

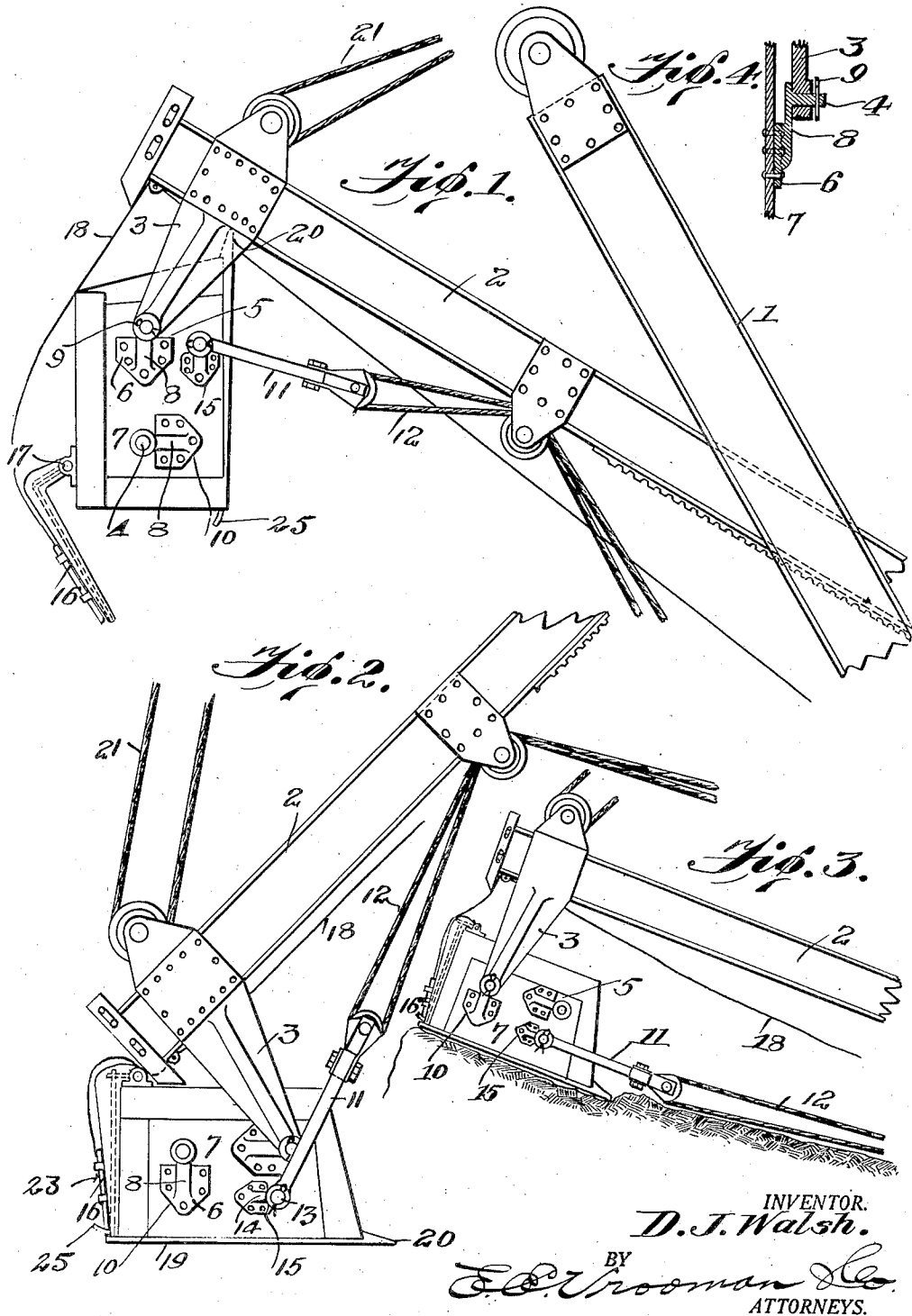
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EXCAVATING MACHINE

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UNITED STATES PATENT OFFICE.

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EXCAVATING MACHINE

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To all whom it may concern:

Be it known that I, DANIEL J. WALSH, a citizen of the United States, residing at Pittsfield, in the county of Berkshire and State of Massachusetts, have invented certain new and useful Improvements in Excavating Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an excavating machine, and more particularly to the dipper structure thereof.

The object of the invention is the provision of simple and efficient means for attaching the dipper, under different conditions or "workings", to the dipper stick. In other words, my invention deals with the "hook-up" of the dipper to the dipper stick, so that excavating can be more efficiently done.

With the foregoing and other objects in view, my invention comprises certain novel combinations, constructions and arrangements of parts as will be hereinafter described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

Figure 1 is a view in side elevation of a machine constructed in accordance with the present invention, showing the same in a dumping position, while

Figure 2 is a similar view of the same machine, showing it in position for taking a load.

Figure 3 is a view in side elevation of my machine, showing the same in a different hook-up for dragging the dipper over the ground and "taking" a load at the same time.

Figure 4 is a fragmentary sectional view of one of the bracket devices and arm mounted thereon.

Referring to the drawings by numerals, 1 designates the derrick and 2 is the dipper shaft.

A pair of arms 3 is attached to the dipper shaft, near its outer end, and the outer ends of these arms are positioned upon the stub shafts 4 of the forward bracket devices 5.

Each forward bracket device 5 comprises a base or plate 6 that is riveted to the sides of the dipper body 7, and extending from the plate 6 is an arm 8, from which arm extends the stub shaft 4. Any ordinary fastening means, such as cotter pin 9, extends

through the outer end shaft 4 for retaining the arm 3 thereon.

The bracket devices 10 are similarly constructed to the forward bracket devices 5.

To facilitate the attachment of the arms 3 to the bracket devices 5 and 10, the forward bracket devices 5 are arranged in a horizontal position, or in other words, extend longitudinally of the dipper body 7, whereas the rear bracket devices are arranged in a vertical position or extend transversely of the dipper body; this positioning of the bracket devices gives a better attachment for the arms 3, whether the arms are attached to the forward bracket as shown in Figure 1, or to the rear bracket devices, as shown in Figure 3; the purpose of which attachments will be hereinafter explained. A link 11 is attached, at its outer end, to operating cable 12 and the inner end of link 11 is pivotally mounted upon the stub shaft 13 formed on arm 14 of the link bracket device 15. The link bracket device 15 is similar in structure to the forward and rearward brackets 5 and 10 respectively. Therefore, it is to be noted that I, preferably, use a series of bracket devices on each side of the body of a dipper. The link 11 and cable 12 are employed for assisting in dragging the dipper over the ground, when the arms 3 are attached to the rearward brackets, as shown in Figure 3, and the dipper is taking or receiving a load.

The end gate 16 is pivotally mounted upon the body of the dipper, at 17, and through operating cable 18, the end gate can be released or moved to an open position for allowing the load to be dumped from the dipper, as shown in Figure 1.

In excavating or digging down an incline or hill, my dipper structure, as shown in Figures 1 and 2 is allowed to be laid against the dirt to be excavated, so that the bottom 19 strikes the dirt first, and then as the dipper shaft drags the dipper over the dirt, the pointed end 20 enters the earth, and its tendency is to sink sufficiently deep into the earth or gravel to quickly cause the dipper to be filled or loaded, whereupon the cable 21 is operated to lift the outer end of the dipper shaft upon the derrick 1, whereupon the loaded dipper will swing to the position shown in Figure 1, and then when the desired pile or place is reached in the

"swing" of the dipper shaft and derrick or the loaded dipper is placed over the wagon or truck, then cable 18 is pulled and gate 16 is opened, whereupon the load drops from the dipper into the desired place.

Now, in the positioning or "hook-up", as shown in Figure 3, the dipper is more particularly arranged for dragging the loads towards the machine, as for instance, in moving a pile of dirt forward, or more particularly in the construction of a ditch. When forming a ditch with my dipper structure, it is preferable to attach the arms 3 to the rear bracket devices 10, and then with the link 11 fastened to the link bracket 15, the strain of dragging or pulling the dipper along over the surface, as in a ditch, can be directly distributed on the forward end of the dipper through the medium of link 11 and bracket 15. The fastening of the link 11 to one side of the dipper removes the cable 12 and the link 11 to a position where they will not interfere with the loading operation, but by reason of their being close to the side of the dipper, a very efficient structure is produced.

It is to be noted that only one link structure device 15 is used on each dipper, whereas the forward and rear bracket devices are arranged in sets upon the sides of the dipper for best results.

While I have described the preferred embodiment of my invention, and have illustrated the same in the accompanying drawings, certain minor changes or alterations may appear to one skilled in the art to which this invention relates, during the extensive manufacture of the same, and I, therefore, reserve the right to make such alterations and changes as shall fairly fall within the scope of the appended claims.

What I claim is:

1. In a machine of the class described, the combination with a dipper shaft, of a dipper contiguous to said dipper shaft, and means for attaching the dipper shaft to the dipper at a plurality of places on its sides.

2. In a machine of the class described, the combination with a dipper shaft, of a dipper contiguous to said dipper shaft, a plurality of sets of brackets on said dipper, and arms fastened to said dipper shaft and adapted to be connected to either of said sets of brackets.

3. In a machine of the class described, the combination with a dipper shaft, of a dipper contiguous to said dipper shaft, said dipper provided with a front and a rear set of brackets, and means rigidly mounted

upon the dipper shaft and adapted to be pivotally connected to either set of brackets for pivotally mounting the dipper on the dipper shaft.

4. In a machine of the class described, the combination with a dipper shaft, of a dipper contiguous to said dipper shaft, horizontally positioned brackets fastened to the sides of the dipper, vertically positioned brackets fastened to the sides of said dipper, a link bracket fastened to one side of said dipper, arms attached to said dipper shaft and capable of being attached to either said horizontal or vertical brackets, and means attached to said link bracket for exerting a pull or load conveying strain upon the dipper.

5. In a machine of the class described, the combination with a dipper shaft, of a dipper contiguous to said dipper shaft, brackets fastened to the sides of said dipper, each bracket comprising a plate, an arm extending from said plate, a stub shaft extending from said arm, and arms fastened at one end to said dipper shaft and provided with means at their other ends for surrounding said stub shafts of the brackets.

6. In a machine of the class described, the combination with a dipper shaft, of a dipper contiguous to said dipper shaft, a pair of longitudinally positioned brackets attached to the sides of said dipper near its front end, a pair of transversely positioned brackets fastened to the sides of said dipper near its rear end, a link bracket longitudinally positioned upon and fastened to one side of said dipper, arms fastened to the dipper stick and adapted to be attached to either pair of brackets, and draft means attached to said link bracket.

7. In a machine of the class described, the combination with a dipper shaft, of a dipper contiguous to the outer end of said dipper shaft, and means on the dipper and on the dipper shaft for attaching the forward end of the dipper or the rear end of the dipper to the dipper shaft.

8. In a machine of the class described, the combination with a dipper shaft, of a dipper contiguous to the outer end of said dipper shaft, detachable means for fastening the rear end of the dipper to the dipper shaft, and means connected to one side and near the front end of the dipper for exerting a pulling or hauling action on the dipper.

In testimony whereof I hereunto affix my signature.

DANIEL JOSEPH WALSH.