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A UNIT FOR COLLECTING DUST FROM THE AIR, (U)
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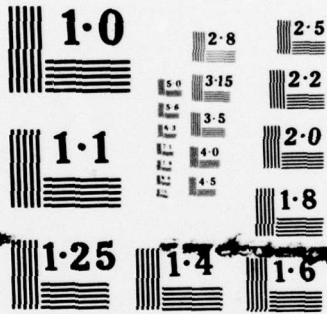
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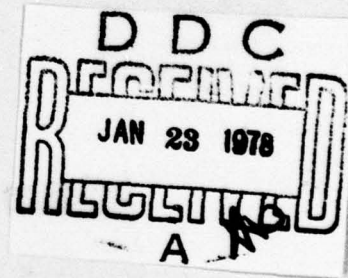
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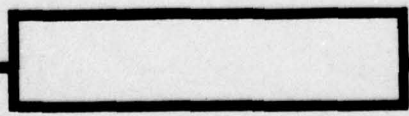
A UNIT FOR COLLECTING DUST FROM THE AIR

by

Leopold Hanzlik



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EDITED TRANSLATION

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By: Leopold Hanzlik

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FIRST LINE OF TEXT

A Unit for Collecting Dust from the Air

Leopold Hanzlik

The invention is a unit for collecting dust from the air during dry machining on lathes or by manual grinding. Commonly known and used dust-collecting devices are cloth filters provided with cone-shaped receiving bins which act as expansion collecting chambers for the partial precipitation of impurities before their intake into bags, and which also serve as a collector to accumulate dust shaken from the filter cloth.

A drawback of receiving bins which work in this way is that the precipitated particles fall on a layer of already settled dust, as well as on the sloping walls, where, with the help of a turbulent stream of air, they cause repeated movement of other grains towards the bags.

The larger grains settling on the cloth knock the smaller dust particles from the individual fibers; the particles are forced to move to ever denser layers of the cloth, while some go through holes to the outside of the filter. The frequently repeated cycle of agitation of grains, as well as the accretion of impurities in the collector, causes gradual lowering of efficiency of dust col-

lection and premature wear of the cloth through frequent motion of the shaking device.

For these reasons, and to obtain the desired efficiency, these filters require a large filtration surface and considerable investment. Another negative feature, especially of filters installed right in production rooms, is that, barring very frequent cleaning, dust repeatedly enters the atmosphere during emptying of the collectors, or before and after the contents are spilled from a collector.

The purpose of the invention is the development of a unit which can handle a greater load of dust-laden air and whose first stage of dust collection would ensure the correct process of catching dust through the cloth in the second stage.

The problem was solved by providing a conventional cloth filter with an expansion chamber having a wet settler and low-level evaporation of a liquid which catches an adequate amount of dust before and after shaking of the bags; this increases efficiency in the second stage of the process of dry-separating flying particles from the air on the filtration cloth fibers.

The invention is shown in the drawing, where fig. 1 is a longitudinal section, and fig. 2 is a cross section.

The invention consists of a conventional cloth filter chamber with bags (1), as well as an expansion chamber (2) with a slotted duct (3) and a wet settler (4) having a layer of liquid several centimeters in depth (5) which may be in the form of low-grade oil with no emulgent. Outlet a-b of the slotted duct (3) from the ventilator (w) is located at a certain height above the surface of

the oil (5) along one side of the interior of the expansion chamber (2) with the wet settler (4), whose base is wider than the conventional bag chamber (1).

A gasket (6) and screws (7) hermetically seal the inside of the unit, which is called an oil-and-cloth filter.

Dust-laden air is brought to the filter through slot a-b perpendicularly to the surface of the liquid (5) and continues across to the expansion chamber (2), where, after the forced change in direction and velocity, the stream flows vertically to the cloth bags (1).

As a result of this, by means of centrifugal force and the viscosity of the liquid, there is partial but irreversible precipitation of impurities, as well as stabilization of the concentration and size of grains in the remaining dust which is suitable for the final phase of dry separation through the filter cloth; at the same time there is complete absorption of dust particles after shaking of the bags. The distance between slot a-b and the surface of the liquid (5); the velocity of the vertical movement of air; and the density and evaporation level of the liquid are all coordinated so that instant absorption of dust takes place uninterruptedly on the suspension- and splash-free surface of the liquid, which gradually and imperceptibly rises as impurities arrive, until it becomes completely dull; this is then a signal for periodic cleaning of the settler and refilling with fresh liquid.

Besides having increased capacity with less cloth surface and reduced overall dimensions, as a result of the two-step operation

the unit removes dust from the air with great efficiency, lowers the initial investment and operating and maintenance costs, and at the same time introduces hygienic conditions during and after emptying of the settler.

Stipulations of Patent

1. The unit for collecting dust from the air, which has a cloth filter and an expansion chamber, is characterized by the fact that the expansion chamber (2) has a slotted duct (3) and a wet settler (4) with low-level evaporation of the liquid (5) for catching precipitated dust in the first stage, *i. e.*, both before and after the shaking of cloth bags (1).

2. The unit of the first stipulation is characterized by the fact that the outlet (a-b) of the slotted duct (3) is located above the surface of the liquid (5) along one side of the interior of the expansion chamber (2) with the wet settler (4), whose base is wider than the conventional bag chamber (1) in the second stage of dust collection.

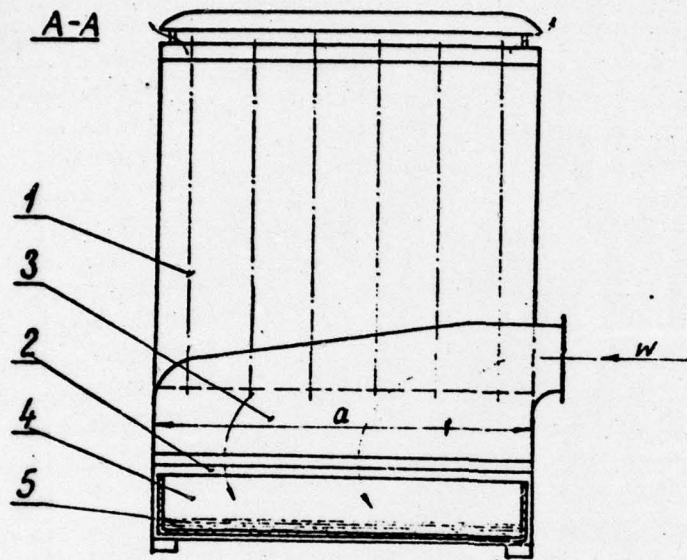


fig.1

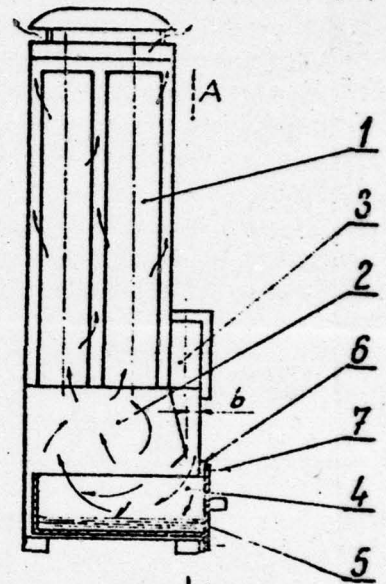


fig.2

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