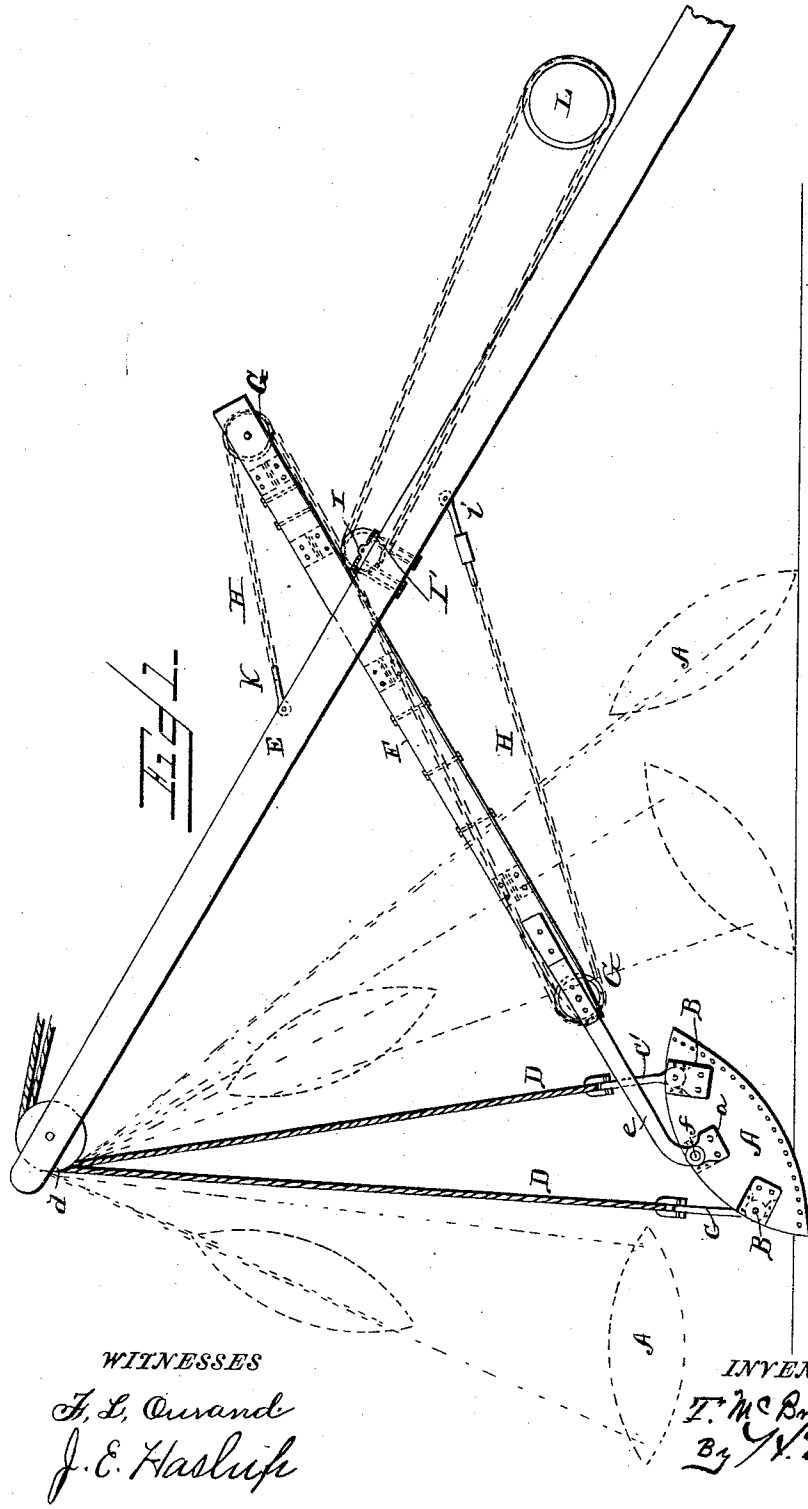
(No Model.) 3 Sheets—Sheet 1.

T. McBRIDE & E. FISHER.

EXCAVATING DEVICE.

No. 483,004. Patented Sept. 20, 1892.



WITNESSES

F. L. Durand

J. E. Haslup

INVENTORS

T. McBride and E. Fisher

By Y. W. Sterling

Attorney

(No Model.) 3 Sheets—Sheet 2.

T. McBRIDE & E. FISHER.

EXCAVATING DEVICE.

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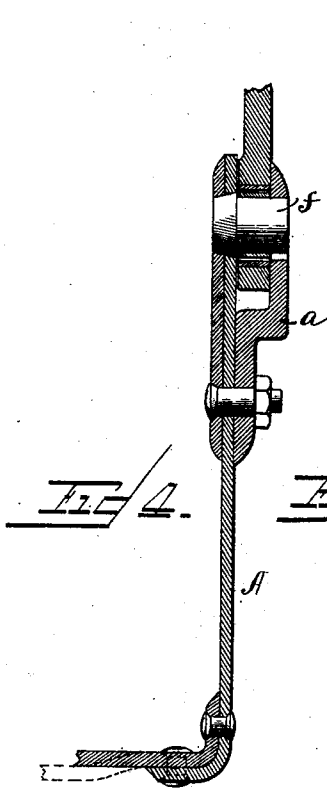

Fig. 4.

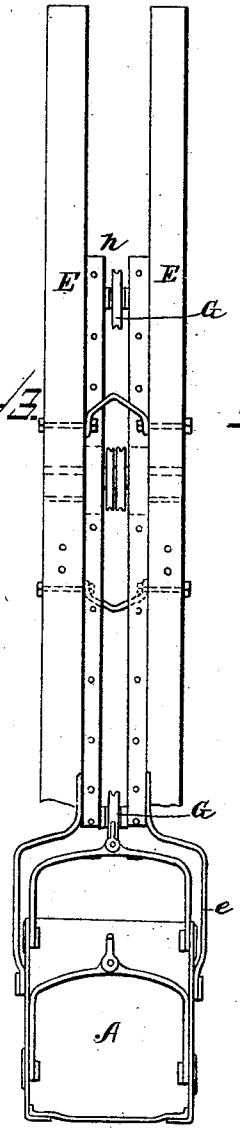

Fig. 3.

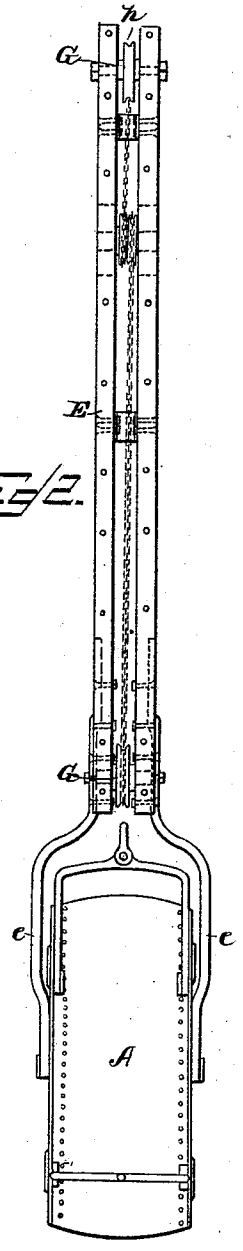

Fig. 2.

WITNESSES
F. L. Durand
J. E. Hasbrouck

INVENTORS
T. McBride and E. Fisher
By Y. W. Sterling
Attorney

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T. McBRIDE & E. FISHER.

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Fig. 5.

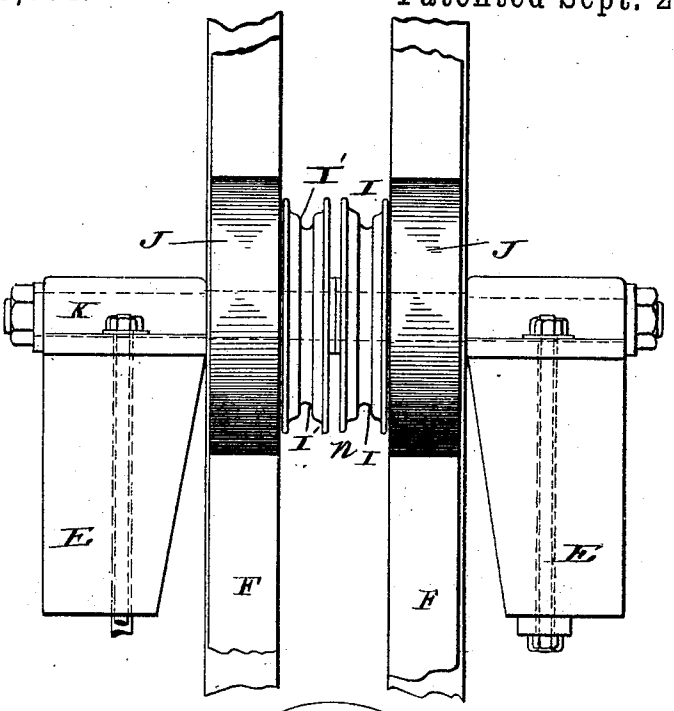
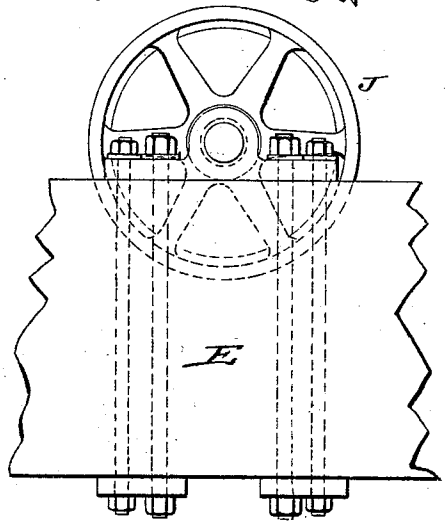


Fig. 6.



WITNESSES
F. L. Ourand
J. E. Haslup.

INVENTORS
T. McBride and E. Fisher
By N. W. Sterling
Attorney

UNITED STATES PATENT OFFICE.

THOMAS McBRIDE, OF PHILADELPHIA, PENNSYLVANIA, AND EBENEZER FISHER, OF KINCARDINE, CANADA.

EXCAVATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 483,004, dated September 20, 1892.

Application filed March 14, 1892. Serial No. 424,807. (No model.)

To all whom it may concern:

Be it known that we, THOMAS McBRIDE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, and EBENEZER FISHER, a subject of the Queen of Great Britain, and a resident of Kincardine, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Excavating Devices; and we do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in excavating-scoops and to the mechanism for operating the same.

The object of our invention is to provide an excavating device by which the scoop is made to travel backward and forward while being filled or emptied at either end of the same.

Our invention consists of an excavating-scoop open at both ends, the sides of said scoop being pivotally connected near each end to the bails, said bails being connected to chains which raise or lower the ends of the scoop, as may be desired, whereby the scoop can be filled and emptied from either end.

Our invention consists, further, in passing the chains which support the scoop over sheaves in the outer end of the arm or gaff of a derrick and operating said chains by suitable mechanism for raising or lowering either end of the scoop.

Our invention consists, further, in securing to the sides of the scoop in a pivotal manner the arms of a bifurcated lever, the outer end of said lever being adapted to slide back and forth in suitable ways in the arm or gaff of the derrick.

Our invention consists, further, in providing the operating-lever with sheaves around which is passed a chain, said chain being operated by suitable mechanism for moving the lever back and forth to force the scoop into the material to be excavated.

Our invention consists, further, in certain details of construction which will be more fully hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a side view of the scoop and operating device with a portion of the gaff of the derrick. Fig. 2 is a top or plan view of the main operating-lever for loading the scoops. Fig. 3 is a plan view showing the operating-lever located between the two members or sides of the gaff. Fig. 4 is a sectional view of a portion of the scoop, showing the connection between the operating-lever and the scoop. Fig. 5 is a top or plan view of the pulleys mounted on the gaff. Fig. 6 is a side view of Fig. 5.

A indicates the scoop, which is made of boiler-iron, steel plate, or other suitable material. The scoop is by preference of rectangular form, having a curved bottom and elliptically-formed sides, the top and ends being open. The sides of the scoop at the ends of the same slope down to the bottom in order to permit the scoop to more readily enter the material to be moved. The sides of the scoop are provided with ears B, in which are pivoted the bails C, so as to give a pivotal connection between the bails and the scoop. The bails C are connected to the ends of the wire rope or chains D, said rope or chains being passed over sheaves or friction-pulleys *d*, mounted in the upper end of the gaff E, and down to and around drums or capstans, (not shown,) said drums or capstans being adapted to be operated by hand, steam, or any suitable power.

The drums around which the chains D are wound are adapted to be operated in unison and also singly. They are operated in unison when it is desired to raise the scoop with its load to the upper point to enable it to be swung around by the gaff to the place of unloading and singly when it is desired to raise or lower one end of the scoop for the purpose of unloading the same.

The scoops are shown in dotted lines, and Fig. 1 indicates their lines of travel in loading and unloading.

The scoop and devices for raising and unloading the same having been described, we will now proceed to describe the devices by which the scoop is operated to load the same.

F is a lever, the front end of which is bifurcated, and the end bifurcated portions *e* are pivoted to ears secured to the center and sides of

the scoop, as indicated at *f*, so that the scoop will be free to move in the arc of circle, irrespective of the bifurcated arms. The main or rear portion of the lever F passes through the two members or pieces forming the gaff E and are supported on suitable friction-rollers J, (shown in Figs. 5 and 6,) which will allow it to work back and forth freely between the sides of the gaff. The rear or main portion of the operating-lever F is composed of two pieces of timber or other suitable material, which are bolted together in such a manner as to leave an open space *h* between the same.

G G are sheaves mounted in the ends of the lever F, around which the chain H passes, as shown in Fig. 1. One end of the chain H is secured to the under side of the gaff E, as shown at *i*, Fig. 1, while the other end of said chain is secured to the upper side of the gaff, as indicated at *k* in same figure. The chain H from point *i* passes over sheaves *g* at lower end of lever and thence to sheave *i* on the gaff E and over the same to the sprocket-wheel L, which is driven from any suitable source of power. After passing around the sprocket-wheel L the chain H passes over the sheaves I′ from the under side and thence to the sheave G on the upper end of lever F, and is secured at point *k* on the gaff E. It will therefore be seen that only one chain is employed; but the invention can be so modified as to use two chains, in which case the chain H would pass from one sheave *g* to the other on the lever, only gearing with sheave *l*, which would be operated by a separate chain from the sprocket-wheel L.

The devices just described are mounted in suitable bearings secured to the gaff. It will be noticed that by turning the wheel L in one direction the lever F will be forced forward, driving the scoop into the material, and that by reversing the movement of the wheel L the lever will be drawn back, pulling the scoop into the material to fill the same.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. An excavating-scoop open at both ends and pivotally secured between arms of a main operating bifurcated lever, said scoop being pivotally connected near each end to bails, said bails being connected to chains which raise or lower the ends of the scoop, as described, whereby the scoop can be filled and emptied from each end.

2. In an excavating-scoop of the character described, the bails pivoted near each end, said bails being connected to operating-chains which pass over sheaves in the outer end of the gaff of a derrick and to suitable operating-drums, whereby the chains can be operated singly or in unison.

3. In an excavating-scoop open at both ends, a main operating-lever to force the scoop into the material to be excavated, bifurcated at the front end and pivoted to the sides of the scoop, and bails provided at each end of said scoop and connected with suitable operating-chains, the rear end of said operating-lever being adapted to slide back and forth on suitable frame-rollers in the arm of the gaff of the derrick, as shown.

4. In an excavating device of the character described, a scoop open at both ends, supported at both ends by ropes or chains, and an operating-lever pivoted to the sides of the scoop, said operating-lever being provided with sheaves, around which is passed a chain, said chain being operated by suitable mechanism for moving the lever back and forth to force the scoop into the material to be excavated.

5. In an excavating device of the character described, a scoop open at both ends, supported at both ends by ropes or chains passing over the end of a gaff, an operating-lever pivoted to the sides of the scoop, said operating-lever being provided with sheaves at each end, sheaves mounted on the gaff, a sprocket-wheel, and an operating-chain secured to the gaff, passing over sheave at lower end of lever, thence over one of the sheaves on gaff, thence to sprocket-wheel, thence around second sheave on gaff, thence around on sheave on upper end of lever, and thence to the gaff, where it is secured, substantially as described.

In testimony whereof we affix our signatures in presence of two subscribing witnesses.

THOMAS McBRIDE.
EBENEZER FISHER.

Witnesses:
THOS. McBRIDE, Jr.,
JOHN McBRIDE.