

The invention relates to impression cylinders having a multiple diameter and packings arranged on the outer surface for supporting a sheet on its side which has already been printed for sheet-fed offset printing machines for perfecting.

Impression cylinders of double size with a chromium-plated and ground outer surface are known. As a result of summated shape errors of the two halves of the ground cylinder, ghosting phenomena readily occur during operation and redistribution of the ink already printed occurs in rectoprinting, such that the impression cylinder has to be washed more frequently and the consumption of solvents which pollute the environment is greater. This leads to a negative influence on quality.

Additionally, impression cylinders of double size which are blasted and subsequently chromium-plated are known, but which have a relatively rough surface and, due to the errors of the impression cylinder consisting of two uneven halves, an even less satisfactory shape accuracy, such that such impression cylinders readily show ghosting. In the case of wear of the surface, exchange of the entire impression cylinder is necessary, thus incurring high costs for parts and assembly as well as outage times at the printer's.

PE-C-2,446,188 discloses an impression cylinder with a single diameter, on whose outer surface a nickel foil with a surface structure is attached, by means of which the outer surface is divided up into raised surface parts which support the sheet and lower-lying, non-supporting surface parts in order to reduce the build-up and accumulation of ink on the outer surface upon contact with the freshly printed sheet side. Foils for this purpose are also known from DE-A-2,916,505.

The object of the invention is to guarantee a high printing quality without ink displacement in impression cylinders having a multiple diameter, even in rectoprinting and thus to reduce the washing time in order to further limit the consumption of solvent.

The invention achieves this object by the design

features according to Patent Claim 1.

The impression cylinder is assigned a number of foils of different thickness and, if appropriate, of different shape for selection so that, by the selection of a suitable foil, the concentricity errors or the sum of the shape errors of the two halves of an impression cylinder of double size are compensated.

If required, foils can be ground to be specifically non-parallel by offsetting the centre-point of the grinding device such that the surfaces of the foil run non-parallel to one another in the circumferential direction in order thus to achieve a difference in thickness between the leading edge and the trailing edge of the foil in the sheet-running direction. Such foils are assigned to the impression cylinder in a stepped manner, for example sorted into three steps of 0.01 mm in each case. In the case of shape errors of the two halves of the impression cylinder being detected or, for example, in the case of wear, by means of a fixed marking the impression cylinder can be returned to the new state at any time by exchanging the foil. The same applies to damage during production. Precise grinding of the back of the foil [sic] appropriate techniques are already mastered by pertinent companies. The same applies to appropriate measuring equipment with which the entire format can be covered, such that presorting of the foils can thus take place.

In analogy to foils for impression cylinders having a single diameter, foils for the purposes according to the invention can also be produced from a backing layer with a high modulus of elasticity and a chromium layer which results in a structured surface by which the sheet is supported.

Two exemplary embodiments of foils of the design according to the invention are illustrated in the drawing on an exaggerated scale and, additionally, the principle of a device for processing such foils is depicted.

Figure 1 shows a section of a foil with surfaces running parallel to one another on an exaggerated scale,

Figure 2 shows a section of a foil with surfaces running non-parallel to one another on an exaggerated scale according to Figure 1, and

Figure 3 shows, in a lateral view, the basic construction of a device for processing a foil according to Figures 1 and 2.

To compensate the summated concentricity and/or shape errors of the two halves of a ground impression cylinder having a diameter of double size, after corresponding measurements and markings this impression cylinder is assigned a plurality of foils of stepped thickness, for example having a thickness of 0.3, 0.29 and 0.28 mm corresponding to the illustration in Figure 1, for attachment in the region of a surface supporting a sheet.

To compensate a central offset, these foils can also have a non-parallel course of the surfaces relative to one another, corresponding to the illustration in Figure 2, such that the leading edge 7, for example, has a greater thickness than the trailing edge 8.

Correspondingly, a non-parallel course of the surfaces 9 and 10 relative to one another can also lead to a difference in thickness between the drive side and the operation side.

Figure 3 shows the basically simplified construction of a device for processing a foil intended for the purpose according to the invention. It consists of a grinding cylinder 1 which is mounted in a frame 3 so as to be rotatable about an axis 2 and has, on its outer circumference, clamping means for a foil 4 to be processed. A driven grinding wheel 5 acts against said foil 4, the axis 6 of said grinding wheel being aligned parallel to the axis 2. To achieve a non-parallel course of the surface on the foil 4 in the circumferential direction, the axis 2 of the bearing of the grinding cylinder 1 is displaced in the direction 2a relative to the axis 6 of the grinding wheel 5 in the common plane of the two axes 2 and 6.

The parallel position of the two axes 2 and 6 to

one another can likewise be changed, if appropriate, in an angular manner in order to achieve different thicknesses of the foil on the drive side and on the operation side, for example in the case of conically ground cylinders.

The foil itself can consist, in a manner which is known per se, of a backing layer and of a covering layer which has the structured surface to avoid the accumulation and build-up of ink during rectoprinting.

LIST OF REFERENCE NUMERALS

- | | | |
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| | 1 | Grinding cylinder |
| | 2 | Axis |
| | 2a | Axis displacement |
| 5 | 3 | Frame |
| | 4 | Foil |
| | 5 | Grinding wheel |
| | 6 | Axis |



Patent claims

1. Impression cylinder having a multiple diameter and packings arranged on its outer surface for supporting a sheet on its side which has already been printed for sheet-fed offset printing machines for perfecting,
5 characterized in that a foil (4), which can be adapted to and compensates shape errors of the impression cylinder and has a structured surface for the sheet rest, is fastened exchangeably to the outer surface of the
10 impression cylinder at least in the region of a surface supporting a sheet.
2. Impression cylinder according to Claim 1, characterized in that it is assigned a plurality of foils (4) of different thickness for selection.
- 15 3. Impression cylinder according to Claims 1 and 2, characterized in that the foils (4) assigned to it have thicknesses which do not run parallel to one another.
- 20 4. Impression cylinder according to Claim 3, characterized in that the foils (4) have a different thickness at the leading edge and at the trailing edge.
5. Impression cylinder according to Claim 3 or 4, characterized in that the foils (4) have a different thickness on the drive side and on the operation side.
- 25 6. Impression cylinder according to one of Claims 1 to 5, characterized in that the foils (4) consist of a backing layer with a high modulus of elasticity and a chromium layer with the structured surface.