Nov. 14, 1961 W. C. ROBERTS ET AL 3,008,407

DAMPENING DEVICE

Filed May 11, 1960

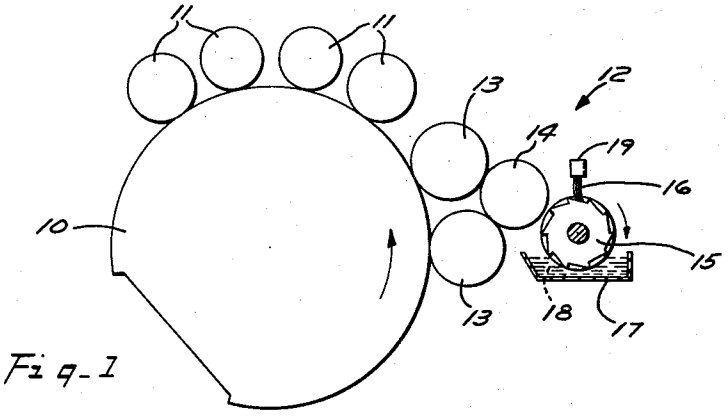


Fig. 1

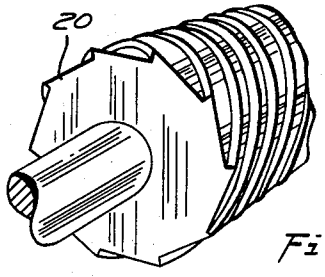


Fig. 2

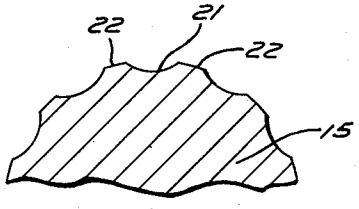


Fig. 3

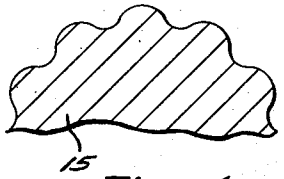


Fig. 4

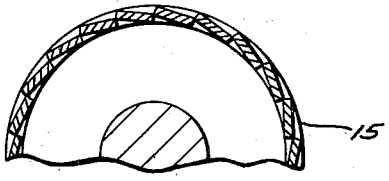


Fig. 5

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DAMPENING DEVICE

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This invention relates to a device for creating a mist of finely divided moisture particles to be applied to a mist receiving surface and in particular to such a device embodied in a lithographic printing press for dampening a lithographic printing plate.

The principal object of this invention is to provide a mist-creating device which is simple in structure, easy to manufacture, and efficient and inexpensive to operate.

Another object of the invention is to provide a device which is more compact than known similar devices.

Other objects and advantages will be apparent from the description in which reference is made to the accompanying drawings.

According to our invention, a supply roller having a plurality of generally longitudinally extending ribs is partially immersed in a container having liquid therein and is rotatable to present a wetted surface of the roller to a stationary brush which engages the ribs to atomize and flick moisture from the ribs toward and onto a lithographic plate of a lithographic printing press, or upon roller means which transfers the liquid in film form to the plate under pressure contact.

In the drawings:

FIG. 1 is a simplified elevational view of a portion of a lithographic printing press embodying one form of the invention.

FIG. 2 is an isometric view of a portion of the supply roller of FIG. 1.

FIGS. 3, 4 and 5 are enlarged sectional views of other forms of supply rollers which may be utilized to accomplish the desired moisture atomization.

Referring now to the drawings, the lithographic press includes a plate cylinder **10** which carries a conventional lithographic plate thereon, a plurality of inking form rollers **11** which receive ink through the usual train of ink rollers from an ink fountain, and a lithographic dampening unit **12**. In normal operation, the dampening unit **12** moistens the lithographic plate during each cylinder revolution prior to its being inked by the inking rollers **11**. As shown in FIG. 1, the dampening unit **12** may comprise one or more dampening rollers **13** which contact the plate on the cylinder **10**, an intermediate roller **14** contacting the roller or rollers **13** and transferring moisture thereto, and a mist-creating device including a supply roller **15**, a stationary brush **16**, and a container **17** for a supply of dampening liquid **18**. The rollers **13** may be of any suitable material used for lithographic dampening. The roller **14** is treated to be water-receptive in the usual manner and preferably reciprocates axially to provide a transverse spreading action of the water.

The brush **16** includes bristles which are carried in a support **19** which preferably extends at least the full length of the roller **15**. When the system is operating, the brush is supported on framework of the machine so as to be stationary. The bristles are impressed against ribs **20** which are produced on the surface of the supply roller **15**. As the brush rotates, a thin liquid film picked up from the liquid supply **18** in the container **17** is presented into the area of contact by the brush so that the brush bristles in contacting the ribs are bent in a direction away from the intermediate roller **14**. Then, as the

peak of a given rib **20** is reached, the bristles will fall off the peak into the valley formed between adjacent peaks and simultaneously spring back to their original relaxed condition. In doing this, the bristles will tend to flick the thin film of moisture from the peak in a direction toward the intermediate roller **14** and at the same time reduce or atomize the liquid to a fine mist. As the supply roller **15** continues to rotate, the moisture picked up from the container will be continuously flicked onto the intermediate roller **14** to supply moisture to the dampening unit **12** and consequently to the surface of the plate on the plate cylinder **10**.

As shown in FIG. 2, the ribs **20** on the supply roller **15** are helically generated about the roller. Although a very good spray pattern is produced with helically generated ribs, it is to be understood that straight longitudinal ribs or intermittent ribs may also be used to carry out the invention. For example, other and different types of ribs which may satisfactorily perform the method of this invention are shown in FIGS. 3, 4 and 5. Still other modifications are not only possible, but probable. In FIG. 3, a conventional smooth roll has been provided with grooves **21** which become the valleys between peaks **22**. FIGURE 4 shows a quite similar structure in which the peaks **22** have rounded corners to reduce brush wear. In FIG. 5, we have shown a tubular louvered-type supply roller which can be made to perform the required flicking action. In each of the modifications disclosed in FIGS. 3, 4 and 5, the ribs can be straight, helical or any other desired form, and the ribs may extend the full length of the roller or be formed as short ribs which may, if desired, be staggered in adjacent rows.

We have provided an efficient mist creating device which can be used not only for a lithographic printing press, but for other types of apparatus as well.

Various changes may be made in the details of construction without departing from the spirit and scope of the claims.

Having described our invention, we claim:

1. A dampening device for a cylindrical member of a lithographic printing machine comprising a container disposed on said machine and adapted to hold a quantity of ink repellent dampening liquid, a supply roller rotatably mounted on the machine and disposed in said container with one side thereof adapted to be immersed in said liquid, said supply roller having a plurality of generally longitudinally extending helically generated ribs forming adjacent peaks and valleys peripherally spaced therearound, and a brush fixedly mounted on the machine and having springy bristles impressed inwardly against the ribbed surface of the supply roller to a depth less than the depth of said valleys, whereby, as the supply roller rotates, the bristles are released from the peaks of said ribs to project the liquid from the ribs in atomized form against the surface of the cylindrical member.

2. The invention set forth in claim 1 wherein each of said peaks is provided with a sharp drop-off on its side opposite the direction of rotation of the supply roller.

3. The invention set forth in claim 1 wherein said ribs are closely spaced, and wherein the helix angle of the ribs and the length of the supply roller are such as to provide for contact of several adjacent ribs by the brush at the same time.

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