

No. 806,488.

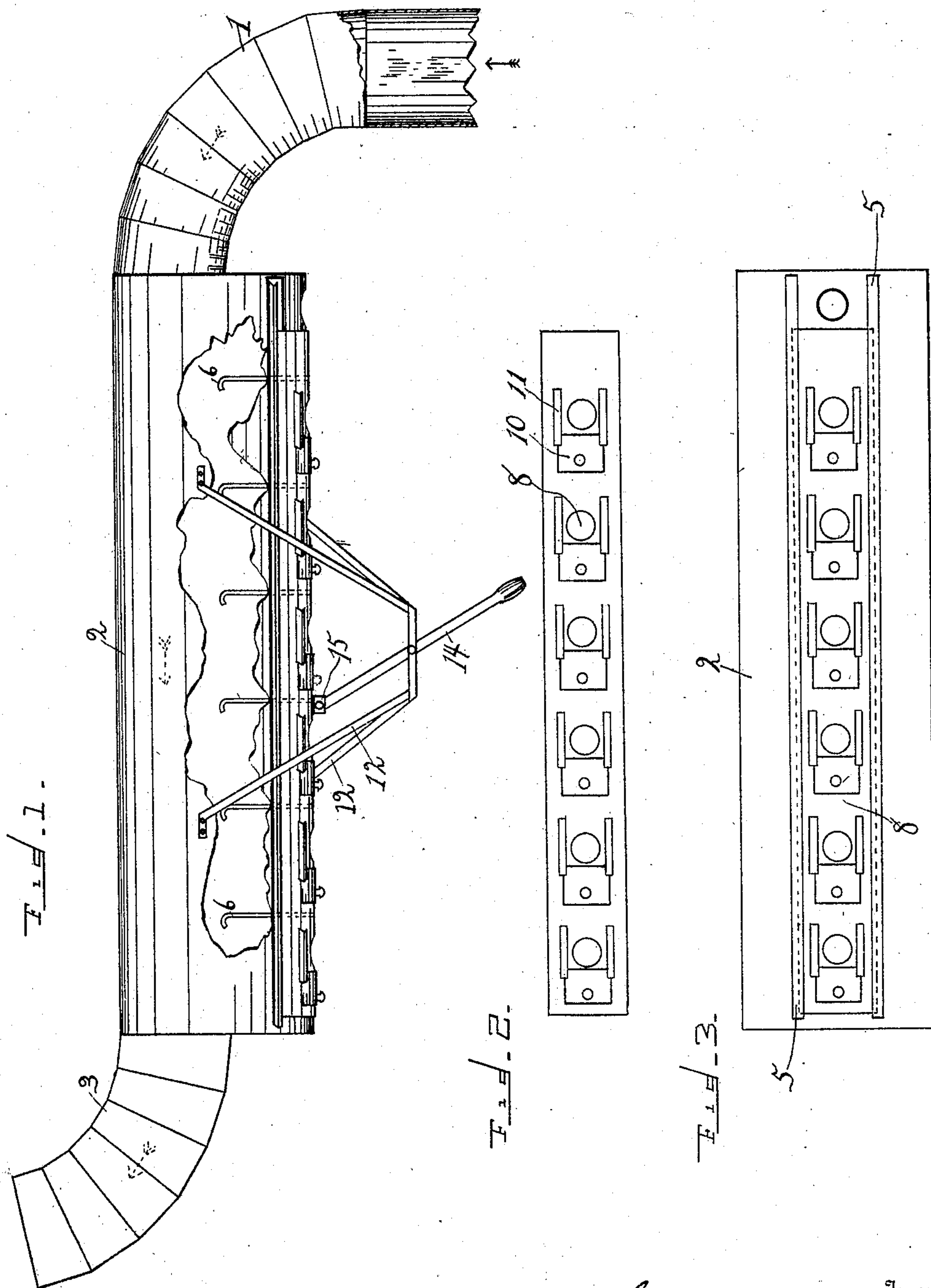
PATENTED DEC. 5, 1905.

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SEPARATING APPARATUS FOR ALFALFA GRINDERS.

APPLICATION FILED APR. 15, 1905.

2 SHEETS—SHEET 1.



Witnesses

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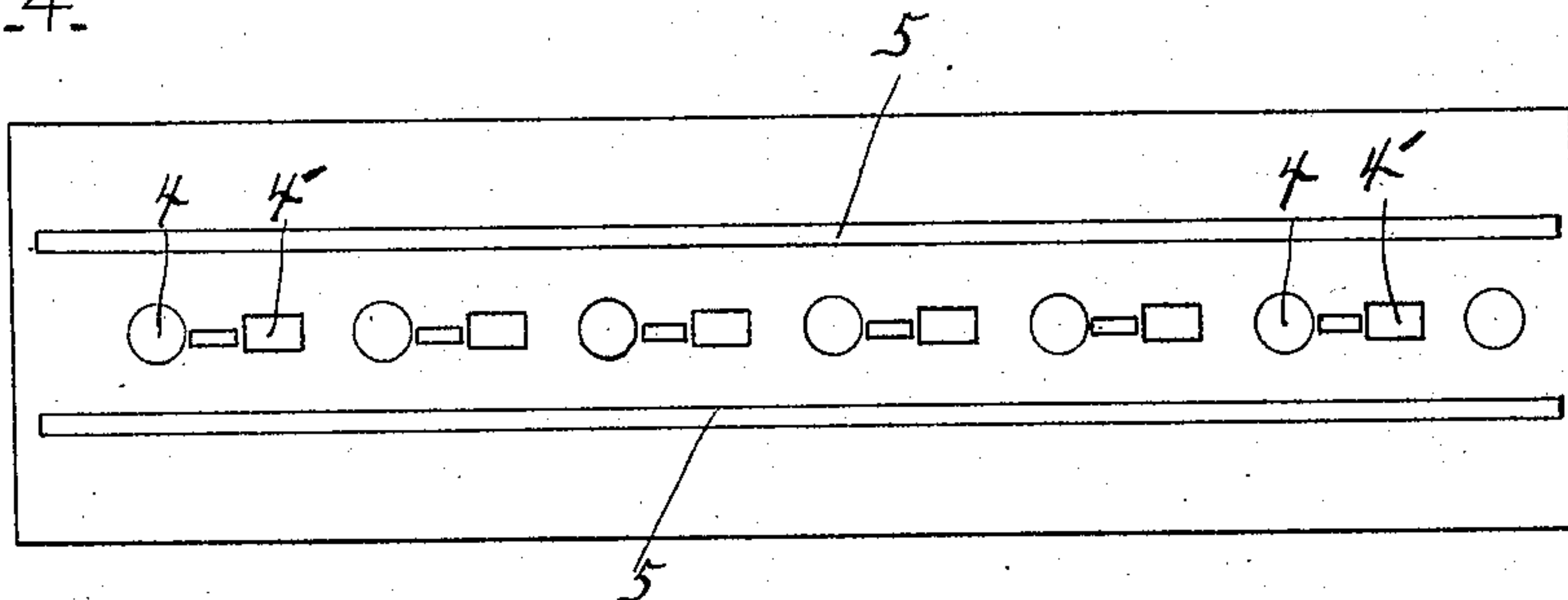
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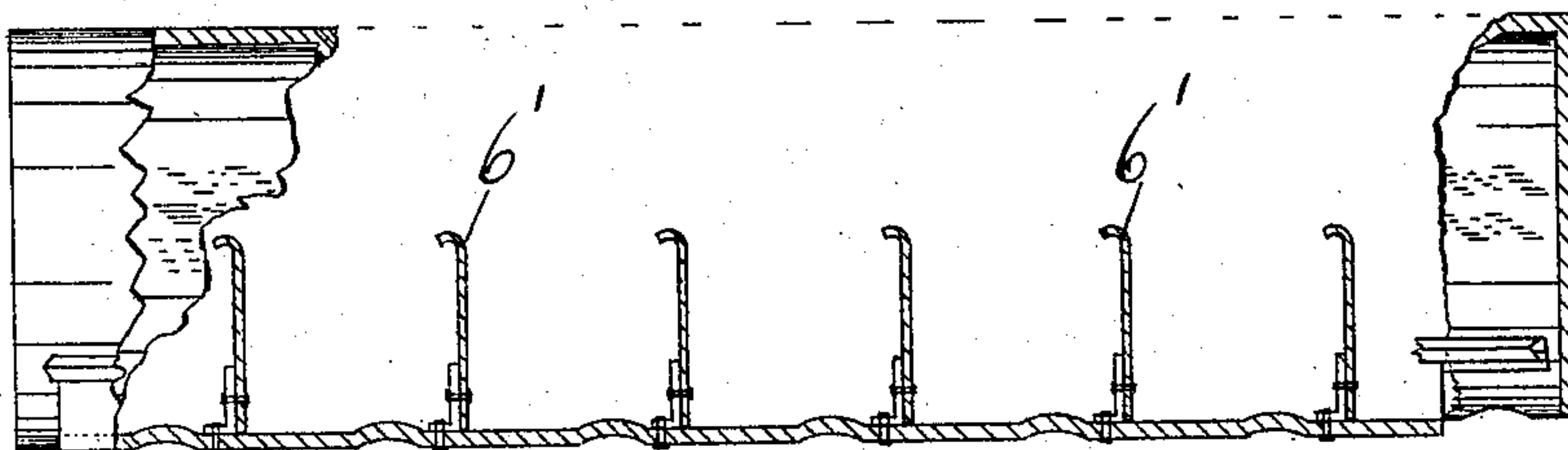
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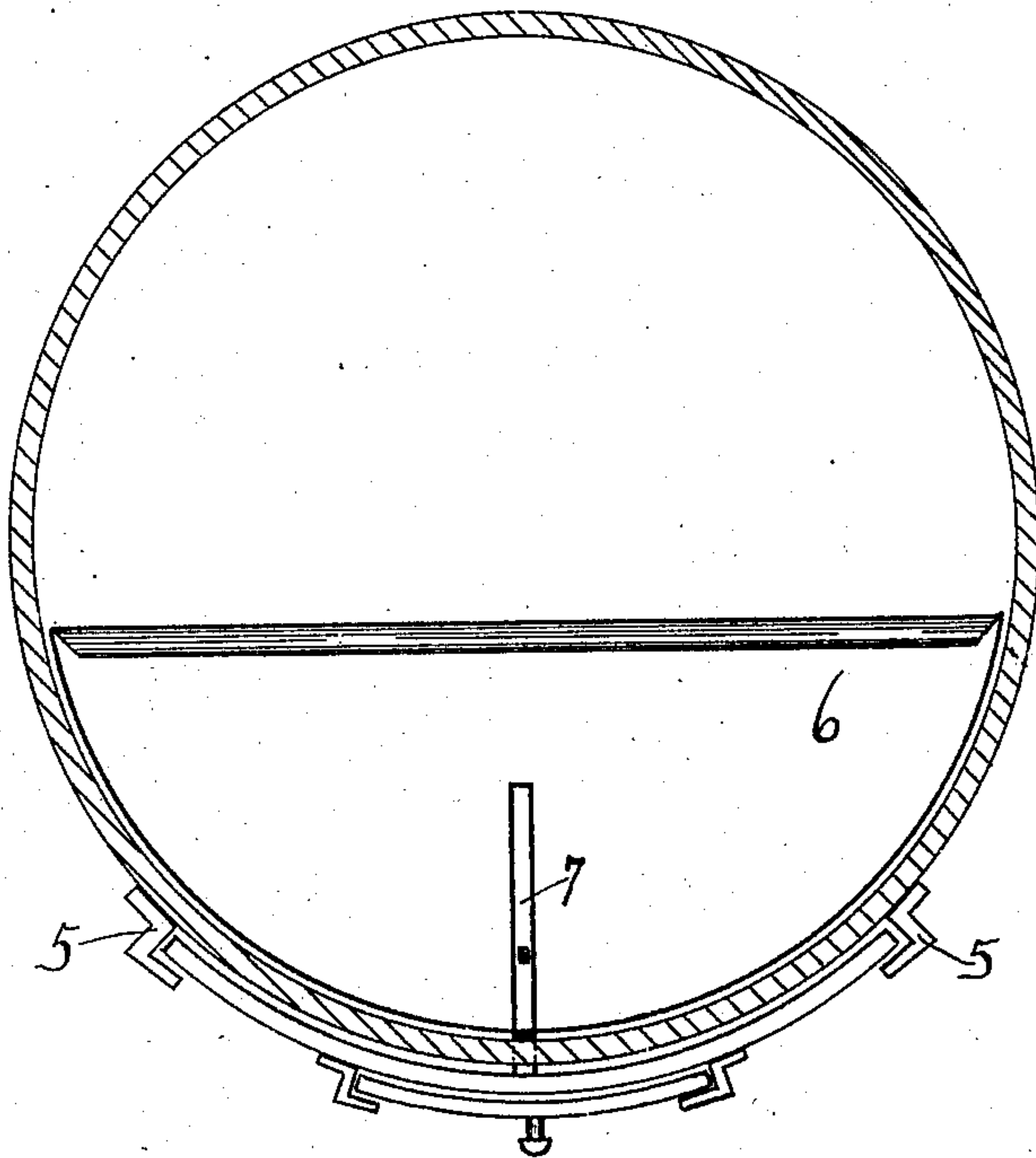
F 1 4.



F 1 5.



F 1 6.



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# UNITED STATES PATENT OFFICE.

GEORGE H. PAYNE, OF OMAHA, NEBRASKA.

## SEPARATING APPARATUS FOR ALFALFA-GRINDERS.

No. 806,488.

Specification of Letters Patent.

Patented Dec. 5, 1905.

Application filed April 15, 1905. Serial No. 255,772.

*To all whom it may concern:*

Be it known that I, GEORGE H. PAYNE, a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Separating Apparatus for Alfalfa-Grinders, of which the following is a specification.

My invention relates to an improvement in separating apparatus for alfalfa-grinders or for a like purpose.

In the grinding and pulverizing of the alfalfa-plant or alfalfa-hay to produce what is known as "alfalfa-meal" the dried stalky portions and leaves are first reduced to small particles by the use of certain kinds of cutting machinery; but before the final grinding process is reached it is necessary to separate from the food portions of the alfalfa any small pebbles, sand, stone, nails, pieces of rock, or metal substances, which, from gathering the crop from the harvest-field or in transportation to the mill, often become mixed with the raw material before it is ready to be prepared as alfalfa food. Various methods for the separation of the small foreign substances have heretofore been resorted to by those who have exploited the reduction of the alfalfa-hay into a powdered or pulverized condition, but generally with ill success.

The object of this invention is to provide an absolutely reliable and efficient means for the separation of particles of rock, pebbles, nails, bits of wire, sand, or other small heavy substances from the alfalfa raw material during the process of its manufacture into meal and before pulverization, so that the substances will be prevented from entering into the food product or into the grinding machinery, also to provide a means so that these foreign and objectionable substances may be separated and removed quickly and without the loss attending a manual handling of the material and without shutting down the mill.

With these objects in view my invention presents many novel features of construction and arrangement of parts; and it consists of the matters hereinafter described, and more fully pointed out and defined in the appended claims.

In the drawings, Figure 1 is a vertical plan view of a connecting-receptacle, a part of its wall being torn away to show interior construction. Fig. 2 is the sliding member. Fig. 3 is a view of the bottom of the connecting-receptacle with the sliding member in posi-

tion. Fig. 4 is a bottom view of the receptacle, the sliding member being removed. Fig. 5 is a side view of the receptacle, all sectional except at each end, to illustrate the relative positions of the movable cross-partitions. Fig. 6 is a vertical sectional end view of the receptacle to illustrate mode of attachment of the sliding member upon the receptacle and one of the series of cross-partitions.

In Fig. 1, which illustrates my complete invention, air from a blower is driven through the pipe 1, passing through the receptacle 2 and thereafter upward through the pipe 3, the velocity or force being sufficiently great to carry all of the cut alfalfa-hay from a point below and where it has been cut into one-half to three-quarter inch lengths to and through the upper pipe, and thence to other and more delicate pulverizing machinery than it had before reached. The incoming and finely-cut alfalfa comes into and passes through the receptacle without being in any manner impeded by any interior structure of said receptacle; but any heavy substances—such as sand, pebbles, particles of rock, nails, or wire, or any pieces of metal, all of which are frequently found in alfalfa, they being of greater specific gravity—will fall upon the bottom of the receptacle between the partitions and will remain upon the rounded bottom of the receptacle until removed by the means which I will presently describe.

I employ a receptacle of sufficient horizontal length to insure the lodgment of the heavy particles or substances above referred to before they would pass through its entire length, and since the incoming pipe has a long curve the tendency for a downward throw into the receptacle of the pipe contents is avoided, and in operation the entire mill output of alfalfa passes through this connecting-receptacle and is blown upward through pipe 1 and along horizontally over the partitions 6 and then again upward through the pipe 3, the sand, pebbles, pieces of metal, &c., by reason of their greater gravity being invariably deposited upon and along the series of openings 4 and 4' upon the lowest inner longitudinal surface of the receptacle and in this manner and by these means are prevented from entering the alfalfa-food product or into the pulverizing machinery at later stages of alfalfa-grinding.

Upon the outer cylindrical surface of the receptacle-body 2 and upon either side of the series of openings 4 and 4' I construct



guideways 5, which form a partial sheath or slideway within which the sliding member, Fig. 2, by its engaging edges is free to move in a longitudinal direction, and in Fig. 3 the dotted lines represent the sliding member in such position.

Integrally and vertically upon the sliding member I construct the series of cross-partitions 6. The sides and lower rim of these cross-partitions just fit within the inner circular body of the receptacle and occupy a crosswise position therein. The upper horizontal rims 6' of these partitions are abruptly bent in the same direction the air is to be blown, and I suitably and rigidly sustain these partitions by means of the supporting-rods 7 bolted thereto.

In order that the small foreign metal or mineral substances above referred to may be quickly and efficiently removed from the receptacle, I employ several devices. I provide a series of round openings 8 upon the sliding member and provide for these openings the corresponding slides 10, which are adapted to slide within their guide-walls 11, and integrally upon the walls of the receptacle I construct the supporting-arms 12 for the pivotally-hung lever 14, adapted to swing in a lengthwise direction with the receptacle-body, and opposite its free end the lever is pivotally hung upon the bearing 15, this bearing being integrally stationed upon the sliding member. If the free end of the lever 14 is now moved to the right, the sliding member necessarily has a correspondingly reverse longitudinal movement to the left, and the round openings 4 of the receptacle come upon exact vertical alinement with the round openings 8 of the sliding member, and if the slides 10 are drawn back the small foreign substances which may have accumulated during the operation which I have described will drop down and out of the receptacle, and by now moving the free end of the lever to the left the entire sliding member, with its series of partitions, slides, &c., will move to the right, and the round openings 8 of the sliding member will be then located immediately below the axial openings 4' of the receptacle, and any of the above-referred-to foreign substances lodged at the points of those axial openings will also drop down and out of the receptacle. A closure is then made of the openings 8 of the receptacle by means of the slides 10. By a quick movement of the lever backward and forward two or three times, the slides 10 being open, all of the objectionable foreign substances above referred to will drop out of the receptacle.

There is an exact fitting of the several parts, the sliding member, its guides, and the several small slides upon all of the openings of the receptacle-body, so that the suction occasioned by the "blower" will not be materially lessened in carrying the alfalfa material

through the pipes, and the adjustment of the parts is such that a single employee can at any time easily and quickly move the lever backward and forward and cause the dislodgment referred to.

I claim the following as my invention:

1. A separating apparatus of the class described, in combination, comprising a horizontally-disposed receptacle having a longitudinally-extending containing-wall with parallel upper and lower surface portions; a series of apertures formed within said lower surface portion of said containing-wall of said receptacle; an incoming and an outgoing pipe connected with said receptacle; a member having a wall extending adjacent to, parallel with and upon the outer part of said lower surface portion of said containing-wall of said receptacle; said wall of said member having a series of apertures formed therein; said wall of said member adapted to have a sliding movement, longitudinally, upon said lower surface portion of said receptacle; a series of vertically-disposed struts integrally mounted upon said member and passing within said receptacle; a series of leaves mounted vertically and integrally upon said struts and disposed transversely thereon with reference to said longitudinally-extending wall of said receptacle; said apertures of said containing-wall of said receptacle being in longitudinal alinement with the apertures of said wall of said member; and means to cause an opening and closure of said apertures.

2. In a separating apparatus, the combination of a horizontally-disposed receptacle having a longitudinally-extending containing-wall with parallel upper and lower surface portions; a series of apertures formed within said lower surface portion of said containing-wall of said receptacle; an entrance-pipe and an exit-pipe connected with said receptacle; a member having a wall extending adjacent to, parallel with and upon the outer part of said lower surface portion of said containing-wall of said receptacle; said wall of said member adapted to have a sliding movement, longitudinally, upon said lower surface portion of said receptacle; a series of vertically-disposed struts integrally mounted upon said member and passing within said receptacle; a series of leaves mounted integrally upon said struts; said series of leaves having body portions and inclinedly-formed free ends; the body portions of said leaves being vertically disposed, and mounted in a manner transversely with reference to said longitudinally-extending wall of said receptacle; said apertures of said containing-wall of said receptacle being in longitudinal alinement with the apertures of said wall of said member; and means to cause an opening and closure of said apertures.

3. A separating apparatus, comprising a pipe having a section thereof enlarged in diameter to form a lengthwise-extending, hori-



zontally-disposed, circular, chamber; a slid-  
able member mounted upon the lower surface  
of said chamber and adapted to have a length-  
wise movement thereon within the guide 5;  
5 the apertures 4 and 4' formed in the body of  
said chamber; the apertures 8 formed in said  
slidable member; the struts 7 integrally  
mounted on said slidable member; the series  
of leaves 6 mounted upon said struts; the  
10 slides 10 and guides 11; and means to cause a

simultaneous opening and closure of said ap-  
ertures 4 and 4', substantially as shown and  
described.

In testimony whereof I have affixed my sig-  
nature in presence of two witnesses.

GEORGE H. PAYNE.

Witnesses:

WM. FULLER,  
GEO. J. JONES.