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E. GERLACH

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GRINDING AND POLISHING MACHINE

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Fig. 1

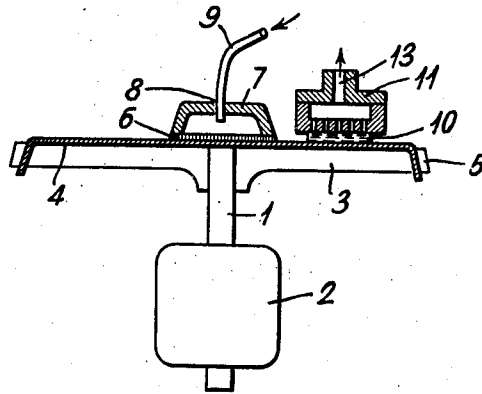


Fig. 2a

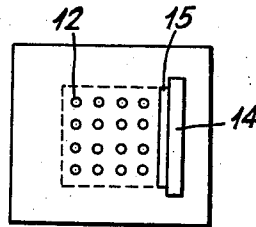
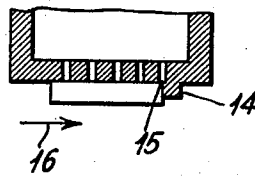


Fig. 2b



INVENTOR
ERWIN GERLACH
BY *H.S. Srover*
ATTORNEY

UNITED STATES PATENT OFFICE

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GRINDING AND POLISHING MACHINE

Erwin Gerlach, Berlin, Germany, assignor to
Telefunken Gesellschaft für Drahtlose Tele-
graphie m. b. H., Berlin, Germany, a corpora-
tion of Germany

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3 Claims. (Cl. 51-125)

This invention relates to a grinding and polish-
ing machine for bodies soluble in a liquid, pref-
erably of crystalline type, especially such as
piezo-electric salt crystals.

To properly grind the crystals, there is
stretched out over a round disk, a cloth which is
continuously moistened in the center with the
liquid solvent of the crystal body to be ground.
For obtaining a uniform distribution of the flow-
ing solvent on the disk, a special distributor for
the liquid is provided. At the rotation of the
disk, the liquid is being conducted to the edge
of the disk owing to the centrifugal force. Since
the surface of the disk increases with the distance
from the center, the moisture on the grinding
surface of the cloth decreases from the center
towards the edge. Furthermore, the degree of
moisture at the places of the cloth depends on
the centrifugal force and also on the number of
revolutions and on the supplied quantity of liquid.
Since, as a rule, the body to be ground is held
at one place only against the grinding disk, the
moisture content of the grinding cloth can, by
varying one or several of the aforementioned
values, thus be controlled at the place at which
the body is to be ground.

The provision of the liquid applied to the cloth
is to have a lubricating means between the crys-
tal body to be ground and the cloth so that the
body is prevented from undergoing too great a
heating during grinding. Furthermore, the liq-
uid dissolves parts of the body thereby obtain-
ing a smooth surface on the body to be ground.

In order to obtain smooth ground edges of
a body soluble in a liquid, according to a further
feature of the invention, care is taken that at
the edge past which the grinding disk moves, the
liquid is continuously passed away. It was found
to be of advantage to remove excessive liquid by
way of suction. When removing the solvent by
means of air suction, the body at the same time
may be drawn by the suction against the support
whereby it remains fixedly secured thereat.

The drawing shows an example of construction
of the grinding and polishing machine accord-
ing to the invention in schematical representa-
tion.

Figure 1 represents the entire grinding ar-
rangement.

Figures 2a and 2b show the arrangement by
which the body to be ground is fixedly held in
place.

In Figure 1, the shaft 1 of the motor 2 is ver-
tically arranged. The shaft 1 carries the plate
3 over which is drawn a cloth covering 4 con-

sisting preferably of silk. The cloth is fixedly
secured under tension to the plate 3 by means
of the ring 5. In the center of the plate 4 there is
placed over the cloth covering a layer 6 of blot-
ting paper on which a holding cap 7 is placed.
The diameter of the layer of blotting paper is
smaller than that of the grinding disk. The
holding cap 7 has in the center thereof a hole 8
through which a tube 9 is inserted serving for
the supply of the solvent. The layer 6 of blot-
ting paper has the task of distributing uniformly
the liquid solvent, so that all places on the cloth
covering concentric with respect to the drive
shaft the same amount of moisture exists.

The crystal body 10 to be ground is inserted
in a supporting arrangement 11. This crystal
body is held onto the arrangement 11 by pneu-
matic action. The arrangement 11 in turn is
fixedly secured to a support not shown in the
drawing. The mounting arrangement 11 con-
sists of a hollow body whose bottom has prefer-
ably a plurality of round openings 12. The air
is withdrawn from the hollow body 11 through
the channel 13 (Figure 1) by means of suction
after the body 10 is fixedly held against the
mounting arrangement, so that the said body is
fastened to the arrangement 11. In order that
the body to be cut is properly mounted, an abut-
ment bar 14 is provided and which serves for
reducing as much as possible at the cutting per-
formance, the amount of solvent settling on the
body to be cut.

In place of the ordinarily round openings, a
suction slot 15 is arranged along the abutment
bar 14, the excessive liquid being withdrawn
through the said slot by way of suction. The
direction of movement of the grinding disk is
indicated by the arrow 16.

What is claimed is:

1. A grinding and polishing machine for piezo-
electric bodies soluble in a liquid comprising a
rotatable plate driven by a motor, a cap-like liq-
uid distributor located in the center of said plate,
the area of said cap-like distributor being small
as compared with the area of said plate, means
located within said cap comprising a layer of
blotting paper for uniformly applying continu-
ous moisture to said rotatable plate, and a sup-
port member for said body to be ground located
near the outside edge of said rotatable plate.

2. A grinding and polishing machine for piezo-
electric bodies soluble in a liquid comprising a
rotatable plate having a cloth covering of silk
driven by a motor, a cap-like liquid distributor
located in the center of said plate, the area of

said cap-like distributor being small as compared with the area of said plate, means located on said cap comprising a layer of blotting paper for uniformly applying continuous moisture to said rotatable plate, and a support member for said body to be ground located near the outside edge of said rotatable plate.

3. A grinding and polishing machine for piezo-electric bodies soluble in a liquid comprising a rotatable plate having a cloth covering driven by a motor, a cap-like liquid distributor located in the center of said plate, the area of said cap-like distributor being small as compared with the

area of said plate, means located on said cap for applying continuous moisture to said rotatable plate, a support member for said body to be ground located near the outside edge of said rotatable plate, said support member having suction means comprising a plurality of apertures for retaining said body, said support member having a bar and a slot arranged adjacent said apertures for retaining said body to be ground so that during the cutting performance the amount of moisture settling on said body is reduced.

ERWIN GERLACH.