Aug. 20, 1963 J. W. CARLSON 3,101,036

DISPOSABLE CARTRIDGE FOR USE IN A PHOTOCOPY MACHINE

Filed June 8, 1960 2 Sheets-Sheet 1

FIG. 1

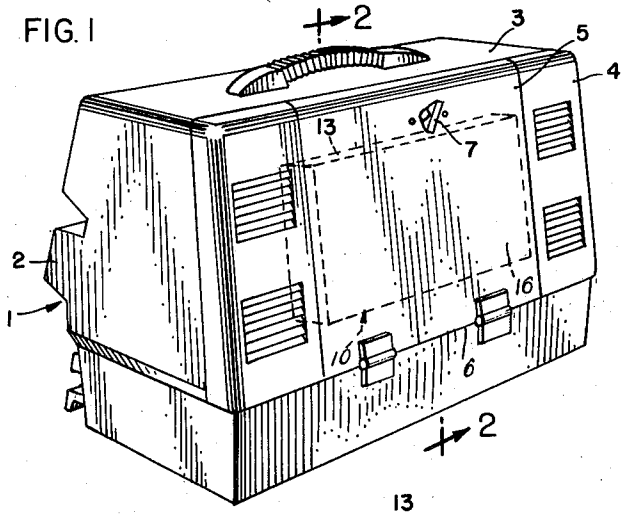


FIG. 5

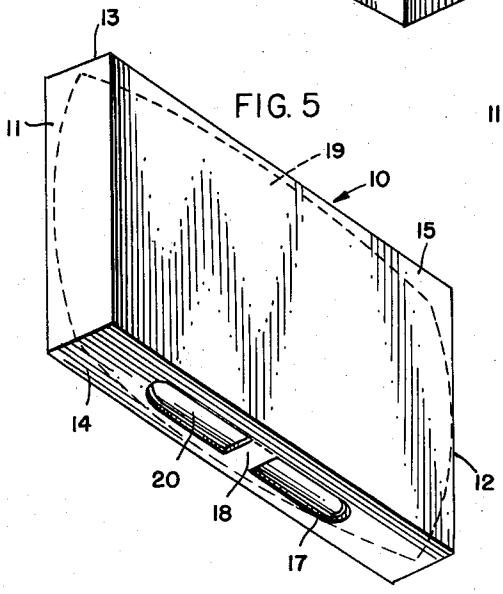


FIG. 6

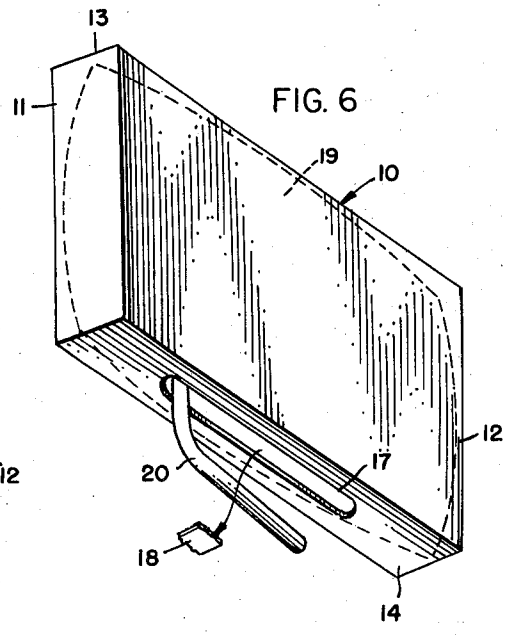
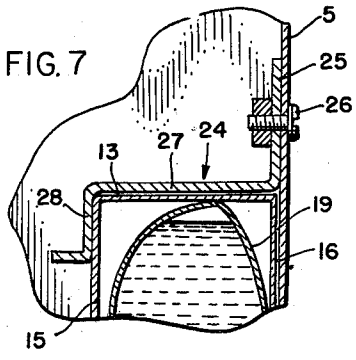


FIG. 7



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DISPOSABLE CARTRIDGE FOR USE IN A PHOTOCOPY MACHINE

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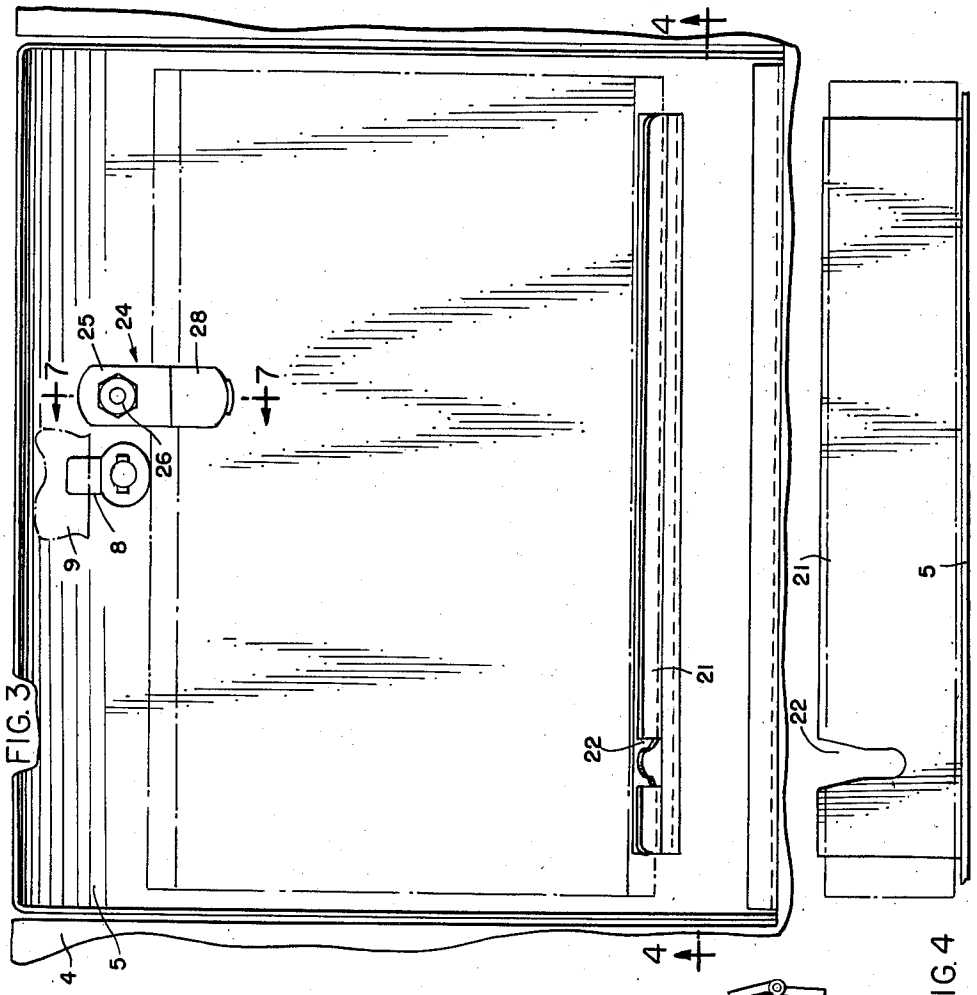


FIG. 3

FIG. 4

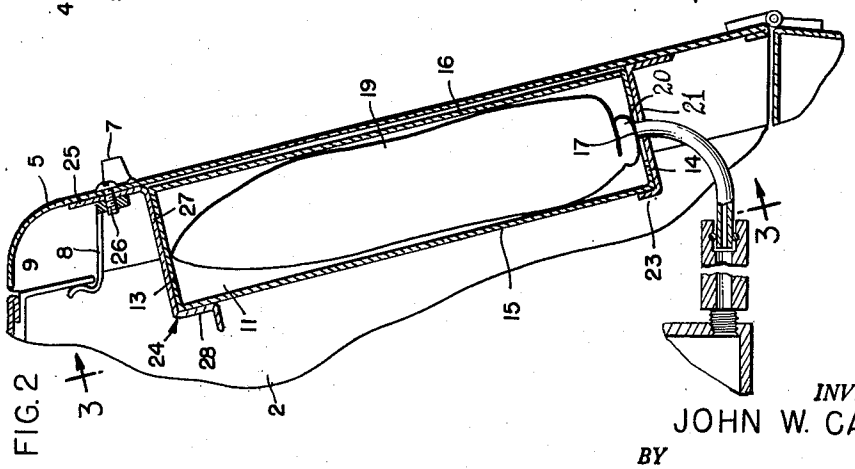


FIG. 2

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DISPOSABLE CARTRIDGE FOR USE IN A PHOTOCOPY MACHINE

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5 Claims. (Cl. 95—89)

This invention relates in general to a disposable cartridge construction which is particularly useful in connection with photocopy machines.

Photocopy machines have become popular in recent years for office use in making copies of various types of documents. Some of the machines require the use of a developer fluid to develop a print of an original document which has been exposed to light. The invention herein is particularly directed to a disposable cartridge construction wherein the developer fluid for a photocopy machine may be stored.

In most photocopy machines of this general nature there is a tray or tank within which developer fluid is placed and through which the exposed light sensitive paper is passed. Usually, the developer fluid must be placed in the tank or tray directly and manually and removed therefrom in the same way. A photocopy machine of this general type is disclosed in my earlier filed copending application Serial No. 420 filed January 4, 1960, now Patent No. 3,031,942.

One advancement in this particular art has been to provide a flexible container for holding the developer fluid wherein the container is mounted within the machine on a door or hinged panel. A tubular flexible extension or conduit is connected to the container at one end and to a valve at the other end through which the developer fluid may pass into the tray when the container is in a position above the tray. Such an arrangement is disclosed in my earlier filed copending application Serial No. 827,903 filed July 17, 1959.

The present invention is designed as an improvement over the aforesaid application Serial No. 827,903 and has definite advantages thereover as will be brought out more clearly hereinafter.

It is, therefore, one of the principal objects of the present invention to provide a disposable cartridge which is especially useful in connection with photocopy machines and which is adapted to contain a fluid such as a developer fluid.

Another object of the invention is to provide a disposable cartridge wherein an outer carton has disposed therein a flexible bag for holding a developer fluid, and a tube secured to the bag is used to convey the fluid from the bag to a tray in a photocopy machine.

A further object of the invention is to provide a disposable cartridge consisting of a comparatively rigid carton, within which there is disposed a flexible bag containing a developer fluid and wherein such cartridge may be removably mounted within a photocopy machine.

A still further object of the invention is to provide a photocopy machine wherein a disposable cartridge containing a developer fluid is mounted on a hinged panel of the machine housing and wherein the cartridge includes an outer relatively rigid carton within which is disposed a flexible container or bag.

Other objects and advantages of the invention will become apparent upon reading the following description taken in conjunction with the accompanying drawings, in which

FIG. 1 is a rear perspective view of a photocopy machine with which the device of the present invention may be used;

FIG. 2 is an enlarged fragmentary sectional view taken substantially along the plane of line 2—2 of FIG. 1;

FIG. 3 is a fragmentary elevational view showing mounting means on the inner surface of the machine for mounting the disposable cartridge thereon and taken along the plane of line 3—3 of FIG. 2;

FIG. 4 is a fragmentary view, partly in section and partly in elevation, taken along the plane of line 4—4 of FIG. 3;

FIG. 5 is a perspective view of the disposable cartridge in the condition in which it is shipped and prior to being placed within the machine;

FIG. 6 is a view similar to FIG. 5 but showing the cartridge in condition ready for use when it is mounted within the machine, and

FIG. 7 is an enlarged fragmentary sectional view taken substantially along the plane of line 7—7 of FIG. 3.

Referring now more particularly to the drawings and especially to FIG. 1, the photocopy machine used for purposes of illustration is like that shown in my above referred to copending application Serial No. 420. The machine has a housing generally indicated by the numeral 1 consisting of end members 2, a top 3, and a back 4. A portion of the back is cut out to provide a hinged panel or door 5 hinged along its bottom edge 6 so that it may be moved between a substantially vertical position, as shown in FIG. 1, and a substantially horizontal position when open.

The door or panel 5 has a latching member in connection therewith which consists of a handle part 7 and an inwardly extending latching member 8 which may be rotated in one direction so the latching member 8 will cooperate with a detent 9 to lock the door or panel in closed position. (See FIG. 2.)

As explained in my above referred to last mentioned pending applicaton, the machine is provided with a tank or tray (not shown herein) for the reception of the developer fluid while the machine is in use.

The disposable cartridge of the present invention is generally indicated by the numeral 10 and consists of an outer carton of generally rectangular form having end members 11—12, a top 13, a bottom 14, and sides 15 and 16. This outer section is relatively rigid and may be formed of any suitable material such as cardboard.

The bottom 14 of the carton is provided with an elongated slot 17 which has a tab 18 extending transversely thereof and intermediate its ends. The tab 18 is connected to the edges of the slot 17 by score lines so that the tab may be easily removed therefrom when the cartridge is to be made ready for use.

A flexible container or bag 19 is disposed within the carton 10 and is provided with a flexible tubular extension 20. When the cartridge is originally formed, the container or bag 19 is placed within the carton so that the tube 20 will lie along the bottom of the carton in the vicinity of the slot 17. The tube 20 is held in place within the carton and is prevented from passing through the slot 17 by means of the removable tab 18.

When the cartridge is mounted within the machine, the tab 18 will be removed as shown in FIG. 6, and the tube 20 will then extend through the slot 17 and may be connected by any suitable means with the developer tray within the machine.

The door or hinged panel 5 is provided with suitable means on its inner face on which the disposable cartridge may be mounted and held in place. In the particular embodiment of the invention shown herein, such mounting means consists of a shelf 21 extending forwardly into the machine from the inner face of the door 5 and is provided with a transversely extending slot 22 extending rearwardly from the edge of the shelf, as shown more clearly in FIG. 4. The purpose of such a slot is to receive the flexible tube 20 when it is connected to the developer tray.

The forward edge of the shelf 21 is turned upwardly as at 23 to provide a stop to hold the carton 10 in place on the shelf, as shown in FIG. 2.

Suitable clamping or locking means is provided on the inner face of the door 5 to cooperate with the top of the carton 10 and hold it in place. Such a means may include a bracket generally indicated by the numeral 24 and which has an upturned flange 25 at its rear end rotatably mounted on the door by means, such as the screw 26. The bracket then has a forwardly extending portion 27 adapted to lie along the topside of the carton 10 and is then turned downwardly at its forward end, as at 28.

Initially, the bracket 24 will be rotated so that the end 28 thereof extends upwardly. The disposable cartridge is then placed on the shelf 21 and the bracket 24 rotated to its locking position shown in FIGS. 2 and 7. This then holds the cartridge in place on the door whether the door is in fully open or fully closed position.

As explained in my foregoing last mentioned copending application, the tube 20 may be connected with suitable valve means so that when the valve is open and the door 5 is in its substantially vertical closed position, the developer fluid will flow from the flexible container through the tube 20 and into the developer tray. When the door is opened to its substantally horizontal position, it will be lower than the tray and the developer fluid will flow therefrom back into the flexible container.

When the developer fluid has lost its strength, the entire cartridge, including the outer carton and the inner flexible bag, may be discarded and a new cartridge inserted in its place.

The improvement in the disposable cartridge of the present invention has many advantages over the use of a flexible container by itself. For example, the cartridge being provided with a relatively rigid outer carton is easier to handle and is easier to pack for shipping purposes. The relatively rigid outer carton is much cleaner and acts as a protection for the flexible bag to prevent damage thereto.

Furthermore, the relatively rigid carton is susceptible to having printing placed thereon whereby advertising material may be printed thereon for display purposes when the cartridge is displayed, thus providing a definite advertising advantage.

Changes may be made in the form, construction and arrangement of the parts without departing from the spirit of the invention, and the right is hereby reserved to make all such changes as fairly fall within the scope of the following claims.

The invention is claimed as follows:

1. A disposable cartridge construction for containing a fluid for use in a photocopy machine, which comprises an outer carton having an elongated opening in one side thereof extending along the major portion of the length of said side, a removable tab spanning said opening transversely thereof, an inner flexible container disposed within said carton and adapted to contain a fluid, and a tubular extension on said flexible container normally disposed in juxtapositon to said tab in parallel, substantially co-extensive, adjacent relation to said opening and held within said container by said tab, but adapted to pass through said opening upon removal of said tab, and through which the fluid is adapted to flow from said container.

2. In combination with a photocopy machine having a tray for the reception of a developer fluid and a hinged panel movable between a substantially vertical position and a substantially horizontal position, a disposable cartridge member comprising an outer carton having an opening in one side thereof, an inner flexible container disposed within said carton and adapted to contain a developer fluid therein, a tubular extension on said flexible container adapted to pass through said opening and to said tray, and means for mounting said carton on said hinged panel, whereby, when said panel is in a substantially vertical position the developer fluid will flow from said flexible container to said tray, and when said panel is in a substantially horizontal position the developer fluid will flow from said tray into said flexible container.

3. In a photocopy machine, a housing, a tray in said housing adapted to receive a developer fluid, a closure member in one side of said housing movable between a substantially vertical closed position and a substantially horizontal open position, a carton member mounted on the inner side of said closure member, a flexible container disposed within said carton adapted to contain a developer fluid, and a tubular extension extending from said flexible container through said carton and connected with said tray, said carton member being disposed above the level of said tray when said closure member is in closed position so that the developer fluid will flow from said flexible container into said tray, and below the level of said tray when said closure member is in open position so that the developer fluid will flow from said tray into said flexible container.

4. In a photocopy machine, a housing, a tray in said housing adapted to receive a developer fluid, a closure member in one side of said housing movable between a substantially vertical closed position and a substantially horizontal open position, a carton member mounted on the inner side of said closure member, a flexible container disposed within said carton adapted to contain a developer fluid, a flexible tubular extension extending from said flexible container through said carton and connected with said tray, and means on the inner side of said closure member to removably mount said carton thereon, said carton member being disposed above the level of said tray when said closure member is in closed position so that the developer fluid will flow from said flexible container into said tray, and below the level of said tray when said closure member is in open position so that the developer fluid will flow from said tray into said flexible container.

5. In a photocopy machine, a housing, a tray in said housing adapted to receive a developer fluid, a closure member in one side of said housing movable between a substantially vertical closed position and a substantially horizontal open position, a carton member mounted on the inner side of said closure member, a flexible container disposed within said carton adapted to contain a developer fluid, a flexible tubular extension extending from said flexible container through said carton and connected with said tray, a shelf on the inner side of said closure member to support said carton, and a movable clamp member to removably maintain said carton on said shelf, said carton being disposed above the level of said tray when said closure member is in closed position so that the developer fluid will flow from said flexible container into said tray, and below the level of said tray when said closure member is in open position so that the developer fluid will flow from said tray into said flexible container.

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