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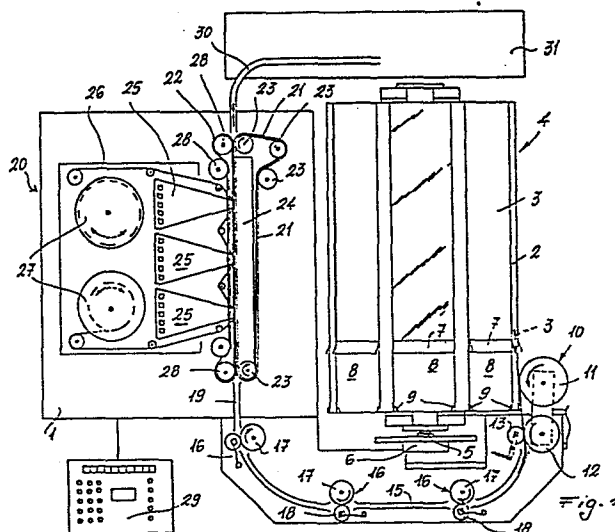
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54 Method and equipment for the repetitive printing of cheques.

57 The method for the repetitive printing of cheques and similar forms, according to the invention, comprises the steps of: (a) piling up a plurality of cheques in a plurality of boxes, each box containing cheques of the same shape, type, color, denomination and the like disposed with the front side thereof facing outwardly; (b) transferring a selected one of said boxes in front of a drawing station for drawing the first cheque of the pile out of the related box; (c) conveying said first cheque along a track leading to a printing unit; (d) printing said front side of said first cheque while the same passes through said printing unit; and (e) discharging said printed cheque into a collecting zone.

The equipment for carrying out the above method comprises a rotating unit (4) having a plurality of boxes (2) circularly disposed, each box having an opening (8) and each adapted to contain a plurality of cheques (3) of the same shape, type, color, denomination and the like disposed with the front side thereof facing outwardly, a drawing station (10) positioned near said rotating unit (4), a track (15) for conveying individual cheques from said drawing station to a printing unit (20), means (30) for transferring said printed cheques from said printing unit to a collecting zone (31), and electronic means (29-36) for controlling the operation of said equipment.



Method and equipment for the repetitive printing of cheques

The invention relates to a method and equipment for the repetitive printing of cheques and other similar forms. The invention, in particular, relates to an equipment for repetitively filling up cheques and similar forms by using the printing technique conventional for the computer printers.

In the banking transactions it's necessary to quicken all those operations which are carried out by the counter clerk, in particular those operations concerning the issuing of cheques to the clients, which cheques have to be filled up by insertiting a plurality of information.

Actually the cheques issued at a bank counter are filled up by using conventional typewriters and said cheques have to be completed by inserting the date, the amount both in letters and numerals as well as information concerning the beneficiary and others.

In order to hasten up the above operations are already known machines associated to a computer which are able to quickly print a high number of cheques all assembled in a continuous or band-like form.

A drawback of said conventional machines resides in that they do not allow to repetitively fill up cheques of different maximum denomination, for doing so the operator being compelled to change, whenever necessary, the continuous or band-like form fed to the machine.

The invention as claimed is intended to remove this drawback by providing a method and an equipment which allows the repetitive printing of cheques and similar forms of different denomination without the use of a continuous or band-like form.

The method for the repetitive printing of cheques and similar forms according to the invention, comprises the steps of:

(a) piling up a plurality of cheques in a plurality of boxes, each box containing cheques of the same shape, type, color, denomination and the like disposed with the front side thereof facing outwardly; (b) transferring a selected one of said boxes in front of a drawing station for drawing the first cheque of the pile out of the related box; (c)

conveying said first cheque along a track leading to a printing unit; (d) printing said front side of said first cheque while the same passes through said printing unit; and (e) discharging said printed cheque into a collecting zone.

The equipment for carrying out the above method comprises a rotating unit having a plurality of boxes circularly disposed, each box having an opening and each adapt to contain a plurality of cheques of the same shape, type, color, denomination and the like disposed with the front side thereof facing outwardly, a drawing station positioned near said rotating unit, a track for conveying individual cheques from said drawing station to a printing unit, means for transferring said printed cheques from said printing unit to a collecting zone, and electronic means for controlling the operation of said equipment.

One way for carrying out the invention is described below with reference to drawings which illustrate only one specific embodiment. In the drawings:

- Fig. 1 is a diagrammatic plan view of the equipment according to the invention;
- Fig. 2 is a side view of the equipment of Fig. 1; and
- Fig. 3 is a flow diagram in block form of the piloting electronic circuit.

With particular reference to Figs. 1 and 2, a frame 1 supports a rotating unit 4 comprising a plurality of circularly disposed boxes 2 each adapt to contain a plurality of cheques or similar forms 3 piled up with the side to be printed facing outwardly, each box containing cheques or forms of the same shape, type, color, denomination or the like. In the embodiment shown, the boxes 2 are in a number of eight and circularly disposed relative to a shaft 5 associated to a step-wise rotating motor 6 integral with the frame 1.

Each box 2 is provided with a transparent lid 7 having an opening 8 and a pair of triangular guides 9. Integral with the frame 1 and near the rotating unit 4 a drawing station - generally denoted at 10 - is provided, said station comprising a first rotating roller 11 and a second rotating roller 12, the roller 11 is a motor-roller and is disposed in front of the opening 8 so as to contact

with its rubber surface the first cheque 3 of each pile, while the roller 12 is associated with an idle counter-roller 13.

5 The first extremity 14 of a U-shaped track 15 ends near the drawing station 10 and said track 15 comprises, along its run, a plurality of pairs of rollers, generally denoted at 16, each comprising a motor roller 17 and an idle counter-roller 18, the axes of said rollers 17 and 18 being so oriented to apply on the passing cheques 3 a pressure directed along two components, i.e. one component
10 determining the advancement of the cheque and the other being inclined relative to the first one so as to make said cheque adhering to the track 15. The distance between consecutive pairs of rollers 16 is less than the length
15 of a cheque 3 and, therefore, less than the length of boxes 2.

The second extremity 19 of track 15 ends in correspondence of a printing unit 20 comprising a pair of ring disposed pressing belts 21 and 22. The pressing belt 21 is supported
20 by driving rollers 23 and by an element 24, while the pressing belt 22 is supported by driving rollers 28 and is so conformed not to interfere with the printing heads 25 of unit 20.

25 In the embodiment shown, said heads 25 are in number of six disposed at different levels (only three are visible in Fig. 1) so as to have each head in a position corresponding to each printing area of the cheques 3. A printing tape 26 passes in front of the heads 25 fed by rollers 27.

30 Downstream of the printing unit 20 a discharging track 30 is provided ending in a collecting container 31.

A key-board 29 makes part of the electronic circuit shown in Fig. 3 wherein said key-board is shown in the form of a block. With particular reference to Fig. 3, the block
35 29 is directly connected to a block 32 constituting the input of the printing unit 20 and is also connected to a block 33 which is the memory into which the necessary information are inserted, such as the amount of the cheques and other data. The block 33 is directly connected to a
40 block 34 controlling the rotation of rotating unit 4 so as to position the proper box 2 in front of drawing station

10, the proper box being selected depending on the information stored in block 32. The block 35 controls the drawing station 10, in particular roller 11, while block 32, as above stated, controls the printing unit 20 and the output signal of said block 32 is returned to the block 29 through fed-back line 36.

Every morning the operator inserts in block 33 the date and, through keyboard 29, he inserts the numerical data corresponding to the amount of the cheque, the name of the beneficiary and possible other information. The amount inserted by numerical parameters is automatically converted by the electronic circuit in letters, thus avoiding the insertion twice of the same datum.

Depending on the amount inserted, the rotating unit 4 will position the proper box 2 in front of the drawing station 10 and rollers 11 and 12 will draw out from the opening 8 the first cheque 3 of the pile, this operation being facilitated by the guides 9, and said cheque is forwarded along the track 15 for rotation of rollers 17. The inclined disposition of the rollers 17 and 18, as above stated, will kept the cheque 3 adhering with its lower edge to the track 15 so as to present the same cheque to the printing unit 20 correctly positioned.

The considered cheque reaches the extremity 19 of the track 15 and drawn in front of the printing heads 25 by the pressing belts 21 and 22, while passing in front of said heads will be printed "en bloque" without stopping.

When exiting from the printing unit 20, the cheque considered is conveyed along the discharging track 30 into the collecting container 31 from which it will be collected for the final operations, i.e. signature by an Officer of the bank.

In the above description reference is made in particular to cheques, but the method and equipment of the invention can obviously be used for other forms which have to be filed up in a manner similar to the filling up of the cheques.

Claims:

1. A method for the repetitive printing of cheques and similar forms comprising the steps of:

- piling up a plurality of cheques in a plurality of boxes, each box containing cheques of the same shape, type, color, denomination and the like disposed with the front side thereof facing outwardly;

- transferring a selected one of said boxes in front of a drawing station for drawing the first cheque of the pile out of the related box;

- conveying said first cheque along a track leading to a printing unit;

- printing said front side of said first cheque while the same passes through said printing unit; and

- discharging said printed cheque into a collecting zone.

2. A method according to claim 1, characterised in that said printing is carried out 'en bloque' on said front side.

3. An equipment for carrying out the method according to claims 1 and 2, characterised in that it comprises a rotating unit (4) having a plurality of boxes (2) circularly disposed, each box having an opening (8) and each adapted to contain a plurality of cheques (3) of the same shape, type, color, denomination and the like disposed with the front side thereof facing outwardly, a drawing station (10) positioned near said rotating unit (4), a track (15) for conveying individual cheques from said drawing station to a printing unit (20), means (30) for transferring said printed cheques from said printing unit to a collecting zone (31), and electronic means (29-36) for controlling the operation of said equipment.

4. An equipment according to claim 3, characterised in that each box (2) comprises a lid (7) for retaining said piled up cheques, said opening (8) making part of said lid.

5. An equipment according to claim 3, characterised in that said track (15) has means (16) for advancing individual cheques along the same track.

6. An equipment according to claim 5, characterised in that said means (16) comprises a pair of rollers (17-18), the axes of said rollers being so oriented to apply pressure on the passing cheque directed along two components, one component determining the advancement of the cheque and the other being inclined relative to the first one to make said passing cheque adhering to said track (15).
7. An equipment according to claim 3, characterised in that said printing unit (20) comprises a plurality of printing heads (25) disposed at different levels corresponding to the levels of the printing area of the cheques.
8. An equipment according to claim 7, characterised in that said printing unit (20) comprises means (21,22) for advancing individual cheques in front of said printing heads.
9. An equipment according to claim 8, characterised in that said means comprises driven pressing belts (21,22).
10. An equipment according to claim 3, characterised in that said electronic means comprises a key board (29), an input circuit (33) for said printing unit, a memory (33), a circuit (34) for controlling the rotation of said rotating unit (4) depending on the output of said memory, and a circuit (35) for controlling said drawing station (10).

