

I. STEINER.

ASPIRATOR.

APPLICATION FILED JAN. 3, 1910.

951,749.

Patented Mar. 8, 1910.

2 SHEETS—SHEET 1.

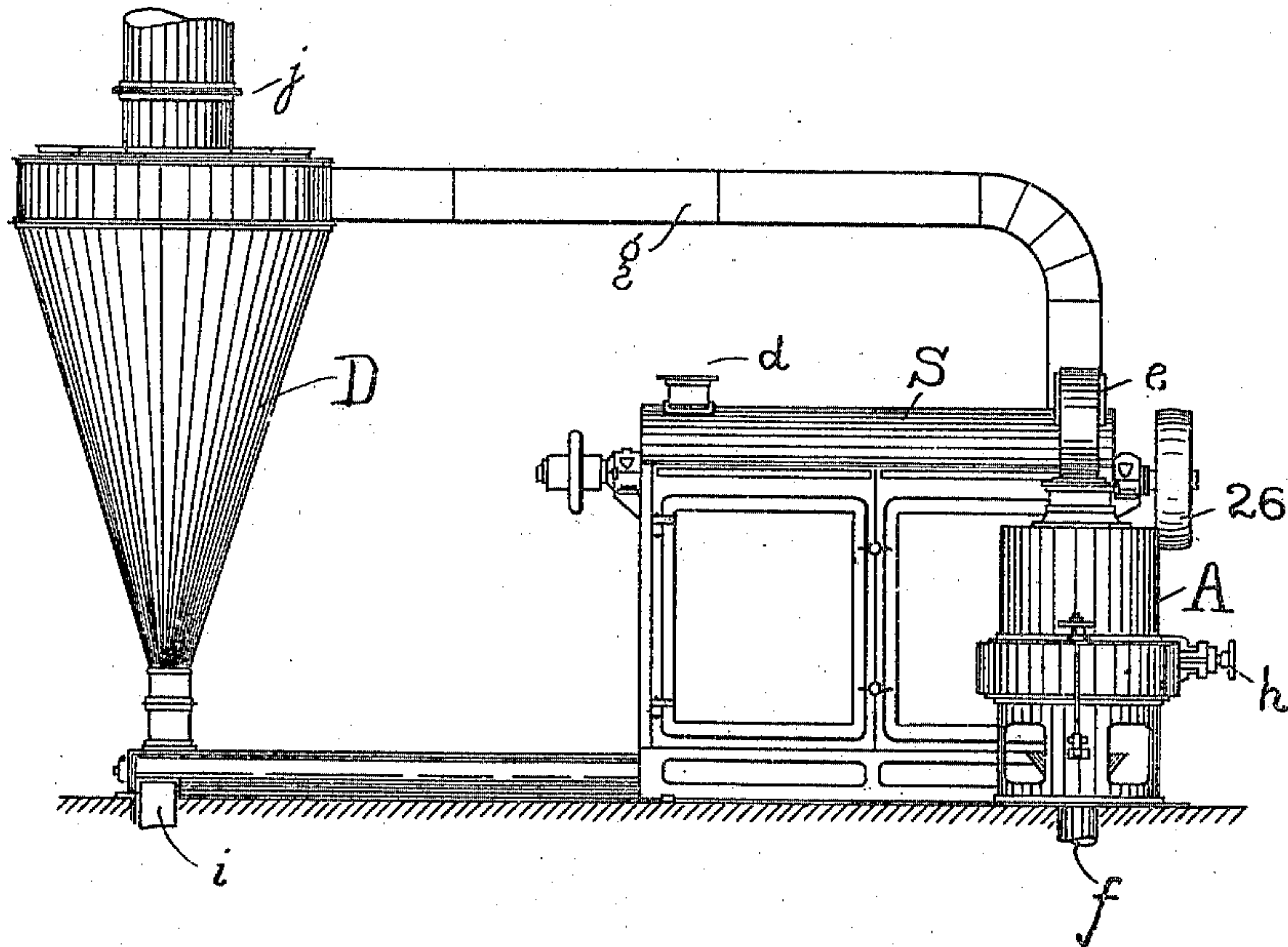


Fig. 1.

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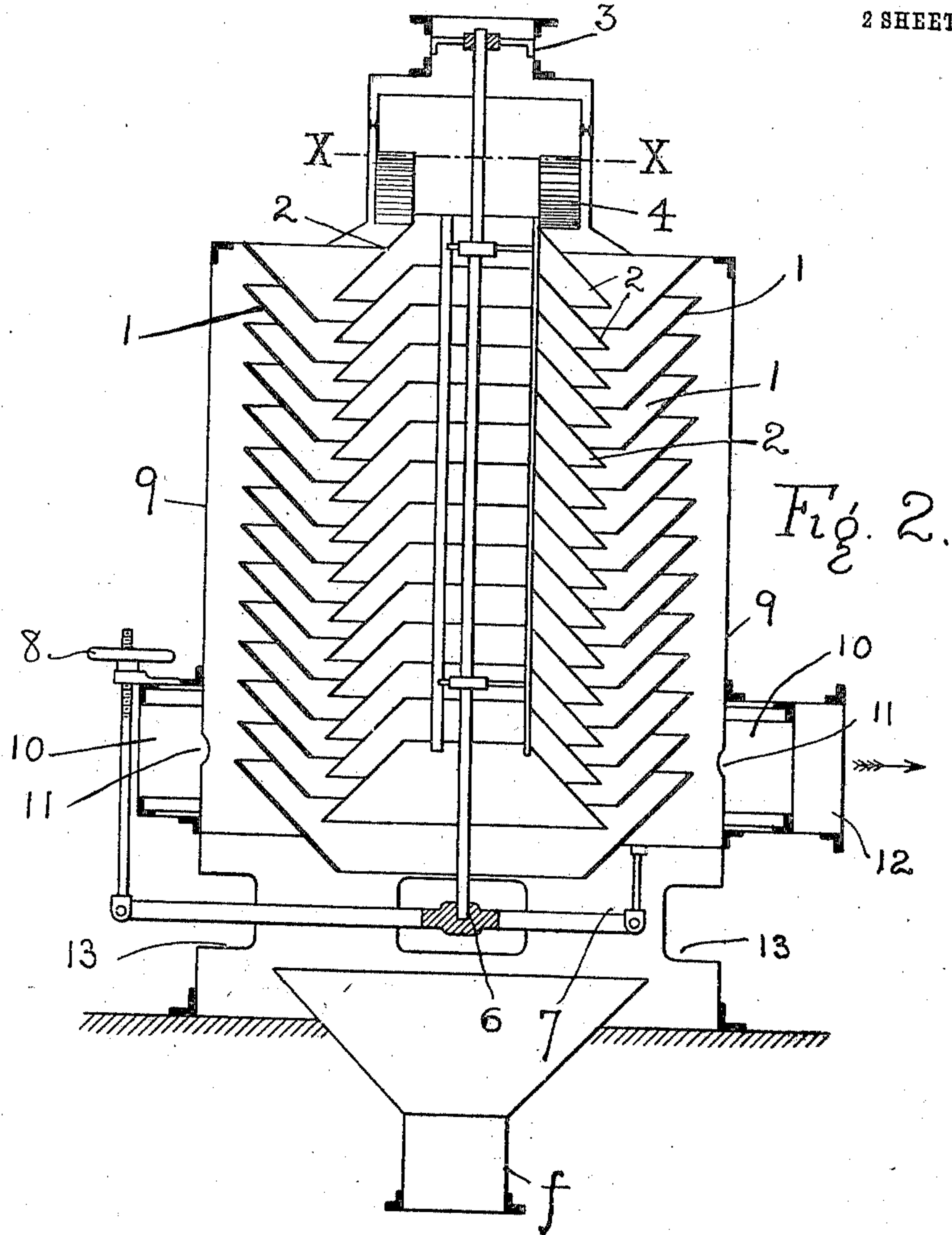
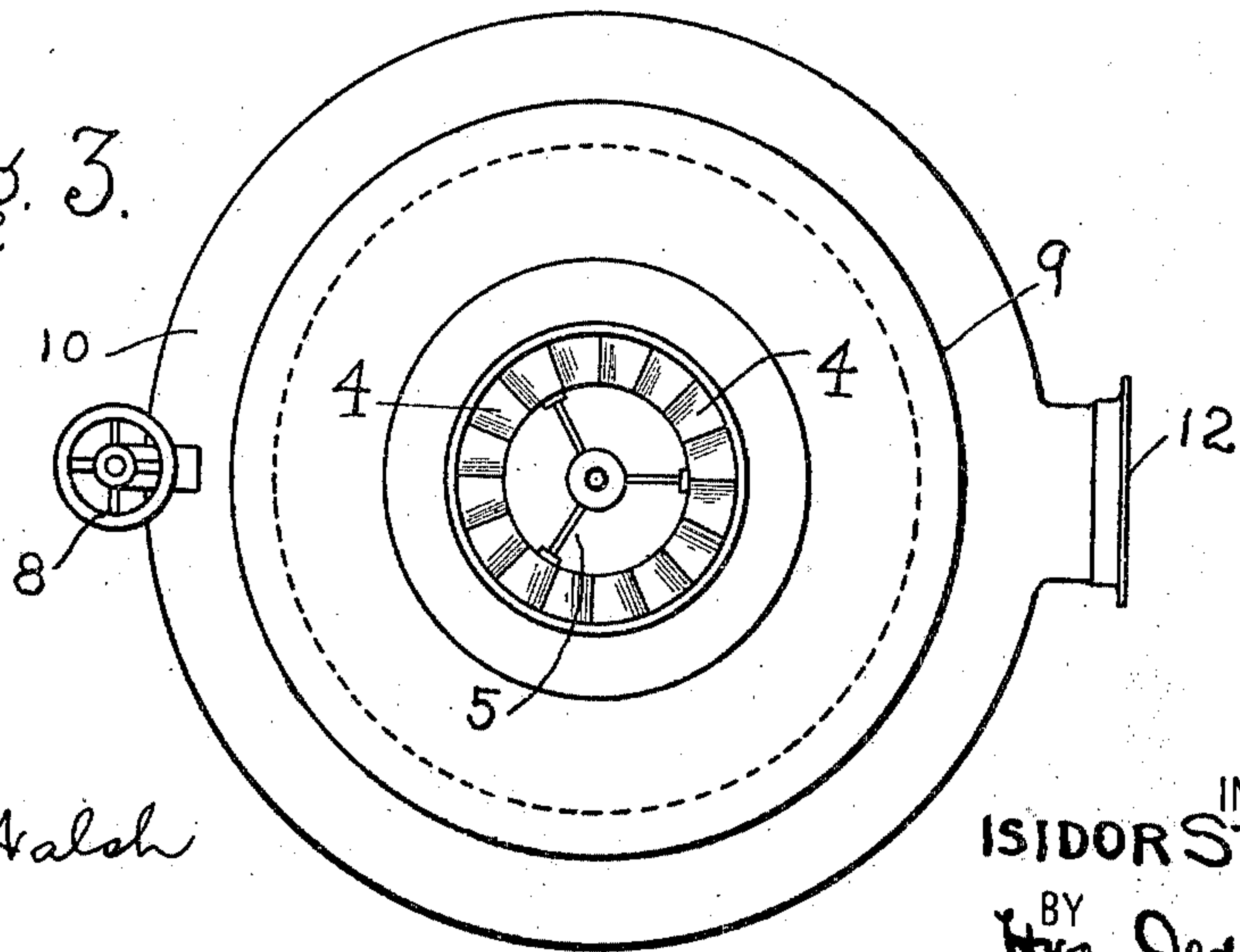


Fig. 3.



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# UNITED STATES PATENT OFFICE.

ISIDOR STEINER, OF MUNICH, GERMANY, ASSIGNOR TO GESELLSCHAFT FUR STEINER'S  
MALZ-ENTKEIMUNGS-PUTZ UND-POLIERMASCHINEN MIT BESCHRÄNKTER HAF-  
TUNG, OF MUNICH, GERMANY.

ASPIRATOR.

951,749.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Original application filed July 20, 1909, Serial No. 508,653. Divided and this application filed  
January 3, 1910. Serial No. 536,152.

*To all whom it may concern:*

Be it known that I, ISIDOR STEINER, sub-  
ject of the German Emperor, residing at  
Munich, Bavaria, Germany, have invented  
5 a new and useful Aspirator; and I do here-  
by declare the following to be a full, clear,  
and exact description of the same.

My invention relates to a machine for  
treating and cleaning grain, principally  
10 malt.

It relates particularly to one part of a  
compound apparatus, which consists as a  
whole of three devices, a separator, in  
which the grain is freed from the combs, a  
15 second device called the "aspirator", and  
a third apparatus called "dust collector".  
The first, or "separator", has been applied  
for by me, under date of July 20th 1909, and  
Serial No. 508,653, and the third, or "dust  
20 collector", forms the subject matter of an  
application filed on the third day of Janu-  
ary, 1910, Serial No. 536,153.

The present invention relates specifically  
to an apparatus called an aspirator, into  
25 which the grain previously treated in the  
separator, is made to pass, and in which a  
separation of the grains from the husks,  
combs, dust and the like, takes place through  
the medium of an air current without the  
30 use of any stationary or rotating sifting  
cylinders, whereby the grain is subjected at  
the same time to a polishing, in addition to  
that received in the separator, as well as to  
cooling and ventilation, so that it leaves the  
35 apparatus perfectly smooth and free from  
dust, the combs and particles of dust being  
carried off by the air current.

Figure 1 is a side elevation of the entire  
apparatus, consisting of the three parts,  
40 separator, aspirator, and dust collector. Fig.  
2 is a vertical section through the aspirator,  
the subject-matter of the present applica-  
tion, and Fig. 3 is a sectional plan view of  
the aspirator, on the line X—X, of Fig. 2.  
45 Referring to the drawings, especially to  
Fig. 1, showing the apparatus for cleaning,  
as a whole, A is the aspirator, S, the sepa-  
rator, and D, the dust collector. The grain  
is introduced into the apparatus S, at the  
50 opening *d*, and reaches the aspirator A  
through the pipe *e*, after being polished and  
freed from the combs. The completely  
cleaned grain leaves the aspirator at *f*, while

the combs and particles of dust are sucked  
away and carried off to the dust collector D, 55  
through a pipe *g*, by an air current pro-  
duced in an exhaustor, or the like, not shown  
in detail, which is driven, for example, by  
an electric motor to be coupled up at *h*.  
The combs and dust particles are separated 60  
from the air current in the dust collector D,  
and fall through the pipe *i* below while the  
purified air leaves at *j* at the top.

The essential improvement in the present  
aspirator which is formed, in a well-known 65  
manner, by a vessel provided with smooth  
conical rings and a drum adjustable in a  
vertical direction, also carrying smooth con-  
ical rings, consists in having open rings on  
the slowly rotating inner drum and arrang- 70  
ing a space or shell connected to an exhaustor  
around the outer rings in such a way that  
the grain on jumping across from one ring  
to another, in a way depending on the regu-  
lation of the spacing, by lifting or lowering 75  
the inner drum, is traversed between the  
conical rings by an air current passing out-  
ward from the center so that the light combs  
and dust particles are carried off thereby,  
while the heavy grains cleaned by the proc- 80  
ess of jumping from ring to ring, are sub-  
jected to a polishing action and fall out at  
the bottom.

In the method of constructing the aspi-  
rator shown in the drawings in Figs. 2 and 85  
3, a number of open-ended funnels 1 are  
arranged short distances apart, around a  
drum consisting of funnels 2 open at the  
top and placed over each other in such a  
way that the grain supplied at 3 passes 90  
through the apparatus at the circumference  
of the inner drum by jumping across from  
ring to ring with a speed depending on the  
distances between the ends of the funnels.  
These funnels constitute frustums of hollow 95  
cones. In order to obtain a uniform dis-  
tribution of the grain, the inner drum is  
allowed to be turned by the distributing  
vanes 4. These vanes 4 are arranged about  
the circumference of the upper part of drum 100  
2 and all slant in the same direction so that  
when the grain falls upon them they are  
rotated to distribute the grain supplied  
through the fixed guide vanes 5 about the  
inner circumference of the drum, thus turn- 105  
ing the drum by utilizing the energy of the



grain. For regulating the distance of the inner drum from the outer funnels, the whole drum is supported at 6 on a lever 7, so that in turning the hand wheel 8 the drum can be raised or lowered. In this manner the zigzag path described by each particle from the inner to the outer funnel and back to the inner one within the apparatus, can be determined at will, and the cleaning process can therefore be regulated.

A shell 9 is arranged around the whole apparatus and is provided at a suitable place with an annular channel 10 which communicates with the interior of the drum, by means of a number of openings 11. If the exhauster, or the like, mentioned above, be now connected to the end of the pipe 12, the air entering through openings 13 below the funnels 2, is sucked first through the interior of the drum, and thence outward through the grain jumping from funnel to funnel, whereby the combs and dust particles are carried away by the current, and are conveyed together with the latter into any vessel whatever, but more conveniently through the pipe *g* to the third component part of the apparatus (shown in Fig. 1), viz., the dust collector.

Having thus fully described and illustrated my invention, what I claim, is:

1. In an aspirator, a vessel provided with a series of stationary conical rings open at the ends, a rotatable vertically adjustable inner drum provided also with open ended conical rings, and a shell encircling the outer rings, in combination with an exhaust device.

2. In an aspirator, a vessel provided with a series of stationary conical rings open at the ends, a rotatable vertically adjustable inner drum, also provided with open ended conical rings, in combination with distributing vanes arranged above the inner drum.

3. In an aspirator, a vessel provided with intercommunicating series of runways, means for supplying air between said runways and means actuated by the entering material to rotate one of said series of runways.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

ISIDOR STEINER.

Witnesses:

JOSEPH HUBER,  
LOUIS MUELLER.