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DIPPER.

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1,249,805. Patented Dec. 11, 1917.

Fig. 2.

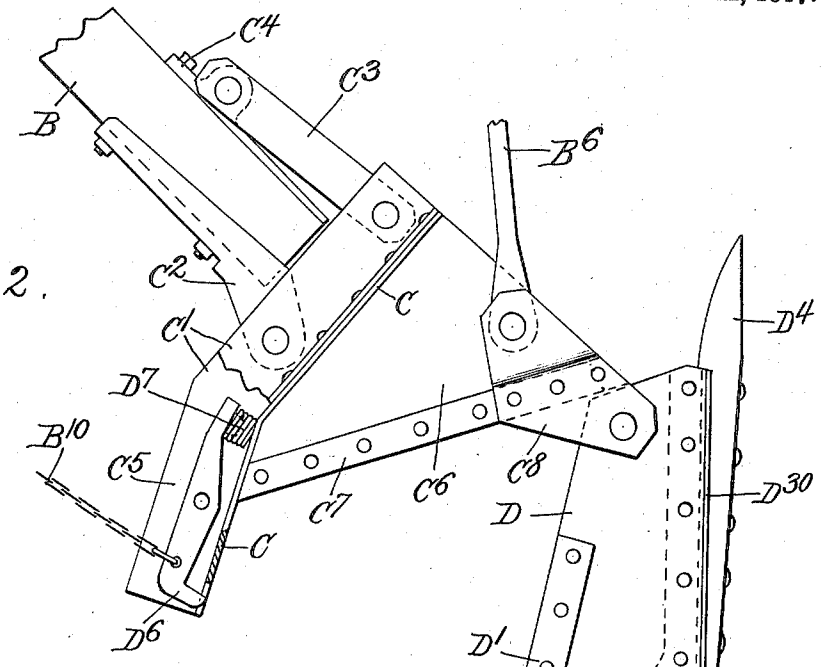
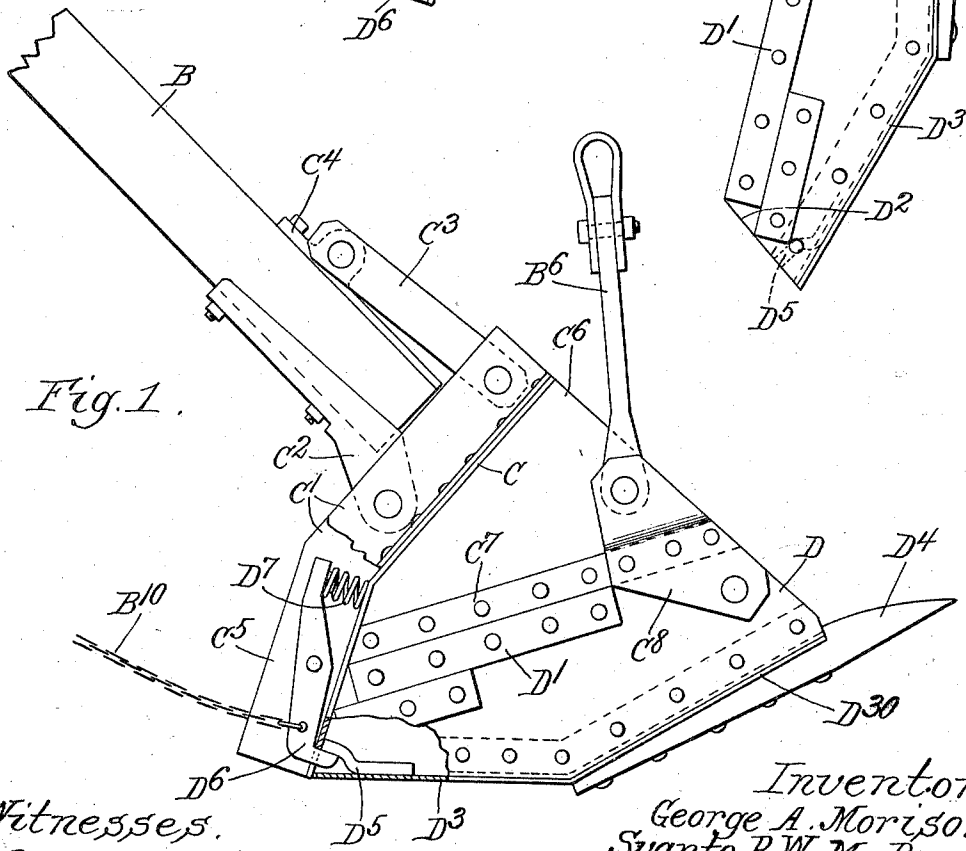


Fig. 1.



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UNITED STATES PATENT OFFICE.

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DIPPER.

1,249,805. Specification of Letters Patent. **Patented Dec. 11, 1917.**

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To all whom it may concern:

Be it known that we, GEORGE A. MORISON, SVANTE R. W. M. BAGER, and OTTO F. KAESER, citizens of the United States, residing, respectively, at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a certain new and useful Improvement in Dippers, of which the following is a specification.

Our invention relates to improvements in dippers for excavating machines and the like and has for one object to provide a dipper which will be easily and conveniently dumped at any position. Another object is to provide a new and improved form of dipper wherein there will be no tendency for material to stick. Another object is to provide a new type of two-part pivot dipper. Other objects of our invention will appear in the specification.

Our invention is illustrated more or less diagrammatically in the accompanying drawings, wherein—

Figure 1 is a side elevation of the dipper with parts in the excavating position and with parts in section and parts broken away; Fig. 2 shows the dipper in section with parts in section and parts broken away and with the parts in the dumping position.

Like parts are indicated by like letters throughout the several figures.

B is a dipper handle of the ordinary steam shovel construction. B^{10} is a trip chain adapted to move the latch D^6 and to allow the bucket to swing open.

C is the dipper back. It is mounted on a rib C^1. This rib is pivoted on the lug C^2 on the handle B and connected by means of the link C^3 with the lug C^4 on the handle B. The rib C^1 is at the bottom bent forwardly as indicated at C^5 and the contour of the bottom C conforms. C^6 are side walls of the bucket. To them is pivoted the bail B^6. The side walls are provided with reinforcing strips C^7 along their forward edges. It will be noted that these side walls do not extend down to the bottom C. The lugs C^8 extend forward from the reinforcing strips C^7 on the side walls C^6 and furnish a pivot for the side walls D on the bucket front. These side walls are reinforced as at D^1 in opposition to the reinforcement C^7 and the lower sides of these side walls are cut off at D^2 so that when in closed position as shown in Fig. 1, the lower edges of these front side walls abut upon the bottom of the bucket-back C. The lower portion of the front wall of the bucket which serves also as the portion of the bottom of the bucket is sharply inclined as indicated at D^3, so that when the front of the bucket is in the closed position, it is in effect made up of two wedge-shaped chambers, the upper one being truncated, the lower one having its apex at the bottom of the bucket. D^4 are the usual type of excavating teeth projecting forwardly from the wall D^3. D^5 is a lug projecting rearwardly from the bucket front D^2 to engage a latch D^6 which latch is by the spring D^7 held normally in the operative position and is engaged by the chain B^{10} in order that manipulation of the lever may disengage and permit release of the pivot bucket front.

It will be evident that while we have shown in our drawings an operative device, still many changes might be made both in size, shape and arrangement of parts without departing from the spirit of our invention, and we wish, therefore, that our drawings be regarded as in a sense diagrammatic.

The front of the bucket is eccentrically pivoted so that it always swings to open but in order to insure this open swing the front is given more than its normal share of the side plating and the additional reinforcing bars riveted on the parting line insure that the center of gravity will be far enough back of the pivot point to insure a wide enough opening for all ordinary positions.

The use and operation of our invention are as follows:—

The operator will start with the bucket parts in the position shown in Fig. 1. By manipulating the handle and the hoisting mechanism, he will take a bite with the dipper in the usual manner filling it with soil or material which he is excavating. He then in the usual manner raises the bucket into say the position shown in full lines in Fig. 3. By releasing the latch the front of the bucket which is eccentrically pivoted as indicated will fall open and the material will fall out through the space between that part of the bucket which is fixedly mounted on the dipper handle and that part which

is pivoted on the fixed portion. The inclination of the front and rear walls toward one another to form a taper or V-shaped bucket bottom assures that there will be no sharp angles or pockets in which the material will be held. In other words, the bucket will always dump no matter how high it is lifted within practical limits, but this is true of the ordinary type of dipper with a square bottom. The present type of dipper, however, will work equally well when the dipper handle is sharply inclined to and is below the horizontal. In this position also the front of the bucket swings clear and the gradually inclined bottom does not furnish a lodgment for the material and experience shows that all of the material will be dropped out even though the handle is downwardly inclined at an angle which will make the ordinary bucket inoperative.

It will be understood that when digging in clay or similar adhesive or sticky material, there is a tendency for the material to pack within the rectangular section of the bucket and when the bottom is open the material will manifest tendency to arch across and wedge itself tight thus making discharge of the bucket difficult. In our arrangement the eccentrically pivoted front half of the bucket always falls open and thus the front and back walls of the bucket are separated. More than this, under ordinary circumstances they will when open be upwardly and inwardly inclined one to another so that the minute the material starts moving it frees itself and during excavating they will be inwardly and downwardly inclined so that the bucket will easily and freely fill itself. In other words, the inclined front and rear walls and their varying angle of inclination one to another permits the bucket to fill easily and empty easily and this emptying can take place then with any suitable inclination of the dipper handle.

We claim:

1. The combination with a dipper handle of a two part dipper comprising a rear portion rigidly mounted thereon and a front portion pivoted on the rear portion, the pivot line of said two bucket portions being located intermediate the front and the rear walls and adjacent the upper edge of the bucket, the center of gravity of the front portion being located behind and below the pivot line, when the dipper handle is approximately horizontal.

2. A two-part excavating dipper having a handle and comprising a front and rear section pivoted together, the rear dipper section being carried on and held against rotation with respect to the handle, each section including side walls united by an end wall, the end walls of the two sections facing each other and the side walls projecting toward each other and being arranged to supplement each other to form closed side walls for the dipper when the dipper is in the excavating position.

3. A two-part excavating dipper having a handle and comprising a front and rear section pivoted together near the upper ends of the side walls of the sections, the rear dipper section being carried on and held against rotation with respect to the handle each section including side walls united by an end wall, the end walls of the two sections facing each other and the side walls projecting toward each other and being arranged to supplement each other to form closed side walls for the dipper when the dipper is in the excavating position.

4. A two-part excavating dipper having a handle and comprising a front and rear section pivoted together, the rear dipper section being carried on and held against rotation with respect to the handle, each section including side walls united by an end wall, the end walls of the two sections facing each other and the side walls projecting toward each other and being arranged to supplement each other to form closed side walls for the dipper when the dipper is in the excavating position, the center of gravity of the front section being located behind the pivot point when the bucket is in the closed excavating position.

5. An excavating dipper comprising a dipper handle, a rear portion rigidly mounted thereon, a hoisting bail and a connection between it and the rear portion of the dipper, a front dipper section pivoted on the rear portion and releasable means for holding such front section in closed position against the rear section, the front section being free to swing forwardly under the influence of gravity when released to dump the bucket.

6. A dipper comprising a handle and two pivoted sections having front and rear walls respectively, downwardly and inwardly inclined bottom walls mounted on said front and rear walls, the inclination of such bottom walls being such as to permit dumping of the material along such walls, one of the pivot sections being rigidly mounted on the handle, mounting and balance of the bucket being such that the pressure of material from the inside will be sufficient to open the bucket completely at all times and in all dumping positions high or low.

7. A front opening dipper comprising a front portion and a rear portion, a handle upon which the rear portion is rigidly mounted, the front and rear walls gradually converging to an apex at the bottom whereby the converging walls have sufficient slope to dump the contained material in all operating positions of the dipper, mounting and balance of the bucket being such that the pressure of material from the inside will be

sufficient to open the bucket completely at all times and in all dumping positions high or low.

8. A front opening dipper comprising a rear portion, a handle upon which it is rigidly mounted, a bail pin, a front portion hinged and supported thereon, the weight of the front portion being properly disposed both forward and back of a vertical line through bail pin, to enable pressure of contained material to readily open the dipper front completely when dumping in high positions.

9. A two-part front opening excavating dipper having a handle and comprising a front and rear section connected together, the rear dipper section being carried on and held against rotation with respect to the handle, each section including side walls united by an end wall, the end walls of the two sections facing each other and the side walls projecting toward each other and being arranged to supplement each other to form closed side walls for the dipper when the dipper is in the excavating position, the line of intersection of the side walls passing back of that of the end walls.

10. The combination with a dipper handle of a two-part dipper carried rigidly thereby, the two parts of the dipper being pivoted together along an axis perpendicular to the axis of the handle adjacent the upper edge of the bucket and intermediate the front and rear walls thereof, the dividing line between the two parts being rearwardly inclined downwardly with respect to the axis of the handle.

11. The combination with a dipper handle of a two-part dipper carried rigidly thereby, the two parts of the dipper being pivoted together through their side walls along an axis perpendicular to the axis of the handle and adjacent the upper edge of the bucket and intermediate the front and rear walls thereof, the dividing line between the two parts being rearwardly inclined downwardly with respect to the axis of the handle, the two dipper parts having downwardly converging front and rear walls and bottom walls which are inwardly inclined with respect to the front and rear walls and come together to form a V-shaped bottom for the bucket, and separate side members projecting forwardly and rearwardly respectively, to engage along the dividing line between the buckets.

Signed at South Milwaukee, Wisconsin, this 18th day of December, 1915.

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