

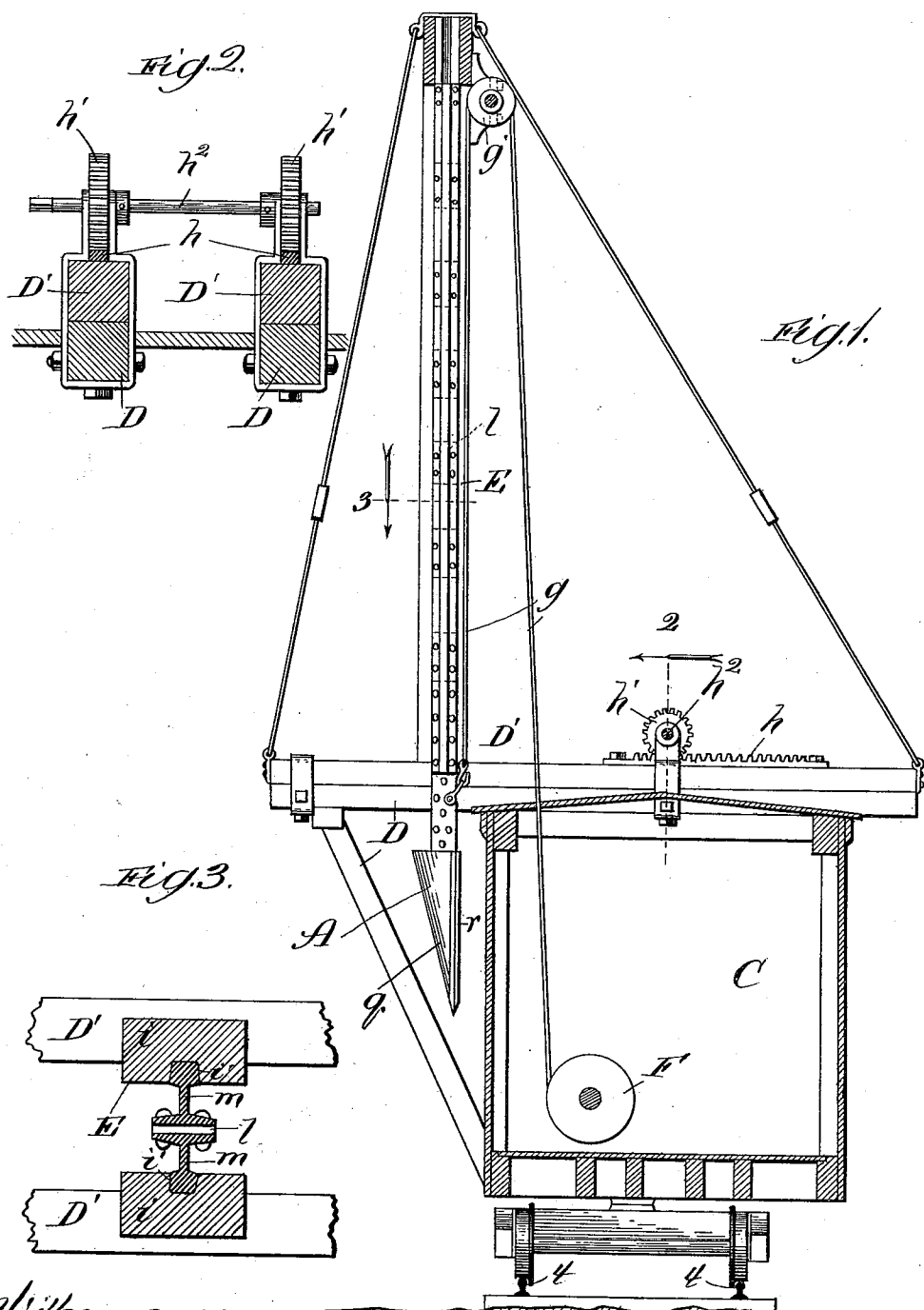
(No Model.)

2 Sheets—Sheet 1.

T. BENNETT.  
DIGGING IMPLEMENT.

No. 506,900.

Patented Oct. 17, 1893.



Witnesses:  
Ed. C. Gaylord,  
Clifford A. White.

Inventor:  
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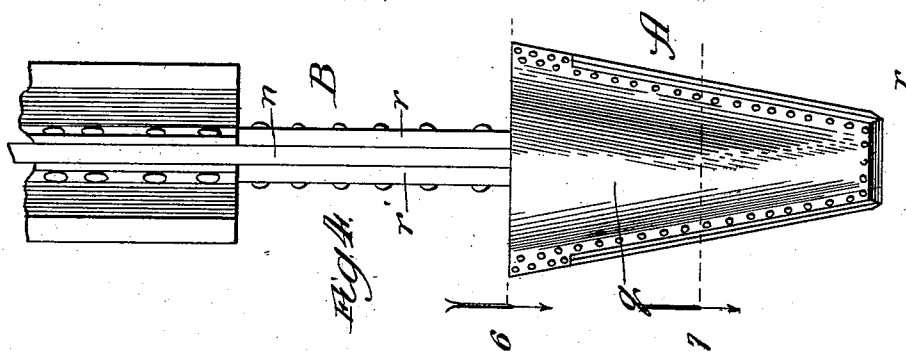
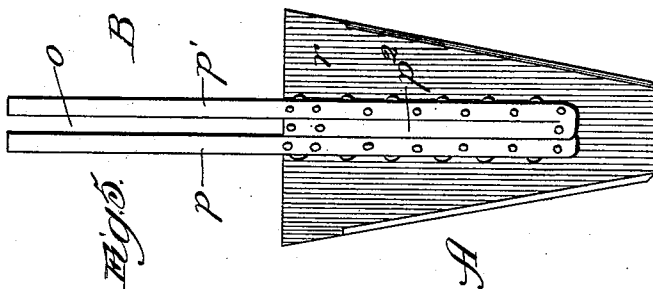
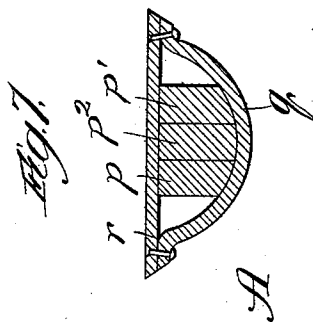
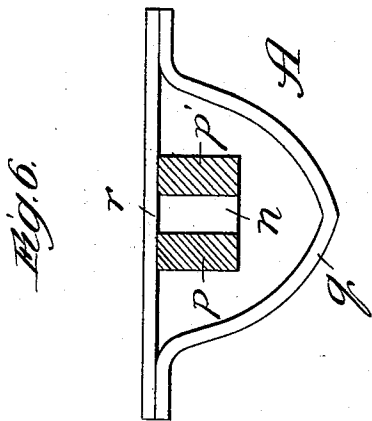
(No Model.)

2 Sheets—Sheet 2.

T. BENNETT.  
DIGGING IMPLEMENT.

No. 506,900.

Patented Oct. 17, 1893.



Witnesses:  
*Clark Clifford*  
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# UNITED STATES PATENT OFFICE.

THOMAS BENNETT, OF KENOSHA, WISCONSIN.

## DIGGING IMPLEMENT.

SPECIFICATION forming part of Letters Patent No. 506,900, dated October 17, 1893.

Application filed April 17, 1893. Serial No. 470,681. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS BENNETT, a subject of the Queen of Great Britain, residing at Kenosha, in the county of Kenosha and State of Wisconsin, have invented a new and useful Improvement in Digging Implements, of which the following is a specification.

My invention relates to an improvement which I have devised for a particular purpose, that is for loosening the soil (clay) when hardened by frost, to prepare it for being taken up by a scraper and fed to the so-called "fire" in burning clay to make ballast. My improved implement may also be used, with advantage, for other purposes, such as for chopping wood; but having been devised for the particular purpose mentioned and since its advantages are, perhaps, most pronounced in its application thereto, I confine the description of the use of the implement, in the explanation hereinafter contained, of my invention, mainly to the application of the implement in connection with ballast burning.

In burning clay to make ballast, and the like, a well-known and commonly practiced procedure is that of performing the burning in the open air in a long pile or "fire," sloping at the opposite sides. Generally stated, this procedure involves laying kindling material on, or along the margin of the bed of, clay, starting the fire, and thereafter piling thereon alternate layers of coal and clay. The clay is dug by machinery from the bed along a side of the line of the fire, thereby forming a trench, which is widened in the direction from the fire as the digging proceeds, and in which the pile or fire is increased in width by the accumulation of material imposed upon it. The machinery commonly employed for digging the clay and depositing it on the fire involves, generally stated, a scraper suspended on and actuated by cable-connections with winding mechanism on a car on a track laid along the fire, between which and the track the scraper is caused to operate to dig and fill itself with the clay and then to convey its load to and dump it on the fire. When the ground is frozen, the scraper mechanism alone, even with the soil-loosening attachments usually provided on or to co-operate with the scraper, is incapable of loosening

the soil; hence, until the advent of my improvement, the ballast burning procedure has had to be suspended or abandoned while the frozen condition of the ground lasted; but my improvement has enabled the burning to be continued through all of the winter.

My improvement, which for want of a better name I entitle a "digging implement," involves a peculiar construction of blade on an adequately ponderous stem adapted to be supported, as at a side of the car hereinbefore referred to, to permit of its being reciprocated vertically in the manner of (but more rapidly than) a pile driver.

In the accompanying drawings, Figure 1 is a view showing in sectional end elevation on a track, and rigged with means for operating it, my improved implement represented in side elevation in its raised position of operation. Figs. 2 and 3 are sections taken, respectively, at the lines 2 and 3 on Fig. 1 and viewed in the direction indicated by arrows. Fig. 4 is a broken view in front elevation of the implement in its guide. Fig. 5 is a similar view of the implement with its face removed; and Figs. 6 and 7 are sections taken, respectively, at the lines 6 and 7 on Fig. 4, viewed as indicated by arrows and enlarged.

The digging-implement comprises as its essential features a blade A on a suitable handle or stem, the blade being formed with a flat back *r*, pointed at its digging end toward which the sides should taper from the upper end; and a face *q*, bowed in cross-section, as or substantially as represented in Figs. 6 and 7, and tapering longitudinally downward from its upper end, with relation to the back *r*, to which it is riveted along its edge-ports, all as, or substantially as, represented in Fig. 4. Thus the purpose of the invention is attained of affording a blade (the parts of which should all be of metal) with a forward and upward bulging face, whereby when driven downward into the ground it will tend, somewhat in the manner of a wedge, to prize the soil.

As I prefer to form the stem B, it comprises the two heavy metal bars *p* and *p'* both riveted to the inner side of the back *r* at a distance apart to leave a longitudinal space *o* between them (Fig. 5) which is filled along

the back  $r$  by an extension  $p^2$  of the bar  $p'$  bent upward for the purpose and to brace the bars, and fastened. The space  $o$  affords a species of socket for an extension of the stem, comprising a bar  $n$ , which should be of metal, riveted in place between the bars  $p$  and  $p'$  and to opposite sides of which are fastened further extensions of the stem, which afford the adequate weight to the implement, and which I prefer to form of railway or analogous rails  $m$  fastened at their flanges to opposite sides of the bar  $n$ , upward beyond which, however, the rails extend, being braced by spacers  $l$ , at intervals between them; and the heads of the rails form guides for the implement in its reciprocating movements.

C is a car shown on a track  $t$  (Fig. 1) which may, for the purposes of the explanation of the operation of my implement in connection with ballast-burning, be presumed to extend along a trench (not shown) between the pile of burning ballast and the track. To support the implement I provide suitable frame-work D carrying a mast E over the plane at a side of the car and formed of spaced beams  $i$  having vertical guide grooves  $i'$  for the guides afforded by the heads of the rails  $m$  forming part of the implement-stem B. The mast E is carried by a horizontally movable portion D' of the frame D on which are racks  $h$  meshing with which are stationarily supported pinions  $h'$  on a rotary shaft  $h^2$ , turning of which in the proper direction affords forward and backward adjustment of the digger A with relation to the edge of the trench, whereby a lesser or greater lateral depth of the soil may be penetrated by the implement according to desire or requirement. As will thus be seen, the implement is adapted to be raised for its operation (to a height which, for the purpose, need not exceed eight to twelve feet between the blade A and surface of the ground) and then dropped with such force, owing to its weight, as to penetrate frozen or hard soil; and it loosens the soil, and, by its somewhat wedge-shaped form, with the bulging side at the front of the penetrating point, as it were bursts off the frozen soil into the trench where it is free to be taken up by the scraper.

The mechanism for actuating the implement may involve any of the well-known apparatus employed for analogous purposes; but as such mechanism forms no part of my invention and as simpler means will answer my purpose of illustration I show merely a winding-drum F in the car, and a cable  $g$  passing from the drum upward over a guide-pulley  $g'$  on the mast E and then down to a desired point on the stem B to which it is attached, as represented in Fig. 1. By turning the drum to wind the cable upon it, the implement may be raised to a desired height from which, on releasing the drum to permit it to unwind the cable, it falls and performs its work.

As another function which I have performed with advantage by the use of my improved implement in the ballast-burning connection referred to, may be mentioned that of splitting ties and timbers for making the kindling wood for use in building the fire, which operation I have thus been enabled to perform expeditiously, conveniently and cheaply.

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

1. A digging implement comprising, in combination, a blade A formed with a flat back-plate  $r$  and a face  $q$  bowed in cross-section and tapering downward toward the cutting end of the back-plate to which it is secured, and a stem B formed of the bars  $p$  and  $p'$  fastened to the back-plate to afford a space  $o$ , with one of said bars bent into said space, a bar  $n$  fastened in the space  $o$  and rails  $m$  fastened to opposite sides of the bar  $n$  and forming guides for the stem, substantially as described.

2. In combination, a car, a guide-mast supported on frame-work adjustably fastened on the roof of the car and provided with rack and pinion mechanism for moving it, a digging implement comprising a weighted blade A and a stem B, the stem working in the guides on the mast, and means on the car for reciprocating the said implement, substantially as described.

THOMAS BENNETT.

In presence of—

M. J. FROST,

W. N. WILLIAMS.