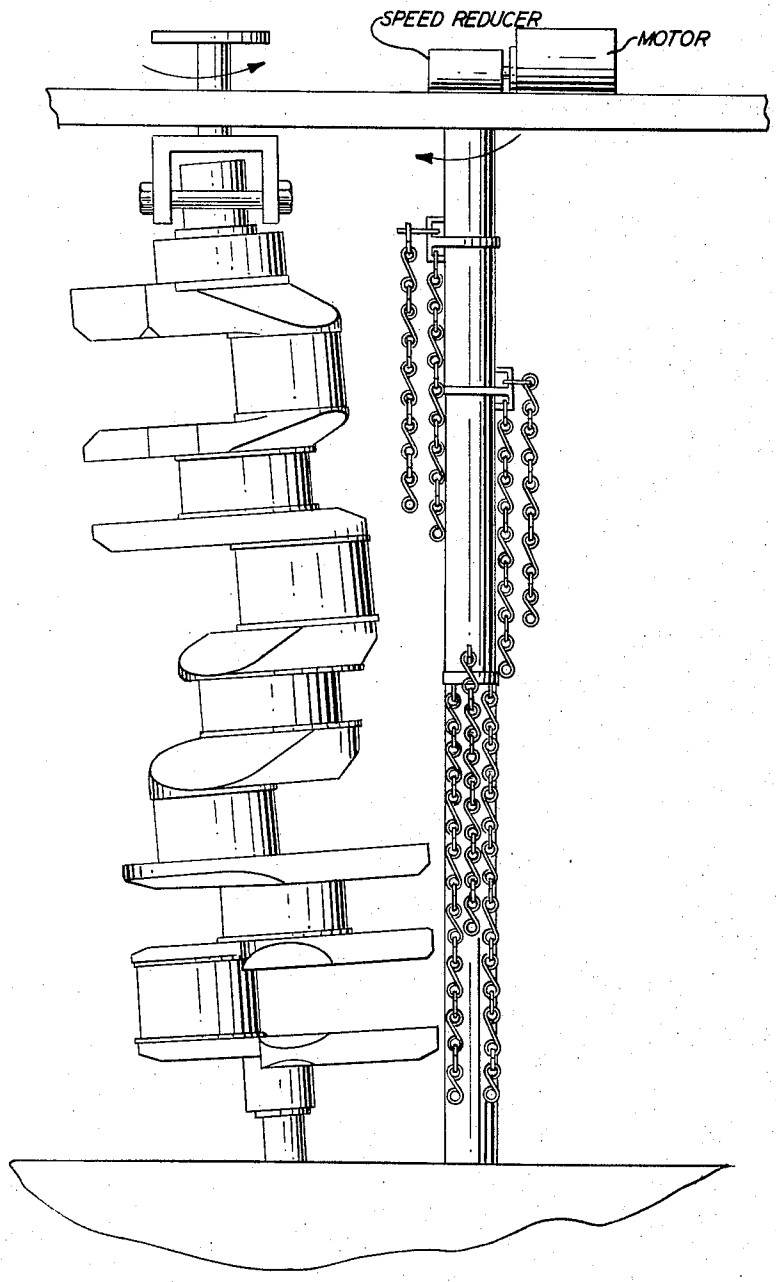
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CASTING CLEANING

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CASTING CLEANING

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ABSTRACT OF THE DISCLOSURE

A process for removing flash from a casting by mounting the casting such that the central axis thereof is coplanar with but at a slight angle, for example 10 degrees, with respect to the central axis of a rotatable member which supports flailing elements thereon. As the member is rotated, the elements are extended to a position whereat they both engage and apply a force on the flash on the casting at an acute angle to cause the removal thereof.

This invention relates to a process for cleaning castings and, more particularly, to the cleaning of castings which may be conveniently rotated to expose their entire surface to cleaning contacts. This invention has been perfected especially for cleaning internal combustion engine crankshafts and camshafts and will be described in connection with such usage.

The effectiveness of the process of this invention is dependent upon the cleaning action of flailing members which are brought into contact with the surface of the casting to be cleaned by centrifugal force. These flailing members are preferably short lengths of steel chain, although the invention is by no means so limited. It is clear that any flexible flailing element which is abrasion resistant may be substituted for the chains. For example, steel cable either alone or coated with an abrasion resistant elastomer may be employed. Similarly, a chain may be enclosed in an abrasion resistant elastomer tube to enhance its durability and cleaning effectiveness in this process.

The operation of this invention is best understood by a study of the drawing which is a perspective diagrammatic view of an apparatus actually employed in the execution of this invention. The crankshaft to be cleaned is suspended so that it is capable of rotation. In the structure shown, the rotation is effected by hand through the agency of a T-shaped handle seen above the crankshaft.

Adjacent the crankshaft is mounted a power-driven rotating member which supports numerous short lengths of steel chain. The axis of revolution of the casting to be cleaned and the axis of revolution of the rotating member may be parallel, although it is preferred that these axes be mounted at a slight angle to each other. In any event, these two axes should be so located that the entire surface of the casting to be cleaned will be contacted by the steel chains acting as flexible flailing members.

Centrifugal force tends to cause the chains to assure a radial position with reference to the axis of the rotating member. In this position these chains flail the rotating

casting and effectively remove all such detritus as sand, scale and flash.

The exact location of the chains on the rotating member is not critical, provided adequate coverage of the surface of the casting is obtained. In the actual operation of this process the chains were spaced about the periphery of the rotating member spaced apart by one hundred twenty degrees. The rotating member and the attached flailing chains were rotated in the speed range of 400 to 600 r.p.m. At a rotating member speed of 480 r.p.m. a speed of rotation of the crankshaft of 3 r.p.m. was found to be most effective. The chains employed were 4½ inch lengths fabricated from SAE 4615 7/32 inch diameter wire, 18 links per foot with a case hardness of 40 to 45 Rockwell C and a core hardness of 36 Rockwell C.

Improved cleaning action is obtained if the angle between the axis of the rotating member and the axis of the crankshaft be set at about ten degrees. The angular axis between the casting and the rotatable member permits the flailing elements to develop a centrifugal down or up force against the surface of the flash rather than striking the edge of the flash as would be the case if the two axes were parallel. The angular action allows a greater breaking force to be applied to the flash by the elements and results in a more efficient cleaning and/or flash removal operation.

We claim as our invention:

1. A process for removing flash from a casting having a central axis which comprises the steps of: mounting said casting such that the central axis thereof is coplanar with but at a slight angle with respect to the central axis of a rotatable member, said rotatable member having a plurality of flailing elements thereon, rotating said member to extend said flailing elements to a position normal to said central axis of said member so that said flailing elements strike the flash on said casting at said slight angle relative to the normal to said central axis of said casting, and rotating said casting about said central axis thereof so that the entire surface area of said casting supporting flash is repositioned, such that said flailing elements engage the flash at said slight angle thereby to create on said engaged flash a breaking force which has a direction other than normal to said central axis of said casting so that said flash is removed from said casting.

2. A process for removing flash from a casting as defined in claim 1 wherein said slight angle is 10°.

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