

## DEVICE AND METHOD FOR APPLYING LUBRICATING OIL

### BACKGROUND OF INVENTION

#### 1. Field of the Invention

The invention relates to a device for applying a flowable medium, in particular a lubricating oil, onto a workpiece, said device containing at least one duct having at least one outlet for the medium. Furthermore, the invention relates to a method for depositing a flowable medium, in particular a lubricating oil, onto a workpiece.

#### 2. Description of the Related Art

During the assembly of machines it is frequently necessary to provide the workpieces which are to be put together with a layer of lubricating oil, so that they can be put together without any problem and without the parts being damaged. Thus, for example, during the assembly of oil filters or air filters of motor vehicle engines the sensitive rubber seals are protected, by a previous wetting with lubricating oil, from being damaged when the components are being pushed together. The depositing of the lubricating oil currently takes place by spraying the parts with an oil mist. However, this procedure has the disadvantage that excess oil mist is emitted into the surrounding atmosphere, which results in stresses for the working personnel and for the environment. Furthermore, the dispersing mist also wets objects with oil which are not part of the installation process, which leads in consequence to the adhesion of dirt and therefore to malfunctions. Apart from these disadvantageous consequences, the excess oil mist does, of course, also cause additional costs through the consumption of material.

### DESCRIPTION OF THE PRIOR ART

DE 43 41 394 A1 discloses a device for the internal coating of holes, in which the flowable coating agent is guided via a duct to an outlet of the device. The outlet is designed as a slinging cylinder which rotates and in the process slings the coating agent radially outward onto the hole walls because of the centrifugal force. However, a device of this type is very complex and expensive and, moreover, is suitable only for depositing a medium onto the internal surfaces of holes. In the case of other surface forms, similar problems to those in the spraying of workpieces would arise due to the medium being slung in all directions.

### SUMMARY OF INVENTION

Against this background, an object of the present invention is to provide a device and a method for depositing a flowable medium, such as, in particular, a lubricating oil, with which device and with which method a targeted and economical wetting of the workpiece is possible in a simple and cost-effective manner.

The present invention is a device for applying a flowable medium, such as, in particular, a lubricating oil, a liquid bonding agent, a small-grained powder or the like, onto the surface of a workpiece contains at least one duct via which the medium to be applied can be conducted from a store to at least one outlet arranged at the end of the duct. In the device, a closure element is arranged in the abovementioned

outlet (or in each case in the plurality of outlets), which closure element can be moved between a closure position, in which it closes the outlet, and an opening position, in which it opens up the outlet. Furthermore, the closure element is prestressed by an elastic spring element into the closure position, and it protrudes outward over the outlet in such a manner that it can be transferred into the opening position, when in contact with a workpiece to be treated, by the contact pressure.

The device according to the invention permits a targeted application of a flowable medium, such as, for example, a lubricating oil, onto a workpiece. The medium can only be discharged from the device if the outlet of the device is opened up. Said opening-up takes place by the transfer of the closure element situated in the outlet from the closure position into the opening position. In the normal state, the closure element is situated in the closure position, since it is prestressed into this position by the spring element. Only if a corresponding counterforce overcomes the spring force is the closure element displaced into the opening position and the outlet is opened up as a result. The design of the device ensures that the abovementioned counterforce can be applied by the device or the closure element of the device making contact with a workpiece to be wetted. In order for this to be possible, the closure element protrudes with an exposed section over the outlet, with the result that it is the first part to come into contact with a workpiece as it approaches the workpiece. The contact pressure which arises in the process then displaces the closure element into the opening position, the dimensioning of the outlet and of the closure element advantageously being selected in such a manner that other parts of the device—such as, in particular, the edge of the outlet—also come into contact with the workpiece in the opening position of the closure element. By means of the resulting “sitting” of the device on the workpiece, a further exertion of pressure on the closure element is prevented.

The design described for the device has the advantage that said device can be realized relatively simply and cost-effectively and that it permits particularly simple handling. In order to deposit a medium, for example a lubricating oil, onto a workpiece, the device has merely to be brought, with the closure element in front, into contact with the workpiece. As soon as there is contact and a corresponding contact pressure is produced, the outlet of the device automatically opens in order to allow the medium to be discharged. The medium is therefore deposited onto the workpiece in an extremely targeted manner, both in terms of time and in terms of space. An emission of medium into the atmosphere is prevented, as a result of which the device obtains appropriate economical and ecological advantages.

According to a preferred refinement of the invention, the at least one outlet for the medium is formed by a cavity which is situated at the end of a duct, the closure element being arranged in the cavity and the cavity together with the closure element being covered to the outside by a mask. The mask has an opening which is shaped and dimensioned in such a manner that it only allows the closure element to partially, but not completely, pass through, and that it is closed by the closure element when the latter is situated in its closure position. The cavity of an outlet of this type is