

No. 668,960.

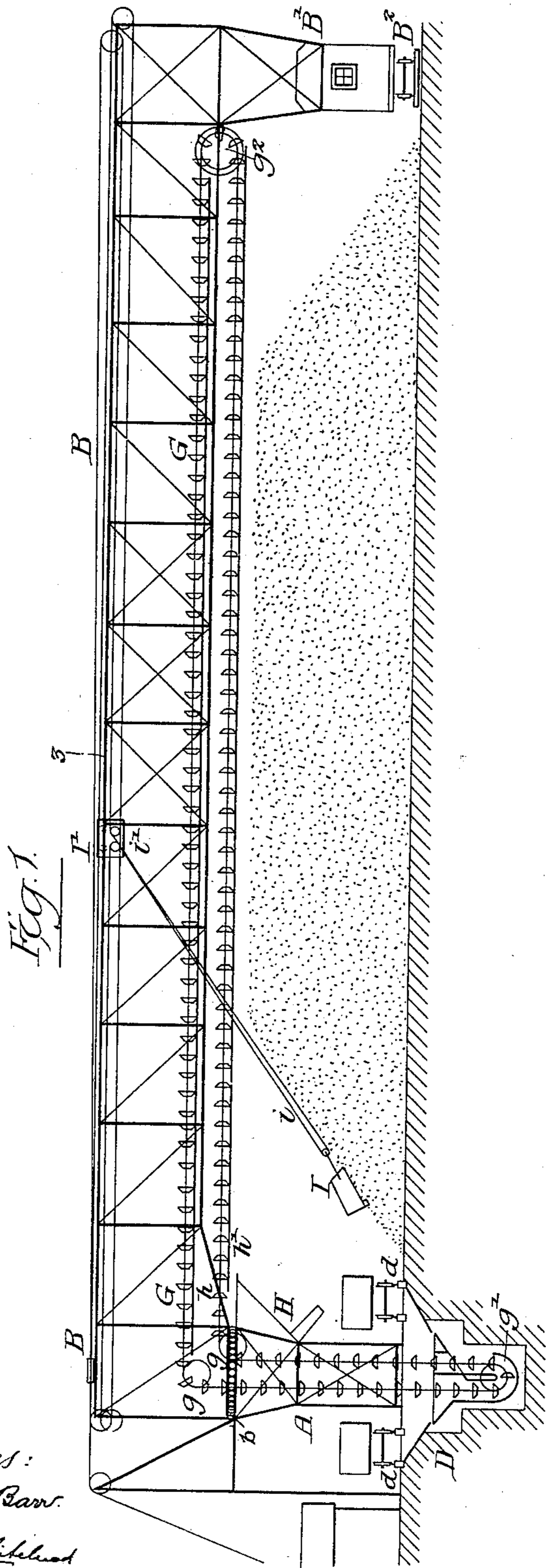
C. PIEZ & R. H. BEAUMONT.
STORAGE APPARATUS.

Patented Feb. 26, 1901.

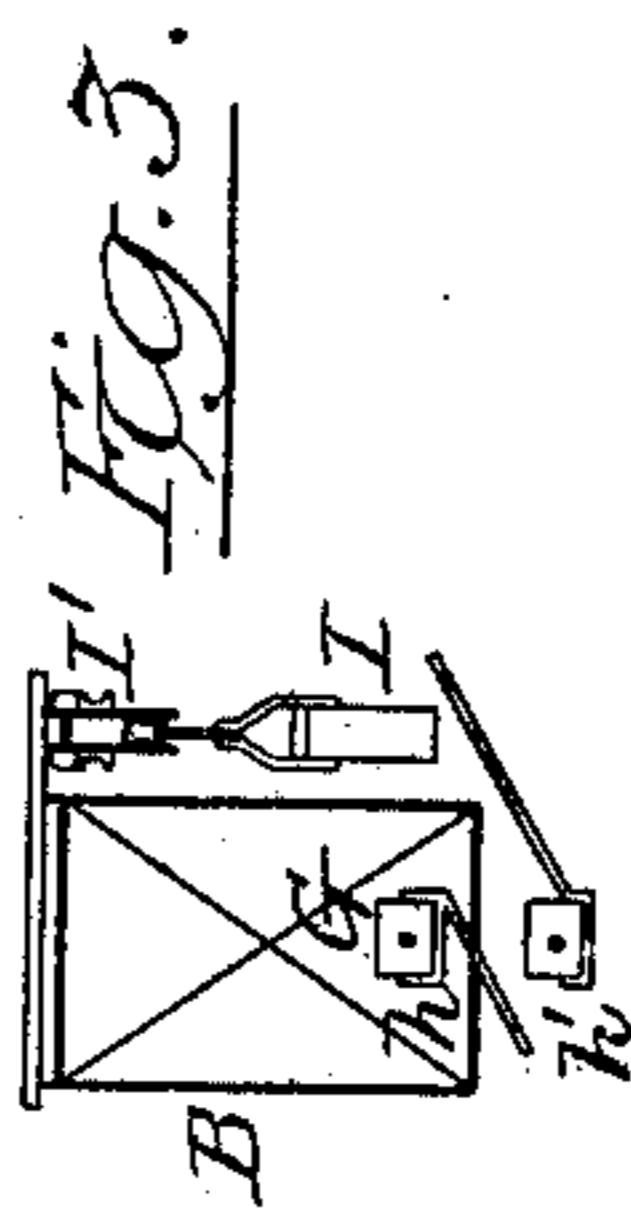
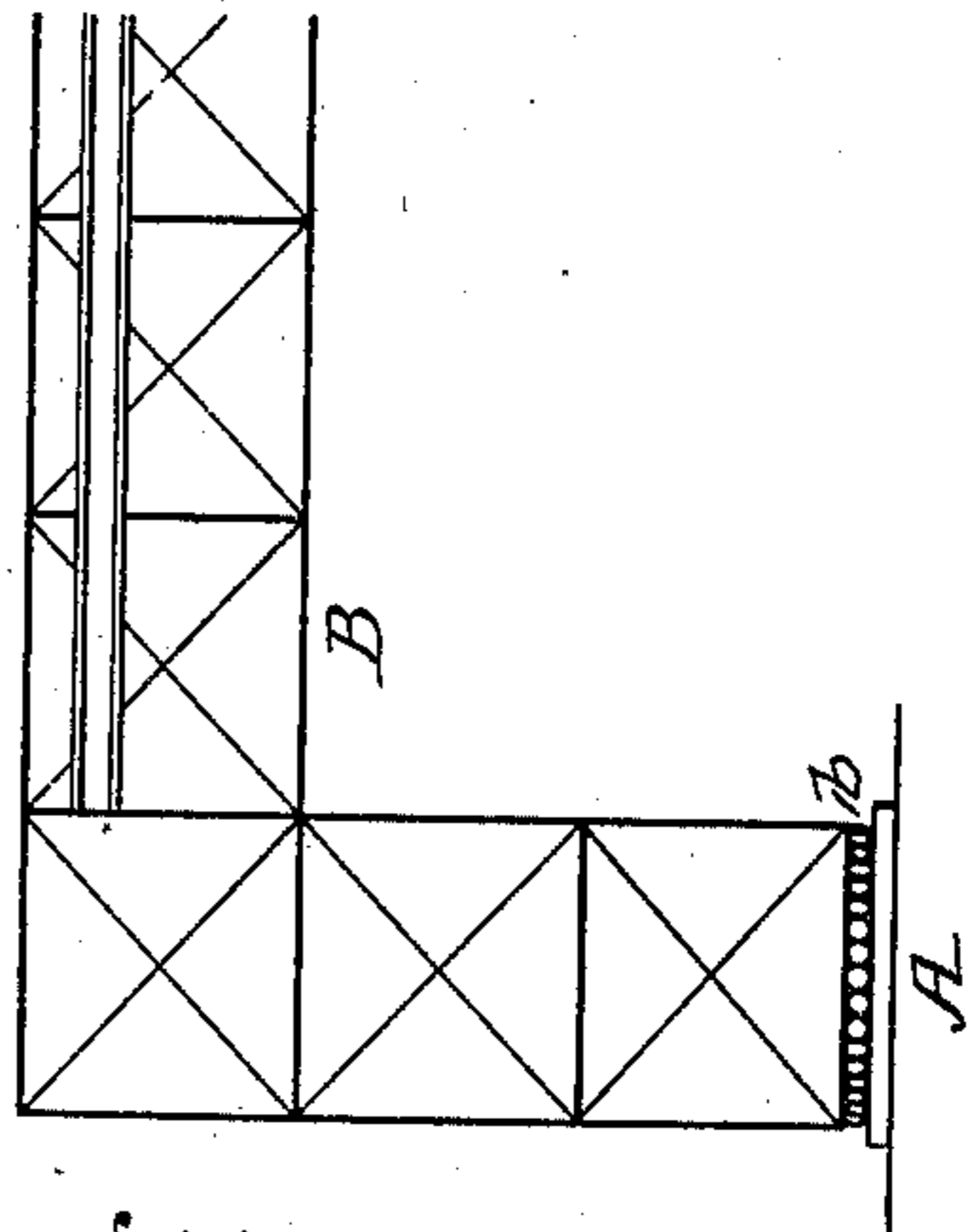
(No Model.)

(Application filed Oct. 18, 1899.)

4 Sheets—Sheet 1.



Witnesses:
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Louis H. F. Whitehead



Inventors:
Charles Piez and
Robert H. Beaumont
by their attorneys
Howell & Howell

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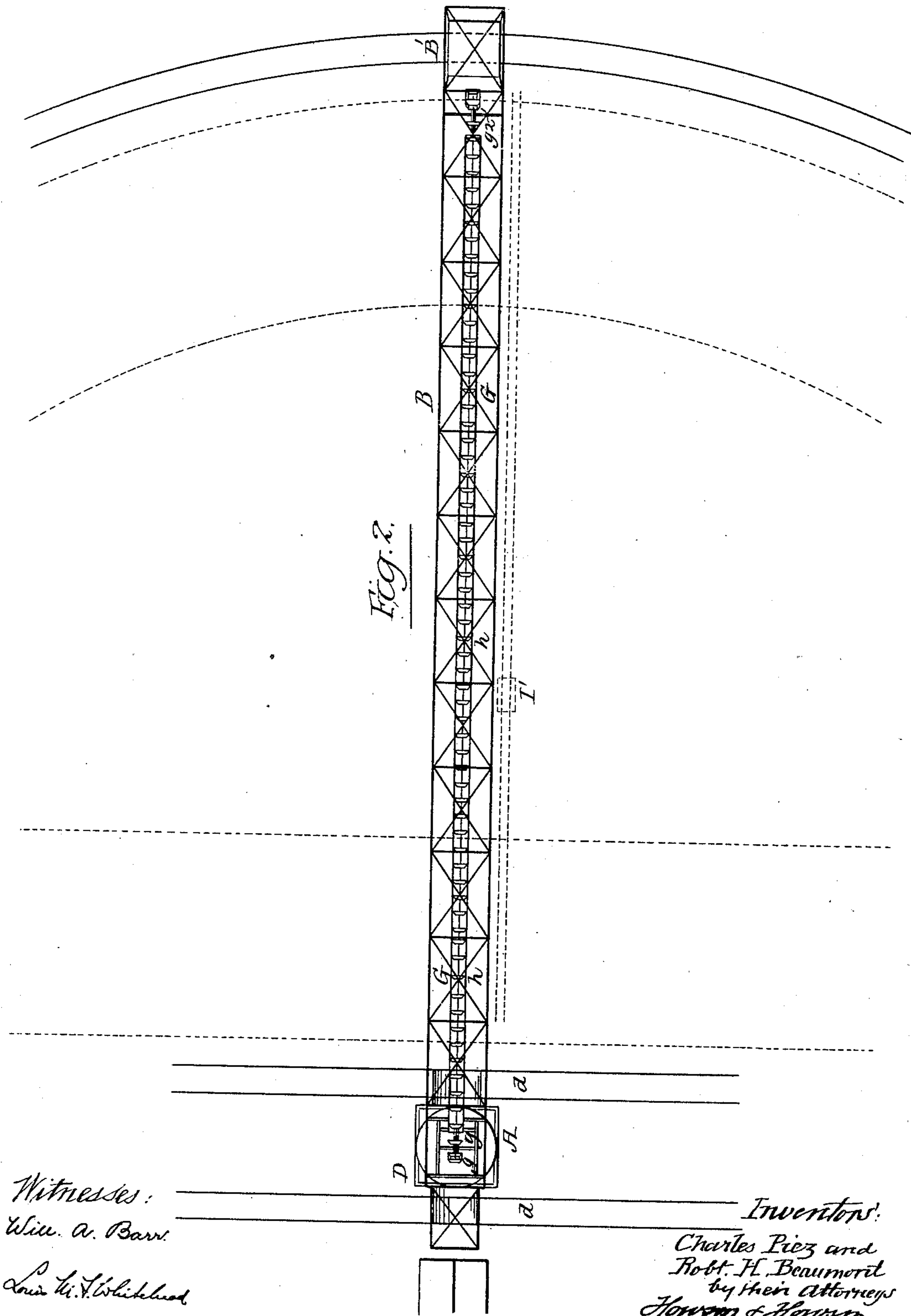
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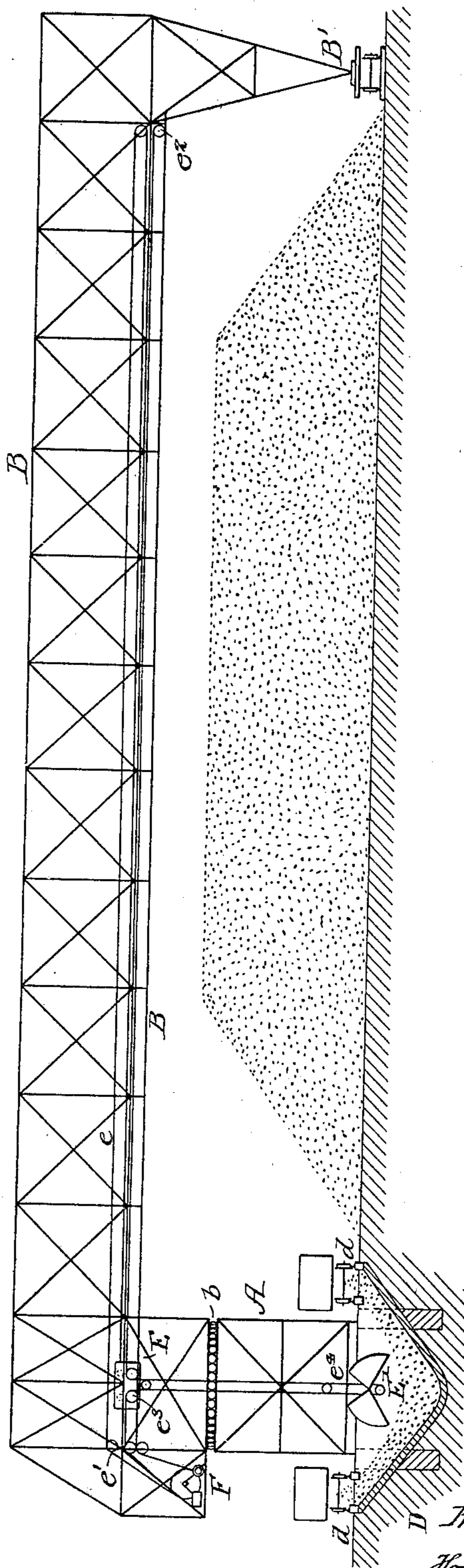
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Fig. 4.



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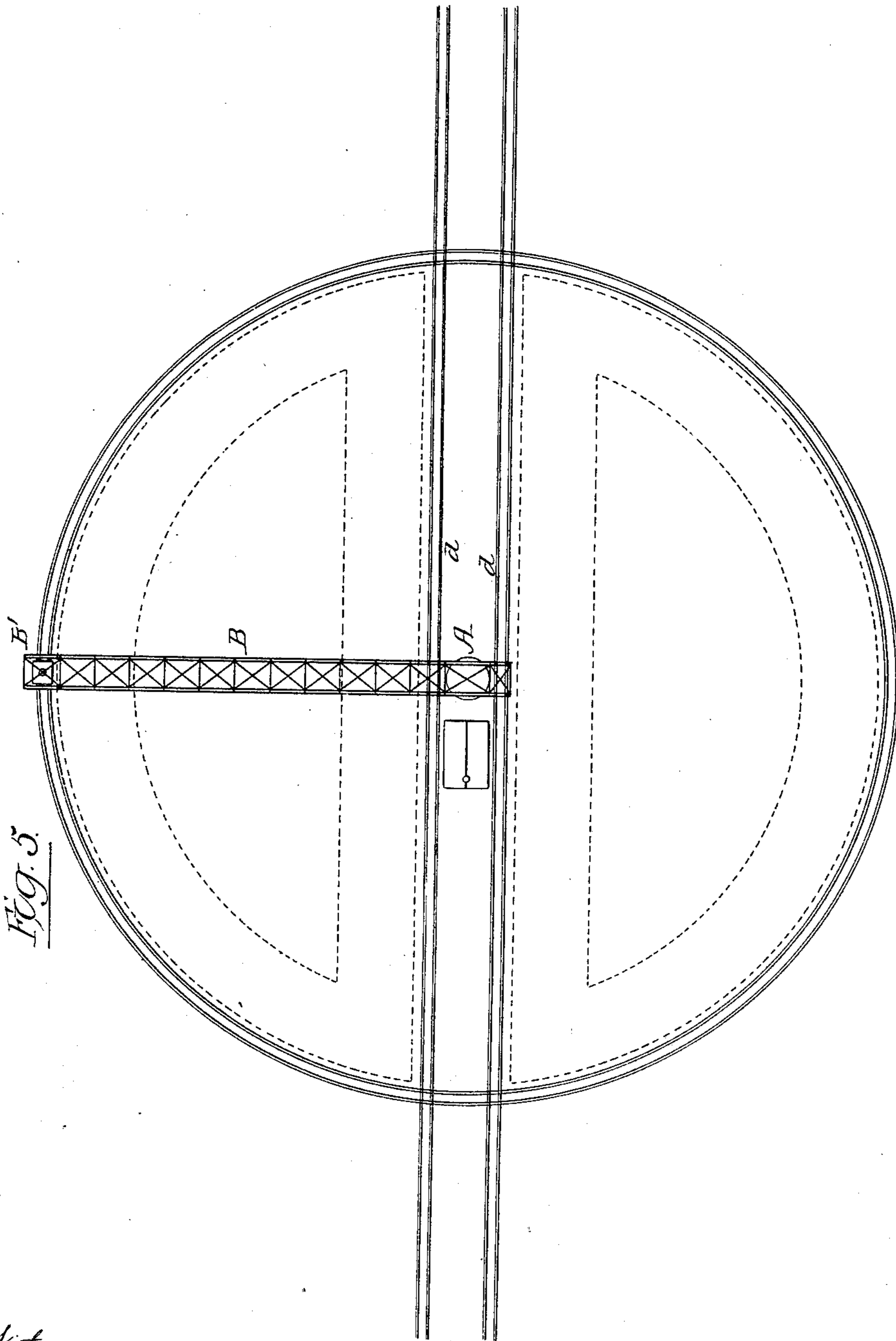
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4 Sheets—Sheet 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES PIEZ AND ROBERT H. BEAUMONT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO THE DODGE COAL STORAGE COMPANY, OF NAUGATUCK, CONNECTICUT.

STORAGE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 668,960, dated February 26, 1901.

Application filed October 18, 1899. Serial No. 733,993. (No model.)

To all whom it may concern:

Be it known that we, CHARLES PIEZ and ROBERT H. BEAUMONT, citizens of the United States, and residents of Philadelphia, Pennsylvania, have invented certain Improvements in Storage Apparatus, of which the following is a specification.

Our invention relates to certain improvements in mechanism for piling coal and analogous material and for removing material from a pile.

The object of our invention is to provide a comparatively cheap structure which will pile material in a semicircular or circular pile from a fixed point and remove material from the pile to a fixed point. This object we accomplish by so constructing the apparatus that the conveyer mounted on a pivoted structure can pass through the pivot of said structure and receive material at a fixed point, the elevating and conveying mechanism being carried solely by the movable section.

In the accompanying drawings, Figure 1 is a side view sufficiently in detail of our improved mechanism to illustrate our invention, showing an endless elevator and conveyer having combined buckets and scrapers. Fig. 2 is a plan view. Fig. 3 is a section on the line 3 3, Fig. 1. Fig. 4 is a view similar to Fig. 1, showing a modification in which a bucket elevator and conveyer of the clam-shell type is used. Fig. 5 is a plan view of the device shown in Fig. 4, and Fig. 6 is a view of a modification.

Referring in the first instance to Fig. 1, A is a fixed structure mounted on a suitable foundation and on which is mounted the pivoted structure B. This structure is in the form of a truss in the present instance and may be of any length, according to the size of the pile desired. The truss structure is supported at its outer end by a leg B', mounted on the carriage B², in the present instance traveling on a semicircular track.

In Fig. 1 we have shown a hopper D directly under the fixed structure, and on each side of the fixed structure are tracks *d d* for the cars. The hopper extends under the tracks, so that material discharged from the cars flows into the hopper.

The fixed structure A has an open center, so as to allow for the free travel of the elevating mechanism through the center of the structure, and the pivot *b*, by which the truss structure B is swung on the fixed structure, has also an open center, as it will be understood on referring to the drawings that the elevator passes up through the pivot.

The conveyer G, as shown in Fig. 1, is of the combined bucket-and-flight type, being an endless conveyer driven by an engine, preferably carried by the pivoted structure. The endless elevator and conveyer G passes around wheels *g g* at the pivot-point of the elevator and around a foot-wheel *g'* within the hopper D and around a wheel *g*² at the end of the truss structure.

Directly under the two horizontal runs of the conveyer are troughs *h h'*, and the material is pushed along the trough *h* by the buckets to the point of discharge. The trough *h* can have a series of gates or shutters at given distances apart, so as to make the pile of a width equal to the length of the truss structure, or a movable ribbon may be used or any device which will allow the material to be progressively discharged from the conveying apparatus and piled. In some instances the bottom of the trough may be opened and the material of the pile itself used as the bottom over which other material is conveyed.

Directly under the lower run of the endless conveyer is a trough *h'*, and this trough extends to a hopper H, into which the material is carried to the pile.

Any suitable mechanism may be used for loading the trough. In the present instance we have shown a scraping-bucket I, hung from a rope or chain *i*, which passes around wheels *i* on a trolley I' and to a suitable power-drum, so that the bucket I will scrape the material from the pile, and thus be loaded, and will discharge the material into the lower trough through a chute, Fig. 3, and the material when in this trough will be pushed forward by the buckets to the hopper H. The trolley can be moved along the truss structure B by any suitable means common to this style of trolley.

The truss structure can be turned on its

pivot *b* in any suitable manner, either by hand or power. An engine can be mounted upon the carriage *B*² and geared to the axles of the carriage, if desired.

5 It will thus be seen that we only use one mechanism for both elevating and conveying the material, and we carry the said mechanism by the pivoted section of the structure, making a very simple and practical apparatus.
10

In the above-described apparatus the loading is continuous; but it will be understood that an intermittent elevator and conveyer may be used, such as that shown in Figs. 4
15 and 5.

It will be seen in referring to Fig. 5 that by our construction of piling apparatus we are enabled to pile coal on each side of a railroad-track, the fixed structure being preferably mounted between the tracks where double tracks are used and with a hopper common to both tracks. The pivoted truss structure is arranged to rotate on this fixed structure and travel on a circular track, so that
20 two segmental piles may be formed, one on each side of the track. By this method of piling it will be seen that two grades of material—such, for instance, as coal—can be piled with one apparatus, and if the tracks
25 are so situated that the structure can only pile on one side of the track this can be accomplished with an apparatus such as designed by us.

In discharging material from the pile we preferably discharge directly into the cars,
35 and in some instances the cars can be run through the fixed structure directly under the center of the pivot.

A hopper is not absolutely essential in carrying out our invention, although preferable,
40 as in some instances the material may be fed directly into the boot of the conveyer, Fig. 1, dispensing with the hopper.

Referring to Fig. 5, we have illustrated elevating and conveying mechanism consisting of a series of ropes or chains *e*, passing around pulleys *e*¹ *e*² and around pulleys *e*³ on the trolley *E* and down and around the wheels *e*⁴ on a clam-shell bucket *E'*, which is opened and
50 closed in a manner common to this class of buckets. The ropes pass around the driving-wheel of an engine *F*, preferably mounted on the pivoted truss structure, and the position of the bucket is regulated by the operator
55 stationed near the engine, so that if it is wished to pile material in a pile under the truss structure the operator so controls the mechanism that the clam-shell bucket *E'* will be lowered through the open pivot of the pivoted structure and through the center of the
60 fixed structure into the hopper *D* and will take a load of material from the hopper, elevate it to a point above the fixed structure, and will then carry it forward along the pivoted structure to a point at which it is desired to discharge the material. This mate-

rial can be either discharged from the bucket at a point near the structure or, if it is fragile material, the bucket can be lowered and discharged at any point from the ground or
70 piling-floor, after which it can be returned to the pivot-point, lowered, and again loaded.

It will be understood that the pivot *b* may be arranged directly under the pivoted structure, as shown in Fig. 1, or some distance below it, as shown in Fig. 5. In this case it is
75 essential to allow space between the bottom of the truss and the pivot for the bucket to be carried out onto the movable structure or it may be at the base, as shown in Fig. 6, in
80 which case the fixed truss structure is dispensed with and the base will form a fixed structure.

Thus it will be seen by referring to the drawings that we provide an open fixed structure
85 and a movable structure pivoted to the fixed structure, the pivot having an open center for the passage of the elevating and conveying mechanism, which can receive material at a fixed point and carry the said material
90 up through the fixed structure and through the open pivot and carry it along the pivoted structure to a discharge-point, so as to form a pile under the pivoted structure. The material can be removed from the pile by elevating it from the pile to the pivoted structure, carrying it along the pivoted structure
95 to the fixed structure, and discharging it either into the hopper, as shown in Fig. 1, or directly into the cars.

The structure illustrated in Fig. 5 forms the subject of a divisional application of this case, filed on the 31st day of December, 1900,
100 Serial No. 41,639.

We claim as our invention—

1. The combination of a fixed structure, a pivoted structure arranged to swing thereon, the said pivot having an open center, and elevating and conveying mechanism on said
105 pivoted structure, said mechanism arranged to elevate material through the open center of the pivot, substantially as described.

2. The combination of a fixed structure having an open center, a movable structure pivoted to the fixed structure, and elevating
115 and conveying mechanism on said movable structure, the elevating mechanism arranged to elevate material through the fixed structure and through the pivot of the movable structure, substantially as described.

3. The combination of a fixed structure, a pivoted structure arranged to swing thereon, said pivot having an open center, and an endless conveyer passing along said pivoted structure through the pivot of the same and down
125 through the fixed structure, substantially as described.

4. The combination of a fixed structure, having an open center, a movable structure arranged to swing thereon and having an open
130 pivot, and elevating and conveying mechanism for carrying material continuously for-

ward through the fixed structure, through the open pivot and along the movable structure, substantially as described.

5 5. The combination of a fixed structure, having an open center, a movable structure arranged to swing on the fixed structure and having an open pivot and having two troughs, an endless conveyer mounted on the movable structure and arranged to travel on said
10 troughs, said conveyer passing through the open pivot and the fixed structure, and means for loading the buckets of the conveyer at the fixed structure, substantially as described.

15 6. The combination in storage apparatus, of a fixed structure having an open center, a movable structure pivoted thereto, said pivot having an open center, two conveyer-troughs carried by the movable structure, a bucket

elevator and conveyer mounted on the movable structure and its horizontal runs arranged to travel on the said troughs, the elevating-section of the conveyer extending through the open pivot and through the fixed structure to a receiving-point, with means carried by the movable structure for charging the return run of the conveyer with material from the pile, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHARLES PIEZ.

ROBERT H. BEAUMONT.

Witnesses:

WILL. A. BARR,

JOS. H. KLEIN.