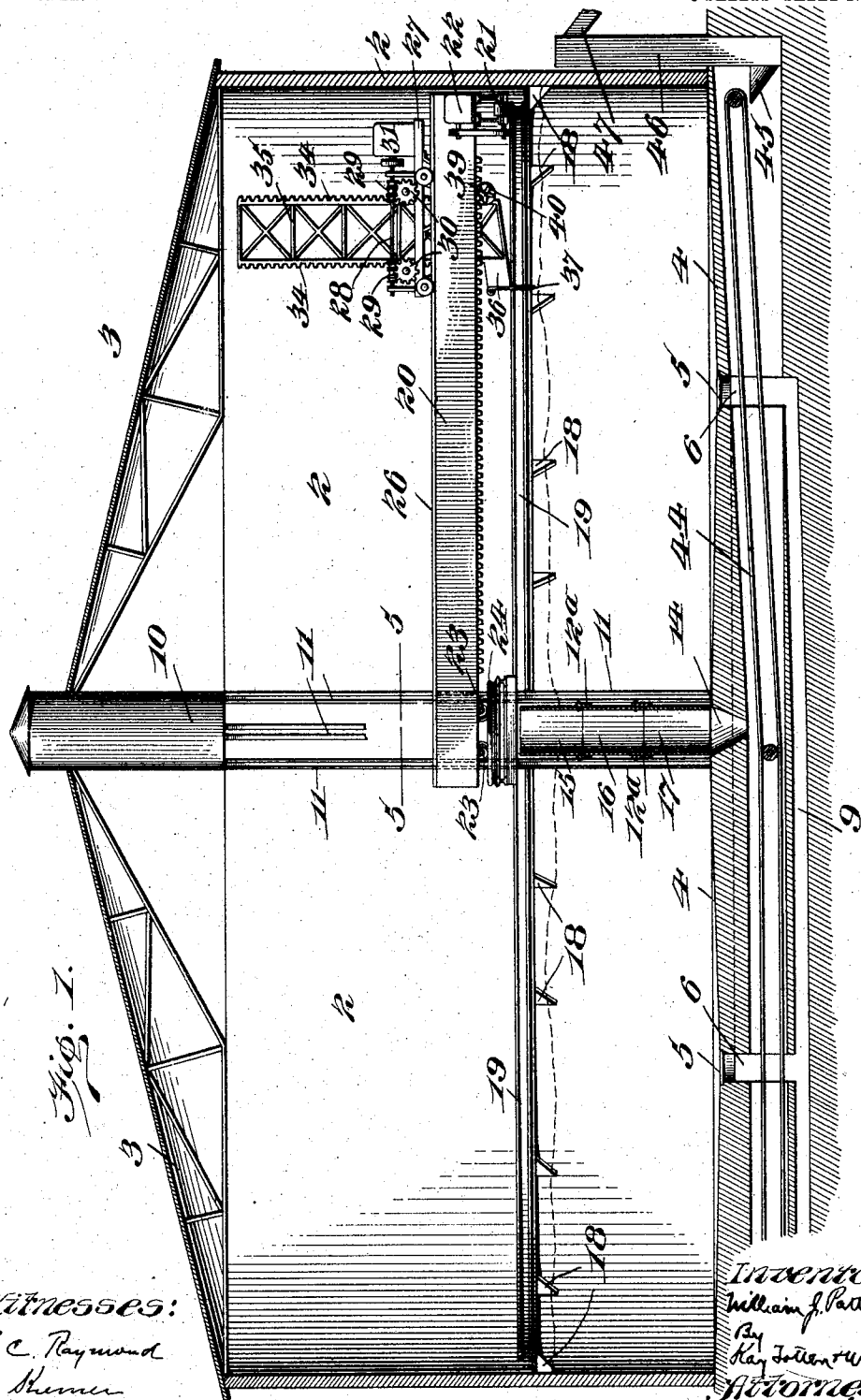


W. J. PATTERSON.
COAL STORAGE PLANT.

APPLICATION FILED JULY 20, 1903. RENEWED JULY 22, 1904.

NO MODEL.

3 SHEETS—SHEET 1.



No. 772,956.

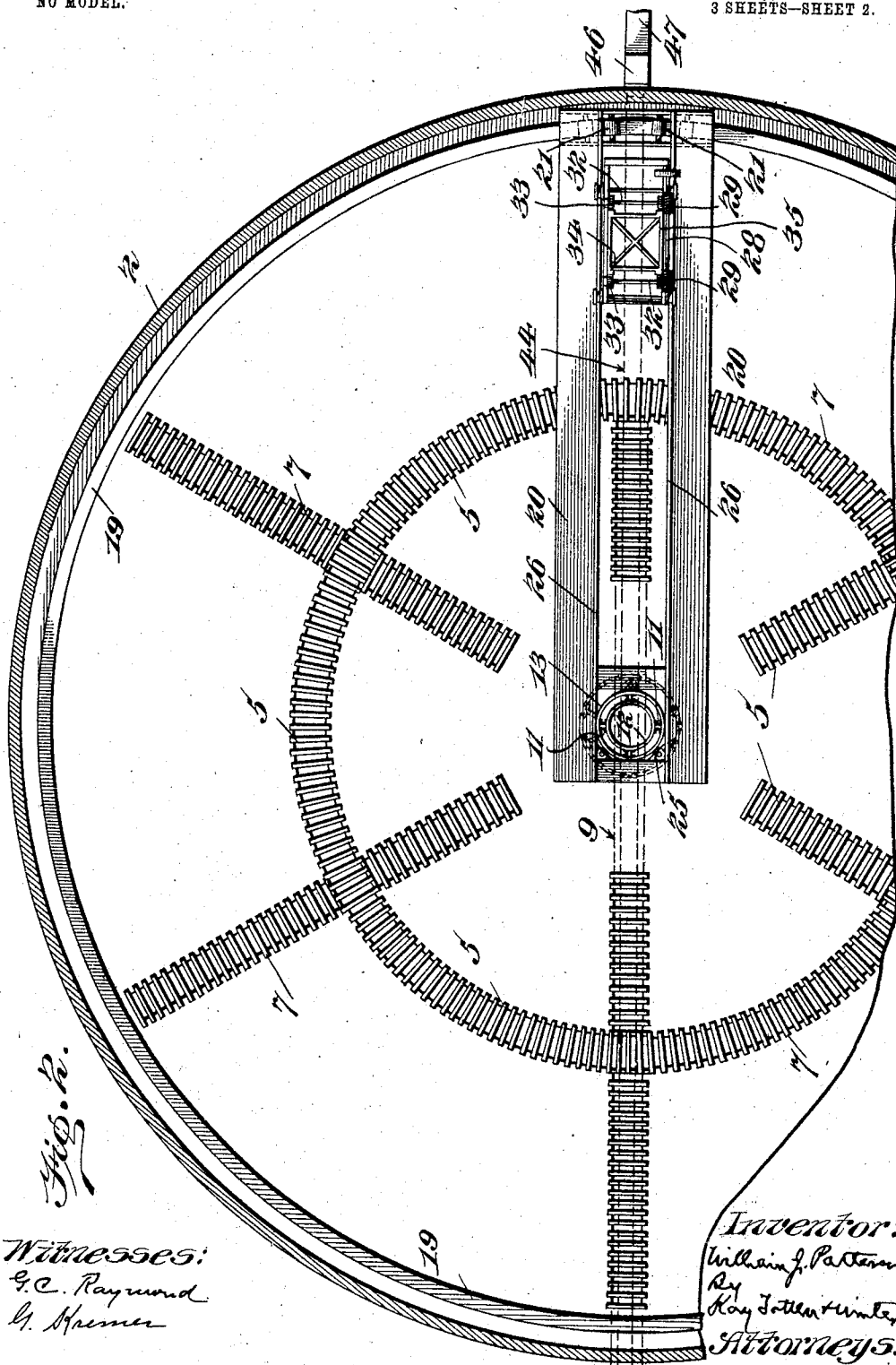
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3 SHEETS—SHEET 2.



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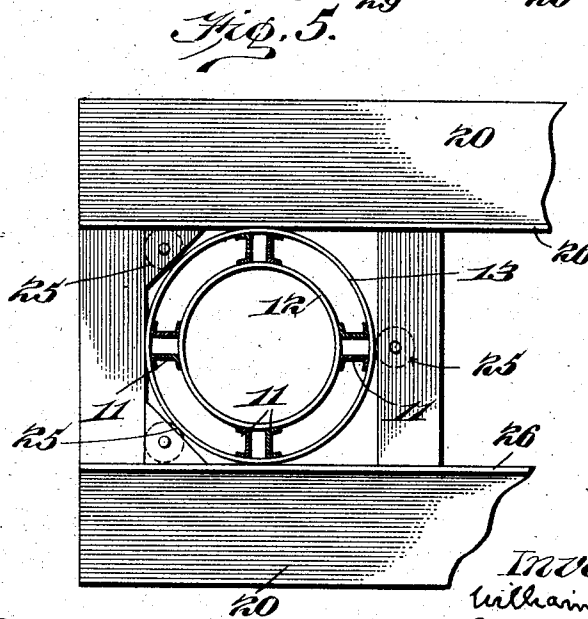
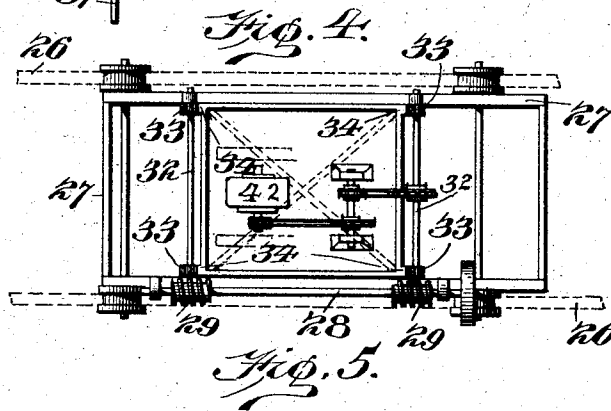
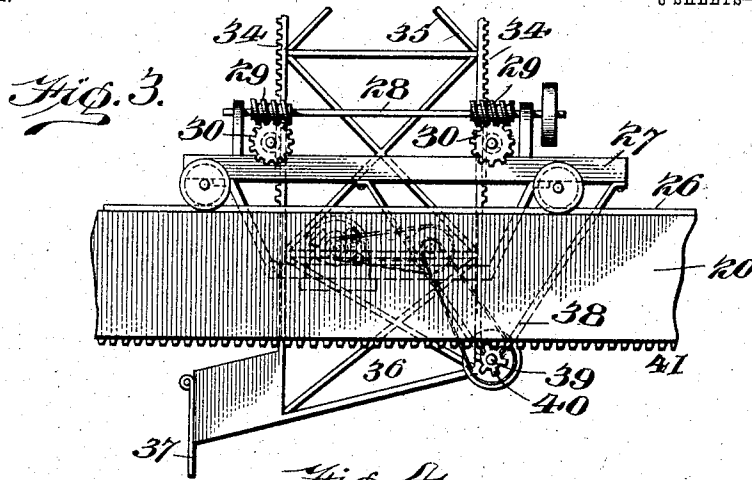
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NO MODEL.

3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

WILLIAM J. PATTERSON, OF PITTSBURG, PENNSYLVANIA.

COAL-STORAGE PLANT.

SPECIFICATION forming part of Letters Patent No. 772,956, dated October 25, 1904.

Application filed July 20, 1903. Renewed July 22, 1904. Serial No. 217,629. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. PATTERSON, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Coal-Storage Plants, (Case No. 1;) and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a coal or like storage plant, and more especially to the style of storage plant set forth and claimed in an application filed on the 20th day of July, 1903, Serial No. 166,350, by Alfred M. Acklin, in which a vertically-moving and horizontally-swinging frame is employed, carrying a scraper adapted to move back and forth on said frame and scrape the coal or other material from the top of the pile to the center thereof, where the coal passes, by an outlet, to suitable conveying mechanism, to be carried to the point of loading.

My invention relates to an improvement of the broad invention set forth and claimed in the above-named application, and I will describe the same with reference to the accompanying drawings, in which—

Figure 1 is a sectional elevation of a suitable tank or bin with my invention applied thereto. Fig. 2 is a horizontal sectional view of my improved storage plant. Fig. 3 is an enlarged detail view, partly broken away, of the scraping device. Fig. 4 is a plan view of same, and Fig. 5 is an enlarged section on the line 5 5, Fig. 1.

Like numerals indicate like parts in each of the figures.

In the drawings the numeral 2 designates a suitable tank or bin (where such is employed) with the sloping top 3 and built upon a suitable foundation of concrete, brick, or other suitable material. The floor 4 of the tank or bin is formed sloping from the center and sides to the annular grating 5, which communicates with the annular conduit 6. The radial gratings 7 extend from the walls of the tank or bin toward the center of the bin, beyond the gratings 5, said grating 7 communicating with corresponding radial conduits which communicate with the annular conduit 6, so that any water or moisture in the mate-

rial stored within the tank will be drained toward the gratings 5 and 7 and will be carried off through the conduits 6, communicating with a main conduit 9.

The tank or bin 2 is preferably circular in form, and located at or about the center thereof is the upright frame or pillar 10, which is adapted to support the roof 3. This pillar 10 is composed of the channel-beams 11, supported upon the floor 4 and extending up therefrom, said channel-beams being connected by the inner rings 12 and the outer ring 13. The channel-beams 11 are arranged upon the floor 4 around the outlet 14, and held within the framework formed by said beams 11 are the tubular sections 15, 16, and 17, the bottom section 17 resting upon the floor 4, the next section 16 resting upon the section 17, and the section 15 resting upon the section 16. These tubular sections are surrounded by the rings 12^a and are adapted to be lifted one at a time for the purpose fully hereinafter set forth.

Supported upon the brackets 18 at a suitable height on the inner walls of the tank 2 is the circular track 19, and on said track is adapted to travel the outer end of the frame 20, said frame having the rollers 21, adapted to run on said track and connected up in a suitable manner to the motor 22. The inner end 80 of the frame 20 surrounds the central pillar 10 and is provided with the wheels 23, which travel upon the circular track 24, secured to the pillar 10. The inner end of the frame 20 is further provided with the friction-rollers 25, adapted to bear against the ring 13, surrounding the pillar 10, so as to hold the inner end of said frame in proper position.

Mounted upon the tracks 26 of the frame 20 is the carriage 27, said carriage having the worm-shaft 28, with the worms 29 thereof engaging the worm-wheels 30. The shaft 28 is driven by a suitable motor 31, mounted on said carriage. The worm-wheels 30 are mounted on the shafts 32, journaled in the carriage 27, said shafts carrying the pinions 33, adapted to mesh with the racks 34 on the vertically-movable frame 35. The frame 35 extends down between the rails 26 of the frame 20, and through the mechanism above

described is adapted to be raised and lowered. This frame 35 carries at its lower end the scraper 36, consisting of a hinged plate 37, supported on its rear face so that as the

5 scraper advances toward the center of the bin no swinging movement is permitted, but upon the return movement said scraper is free to swing so as to override any obstacles in its path.

10 The carriage 27 has a downwardly-extending frame 38, within which is journaled the shaft 39, said shaft carrying the pinions 40, adapted to mesh with the racks 41 on the under face of the frame 20. A suitable motor 42, carried by the carriage 27, is adapted

15 to operate the pinions 40, so as to move the carriage along the frame 20 to or from the center of the bin, said motor being connected up to shaft 39 by any suitable driving connections. 20 In proper position with reference to the outlet 14 is the conveyer 44, adapted to convey the material discharged through said opening to the hopper 45, whence it is carried up by a suitable conveyer contained in the frame 46 to

25 the discharge-hopper 47, whence it may pass into a car or other suitable receptacle. As any suitable form of conveying apparatus may be employed for this purpose, it has not been deemed necessary to illustrate the same in detail. 30

While I have illustrated and described my invention in connection with a tank or bin, yet it is apparent that it may be applied to any suitable open storage-platform or to a

35 covered platform without sides. When it is desired to remove coal or other material from the bin 2 where the coal is stored at a height represented by the dotted line in Fig. 1, the upper tubular section 15 is

40 lifted, which will cause the coal adjacent thereto to fall down through the sections 16 and 17 to the outlet 14, whence it passes onto the conveyer 44. At the same time the scraper 36 is lowered into proper position with reference to the top of the coal, and power is then

45 applied to the motor to move the carriage 27 toward the center of the bin. The scraper will act to scrape the coal toward the center of the bin, and the coal will be carried through

50 the sections 16 and 17 to the outlet and discharged upon the conveyer 44. The frame 20 is then shifted around horizontally and, the carriage 27 having been returned to the outer end of the frame by the reversal of the

55 motor, power is again applied to move the carriage toward the center and the coal scraped as before. In this manner the coal is scraped on radial lines from different sections of the bin until the frame has made a complete revolution, whereupon the frame 35 is lowered

60 sufficiently to bring the scraper into contact with the top of the coal for the scraping of another layer of coal. The lowering of the scraper is accomplished by power from the

65 motor 31, through the worm and mechanism

connected therewith, which lowers the frame 35. If necessary, the tubular section 16 is now elevated, and the coal is then scraped from the top of the pile to the center and passes through the section 17 to the outlet. 70 Finally the section 17 may be raised. In this manner all the coal contained within the bin may be removed therefrom, the coal being taken evenly from the top of the pile and discharged onto the conveyer in regular quantities. 75

What I claim is—

1. In a coal, or like, storage plant, the combination of a suitable platform having a discharge-outlet at, or adjacent to, the center 80 thereof, a frame supported above said platform, a carriage on said frame adapted to move to and from said outlet, and a vertically-movable scraper on said carriage.

2. In a coal, or like, storage plant, the combination with a suitable platform having a discharge-outlet at, or adjacent to, the center 85 thereof, a frame supported above said platform, a carriage on said frame adapted to move to and from said outlet, a vertically-movable frame on said carriage, and a scraper 90 supported by said vertically-movable frame.

3. In a coal, or like, storage plant, the combination with a suitable platform having a discharge-outlet at, or adjacent to, the center 95 thereof, a frame supported above said platform, a carriage on said frame adapted to move to and from said outlet, a vertically-movable frame on said carriage having rack-faces, pinions on said carriage engaging said 100 rack-faces, and a scraper carried by said vertically-movable frame.

4. In a coal, or like, storage plant, the combination with a suitable platform having a discharge-outlet at, or adjacent to, the center 105 thereof, a frame supported above said platform, a carriage on said frame adapted to move to and from said outlet, a vertically-movable frame on said carriage having rack-faces, pinions on said carriage engaging said 110 rack-faces, worms and worm-wheels on said carriage driving said pinions, and a scraper carried by said vertically-movable frame.

5. In a coal, or like, storage plant, the combination with a suitable platform having a discharge-outlet at, or adjacent to, the center 115 thereof, a frame supported above said platform, a carriage on said frame adapted to move to and from said outlet, a vertically-movable scraper supported by said carriage, 120 said frame having a rack thereon, and a pinion on said carriage engaging said rack.

6. In a coal, or like, storage plant, the combination with a suitable platform having a discharge-outlet at, or adjacent to, the center 125 thereof, a frame supported above said platform, a carriage on said frame adapted to move to and from said outlet, a vertically-movable scraper supported by said carriage, said frame having a rack on the lower face 130

thereof, and a pinion on said carriage engaging said rack.

7. In a coal, or like, storage plant, the combination with a suitable platform having a discharge-outlet at, or adjacent to, the center thereof, a horizontally-movable frame supported at, or about the center of said platform and at, or adjacent to, the outer edge of said platform, and a scraper carried by said frame adapted to travel to and from said outlet.

8. In a coal, or like, storage plant, the combination with a suitable platform having a discharge-outlet at, or adjacent to, the center thereof, a horizontally-movable frame supported at, or about, the center of said platform, a circular track supporting the outer end of said frame, and a scraper carried by said frame adapted to move to and from said outlet.

9. In a coal, or like, storage plant, the combination with a suitable bin having a discharge-outlet at, or adjacent to, the center thereof, a horizontally-movable frame supported at, or about, the center of said bin, a circular track

supported by the inner walls of said bin, a roller on the outer end of said frame engaging said track, and a scraper carried by said frame adapted to move to and from said outlet.

10. In a coal, or like, storage plant, the combination with a suitable platform having a discharge-outlet at, or adjacent to, the center thereof, a removable tube, or chute, connected to said outlet, and a scraper supported above said platform adapted to move to and from said outlet.

11. In a coal, or like, storage plant, the combination with a suitable platform having a discharge-outlet at, or adjacent to, the center thereof, a tube, or chute, composed of two or more removable sections connected to said outlet, and a scraper supported above said platform adapted to move to and from said outlet.

In testimony whereof I, the said WILLIAM J. PATTERSON, have hereunto set my hand.

WILLIAM J. PATTERSON.

Witnesses:

ROBERT C. TOTTEN,
G. C. RAYMOND.