We HERMANN STÖCKBURGER and HANS-GEORG WINDERLICH

of Kirnachweg 7, D-7742 St. Georgen, Federal Republic of Germany and Niedere Str. 36, D-7730 VS-Villingen, Federal Republic of Germany, respectively

hereby apply for the grant of a Patent for an invention entitled:
"COPYING APPARATUS FOR PRODUCING COMBINED COPIES"

which is described in the accompanying complete specification.

This application is a Convention application, and is based on an Application for a Patent or similar protection made under:-

P 3111 354.0 filed 23rd March, 1981

Our address for service is care of G.R. CULLEN & COMPANY, Patent Attorneys, of 289 Queen Street, Brisbane, in the State of Queensland, Commonwealth of Australia.

DATED this ELEVENTH day of SEPTEMBER, 1981.

HERMANN STOCKBURGER and HANS-GEORG WINDERLICH

By their Patent Attorneys,
G.R. CULLEN & COMPANY

To:
The Commissioner of Patents.
DECLARATION IN SUPPORT OF A CONVENTION APPLICATION FOR A PATENT

In support of the Convention application made for a patent for an invention entitled "COPYING APPARATUS FOR PRODUCING COMBINED COPIES"

We, HERMANN STOCKBURGER and HANS-GEORG WINDERLICH, Kirnachweg 7, D-7742 St. Georgen, West Germany and of Niedere Str. 36, D-7730 VS-Villingen, West Germany, respectively do solemnly and sincerely declare as follows:

1. We are the applicants for the patent

2. The basic application as defined by section 141 of the Act was made in West Germany on the 23rd day of March, 1981, by HERMANN STOCKBURGER and HANS-GEORG WINDERLICH

3. Hermann Stockburger, Hans-Georg Winderlich, Siegfried Bauer and Zeljko Hans Adamovic of Kirnachweg 7, D-7742 St. Georgen, West Germany; Niedere Str. 36, D-7730 VS-Villingen, West Germany; Kussenhofstr. 16, D-7743 Pfortwangen, West Germany; and Hochstr. 6, D-7730 Villingen/Schwenningen, West Germany, respectively. We are the joint assignees of the said Siegfried Bauer and Zeljko Hans Adamovic to make the application are as follows:

4. The basic application referred to in paragraph 2 of this Declaration was the first application made in a Convention country in respect of the invention, the subject of the application.

DECLARED at St. Georgen this Second day of September, 1981

(Signed) (Signed)

TO: The Commissioner of Patents.
DOCUMENTS
LODGED WITH
THIS APPLICATION
ARE UNSUITABLE
FOR REPRODUCTION
AND MAY BE
INSPECTED AT THE
PATENT OFFICE A.C.T.
COPYING APPARATUS FOR PRODUCING COMBINED COPIES

Stockburger, H. and Winderlich, H-G

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G02F 1/133

Claim

1. A copying apparatus having an original supporting member, optical imaging means for forming an image of the original, imaging means comprising an optical light path between the original and the image, means for forming copies of the image, means for generating an information derived from an external information source, and combining means for combining the information with the image of the original on the copies to be produced, wherein means for blocking or masking at least selected portions of the light path are provided, the blocking or masking means being placed under the control of the external information source.
COMMONWEALTH OF AUSTRALIA

The Patents Act 1952-1969

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Actual Inventors HERMANN STOCKBURGER; HANS-GEORG WINDERLICH;
SIEGFRIED BAUER; and ZELJKO HANS ADAMOVIC

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Commonwealth of Australia.

COMPLETE SPECIFICATION FOR THE INVENTION ENTITLED:

"COPYING APPARATUS FOR PRODUCING COMBINED COPIES"

The following statement is a full description of the invention
including the best method of performing it known to us:
This invention relates to a copying apparatus having an original supporting member, an optical imaging arrangement for producing images of the original for producing copies thereof and an arrangement for generating an information derived from an external information source and to be combined with the image of the original on the copies to be produced.

A copying apparatus of this kind is disclosed in German Offenlegungsschrift 2 925 752. For producing a combined record of an original to be copied and an information derived from an external information source, a reproduction apparatus is provided in addition to the optical imaging apparatus of the copying machine, the reproduction apparatus being formed as a Laser beam scanner or an optical imaging apparatus. A mechanical masking device is provided for selectively masking portions of the original. The reproduction apparatus images the masked portions. This conventional apparatus is complex in manufacture and operation, because an additional masking mechanism is necessary and the desired combinations to be produced on the copies are only obtained in case the
operator correctly adjusts the masking members.

The invention therefore aims at providing a copying apparatus of the above mentioned type, having simplified structure and operation and low manufacturing cost.

The inventive copying apparatus has an original supporting member, optical imaging means for forming an image of the original, the imaging means comprising an optical light path between the original and the image, means for forming copies of the image, means for generating an information derived from an external information source, and combining means for combining the information with the image of the original on the copies to be produced. In accordance with the invention, means for blocking or masking at least selected portions of the light path are provided, which blocking means are placed under the control of the external information source.

In accordance with a preferred embodiment, the blocking or masking means comprise at least one layer of a liquid crystal forming a liquid crystal display element. The liquid crystal display element which is controlled by the external information source, is preferably associated with a platen forming the original supporting member. Still preferably, the liquid crystal display element is formed as an intermediate layer of a composite glass plate forming the original supporting member.
Further features and advantages of the invention will stand out from the following description of non-limitative examplary embodiments of the invention with reference to the drawings. In the drawings:

Figure 1 is a lateral view of a copying apparatus, one side wall being omitted;

Figure 2 is a plan view of a support of the apparatus shown in Figure 1; and

Figure 3 is a diagrammatic view of the interconnected data processing and control elements of the Figure 1 embodiment.

In the copying apparatus 1 shown in figure 1, the front wall facing the user is omitted for clarity. In conventional manner, the copying apparatus comprises a copying station 2 of conventional type, a paper supply station 3 for providing paper to the copying station and a support 4 for the originals to be reproduced with the copying apparatus. The output side of the copying station 2 is followed by a conveying channel 5 connected with a copy delivery opening 7 and a collecting container 10 for receiving completed copies. The copying apparatus is provided with a control panel 11 having a display 12 and a button 13 for starting the copying operation. The actual
control of the data processing portion is integrated into the control panel 11.

The support 4 of the copying station 2 has the form of a composite glass plate held in a frame 35 (cf. figure 5). The composite glass plate comprises a layer 37 of liquid crystals. A first zone 28 of these liquid crystals forms an LCD-display 34, for example indicating day, month, year, customer number, time, institution or any other user information. The remaining zone of the support 4 is possibly completely covered by a second zone 29 of liquid crystal segments. At one end of the support, connections 30 arranged outside the light path are provided with lines leading towards an LCD-driver 33 and a voltage supply 32 for connecting the two zones 28, 29. The control panel 11 comprises a terminal 17 for receiving and processing an authorization card 18. The terminal is connected to a controller 19 for that terminal, and further connected to a micro-computer 26. The micro-computer 20 is connected both with the display 12 and with a controller 21 of the copying station 2. A serial data storage 31 is connected to the controller 21 through a data line and a clock line. Its operating voltage is supplied by the voltage supply 32 of the copying apparatus. On its output side, it is connected to the LCD-drive 33 in turn connected with the LCD-display 34 of the zones 28, 29.
The authorization card 18 is formed in a manner to contain the data for the authenticity check, i.e. for providing evidence that the card is among the allowed cards, as well as for identification, i.e. for providing evidence with respect to whom the card was delivered, to be read out by the terminal, particularly in coded form and on a magnetic track. Further, the authorization card 18 comprises adjustment members 23, 24 by which the authorized user may adjust a code word only known to himself in the form of a memorized number and/or memorized word. The adjustment of the adjustment members 23, 24 made by the user may be detected by the terminal 17. The data characterizing all of the personal code words of the individual authorized persons may be stored within the computer 20. However, it is also possible to mark the authenticity data resulting from the adjustment of the adjustment members 23, 24 on the authorization card itself in a manner to be read by the terminal, so that the terminal and the computer will compare the data eventually marked in coded form on the authorization card with the actual adjustment of the adjustment members, through the personal code word. Only in case of coincidence it will be assumed that the user is actually the authorized person. The terminal is formed in such a manner, that upon restitution of the card, the adjustment members 23, 24 are moved back to a zero-position towards one of the abutment sides so that the authorization card will not be accessible to any third person in a form having the personal adjustment of the adjustment members.
In operation, the user will initially introduce the authorization card 18 into the terminal 17. Through the controller 19 the micro-computer 20 will check the card with respect to the above disclosed features, i.e. with respect to authenticity and permission, particularly whether the user is an authorized person. Upon a positive result the display 12 will signal that the copying station is ready for the copying operation. In the contrary case, the card is refused. The operator will now put the original to be copied on the support 4 and push the button 13 to start the copying operation. Subsequently, a copy will be made.

As long as no data are transmitted from the controller 21 to the serial data storage, the second zone 29 of the liquid crystal is reflective or dark, so that the original eventually laid thereon cannot be reproduced because the supporting surface is reflective, so that the light path is substantially interrupted. By triggering the copying operation through the button 13 and the subsequent control of the serial data storage 31 through the controller 21, a corresponding signal is delivered to the LCD-drive 33 and thus to the LCD-display 34. As a result, the second zone 29 of the liquid crystal will be switched into a transparent state. Simultaneously, the first zone 28 of the LCD-display 34 will display the personal data of the user resulting from the authorization card, and particularly the code word, eventually together with the time and date of making the copy, and thus directed into the light path of the copying apparatus so that they will
automatically be recorded on the copy during the copying operation.

At the end of this operation, further copies may be produced in the same manner. Alternatively, the operator may cause the restitution of the authorization card from the terminal by pushing a button 26. Simultaneously, the controller 21 may deliver a copying acknowledgement pulse signal to a pulse counter or a debiting station.

By this will be achieved that, on the one hand,

- only an authorized person may use the copying apparatus, because only the authorized person will know the personal code word and may enable the use of the copying apparatus.
- On the other hand, it will be ensured that the person who made the copy may be determined. As any third person would not know the personal code of the authorized persons, any third person would be prevented from using an authorization card to enable a copying operation, and more particularly, it will be prevented that an authorized person will be marked on a copy as the user if he is not the actual user.

In accordance with another embodiment, the personal code word may be introduced through a keyboard 27 provided on the control panel. A drawback of this embodiment, however, is that third persons may observe the introduction of the code word and use the knowledge of this code word to produce non-authorized copies.
The controller 21 and the serial data storage 31 will simultaneously perform a counting operation of the successive numbers of the copies made on the copying apparatus. The LCD-display of the first zone 28 will preferably indicate this number. In this manner, each copy is associated with a number marked on the copy to be stored by the fading-in together with the information identifying the user. Simultaneously, the counter printer will deliver a signal through the LCD-drive and the controller 21 to the controller 19 causing the number of the stored copies to be marked on the authorization card 18 within the terminal 17. This number may be marked on the magnetic strip of the authorization card or in the form of an imprinted number. In that case, the authorization card is preferably formed as a value card, i.e. the magnetic strip contains, in addition to the data characterizing the user and the card, data which indicate a maximum number of copies to be made by the authorized persons. The controller 19 is formed to rerecord, through the terminal 17, the previous copying volume minus the number of the copies made, after each copying operation.

In order to prevent the controller 21 from being bypassed to prevent evidence with respect to the performed copying operations, the voltage supply of a serial data storage 31 is taken from the voltage supply 32 of the copying apparatus, together with the LCD-drive 33 and the LCD-display.
Further, by-passing will be prevented by the fact that the second zone 29 covering as much as possible of the copying zone in the above disclosed manner will be reflective without control by the controller 21 to interrupt the light path. Preferably, a connection between the controller 21 and a device for keeping a cover 76 closed on the support 4 may be provided. The controller is formed to deliver signals for making a copy only in case the cover is maintained in a closed state. This will prevent originals to be changed during the copying operation.

As an information derived from an external information source, not only an information identifying a person may be combined with the original on the copy to be produced thereof, but any other kind of information. The additional information to be applied on the copies may be introduced using a data carrier such as an authorization card or the keyboard 27. In addition, the liquid cristal layer 37 may cover the total surface of the platen forming the original supporting member. However, the layer 37 may cover only a portion of this surface, particularly in case additional information from the external information source is to be marked only on a portion of the copy to be produced.

It should be understood that the above description is in no way limiting and that many modifications may be brought to the embodiments disclosed without departing from the true spirit of the invention.
THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. A copying apparatus having an original supporting member, optical imaging means for forming an image of the original, imaging means comprising an optical light path between the original and the image, means for forming copies of the image, means for generating an information derived from an external information source, and combining means for combining the information with the image of the original on the copies to be produced, wherein means for blocking or masking at least selected portions of the light path are provided, the blocking or masking means being placed under the control of the external information source.

2. The copying apparatus of claim 1, wherein the blocking or masking means comprise at least one layer of a liquid crystal forming a liquid crystal display element.

3. The copying apparatus of claims 1 or 2, wherein a normal operation mode comprises at least partial blocking or masking of the light path by the blocking or masking means, those portions of the light path being not blocked or masked being determined by the external information source.

4. The copying apparatus of claims 2 or 3, wherein the liquid crystal display element is associated with the original supporting member.
5. The copying apparatus of claim 4, wherein the liquid crystal display element is arranged below a platen forming the original supporting member.

6. The copying apparatus of claim 4, wherein the liquid crystal display element is incorporated into a platen forming the original supporting member.

7. The copying apparatus of claim 6, wherein the platen is a composite glass plate comprising the liquid crystal layer as an intermediate layer.

8. The copying apparatus for producing combined copies, substantially as disclosed above and as shown in the attached drawings.

DATED THIS ELEVENTH DAY OF SEPTEMBER, 1981.

HERMANN STOCKBURGER and
HANS-GEORG WINDERLICH

By their Patent Attorneys,
G.R. CULLEN & COMPANY.
FAILURE
COPY ACKN.
COVER LOCK
DISPLAY MACHINE
READY DATE, TIME,
USER DATA,
COPYING CREDIT
ON CARD
CONTROL PANEL

12

OUTPUT
START COPY
COVER LOCK

14

11

10

19

21

20

17

LCD-DISPLAY

34

LCD-DRIVE

33

SERIAL DATA
STORAGE

31

32

IDENTITY CARD WITH
AUTHENTICITY CODE

18

23

24

FIG. 3
END