No. 738,013. PATENTED SEPT. 1, 1903.

J. M. DODGE.

# APPARATUS FOR REMOVING MATERIAL FROM PILES.

APPLICATION FILED MAY 5, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

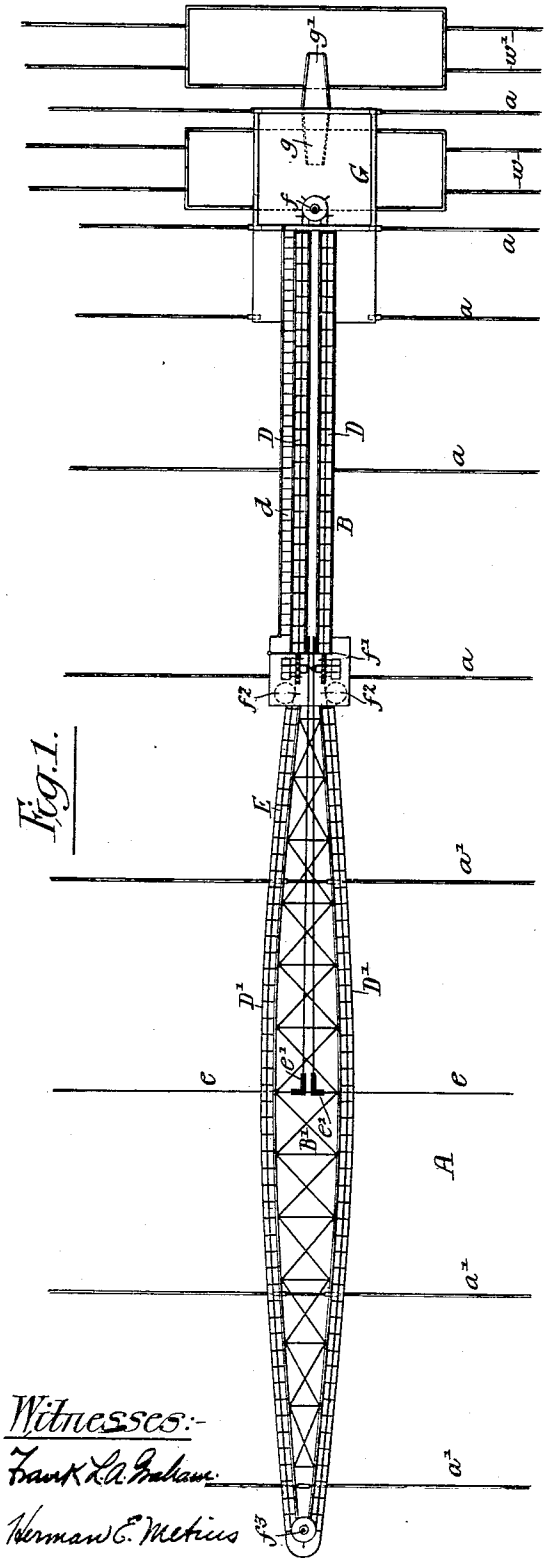


Fig. 1.

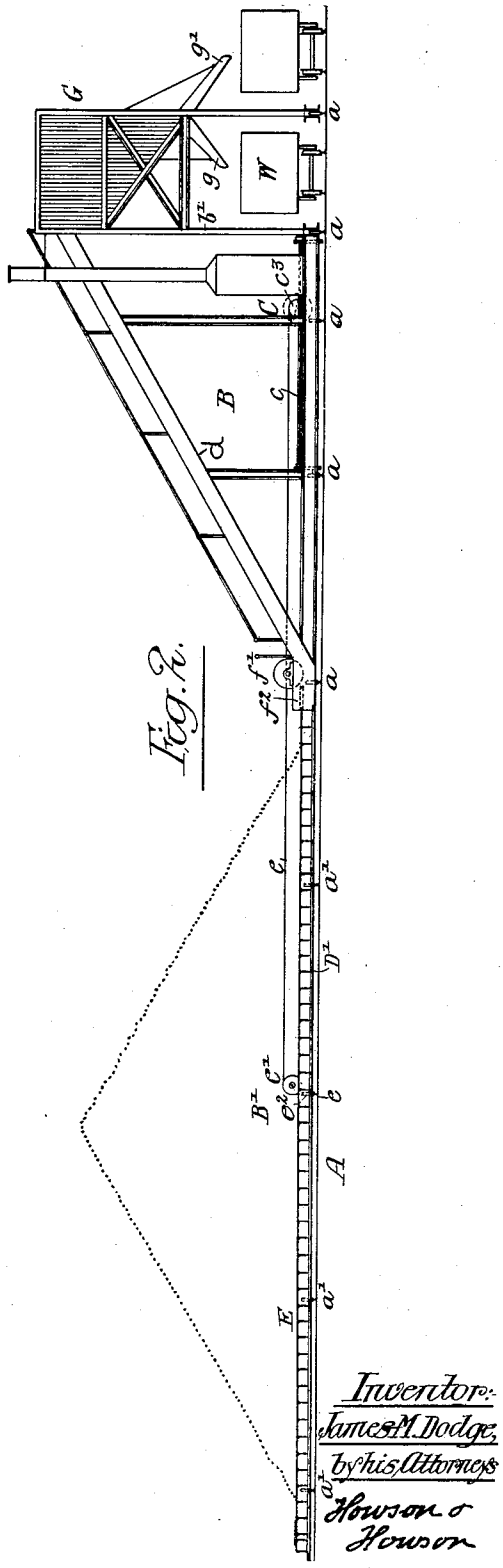


Fig. 2.

Witnesses:-
Frank L. A. Graham.
Herman E. Metius

Inventor:
James M. Dodge,
by his Attorneys
Howson & Howson

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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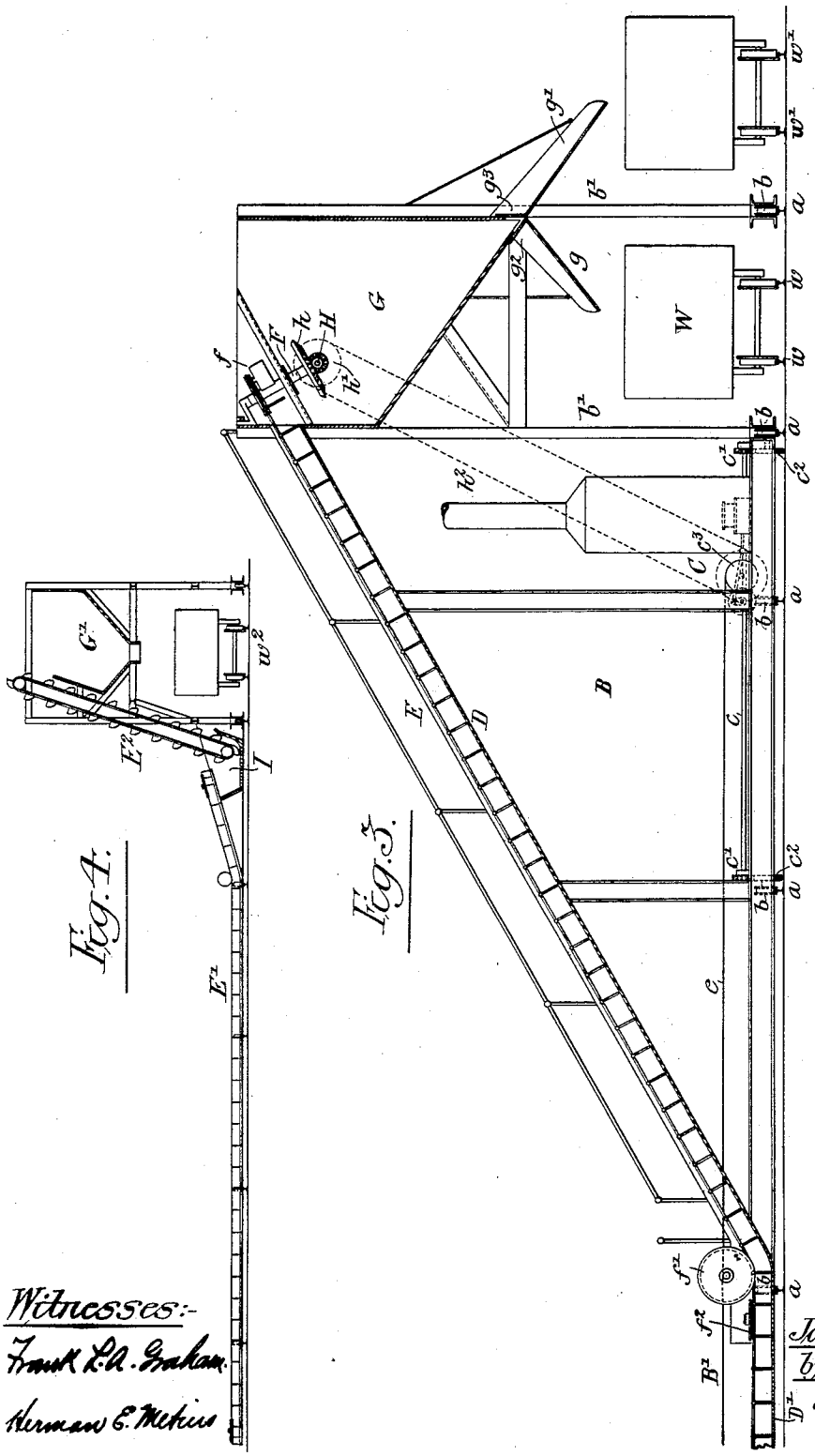


Fig. 4.



Fig. 3.

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No. 738,013. Patented September 1, 1903.

# UNITED STATES PATENT OFFICE.

JAMES M. DODGE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE DODGE COAL STORAGE COMPANY, OF NAUGATUCK, CONNECTICUT, A CORPORATION OF CONNECTICUT.

## APPARATUS FOR REMOVING MATERIAL FROM PILES.

SPECIFICATION forming part of Letters Patent No. 738,013, dated September 1, 1903.

Application filed May 5, 1903. Serial No. 155,747. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES M. DODGE, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Apparatus for Removing Material from Piles, of which the following is a specification.

My invention relates to that type of apparatus for removing materials from piles which attacks the pile at or near the base, causing the material to flow by gravity into the path of a conveyer which carries the material to the discharge-point.

The object of my present invention is to provide an apparatus in which the entire structure is movable, so that it can be moved bodily on a line parallel with the longitudinal line of the pile.

In the accompanying drawings, Figure 1 is a plan view of my improved apparatus. Fig. 2 is a side view. Fig. 3 is a sectional view of part of Fig. 2, enlarged; and Fig. 4 is a view of a modification.

A is the piling-floor, the pile being shown in dotted lines in Fig. 2.

B is the structure for removing material from the pile. This structure has an extension B′, which is preferably of such a length as to extend the full width of the pile.

*a a* are the tracks for supporting the structure B, and *a′* represents the tracks for supporting the extension B′. These tracks are parallel with the longitudinal line through the pile, and the tracks *a′* extend over the piling-floor. Suitable wheels *b* on the structure are mounted on the tracks. The structure may be moved by power, by hand, or by an independent shifting-engine, as desired; but I have illustrated a power apparatus carried by the structure itself.

In the present instance C is an engine of any suitable type, which is geared to a shaft *c*, having pinions *c′*, which mesh with gears $c^2$ on the shaft of two of the wheels *b*, supporting the structure B.

*e e* are ropes anchored at each end of the piling-floor and extending around pulleys *e′* $e^2$ to the drum $c^3$ of the engine C, and power is so applied that when it is wished to move the structure to or from the pile the drum $c^3$ and the shaft *c* are driven in unison, so that the entire apparatus will move bodily. This shifting mechanism may be modified, if necessary, without departing from the main feature of my invention.

Carried by the main structure B are two inclined troughs D D, and carried by the extension B′ are platforms D′.

E is an endless-chain conveyer having a series of flights. This conveyer travels over the inclined troughs D D and over the platforms D′ of the extension B′ and around a driven head-wheel *f* at the upper end of the structure B, around guide-wheels *f′* $f^2$, and around a wheel $f^3$ at the outer end of the extension B′, so that material falling onto either one of the platforms D′ will be transferred by the conveyer up the inclined trough D and discharged into a hopper G, carried by the structure B. Uprights *b′* support the hopper, which is elevated sufficiently to allow full clearance for a car W, which traverses the rails *w w* between two of the rails *a a*, as clearly shown in Fig. 3. Beyond the structure B is another track having rails *w′*, so that two cars can be loaded from the hopper at the same time, if necessary. The hopper has two adjustable chutes *g g′*, one arranged to discharge into a car on the track *w* and the other into a car on the track *w′*. Suitable valves $g^2$ $g^3$ control the flow of material to the chutes.

The conveyer E is driven in the present instance from an inclined driving-shaft F, carrying the sprocket-wheel *f*, around which the conveyer passes, and on this shaft is a bevel-gear *h*, meshing with a pinion *h′* on the shaft H, driven from the engine C, in the present instance by a chain belt $h^2$. (Shown by dotted lines in Fig. 3.) The method of driving the conveyer-chain may be modified without departing from my invention.

On one side of the inclined troughs D is a stairway *d*, which may be dispensed with in some instances.

The above-described invention is designed especially for removing material formed by the piling apparatus, application for Letters Patent for which was filed by me on April 30, 1903, Serial No. 155,062; but it will be under-

stood that it may be used independently, if desired.

In operation if, for instance, a pile is formed as set forth in the above-mentioned application and it is wished to remove material from the pile the driving mechanism is set in motion, so as to bring the extension B′ against the pile or in close proximity thereto, so that the material will flow by gravity onto one of the platforms of the extension. The conveyer is then set in motion, so as to carry the material along the platform, up one of the troughs, and finally discharge it into the hopper G. If it is wished to immediately load a car with the material, then the car is run either onto the tracks $w$ or $w'$ and either of the chutes $g\,g'$ adjusted and one of the valves opened, so as to allow material to flow from the hopper directly into the car. When the car is loaded, it is shifted and another car substituted for it. When it is necessary to adjust the apparatus again in respect to the pile, the shifting mechanism is set in motion and the entire apparatus is moved bodily toward the pile.

Instead of having the conveyer made in one section it may be made in two sections, as shown in Fig. 4, one a horizontal conveyer E′, emptying into a boot I of a vertical elevator $E^2$, which discharges into a hopper G′, carried by the structure and at such a height as to discharge into a car on the track $w^2$. This type of conveyer can be used when the tracks must be arranged close to the pile.

It will be understood that my invention is especially applicable for removing coal or like material either in lump or granular form from piles; but while it is especially applicable to coal it will be understood that it can be used for removing any granular or lump material in piles formed in any manner.

I claim as my invention—

1. The combination in an apparatus for removing materials from piles, of a piling-floor, a movable structure having an extension and an elevated hopper, said extension arranged to travel over the piling-floor, conveying mechanism carried by the movable structure and arranged to transfer material received from the pile on the piling-floor to the elevated hopper, substantially as described.

2. The combination in apparatus for removing material from piles, said apparatus consisting of a movable structure having an extension, a platform on the extension and an inclined trough on the main structure, a conveyer moving over the platform and inclined trough, a hopper at the upper end of the trough into which the conveyer discharges, and means for driving the conveyer, substantially as described.

3. The combination of a movable structure having an extension, an inclined trough carried on the main structure, a hopper at the upper end of the trough, said hopper being situated above the car to be loaded, and conveying mechanism for transferring the material from the platform of the extension to the hopper, substantially as described.

4. The combination of a movable structure having an extension of a length equal to the width of the base of the pile, an elevated hopper carried by the structure, an inclined chute extending from the inner end of the extension to the upper portion of the hopper, an endless-belt conveyer arranged to travel on the extension and the chute so as to convey material from the base of the pile and discharge it into the hopper, and a discharge-chute from the hopper so that a car on an adjacent track can be loaded from the hopper, substantially as described.

5. The combination of a piling-floor, tracks running parallel with the longitudinal line of the said piling-floor, a movable structure having wheels mounted on the said tracks, said structure consisting of a main frame and an extension, platforms on the extension and inclined troughs on the main frame, an endless-belt conveyer for carrying material from one of the platforms up one of the troughs, and means for traversing the said structure over the rails so that it can be adjusted in respect to the pile of material on the piling-floor, substantially as described.

6. The combination of a piling-floor, tracks running parallel with the longitudinal line of said floor, a structure mounted on the said tracks, said structure having a main portion and an extension, platforms on the extension and inclined troughs on the main portion, an elevated hopper carried by the main structure, an endless-belt conveyer arranged to travel over the platforms and troughs and discharge material into the hopper, and tracks directly under the hopper for the cars to be loaded so that the material can be discharged from the hopper directly into the car, substantially as described.

7. The combination of a piling-floor, tracks running parallel with the longitudinal line of said floor, a structure mounted on the said tracks, said structure having a main portion and an extension, platforms on the extension and inclined troughs on the main portion, an elevated hopper carried by the main structure, an endless-belt conveyer arranged to travel over the platforms and troughs and discharge material into the hopper, tracks directly under the hopper for the cars to be loaded so that the material can be discharged from the hopper directly into the car, and another track outside of the structure to receive the cars to be loaded, with two chutes and valves therefor, so that the material can be discharged from the hopper into the cars on either track, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES M. DODGE.

Witnesses:
WILL. A. BARR,
JOS. H. KLEIN.