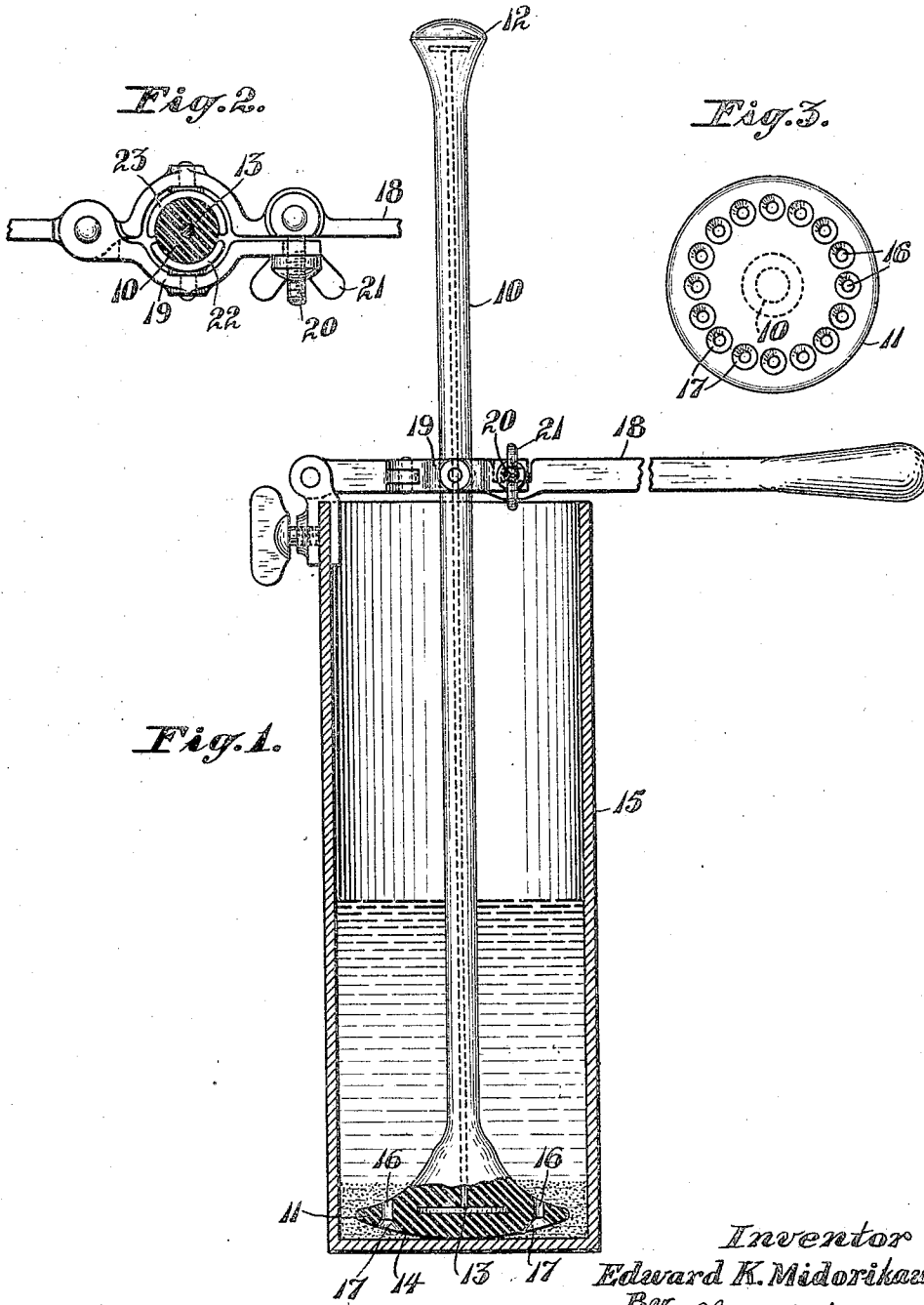


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E. K. MIDORIKAWA.
MIXING DEVICE.
FILED NOV. 2, 1921.

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Inventor
Edward K. Midorikawa
By Chas. E. Lounsbury
Attorney

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EDWARD KOSO MIDORIKAWA, OF SAN FRANCISCO, CALIFORNIA.

MIXING DEVICE.

Application filed November 2, 1921. Serial No. 512,213.

To all whom it may concern:

Be it known that I, EDWARD KOSO MIDORIKAWA, a citizen of the Empire of Japan, residing at the city and county of San Francisco and State of California, have invented new and useful Improvements in Mixing Devices, of which the following is a specification.

This invention relates to a mixing device, and particularly pertains to means for mixing up solutions.

It is a principal object of the present invention to provide a simple stirring and crushing member which is so constructed as to readily crush granular or powdered material and cause it to be mixed with a liquid, thus forming a desired solution, the invention being particularly applicable for use in connection with solutions used in photography.

The invention is illustrated by way of example in the accompanying drawings in which—

Fig. 1 is a view in section and elevation showing the application of the present invention;

Fig. 2 is an enlarged view in section showing the mounting of the stirring element;

Fig. 3 is a view in elevation showing the formation of the lower end of the stirring element.

Referring more particularly to the drawings, 10 indicates the stem of a pestle. The lower end of this stem is formed with an enlarged disc shaped knob 11, while the upper end of the stem is formed with a smaller knob 12. The pestle thus constructed is preferably made from material which is not readily affected by chemical action as, for example, hard rubber, and the like, in which case a reinforcing core 13 is embodied within the center of the structure, this core being formed with discs at its opposite ends. The disc shaped knob 11 at the lower end of the pestle is formed with a convexed face 14 which is intended to rest against the bottom of a solution container 15. A series of passageways 16 are formed through the portion 11. These passageways are counter-bored at their lower ends to provide the recesses 17. The counter-bored passageways thus form circulating means for the solution and at the same time provide means whereby the granular substance may be held and crushed as the pestle is moved up or down or rocked on its convexed surface.

In order to obtain the best results the container 15 is but slightly larger than the diameter of the disc 11, thus insuring that movement of the pestle will have the effect of crushing all of the granular material. At the same time some of the crystals will be caught in the counterbores of passageways 16, this permitting the crystals to be crushed and the circulating liquid to be strengthened. As will be understood, the pestle may be used alone or may be attached to the operating arm 18, and will in this manner be given additional pressure. The operating arm 18 carries a removable hinge section 19 which may be secured in position by a clamp bolt 20 and a wing nut 21. Adjacent portions of the lever 18 and the hinge member 19 are semi-circular in shape and receive pivoted shoes 22 and 23. These members are arcuate to conform to the opposite sides of the pestle stem 10.

It will thus be seen that the vertical oscillation of the lever 18 will cause the pestle to rise and fall, and at the same time will allow it to remain in a substantially vertically aligned position.

In the operation of the present invention, the pestle may be used without reference to the lever mechanism, in which instance either of the knobs 11 or 12 may be employed to crush the solid material. In the event that additional pressure is required the lever may be applied to the container and the hinge section 19 clamped around the stem of the pestle, as shown in Fig. 3. Further operation may then be carried on.

The container as here shown is cylindrical and of a diameter slightly greater than the diameter of the disc of the pestle, in which case the solution will be agitated and the solvent caused to circulate in a manner to produce a rapid dissolution of the chemicals. This is preferable although containers of other relative dimensions and designs may be used if desired.

It will thus be seen that due to the formation of the pestle, solid material may be readily crushed and reduced, and that the present invention contemplates the use of means whereby the pestle may be given additional pressure when required.

While I have shown the preferred form of my invention, it is to be understood that various changes may be made by those skilled in the art without departing from the spirit of the invention.

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

1. A pestle comprising a stem portion, a relatively thick substantially concavo convex disc shaped knob at one end thereof, said knob being formed with a plurality of counter-bored passageways therethrough.

2. A pestle comprising a stem; an enlarged circular knob at the lower end thereof, said knob having a convexed end surface thereon and being formed with a plurality of passageways therethrough, the lower ends of said passageways being counter-bored.

3. A pestle comprising a stem, and an enlarged circular knob thereon having a convexed end, there being a plurality of tapered recesses formed in the convexed face of the knob.

4. A pestle comprising a stem, and an enlarged circular knob thereof having a convexed end, there being a plurality of tapered recesses formed in the convexed face of the knob and circular passageways through the knob and in communication with said recesses.

5. A pestle comprising a stem, an enlarged

relatively thick circular knob at one end of the stem provided with a relatively thin marginal perforated edge.

6. A pestle formed with a central rigid core having disc shaped reinforcing members at the opposite ends thereof; and knobs formed at the opposite ends of the pestle and surrounding said disc shaped reinforcements, one of said knobs being of larger dimensions than the other knob and having a convexed crushing face, there being a plurality of recesses formed in the inset face of said knob and circulating passageways extending from the recesses through the knob.

7. A pestle comprising a relatively long narrow stem, an enlarged circular knob at the lower end thereof, said knob having a convexed outer surface and upon its inner surface gradually merging from the stem to the upper end surface of the knob, whereby to form a relatively thick knob whose marginal edge is relatively thin, the knob adjacent its marginal edge having a plurality of passage-ways arranged in circular series therein.

EDWARD KOSO MIDORIKAWA.