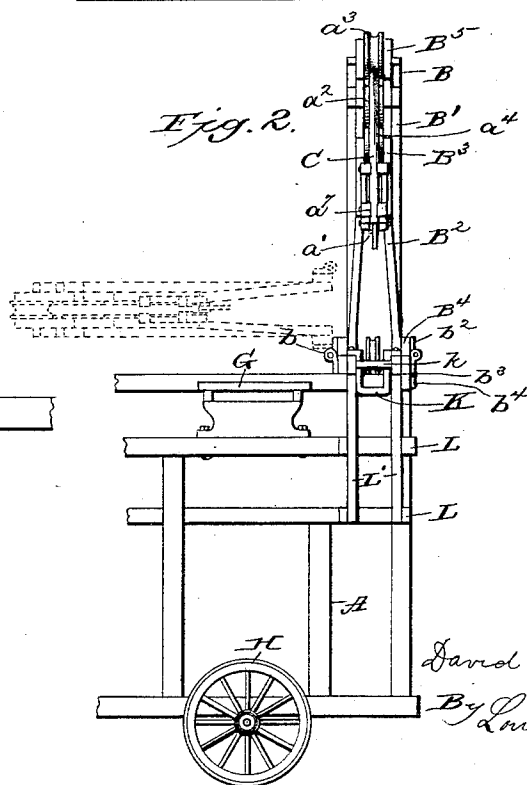
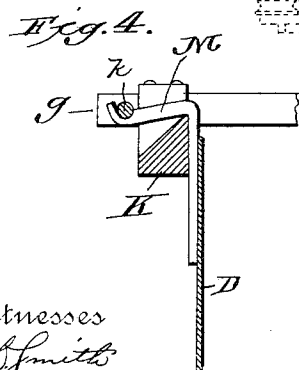
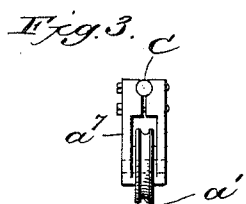
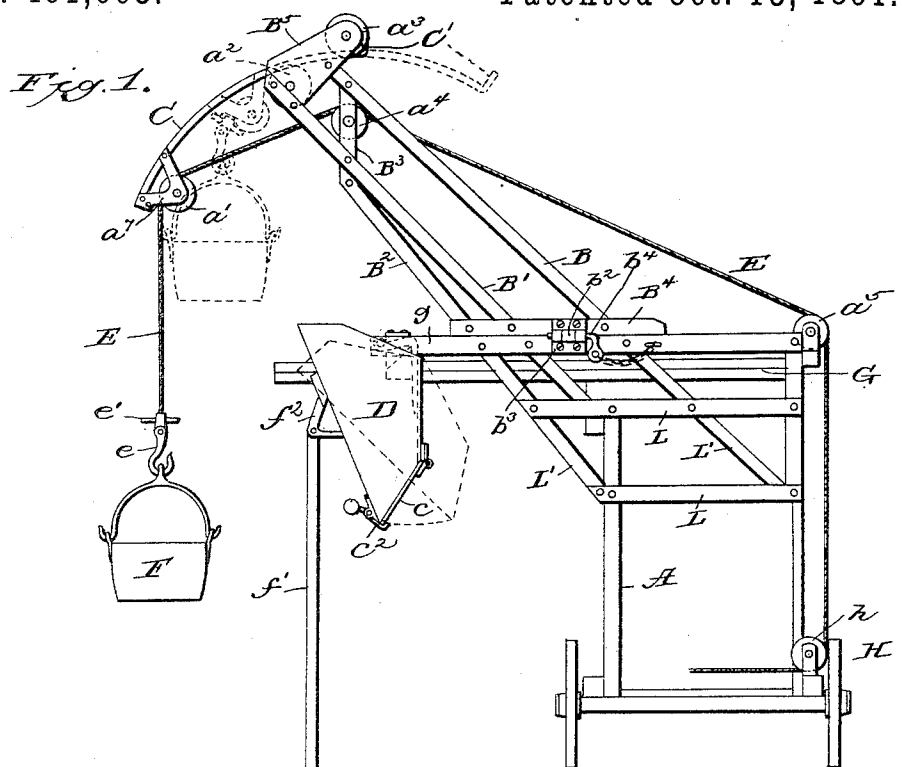


(No Model.)

D. S. WHITE.
HOISTING APPARATUS.

No. 461,005.

Patented Oct. 13, 1891.



Witnesses
E. H. Smith
Aly. Stewart.

Inventor
David S. White.
By Louis F. Turner & Co.
His Attorneys

UNITED STATES PATENT OFFICE.

DAVID STANWOOD WHITE, OF NORTHFIELD, MINNESOTA.

HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 461,005, dated October 13, 1891.

Application filed March 20, 1891. Serial No. 385,797. (No model.)

To all whom it may concern:

Be it known that I, DAVID STANWOOD WHITE, of Northfield, in the county of Rice and State of Minnesota, have invented certain
5 new and useful Improvements in Adjustable and Movable Hoisting Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the same, reference
10 being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in hoisting apparatus, such as are especially designed for use in ditching operations, although
15 not confined to such use, but may be employed in digging sewers, or, in fact, in any business where hoisting apparatus is employed, the object being to provide a highly-efficient apparatus of the character indicated
20 which will have a wide range of utility and when out of use or during transportation may be folded into a relatively compact form.

The invention consists in certain novel details of construction and combinations and
25 arrangements of parts, to be hereinafter described, and pointed out in the claims at the end of this specification.

Referring to the accompanying drawings, Figure 1 is an end elevation of a hoisting apparatus constructed in accordance with my
30 present invention. Fig. 2 is a side elevation of one end of the same, showing the upper portion of the derrick folded in dotted lines and with the receiving-chute removed. Fig.
35 3 is a bottom plan view of the outer end of the sliding crane-arm. Fig. 4 is a detail of the supporting means for the receiving-chute.

Similar letters of reference in the several figures indicate the same parts.

40 In carrying the present invention into practice I prefer to mount the whole apparatus upon a truck H, which may be conveniently moved from place to place, the supporting-framing A being of any suitable or preferred
45 character, preferably, however, so formed as to leave a comparatively large internal area for the reception of a suitable hoisting-engine of any approved construction, and which it has not been deemed necessary to illustrate
50 in the drawings, as it is not necessarily employed and constitutes no part of the present invention. At the top of the framing A suit-

able horizontal cross-framing L is provided with diagonals L', constituting the bottom end of the overhanging derrick-arm. 55

The overhanging extended arm of the derrick is formed by a separate frame-work consisting, essentially, of the diagonal timbers B B', braced by a third timber B², the end B³ of which unites the timbers B B' near their outer
60 extremes, forming, together with the base-piece B⁴ and end piece B⁵, a strong rigid frame-work, which at the inner edge is hinged to the top horizontal timbers g of the truck-framing by means of hinges b. With this construction the whole upper derrick-arm may be
65 swung down to the position indicated in dotted lines, Fig. 2, when desired, but is normally held rigidly in upright position by means of the registering lock-plates b² b³,
70 through which an angle-bolt b⁴ passes. This bolt b⁴ is loosely connected to the framing by means of a chain or other similar loose connections, which will permit it to be readily
75 inserted or withdrawn from the eyes of the co-operating lock-plates. When in upright position, as shown in full lines, Figs. 1 and 2, the bottom timbers b⁴ of the overhanging derrick-arms rest squarely upon the top of the
80 horizontal timbers g of the truck-frame, giving a broad, firm, and secure support for said arm.

At the upper end of the derrick-arm I form suitable ways for a sliding member C, which I shall herein term the "supplemental" or
85 "movable" derrick-arm. The ways I preferably form by means of grooved rollers a² a³, journaled in the end pieces B', the roller a² being in advance of and slightly below the roller a³, by which arrangement the supple-
90 mental derrick-arm when passed in between the rollers will project beyond the derrick and at the same time is free to move in or out as occasion requires. In the preferred construction this supplemental derrick-arm
95 is formed by a curved metallic rod or frame having its inner end C' bent upward to form a stop, which, striking the roller A³, serves to limit the outward movement of said arm and determine the position of the
100 small roller or pulley a', held by a frame a' on the outer end of the arm and over which the hoisting-rope E passes. The hoisting-rope just referred to carries at its lower ex-

trema a hook or other device *e* for the attachment of a bucket *F* or other articles to be hoisted, and a stop, which, as shown, consists of a cross-pin *e'*, and after passing over the pulley *a'* it runs back to a pulley *a⁴* on the derrick-arm slightly below the rollers *a²* *a³*, and thence back over a third pulley *a⁵* on the truck-frame and down to and around a drum or pulley *h*. With this construction, when the supplemental arm is extended it is in position for lowering the bucket to the right point, and when the bucket is drawn up it first passes straight up to the pulley *a'*, when the stop *e'* comes in contact with the frame *a'* or the pulley *a'*, and draws the said arm, bucket, and all back to the position indicated in dotted lines, Fig. 1, in which position the bucket is over the dumping-chute or in position to be easily and quickly emptied by an operator, who stands on a small narrow platform *G* on the truck-framing and extending out at one side of the derrick-arm, as shown clearly in Fig. 2.

To further increase the efficiency of the apparatus and provide a means for receiving the contents of the bucket at the point where its inward movement ceases, the timbers *g* are extended some distance out beneath the crane-arm and at their outer end carry a yoke or frame *K* and a cross-pin *k*, with which the bent end *M* of a chute or hopper support engages. The chute or hopper *D* is preferably of tapering or conical form, rigidly connected to the support *M* and having a hinged door *c* at the lower end held in closed position by a weighted catch *c²*. The bent end of the hanger, which hooks over the yoke or framing *K*, enables the chute or hopper to be swung in or out, as shown in dotted lines, Fig. 1, to adjust the discharge-opening for the receiver, such as a car or cart running beneath the same, and in order to hold the chute or hopper in its adjusted position it is provided with an angle-bracket *f²*, to which is pivotally connected the upper end of a support *f'*, the lower end of which is adapted to rest on the ground, as will be readily understood. When the bucket has been emptied and as the hoisting-rope is slackened, the first movement is for the supplemental arm to move outward by its own gravity and the weight of the bucket. Then when it has reached its extreme outer position the bucket is lowered straight down.

With the construction herein set forth it will be seen that dirt may be reached and the bucket moved a very considerable distance from the truck or base framing thereon, and that with a comparatively low derrick-arm at the same time the full inward movement of the bucket may be secured, owing to the fact that the bucket itself, as well as its direct support, (the supplemental derrick-arm,) moves inward, and at the same time an arm is provided which when folded down does not project much, if at all, beyond the base-framing, thereby enabling the apparatus to be

folded compactly for storage or transportation, and will be found of material benefit where the device has to pass through narrow or low passage-ways, as a covered bridge or similar structure.

Having thus described my invention, what I claim as new is—

1. In a hoisting apparatus, the combination, with the base-framing, of the inclined derrick-arm formed by the frame-work and united at one edge of the lower end to the base-framing by a hinge connection, and a locking-plate secured to the opposite edge of the lower end and adapted to co-operate with a corresponding plate on the base-frame to hold the arm in upright position, substantially as described.

2. In a hoisting apparatus, the combination, with the base-frame having the substantially horizontal top timbers, of the derrick-arm formed by the diagonal timbers, having the substantially horizontal bottom pieces hinged on one side to the horizontal timbers of the base-framing, and locking-plates for uniting the bottom pieces and horizontal timbers on the opposite side, whereby the derrick-arm may be folded down within the compass of the machine or locked in upright position, substantially as described.

3. In a hoisting apparatus, the combination, with the inclined derrick-arm having the oppositely-inclined ways at the outer end, of the supplemental arm sliding in said ways and carrying the guide-pulley for the hoisting-rope at the outer end, and the guide-pulley on the derrick-arm in proximity to the inclined ways, over which said hoisting-rope passes after passing over the pulley at the end of the supplemental arm, whereby the longitudinal movement of the supplemental arm is automatically accomplished, substantially as described.

4. In a hoisting apparatus, the combination, with the inclined derrick-arm, of the oppositely-inclined supplemental derrick-arm mounted and moving longitudinally in ways at the end thereof and carrying the pulley for the hoisting-rope at the outer end, substantially as described.

5. In a hoisting apparatus, the combination, with the inclined derrick-arm having the grooved wheels mounted in journals at the end thereof, of the inclined supplemental derrick-arm mounted between said rollers and carrying the pulley for the hoisting-rope at the outer end, substantially as described.

6. In a hoisting apparatus, the combination, with the foldable derrick-arm, of the supplemental derrick-arm mounted and sliding longitudinally in ways at the end thereof and adapted to project beyond the end of said foldable derrick-arm, substantially as described.

7. In a hoisting apparatus, the combination, with the inclined derrick-arm and the supplemental derrick-arm mounted and sliding longitudinally in ways at the end thereof to

move outward and carrying the pulley for the hoisting-rope at the outer end, of the hoisting-rope passing over said pulley and over a pulley near the base of the supplemental arm and having a stop thereon, whereby as said rope is wound up the stop will engage the supplemental arm and move the same inward, substantially as described.

8. In a hoisting apparatus, the combination, with the inclined derrick-arm having the inclined supplemental arm mounted and sliding longitudinally in ways at the end thereof and carrying the pulley for the hoisting-rope at its outer end, of the hoisting-rope having a stop thereon passing over said pulley and over a pulley near the inner end of the supplemental arm, whereby when said rope is wound up the stop will engage said arm and draw the same inward, and when the rope is slackened the arm will move to its outer position by gravity, substantially as described.

9. In a hoisting apparatus, the combination, with the base-framing having the horizontally-extending timbers with the frame K and

pin k thereon, and the derrick, of the chute or hopper having the hangers hooked over the frame K and engaging the pin k , substantially as and for the purpose specified.

10. A hoisting apparatus comprising the base-framing having the horizontally-extending timbers, the inclined derrick-arm hinged to said horizontally-extending timbers, and the platform secured to the base-framing and extending out beside said derrick-arm, the supplemental derrick-arm mounted in ways at the end of said inclined derrick-arm and carrying the pulley for the hoisting-rope at its outer end, and the adjustable chute hung on the end of said horizontally-extending timbers beside the platform and beneath the derrick-arms, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

DAVID STANWOOD WHITE.

Witnesses:

FR. F. WILDE,

LOUIS FEESER, Jr.