

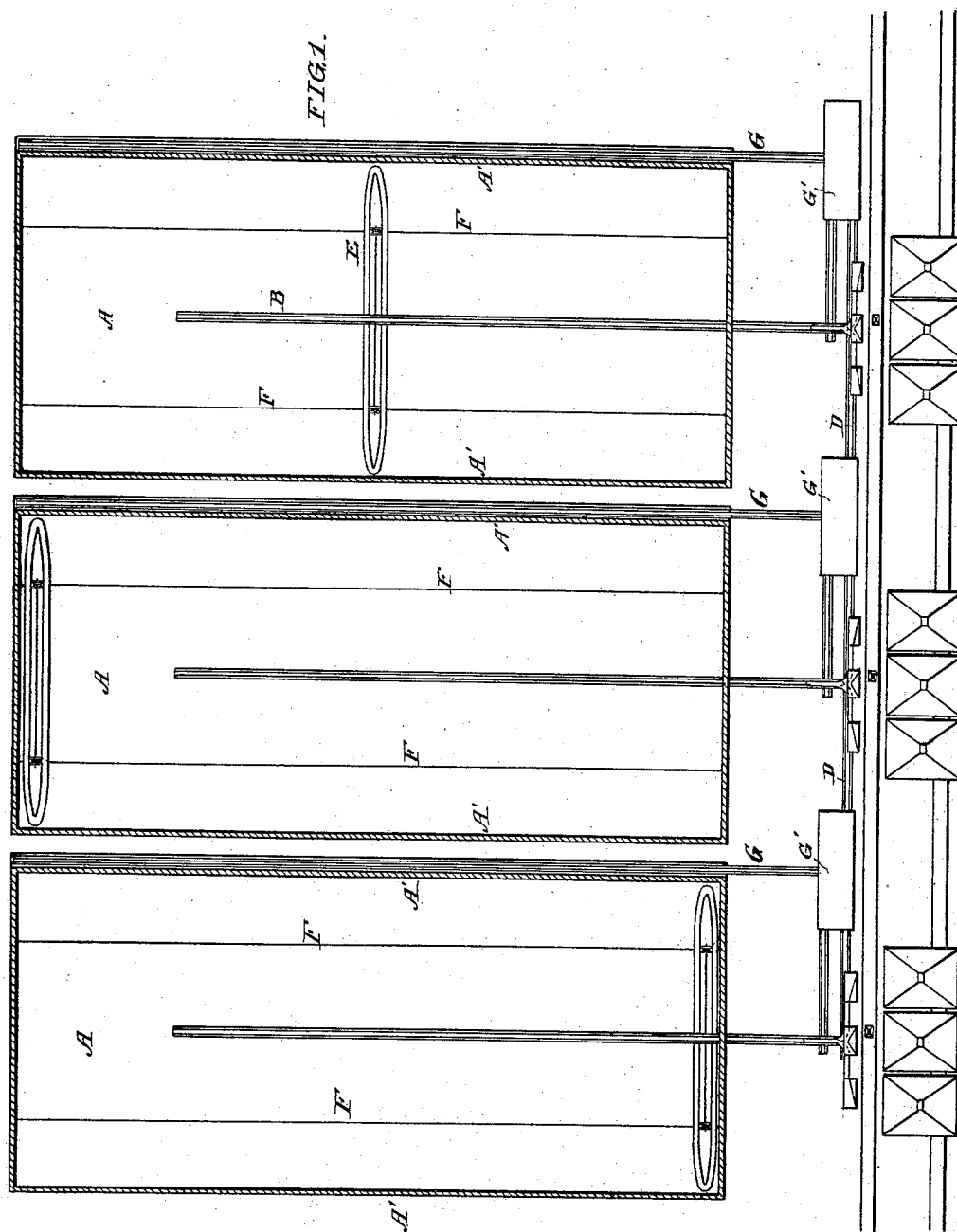
(No Model.)

4 Sheets—Sheet 1.

J. M. DODGE.
APPARATUS FOR STORING COAL.

No. 576,977.

Patented Feb. 9, 1897.



Witnesses:
F. D. Goodwin
Will. A. Barr.

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

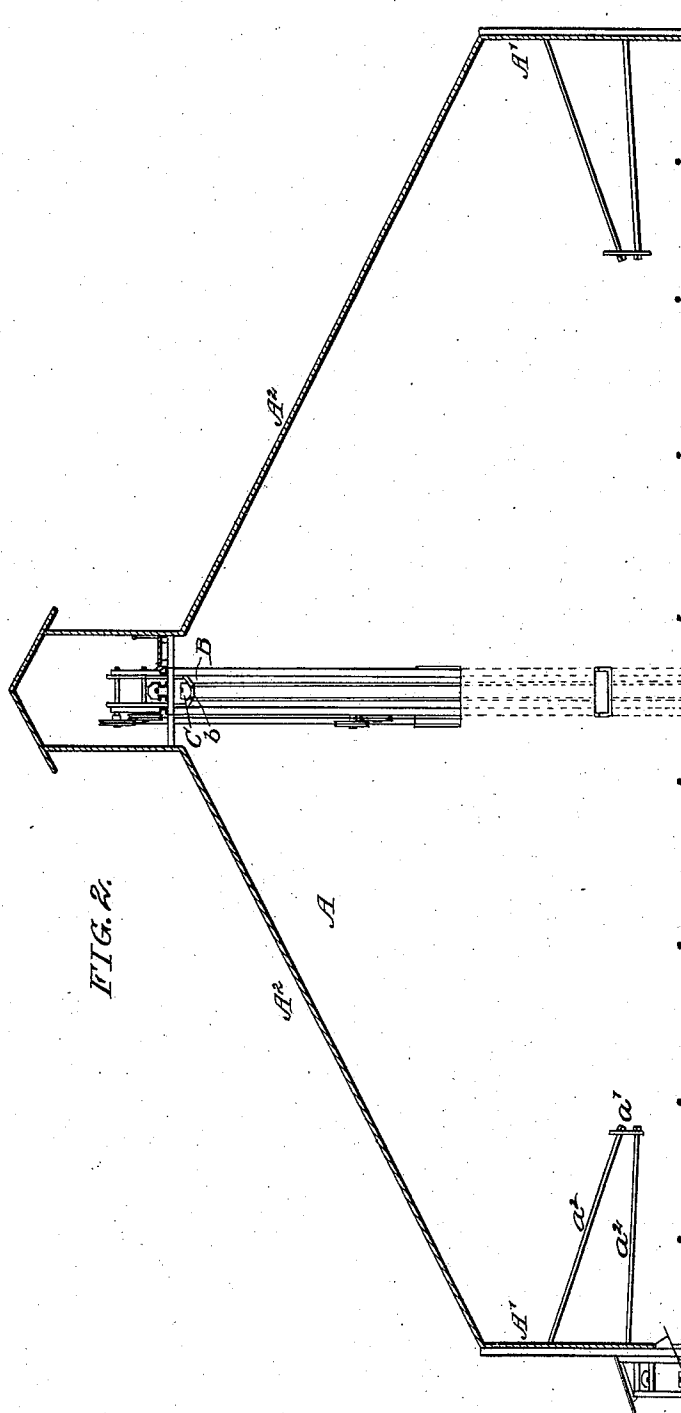
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4 Sheets—Sheet 2.

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4 Sheets—Sheet 3.

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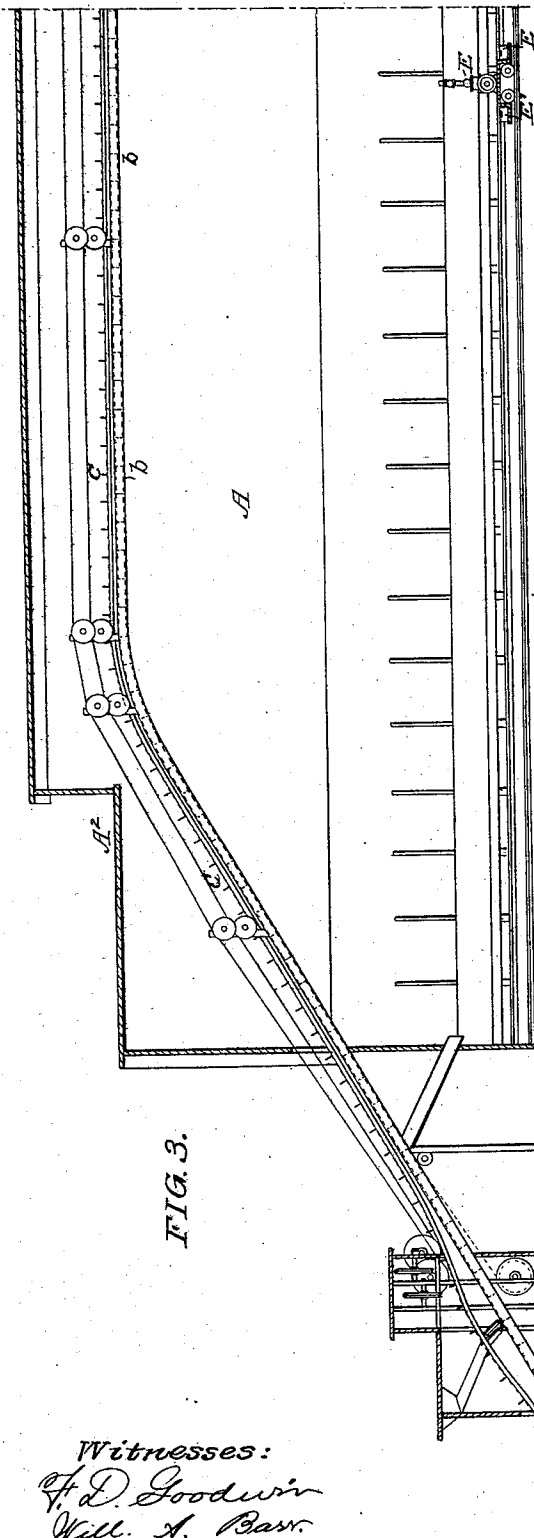


FIG. 3.

FIG. 9.

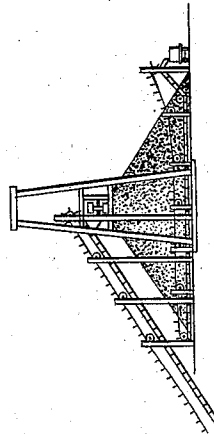
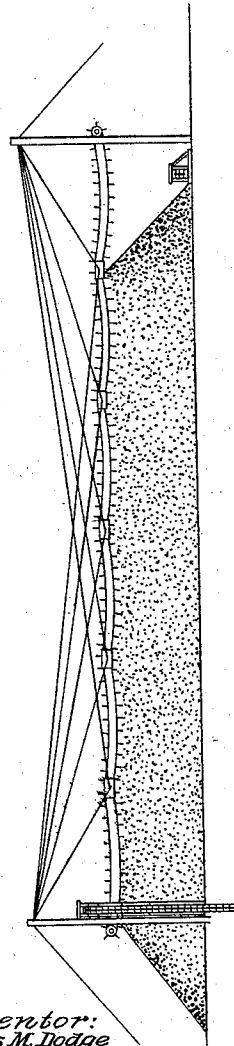


FIG. 8.



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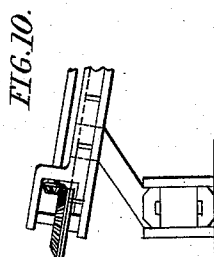
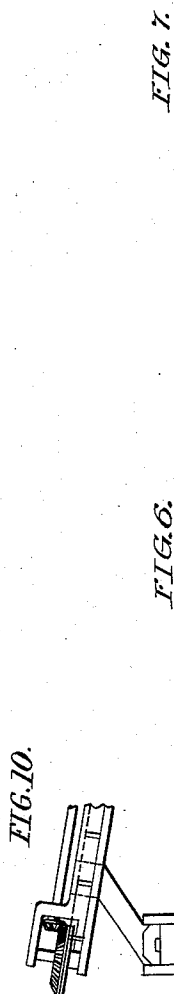
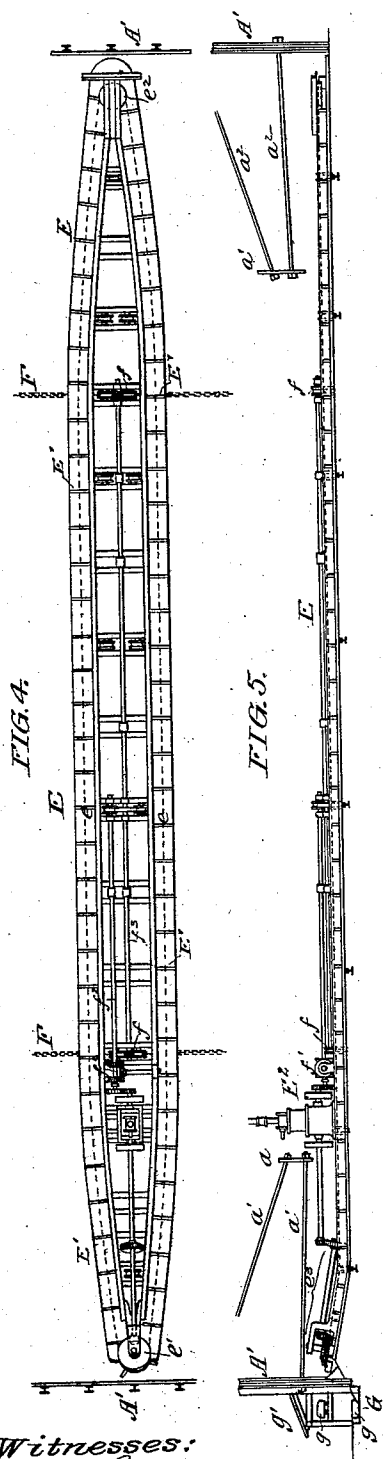
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4 Sheets—Sheet 4.

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UNITED STATES PATENT OFFICE.

JAMES M. DODGE, OF PHILADELPHIA, PENNSYLVANIA.

APPARATUS FOR STORING COAL.

SPECIFICATION forming part of Letters Patent No. 576,977, dated February 9, 1897.

Application filed July 31, 1895. Serial No. 557,773. (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
5 Improvements in Apparatus for Storing Coal and other Material, of which the following is a specification.

The object of my invention is to store coal and other material in longitudinal piles by an
10 overhead conveyer or conveyers and remove the coal from the pile by transverse conveyers extending the width of the pile and adapted to travel longitudinally along the piling-floor and deliver the material to a conveyer at one
15 side of the pile, which conveyer will deliver the material at a fixed point. This object I attain in the following manner, reference being had to the accompanying drawings, in which—

20 Figure 1 is a diagram plan view illustrating storage structures for three independent piles of coal. Fig. 2 is a transverse sectional view through one of the structures. Fig. 3 is a longitudinal sectional view. Fig. 4 is a plan
25 view of the remover, showing its relation to the side walls of the structure. Fig. 5 is a side view of the remover. Figs. 6 and 7 are detail views showing the discharge-troughs at the side of the structure. Figs. 8 and 9
30 are views of a modification, showing the arrangement of the conveyer without using side walls and roof and showing a different manner of suspending the overhead conveyer. Fig. 10 is a detail view of a modification here-
35 inafter referred to.

While my invention is especially adapted for use in piling coal in large quantities, it will be understood that it may be used for piling any material which can be piled in bulk.

40 By the present invention I am enabled to form comparatively narrow piles on a plot of ground, the piles being isolated one from the other, so that coal of different grades can be piled. By making the pile in the shape shown
45 I am enabled to carry one grade of coal at one end of the structure and another grade at the other end, and by mounting the remover between the two grades of coal I am enabled to remove the coal from either end at will.

50 A are the storage structures, three in the present instance, arranged side by side, as shown clearly in Fig. 1. These structures are

in the form of longitudinal bins having side walls A' and a roof or cover A², which is so
trussed as to span the pile.

55 Hung from the roof A² is a conveyer-trough B, having a bottom b, in the present instance in the form of a traveling ribbon of the construction fully described in the United States patent granted to me on the 17th day of Feb-
60 ruary, 1891, and numbered 446,436, or it may be a fixed bottom having a series of valved openings, so that the discharge-point of the conveyer-trough can be advanced as the pile increases in length. In this conveyer-trough
65 B is mounted an ordinary flight-conveyer C, the return run of which travels above the trough, as clearly shown in Figs. 2 and 3. This conveyer-trough B receives material from a conveyer-trough D, common to all the
70 storage structures, though where a single structure is used the conveyer-trough B may receive material directly from a tower or elevator, as the case may be. The conveyer-
75 trough B, as well as the supports for the conveyer, are carried by the roof-trusses in the present instance, so that the space under the truss and roof is clear for the storage of coal. The conveyer is driven by any suitable mechanism common to this class of machinery.

80 On the storage-floor of the building are in the present instance a series of tracks on which is adapted to travel a removing-conveyer E. (Shown in detail in Figs. 4 and 5.) This removing-conveyer in the present
85 instance has two troughs or ways e e, over which the flights of the conveyer-chain E' travel. The conveyer-chain passes around wheels e' e², one at each end of the remover, and the wheel e' is driven from a motor E²,
90 mounted on the remover through gearing and shafting. (Illustrated clearly in Fig. 5.)

The remover is moved bodily over the piling-floor by means of chains F, adapted to
wheels f f, driven through the gearing f'
95 and shafting f² f³, so that by operating one clutch the remover can be bodily moved against the base of the mass of coal and by throwing in another clutch the conveyer-chain can be thrown into gear, so as to remove coal
100 that will fall by gravity or that will be fed into the trough next the coal pile, so as to convey the coal to one side of the storage structure.

Extending along one side of the storage structure, in the present instance beyond the side walls, is a conveyer-trough G, having a conveyer *g* adapted to travel therein. This 5 conveyer-trough is covered by a suitable casing *g'* and is preferably on or about the same level as the storage-structure floor, and I elevate one end *e*³ of the remover that I may provide an inclined plane *a*, which extends 10 from the end of the remover to the conveyer-trough G, and thus as the coal is removed from the base of the pile it will be carried to the inclined plane and discharged into the conveyer-trough G, in which it will be conveyed by the conveyer *g* to the fixed point G' 15 of discharge.

At intervals throughout the length of the structure I provide swinging gates I, pivoted at *i* to the upright beams forming part of the 20 structure, and I lock these gates in position by double-ended bolts *i'*, which pass through the beams. Consequently by moving the bolts to one side one of the gates may be opened, so as to allow for the free discharge of coal 25 into the conveyer-trough G. In case the gates should have a tendency to stick I provide sockets *i*², in which may be placed bars, so that pressure may be exerted to open the gates or to control the flow of coal through the gateways. 30

In some instances the conveyer G may be arranged in a tunnel below the floor-level within the storage structure, as shown clearly in Fig. 10, or may be arranged in a covered 35 way on the inside of the walls of the structure in the same manner as the covered way shown in full lines in Fig. 5.

I suspend within the side walls anchor-plates *a'*, tied to the side walls A' by rods *a*², 40 and these anchor-plates are so suspended that the removing-conveyer will pass freely under them. By this means I am enabled to build a comparatively light retaining-wall for the material, and yet when the coal is piled within the structure the walls will be of 45 sufficient strength to withstand the pressure of the coal, as described and claimed in the patent granted on the 14th day of May, 1895, and numbered 539,250.

50 It will be seen that any number of these buildings can be arranged in a row and that the overhead conveyer used for piling the

coal may be carried by suspended guides when a roof is not required, as illustrated in Fig. 8.

The end portion *e*³ of the remover may be 55 elevated to such an extent as to discharge directly into a car instead of into a conveyer-trough, as shown in Fig. 9, in which instance a track would be arranged along the edge of 60 the pile or structure and a sufficient number of cars could be switched onto the track to enable the remover to load directly into the cars.

I claim as my invention—

1. An apparatus for storing coal, &c., comprising a quadrangular floor on which material may be piled, a conveyer-trough extending 65 along one side of the floor, a conveyer therein, a traveling conveyer mounted on the floor, conveying mechanism thereon adapted to discharge into the conveyer at the side of 70 the floor, and means for moving the traveling conveyer along the floor on a line parallel with the fixed conveyer-trough at the side, substantially as described. 75

2. An apparatus for storing coal, &c., comprising a piling-conveyer, the receptacle at one side of the floor into which material is 80 discharged, a traveling conveyer extending across the floor and mounted thereon, with means for moving the conveyer bodily on the floor, and conveying mechanism carried by 85 said traveling conveyer adapted to receive material and discharge it into the receptacle at the side, said conveyer being elevated at the discharge end so that the material after 90 being discharged will fall by gravity into the receptacle, substantially as described.

3. An apparatus for storing coal, &c., comprising a piling-floor, a removing-conveyer 95 adapted to travel thereon, a conveyer at the side of the floor into which the removing-conveyer discharges, and side retaining-walls for the material piled upon the floor, the wall adjoining the side conveyer having openings 95 therein, and gates for said openings, substantially as described.

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.