(No Model.) 2 Sheets—Sheet 1.

T. McBRIDE & E. FISHER.

DEVICE FOR CONVEYING GRAIN, ICE, COAL, &c.

No. 399,063. Patented Mar. 5, 1889.

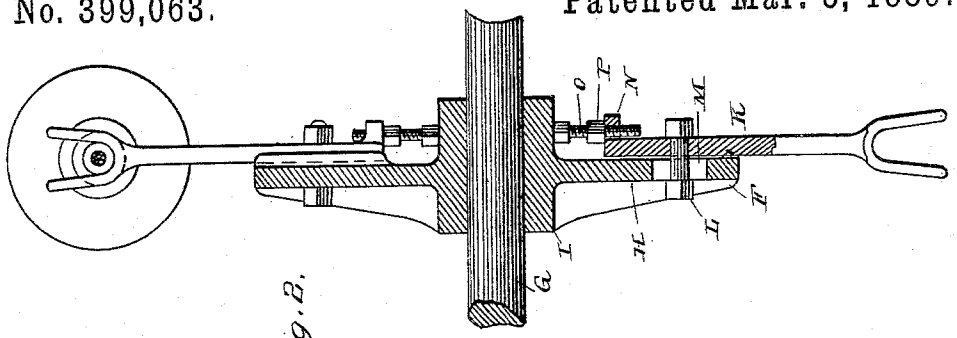


Fig. 2.

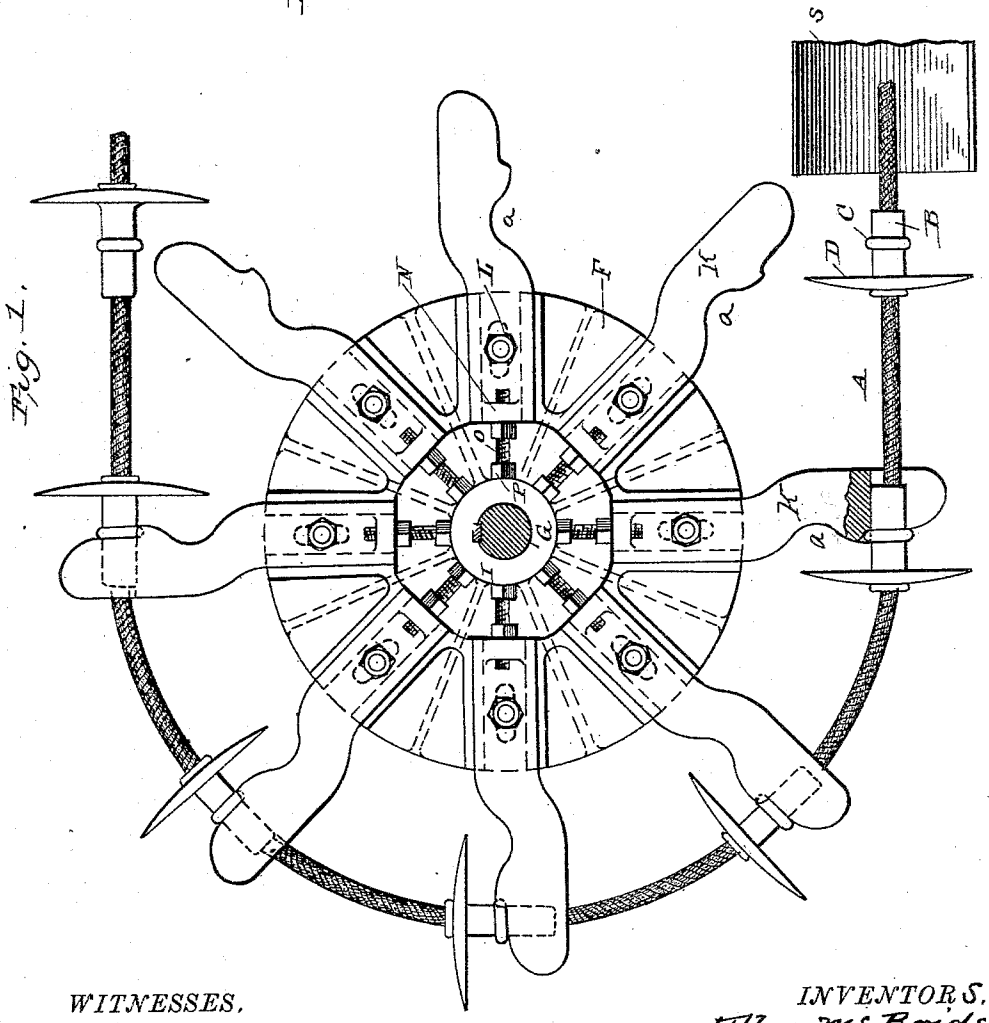


Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

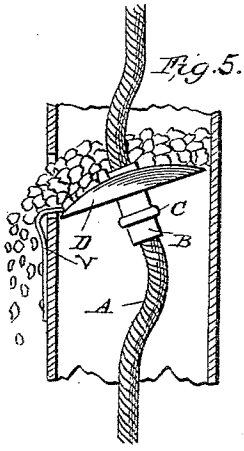


Fig. 3.

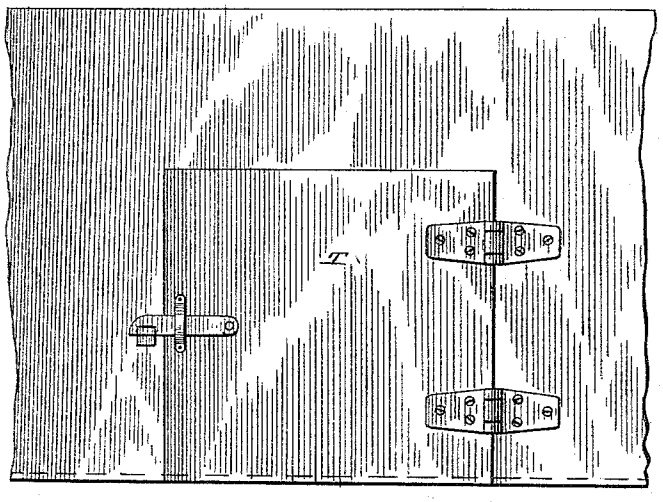
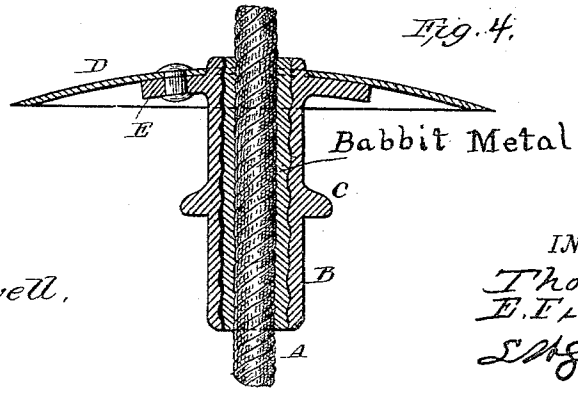


Fig. 4.



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UNITED STATES PATENT OFFICE.

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

DEVICE FOR CONVEYING GRAIN, ICE, COAL, &c.

SPECIFICATION forming part of Letters Patent No. 399,063, dated March 5, 1889.

Application filed March 5, 1888. Renewed February 7, 1889. Serial No. 299,089. (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, residing at Kincardine, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Devices for Conveying Coal, Grain, &c., of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention relates to improvements in devices for elevating or conveying coal, ice, grain, and like substances from one point to another.

The object of our invention is to provide a device for elevating or conveying coal, ice, grain, and the like material, which will be simple in its parts and effective in operation, and which at the same time will not be liable to get out of order.

This invention is designed to be used in connection with a loading and unloading device, such as is described and claimed in an application for a patent filed by us February 23, 1888, Serial No. 264,936.

Our invention consists, first, in securing the disks of an endless conveyer to sleeves or hubs mounted on the cable and in providing said sleeves or hubs with annular or circumferential ribs, with which the bifurcated arms of the driving-wheel are adapted to engage; second, in providing the conveying trough or tube with discharge-apertures in its walls and with spring-catches at said apertures to trip the conveying-disks and discharge the material through the apertures.

Other novel features will be more fully hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a side view of the driving-wheel and the endless conveying-cable. Fig. 2 is a sectional view. Fig. 3 is an enlarged view of the conveying-trough with door. Fig. 4 is a sectional view of one of the conveying disks and cable. Fig. 5 is a modification in which the machine is raised in a vertical direction.

A indicates an endless rope or cable, made of wire or other suitable material, a steel-wire cable being preferred to enable it to withstand the heavy strain which is imposed upon it in moving heavy bodies of coal, ice, or grain.

B are sleeves firmly secured to the cable with Babbitt metal or in any suitable manner, and at intervals of every two or three feet, (more or less,) as may be desired. The sleeves B are provided with a central rib or annular projection, C, against which the bifurcated arms of the driving-wheel impinge to draw or move the cable, as will more fully appear in connection with the description of the driving-wheel.

D are metallic disks or plates secured to the sleeves or hubs B, the front side of said disks or plates being made of a convex form, so as to allow the material being moved to more readily drop therefrom, and also to allow them to yield in case they should come in contact with some heavier and more dense body or with projections on the sides of the conveying trough or tube. We prefer to make the disks or plates D of sheet-steel and secure them to the annular flange E of the sleeve B by means of bolts or rivets, as indicated in Fig. 4, said flange E also serving to support or strengthen the central portion of the disks or plates.

F indicates the driving-wheel, which is mounted on the shaft G and driven from any suitable source of power. The driving-wheel F is composed of an annular disk, H, and a central hub, I, to receive the shaft G, the outer portion of the disk H being provided with grooves or seats to receive the inner ends of the arms K. The arms K are held in position on the annular disk H by means of screw-bolts L, which pass through the inner ends of the arms and through slots M, formed in the disk H. The extreme inner ends of the arms K are provided with an extension or projection, N, through which the screw-bolts O are passed, the heads of the bolts being designed to rest on the hub I, while adjusting-nuts P on the bolts O serve to adjust the arms farther from or toward the axis of the driving-wheel. The outer ends of the arms

K are bifurcated, so as to engage with the projection or rib C on the sleeve B and to move the cable with its load. The outer ends of the arms K are bent or curved, as shown at *a*, Fig. 1, so as to allow the carrying-disks D to pass around the wheel and accommodate them to the curvature of the cable without coming in contact with the arms K.

It will be noticed that the arms K are both removable and adjustable, so that in case one or more of them should become worn out or broken new ones can be readily inserted in their places; and the object of making them adjustable is to increase the diameter of the wheel to compensate for the stretching of the cable, whether it occurs from use or from expansion caused by thermal changes, and in case the cable should contract by a sudden change of temperature the arms can be readily adjusted so as to insure the perfect working of the cable.

It will of course be understood that the endless cable, with the disks, passes through a conveying-trough, S, into which the material to be conveyed is deposited in any suitable manner, and that owing to its peculiar construction the material can be readily conveyed at an angle or in a vertical or horizontal direction, and that the material will not clog or stick to the cable, as it would in the links of an endless chain.

The conveying tube or trough is provided with suitable doors, T, located over the bins or storage-chambers, through which the material is discharged, and in cases where it is desired to lift the material in a vertical direction we place a spring-hook, V, at the top of the conveying-tube, which will engage the disks or plates K and cause them to tip, as shown in Fig. 6, so as to discharge the load through an opening in one side of the tube or trough.

We do not herein claim the particular construction of the expansible driving-wheel shown and described, the same being made the subject of a separate application filed July 23, 1888, Serial No. 280,743.

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

1. In a device for conveying coal, ice, grain, &c., an endless wire cable having carrying disks or plates, the sleeves of which disks are provided with projections or ribs near the middle at a distance from the disks, said ribs adapted to be engaged by bifurcated arms on the driving-wheel, as set forth.

2. A conveyer for coal, ice, grain, &c., comprising a conveying trough or tube, an endless cable provided at intervals with disks or plates the sleeves of which have circumferential ribs or projections near the middle at a distance from the disks, and an expansible driving-wheel with bifurcated arms, around which said cable passes, said arms engaging said ribs or projections, substantially as shown and described.

3. In a device for conveying coal, grain, &c., a sleeve to engage a wire cable, having near one end a flange or annular projection to which a carrying disk or plate is attached, and an enlarged annular portion or rib adjacent the point of connection of the disk, the latter adapted to be engaged by the bifurcated arms of the driving-wheel, as set forth.

4. The conveying-trough provided with a discharge-aperture and a spring-hook arranged at the aperture, in combination with the conveyer having mounted thereon carrying-disks to be engaged by the spring-hook to tip the disks and discharge the load, as set forth.

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

THOMAS McBRIDE.
EBENEZER FISHER.

Witnesses:
JOHN McBRIDE,
PETER McBRIDE.