

(No Model.)

2 Sheets—Sheet 1.

J. M. DODGE.
APPARATUS FOR PILING COAL.

No. 502,555.

Patented Aug. 1, 1893.

FIG. 1.

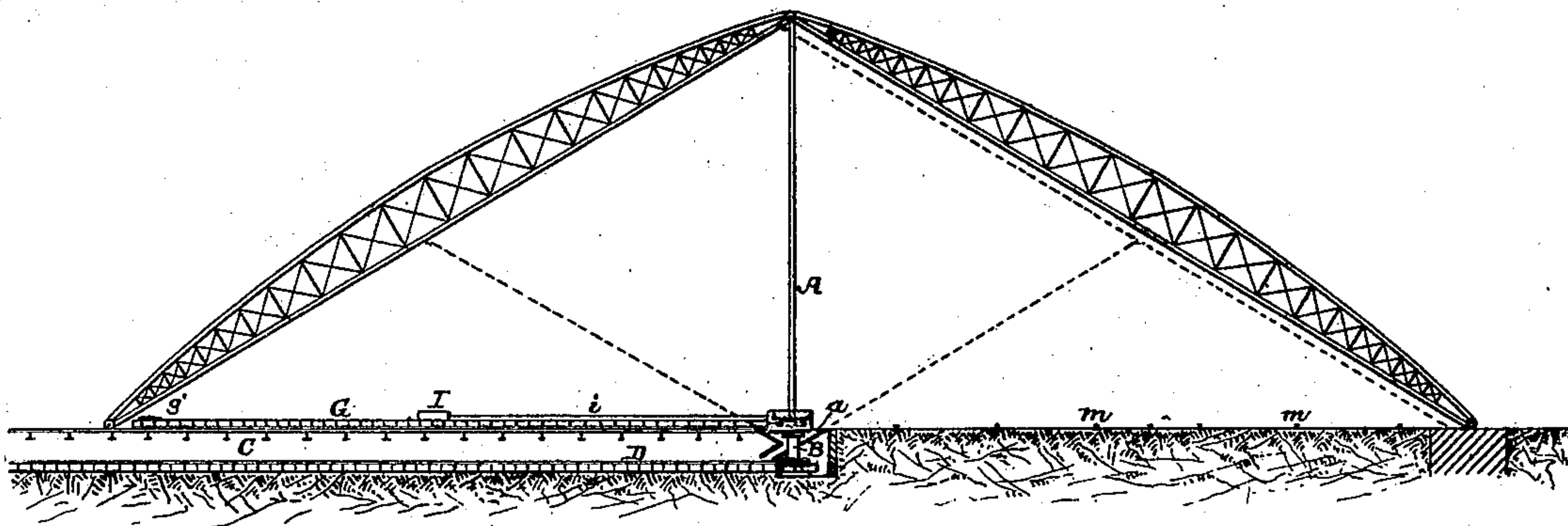
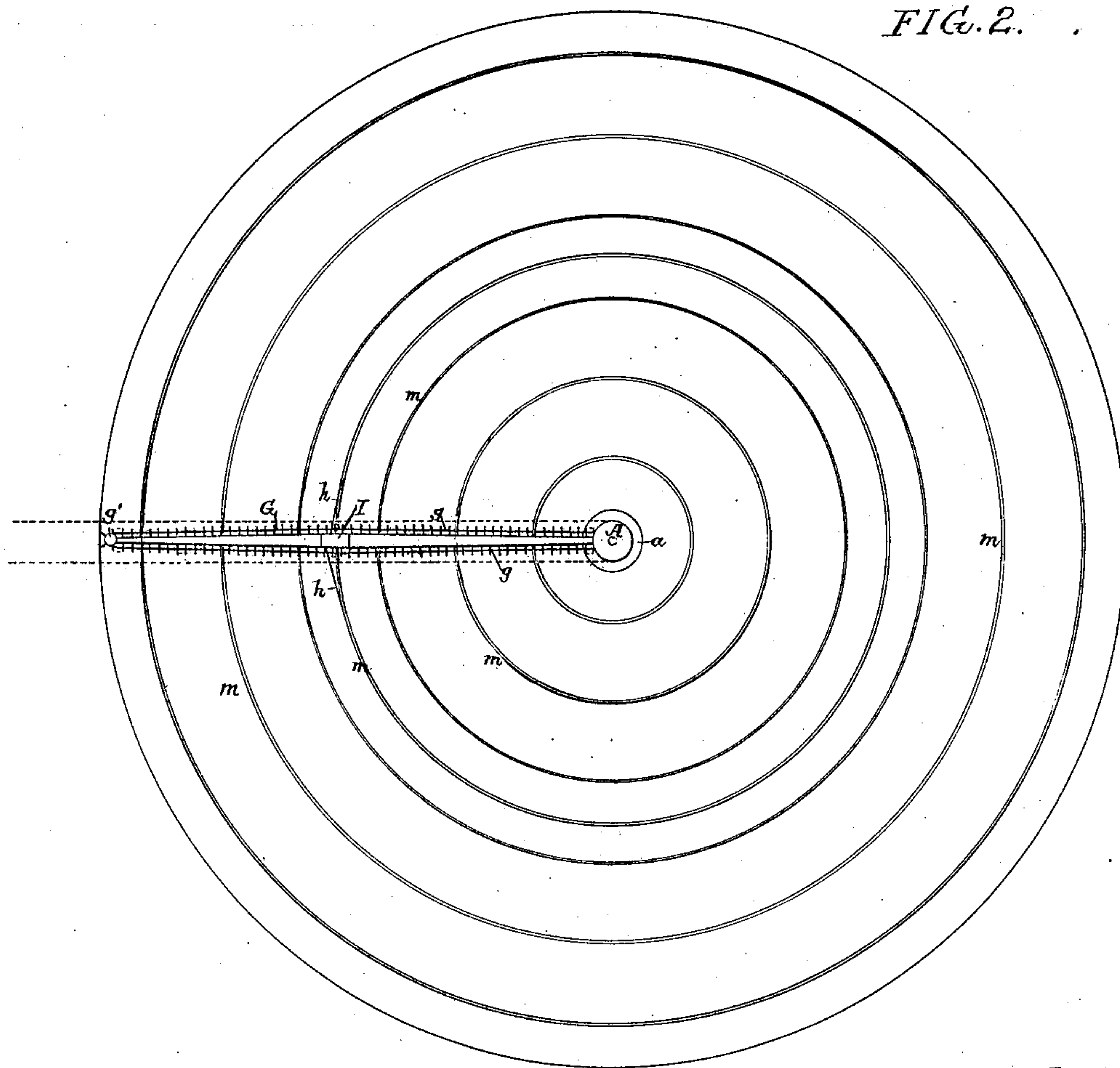


FIG. 2.



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Inventor:
James M. Dodge
by his Attorneys
Horn & Shum

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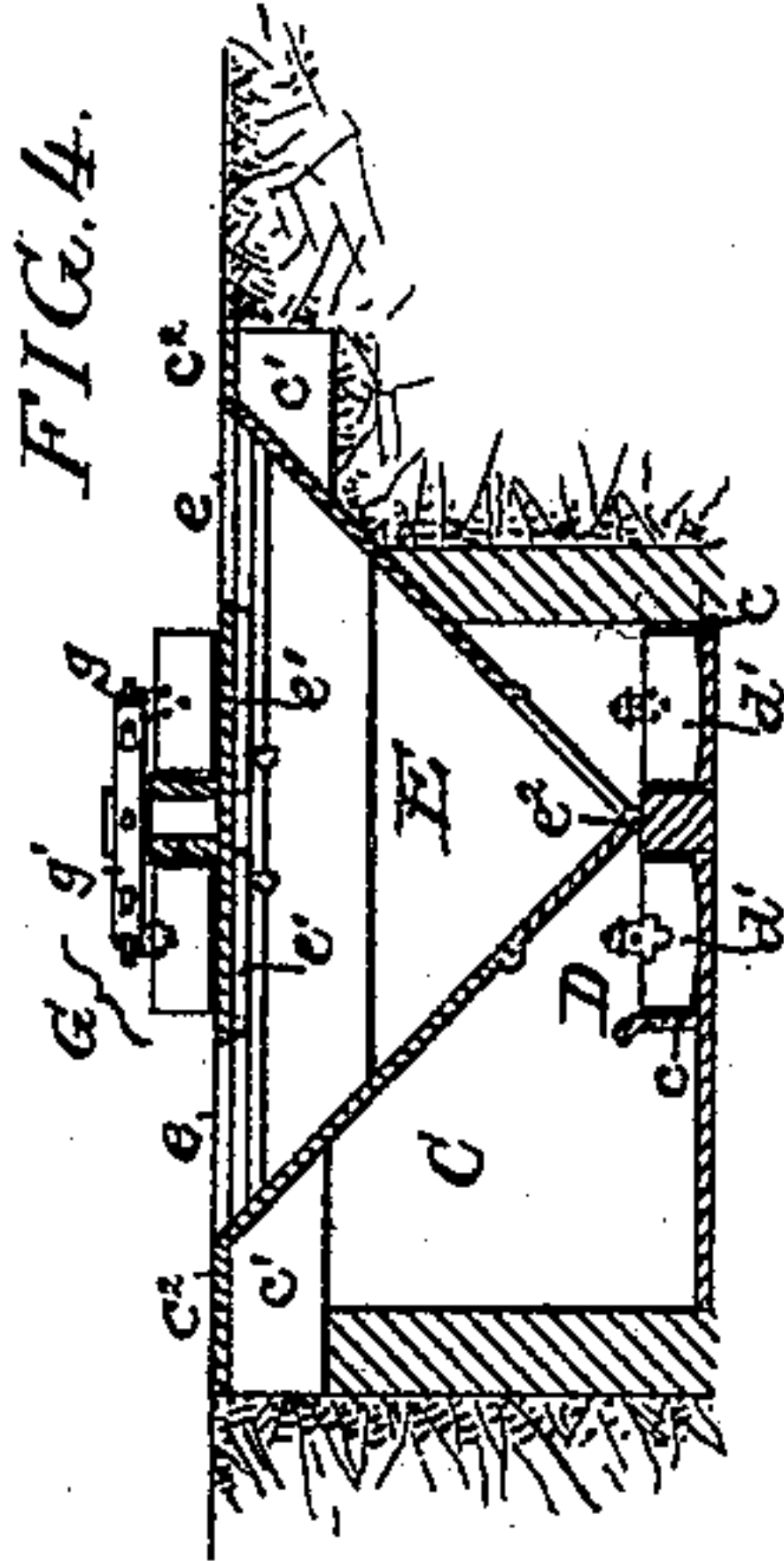
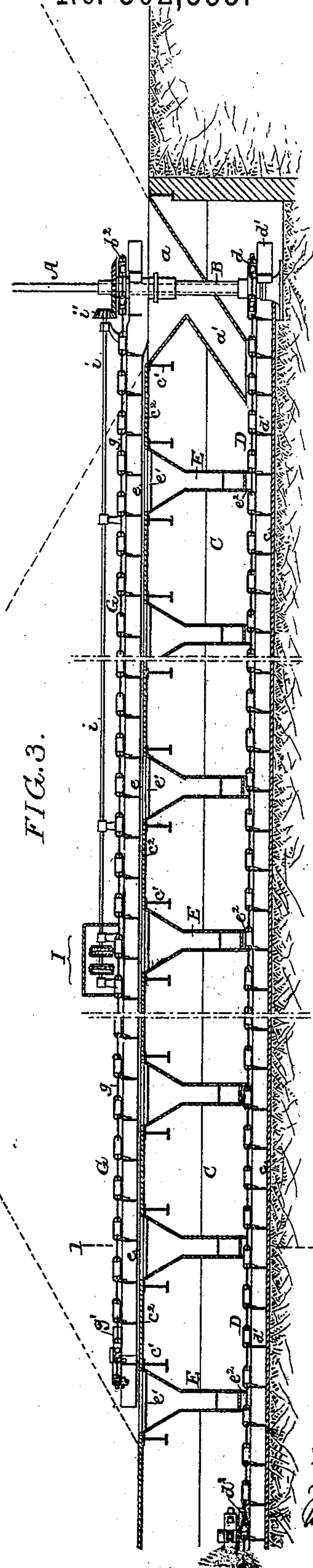


FIG. 5.

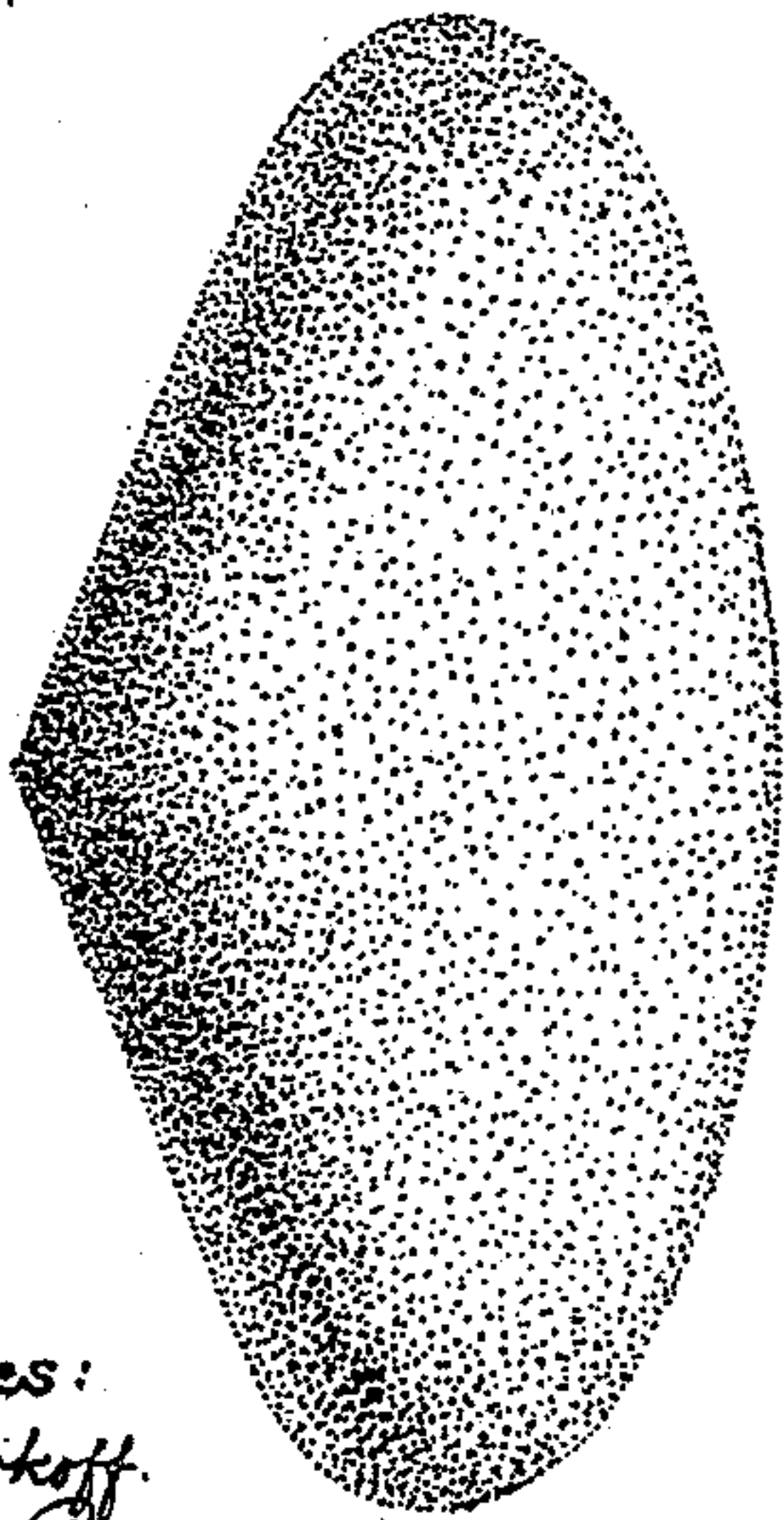


FIG. 8.

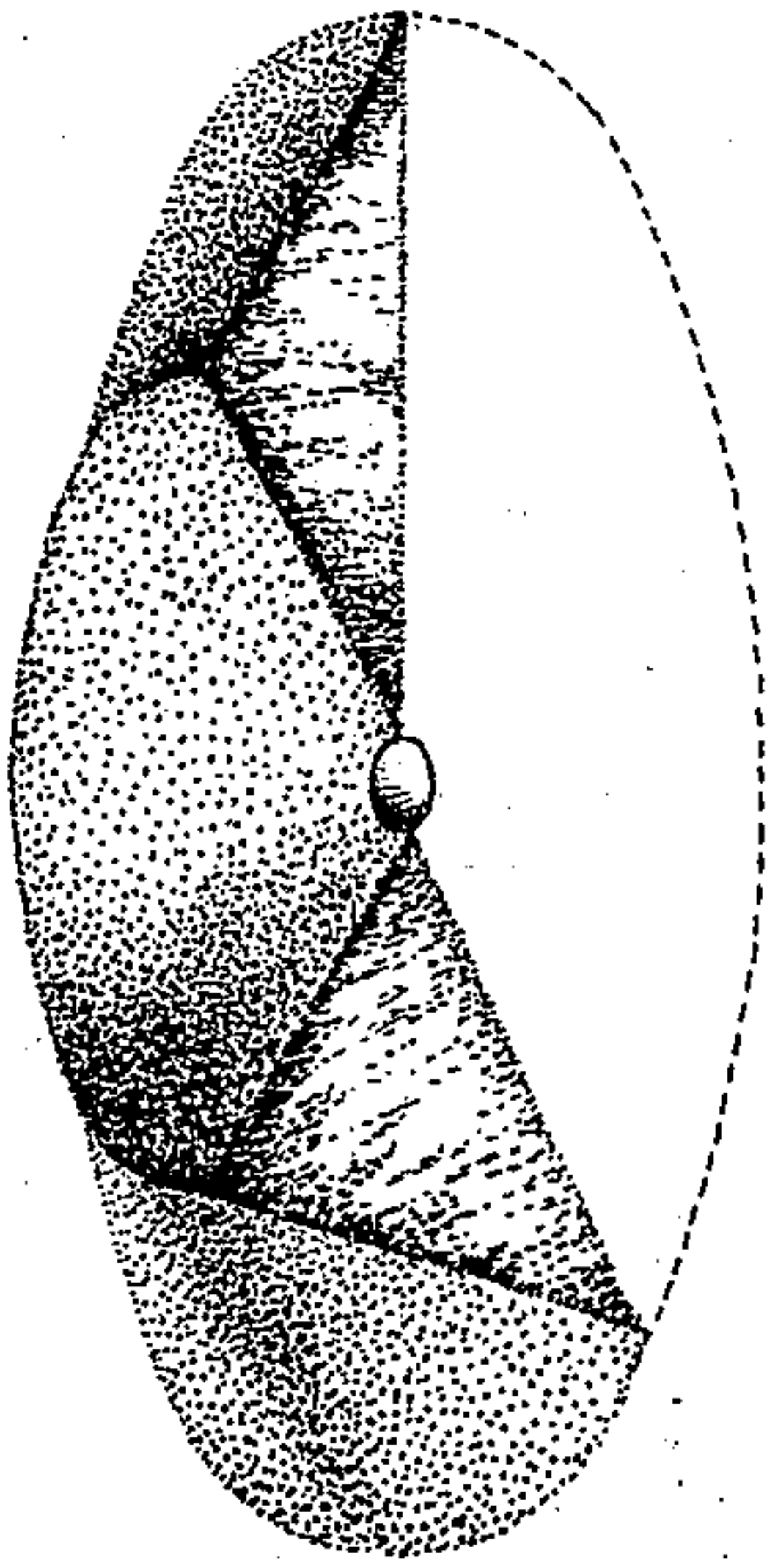


FIG. 6.

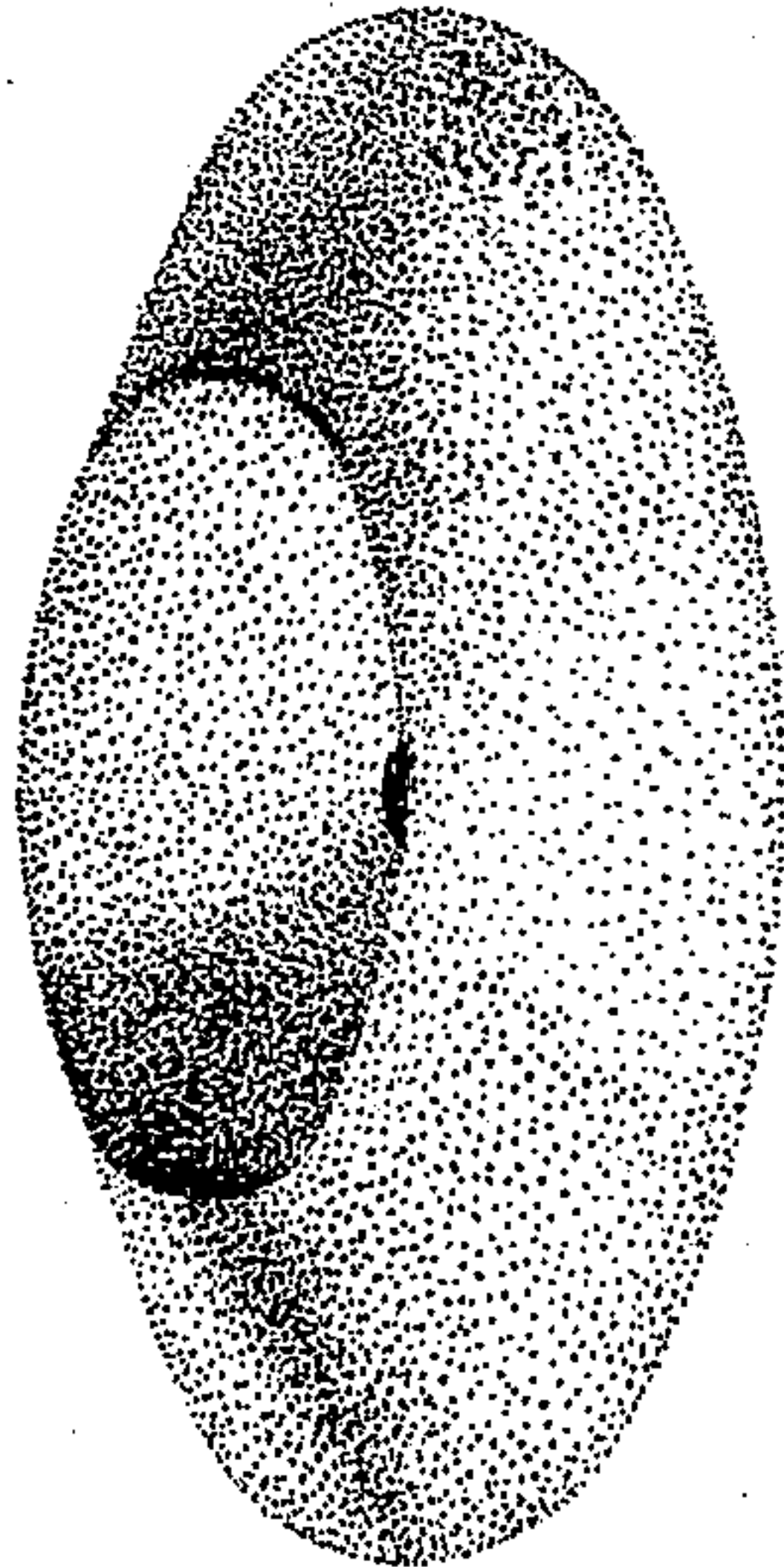
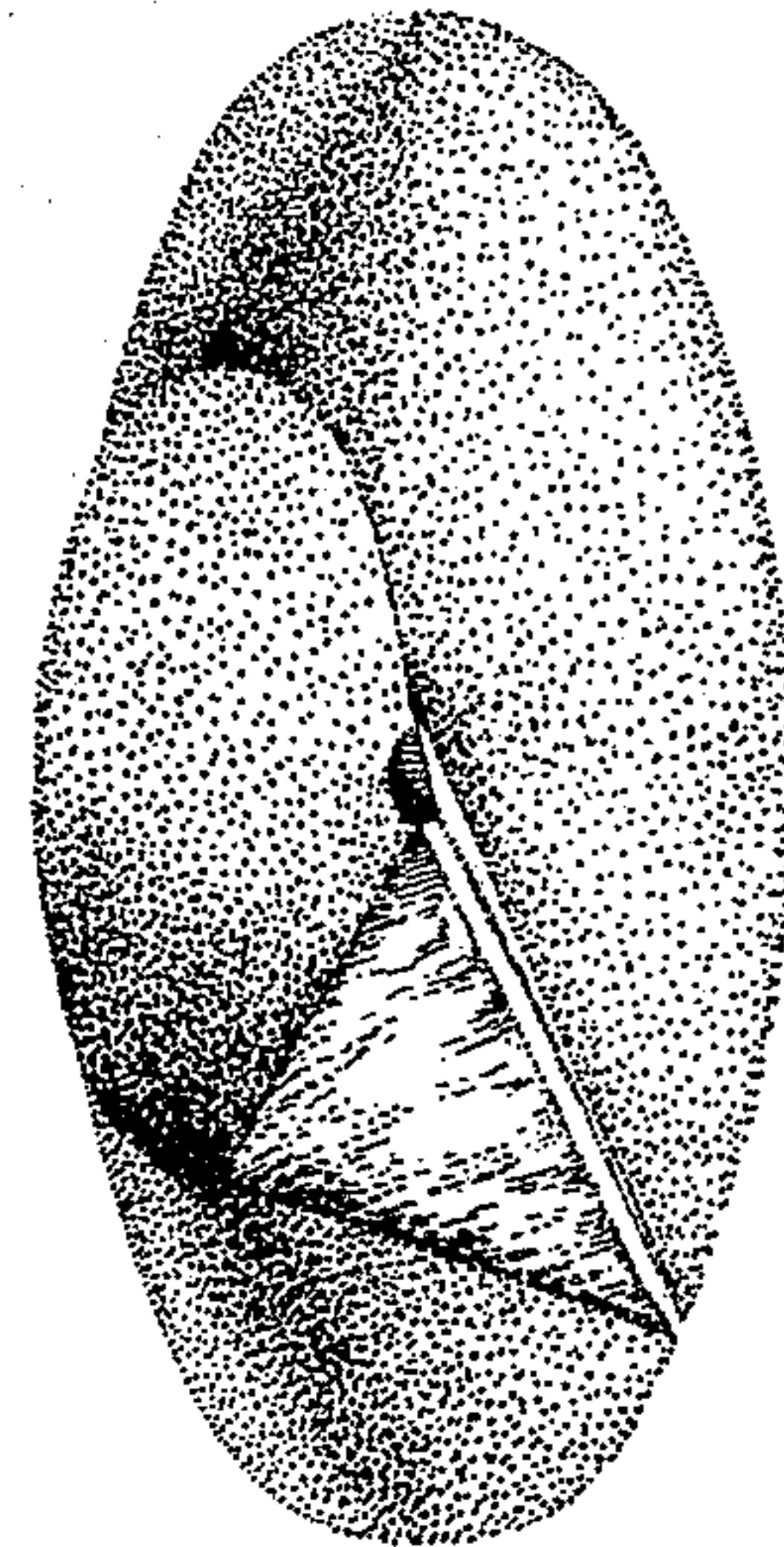


FIG. 7.



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UNITED STATES PATENT OFFICE.

JAMES M. DODGE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
DODGE COAL STORAGE COMPANY, OF SAME PLACE.

APPARATUS FOR PILING COAL.

SPECIFICATION forming part of Letters Patent No. 502,555, dated August 1, 1893.

Application filed March 6, 1893. Serial No. 464,726. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. DODGE, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Apparatus for Piling Coal or Analogous Material, of which the following is a specification.

My invention relates to apparatus for removing large piles of coal or analogous material, and the object of my invention is to so construct the apparatus that the center of the pile of material to be removed will be discharged by gravity, leaving an annular pile of coal to be discharged by a movable conveyor, as fully described hereinafter.

In the accompanying drawings:—Figure 1, is a sectional view illustrating my improved apparatus for removing piles of granular material. Fig. 2, is a plan view. Fig. 3, is an enlarged sectional view showing the conveyers. Fig. 4, is an enlarged sectional view on the line 1—2, Fig. 3; and Figs. 5, 6, 7 and 8, are perspective diagrams of a pile of material in the different stages of removal.

In piling the material in the form of a conical pile as shown in outline in Fig. 1, and in Fig. 5, I preferably use a truss structure similar to that described and claimed in a prior patent granted to me February 17, 1891, No. 446,814, reissued August 9, 1892, No. 11,258. In this apparatus the truss structure supports the piling conveyer, and the material is carried up this truss structure and discharged, forming a conical pile of material.

My invention relates to apparatus for removing a conical pile of material either piled with apparatus as shown, or analogous apparatus. In another patent granted to me on the 28th day of October, 1890, and numbered 489,487, I have described and claimed a removing apparatus which attacks one side of the pile and eats its way into the pile, and finally removes it, whereas in the apparatus which I will now proceed to describe the pile is removed by allowing the material to flow into a central discharging conveyer forming an annular pile, as shown in Fig. 6, after which this annular pile is cut into as shown in Fig. 7, exposing a movable conveyer which is so arranged as to remove the annular pile, as shown in Fig. 8. This process of removing a conical

pile of material forms the subject of a separate application for patent, filed even date herewith, Serial No. 464,727.

Referring to Figs. 1 to 4, inclusive, A is a vertical pole acting not only as the support for the removing apparatus, but in some instances, as an additional support for the truss structure, or for the roof when a roof is used, but it may in some instances extend only to the removing apparatus. On this pole is a sleeve or hollow shaft B suitably stepped at its lower end, and mounted on this shaft is a chain wheel *d* around which passes the conveyor chain D having the flights *d'*. The conveyor chain passes around a driving wheel *d*² at the opposite end through the medium of which power is given to the apparatus. The conveyor D is adapted to suitable troughs *c* within a tunnel C extending from the outside to a point below the center of the pile, as shown in Figs. 1 and 3. I make this tunnel large enough so that a man can pass into it and repair the parts if necessary. The roof of the tunnel is supported by beams *c'* and a floor *c*² is placed on these beams. At the center of the piling floor is a conical discharge tube *a* which discharges the material into a passage *a'*, the material from this passage flowing into the troughs of the conveyer so that when the conveyer D is set in motion, the material at the center of the pile will flow into the trough and be conveyed away through the tunnel by the conveyer D until the material of the pile ceases to flow by gravity, and the pile will be then in the form of a ring having an annular apex, as clearly shown in Fig. 6. In order to cut into this ring I form a series of openings *e* in the floor *c*² above the conveyer D, and provide these openings with gates *e'* which can be either operated from the tunnel C or from a point outside the limits of the pile, and below the gates is a chute E preferably provided with a valve *e*² by which the material flowing through the openings *e* can be directed to one side of the conveyer or the other, according to the direction of travel of the conveyer. When the conveyer travels only in one direction the valve may be dispensed with and the chute so arranged as to direct the material to the carrying run of the conveyer. Thus when the an-

nular pile is formed as described above, the gates e' are opened and the annular pile is cut into on a radial line, the material discharging by gravity to the openings e into the path of the conveyer D, forming a pile as shown in Fig. 7, and exposing the movable conveyer G. As shown in Figs. 1, 2 and 3, this movable conveyer G is pivoted at the center on the hollow shaft B, which extends above the conveyer as shown, and carries the chain wheel b^2 for the conveyer chain g of the conveyer G. This conveyer chain passes around the chain wheel g' at its outer end, and the chain is provided with suitable flights for conveying the material to the central discharge opening. The conveyer may be guided on the annular rail m and propelled by any means without departing from my invention.

In order to move the conveyer around the center, I provide in the present instance, winding apparatus 1, driven from the shaft i having a bevel pinion i' gearing with a bevel wheel b^2 on the sleeve B, as shown in Figs. 1 and 3, and connected to the winding apparatus are ropes or chains h which are suitably anchored and pass back of one of the annular rails m on which the conveyer G travels. This apparatus is somewhat similar to the apparatus set forth in a previous patent granted to me. It will be seen that when the conveyer G is exposed, it can be turned on its pivot, and will cut into the annular pile and remove the material therefrom, making, if necessary, one complete revolution, and it will be understood that the apparatus for driving the several parts may be modified without departing from my invention.

The invention is especially applicable for use where the piling floor is limited, and where the piling floor is walled in and roofed, as the removing conveyer does not extend beyond the floor.

I claim as my invention—

1. The combination in apparatus for removing piles of material, of the floor having a central discharge opening, with a movable conveyer adapted to travel on the floor around the center and remove the material therefrom, substantially as described.

2. The combination of a piling floor, a horizontal conveyer pivoted in the center thereof and adapted to travel entirely around the floor, and a discharge for the conveyer, substantially as described.

3. The combination in apparatus for removing piles of material, of the floor having a central discharge opening, with a movable conveyer pivoted at the center and adapted to travel on the floor around the center and remove the material therefrom, substantially as described.

4. The combination of the piling floor hav-

ing a central discharge opening, a discharging conveyer into which material flows from said opening, with a pivoted conveyer mounted on the floor and adapted to travel in a circular path and remove the material from the floor, substantially as described.

5. The combination of the piling floor having a central discharge opening, a tunnel under the floor, extending to the central discharge opening, a conveyer in said tunnel receiving material from said discharge opening, openings in the floor above the conveyer in the tunnel, so that the conveyer will receive material from said openings, a pivoted conveyer mounted on the floor and pivoted at the center thereof so as to travel in a circular path, said conveyer when at rest being situated above the tunnel so that when the material of the pile flows through the openings in the floor above the tunnel, the pivoted conveyer will be exposed, substantially as described.

6. The combination of the piling floor, central discharge opening therein, a vertical shaft at the center of the piling floor, an endless chain conveyer adapted to a wheel on said shaft and to a driving wheel, said conveyer mounted in a tunnel under the piling floor, with a pivoted conveyer, conveyer chain mounted on said pivoted conveyer and driven by a wheel on said central shaft, substantially as described.

7. The combination of the piling floor, the central shaft, the tunnel under the piling floor, the endless conveyer adapted to travel in said tunnel, and geared to the central shaft, a pivoted conveyer mounted on the piling floor, a conveyer chain geared to the central shaft and mounted on said pivoted conveyer, and apparatus for moving the movable conveyer around its pivot, said apparatus being also geared to the shaft, substantially as described.

8. The combination of the piling floor, a tunnel, and underground conveyer in said tunnel, a roof for said floor, a post at the center of the piling floor extending to the roof, a hollow shaft or sleeve mounted on said post, a chain wheel at the base of said shaft, a conveyer in the tunnel passing around the chain wheel and giving motion to the shaft, a pivoted conveyer adapted to travel on the piling floor, and having a conveyer chain thereon, a chain wheel on the shaft engaging with the conveyer chain, 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:

RICHARD W. YERKES,
JAMES B. CRAWFORD.