

July 13, 1965

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3,194,156

CLEANING SCRAPERS FOR TWIN CYLINDER STENCIL DUPLICATORS

Filed July 8, 1963

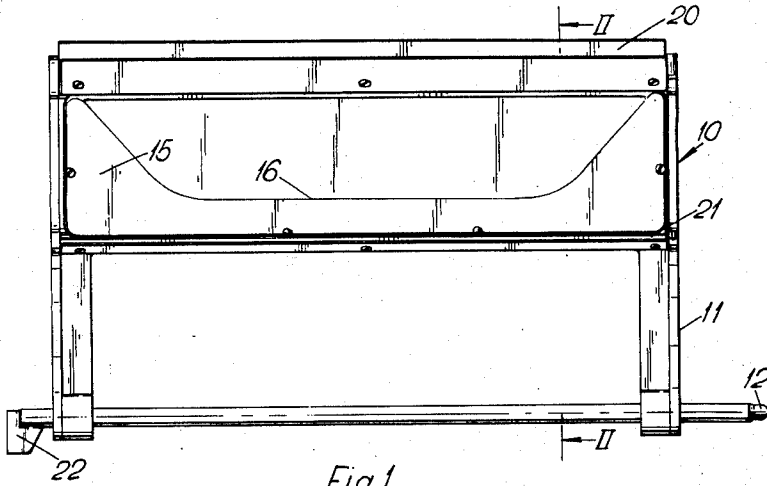


Fig. 1.

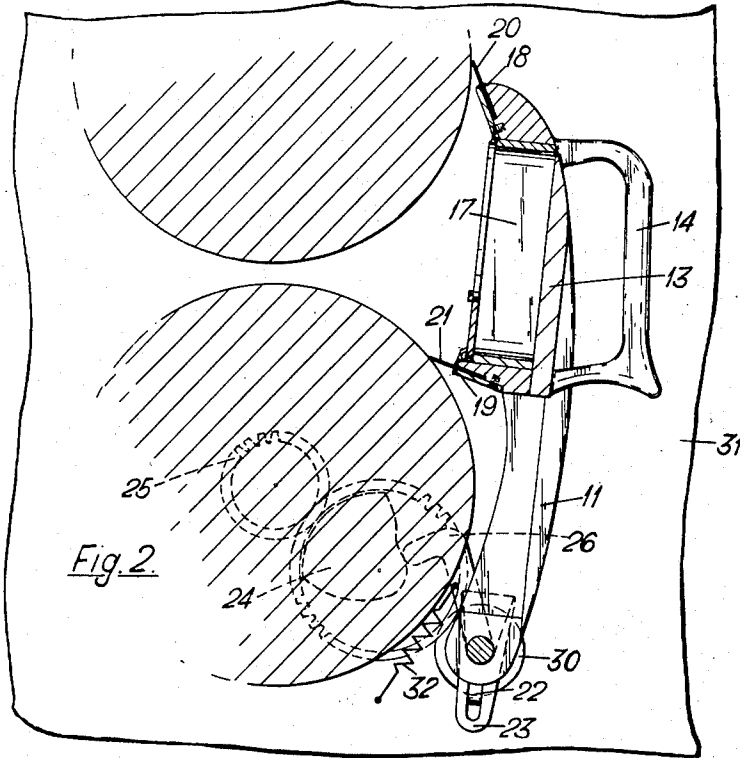


Fig. 2.

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3,194,156

CLEANING SCRAPERS FOR TWIN CYLINDER STENCIL DUPLICATORS

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Filed July 8, 1963, Ser. No. 293,523

Claims priority, application Great Britain, July 11, 1962, 26,687/62

1 Claim. (Cl. 101—425)

This invention concerns improvements in or relating to duplicators, and more particularly twin cylinder stencil duplicators, i.e. duplicators in which the stencil is adapted to be fitted over an ink screen mounted around two printing cylinders rotatable about parallel axes and positioned one above the other.

It is at times, for example when duplicating is required to be carried out with ink of a different colour from that last used, necessary for the old ink to be cleaned from the two printing cylinders. An existing apparatus used to clean the cylinders comprises a frame which carries an elongated rectangular cleaning card and which is, after removal of the ink screen and inking rollers, adapted to be clipped into the space between the printing cylinders so that the card extends with its direction of length parallel to the cylinder axes and with its plane parallel to the plane passing through such axes, so that the upper edge of the card engages the periphery of the upper cylinder, whilst the lower edge of the card engages the periphery of the lower cylinder. Cleaning is effected by applying such apparatus to the cylinders and then rotating the latter thereby causing the ink to be scraped from the cylinders onto the edges of the card.

Such apparatus suffers from the disadvantage that it requires considerable effort on the part of the operator to turn the cylinder against the force provided by the card and that, when the cylinders are stopped and the apparatus removed, lines of ink deposit remain on the cylinders along the line of contact therewith of the edges of the card, particularly the lower card edge.

It is an object of this invention to provide an improved cleaning apparatus for twin cylinder stencil duplicators.

The apparatus of this invention comprises a holder adapted, in use of the apparatus, to receive a card or cards in such a position that the card or cards have two cleaning edge portions which can be applied against the two cylinders so that such edge portions are in contact with the cylinders, one with each cylinder, the cleaning edge portions projecting from the holder at angles of less than 90° to a plane which is parallel to the plane through the cylinder axes, such angles being measured in the same direction in such plane. Generally, in use, a duplicator stands on a horizontal surface and the plane through the cylinder axes is vertical. Thus, when apparatus according to this invention is applied to such a duplicator, each of the said cleaning edge portions will project at an angle of less than 90° to the vertical and they will both be generally directed upwardly or downwardly.

It will be appreciated that both cylinders of a twin cylinder duplicator rotate in the same rotational direction. When using the apparatus of this invention, the cylinders would be rotated in the direction which would cause each cleaning edge to have a shaving action on the cylinder which it engages. The known apparatus previously mentioned, because one edge portion of the cleaning card projects upwardly and the opposite edge portion projects downwardly, has one edge portion "shaving" its cylinder and the other edge portion riding over its cylinder whatever the direction of rotation of the two cylinders. The apparatus of this invention gives better and more uniform cleaning results.

Preferably, the edge portions are arranged to extend upwardly in use of the apparatus so that ink scraped from the cylinders will tend to run onto the card, rather than drip or fall therefrom, as might occur if the edge portions extended downwardly. The edge portions may conveniently be arranged so that each makes the same angle with the tangent to the appropriate cylinder at the point of contact of the edge portion with the latter. A suitable value for such angle is between 20° and 30°.

Although the holder could be adapted to receive a single wide card and retain the latter in such a bent form that the upper and lower edges of the card project from the holder at the appropriate angles, advantageously the holder is adapted to receive and retain two narrow strips of card with longitudinal edges of such strips projecting from the holder at the appropriate angles. Conveniently the holder is provided with two spaced strip-receiving slots arranged at the appropriate angles.

Preferably, according to a further feature of the invention, the card or cards, when mounted in the holder, project outwardly from one side thereof for easy removal of the card or cards without the necessity of touching the inky edges thereof.

Conveniently the holder may comprise a body having the said edges projecting from its upper and lower sides and having between such edges a hollow space serving as a magazine or container for unused cards or strips.

Although the holder could be of a form adapted simply to be held in the hand and pressed between the cylinders so that the card edges are pressed onto the cylinders, preferably the holder is adapted to be mountable on the duplicator itself for accurate positioning of the cleaning edges relatively to cylinders.

In a convenient construction, the holder is pivotably mountable on the duplicator, for example by the body of the holder being carried on two transversely spaced arms projecting outwardly from a shaft adapted to be mounted at its ends removably in journals in the side frames of the duplicator between which the cylinders are mounted.

Instead of requiring to be pressed manually against the cylinders, the apparatus could be biased, e.g. spring biased, towards the cylinders to maintain the cleaning edges against the latter.

In order that the invention may more readily be understood the following description is given by way of example, reference being made to the accompanying drawings, in which:

FIGURE 1 is a front elevation of one embodiment of cleaning apparatus according to the present invention; and

FIGURE 2 is a cross-section on the line II—II of FIGURE 1, to an enlarged scale, and shown in the operative position, adjacent portions of the twin cylinders of a rotary duplicator.

Referring now to the drawings, the apparatus of the present invention comprises a card holder 10 having transversely spaced side arms 11 projecting outwardly from a shaft 12 adapted to be mounted at its ends removably in journals 30 in the side frames 31 of the duplicator between which the cylinders are mounted. Between the side arms 11 extend a cover sheet 13 to which is secured a handle 14 by which the holder may be manually pivoted. A plate 15 having an aperture 16 defines with cover plate 13 a chamber 17.

The holder also includes two sets of spaced apart jaws 18 and 19, each having a card receiving slot therebetween. The drawings show two cards 20 and 21 fitted into these slots 18 and 19 respectively.

In some duplicators, a mounting bar for the ink screen extends across the cylinders parallel to the axes thereof and it is necessary, in such duplicators, for the apparatus according to this invention to be periodically moved away

from the cylinders, to allow the mounting bar to pass by the apparatus. Although such periodic movement could be carried out manually, it is preferred that means be provided to ensure that it occurs automatically.

This is achieved by utilising a cam surface on a cam 24 driven by a gear 25 on the shaft of the lower cylinder to swing the holder away from the cylinders at the appropriate time. The shaft 12 has at one end a lug 22 which fits into a slot on a support 23 carried by the appropriate journal and the said cam surface engages a follower arm 26 carried on the support 23 thus pivoting shaft 12 and the holder 10.

The position and angles of jaws 18 and 19 is such that a piece of card placed therebetween is arranged to project therefrom in a plane at an angle of less than 90° to the vertical plane passing through the axes of the cylinders of the duplicating machine. As shown, the angles are such that the plane of the projecting portion of each of the cards 20 and 21 is at an angle of approximately 26° 30 minutes to the tangent of each cylinder at the point of contact of the edge portion with the latter.

In use of the apparatus of the present invention, the silk screen is removed from the cylinders of the rotary duplicating machine and the latter are rotated slowly in a clockwise direction, as shown in FIGURE 2, and the holder 10 is urged manually or by spring 32 towards the axes of the cylinders, the cards 20 and 21 thus scraping the ink from the two cylinders. The moving of the cleaning edges away from the cylinders is effected by the operating cam of the duplicating machine acting on lug 22. Because such movement occurs as the cylinders are rotating, no lines of ink deposit remain on the cylinders and thus the movement is advantageously made even in duplicators where it is not otherwise necessary to provide for such movement away from the cylinders.

The chamber 17 is of such a shape that it is particularly convenient to use it as a magazine or container for the strips or cards. A quantity of strips or cards are simply flexed and sprung into place in the chamber 17, where they are retained in place by their own resilience and by plate 15.

I claim:

In a rotary duplicator comprising side members, two cylinders mounted between said side members, surfaces on said cylinders and means for rotating said cylinders about parallel axes and in the same direction, an apparatus for cleaning said cylinder surfaces, such apparatus including a holder, a shaft in said holder, journal means on said side members for receiving said shaft for pivotally mounting said holder, a pair of parallel spaced apart jaws secured to said holder, means defining in each said jaw a card receiving slot parallel to said axes, a strip of card held in each said slot and extending beyond one end of said slot and two cleaning edge portions, one on each said card, operatively positioned by said slot defining means to be pressed against said twin cylinders simultaneously at an angle between 20° and 30° to said cylinder surfaces so as to be in shaving relation therewith, means defining a chamber between said jaws said chamber serving as a container for unused strips of card, spring means urging said holder towards said twin cylinders, support means associated with said journal means, cam follower means connected to said support means, a lug on said shaft engaged in said support means and a cam operatively connected to said rotating means to move periodically said cam follower, support means, lug and holder whereby said cleaning edges are moved from said cylinder surfaces.

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