

Fig.1

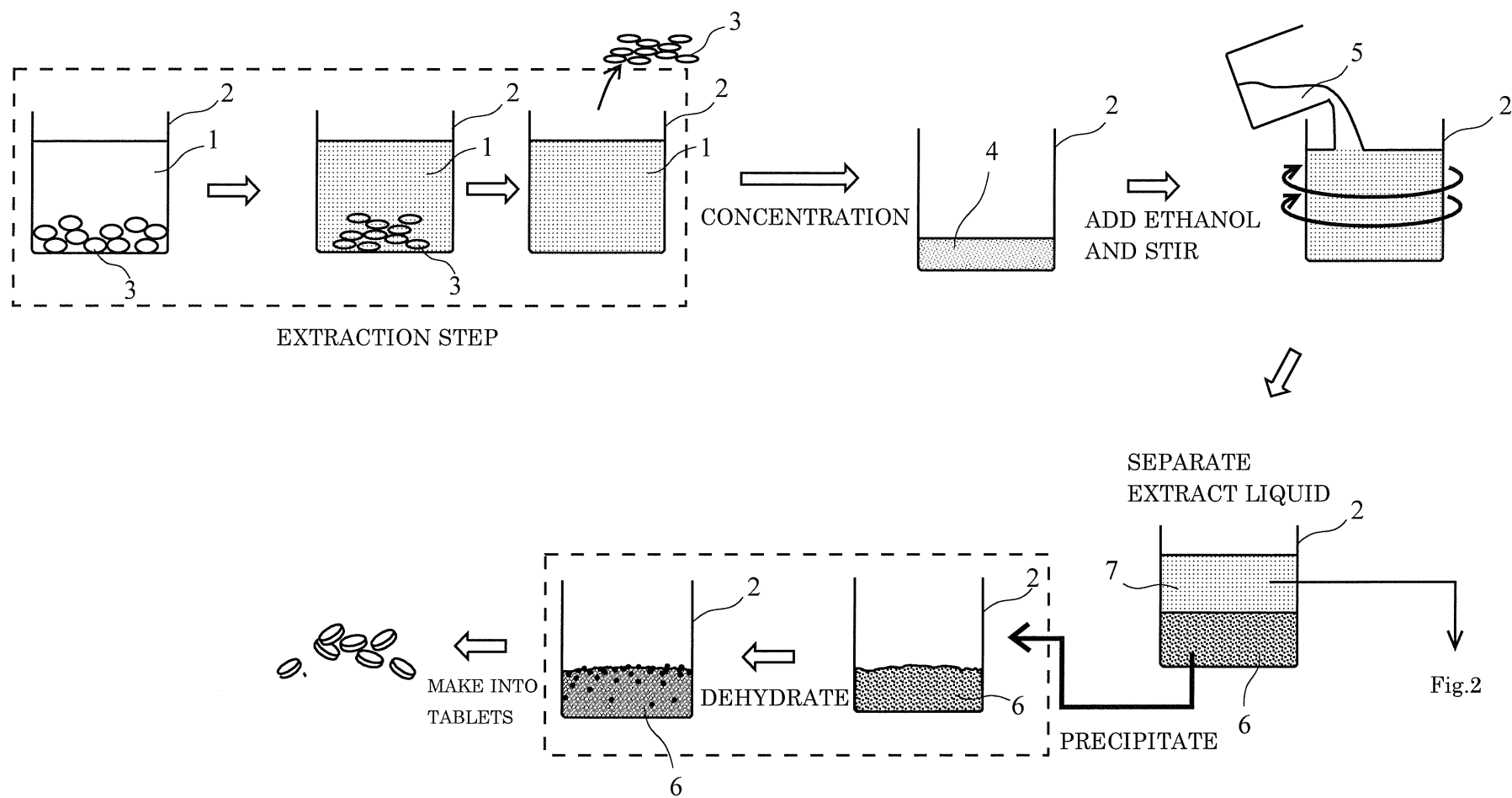


Fig.2

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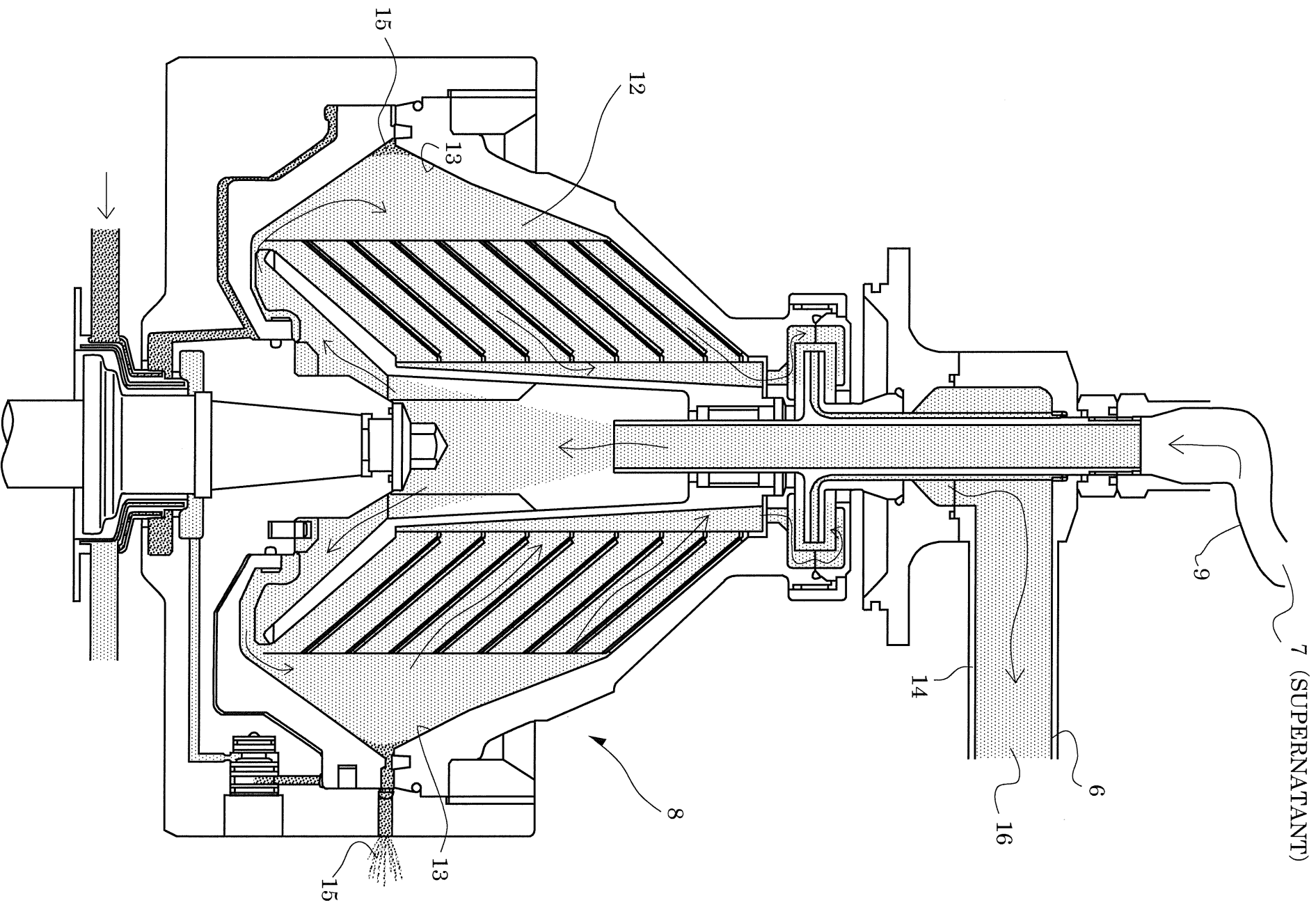


Fig. 3

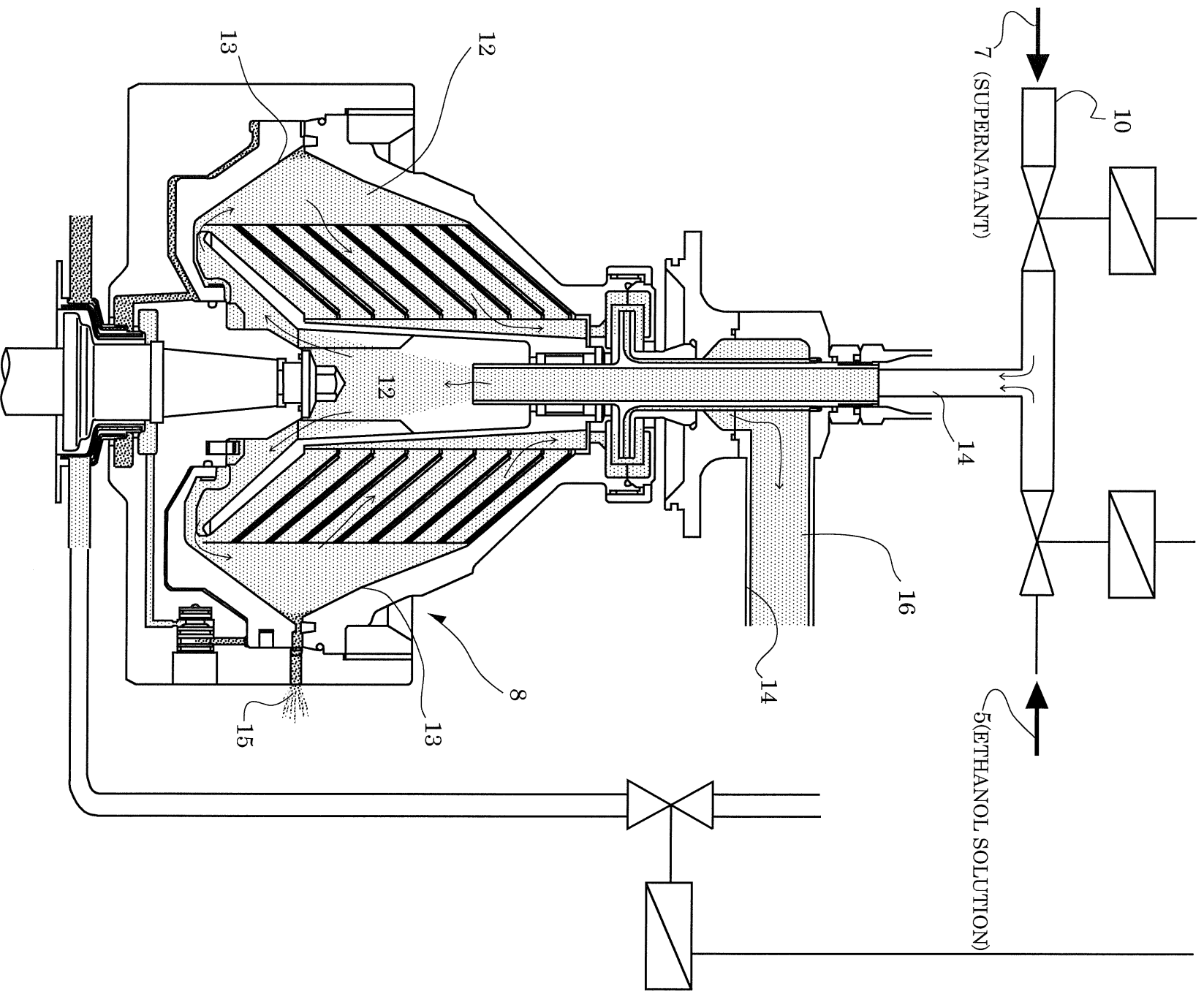


Fig.4

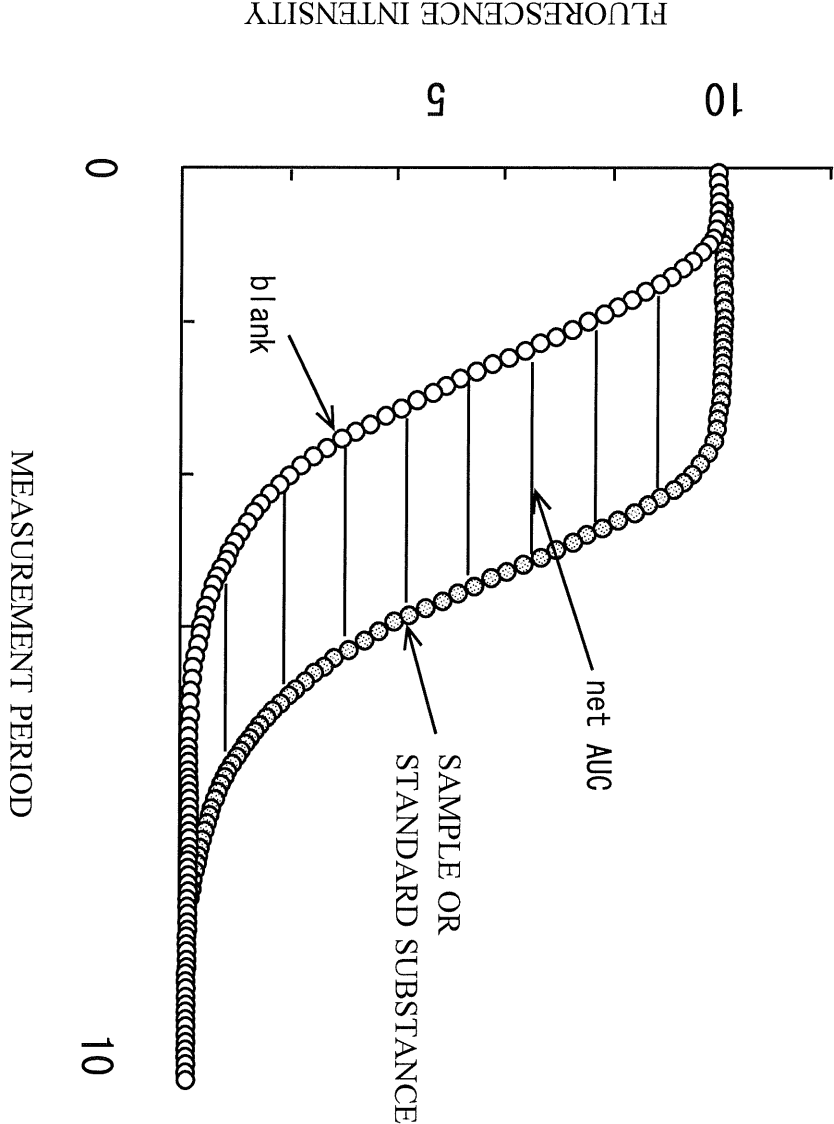


Fig.5

CALCULATION METHOD OF ORAC VALUE

$$ORAC = \frac{netAUC_{Sample}}{netAUC_{Trolox}} \times \frac{[Trolox]}{[Sample]}$$

net AUC_{Sample}= AUC_{Sample} -AUC_{Blank}

net AUC_{Trolox}=AUC_{Trolox}- AUC_{Blank}

[Trolox]:Trolox CONCENTRATION(μ mol/L)

[Sample]:Sample CONCENTRATION (g/L)

APPARATUS, REAGENT, AND UNIT USED FOR ORAC METHOD

ANALYZER

FLUORESCENCE PLATE READER

RADICAL GENERATOR

AAPH(2,2'-azo-bis(2-amidinopropane)dihydrochloride) OR SIMILAR

REACTIVE OXYGEN SPECIES

Peroxyl radical OR SIMILAR

LABELED SUBSTANCE

Fluorescein(3'6'-dihydroxyspiro[isobenzofuran
-1[3H],9'[9H]-xanthen]-3-one)

STANDARD SUBSTANCE

Trolox[®] (6-hydroxy-2,,5,7,8-tetramethylchroman -2-carboxylicacid)

EXAMPLE OF UNIT

μ mol Trolox equivalent / g

Fig.6

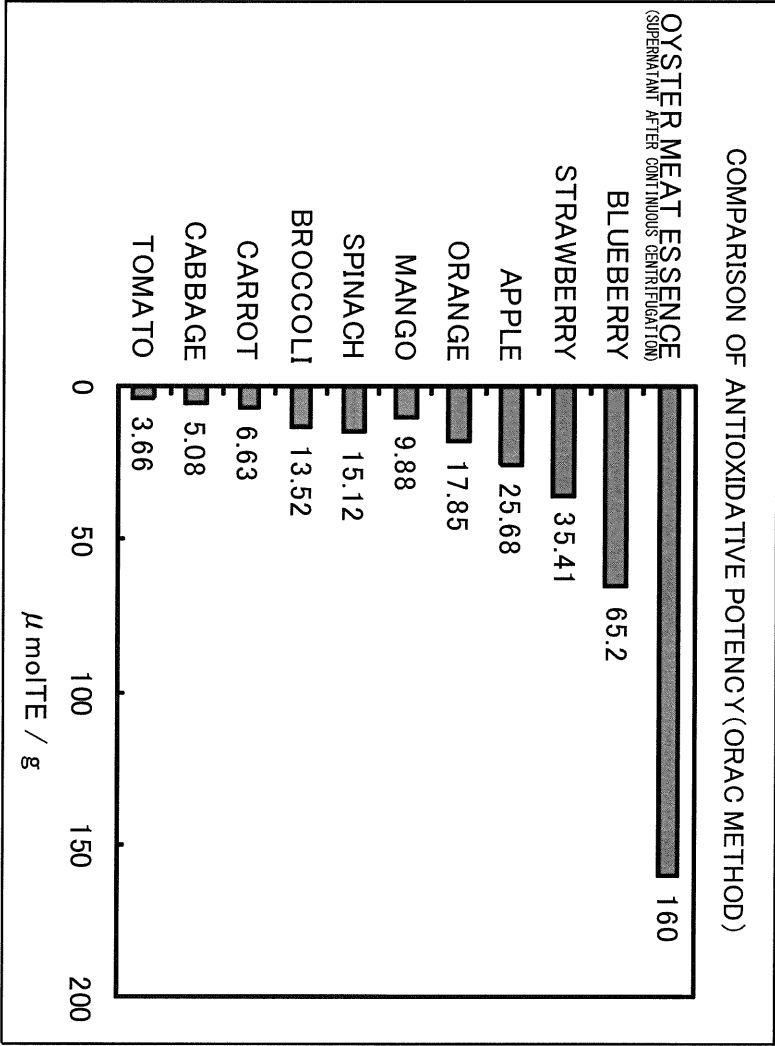


Fig. 7

GENERALLY, TO PERFORM CENTRIFUGATION, A “RELATIVE CENTRIFUGAL ACCELERATION” (RCF: Relative Centrifugal Force), WHICH IS EXPRESSED BY THE RATIO WITH THE GRAVITATIONAL ACCELERATION OF THE EARTH, IS USED AS A UNIT OF CENTRIFUGAL ACCELERATION. THE RELATIVE CENTRIFUGAL ACCELERATION IS USUALLY EXPRESSED WITH “G”, “ x_g ”, OR SIMILER SYMBOL.

HERE, ASSUME THAT THE PARTICLES ROTATE N TIMES PER MINUTE PLACING THE ROTATION AXIS AS THE CENTER: $\omega = 2\pi N/60(\text{rad/s})$ AND THE GRAVITATIONAL ACCELERATION OF THE EARTH = $980.665(\text{cm/s}^2)$ ARE FOUND. ACCORDINGLY, THE RELATIVE CENTRIFUGAL ACCELERATION RCF IS FOUND BY THE FOLLOWING.

RCF =

CENTRIFUGAL
ACCELERATION

GRAVITATIONAL
ACCELERATION
OF EARTH

$r \cdot \left(\frac{2\pi N}{60} \right)^2 \cdot \frac{1}{980.665}$

THIS EXPRESSION CAN BE SIMPLIFIED AS THE FOLLOWING EXPRESSION.

RCF = $1118 \times r \times N^2 \times 10^{-8}$ (xg)

..... (1)

- r

:

ROTATION RADIUS (cm)
- N

:

ROTATION SPEED PER MINUTE (rpm)

WHEN “CENTRIFUGAL ACCELERATION” IS SIMPLY REFERRED IN CENTRIFUGATION, THE “CENTRIFUGAL ACCELERATION” IS USUALLY REFERRED TO AS THE “RELATIVE CENTRIFUGAL ACCELERATION”.

[CALCULATION EXAMPLE OF MAXIMUM CENTRIFUGAL ACCELERATION]

THE MAXIMUM CENTRIFUGAL ACCELERATION IS CALCULATED FROM THE MAXIMUM ROTATION RADIUS AND THE MAXIMUM ROTATION SPEED OF EACH CENTRIFUGE.

- MAXIMUM ROTATION RADIUS

:

$r_{\text{max}} = 11.4 \text{ (cm)}$
- MAXIMUM ROTATION SPEED

:

$N_{\text{max}} = 8000 \text{ (rpm)}$

IF THE CENTRIFUGE SATISFIES THE ABOVE, THE MAXIMUM CENTRIFUGAL ACCELERATION RCF_{MAX} IS AS FOLLOWS FROM THE EXPRESSION (1).

RCF_{max}

=

$1118 \times 11.4 \times (8000)^2 \times 10^{-8} = 8156.928 \text{ (xg)}$

THAT IS, THE MAXIMUM CENTRIFUGAL ACCELERATION OF THE CENTRIFUGE IS CALCULATED AS $8156.928 \times g$. THIS MEANS THAT THE CENTRIFUGE CAN GENERATE THE CENTRIFUGAL ACCELERATION OF EQUAL TO OR MORE THAN 8000 TIMES THE GRAVITATIONAL ACCELERATION.

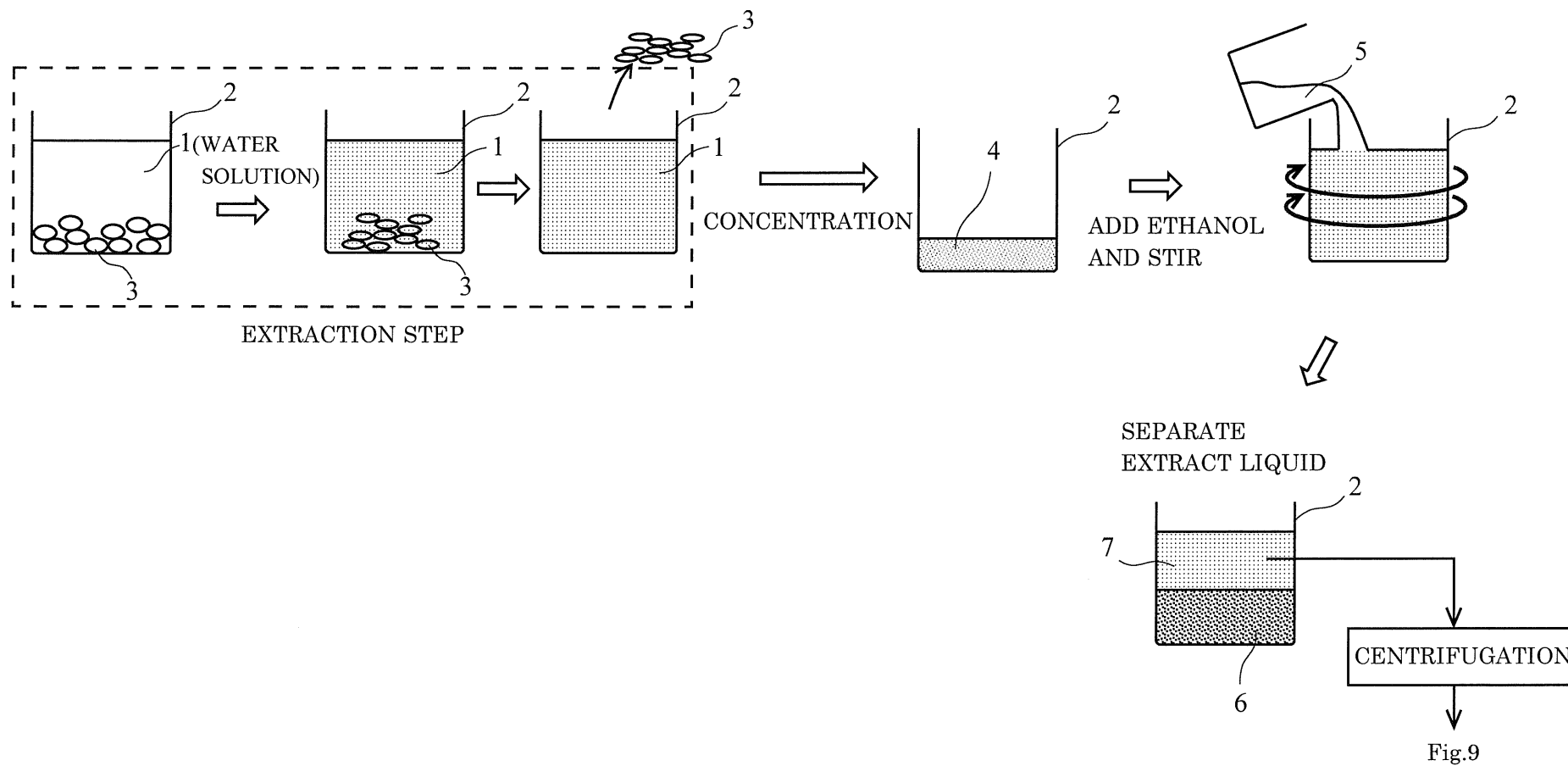


Fig.9

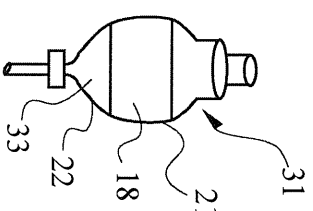
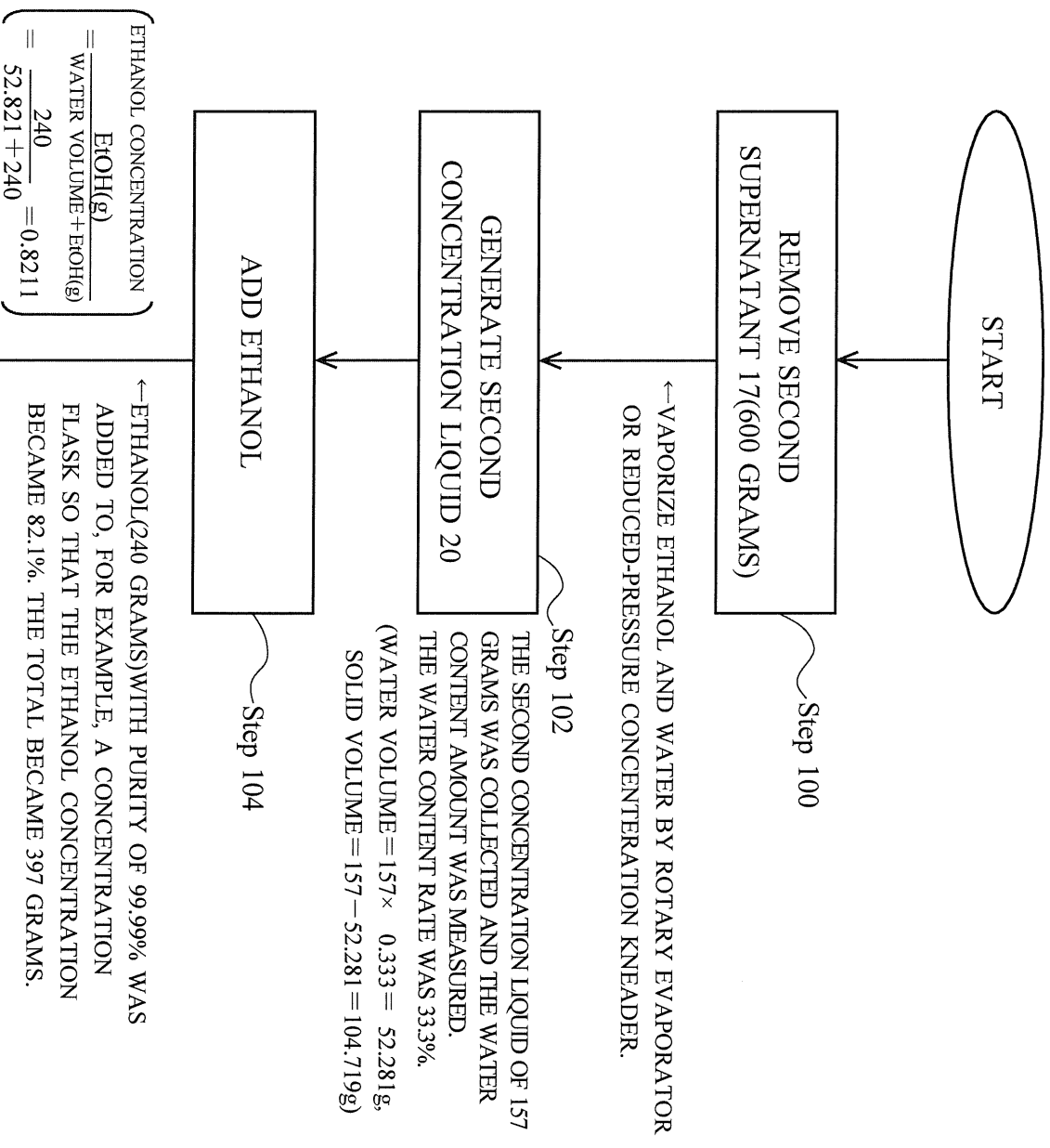


Fig.10

Fig.10

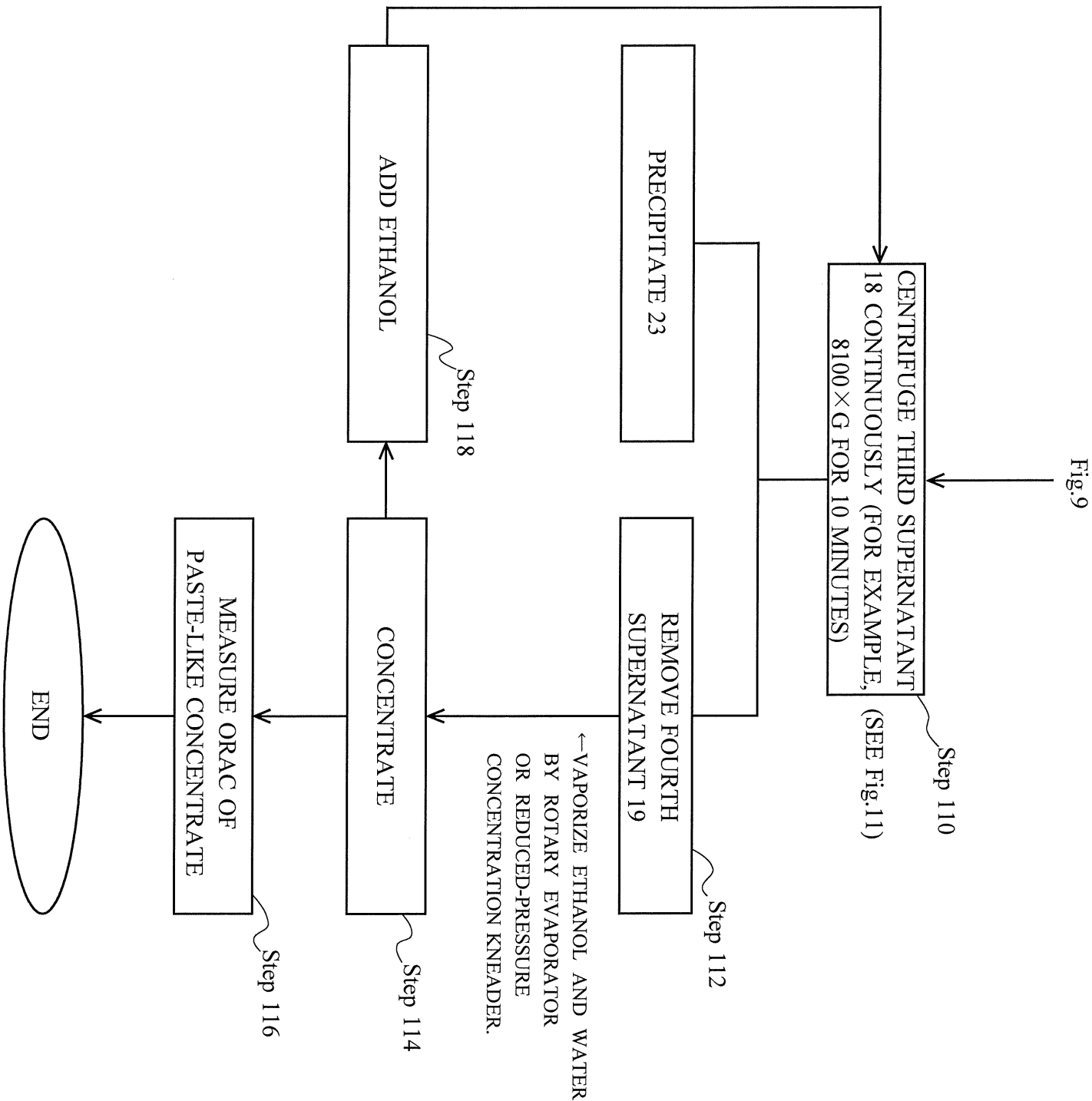


Fig.11

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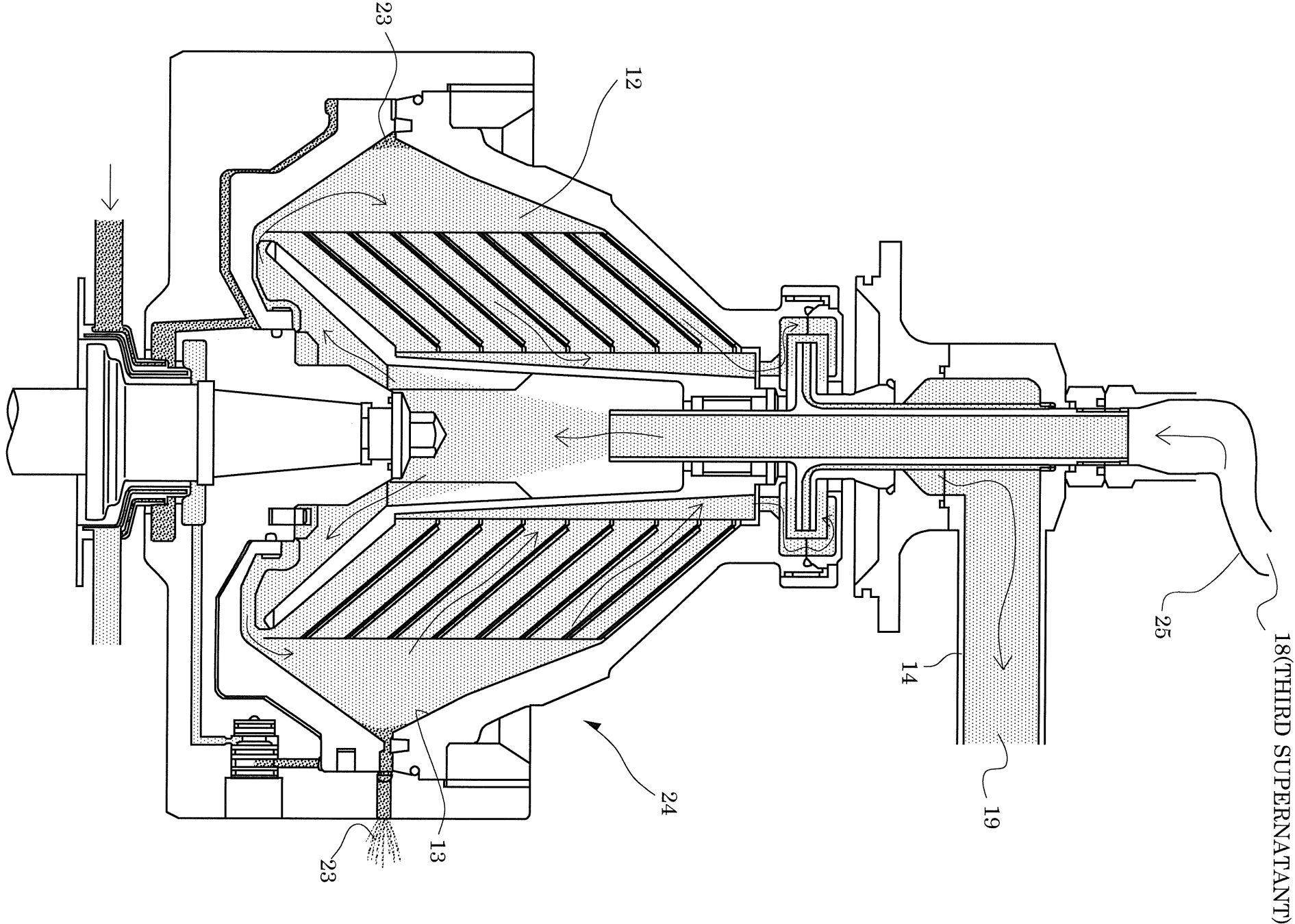


Fig.12

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