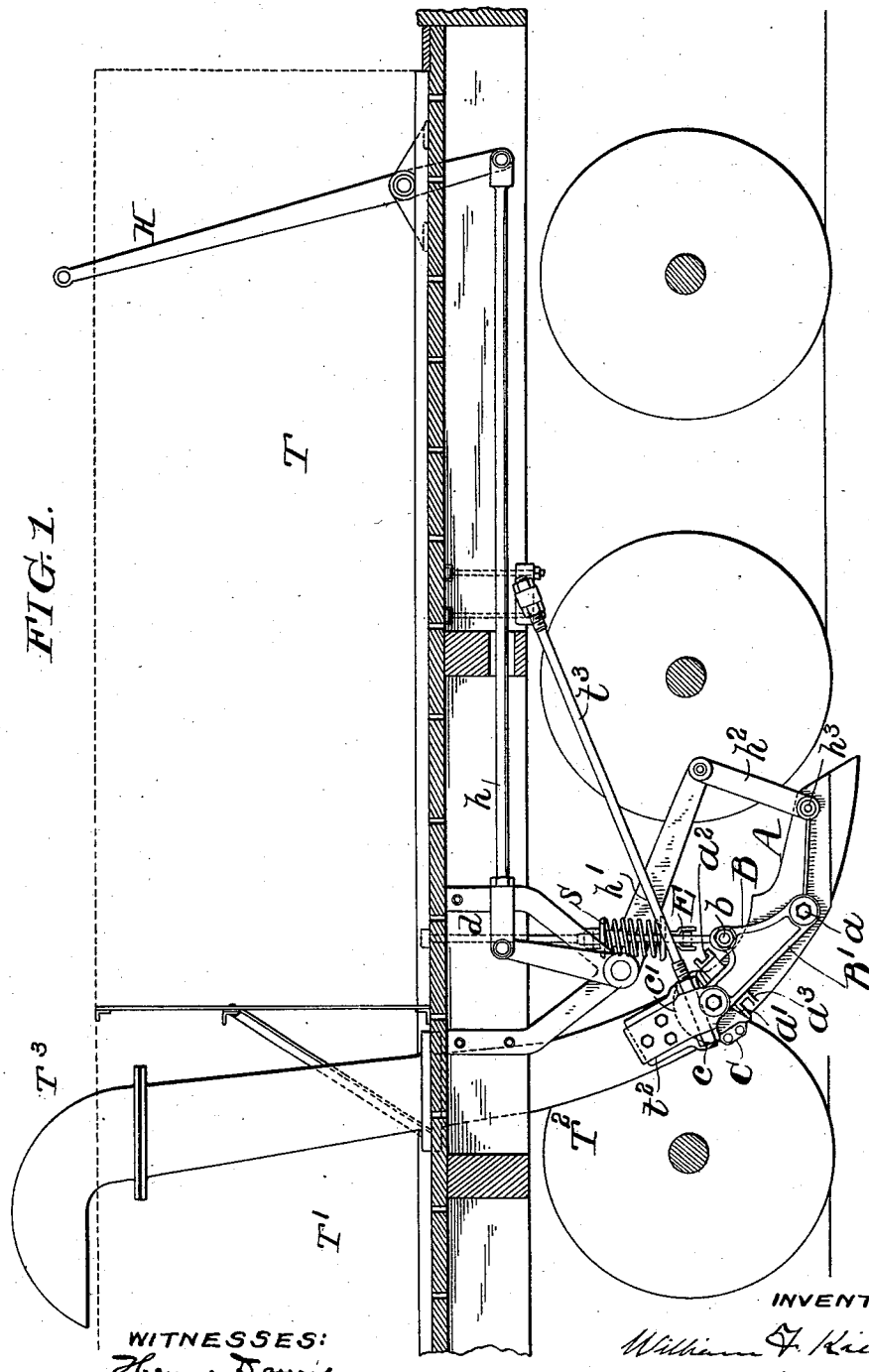
(No Model.) 3 Sheets—Sheet 1.

W. F. KIESEL, Jr.

TENDER SCOOP.

No. 531,191. Patented Dec. 18, 1894.

FIG. 1.



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(No Model.) 3 Sheets—Sheet 2.

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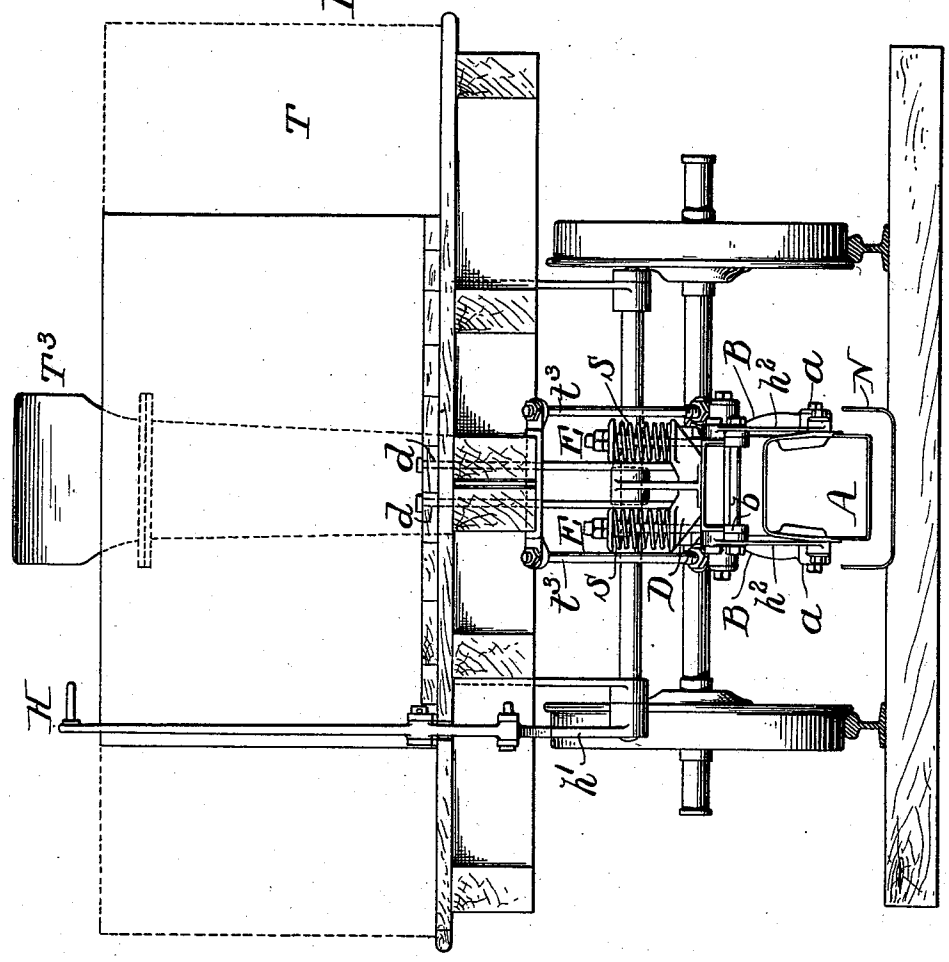
TENDER SCOOP.

No. 531,191 Patented Dec. 18, 1894.

FIG. 2.



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(No Model.) 3 Sheets—Sheet 3.

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TENDER SCOOP.

No. 531,191. Patented Dec. 18, 1894.

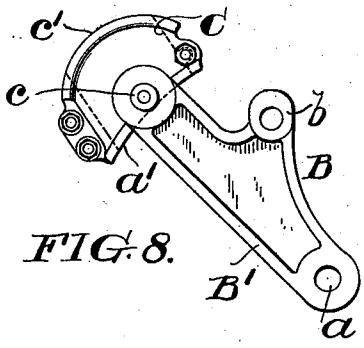


FIG. 8.

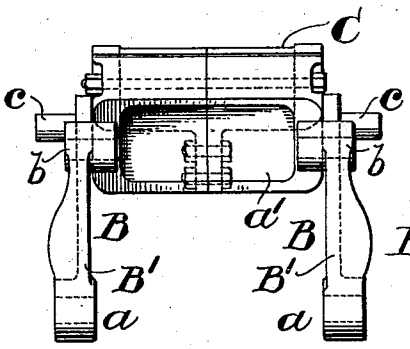


FIG. 7.

FIG. 5.

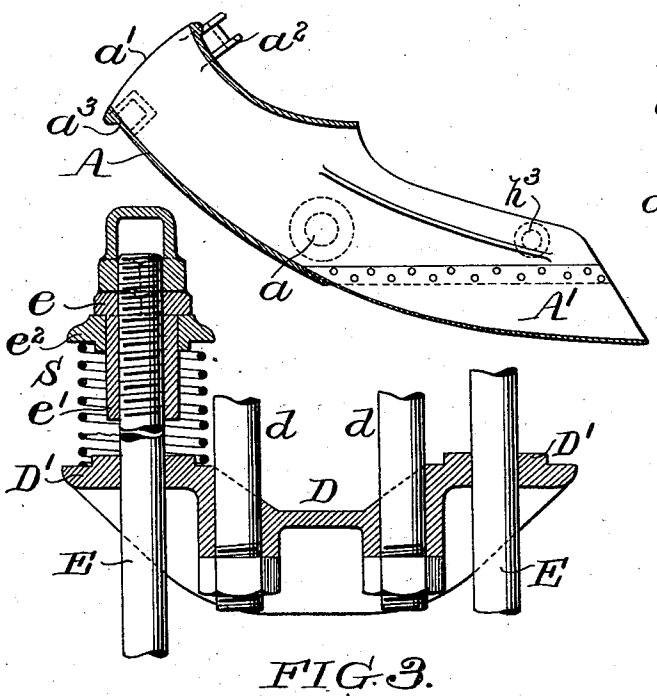


FIG. 3.

FIG. 6.

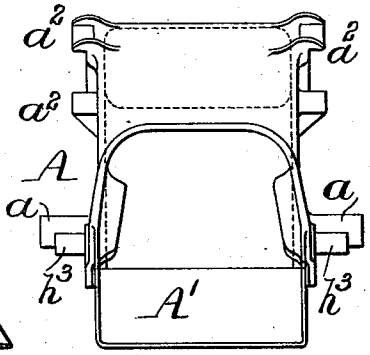
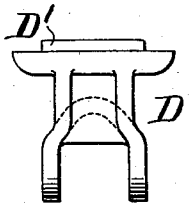


FIG. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM F. KIESEL, JR., OF ALTOONA, PENNSYLVANIA.

TENDER-SCOOP.

SPECIFICATION forming part of Letters Patent No. 531,191, dated December 18, 1894.

Application filed September 15, 1894. Serial No. 523,070. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. KIESEL, Jr., a citizen of the United States, residing at Altoona, in the county of Blair, in the State of Pennsylvania, have invented a certain new and useful Improvement in Tender-Scoops, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to tender scoops, which are designed to raise water from a trough, usually placed between the rails of a railroad track, and convey it into a tank usually carried by the tender of the locomotive. As heretofore constructed, a serious defect in these devices has been that the power necessary to lift the dipper from the trough increases with the speed at which the tender is moving.

The main object of my invention is, therefore, to so construct the scoop that the power, necessary to raise the dipper, will be independent of the speed, and to effect this end my invention consists in so pivoting the dipper that it will be practically balanced and unaffected by the pressure of the inflowing water.

My invention further consists in various details of construction, which will be more definitely pointed out hereinafter.

My invention will be best understood as explained in connection with the accompanying drawings, in which—

Figure 1 is a side view of the preferred form of my scoop, the tender on which it is supported being shown in central vertical section. Fig. 2 is a front view of the scoop and looking from the right of Fig. 1. Figs. 3 and 4 are enlarged detail views of the yoke on which certain stops are supported which serve to bear the strain due to the inflowing water when the scoop is in operation. Fig. 5 is an enlarged sectional view of the dipper proper. Fig. 6 is a front view of the dipper. Fig. 7 is a detailed view of the preferred form of frame to which the dipper is pivoted, and Fig. 8 is a side view of this frame.

T is a tender, or other suitable vehicle, having a tank T′.

T^3 is a tube or conduit opening into the tank T′.

T^2 is a suitable conduit or tube projecting below the tender which serves to receive and convey to the tube T^3 the water raised by the dipper.

A is the dipper, which is adapted to dip into a trough as N (see Fig. 2) and raise water therefrom as the tender moves. Heretofore, as has been stated, the dipper A has been so pivoted that the effect of the inflowing water was to tend to hold the lip A′ of the dipper beneath the surface of the water, making it difficult to raise it, and this action of the water increased with the speed of travel of the tender. To overcome this objection, I form and pivot the dipper in a suitable supporting frame in such a manner that the pressure of the ascending column of water acting at the rear of the pivotal point will tend to counterbalance the pressure of the water acting on the front of the dipper.

Preferably the dipper is so shaped and the pivotal point so chosen that the pressure at the rear of the pivot will be substantially equal to that on the front of the dipper so that a balanced dipper will be provided. In the particular construction shown, the dipper A is of substantially uniform curvature and the pivot point *a* is taken at about the center of the dipper. The pivoted point may of course, if desired, be placed to the front of the center when the effect of the inflowing water will be to tend to raise the lip from the water, or it may be placed somewhat behind the center. Then the effect of the water will be to hold the lip in the water, but of course with a force which will be immaterial. In any case, I prefer to take the pivoted point of a dipper, such as is shown in the drawings, near the center, so that the dipper will be practically balanced.

The frame to which the dipper is pivoted can be secured to the tender in any way, or the tube T^2, or a continuation thereof, may constitute the frame to which the dipper is pivoted, but I prefer to form an intermediate joint piece, as indicated at C, to which is secured the frame B, to which is pivoted the dipper. The joint piece C makes a joint at *c′* with the end t^2 of the tube T^2, and, as the joint piece C is pivoted to the tube T^2 at *c*, the joint *c′* is of a curvature, whose center is at *c*. The frame B is preferably formed integral with the joint piece C, and consists, as shown, of two arms B′ B′, which embrace the

dipper A. The dipper is pivoted to the frame B at *a a*, substantially as described.

Any suitable means, as the lever H, rod *h*, bell crank lever *h'*, and links h^2, may be employed to raise and lower the dipper, the links h^2 being shown pivoted on stud h^3 on the front of the dipper.

The dipper makes a joint at *a'* with the joint piece C, the center of curvature of this joint being the point *a*. At a^2 a^3 are stops which are adapted to limit the swing of the dipper on its trunnions at *a a*. These stops can, of course, be arranged in any suitable way, but are very conveniently arranged, as shown, on the dipper. I also prefer to provide a suitable support, which will transfer to the main frame of the tender, all strains due to the inflowing water, and I also provide a counterbalance for the frame and dipper.

As shown, D is a yoke which is supported from the tender by a suitable rod or rods as *d d*.

E E are rods or links which are connected to the frame B at *b*, and which have stops, preferably adjustable, which, when the dipper and the frame B are in their lowermost position, as shown in Fig. 1, are adapted to rest firmly on the yoke, and so support the dipper directly from the tender frame. Between the upper end of the stops and the yoke I insert springs S S so as to counterbalance the weight of the dipper. In the particular construction shown, the rods E have their upper ends threaded and sleeves *e* are screwed thereon. The springs S bear against the upper ends of the sleeve, either directly, or through a washer, as indicated at e^2, Fig. 3, and tend to hold the frame B and the dipper in a raised position. When the dipper is lowered, the ends *e'* of the sleeves bear against platforms D' on the yoke and so form a rigid support which takes up all the strain due to the water. By suitably adjusting the sleeves *e*, the depth to which the dipper can project into the trough N can be very conveniently regulated.

Stiffening bars, as b^3, may be arranged, as shown, to further support the end of the tube T^2.

In operation, the dipper on a rapidly moving tender is lowered into the water which immediately rushes into it. When it is desired to raise the dipper, the lever H, or other raising means, is suitably operated. The dipper first turns on its pivot points *a* till its lip A' is out of the water, there being but little difficulty in lifting the lip out of the water, no matter how fast the train is traveling on account of the balancing of the dipper. If it is desired to raise the dipper farther than would be convenient to do by turning it on the trunnions at *a a*, the frame B is employed and when the stop a^2 abuts against this frame, both it, and the dipper carried thereby, turn on the pivots at *c* and are raised entirely clear of the road bed.

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

1. In a tender scoop, the combination with a suitable supporting frame, of a dipper formed and pivoted as described, and so that the pressure of the ascending column of water acting at the rear of the pivot will tend to counterbalance the pressure of water on the front of the dipper.

2. In a tender scoop, the combination with a suitable supporting frame, of a dipper formed and pivoted as described, and so that the pressure of the ascending column of water acting at the rear of the pivot will be substantially the same as the pressure on the front of the dipper, whereby the dipper will be practically balanced at all speeds of the tender.

3. In a tender scoop, the combination with a suitable supporting frame, of a dipper of substantially uniform curvature, pivoted at substantially its central point on said frame so that the pressure of the ascending column of water acting at the rear of the pivot will tend to counterbalance the pressure of water on the front of the dipper.

4. The combination in a tender scoop, of a suitable supporting frame, a dipper pivoted to said frame as described and so that the pressure of the ascending column of water, acting at the rear of the pivot will tend to counterbalance the pressure of water on the front of the dipper, stops to limit the swing of the dipper, and a pipe to convey away the water collected thereby.

5. In a tender scoop, a suitable tube or conduit T^2 secured to the tender, a joint piece C pivoted to said tube T^2, and a dipper pivoted to said joint piece C so that the joint piece and dipper can have independent movements.

6. In a tender scoop, a tube or conduit T^2 secured to the tender, a joint piece C pivoted on said tube T^2, a frame secured to said joint piece C, and a dipper pivoted substantially as described, on said frame, so that the pressure of the ascending column of water at the rear of the pivot will tend to counterbalance the pressure of water on the front of the dipper.

7. In a tender scoop, a tube or conduit T^2 secured to the tender, a joint piece C pivoted on said tube T^2, a frame secured to said joint piece C, a dipper A pivoted substantially as described on said frame, stops to limit the swing of the dipper relatively to the frame, and means for raising and lowering the dipper so that on raising the dipper it will first swing on the frame till clear of the water, and then rise with the frame and joint piece.

8. In a tender scoop, the combination with a pivoted frame, of a dipper pivoted substantially as described on said frame as and for the purpose specified, and a counter balance for the frame and dipper.

9. In a tender scoop, a pivoted frame B, a dipper pivoted as described on said frame so

as to render it substantially balanced at all speeds, and a suitable connection adapted when the frame B and dipper are in operation, and in their lowermost position, to support the frame and dipper directly from the tender.

10. In a tender scoop, a yoke D supported from the tender, a pivoted frame B having a dipper A thereon and a rod or rods E connected to said frame B and adapted, when said frame is in its lowermost position, to be supported on the yoke, whereby the strain due to the inrushing water may be borne by the tender.

11. In a tender scoop, a yoke D supported from the tender, a pivoted frame B having a dipper A thereon and a rod or rods E connected to said frame B, stops on said rods, and a spring between the stop on each rod and the yoke, all substantially as and for the purpose specified.

12. In a tender scoop, a yoke D supported from the tender, a pivoted frame B having a dipper A pivoted thereon, a rod or rods E connected to said frame B, adjustable stops on said rods, and springs for normally holding the stops away from the yoke, all substantially as specified, and so that when the dipper is in its lowermost position and in operation that the strain due to the inflowing water may be borne by the tender.

13. In a tender scoop, the combination with a tube or conduit T^2 secured to the tender, of a joint piece C pivoted thereto, and making a joint c' therewith, a frame B formed integral with the joint piece C, a dipper A pivoted at substantially its middle point to the frame B, and making a joint with the joint piece C at a', and means for raising and lowering the dipper.

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Witnesses:
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GEO. S. WALTON.