

March 26, 1940.

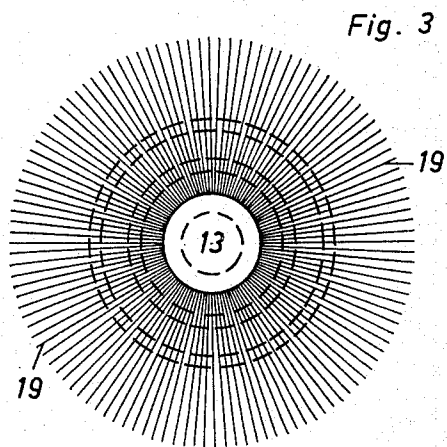
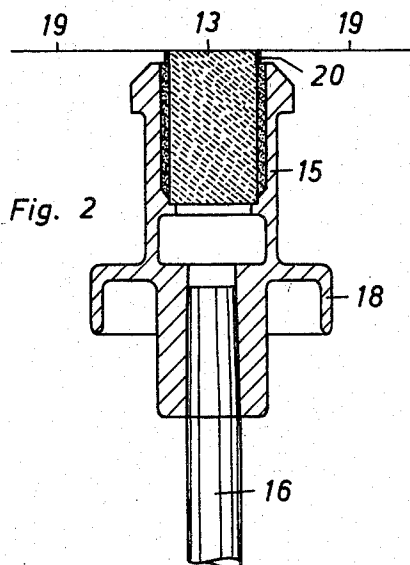
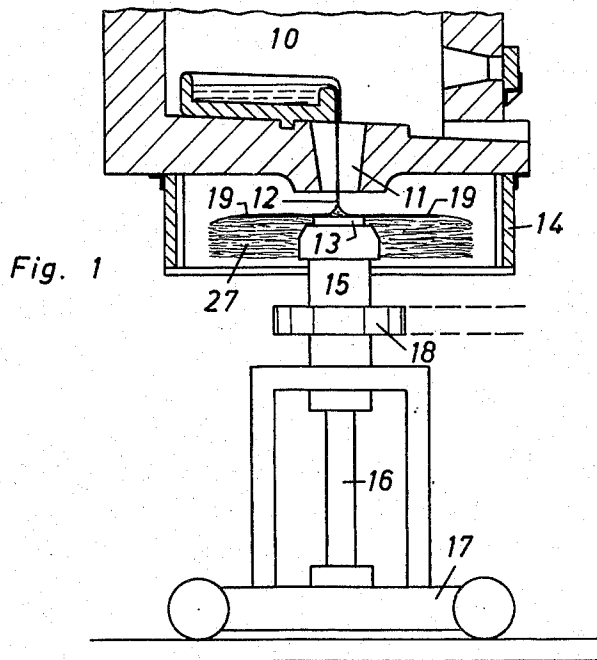
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2,194,727

PRODUCTION OF FIBERS FROM GLASS, SLAG, AND THE LIKE MELTABLE MATERIALS

Filed Aug. 10, 1937

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

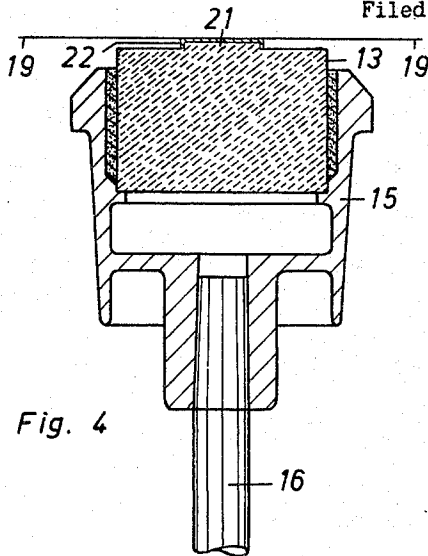


Fig. 4

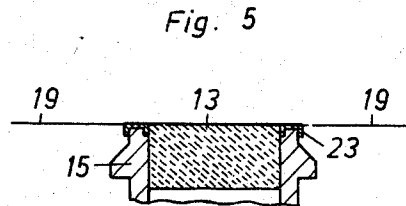


Fig. 5

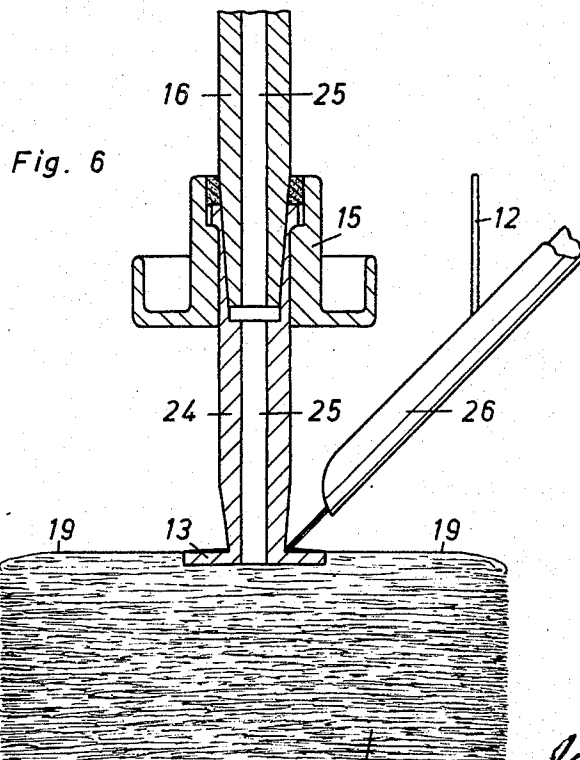


Fig. 6

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## UNITED STATES PATENT OFFICE

2,194,727

PRODUCTION OF FIBERS FROM GLASS,  
SLAG, AND THE LIKE MELTABLE MA-  
TERIALS

Leopoldo Sanchez Vello, Saint Cloud, France, as-  
signor to Naamlooze Vennootschap Maat-  
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Octrooien, The Hague, Netherlands

Application August 10, 1937, Serial No. 158,416  
In Germany August 21, 1936

## 7 Claims. (Cl. 83—91)

This invention relates to that kind of pro-  
ducing fibers from glass, slag and the like melta-  
ble materials, according to which the hot molten  
mass is flown in a preferably continuous thin  
stream from the outlet of a suitable tank, such  
as a melting furnace, onto the surface of a  
rapidly rotating disc from which it is thrown off  
by centrifugal action in the form of fine fibers or  
filaments.

The invention has for its object to so im-  
prove this known method as to allow the pro-  
duction of fibers of greater fineness than could  
hitherto be produced with this method.

To this end, the present invention essentially  
consists in subjecting the mass thrown off the  
disc in a divided state to a further sub-division  
of still finer grade, which is attained by causing  
the individual mass particles to pass from the  
disc surface proper to a surface contiguous with  
and constituting an enlargement of the former  
and surrounding it like an aureola, this surface  
being formed by a multiplicity of substantially  
radial linear members along which the divided  
mass is caused to travel and be further sub-  
divided so as to be converted into fibers of the  
greatest fineness.

For carrying this improved method into effect  
the centrifuging disc is provided at its periphery  
with a multiplicity of thin metal rods or wires  
extending substantially radially from the disc  
and lying flush with the top surface of the  
latter.

The said rods or wires preferably consist of  
platinum, chromium-nickel-steel or another met-  
al or metal alloy having a high heat resistance.  
They are made of great fineness, having for ex-  
ample a thickness of only one tenth of a milli-  
meter. The wires are attached by welding, sol-  
dering or in any other suitable manner to holding  
rings or covers of the disc or to the disc itself.  
The parts carrying the wires preferably consist  
of the same heat-resistant metal or metal alloy  
as the wires or are provided with a coating of  
such metal. This wire aureola considerably en-  
larges the diameter of the centrifuging disc. It  
may be of a dimension to increase the said diam-  
eter for example from about 200 millimeters to  
about from 400 to 500 millimeters. The cen-  
trifuging disc may be disposed in a horizontal or  
inclined plane.

It is attained by the invention that the molten  
mass delivered to the revolving disc is guided  
by the said wires beyond the periphery of the  
disc proper, subjected thereby to an utterly fine  
division and thrown as fibers or filaments into

the surrounding space only at the free ends of  
the wires. The great fineness of the fibers at-  
tainable in this way may even be increased by  
an increased speed of rotation of the revolving  
disc. Owing to the possibility of drawing the  
mass to fibers of exceedingly great fineness, the  
supply of a predetermined quantity of molten  
mass yields a correspondingly large volumetric  
quantity of fibers. The resulting fibrous prod-  
uct has less density, a considerably looser texture  
and therefore a higher insulating efficiency than  
products obtained by the corresponding old  
method. The fine fibers or filaments, moreover,  
are much more suited for undergoing treatments  
for textile and like purposes.

Several embodiments of devices according to  
the invention are illustrated, by way of example,  
in the accompanying drawings, in which:

Fig. 1 is an elevational view, partly in section,  
of an apparatus for producing glass fibers with  
the improved centrifuging device according to  
the invention.

Fig. 2 is a vertical section and Fig. 3 a plan  
view of the centrifuging device on an enlarged  
scale.

Fig. 4 is a section similar to Fig. 2 of a some-  
what modified form of device.

Fig. 5 is a partial section through another  
modification, and

Fig. 6 is a vertical section of still another form  
of centrifuging device.

Referring to the drawings the numeral 10  
designates a melting furnace for the material,  
such as glass, from which the fibers are to be  
produced. The furnace has in its bottom an  
outlet 11 through which a stream of molten ma-  
terial 12 is delivered to the top surface of a cylin-  
drical body or disc 13 of suitable refractory ma-  
terial, which is caused to revolve at high speed  
and from which the molten mass is thrown off  
in divided state and drawn to fibers by centrif-  
ugal action. 14 is a jacket surrounding the space  
of fiber formation. The disc 13 is fastened by  
means of a suitable armature 15 to a vertical  
shaft 16 which may be mounted stationarily or  
in a truck 17, as shown in Fig. 1. Rotating power  
is transmitted to the device through a belt pulley  
18 or any other suitable drive.

According to the invention, the disc 13 is  
provided at its periphery with a multiplicity of  
thin metal wires 19 extending substantially ra-  
dially of the disc and lying flush with the top  
surface thereof, forming a kind of aureola sur-  
rounding the disc.

In the form illustrated in Figs. 2 and 3 the

wires 19 are fastened to the upper edge of a metal ring 20 encircling the centrifuging disc 13.

According to Fig. 4 the disc 13 has a central projection 21 hooded by a metal cap 22 to which the wires 19 are attached.

With the embodiment according to Fig. 5, the cylindrical armature 15 holding the disc 13 has fitted on its upper margin a metallic border ring 23 of inverted U-shape the surface of which lies flush with the surface of the disc 13. The wires 19 are clamped with their inner ends between the disc and the border ring and fastened to the latter.

According to the modification illustrated by Fig. 6, the disc 13 is formed in one piece with a hollow stub-shaft 24 and is seated at the lower end of this shaft. The wires 19 are fastened directly to the disc 13. The stub-shaft is coupled by the armature 15 with the driving shaft 16 which is likewise hollow. Thus a continuous channel 25 is formed in the shafts 16 and 24 through which air or another medium may be admitted. The molten mass is supplied to the disc 13 by a chute 26.

The fibers produced by the centrifuging devices are designated by the numerals 27 in Figs. 1 and 6.

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

1. A method of producing fibers from molten glass, slag and the like meltable materials, consisting in delivering a thin stream of molten material onto the surface of a disc-like body, imparting high-speed rotation to this body and thereby causing the supplied molten mass to be divided into small particles and thrown off the disc by centrifugal action, passing the divided mass as it leaves the disc surface onto another surface contiguous and flush with the former and formed by a multiplicity of thin linear members fast to and surrounding the disc like an aureola, the mass particles thrown off the disc being guided along and subjected to further subdivision by the said members so as to yield fibers of greatest fineness.

2. A centrifuging device for use in the production of fibers from glass, slag and the like meltable material, comprising a disc-like body having attached to its periphery in one plane with its top surface a multiplicity of fine wires of highly heat-resistant metal extending substantially radially from the disc periphery and surrounding same like an aureola.

3. A centrifuging device for use in the produc-

tion of fibers from glass, slag and the like meltable materials, comprising a disc-like body, a central projection on the top surface of this body, a cap of highly heat-resistant metal covering the said projection and thin wires of highly heat-resistant metal fastened to the periphery of the said cap so as to extend substantially radially therefrom in the plane of the top surface of the cap.

4. A centrifuging device for use in the production of fibers from glass, slag and the like meltable materials, comprising a disc-like body, a cylindrical armature for holding this body, a border ring of highly heat-resistant metal on the upper edge of the said armature contiguous with the top surface of the disc, and a multiplicity of thin wires of highly heat-resistant metal fastened on the said border ring and extending substantially radially relative to the disc and substantially in the plane of the top surface of the disc-like body.

5. A centrifuging device for use in the production of fibers from glass, slag and the like meltable materials, comprising a vertically disposed shaft, a disc formed at the lower end of this shaft in one piece therewith and a multiplicity of thin wires of highly heat-resistant metal fastened directly to the periphery of the said disc and extending substantially radially thereof in a plane level with the upper surface of the disc.

6. In an apparatus for producing fibers from glass, slag and the like meltable materials, in combination a container for holding a supply of molten material, an outlet in this container wherethrough to discharge a stream of the molten material, a rapidly rotating disc-like body of refractory material below the outlet whereon to deliver the stream of molten material and a multiplicity of fine wires of highly heat-resistant metal extending substantially radially from the periphery of the disc and in the plane of the top surface of the disc.

7. A centrifuging device for the manufacture of fibers from glass, slag and the like meltable materials, comprising a disc-like body, a ring of highly heat-resistant metal surrounding such body at the top thereof, such ring being coaxial with the body and having the inner dimension thereof corresponding substantially to the outer dimension of the upper part of said body, and a multiplicity of fine wires of highly heat-resistant metal fastened to the said ring substantially radially thereof in a plane level with the top surface of the body.

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