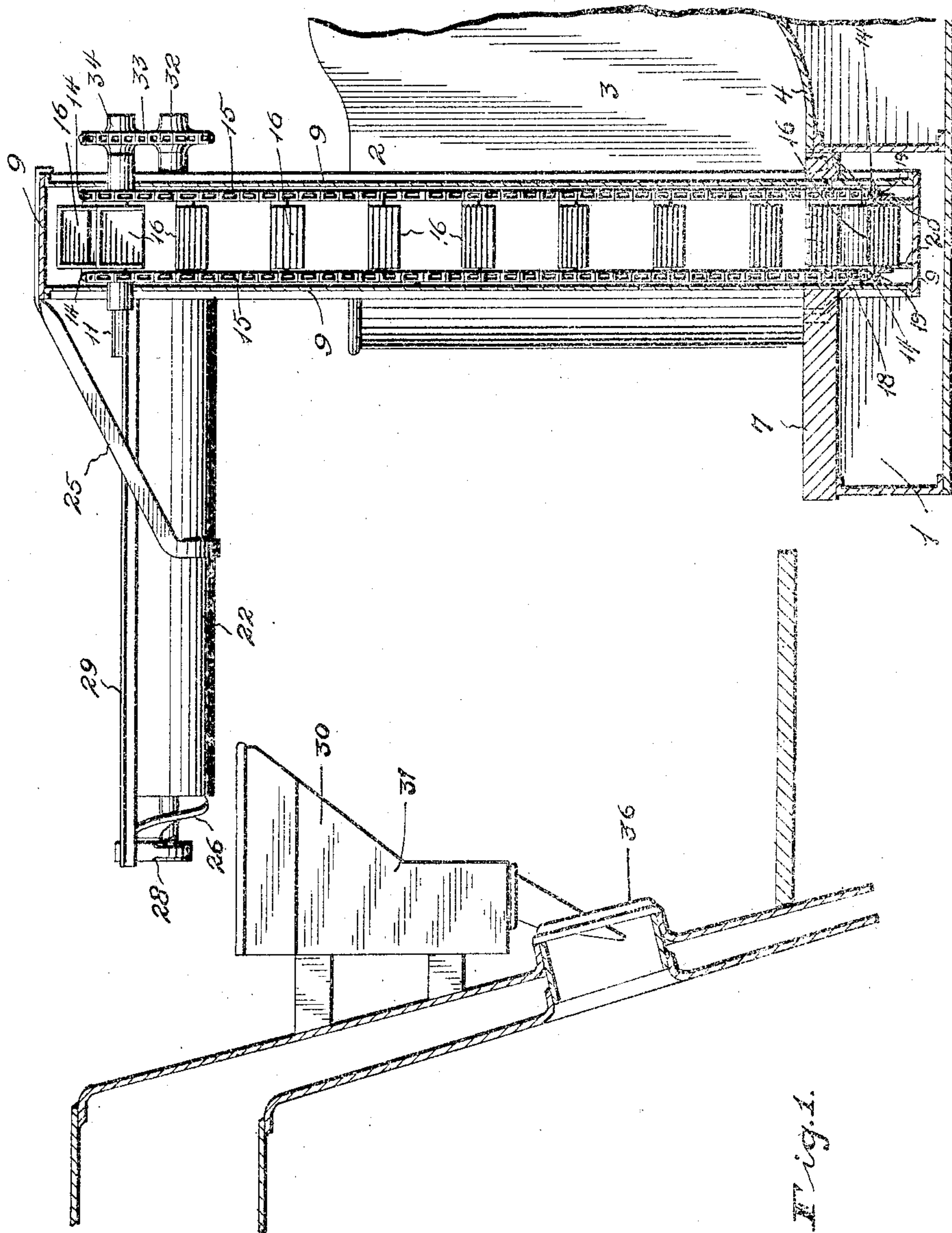


No. 812,478.

PATENTED FEB. 13, 1906.

M. B. BREWSTER.
ELEVATOR AND CONVEYER.
APPLICATION FILED MAR. 6, 1905.

3 SHEETS—SHEET 1.



WITNESSES:

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3 SHEETS—SHEET 2

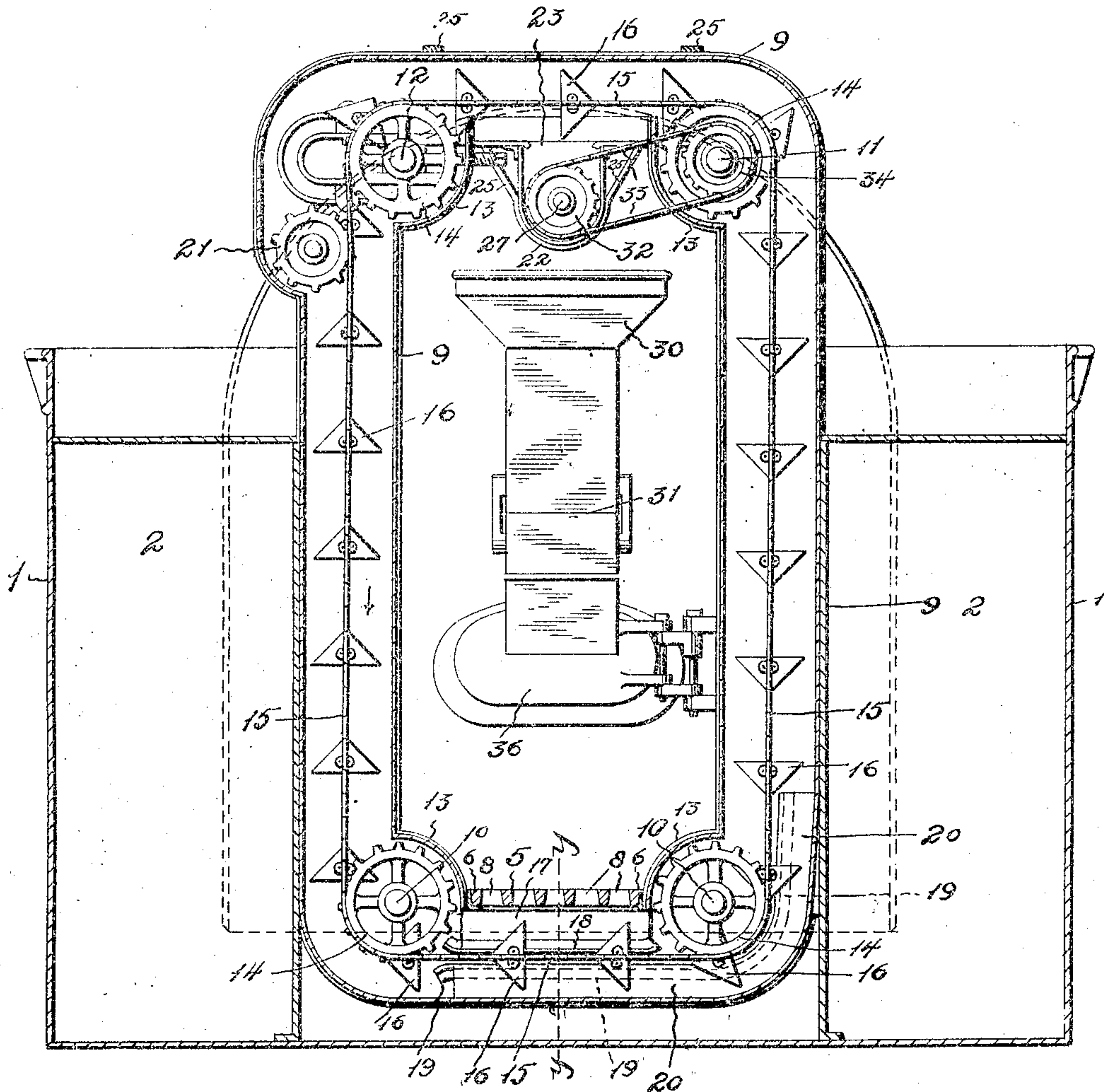


Fig. 2.

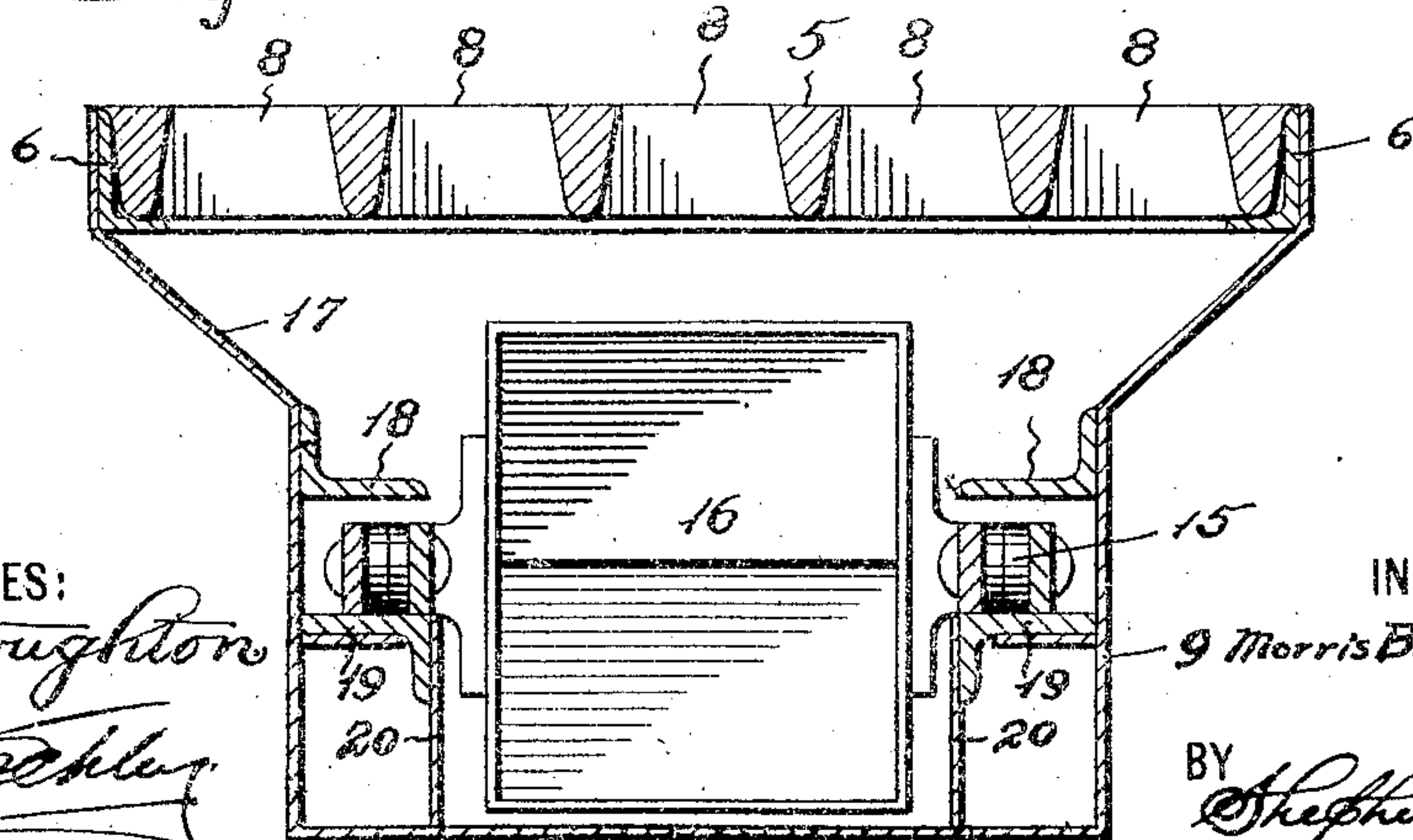


Fig. 3.

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3 SHEETS—SHEET 3.

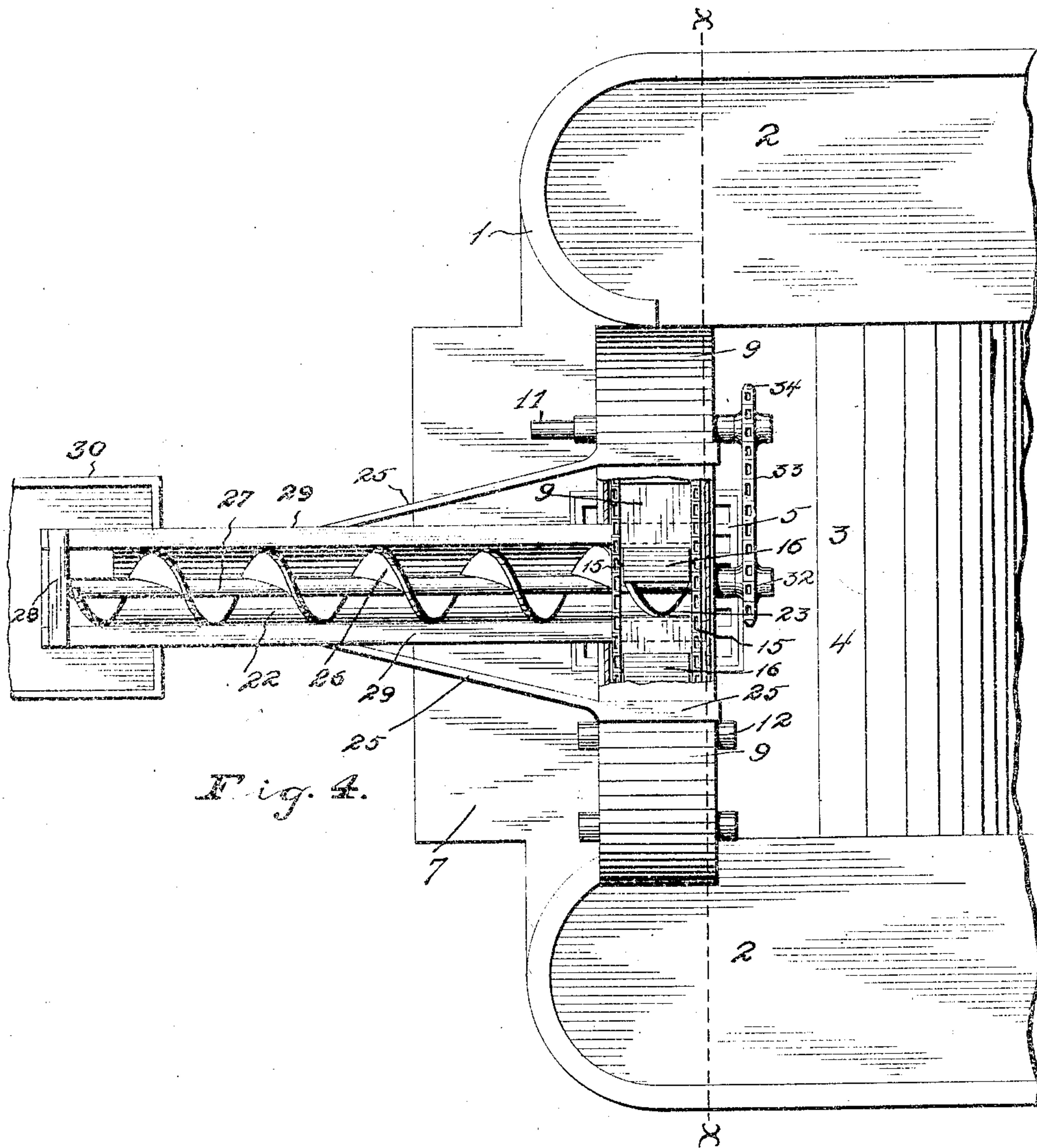


Fig. 4.

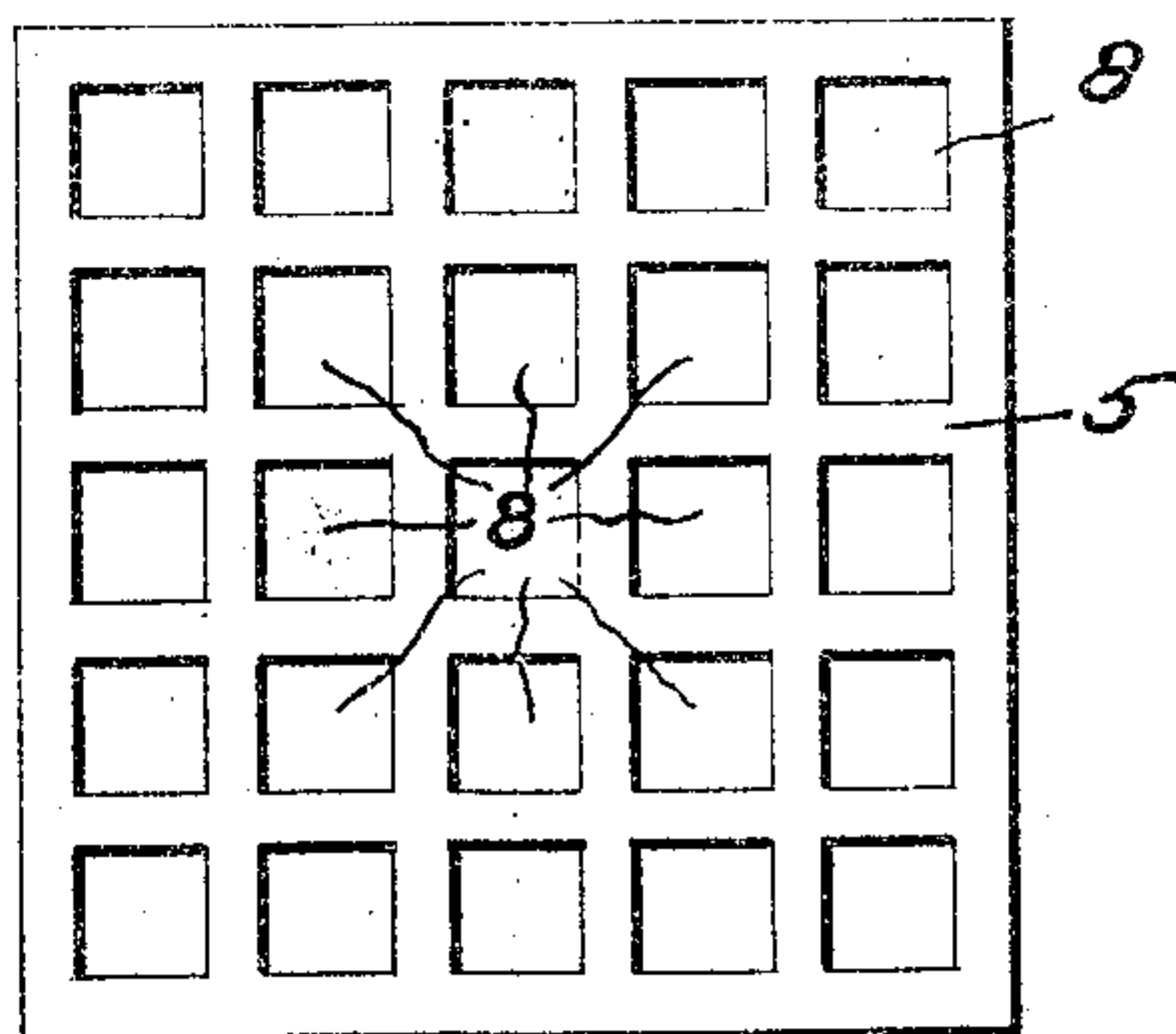


Fig. 5.

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UNITED STATES PATENT OFFICE.

MORRIS B. BREWSTER, OF COLUMBUS, OHIO.

ELEVATOR AND CONVEYER.

No. 812,478.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed March 6, 1905. Serial No. 248,718.

To all whom it may concern:

Be it known that I, MORRIS B. BREWSTER, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Elevators and Conveyers, of which the following is a specification.

My invention relates to a new and useful improvement in elevators and conveyers, and more particularly to those designed for elevating and conveying fuel from a tender to the hopper of a mechanical stoker located on a locomotive.

The object of the invention is to provide means located at the forward end of the tender for elevating fuel up either side thereof and then conveying the same centrally overhead to the hopper of the stoker carried on the locomotive. By such an arrangement the platforms of the locomotive and the tender are unobstructed and free access is had to the fire-doors and the tender.

Another feature resides in a grate having a plurality of openings of such dimensions as to allow only the proper-sized lumps of coal to pass through. By the term "proper-sized lumps of coal" such sized lumps as will readily be acted upon by the elevator and conveyer and properly combusted when delivered to the fire-box are referred to.

Finally, the object of the invention is to provide a device of the character described that will be strong, durable, efficient, simple, and comparatively inexpensive to build and one in which the several parts will not be liable to get out of working order.

With the above and other objects in view the invention relates to the novel details of construction and operation, a preferable embodiment of which is described in the specification, and illustrated in the accompanying drawings, wherein—

Figure 1 is a view showing a portion of the forward end of a tender in vertical section and my elevator arranged thereon in vertical section and the conveyer projecting therefrom in elevation, a portion of a locomotive and an automatic stoker being also illustrated in their relative positions to the conveyer and elevator. Fig. 2 is a vertical transverse sectional view taken on the line *x x* of Fig. 4 and looking from the rear of the tender and showing the stoker in elevation and the outline of the boiler partly in full lines and partly in dotted lines. Fig. 3 is a partial longitudinal sectional view through the grate

and its adjacent parts on the line *y y* of Fig.

2. Fig. 4 is a plan view of the various parts in their relative positions, the elevator-casing being broken away on top to show the construction lying beneath; and Fig. 5 is a plan view of the grate.

In the drawings the numeral 1 designates the forward portion of an ordinary locomotive-tender, upon each side of which are arranged the usual water-tanks 2, disposed so as to form the ordinary fuel inner space 3. At the bottom of the inner space 3 is arranged a downwardly and forwardly inclined plate or flooring 4, which serves to feed the fuel forward to a grate 5. The grate 5 is suitably mounted in an angle-iron frame 6, as shown in Fig. 3, supported in the forward end of the plate 4 and the rear portion of the usual platform 7 of the tender. The grate, as shown in Fig. 5, is provided with a plurality of rectangular openings 8 of such dimensions as to allow only the proper-sized lumps of coal or fuel to fall through, and the grate is constructed so as to withstand considerable strain as would be occasioned by the crushing of the fuel thereon to break the same into the proper-sized lumps to pass through the openings 8. Extending beneath and upwardly from the ends of the grate and between the water-tanks 2 is a substantially rectangular vertical elevating-casing 9, suitably constructed, preferably of sheet metal, and having arranged at each corner transverse lower shafts 10 and upper shafts 11 and 12. The inner walls of the casing are bulged inward adjacent the shafts, as indicated at 13, to accommodate sprockets 14, arranged in pairs, two upon each of the shafts, and at the sides of the casing. Sprocket conveyer-chains 15 are mounted upon the sprockets 14 at each side of the casing, as indicated in Fig. 1.

Buckets 16 are fixedly supported between the chains 15 and are preferably V-shaped in cross-section, so as to readily and effectually scoop up the fuel and dump the same. Of course it is to be understood that the casing 9 is cut away beneath the grate, so as to allow the fuel to drop therein. The casing beneath the grate is formed at its front and rear sides with outwardly and upwardly inclined portions 17, so as to direct the fuel falling through the openings 8 into the casing 9. Arranged on each side of the casing and at the bottom of the inclined portion 17 are angle-irons 18, acting as guide-shoes, beneath

which the chains pass. Beneath the angle-irons or guide-shoes 18 are arranged lower angle-irons or guide-shoes 19, which extend beyond the upper shoes 18 and part way up one of the vertical legs of the casing, as indicated in dotted lines in Fig. 2. The chains, and consequently the buckets, are prevented from riding upward, as the chains resting on the lower shoes 19 beneath the upper shoes 18 are directed in their course of travel and allowed only a limited upward movement. The lower guide-shoes also prevent sagging, and their extended portions serve to support the chains and the buckets until they have rounded the sprocket-wheel 14 and started on their vertical flight. Facing-plates 20 extend downwardly from the shoes to the bottom and outer wall of the casing, thus preventing the fuel from getting beneath the said shoes.

The sprocket-chains 15 and the buckets, with reference to Fig. 2, travel upward on the right-hand side and downward on the left-hand side, the buckets on the right-hand side being carried right side up and loaded and the buckets on the left-hand side being inverted and unloaded. As the buckets are carried around the lower left-hand sprocket 14 they are brought to a vertical position, as indicated in the said Fig. 2, so as to scoop up the fuel which falls through the openings 8 of the grate 5 as the said buckets pass thereunder, and as they pass around the lower right-hand sprocket 14 they are again brought to a horizontal position right side up and loaded, in which position they remain until they pass over the upper right-hand sprocket 14, when they will again be brought to a vertical position and dump the fuel, as will be apparent from the said figure. For imparting motion to the chains 15 I preferably extend the shaft 11, so that the same may be suitably connected with a source of power to transmit motion to the sprocket-wheels 14, carried on the said shaft. Motion thus being imparted to the said sprockets, the chains 15 will be driven, while the other sprockets will operate merely as idlers, the shaft 11 acting to further transmit motion, as will be herein after described. The shaft 12 is suitably slidably mounted, so that the slack in the sprocket-chains 15 may be taken up, while tightening-sprockets 21 are disposed within the casing slightly below the upper left-hand sprockets 14, as shown in Fig. 2, and engage with the said sprocket-chains 15.

Extending forwardly and from the central upper portion of the casing 9 is a conveyer-trough 22, arranged beneath the inner wall of the said casing, which is formed with an opening 23, so as to allow the fuel to drop into the said trough. The trough is closed at its rear end by the rear wall of the casing and rests in a hanger 25, having its free ends bent down and suitably fastened upon the top of the

casing 9. Arranged within the trough is an ordinary screw conveyer 26, whose shaft 27 is mounted at its forward end in a boxing 28, supported between the ends of the side flanges 29 of the trough 23, which side flanges project a short distance beyond the said trough, consequently causing the extreme outer end of the conveyer to project out of and beyond the trough, so as to carry the fuel therefrom. The trough and the exposed portion of the conveyer 26 are disposed directly over the hopper 30 of a suitable mechanical stoker 31. The rear end of the shaft 27 projects through and beyond the rear vertical wall of the casing from which it is supported and has keyed upon its projecting portion a sprocket 32, which is connected, by means of a sprocket-chain 33, with a sprocket 34, keyed upon the shaft 11. As before described, motion being imparted to the shaft 11 by the sprockets 14, it is apparent that the said sprocket 34 will be revolved and motion transmitted from the sprocket by means of the chain 33 to the sprocket 32, which latter being fixed upon the shaft 27 of the conveyer will revolve the same and cause the fuel dumped from the bucket 17 through the opening 23 into the trough 22 to be conveyed forward to the end of the trough, from which point it will drop into the hopper 30.

By carrying the fuel up the side of the inner space 3 the same is left free and unobstructed, so that the fireman may readily pass into the tender and that he may also use the long-handled pokers and implements without interference on the part of the elevator, and by disposing the conveyer centrally overhead the fireman is afforded free access to the fire-doors, which are indicated in Fig. 1 of the drawings by the numeral 36, so that he may stoke the furnace by hand should he desire or in case of accident to the stoker or the elevator and conveyer.

Another material advantage gained by arranging and constructing the parts as herein described is the removing of all fuel-delivering mechanism from and about the sides and lower portion of the boiler and also obviating the detrimental effects of the lost motion between the tender and the locomotive. Further, it will be observed that the conveyer being disposed centrally over the hopper 30 the rounding of sharp curves and the swaying of the tender and locomotive will not in any way interfere with the continuous delivery of the fuel to the hopper.

In conclusion I wish it understood that the essential feature of the invention is the construction and arrangement of the parts so as to elevate the fuel from the bottom of the tender up its side to a central overhead conveyer and to convey the fuel centrally overhead above the platform of the tender and deck of the locomotive to the hopper of the stoker, and in view of this fact various

changes may be made in the construction and operation wholly within the scope of the claims and without departing from the spirit of my invention.

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

1. The combination with a locomotive, a stoker for supplying fuel thereto and a locomotive-tender, of means for conveying fuel from the tender to the stoker, the delivery end of said means lying in juxtaposition to the stoker, but movable laterally with relation thereto.
- 15 2. The combination with a locomotive, a stoker for supplying fuel thereto and a locomotive-tender, of means for conveying fuel from the tender to the stoker, said means being mounted upon the tender centrally thereof and extending longitudinally overhead from the tender toward the locomotive with its delivery end in juxtaposition to the stoker and movable laterally with relation thereto.
- 20 3. Means for feeding fuel from a locomotive-tender to the hopper of a mechanical stoker carried on the locomotive, comprising a device for elevating the fuel up the side of the tender, and means for conveying the fuel overhead from the said device to the hopper of the stoker.
- 25 4. In a device of the character described, the combination with a stoker and a locomotive-tender, of means for elevating fuel up one side of the tender and partly across the same overhead, and a conveyer associated with the elevator and extending overhead therefrom to convey the fuel from the elevating means to the stoker.
- 30 5. The combination with a locomotive-tender and a stoker, of a grate located in the tender, means for elevating fuel from be-

neath the grate up one side of the tender, and a conveyer for conveying the fuel from the elevating means to the stoker.

6. The combination with a locomotive-tender and a stoker, of an elevator for carrying fuel from the bottom of the tender up one side and overhead across to the center of the same, and a conveyer supported centrally overhead from the elevator with its outer end in juxtaposition to the stoker and adapted to convey the fuel from the elevator to the stoker.

7. The combination with a locomotive-tender and a stoker, of an overhead conveyer having its discharge end adjacent the stoker, means for automatically elevating fuel from the tender and delivering it to the conveyer, means for imparting motion to the elevating means, and means for imparting motion to the conveyer.

8. The combination with a locomotive and its tender of a stoker carried upon the locomotive, a conveyer carried by the tender and extending from said tender to said stoker in a plane above the top of the tender and means for elevating fuel from the body of the tender and delivering the same to said conveyer.

9. The combination with a locomotive and its tender, of a stoker carried upon the locomotive, a conveyer carried upon the tender and held rigidly in line therewith, said conveyer passing overhead from the tender to the stoker with its free and delivery end overhanging said stoker.

In testimony whereof I affix my signature in presence of two witnesses.

MORRIS B. BREWSTER.

Witnesses:

A. L. PHELPS,
M. B. SCHLEY.