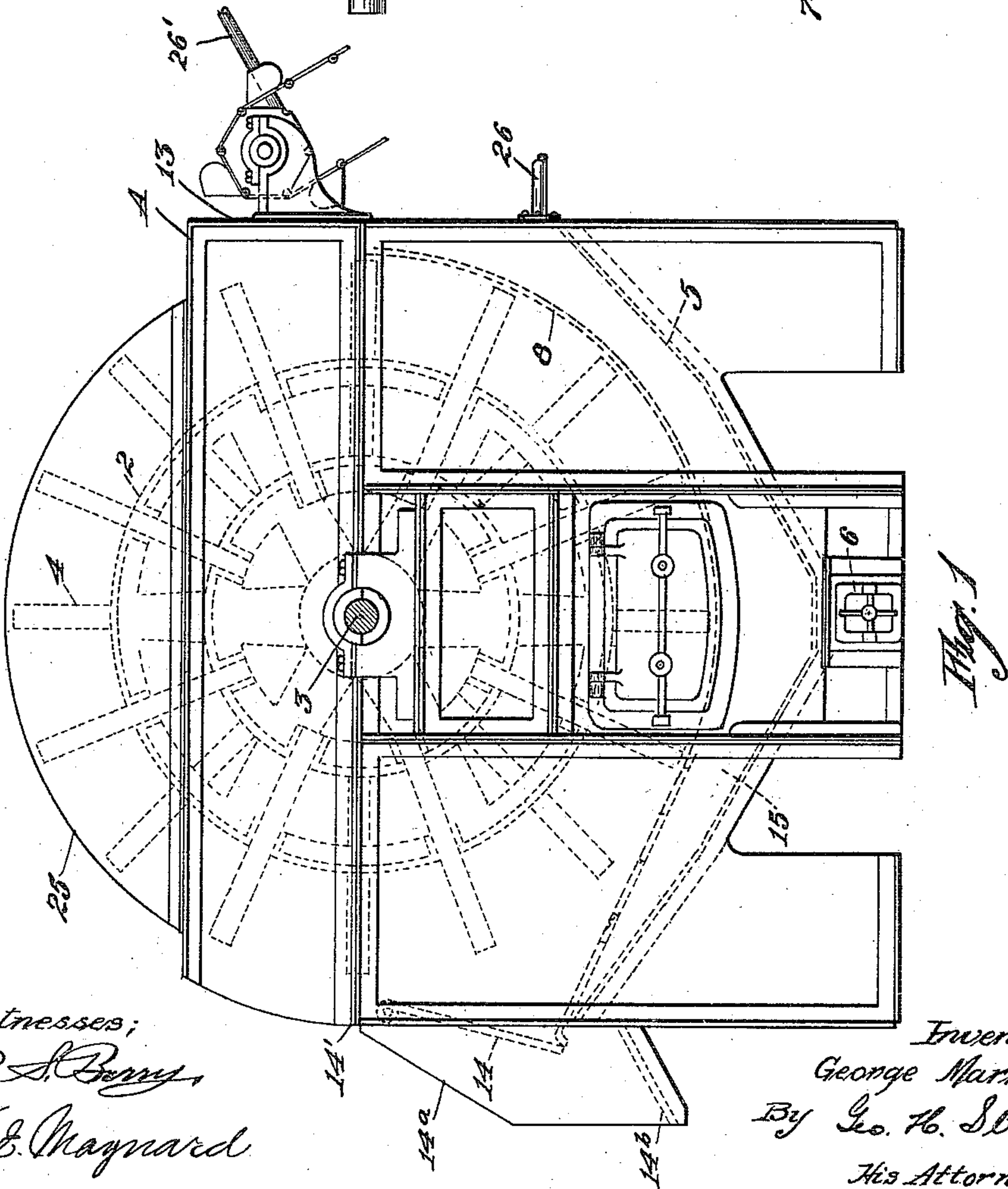
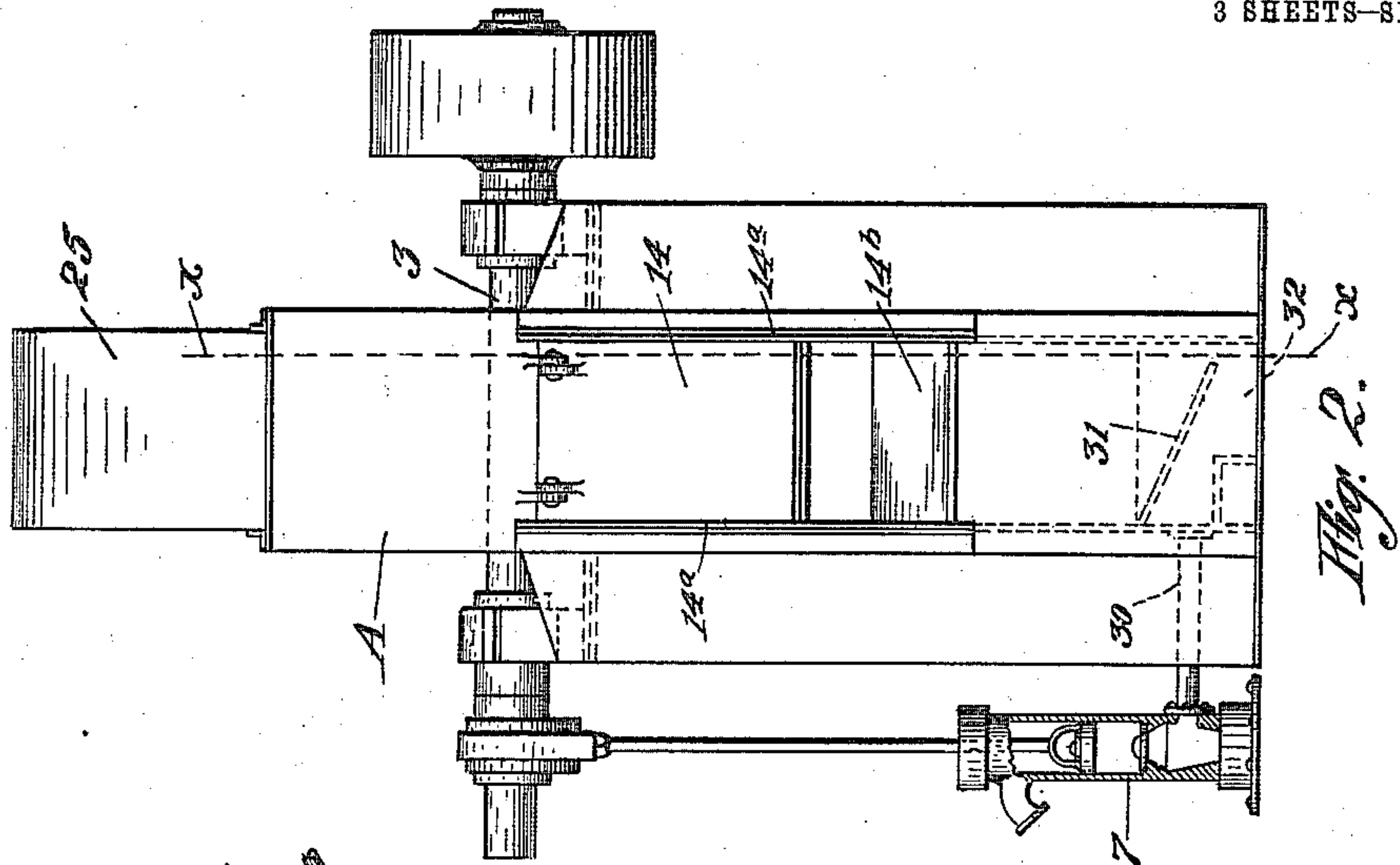


G. MARSHALL.
DISINTEGRATING AND VALUE SAVING MACHINE.
APPLICATION FILED MAY 5, 1909.

985,359.

Patented Feb. 28, 1911.

3 SHEETS—SHEET 1.



Witnesses;
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J. E. Maynard

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By Geo. H. Strong,
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3 SHEETS--SHEET 2.



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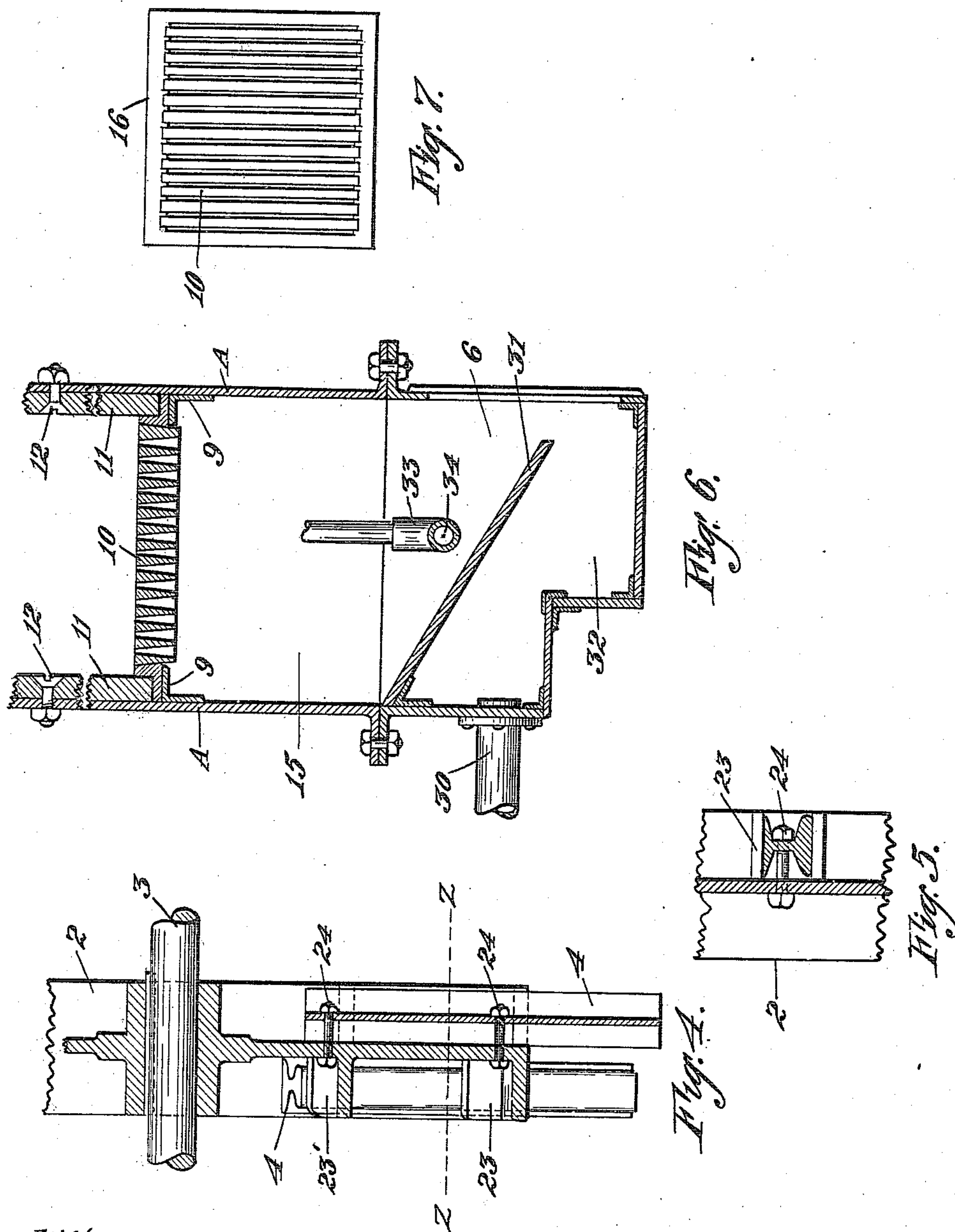
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UNITED STATES PATENT OFFICE.

GEORGE MARSHALL, OF SAN FRANCISCO, CALIFORNIA.

DISINTEGRATING AND VALUE-SAVING MACHINE.

985,359.

Specification of Letters Patent.

Patented Feb. 28, 1911.

Application filed May 5, 1909. Serial No. 494,122.

To all whom it may concern:

Be it known that I, GEORGE MARSHALL, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Disintegrating and Value-Saving Machines, of which the following is a specification.

My invention relates to a rotary puddler or apparatus for disintegrating clays, cements, and the like.

The object of the invention is to provide a simple, practical, economically operated machine, particularly applicable for use in placer mining for the purpose of disintegrating clay, or sticky or cementitious soils and deposits, and so as to enable the recovery of the metalliferous or mineral values which they may carry. It is manifest, however, that the apparatus is capable of use in other arts, and for other purposes.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a side elevation of the invention. Fig. 2 is an end elevation. Fig. 3 is a section on line X—X, Fig. 2. Fig. 4 is a section on line Y—Y, Fig. 3. Fig. 5 is a fragmentary section on line Z—Z, Fig. 4. Fig. 6 is an enlarged detailed view in section of the tank. Fig. 7 is a plan view of a grizzly.

A represents a box or shell of suitable size, shape and material, in which the wheel 2, supported on the shaft 3 and carrying the beaters 4 is revoluble. In practice, I prefer to make the box or shell of steel plates suitably riveted together to form water-tight joints, and constructed in one or more parts; the lower part, or main body, being about 10 feet 4 inches, more or less, in length, by about 20 inches in width, and 6 feet in depth, with the sides of steel plates preferably about $\frac{3}{8}$ of an inch in thickness. The sides of the shell may be provided with suitable doors or closed openings through which access may be had to the interior thereof. The shell may also be supported on any suitable form of foundation or support. This shell or box has a sloping bottom 5 leading down to a discharge or sump 6 for the collection of the heavier portions of the pulp and the values, and which pulp is thereafter re-

moved by suitable means, as a pump 7 worked from an eccentric on shaft 3, or by other means, leaving behind the values sought to be saved.

Arranged within the shell and above the sloping bottom 5, is a false bottom made up of liner plates 8 resting on curved angle-iron supports 9 which are secured to the inside of the sides of the shell; the liner plates 8 being substituted in places by grids or grizzlies 10, through which the water may pass to mix with the material, and the disintegrated pulp and water may pass downward to the sump; all as will be more fully explained hereinafter. The liner sections 8 are made of heavy, and of a good quality of steel, and are held in place by the side liners 11, which latter have their lower ends fitting in suitable mortises in the ends of the bottom liners 8, the side liners being suitably secured to the shell by dovetail headed bolts, as 12. These bottom and side liners extend from the feed opening, preferably as represented at 13, to the discharge opening, indicated by the swinging gate 14, and baffle plates 14' just beyond. The door 14 swings between the side plates 14^a so that discharge can only take place under the door and over the lip 14^b.

The grizzlies 10 are of suitable construction and mesh and arranged at appropriate intervals in the length of this inside flooring, and allow for the proper material, including the finer stuff sluiced from the gravel and other matter fed to the machine, to pass down into the space 15 beneath; thence the portion not sought to be saved is withdrawn from the sump by the pump, or otherwise taken care of. These grizzlies or grids preferably consist of metal plates spaced not usually more than a quarter of an inch apart and extending lengthwise of the apparatus, these plates being secured to frames 16 which are adapted to be locked in position between the bottom liners 8 by suitable means, as the transversely extending bolts 17 coöperating with the side liners which rest on the sides of the frame 16.

The forward portion of the flooring, composed of the grids and bottom liners, assumes a tangent to the arc of the ends of the beaters 4 toward the door 14, and in this tangential portion may be arranged metal plates with pockets 21 for the collection of the heavy metalliferous particles. The door

14 is shown as gravity-actuated, and only opened under the pressure of the stones and cobbles banked up against it after passing beyond the range of action of the beaters, and when the door opens, the rock and stuff pass out of the machine to a suitable point of discharge. The tangential or straight portion of the flooring is preferably dropped down a step to give clearance, as shown at 22. The amount of opening given the door will serve to regulate the quantity and size of material discharged.

The arms or beaters 4 are of any suitable material, and are held in by any appropriate means. Preferably railway rails are used, cut to appropriate length, so that they can be reversed, end for end, and both ends used before being finally thrown away. As here shown, the rim of the wheel 2 has suitable radial sockets or mortises 23 to receive the arms or beaters, and a bolt or equivalent securing means 24 is passed through the walls of the sockets and through the beaters to hold the latter in place. If desired, I may place, midway between the rim and hub on the wheel, a set of pockets 23' to support the inner ends of the beaters and give them additional rigidity. The beaters are not allowed to come in contact with the bottom liners, as the apparatus is essentially a disintegrating, puddling and sluicing machine, as distinguished from a grinder; these beaters acting as disintegrators by striking the pulp fed in to the machine, and the continuous agitation and beating causing the desired action to take place. The wheel is operated at appropriate speed, and the beaters 4 are arranged in staggered relation, so as to produce the desired agitation.

The tank space 15 is filled with water or other liquid from any appropriate source of supply, represented at 26 and 26', to the level of the discharge opening represented by the door 14; and by reason of the dipping down of the upper flooring formed by the liners 8 and grids 10, and by reason of the openings afforded by the grids 10, the water passes up through the grids and also down from the feed to mix with the material undergoing disintegration and segregation. The values, in the form of precipitates and slimes, pass down into the hopper space 15 through the grids 10, the rocks and worthless debris, too large to pass through the grids, being finally forced onward to the discharge outlet and through the opening controlled by door 14. The discharge may be continuous, or intermittent, and sized, by manipulating the door in any suitable fashion.

If desired, the beaters may be housed in by a suitable metal covering or hood 25.

If necessary, or desirable, where working in cold countries, suitable means (not necessary here to be shown) may be employed to

heat the tank and thaw the material therein, so as to aid the operation of recovery of the valuable contents.

The outtake 30 for the pump is protected by a baffle plate 31 to throw the precipitates clear of the pump and allow their collection in the trap or pocket 32.

If desired, an upward counter-current and downward current to stir up the slimes may be obtained by the arrangement of spray pipes 33—34 shown in Figs. 3 and 6.

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

1. In a disintegrating machine, the combination with a revoluble beater, of a liquid containing box within the contents of which the beater operates, a hopper space beneath the beater and into which the fines and values are delivered, said box having a false bottom with screen openings, and having a gravity actuated door at one end of the false bottom adapted to be opened in an upward direction under the influence of heavier and coarser material carried forward by the beater, the lower edge of said door resting in contact with the edge of the false bottom.

2. A disintegrating machine comprising a liquid containing box having a curved bottom with suitable screen openings therein, and a hopper space beneath into which the fines and values are delivered, a rotary beater revoluble in said box in the liquid contents thereof, said box having a gravity controlled door at one end of the curved bottom, and said beater adapted to discharge heavier and coarser material too large to pass the screen openings, centrifugally over the bottom and through said gravity door.

3. A disintegrator having in combination a liquid containing box, a false bottom therein having screen openings, a hopper space beneath said bottom, a rotary beater revoluble in the box above the bottom and in the liquid contents thereof, adapted to move heavier and coarser material, too large to pass the screen openings, centrifugally over said bottom to the discharge end thereof, the disintegrated finer material passing through the screen openings to the hopper space below, and a door hung at its upper end proximate to the discharge end of the box and at the end of the false bottom, said door adapted to be opened in an upward direction under the influence of the heavier and coarser material carried forward by the beater.

4. A disintegrator comprising a box having a curved bottom made up of removable metal liners with interspersed grids or grizzlies, means inclosing a hopper space below the said bottom and within the box and adapted to contain water, which water may pass through said grids into the space about said curved bottom, a wheel within the box

having beater arms operating concentrically
with, and in juxtaposition to, said curved
bottom, said bottom liners having their ends
recessed, side liners secured within the box
5 with their ends resting in said recesses, and
means for feeding material into one end of
the box and into the path of the beaters, said
box having an upwardly swinging gravity
door at the opposite end automatically
10 opened by the material too large to pass
through the grids, and said bottom extend-

ing approximately tangential to the arc of
the ends of the beaters as said bottom ap-
proaches said discharge outlet.

In testimony whereof I have hereunto set 15
my hand in presence of two subscribing wit-
nesses.

GEORGE MARSHALL.

Witnesses:

CHARLES EDELMAN,
C. C. COOK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
