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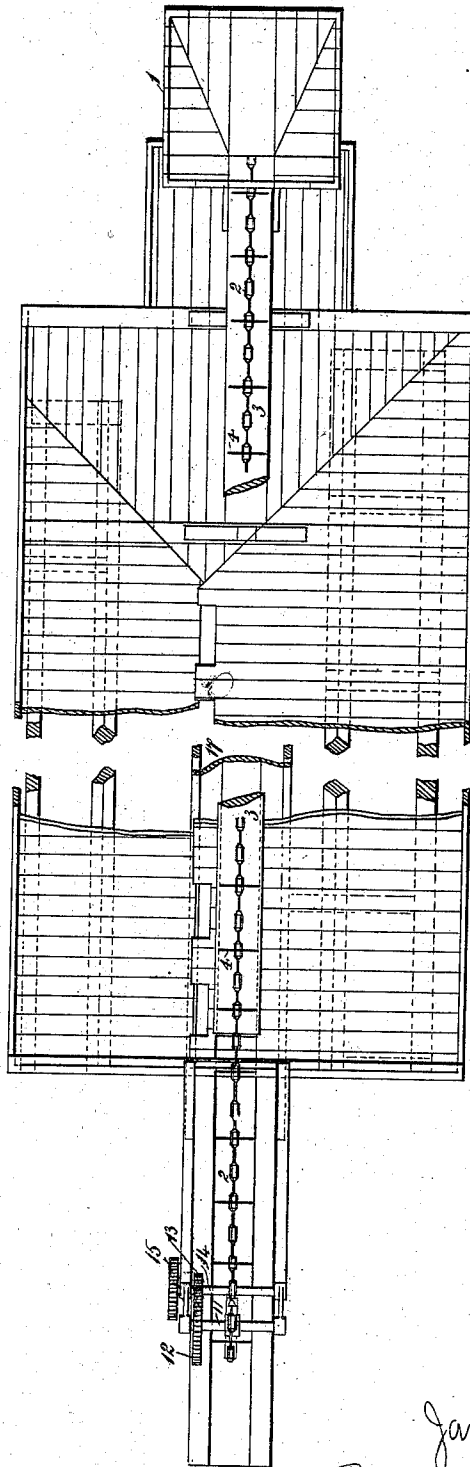
3 Sheets—Sheet 1.

J. H. MITCHELL.
PLANT FOR STORAGE OF COAL.

No. 562,408.

Patented June 23, 1896.

Fig. 1.



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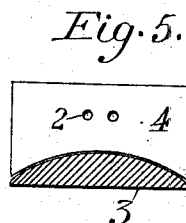
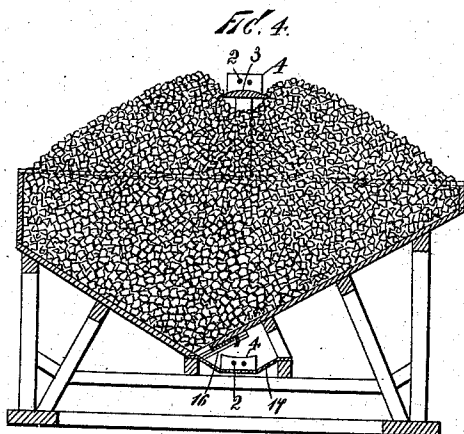
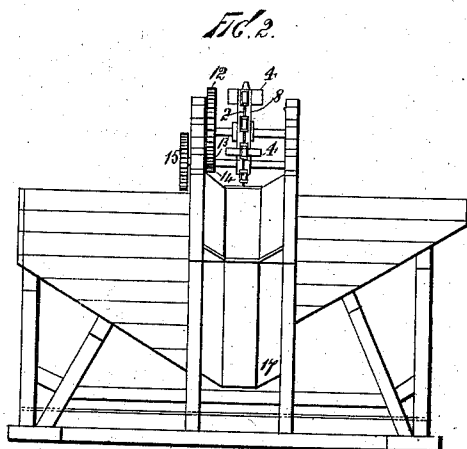
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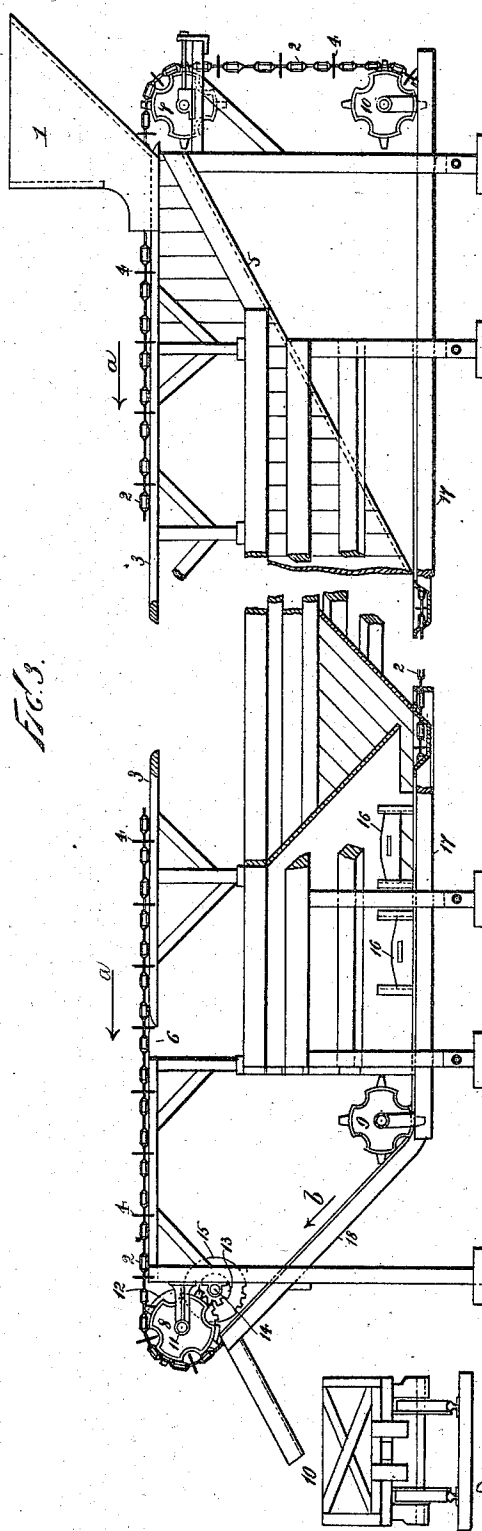
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UNITED STATES PATENT OFFICE.

JAMES H. MITCHELL, OF PHILADELPHIA, PENNSYLVANIA.

PLANT FOR STORAGE OF COAL.

SPECIFICATION forming part of Letters Patent No. 562,408, dated June 23, 1896.

Application filed January 11, 1895 Serial No. 534,533. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. MITCHELL, a citizen of the United States, residing in Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Plants for the Storage of Coal, of which the following is a specification.

My invention relates especially to means and mechanism for storing coal in bulk in a bin, and delivering the same therefrom, and has for its object the provision of simple devices whereby coal may be piled in a long bin by means of a single drag-conveyer, said conveyer being also employed for redelivering the coal from the bin, which is so constructed as to enable the conveyer to carry the moving coal from below without danger of clogging by a sudden flow of coal.

To attain the desired end, my invention involves certain novel and useful combinations or arrangements of parts and peculiarities of construction and operation, all of which will be hereinafter first fully described, and then pointed out in the claims.

In the accompanying drawings, forming a part hereof, Figure 1 is a plan view, and Fig. 2 an end elevation, of my plant for the storage of coal. Fig. 3 is a side elevation and partial section thereof. Fig. 4 is a vertical cross-sectional view at line *xx* of Fig. 2. Fig. 5 shows a section of the upper slideway and a flight resting thereon.

1 is a hopper into which the coal is dumped or supplied in any suitable manner, by a coal-elevator, or directly from the cars. Passing through the bottom of the hopper 1 is the upper portion of the drag conveyer-chain 2, which travels in the direction indicated by the arrows *a* when the conveyer is in operation for filling the bin. Located below the upper portion of the conveyer-chain is a slideway 3, having without sides its face ovoid in cross-section, as particularly illustrated in Figs. 3 and 4. 4 are flights, secured to the conveyer or drag chain, the lower edge of said flights, which come in contact with the slideway 3, conforming to the surface thereof, and the opposite edge of the flights being preferably made square, for the purpose hereinafter described. The slideway extends beneath the hopper 1, forming its bottom, and the drag-chain is made to pass through said hopper,

and as the direction of travel of the chain is from right to left, it carries the coal out from the hopper 1 by the action of the flights. The coal immediately upon passing out from the hopper 1 commences to slide from the center of the slideway to each edge from whence it drops, coming in contact with a chute 5, which forms a continuation of the end wall of the bin at an angle of about thirty degrees, such an angle of inclination permitting the coal to slide freely, but without undue force. As the coal continues to enter this chute 5, it will pile up until it reaches back up the chute to the hopper 1, and as coal continues to be supplied from the hopper, it will commence to accumulate forward in the direction of travel of the conveyer-chain, the coal itself forming the sides of the conveying-channel on each side of the slideway 3, this feature being fully illustrated in Fig. 4.

It is a well-known fact that coal will pile at an angle of thirty degrees, or substantially that angle, and thus the elongated bin will be gradually filled, the complete filling being accomplished from one end toward the other by the coal passing over the slideway 3 until it reaches such a position upon said slideway as to fall therefrom, and then after that portion of the bin is filled the coal will pile at the sides of the slideway, extending the channel of coal until the bin is completely filled.

From the foregoing description it will be readily seen that the coal cannot drop any material distance from the slideway to the bin, as owing to the mechanical construction and action of all the parts, it is a system of elongated piling of the coal at an angle of about thirty degrees, whereby the direct dropping of the lumps of coal is entirely obviated, and at the same time there is freedom of sliding movement and dragging motion of the conveyer-chain and flights, as they are at all times supported by the slideway 3, over which they travel. I do not confine myself to the oval cross-section of the slideway shown, as the face thereof may be made more flat or the curve made greater, without departing from the spirit of my invention, the object being to give such a side inclination as to cause the coal in its forward travel to work its way toward the edge of the slideway 3, and after leaving it, to pile at an angle of about thirty

degrees, and also form sides to the conveying-channel. The slideway 3 is broken at 6, so that none of the coal will be conveyed beyond the end of the bin.

5 The conveyer-chain 2 passes over suitable sprocket-wheels 7, 8, 9, and 10, the shaft 11 upon which sprocket-wheel 8 is mounted being provided with a gear 12, which meshes with a gear 13 upon a shaft 14, power being
10 applied thereto by means of a wheel 15.

In unloading the coal from the bin, the chain 2, with its flights 4, is caused to travel in the opposite direction from that above described, as indicated by the arrow *b*. At the
15 bottom of the body of the bin are openings, provided with sliding doors 16. These openings should be arranged along the entire length of the bin a short distance apart. They open out from the bin into a lower slide-
20 way 17, the sides of which are at an angle of substantially thirty degrees. From the arrangements of the openings in the bottom of the bin, it will be readily seen that the coal enters the slideway 17 from the side, and
25 comes in contact with the traveling flights 4, located upon the drag-chain 2, and it is then carried forward in the direction of the arrow *b*, up the incline 18, to a sufficient elevation to enable it to pass to a coal-car 19, or other
30 receptacle. The openings in the bottom of the bin are of sufficient width to permit the coal to pass out freely, and at the same time, if an excess of coal should accumulate in the slideway 17, it will be stopped from further
35 passing out of the bin by automatically choking itself off by the accumulation in the slideway, and the coal will not commence to flow out of the bin again until the excess is removed by the action of the flights upon the
40 chain 2. In emptying the bin, it is preferable to open the door 16 nearest to the car or other receptacle to be filled, and after the coal having direct communication with this open-

ing has been removed, open the next succeeding door, and so continue until the contents 45 of the bin is exhausted. It will be observed that the flights 4 do not completely fill the slideway 17, the ends of the flights being vertical and the sides of the slideway at an angle of substantially thirty degrees. The ob- 50 ject of this construction is to permit each flight to carry its quota of coal, the excess dropping back to be taken by the next flight, and by this means the entire mass is easily carried forward, and at the same time if too 55 much coal escapes from the bin, the excessive quantity will be distributed equally, as described. If the flights 4 completely fill the slideway 17, it would cause a choking and jamming of coal in front of the flights. 60

It will thus be seen that my arrangement of bin and conveying mechanism is admirably adapted for storing and for loading coal from the bin, the mechanism being automatic in action, simple in construction and operation. 65

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In a plant for the storage of coal, a bin for the reception of the coal; an elevated slide- 70 way, without sides, the face whereof is convex, and a conveyer-chain provided with flights the edges whereof conform to the face of the slideway, the whole combined and arranged to operate, substantially as shown and de- 75 scribed.

2. In a plant for the storage of coal, a conveying-chain, provided with flights having one edge concave, in combination with an elevated slideway the face whereof over which 80 the flights travel is convex, substantially as shown and described.

JAMES H. MITCHELL.

Witnesses:

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