

Fig.1

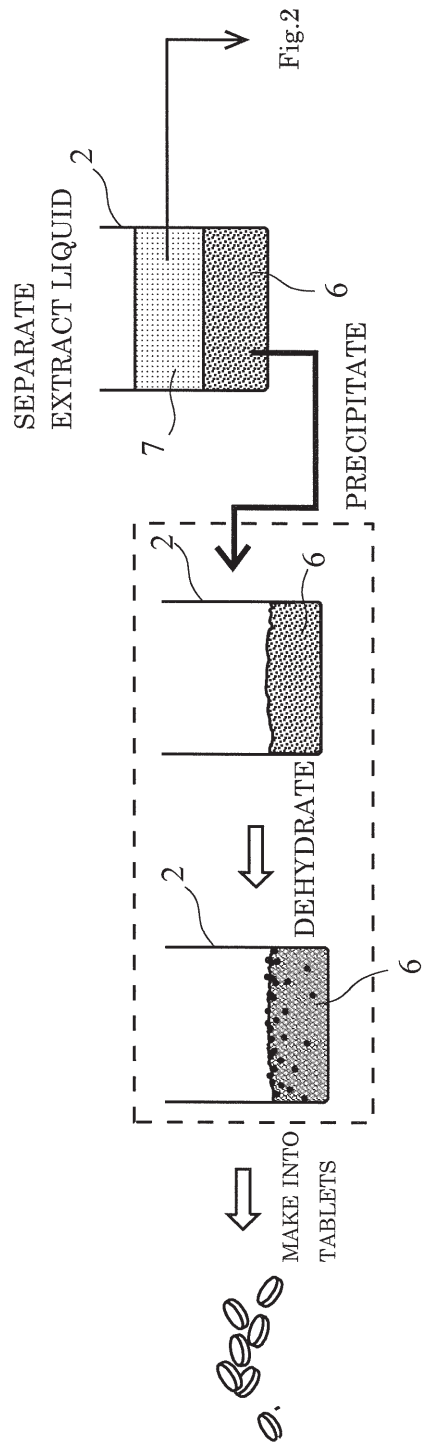
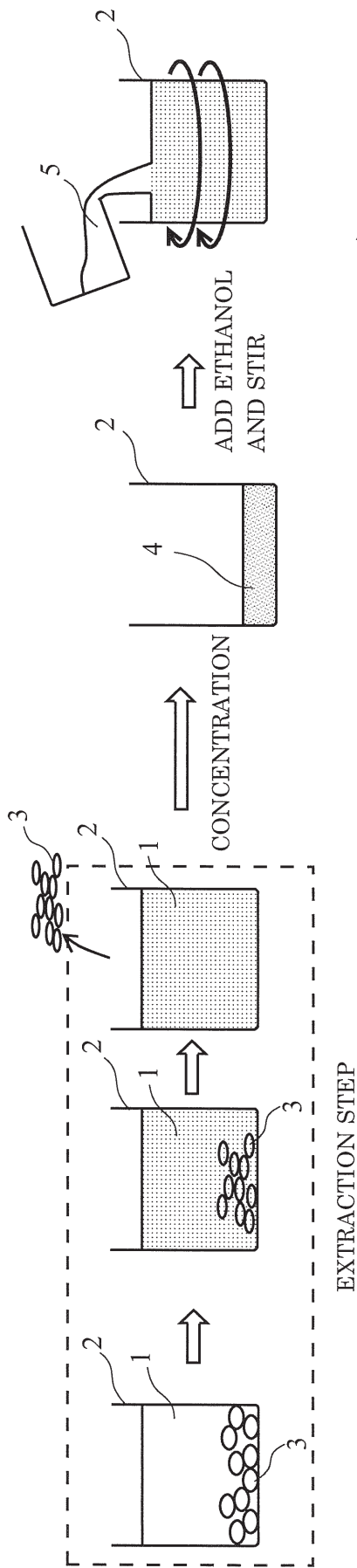


Fig.2

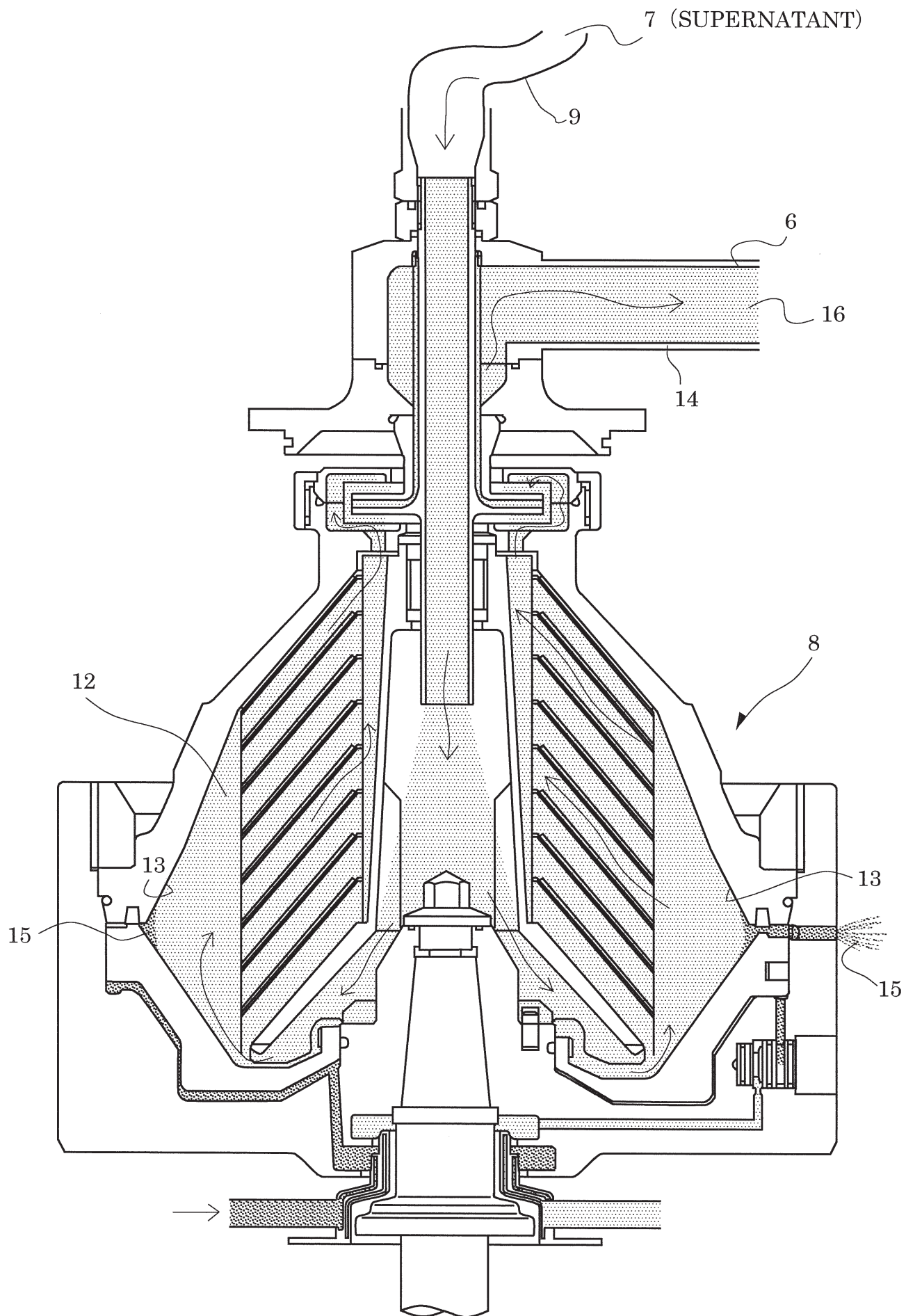


Fig.3

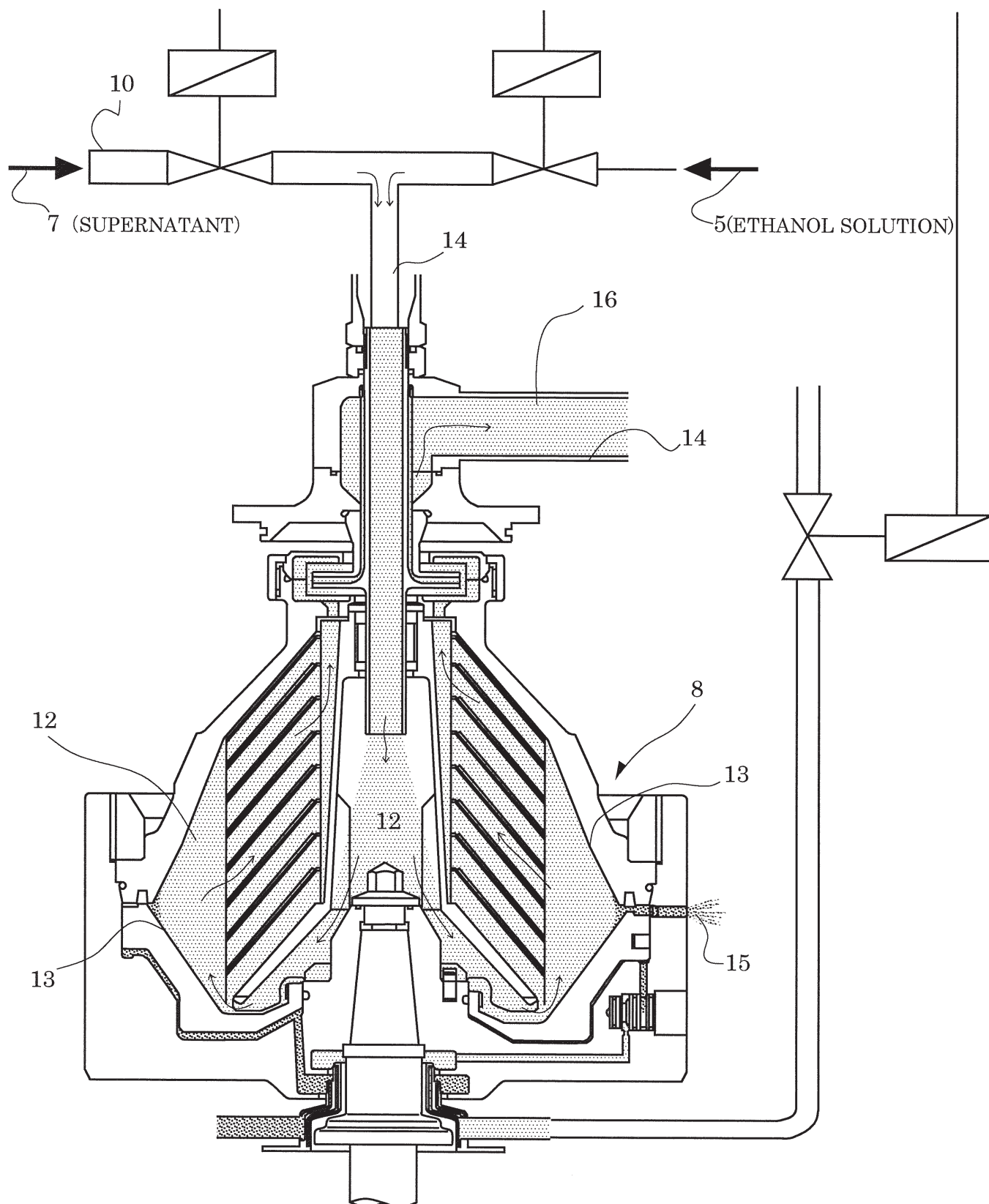


Fig.4

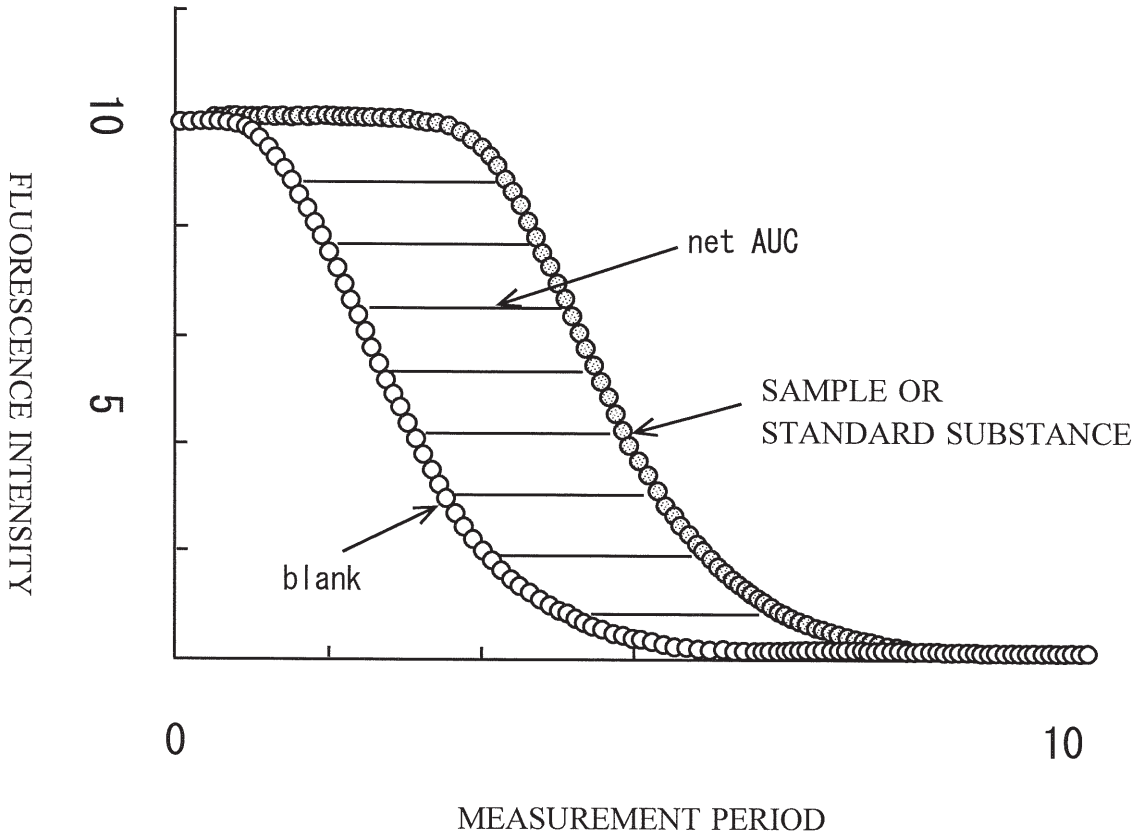


Fig.5

CALCULATION METHOD OF ORAC VALUE

$$\text{ORAC} = \frac{\text{netAUC}_{\text{Sample}}}{\text{netAUC}_{\text{Trolox}}} \times \frac{[\text{Trolox}]}{[\text{Sample}]}$$

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-carboxylic acid)

EXAMPLE OF UNIT

μ mol Trolox equivalent / g

Fig.6

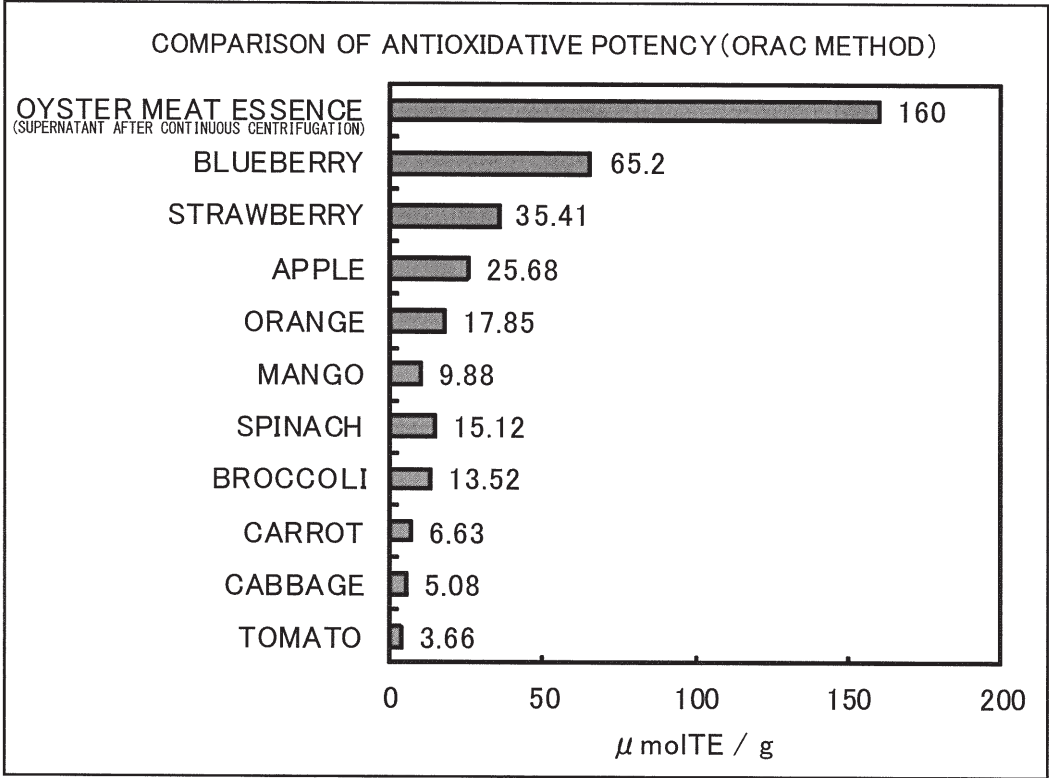


Fig. 7

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”, “xg”, OR SIMILAR 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.

$$\text{RCF} = \frac{\text{CENTRIFUGAL ACCELERATION}}{\text{GRAVITATIONAL ACCELERATION OF EARTH}} \cdot r \cdot \left(\frac{2\pi N}{60} \right)^2 \cdot \frac{1}{980.665}$$

THIS EXPRESSION CAN BE SIMPLIFIED AS THE FOLLOWING EXPRESSION.

$$\text{RCF} = 1118 \times r \times N^2 \times 10^{-8} \quad (\times g) \quad \dots\dots\dots (1)$$

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).

$$\text{RCF}_{\text{max}} = 1118 \times 11.4 \times (8000)^2 \times 10^{-8} = 8156.928 (\times g)$$

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.8

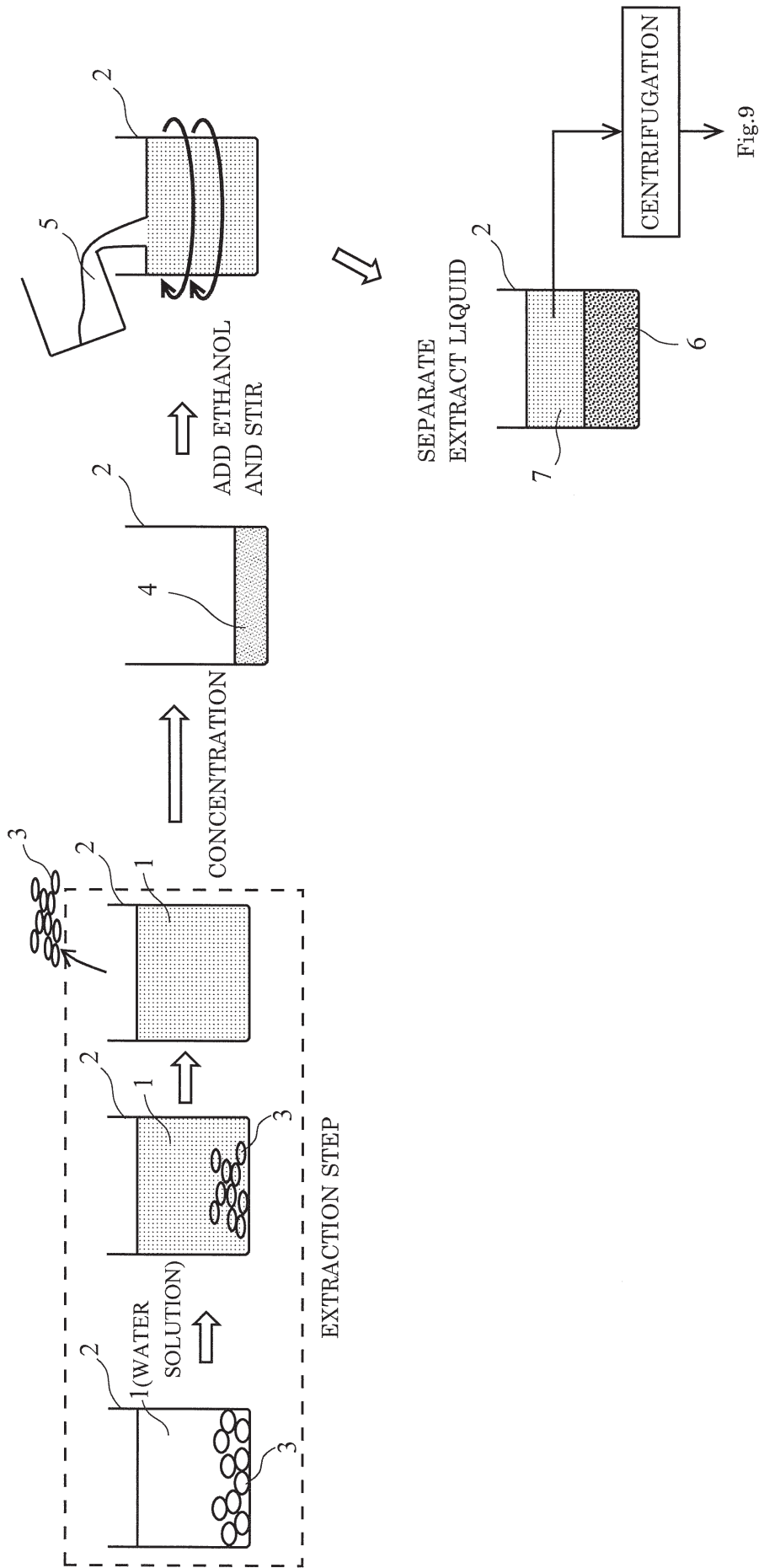
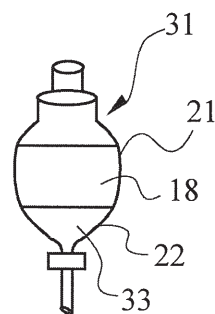
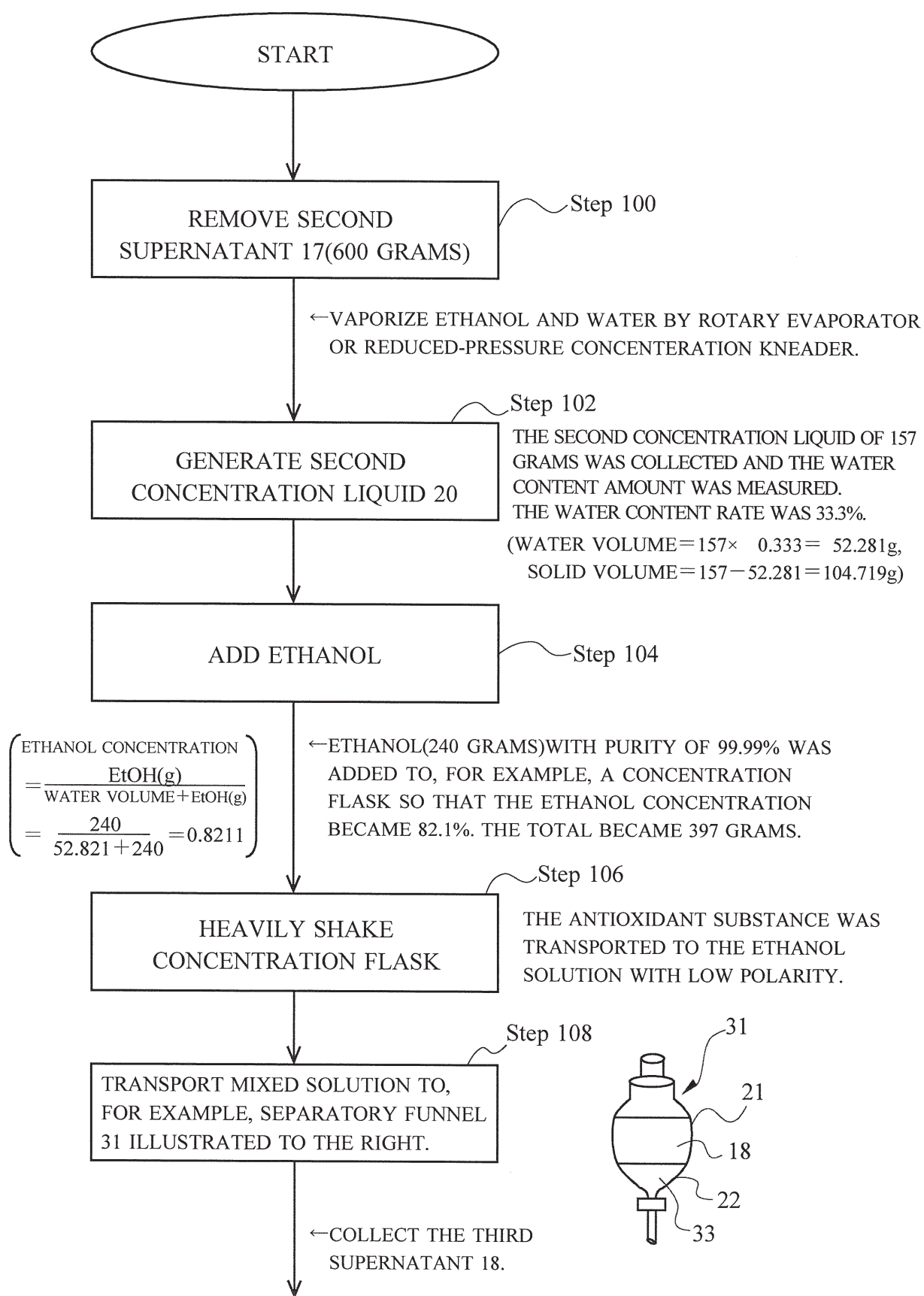


Fig.9



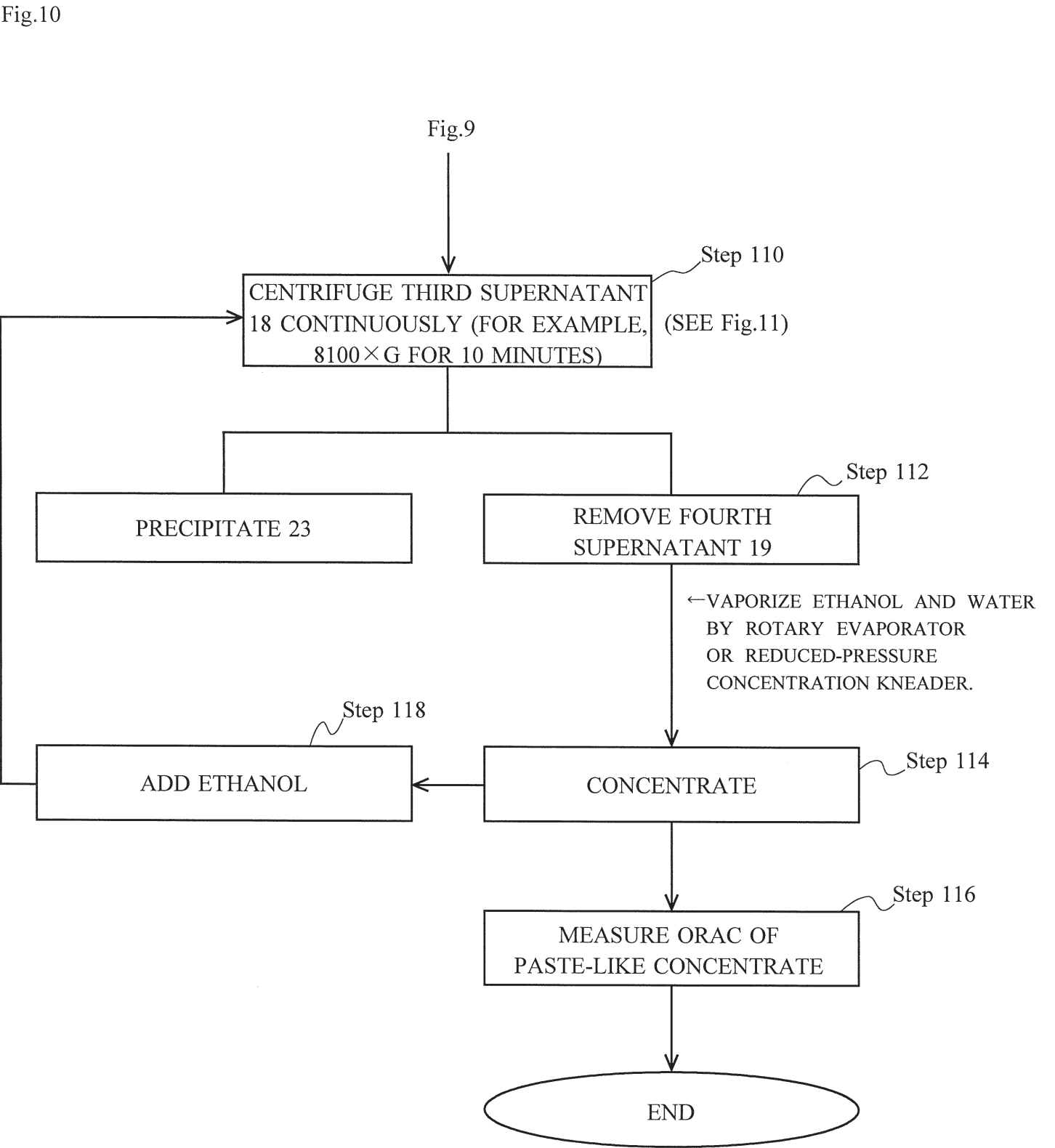


Fig.11

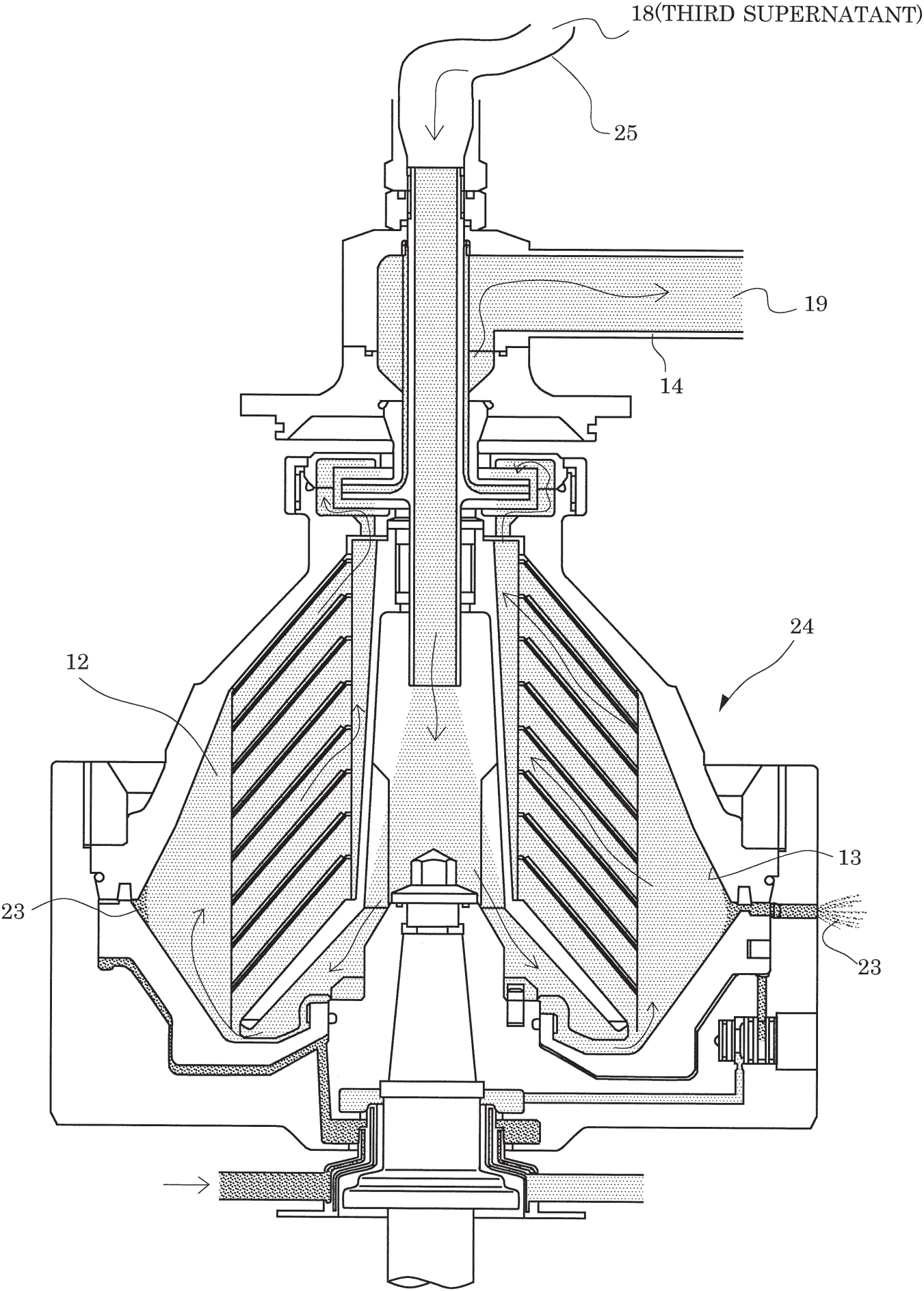


Fig.12

