(No Model.)

H. G. BUTLER.

SCRAPER.

No. 493,421. Patented Mar. 14, 1893.

Fig. 1.

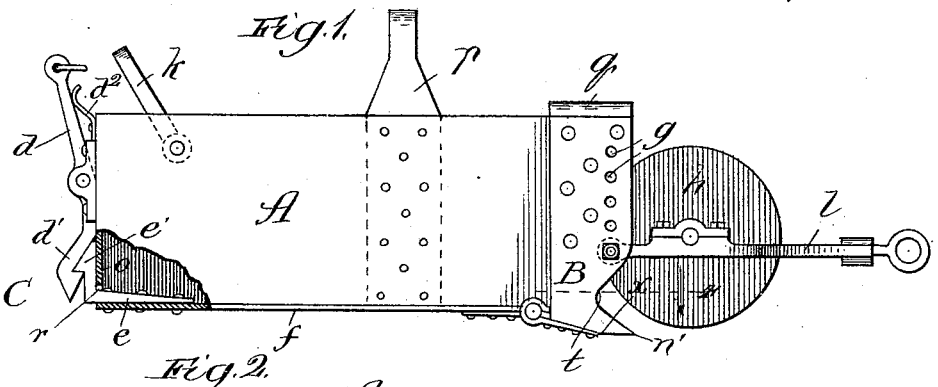


Fig. 2.

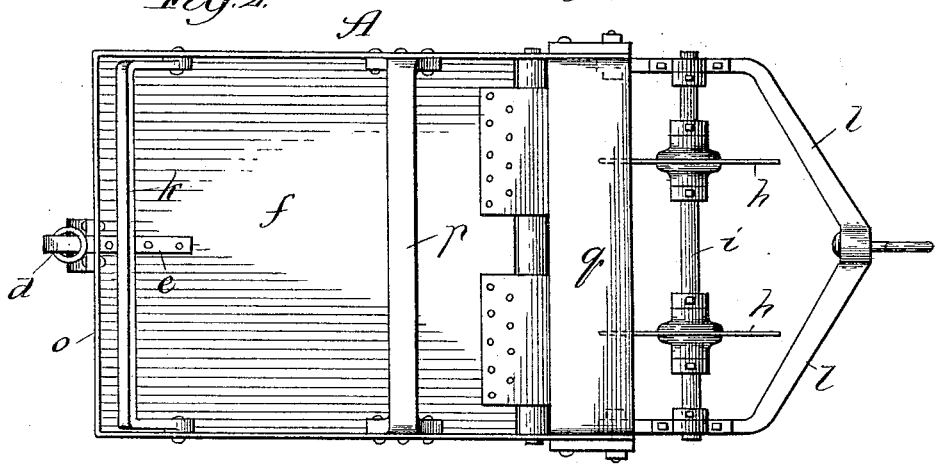


Fig. 4.

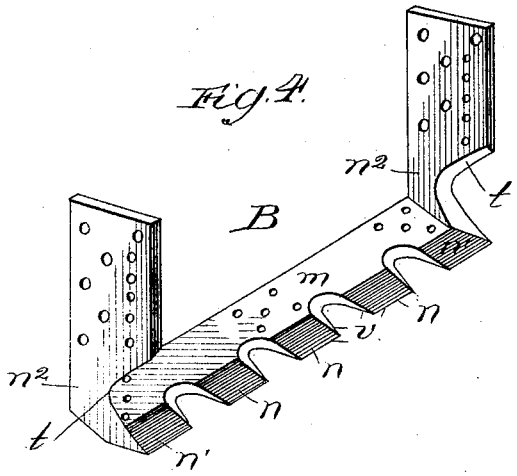
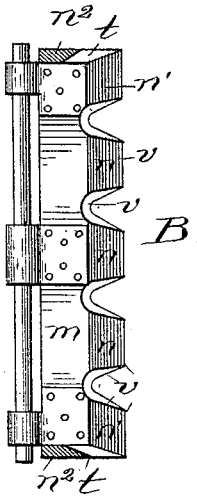


Fig. 3.



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UNITED STATES PATENT OFFICE.

HENRY G. BUTLER, OF KENOSHA, WISCONSIN, ASSIGNOR OF ONE-HALF TO WILLIAM BUTLER, OF SAME PLACE.

SCRAPER.

SPECIFICATION forming part of Letters Patent No. 493,421, dated March 14, 1893.

Application filed September 19, 1892. Serial No. 446,294. (No model.)

To all whom it may concern:

Be it known that I, HENRY G. BUTLER, a citizen of the United States, residing at Kenosha, in the county of Kenosha and State of Wisconsin, have invented a new and useful Improvement in Scrapers, of which the following is a specification.

My invention relates to an improvement in the class of scrapers adapted to be operated by animal or steam power particularly for earth excavating purposes, as in digging sewers, canals, cellars, foundations, and the like, and, in burning clay to make ballast, for scraping up the clay from the ground and depositing it on the pile or "fire."

My objects are to provide a strong and durable construction of the scraper, which shall present no external obstructions to its progress, in cutting its way through the soil; which shall, if the scraper be of the variety to be operated by hoisting to dump it, permit the dumping to be accomplished readily and effectively; and by which the leading plow-end of the scraper is rendered peculiarly efficacious for its purpose.

In the accompanying drawings, Figure 1 is a broken view in side elevation of my improved scraper. Fig. 2 is a plan view of the same. Fig. 3 is a plan view of the plow; and Fig. 4 is a perspective view of the plow detached.

A is the body of the scraper, shown as of general rectangular shape and formed preferably, as to its sides and back, at least, of a single plate of steel with a section removed from the base of the back to afford a drainage-opening r for service when the scraper is operated in water or wet soil. To afford desired rigidity of the sides, I may extend across the top of the front end of the body-portion a bracing-bar q, bent to right-angles at its opposite ends and inserted between and securely riveted, at the bent ends, to the sides of the scraper; in addition, the plow B, hereinafter described, braces the forward end of the body-portion A at its base, the hanger-bar p, securely riveted against the inner surfaces of the sides, and which should be a heavy forging extending high enough above the sides to clear the soil in filling and to insure balancing the loaded scraper, braces the body-portion at its center, while the back o performs the same function at the rear.

The most important feature of my improvement is the plow B, which I prefer to form of a single plate of plow-steel. In one edge of the plate are formed the teeth n, preferably of the shape illustrated, each having its cutting edges formed by beveling, as at v, laterally outward and downward, the bevel being also formed on the forward edge of the plow-bar m between the teeth. Toward the ends of the plow-bar it is turned to right-angles from a line at or near the center of each end-tooth n', and the forward edges presented along the bent ends n^2 of the plow-bar, which extend upward along and are riveted to the outer surfaces of the sides of the body A, are sharpened and afford vertical cutters, by being beveled, near their bases at the hollowed portions illustrated, outward from the inner surfaces, as represented at t, the bevels t thus corresponding with those on the outer edges of the end-teeth n'. The plow is also fastened to the base of the body-portion A. Thus the plow is adapted the better to cut its way through the soil and in so doing to crowd the loosened dirt into itself, functions which permit the scraping to be performed continuously in the same furrow, as required, for example, in excavating for a sewer.

To adapt the plow-teeth the better, in being dragged, to engage the ground and cut their way through the soil, instead of tearing it, and requiring for the purpose that the scraper be tipped forward, I set them in a peculiar manner, described as follows: In bending the ends of the plow-bar into their relatively right-angle positions, the intermediate section of the bar is slightly bent to tip it forward in a downward direction, thus to or about to the incline represented in Fig. 1, whereby the pitch of the forward projecting plow-teeth is downward; but this pitch is then altered by bending the teeth upward along the line of their junction with the bar m to or about to such an angle as would cause the bend at x or heel of the plow to be slightly above a straight-edge extended from the points of the plow-teeth to the base of the back o.

At the forward end of the scraper I provide a draft-bar *l*, formed of a heavy forging, and which is pivotally connected at its bent ends with the inner sides of the body-portion A; and a supplemental suspension-bar *k* may be provided near the rear end of the body-portion, pivotally connected at its opposite bent ends with the inner sides thereof.

As usual cutters should be provided in advance of the plow to cut the ground ahead of the plow, thereby to lessen the work of the scraper proper. The cutters illustrated involve a steel shaft *i* journaled or otherwise supported at its opposite ends in bearings, preferably on the end-portions of the draft-bar *l*, and carrying vertical disk-cutters *h*, in any desired number, and which should be supported to revolve independently on the shaft. Besides, the cutters *h* afford a fulcrum on the ground for the draw-bar, whereby it is given a leverage on the scraper (which may be changed by adjusting it up or down in the side-holes *g* through the vertical ends of the plow-bar and sides of the body-portion A) to overcome any tendency thereof to penetrate the ground too deeply.

Where the scraper is designed for work requiring it to be hoisted for dumping, as in ballast-burning, means should be provided to render the dumping operation automatic. This I accomplish by hinging the bottom *f* near the forward end of the body-portion A behind the plow-bar, (in a manner to avoid obstruction by the hinge on the base of the scraper,) and providing a catch C at its rear-end to hold it when closed and to release it for dumping. The form of catch illustrated comprises a bar *e* bolted rigidly to the upper side of the bottom *f* and extending beyond its rear end, where it terminates in a head *e'* having a shoulder and which is bent to a right-angle, and a bent lever *d* pivoted at its bend to the outer surface of the back and terminating at it lower end in a head *d'* having a shoulder, adapted to engage that of the head *e'* when the bottom *f* is in closed position, the lever being controlled by a spring d^2 to tend normally to engage the head *e'*. Thus when the scraper has been filled and hoisted (being then suspended at the hanger *p* and supplemental hanger *k*) it may be dumped by pulling the lever *d* in the direction toward the forward end of the scraper thereby releasing the catch and permitting the load to force the bottom *f* open and discharge; and by tilting the scraper toward a vertical position, or otherwise forcing the bottom, the latter will assume its place automatically and in so doing, the head *e'* will pass and engage the head *d'*, thereby locking the bottom in closed position.

All the details and features thus described, when combined to produce a scraper, afford thereto all their incidental advantages; but it is not necessary that they should all be combined in the same scraper, for several of the features, particularly in the plow-construction, improve a scraper to that extent if the other features of my improvement be omitted therefrom. Hence I do not wish to be understood as limiting my invention to combinations of details in a scraper other than those expressed in the several appended claims.

It may be suggested that, though not considered practicable, it is within the spirit of my invention, instead of providing an extra bar for the plow, to form the cutter portions thereof on the forward edge of the body-portion.

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

1. A scraper formed with a body-portion open at its forward end, in combination with a plow at the open end, comprising a bar having in its forward edge teeth beveled at their edges to form cutters, said bar being bent toward its opposite ends through the end-teeth to suitable angles and secured at the bent end-portions to the sides of the said body-portion, the bent end-portions being beveled from their inner sides outward and forming cutters on their forward edges, substantially as described.

2. A scraper formed with a body-portion open at its forward end, in combination with a plow at the open end, comprising a bar having in its forward edge cutter-teeth and bent to suitable angles, the bent ends being secured to the sides of the body-portion and forming cutters on their forward edges, the bar between the said ends inclining downward and forward toward its cutter-edge and the teeth thence inclining upward, substantially as described.

3. A scraper formed with a body-portion open at its forward end, in combination with a plow at the open end, comprising a bar provided with a beveled cutting edge having projecting therefrom beveled teeth forming cutters, said bar being bent toward its opposite ends to suitable angles, and secured at the bent end-portions to the sides of the said body-portion and, the bar between the bent ends, inclining downward and forward toward its cutter edge and the teeth thence inclining upward, the said bent ends being beveled from their inner sides outward and forming cutters on their forward edges, substantially as described.

4. A scraper formed with a body-portion A open at its forward end, in combination with a plow B at the open end having the downward inclined cutter-bar *m* provided with the thence upward inclined cutter-teeth *n n'* and ends n^2 having the cutting edges *t*, a draft-bar *l*, and a shaft *i*, carrying cutter-disks *h*, in advance of the plow, substantially as described.

5. A scraper comprising, in combination, the body-portion A having the rear drainage-opening *r*, hinged bottom *f* provided with a

catch C, brace-bar q and hanger-bars p and k, a plow B at the open end of the said body-portion, having the downward inclined cutter-bar m provided with the thence upward inclined cutter-teeth n, n' and ends n^2 having the cutting edges t, an adjustable draft-bar l, and shaft i supported in the draft-bar and carrying cutter-disks h, the whole being constructed and arranged to operate substantially as described.

HENRY G. BUTLER.

In presence of—
W. N. WILLIAMS,
M. J. FROST.