Jan. 7, 1930. P. BOEHM 1,742,643

CENTRIFUGAL MACHINE

Filed July 8, 1929

Fig. 1.

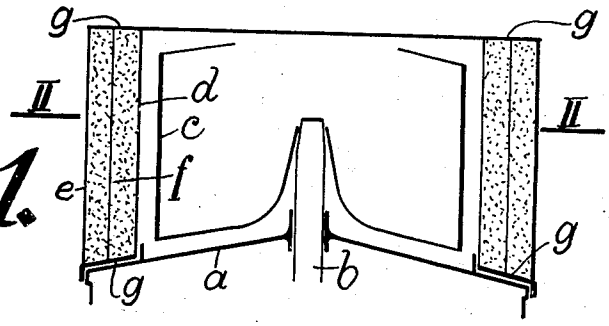



Fig. 2.

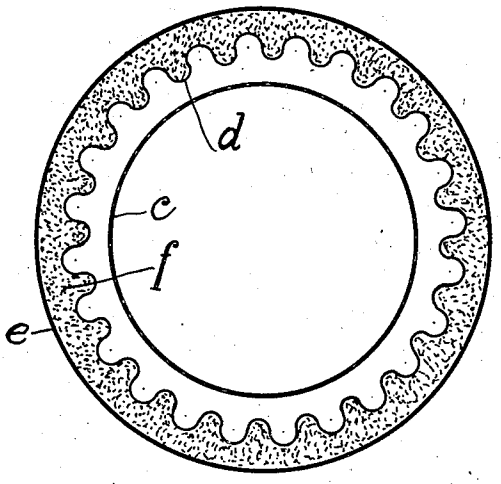
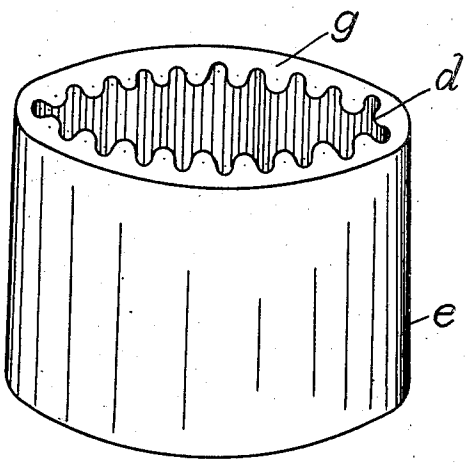



Fig. 3.




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# UNITED STATES PATENT OFFICE

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## CENTRIFUGAL MACHINE

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When a centrifugal machine is subjected to careless handling, such as overloading, exceeding the admissible speed of revolution and the like, there is a danger that the drum of the centrifugal machine running at a too high speed of revolution will burst and that the flying pieces of the drum will break through the shell and injure the people attending to it. For preventing such accidents it has already been proposed to provide a double-walled protective casing for the drum, in which the inner shell is made rotatable, so that, on the pieces of the burst drum striking against it, the tangential force of the same will be converted into frictional energy.

The invention consists in the insertion into the centrifugal machine of a double-walled protective casing which forms an independent, closed body which can be easily inserted in any existing centrifugal machine and the inner wall of which consists of corrugated sheet metal, while the hollow space is filled with an elastic layer consisting say of cork.

The inner corrugated sheet metal wall catches the pieces of the drum which are thrown outwards with exceedingly high centrifugal force and is flattened by them. The kinetic energy of the tangentially flying pieces of the drum is thus in part absorbed by flattening the inner corrugated sheet metal wall and is in part distributed by the elastic filling over a great surface of the outer wall and absorbed. The elastic filling also increases the resistance of the corrugated sheet metal to being flattened.

As compared with the known constructions this protective casing for the drum has the advantage of structural simplicity and increased reliability in working. Without any costly expenditure of material the idea is realized of converting great available energy into the work of deformation.

As the protective casing according to the invention forms an independent body, existing centrifugal machines can be fitted with the novel protective casing without the necessity of removing parts of the centrifugal machine, and, what is more important, without having to send the centrifugal machine to the factory. All that is necessary is for the protective casing to be ordered and made in the factory to the requisite dimensions. It can be inserted where the centrifugal machine is used and erected.

A further consequence is a not inconsiderable reduction in the cost of the whole fitting.

The accompanying drawing shows a constructional form of the improved centrifugal machine, without the scope of the invention being limited to this particular constructional form.

Fig. 1 is a vertical section through a centrifugal machine fitted with the protective casing according to the invention.

Fig. 2 is a section on line II—II of Fig. 1, and

Fig. 3 shows the protective casing in perspective view.

In the bottom *a* of the centrifugal machine the driving spindle *b* supporting the centrifugal drum *c* is journalled. On the bottom *a* of the centrifugal machine is fixed the protective casing, shown in Fig. 3 and forming an independent unit, for instance by welding, soldering, riveting and the like. The protective casing consists of the outer armour wall *e* made for instance of sheet metal and the inner corrugated sheet metal wall *d*. The hollow space thus formed is closed at the top and bottoms as shown at *g* and is filled with some elastic material, for instance cork.

On the drum *c* bursting, the pieces flying outwards with great kinetic energy in the first place act on the inner corrugated sheet metal wall *d*, when striking the same, in such a manner that the corrugations are to a great extent flattened. By this means the greater part of the kinetic energy of the flying pieces of the drum is converted into work of deformation and is absorbed. The remainder of the kinetic energy is transmitted by the elastic intermediate layer *f* to a large surface of the outer supporting wall *e* and is completely absorbed within the shell. The outer wall *e* forming the shell remains unaffected, the entire centrifugal machine collapsing where it stands without being hurled outwards.

The armour wall *e* may, as shown, form the external wall of the centrifugal machine.

Where the protective casing is subsequently fixed to an existing centrifugal machine, the original outer wall of the centrifugal machine can remain in position, so that the armour wall *e* will lie behind the actual outer wall of the centrifugal machine.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

In a centrifugal machine a double-walled protective casing, one of the walls of said casing consisting of corrugated sheet metal, an elastic layer filling the hollow space between the two walls of said casing, the said casing forming an independent unit which is closed on all sides and can readily be fitted to any existing centrifugal machine.

In testimony whereof I affix my signature.

PAUL BOEHM.