

(No Model.)

2 Sheets—Sheet 1.

W. & H. G. BUTLER.
SCRAPER APPARATUS.

No. 494,320.

Patented Mar. 28, 1893.

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2 Sheets—Sheet 2.

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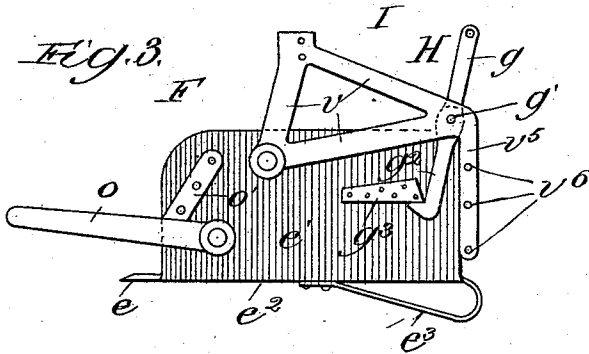


Fig. 4.

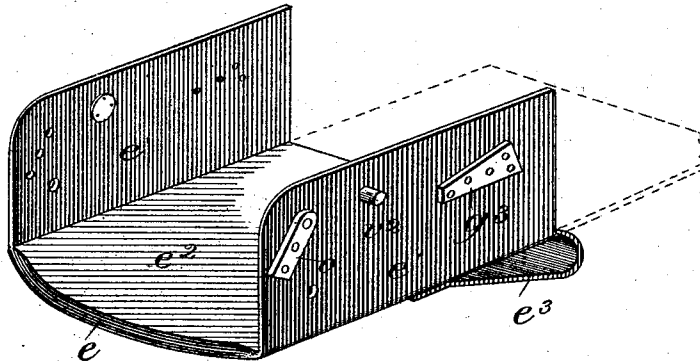


Fig. 5.

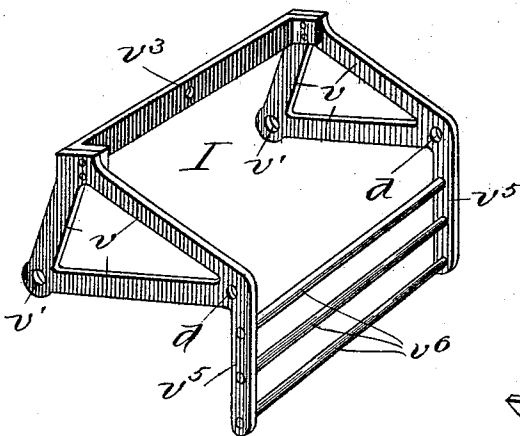
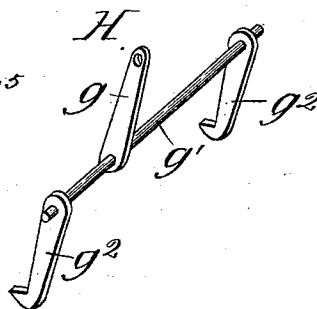


Fig. 6.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM BUTLER AND HENRY G. BUTLER, OF KENOSHA, WISCONSIN.

SCRAPER APPARATUS.

SPECIFICATION forming part of Letters Patent No. 494,320, dated March 28, 1893.

Application filed October 14, 1892. Serial No. 448,808. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM BUTLER and HENRY G. BUTLER, citizens of the United States, residing at Kenosha, in the county of Kenosha and State of Wisconsin, have invented a new and useful Improvement in Scraper Apparatus, of which the following is a specification.

Our invention relates to an improvement in scraper-apparatus of the class commonly employed for feeding clay to the fire in burning clay to make ballast, and involving, as its generally stated construction, a car movable on a track along the line of the fire, and carrying winding-drums and power mechanism for driving them, and a mast and boom on which are strung cables connected with the drums to be wound and unwound thereon, and a scraper suspended by the cables and controlled by winding and unwinding them, thereby to fill and then rise and travel to the desired point of dumping on the fire.

Our improved apparatus is applicable to other purposes than feeding clay to a ballast-burning fire, but the foregoing reference thereof is sufficient to identify it.

Our present improvement is in the scraper-operating apparatus, whatever the particular construction of the scraper with which it is used, and in the scraper itself, whatever the construction of its operating apparatus.

In the accompanying drawings, Figure 1 is a view in end-elevation of our entire apparatus, the end of the car being removed to disclose the location of the winding-mechanism within it. Fig. 2 is a broken view representing details of the dumping mechanism. Fig. 3 is a view in side elevation of the scraper. Fig. 4 is a perspective view, diagrammatic in its nature, of the mere body of the scraper. Fig. 5 is a perspective view of the cradle by which the scraper is suspended. Fig. 6 is a perspective view of the dumping catch.

A is the support for the mechanism, shown as a car on a railway-track B, which may be considered as extending along a ballast-burning fire at the right-hand side of the car.

C is the mast or mast-structure, extending above the roof of the car, and having connected with it, preferably by pivoting, as represented,

a boom D extending in the direction of the aforesaid fire and which should be supported at its outer end from the upper portion of the mast by stay-cable *r*.

E and E' are the winding-drums properly journaled inside the car, and which may be adapted to be rotated by hand, or, and preferably and as usual, by suitable steam or analogous power, for generating which the mechanism should be located in the car, though it is not herein minutely described nor illustrated in the drawings because it need involve no features of novelty and is well-known in the particular connection. Each drum should, however, be provided with a brake *g*, shown as of the foot-operated band-brake variety.

To the drum E' one end of a cable *p* is fastened, being fastened at its opposite end to the pivotal draft-bar *o* at the front of a scraper F, preferably of the construction hereinafter described.

To the drum E is fastened one end of a cable *p'*, which passes thence upward over a guide-sheave *n* at the upper end of the mast and down under the suspension-pulley *m* on the hanger-portion of the scraper, from which the cable proceeds about a guide-sheave *n'* at the outer end of the boom, and returns to the axis of the pulley *m* to which it is fastened.

G (see Fig. 2) is a dumper comprising a shaft *l* carrying a larger drum *k* and a smaller drum *k'*, both fastened to the shaft to rotate with it, the shaft being journaled in suitable bearings in the car in a plane above the winding-drums. A dumping-cord *i* is fastened at one end to the larger drum *k* and at its opposite end to the lever *g* of a dumping-catch H on the scraper. To the smaller drum *k'* is fastened a cord *h* carrying a weight *h'* at its lower end and wound about its drum in the direction contrary to that of winding the cord *i* on its drum *k*. Thus, by unwinding the dump-cord, the weighted cord is wound; and upon slackening the dump-cord the gravity of the weight *h'* causes it to unwind the cord *h* and take up any slack in the cord *i*. A brake *i'* is provided for application to a rim of the drum *k*, whereby the rotation of the shaft *l* may be suddenly checked to effect dumping of the scraper, as hereinafter described.

The scraper F has its body formed of sheet metal, preferably steel and in a single piece, cut to form the transversely convex beak e , sharpened by beveling its upper edge, and the sides e' produced by bending upward into vertical relation with the bottom e^2 , which extends beyond the rear ends of the sides, according to the dotted representation in Fig. 4, to provide material for a rear shoe e^3 formed by bending the extension of the bottom downward and forward and fastening it toward its forward edge to the bottom. The shoe e^3 serves to tip the scraper toward its beak e , and thereby cause the latter the better to engage the ground; and its rounded bearing surface reduces to the minimum its frictional contact with the ground.

I is a cradle, the preferred construction of which is that illustrated, comprising triangular side-pieces v , v , having journal openings v' at their forward lower corners and supported on trunnions v^2 at the sides e' of the scraper forward of its transverse center. The side-pieces are connected at their upper angle-portions by a cross-bar v^3 at which to hang the scraper, being provided for the purpose at its center with a bearing v^4 for the pulley m , under which the cable p' passes and to the axis of which the cable is fastened as hereinbefore described. The side-pieces of the cradle extend at their rear ends to the back of the scraper-body, which is open, and are there provided with extensions v^5 projecting downward or at right-angles to the bases of the angular side-pieces and adapted to fit against the outer surfaces of the sides e' near their rear ends; and rods v^6 connect the extensions v^5 and afford an open-work back for the scraper when the cradle is in its normal condition of being rigidly connected with the scraper-body. This condition is produced by means of the dumping-catch H, hereinbefore referred to, and comprising a shaft g' carrying the lever g connected, as aforesaid, by the dumping-cord i with the drum k , and pendant catches g^2 near its opposite ends, the shaft being journaled in coincident openings d in the rear ends of the cradle side-pieces v in position to adapt the catches g^2 to engage ears g^3 on the outer surfaces of the sides of the scraper.

The draft-bar o , connected, as aforesaid, by the cable p with the winding-drum E' , is pivotally connected with the scraper toward its forward end in the usual or any suitable manner; and on the outersides of the scraper may be provided stops o' for the pivotal draft-bar to oppose any tendency of the draft-strain to overturn the scraper in filling.

The operation is as follows: The scraper being in position for filling, as represented in Fig. 1, the drum E' is turned to wind upon it the cable p , the drum E being then free to turn in the direction to permit the cable p' to pay off accordingly. Thus the scraper is dragged toward the car and filled. Then the

brake is applied to the drum E' and the drum E is turned to wind upon it and haul in the cable p' , but not (unless it be desired merely to elevate the scraper) till the drum E' has been freed from its brake to permit the cable p to pay out. By so hauling in the cable p' , simultaneous strains are exerted thereon, namely from the axis of the scraper-hanger pulley toward the outer end of the boom, and from said pulley to the guide-sheave at the top of the mast, whereby the scraper is at once raised and hauled toward the outer end of the boom. Between the first-named points the cable p' , being doubled, will effect hauling out the loaded scraper faster than it is raised; though if it be desired to raise the scraper before hauling it out, the brake may be maintained on the drum E' . In fact the operation of the scraper, after filling, may be controlled at will by properly manipulating the brake of the drum E' . When the scraper has reached the desired point in its outward travel the brake of the dumping drum k is applied, thereby causing the cord i to pull on the dumping-lever g and thus turn the shaft g' in its bearings in a direction to withdraw the catches g^2 from their engagement with the ears g^3 . Then the weight of the load in the scraper will cause the body-portion to tilt backward on the cradle-journals and remove from closure by the cradle-back the open rear end of the scraper-body out of which the contents are thus spilled or dumped. The scraper is then returned by hauling in the cable p and permitting the cable p' to pay out, the engagement of the dump-catch H and scraper-body being produced automatically when the scraper again rests on the ground; and the proceeding is repeated.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a scraper-apparatus, the combination with a support carrying cable winding-mechanism having a scraper-filling drum and a scraper hauling-out drum, a mast and a boom, of a scraper, a cable connecting the scraper from its forward end with the said filling-drum, and a cable connected at one end with the said hauling-out drum, passing thence upward over a guide on the mast and down about the scraper-hanger over a guide near the outer end of the boom and back to the scraper-hanger to which it is fastened at its opposite end, substantially as described.

2. In a scraper-apparatus, the combination with a support carrying cable winding-mechanism having a scraper-filling drum and a scraper hauling-out drum, a mast and a boom, of a scraper, a cable connecting the scraper from its forward end with the said filling-drum, a cable connected at one end with the said hauling-out drum, passing thence upward over a guide on the mast and down about the scraper-hanger over a guide near the outer end of the boom and back to the scraper-hanger to which it is fastened at its opposite

end, and a dumping device on the said support connected with the scraper, substantially as described.

3. In a scraper-apparatus, the combination
5 with suitable scraper-operating mechanism, of a scraper F having the body-portion provided with a rear extension of its base bent downward and forward and fastened near its forward end to the base and forming a rounded
10 tilting-shoe e^3 on the rear portion of said base, a hanger and a forward draft-bar, substantially as described.

4. In a scraper-apparatus, the combination with suitable scraper-operating mechanism,
15 of a scraper F having the body-portion formed with a bottom, sides, and open ends, a cradle I pivotally supported between the sides forward of the transverse center of the scraper and terminating in a back for the rear end of
20 the body-portion, a dumping-catch H journaled on the cradle to engage the said body-portion and provided with a dumping-lever g , and a draft-bar o , substantially as described.

5. In a scraper-apparatus, the combination
25 with suitable scraper-operating mechanism of a scraper F comprising the body-portion formed with a bottom, sides and open ends, the bottom being formed into a beak e at its forward end, and into a shoe e^3 at its rear end,
30 and the sides having ears g^3 , a cradle I pivotally supported between the sides forward of the transverse center of the scraper and terminating in a back for the rear end of the body-portion, a dumping-catch H formed of a
35 shaft g' carrying a lever g and journaled in the said sides and provided with depending

catches g^2 to engage the ears, and a draft-bar o , substantially as described.

6. A scraper-apparatus comprising, in combination with a car A supporting the winding-
40 drums E and E' having brakes, a mast C and a boom D, a dumper G on the car formed with a rotary shaft l carrying drums k and k' , a brake for the dumper, a weighted cord h fastened to the drum k' to wind thereon in one
45 direction and a dumping-cord i fastened at one end on the drum k to wind in the opposite direction, a scraper F formed with the body-portion open at opposite ends and provided with a cradle I journaled between the sides in
50 advance of the transverse center of the scraper and terminating in a back for the rear open end of the body-portion, a suspension-pulley m on the hanger-bar of the cradle, a dumping-catch H on the rear portion of the
55 cradle for supporting and releasing the body-portion and provided with a lever g with which the opposite end of the cord i is connected, a cable p connecting the draft-bar of the scraper with the drum E', and a cable p'
60 fastened at one end to the drum E, passing thence upward over a guide on the mast and down under the hanger-pulley m on the scraper over a guide near the outer end of the boom and back to the axis of the pulley m , substantially as described.

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HENRY G. BUTLER.

In presence of—
M. J. FROST,
M. E. WINN.