

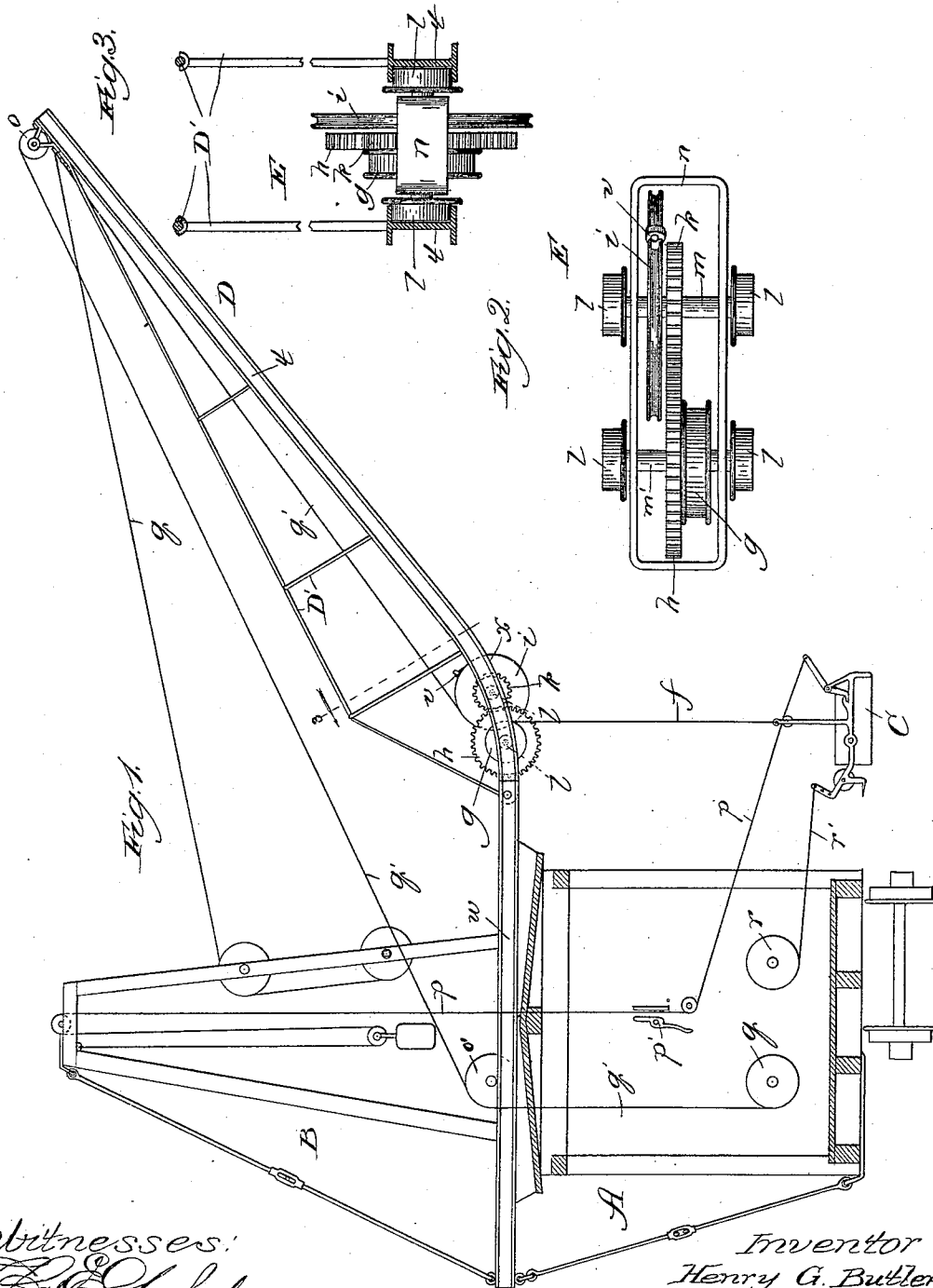
(No Model.)

H. G. BUTLER.

FEEDING APPARATUS FOR USE IN BURNING CLAY.

No. 447,458.

Patented Mar. 3, 1891.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

HENRY G. BUTLER, OF KENOSHA, WISCONSIN.

## FEEDING APPARATUS FOR USE IN BURNING CLAY.

SPECIFICATION forming part of Letters Patent No. 447,458, dated March 3, 1891.

Application filed August 22, 1890. Serial No. 362,735. (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 Feeding Apparatus for Use in Burning Clay, of which the following is a specification.

In burning clay to make ballast according to Letters Patent of the United States Nos. 305,432 and 371,042, to William Davy, and No. 413,358, to myself and William Butler, the clay is burned in the open air on the ground from which the supply is taken and is piled along one side of a trench, whence the clay is dug, on a "fire," which is replenished from time to time with alternate layers of fuel and clay. The burning and replenishing are continued until a pile of desired dimensions forming the fire is produced and the clay has been sufficiently burned.

To save in the labor and facilitate the supplying to the fire of the clay to be burned, machinery is employed, forming a feeding apparatus and operating to dig or scoop the clay from the trench and deposit it on the fire. Letters Patent of the United States Nos. 389,551 and No. 413,361, granted, respectively, to William Davy and to William Davy and myself, as also the joint application of myself and William Butler, Serial No. 362,736, filed August 22, 1890, show and describe apparatus for this purpose; and my present invention is designed as an improvement in the class of such apparatus.

As in the case of the aforesaid formerly-patented apparatus, my present machine, while it has been devised by me especially for use in burning clay to make ballast for railroads, may be used with advantage for other purposes; and I desire, therefore, to be understood as claiming it for any work to perform which it may be adapted.

The improvement forming the subject of the present application relates particularly to the means for supporting and controlling the scoop or scraper in its operations of filling from the trench and moving to the fire, there to be dumped.

In the accompanying drawings, Figure 1 is a view in elevation, partly sectional, showing the feeding apparatus provided with my im-

provement; Fig. 2, a plan view of the carriage from which the scoop or scraper is suspended, and Fig 3 a section taken on the line 3 of Fig. 1 and viewed in the direction of the arrows.

A is the support for all the operating parts of the apparatus, and is preferably in the form of a car movable on a track provided along the side of the trench opposite that at which the fire is built. On the roof of the car is the mast or mast structure B, and inside the car are the drums *r* and *q*, upon which to wind, respectively, ropes or cables *r'* and *q'*, through the medium of which to effect the filling of the scoop or scraper C, and its movement from the point of filling to the point of dumping on the fire, the dumping being produced through the medium of the weighted rope or cable *p*, controlled by a suitable gripping device *p'*.

The construction and general manner of operation of the parts thus referred to, as well as of the power mechanism (not shown) on the car A, may be the same as set forth in the aforesaid formerly patented feeding apparatus, and need not, therefore, be more definitely described than will serve to render clear their co-operation with my improvement. I prefer to have the boom D itself form the track for the carriage E, though a separate suitable track could be suspended from the boom, and to that end to construct it of two I-beams *t*, facing each other laterally, as shown, and extending from their supporting-beams *w* (which may also be I-beams and which project laterally beyond the roof of the car A, and thence slightly curve, as shown at *x*) in an upward direction to the outer extremity of the boom, where a guide-pulley *o* is supported. The I-beams *t* are braced by a suitable superstructure of truss-work D'.

The carriage E comprises a frame *n*, having journaled, respectively, near its opposite ends axles *m* and *m'* for the wheels *l*, which should be loose to revolve independently of their axles. On the forward axle *m* are secured a pinion *k* and a larger (preferably three times) peripherally grooved pulley or drum *i*, and on the rear axle *m'* a pinion *h*, which meshes with and should be three times the size of the pinion *k*, and a peripherally-grooved pulley or drum *g*, smaller (say one-

third the size) in diameter than the pulley *i*. The wheels *l* fit at the opposite sides of the carriage, respectively, between the adjacent flanges of the **I**-beams, which thus afford the track for the carriage, though of course it may be otherwise formed. If the boom consists of only a single **I**-beam, the carriage could obviously be arranged to have the wheels at its opposite sides fit and move between the opposite flanges of the one **I**-beam.

The scoop or scraper **C** is suspended by a rope or cable *f* from the drum *g*, and the carriage is connected with the drum *q* on the car **A** by a rope or cable *q'*, secured at one end on the pulley *i*, and passing thence over the guide-pulley *o* and a similar pulley *o'* on the car to the winding-drum *q*.

The operation is as follows: A rope or cable *d* is shown as leading from the outer end of the boom where it is fastened over a pulley *e* on the mast to a winding-drum *b* for raising and lowering the boom to adjust it to different angles according to requirement. The scraper **C** being lowered to permit, by adequately paying out the cable *q'* to bring the carriage **E** to the position shown, where the weight of the scraper takes up slight slack in the said cable by unwinding the cable *f* from the drum *g*, thereby winding thrice the length of cable *q'* on the drum *i*, the drum *r* is turned to draw the scraper in the usual manner to fill it. When so filled, the cable *r'* is released to permit it to be paid off from its winding-drum and the drum *q* turned to wind upon it the cable *q'*. The first effect of winding up the cable *q'* is to turn the pulley *i*, and thereby the pulley *g*, to wind upon it the cable *f*, which effects raising of the scraper from contact with the ground. This produces so much of a turn of the pulley *i* without starting the movement of the carriage as to cause the cable *q'* to pay off from its circumference until it extends from its point of fastening *v* on the pulley *i* in the direct line of draft along the boom, whereby continued winding of the cable *q'* produces no further rotation of that pulley, (nor consequently of the pulley *g* nor vertical raising of the scraper,) but merely draws the carriage **E** up the inclined track, and with it the scraper **C**, to the point of depositing its contents, where it is dumped in the usual manner by stopping with the grip *p'* the paying out of the cable *p*. After the dumping, on releasing the cable *q'* to permit it to pay out from its drum *q* the carriage returns to the loading position by its own gravity, carrying with it the scraper, which is then operated again to be filled, in the manner already described.

As will be seen, the inclined track and arrangement of other parts of my improvement serve to effect the elevation, carrying forward, and return of the scraper in a manner to economize in time and in the power for raising and transporting the scraper, and, besides, enable the dumping to be readily directed to any of various heights on the fire.

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

1. In an apparatus substantially for the purpose set forth, the combination, with the support **A**, provided with winding mechanism *q r*, of a boom **D**, having a track extending lengthwise along it, a carriage supported on the track and provided with intermeshing gears, a scraper **C**, suspended from one of said gears and connected by a flexible medium *r'* with and controlled from the winding device *r*, the other said gear being connected by the flexible medium *q'* with and controlled from the winding device *q*, the said intermeshing gear operating by the weight of the scraper, when lowered, to wind up slack in the connecting medium *q'*, and, by drawing against the carriage to move it, to unwind the said slack and thereby raise the scraper, substantially as described.

2. In an apparatus substantially for the purpose set forth, the combination, with the support **A**, of a boom **D**, rising toward its outer end and comprising flanged beams *t*, braced by a truss structure **D'** and forming with their adjacent flanges an inclined track, a carriage **E**, supported on the track, a scraper suspended from the carriage, and winding mechanism on the support **A** for controlling the movement of the carriage and the operations of the scraper, substantially as described.

3. In an apparatus substantially for the purpose set forth, the combination, with the support **A**, of a boom **D**, having a track extending lengthwise along it and rising toward its outer end, a carriage **E**, supported on the track and provided on its axles with the intermeshing pinions *k* and *h* and the pulleys *i* and *g*, winding-drums *r* and *q* on the support **A**, a scraper **C**, suspended by a cable *f* from the pulley *g*, a cable *q'*, connecting the pulley *i* with the drum *q*, and a cable *r'*, connecting the scraper with the drum *r*, substantially as described.

4. In an apparatus substantially for the purpose set forth, the combination, with the car **A**, of a boom **D**, rising toward its outer end and comprising **I**-beams *t*, braced by a truss structure **D'** and forming between their adjacent flanges an inclined track, a carriage **E**, supported on the track and comprising a frame *n*, provided with axles *m* and *m'*, carrying the wheels *l*, the intermeshing pinions *k* and *h*, and the pulleys *i* and *g*, winding-drums *r* and *q* on the car, a scraper **C**, suspended by a cable *f* from the pulley *g*, a cable *q'*, connecting the pulley *i* with the drum *q*, and a cable *r'*, connecting the scraper with the drum *r*, the whole being constructed and arranged to operate substantially as described.

HENRY G. BUTLER.

In presence of—

J. W. DYRENFORTH,  
M. J. FROST.