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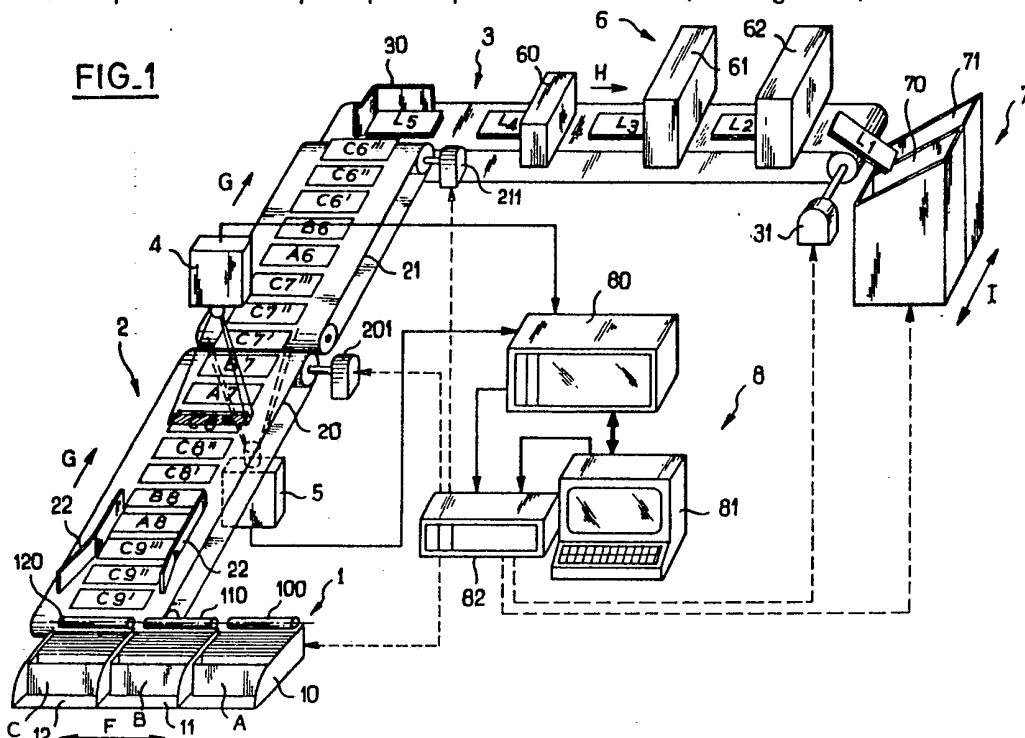
(71) Applicant
Francois Charles Oberthur,
20 rue du Breil, 35135 Chantepie, France
(72) Inventor
Jean Claude Andre Tillon
(74) Agent and/or Address for Service
Marks & Clerk,
Suite 301, Sunlight House, Quay Street, Manchester
M3 3JY

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(54) Apparatus for assembling concordant documents into sets

(57) Documents, e.g. traveller's cheques, at least certain ones of which carry concordance symbols, are assembled into sets according to a predetermined program by apparatus comprising bins (10-12) from which the documents (1) are delivered in the correct order to a first conveyor (2) on which the documents (A,B,C',C'',C''') are continuously displaced, at least one camera (4) for optical reading of the concordance symbols, means (31) for driving in steps a second conveyor (3) on which the documents (A,B,C',C'',C''') are stacked in sets (L), means (60,61) for binding the sets, and a system (8) for processing the readings made by the camera (4), this system controlling the operation of the bins (10-12) if the readings are in accordance with the predetermined program, on stopping their operation if they are not in accordance.

The traveller's cheque booklets may comprise a purchase contract A, a use guide B, and three traveller's cheques C.



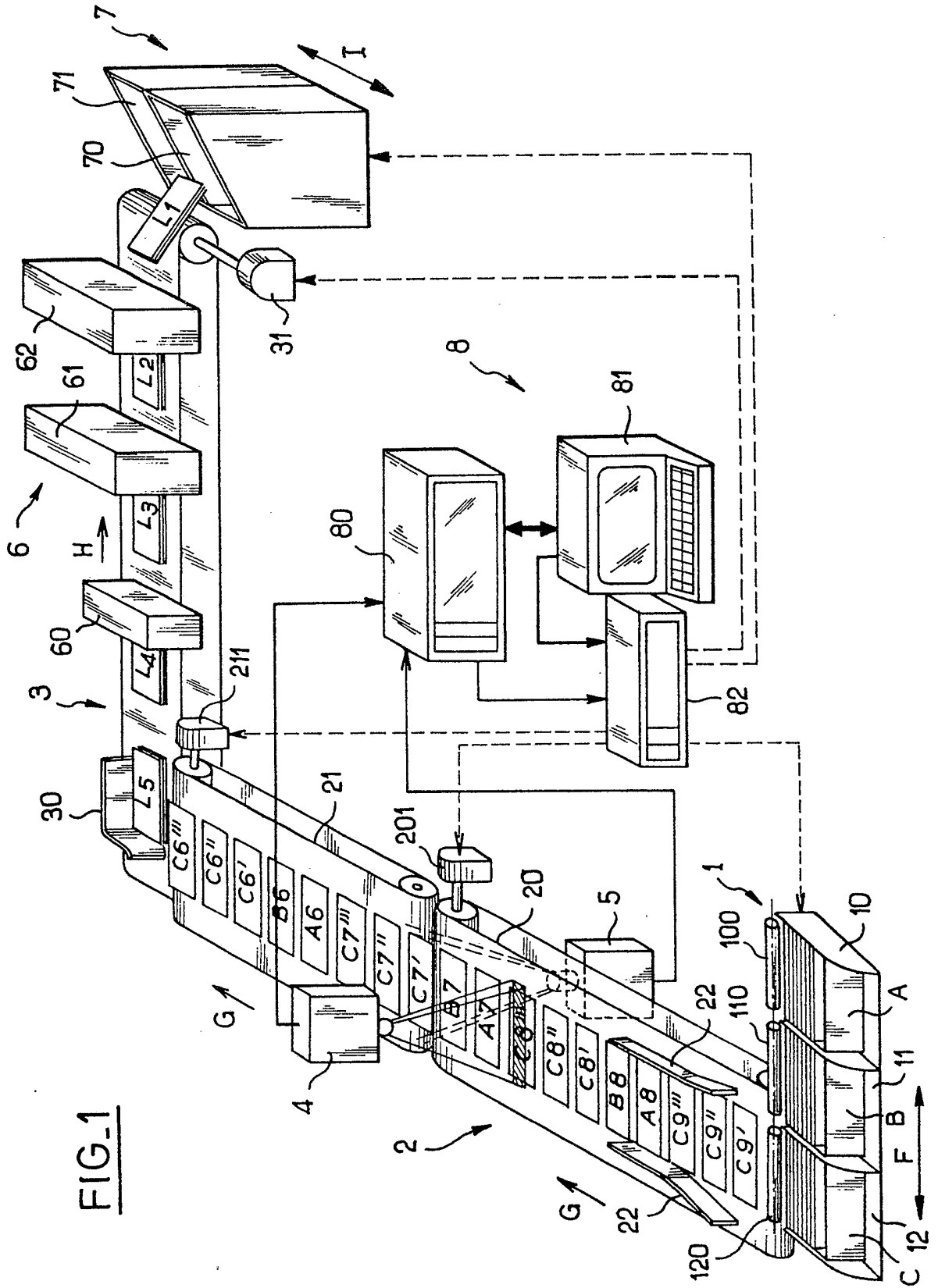


FIG. 1

FIG. 2

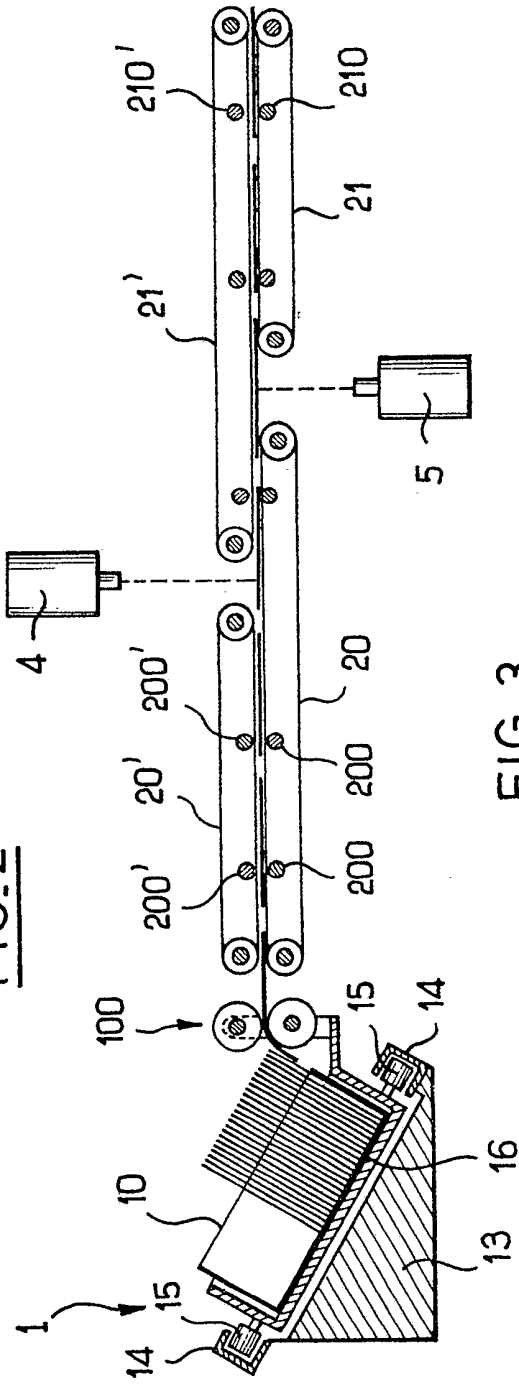


FIG. 3

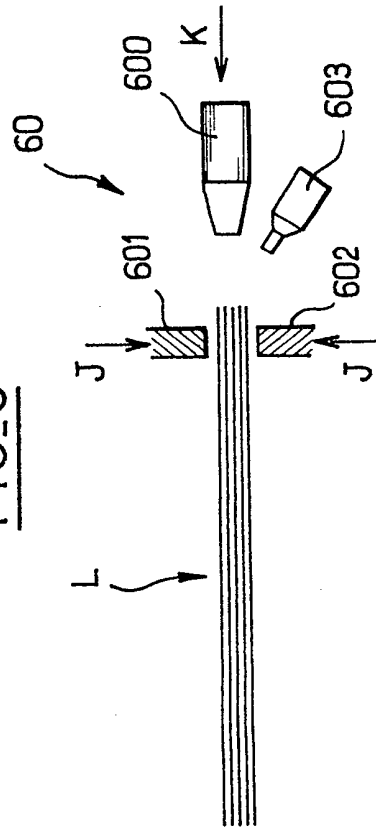
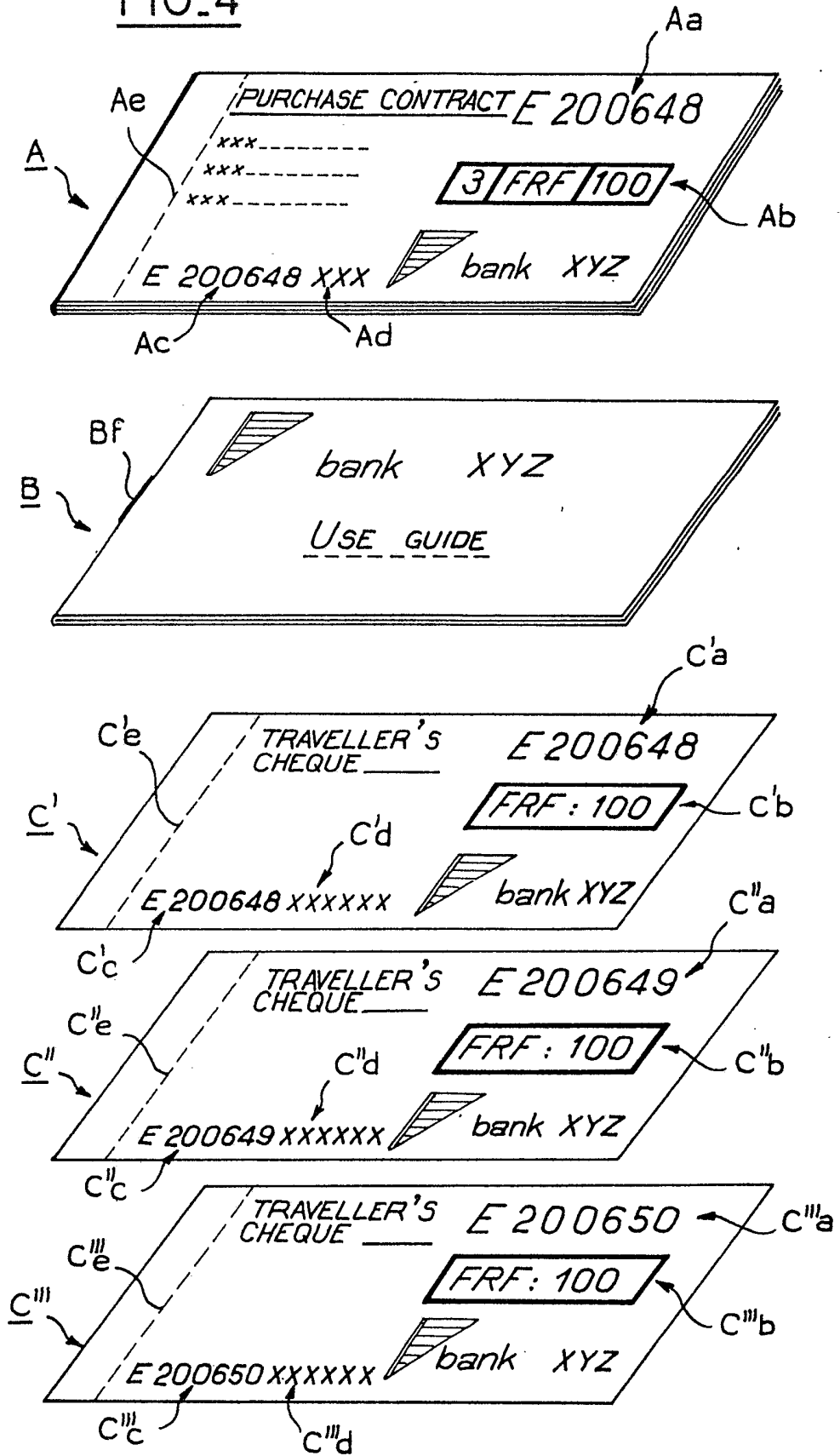
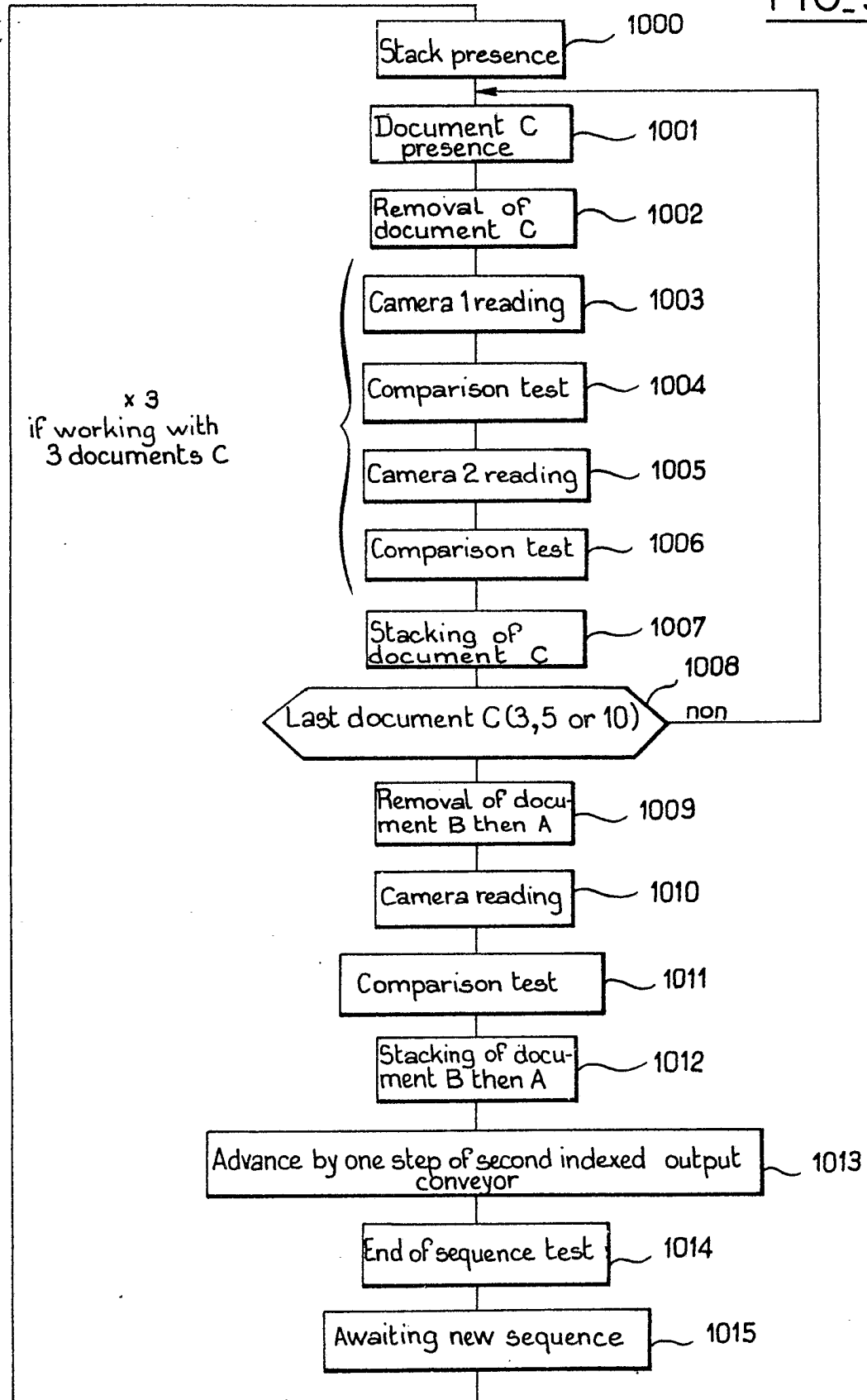


FIG. 4



FIG_5



SPECIFICATION

Apparatus for assembling concordant documents into sets

5 The present invention relates to apparatus for assembling into sets, in accordance with a predetermined programme, an assembly of documents of which at least certain ones carry concordance symbols.

10 In certain areas of the field of printing, it is necessary to arrange into the same set several documents, for instance several categories of concordant documents. This is the case particularly in the production of traveller's cheques, which are provided to banks in sets (or books).

A set of traveller's cheques generally contains:

20 a contractual document, called a "purchase contract", which consists of several sheets of which certain are intended to be retained by the bank after signature by the client;

25 an information document, or use guide, which generally serves in addition as a publicity medium;

a certain number of traveller's cheques, for example, one, three, five or ten cheques.

30 These documents are assembled by glueing and/or stapling in a manner to constitute a small book of which certain leaves, particularly the cheques, are detachable along the length of perforated edge lines.

35 Each traveller's cheque carries several symbols, in which occur numbers and letters which give it its identity. Generally, the front of the cheque carries a principal number which is written in two different places (for example top right and bottom left), a secondary number, and the indication of the value of the cheque; in certain cases, the principal number and/or the secondary number are also printed on the back of the cheque.

45 Generally cheques contained in the same book have principal numbers which follow each other, whilst their secondary numbers have a common part. On the other hand, cheques from the same book all have the same value.

50 The purchase contract carries indications of concordance with the cheques contained in the set. Thus, the front of this document can carry on each of its leaves for example the following information:

55 the principal number of the first cheque of the set, this number being also written in two different places;

the number of cheques contained in the set;

the value of the cheques;

60 the common part of their secondary numbers.

The use guide is an anonymous document, that is to say it does not carry an indication characteristic of the set concerned.

65 For the majority of banks, the direction of

assembly of cheques corresponds to that of the purchase contract; for other banks the assembly is the reverse, the front of the purchase contract being turned uppermost whilst the back of the cheques is turned downwards.

70 At present there exists no installation specifically adapted for carrying out a single control of the different documents intended to constitute a set, and particularly for controlling the

75 concordance symbols such as the numbers provided on these documents, then for carrying out the assembly of these documents when the required concordance has been effectively obtained. The operations of control

80 and assembly are presently carried out at distinct separated stations, by manual processes, which results in work which is at once fastidious and insecure, completely unadapted to modern large scale production.

85 The invention aims to fill this gap in proposing a device of the type mentioned which provides automatically and at high rate the control and assembly into sets of concordant documents, particularly traveller's cheques, and practically without risk of error.

This result is obtained in accordance with the invention since the apparatus comprises:

90 a) means for holding and distribution, in accordance with a pre-established order, of the said documents;

95 b) a first conveyor adapted to continuously displace the documents, one after the other, coming from the said holding and distribution means, and for stacking them on a second conveyor;

100 c) at least one camera arranged above or below the said first conveyor, and adapted for optical reading of said concordance means;

105 d) step by step drive means for the said second conveyor, adapted for displacing, one after the other, the sets formed by stacking a predetermined number of concordant documents;

110 e) at least one means for assembling sets transported by the said second conveyor;

f) means for receiving the assembled sets;

115 g) a system for processing information read by the said camera, adapted to control the operation of the said holding and distribution means, and the said first and second conveyors when these readings are found to be in concordance with the assembly programme and, on the contrary, controlling their stopping when they are found not to be in concordance with this programme.

120 The program for information processing as well as the assembly means are naturally adapted to the production programme and the type of set concerned (of which the specification, in the case of traveller's cheques, is fixed by the bank) so that this apparatus has a universal character.

125 In the preferred embodiment, this apparatus is equipped with two cameras which are placed respectively above and below the said

130

first conveyor, each of these cameras being adapted for optical reading of the concordance symbols provided on one of the two faces of the documents, their front and back.

5 Thus the apparatus is adapted for carrying out unitary control of assembly of the documents constituting the set, at once on their front and back faces.

10 In a possible embodiment, the holding and distribution means for the documents comprise a magazine which is constituted by a certain number of juxtaposed bins intended each to receive one category of document, this magazine being movable transversely with
15 respect to the displacement direction of the first conveyor. Thanks to this arrangement, it suffices to displace automatically the magazine with respect to this first conveyor, in a sequence which corresponds to the position of
20 the documents of the set, for obtaining a correct distribution of these documents in a particularly simple manner.

Advantageously, each bin is provided with an individual remover, so that each of the
25 removers can be perfectly adapted to the thickness and rigidity of the document placed in the associated bins.

The means for assembly of the sets is for example a glueing machine; in this case this
30 machine preferably comprises members for pinching one of the edges of the set, a nozzle for blowing compressed air onto the face of this edge, and a glue injection nozzle; so that blowing of air against the edge of the documents causes spacing of their edges, which
35 helps the injection of glue between these edges.

The means of assembly of the sets can equally be a stapler; further the apparatus is
40 advantageously equipped with a perforating machine situated downstream of the assembly means.

In addition, the means for receiving the assembled sets is preferably constituted by a
45 movable magazine which comprises at least two removable bins; thus when one of the bins is opposite the second conveyor, it is possible to empty the other bin and vice-versa.

50 The information processing system advantageously comprises:

- a device for visualisation of the reading made by the or each camera;
- a microcomputer;
- 55 a programmable robot.

Other characteristics and advantages of the invention will appear from the description and accompanying drawings which show a preferred embodiment.

60 In the drawings:

Figure 1 is a diagrammatic general view in perspective of the device;

Figure 2 is a diagrammatic longitudinal cross-sectional view of a first conveyor and of
65 holding and distribution means arranged up-

stream of the conveyor;

Figure 3 is a diagrammatic view of the glueing machine;

70 Figure 4 is an exploded perspective view intended to show the assembly of documents constituting an example of a set of traveller's cheques of which the assembly can be carried out by means of the apparatus according to the invention;

75 Figure 5 shows a flow chart for the apparatus of Figure 1 for assembly of documents into sets.

As seen in Figure 4, the set of traveller's cheques shown comprises a document A
80 known as the purchase contract, a document B known as the use guide, and an assembly C', C'', C''' of three traveller's cheques.

The purchase contract A is formed of several leaves, assembled by glueing along the
85 length of one of their edges, certain of the leaves being detachable along the length of a weakened line Ae.

The use guide is itself constituted by an assembly of a certain number of leaves, as-
90 sembled for example by means of a staple Bf.

Each of the traveller's cheques C', C'', C''' is a separate document also provided with a
tear line C'e, C''e, C'''e respectively.

Each of the constituent documents of this
95 set carries the name of the issuing bank, in this case a bank X Y Z.

Each traveller's cheque carries at the top right hand corner a principal number designated by the respective references C'a, C''a,
100 C'''a; this number is also found at the bottom left hand corner of each of the cheques with the respective references C'c, C''c, C'''c.

Following the numbers C'c, C''c, C'''c, are written numbers called the secondary numbers
105 C'd, C''d, C'''d. There exists a correlation between the principal numbers and the secondary numbers, this correlation being determined by an internal code of the bank; the principal and secondary numbers written at
110 the bottom left of the cheques have characters able to be read by a magnetic method in a manner to permit their automatic processing in banks.

Each cheque also carries an indication relating to the value of the cheque, in this case
115 100 French francs as shown; these indications are referenced respectively C'b, C''b, C'''b.

The principal numbers of the three cheques, C', C'', C''' follow in sequence; the secondary
120 numbers of each of the cheques possess a common part, for example the first three characters of these numbers.

On the purchase contract A, is found at two
125 different points a principal number Aa,Ac, which is the same as the number of the first cheque C'; there is also found the part Ad common to all the cheques of the set, as well as the indication Ab of the number of cheques contained in the set (three) and the value of
130 these cheques (100 French francs).

It is essential, preliminarily to the assembly, to ensure on the one hand that the assembly of symbols (in this case the numbers) carried by each document is in concordance amongst
5 themselves and on the other hand that the symbols of the different documents of the set are also in concordance.

The apparatus which will now be described permits provision of preliminary control, then
10 carrying out of the assembly as such of the documents.

As shown in Figure 1, this apparatus comprises holding and distribution means for the documents 1, a first conveyor 2, a second
15 conveyor 3, two cameras 4,5, means 6 for assembly and working of the sets, via means 7 for reception of the assembled sets, and a system 8 for information processing intended to control the operation of the entire apparatus.
20

The holding and distribution means for the documents 1 are constituted by an assembly of juxtaposed bins, 10,11,12; their number is equal to the number of categories of different
25 documents to be assembled, in this case three as shown; each of the bins 10,11,12 receives a stack of documents A,B,C respectively. Each bin is equipped with a removal device 100, 110, 120 of a known type, for
30 example rotating discs equipped with suction cups.

The group of bins 10,11,12 is situated at the end of a conveyor 2, and is movable transversely with respect to the longitudinal
35 direction of this; this mobility is shown by the double arrow F.

The conveyor 2 is a type of conveyor currently used in the printing field for the transport flat of documents following each other,
40 for example, as is seen with reference to Figure 2, of the type comprising two series of endless belts arranged one above the other and providing pinching of the documents; in Figure 1 in the interests of simplification, this
45 conveyor has been shown in the form of two endless belts 20,21 arranged end to end.

At the entrance to the conveyor 2, lateral plates 22 provide centering of the documents on the conveyor; the endless belts 20,21 are
50 continuously driven by appropriate electric motors 201, 211 respectively.

Above the belt 20 is arranged a video camera 4, of which the objective lens is directed downwards for viewing the upper face of the
55 documents transported by the belt 20. At the gap separating the two belts 20,21, below these belts is arranged a second camera 5 of which the objective lens is directed upwards, this camera being adapted for viewing the
60 lower face of the documents, when these pass from the belt 20 to the belt 21.

The cameras 4 and 5 are linear C C D detector cameras.

The characteristics of these cameras are determined as a function of the number of char-

acters having to be read on each document, and as a function of the feed speed of these latter, so that each of the cameras can carry out definitive reading of all the concordance
70 characters provided on one of the faces of each document.

The conveyor 2 overhangs at its end opposite to the bins 10, 11, 12, a second conveyor 3 which, in the interests of simplification has been shown in the form of an endless belt; this is arranged perpendicularly with respect to the first conveyor 2; it is driven in a step-by-step movement by an appropriate electric motor 31; this movement is illustrated
75 by the arrow H.

A jogger 30 permits centering of the documents which arrive on the belt 3 when they leave the first conveyor 2.

On the path of the second conveyor 3 are arranged successively a glueing machine 60, a stapling machine 61, and a perforating machine 62.
85

At the downstream end of the conveyor 3 are arranged reception means 7 for the assembled sets; these means consist of a magazine formed with a pair of juxtaposed reception bins 70,71; this group of bins is movable transversely with respect to the longitudinal direction of the conveyor 3; this movement is
90 shown by the double arrow I.

The information processing chain 8 comprises a visualisation device 80 of the reading made by the cameras 4 and 5, a microcomputer 81 and a programmable robot 82.

Figure 2 shows in more detail the structure of the holding and distribution means 1 as well as that of the first conveyor 2.
100

The holding means 1 comprises a base 13 supporting two transverse rails 14 which serve as guide ways to a traveller 16 provided with lateral wheels 15; the traveller 16 is slightly inclined with respect to the horizontal, at an angle of about 30°.

It is the traveller 16 which receives the juxtaposed bins 10, 11, 12. The traveller 16 is equipped with a removal device 100,110,120 situated opposite each of the bins.
110

The conveyor 2 comprises two lower belts juxtaposed in series 20,21 and two upper belts juxtaposed in series 20',21'; these two series of belts provide pinching of the documents thanks to the presence of appropriate pressure wheels 200,210,200',210'.

The cameras 4 and 5 are respectively situated in vertical alignment with the gap separating the belts 20' and 21' on the one hand and 20,21 on the other hand.
120

In Figure 3 is shown the machine for glueing 60 which can possibly equip this apparatus. This machine comprises a pair of movable jaws 601, 602 adapted to grip the edge of the set L to be glued (gripping in the direction of the arrows J); close to the edge to be glued are arranged a nozzle 603 for blowing of compressed air and a nozzle 600 for injec-
125
130

tion of glue, this latter being movable in the direction of the face of the set (arrow K).

A glueing operation is made in the following manner: the jaws 601,602 are brought together with respect to each other in a manner to closely pinch the edge of the set of documents L; air is then blown against this edge in a manner to slightly separate from each other the free edges of the set, then a band of glue is injected by means of the nozzle 600, this glue lodging between the preliminarily spaced faces of the documents. The jaws 601,602 are then separated for freeing the set.

The apparatus which has been described functions in the following manner:

There is placed in each of the bins 10,11,12 of the holding magazine 1 a stack of documents of a different category, that is to say traveller's cheques C in the bin 12, use guides B in the bin 11 and purchase contracts A in the bin 10. The purchase contracts A and the traveller's cheques C are classified in number order. One purchase contract and one use guide are provided for three traveller's cheques; the bins receive for example 600 traveller's cheques for 200 purchase contracts and 200 use guides at the beginning of the operation. The concordance numbers of the last purchase contract correspond to the numbers of the antipenultimate of the traveller's cheques of the stack.

The micro computer 81 and robot 82 having been programmed for an operation of assembly corresponding to a set as shown in Figure 4, this robot 82 displaces, by non-shown control means, the magazine 1 in a manner to position the bin 12 opposite the conveyor 2; at the same time the robot causes the start of the motors 200,211 and 31, causing movement of the conveyors 2 and 3.

The movements of the magazine 1 are controlled by the robot 82 in such a manner that after the removal of three successive documents C, the bin 11 is presented at the end of the conveyor 2 in a manner to permit the removal of one document B and then the magazine is positioned at the end of the conveyor for permitting removal of one document A, after which the bin 12 is removed to its initial position (of Figure 1) for permitting the removal of three more traveller's cheques C and so on. The successive documents removed are centred on the belt 20 by means of guides 22 and the assembly of concordance symbols carried by the documents, both on their top faces and on their back faces are read by the cameras 4 and 5. The reading is visualised on the device 80, which permits an operator to continually follow the quality of the reading.

The information processing system decides if the reading is correct, that is to say if on the one hand the different symbols read on the same document are concordant between

themselves and on the other hand if the symbols of the documents intended to constitute the same set are also concordant.

Thus, an error will be detected for example when the numbers Ca and Cc of the same cheque C are not the same, or in the case where two successive documents C',C'' will have numbers C'a,C''a which do not follow; this will also be the case when the amount Ab of a purchase contract or Cb of a cheque will not correspond with one another and/or with the make-up programme concerned; this will also be the case when the number Aa of a purchase contract will not correspond with the number C'a of the first of the three cheques intended to be arranged into the set for this purchase contract.

In the case of error, the programmable robot 82 controls the stopping of the apparatus, particularly the control of the magazine 1 and of the motors 201,211 and 31.

If the reading is correct, the documents A,B,C continue their progression on the first conveyor 2 (arrow G) and are arranged for forming a set on the second conveyor 3, after jogging by the member 30.

As soon as a set has been assembled in accordance with the structure shown in Figure 4, the conveyor belt 3 advances one step, in a manner to position a set in the glueing machine 60, while the preceding set is taken from the glueing station to the stapling station 61 and the preceding set is taken from the stapling station to the perforation station 62; after these different operations the assembled set L is received in one of the two bins 70,71; when one of the bins is full, the magazine 7 is automatically displaced in a manner to place the other (empty) bin into position for reception of sets, and an operator removes the finished sets.

For facilitating understanding of the assembly operation, the sets carried by the conveyor 3 have the references L1 to L5, from down- to upstream of the conveyor, whilst the documents carried by the first conveyor 2 have the serial numbers 6 to 9.

The working machines 60,61,62 are not necessarily all used, their use depending on the method of assembly and working required in the programme; it is thus that certain sets will be glued only, whilst others will be stapled only; certain only will then be perforated; it is also possible to provide removable working machines these being positioned in the apparatus as a function of the make-up programme. Further, other working stations can be provided, for example a station for positioning assembly tags in perforated holes (tags of the paper clip type).

The apparatus which has been described permits a high rate of working, of the order of six thousand traveller's cheques an hour.

In the case where a concordance error is detected by the information processing sys-

tem, this error is advantageously automatically displayed on the screen of the micro computer 81 so that it is possible to remedy it rapidly.

5 All the make-up programmes carried out in the course of a day are advantageously stored in the memory of the micro computer 81, which permits updating of a production file. It is naturally possible to provide that the cameras 4 and/or 5 carry out complementary reading of a symbol other than the concordance symbol, for example the correct positioning of an inscription such as the name of the bank for example.

15 It is possible in addition, for further increasing the rate of production, to provide assembly of a multiple set then intended to be cut for forming several distinct books; thus in the case of an application for an assembly of traveller's cheques, one will be able to provide sets of three distinct books of traveller's cheques which will then be separated by an appropriate cutting operation.

25 The conveyors used can naturally be different from those which have been shown in the drawings; thus, as concerns the second conveyor 3, this could be constituted by transport chains carrying individual bins adapted for each receiving a set of documents; the assembled sets being able to be removed and stacked in vertical position, for example by means of stacking grippers of a known type.

30 A flow chart used by the information processing system 8 of the apparatus for assembly into sets of documents according to the invention will now be described in connection with Figure 5.

35 The mentioned flow chart is given by way of non-limitative example, a quite other flow chart can be envisaged in order to provide an assembly of sets, in accordance with the apparatus according to the invention, without departing from the scope of this.

40 As appears in Figure 5, the bin 12 for example containing the documents C being taken to the first conveyor 2, a test for the presence of a stack corresponding to the stack of documents C stored in the bin 12, is first of all carried out at 1000. On positive response to this mentioned test, a new test for the presence of documents C is carried out at 1001 then an operation of removal of documents C is carried out at 1002. The document C considered is then positioned on the first conveyor 2, by means of the guide means 22, and transported by the mentioned conveyor.

45 An operation of reading by the first camera designated 4 on Figure 1, is carried out at 1003 then a comparison test of data acquired by this reading is carried out at 1004 at the information processing system 8 and in particular at micro computer 81 and the programmable robot 82. On positive response to the mentioned comparison test 1004, a second

70 reading of the concordance symbols is then carried out by the second camera 5 at 1005, then a comparison test is carried out at 1006 at the programmable robot 82 and the micro computer 81. On positive response to the comparison test carried out at 1006, the information system 8 causes the transfer of documents C considered by transport belt 21 constituting the first conveyor 2 then stacking of the documents C at 1007 at the second conveyor 3 and in particular at the jogger 30. A test relating to the number of documents C submitted to the preceding processing is then carried out at 1008, this test being able to be carried out by means for example of a loop analogous to a counting loop sequenced by the programmable robot 82 and the micro computer 81. As long as the number of documents to be stacked is not reached, that is to say a negative response to the test carried out at 1008, the programmable robot 82 and the micro computer 81 permit the return to the initial situation before the test for presence of documents C 1001 and, until the obtaining of the chosen number of documents C, this number is equal to 3,5 or 10 by way of non-limitative example in Figure 5.

80 When the mentioned number is obtained on the contrary, the micro computer 81 and the programmable robot 82 permit the passage to a successive stage designated 1009, then consisting of a test for the presence of a stack, not shown, analogous to the presence of a stack shown at 1000, the bin 11 for example X, having been taken to the second conveyor 2, to carry out removal of documents A or B. The document A or B having been loaded onto the first conveyor 2, an operation of reading by the camera 4 for example is carried out at 1010, then a comparison test relating to the data or concordance symbol s is carried out at 1011.

85 In an analogous manner to the operation designated at 1007, previously described, a stacking of the document B or A is then carried out at 1012. The stages 1009 and 1012 having been successively repeated relative to the document B then A successively, and the stacking of this latter having been carried out at the second conveyor 3 and in particular at the jogger 30, the programmable robot 82 and the micro computer 81 permit carrying out of the advance by one step of the second indexed output conveyor 3 by for example the drive means 31.

90 An end of sequence test is then carried out at 1014, in a manner to verify that the entire sequence has been performed, the set formed at the jogger 30 has suitably been transmitted by the second conveyor 3, across the different stations constituted by the working machines 60,61 and 62, which are not necessarily all used.

95 Following the end of sequence test shown at 1014, the programmable robot 82 and the

micro computer 81 then permit positioning of the entire system in a situation of waiting for a new sequence 1015, this situation of awaiting a new sequence 1015 permitting the return to the initial situation of stack presence 1000. During this phase of waiting for a new sequence designated 1015, the bins 12,11 and 10 can advantageously be returned by the programmable robot 82 into their initial position.

The operation of the sequence flow chart described in Figure 5 can of course be carried out with the aid of the programmable robot 82, which advantageously comprises interface circuits between the active elements of the device shown in Figure 1, active elements such as the drive means 201,211 and 31, or the motor for positioning the bins 12,11,10. The interface circuits will not be described because they consist of interface circuits of known type, permitting the control of a motor, such as a continuous current motor or a synchronous motor for example.

Further, the micro computer 81 can advantageously comprise a sequence program permitting carrying out of the sequence stages or phases such as shown in Figure 5. With this object, the program can be loaded into the central memory of the micro computer 81, from the permanent memory unit of the magnetic memory type for example. In a more advantageous manner, the sequence program can be stored in a passive memory of the ROM type, directly connected to the central unit of the micro computer.

The apparatus according to the invention can of course be applied to the assembly of a wide diversity of documents having concordance symbols and not solely to traveller's cheques; these symbols are not necessarily numbers or letters, but can be various designs, figures or logos.

CLAIMS

1. Apparatus for assembly into sets, in accordance with a predetermined programme, of an assembly of documents of which certain ones at least carry concordance symbols, the apparatus comprising:

- a) means for holding and distribution, in a pre-established order, the documents;
- b) a first conveyor adapted to displace continuously, one after the other, the documents coming from the said holding and distribution means, and for stacking them on a second conveyor;
- c) at least one camera arranged above or below the said first conveyor, adapted for carrying out an optical reading of the concordance means;
- d) means for step-by-step driving of the said second conveyor, adapted for displacing, one after the other, the sets formed by stacking of a predetermined number of concordant documents;

- e) at least one means for assembly of the sets transported by the said second conveyor;
- f) means for reception of the assembled sets;

g) an information processing system for the readings made by the said camera, adapted to control the operation of the said holding and distribution means, and of the said first and second conveyors when these readings are in concordance with the assembly programme and, on the contrary, controlling their stopping when they are not in concordance with this programme.

2. Apparatus according to claim 1, including two said cameras, positioned respectively above and below the said first conveyor and each adapted for carrying out the optical reading of the concordance symbols provided on one of the two faces of the documents.

3. Apparatus according to claim 1 or claim 2, wherein the said means for holding and distribution of the documents comprises a magazine constituted by a certain number of juxtaposed bins intended each to receive one category of documents, this magazine being movable transversely with respect to the direction of displacement of the said first conveyor.

4. Apparatus according to claim 3, wherein each of the bins is provided with a remover.

5. Apparatus according to any preceding claim, wherein the means for assembly of the sets is a glueing machine.

6. Apparatus according to claim 5, wherein the glueing machine comprises pinching members for one of the edges of the set, a nozzle for blowing compressed air onto the face of this edge, and a nozzle for injection of glue.

7. Apparatus according to any one of the preceding claims, in which the said assembly means is a stapler.

8. Apparatus according to any one of the preceding claims including a perforating machine situated downstream of the or each assembly means.

9. Apparatus according to any one of claims 1 to 8, wherein the said means for receiving assembled sets is constituted by a movable magazine comprising at least two removable bins.

10. Apparatus according to any one of the preceding claims, wherein the information processing system comprises:

- a device for visualising the reading made by the or each camera;
- a micro computer;
- a programmable robot.

11. Apparatus according to claim 10, wherein the micro computer comprises stored in a passive memory, a sequence program permitting the production of sets after comparison of concordance symbols read by the or each camera with reference symbols or data.

12. Apparatus for assembly into sets of do-

cuments carrying concordance symbols substantially as hereinbefore described with reference to the accompanying drawings.

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