An apparatus for ink supply.

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Description

TECHNICAL FIELD

The present invention relates to an apparatus for ink supply on printing by means of a rotary printing process, the apparatus including an inking roller adjacent which is disposed a chamber doctor blade.

BACKGROUND ART

In printing by means of rotary printing processes such as flexograph, rotogravure or offset printing, different inks have been produced and, in addition, different ink supply systems. However, on occasions it proves desirable to employ, in one printing process, an ink which is actually intended for a different process. In such an instance, the ink supply system which has been developed for the ink and printing process in question will not function. For example, it is possible thus to employ a conventional inking roller for flexograph printing and, in addition, inks which are normally employed in offset printing. These inks have a paste-like viscous consistency and, as a result, by no means correspond to the more freely-flowing inks which are normally used in the flexograph printing process. One reason for wishing to employ offset inks in flexograph printing may be because the intention is to utilize screen printing (also known as raster print) in which the ink is not of the blanket type. Since flexograph inks are normally of the blanket type, these cannot be employed for this purpose. It has also proved possible to achieve improved print quality by combining different printing systems with inks intended for other printing systems.

One method of supplying viscous ink to a conventional flexograph inking roller is to pump the ink into a chamber doctor blade. However, a solution of this type would entail such low speeds of the pump that this would become extremely difficult to operate.

OBJECTS OF THE INVENTION

One object of the present invention is to realize an ink supply system in which it is possible to employ paste-like inks normally intended for offset printing in a printing process in which conventional flexograph printing rollers are utilized, with a chamber doctor blade disposed adjacent thereto.

A further object of the present invention is to realize an apparatus for ink supply which is easy to control and easy to regulate, with few moving parts.

Yet another object of the present invention is to realize an apparatus for ink supply which is simple and easy to clean, and in which the ink is affected by mechanical action to but an insignificant degree.

SOLUTION

These and other objects have been attained according to the present invention in that the apparatus of the type disclosed by way of introduction has been given the characterizing features that each end of the chamber doctor blade is connected to each end of a cylinder in which printing ink is supplied; and that a reciprocating piston is disposed within the cylinder.

Preferred embodiments of the present invention have further been given the characterizing features as set forth in the appended subclaims.

BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWING

One preferred embodiment of the present invention will now be described in greater detail hereinbelow, with particular reference to the accompanying Drawing: Fig. 1 which schematically illustrates the apparatus according to the present invention.

The accompanying Drawing shows only those details essential to an understanding of the present invention, remaining parts of the printing press which are well-known to a person skilled in this art having been omitted.

DESCRIPTION OF PREFERRED EMBODIMENT

As shown in Fig. 1, a conventional chamber doctor blade 2 is disposed adjacent a conventional flexograph inking roller 1, the doctor blade normally being employed in flexograph printing processes. The chamber doctor blade 2 constitutes an enclosed chamber which abuts against the inking roller 1 with two sides and in which a third side closes the chamber outwardly. The chamber doctor blade 2 is also provided with end walls so that ink is completely enclosed in the chamber which is thus created.

At each end of the chamber doctor blade 2, there are provided connections which are of relatively large diameter, of the order of between 10 and 20 mm. A hose 3, 4 or conduit is joined to each connection, the hose or conduit having a diameter of between 10 and 20 mm. The two connections with their hoses 3, 4 are interconnected to each end of a cylinder 5. The connections of this cylinder 5 are also of relatively large diameter, of the order of between 10 and 20 mm. The cylinder 5 is provided with some form of aperture 6 where ink may be fed in. This aperture is preferably disposed centrally of and above the
cylinder 5. The aperture 6 may be designed as a funnel 7 with or without a lid, but other methods of supplying ink are also conceivable, such as continuous supply from an ink reservoir.

Within the cylinder 5, there is disposed a piston 8 which may reciprocate in the cylinder 5 between two end positions 9, 10. The piston 8 is ideally controlled by a pneumatic piston and cylinder assembly 11. The piston may also be controlled by an electric system. However, an electric system would be more complicated and, in the preferred embodiments of the present invention, the piston 8 is therefore controlled pneumatically.

Since the ink supply apparatus according to the present invention is to supply the flexograph inking roller 1 with a paste-like viscous ink of the offset ink type, the system must always be well-filled with ink in order to obtain an even and superior print quality. The ink is shown in Fig. 1 as hatched surfaces. The ink is supplied via the aperture 6 of the cylinder 5, and, in one or other direction of its reciprocating movement, the piston 8 forces the ink up towards the chamber doctor blade 2 through the one conduit or hose 3. Excess ink returns via the other conduit 4 to the cylinder 5 and thus wholly fills the system. When the reciprocating piston 8 disposed in the cylinder has reached its one end position 9, it automatically reverses and moves back to its other end position 10. The ink then passes via the conduit 4 up to the chamber doctor blade 2 and excess ink returns to the cylinder 5 via the conduit 3.

Because of the consistency of the ink and the slight quantity of ink which is consumed in this printing process, the speed of displacement of the piston 8 must be very slow. This speed is dependent upon ink consumption and, thereby, also the width of the printing press mechanism. On the slow movement of the piston 8, that air which is entrapped in the system will have time to bleed out via the small openings which always naturally occur in such a system, since it is not possible to render such a system fully air tight. The slow movement of the piston 8 also entails that the ink will be treated very gently, given that the viscous offset printing inks may be highly sensitive to mechanical action.

When the ink supply apparatus is started up, a slightly higher speed for the first stroke of the piston 8 is conceivable, in order more rapidly to be able to prime the system fully, since it is important that the system is constantly full so as to ensure a satisfactory ink deposition on the inking roller 1. The pressure over the system will be quite low, given the slow movements executed by the piston 8, and a desirable pressure is of the order of between 0.1 and 0.3 bar.

In order to make the ink supply apparatus as easily maintained and simple to clean as possible, the cylinder 5 should be disposed as close to the inking roller 1 as possible, so as thereby to avoid the use of long conduits or hoses 3, 4 between the chamber doctor blade 2 and the ink cylinder 5. The relatively large diameter of the connections and conduits 3, 4 also makes for simple cleaning of the apparatus. By employing short conduits 3, 4, ink wastage in completed printing will also be minimized.

As will have been apparent from the above description, the present invention realizes an apparatus which makes possible ink supply to a conventional flexograph inking roller of a paste-like ink actually intended for offset printing processes. The apparatus makes for a system which is easy to clean and easy to control.

The present invention should not be considered as restricted to that described above and shown on the Drawing, many modifications being conceivable without departing from the scope of the appended Claims.

**Claims**

1. An apparatus for ink supply, in printing by means of a rotary printing process, comprising an inking roller (1) to which is disposed a chamber doctor blade (2), characterized in that each end of the chamber doctor blade (2) is connected to each end of a cylinder (5) in which printing ink is supplied; and that a reciprocating piston (8) is disposed in the cylinder (5).

2. The apparatus as claimed in Claim 1, characterized in that the reciprocating piston (8) is controlled from a pneumatic piston and cylinder assembly (11).

3. The apparatus as claimed in Claim 2, characterized in that the pressure over the apparatus in its entirety is of the order of magnitude of between 0.1 and 0.3 bar.

4. The apparatus as claimed in Claim 1, characterized in that the conduits (3, 4) between the chamber doctor blade (2) and the cylinder (5) are of a diameter of the order of magnitude of between 10 and 20 mm.

**Patentansprüche**

1. Vorrichtung zur Farbverteilung zum Drucken mittels eines Rotationsdruckverfahrens, wobei die Vorrichtung eine Einfärblehze (1) aufweist, an der eine Kammerrakel (2) angeordnet ist,
dadurch gekennzeichnet, daß jedes Ende der Kammerrakel (2) mit einem jeweiligen Ende eines Zylinders (5) verbunden ist, dem Druckfarbe zugeführt wird; und daß in dem Zylinder (5) ein hin- und hergehender Kolben (8) angeordnet ist.

2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß der hin- und hergehende Kolben (8) von einer pneumatischen Kolben-Zylinder-Einheit (11) betätigt wird.

3. Vorrichtung nach Anspruch 2, dadurch gekennzeichnet, daß der Gesamtdruck über die Vorrichtung in der Größenordnung zwischen 0,1 und 0,3 bar liegt.

4. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die Leitungen (3, 4) zwischen der Kammerrakel (2) und dem Zylinder (5) einen Durchmesser in der Größenordnung zwischen 10 und 20 mm haben.

Revidications

1. Appareil d'alimentation d'encre, pour l'impression par procédé d'impression rotatif, comprenant un rouleau d'encrage (1) auquel est associée une lame de râlage (2) formant chambre, caractérisé en ce que chaque extrémité de la lame de râlage (2) formant chambre est reliée à chaque extrémité d'un cylindre (5) alimenté en encré d'impression, et en ce qu'un piston (8) à mouvement de va-et-vient est logé dans le cylindre (5).

2. Appareil selon la revendication 1, caractérisé en ce que le piston (8) à mouvement de va-et-vient est commandé à partir d'un ensemble pneumatique à piston et cylindre.

3. Appareil selon la revendication 2, caractérisé en ce que la pression dans l'appareil pris dans son ensemble est d'un ordre de grandeur compris entre 0,1 et 0,3 bar.

4. Appareil selon la revendication 1, caractérisé en ce que les conduits (3,4) reliant la lame de râlage (2) formant chambre et le cylindre (5) ont un diamètre d'un ordre de grandeur compris entre 10 et 20 mm.