

(12) **EUROPEAN PATENT APPLICATION**

(21) Application number: 82850100.7

(51) Int. Cl.³: **B 41 J 7/34**

B 41 K 3/08, G 07 B 11/02

(22) Date of filing: 05.05.82

(30) Priority: 05.05.81 SE 8102805

(43) Date of publication of application:
17.11.82 Bulletin 82/46

(84) Designated Contracting States:
BE CH DE FR GB LI NL

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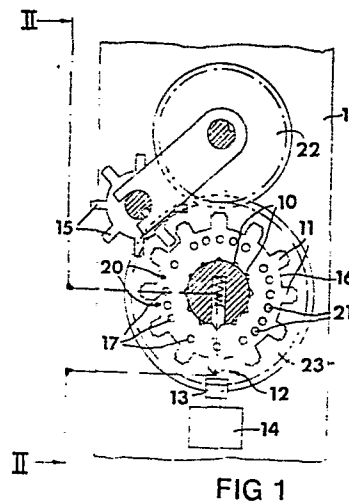
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(54) Cancellor.

(57) A cancellor for tickets or the like comprising a number of wheels (8) being rotatably mounted on a common shaft (7) and individually settable in locked positions (10) each corresponding to a position of types disposed on the wheels for the printing of characters on a ticket or the like. Each wheel (8) has in each locked position (10) at least one zero position (17) corresponding to said locked position. The zero positions of each wheel are located at the same distance from the centre of the wheel. Each zero position in the respective locked position permits free passage for a sensing means (18,19). Furthermore, for determining the position of each wheel, a code position (20, 21) is disposed on the wheel between each pair of adjacent zero positions, so that when rotating the wheel to be set between two adjacent locked positions, one of said code positions (20, 21) passes by said sensing means.



Cancellor

The present invention relates to a cancellor for tickets or the like, comprising a number of wheels being rotatably mounted on a common shaft and individually settable in locked positions each corresponding to a position of types disposed on the wheels for the printing of characters on a ticket or the like.

So called cancellors for the printing of characters, numerals and/or letters on a ticket or the like have previously been totally mechanical, and the setting of the mutual positions of the characters has been achieved mechanically. However, it has become desirable to let a micro processor take over the setting operation in such a device. Then, the determination of the positions of the type wheels in the cancellor must be simplified. Such a positional determination will of course primarily relate to the determination of the mutual position of the various type wheels when starting the device. Since the type wheels are relatively small, having a diameter of approximately 5 cm, there is no room for disposing a position sensing means for each wheel, but such a sensing means must permit the sensing of the mutual positions of all the wheels. Therefore, only one wheel may be displaced at a time when setting the type wheels to enable the positional determination.

The object of the invention is to provide a cancellor of the kind stated above, wherein the mutual positions of the wheels can easily be determined automatically, e.g. by means of a micro processor.

Another object of the invention is to provide a cancellor of the kind stated above, having a reliable and simple structure.

These objects are achieved by the invention in that each wheel in every locked position has at least one zero position corresponding to said locked position, wherein the zero positions of each wheel are located at the same distance from the centre of the wheel, and wherein each zero position in the respective locked position permits free passage for a sensing

means, and in that a code position is disposed on the wheel between each pair of adjacent zero positions for the determination of the position of each wheel, so that when the wheel to be set is rotated between two adjacent locked positions, one of said code positions will pass by said sensing means.

The invention will be described more fully below with reference to the appended drawing. Fig. 1 is a cross-section along line I - I in Fig. 2 of a portion of cancellor according to the invention. Fig. 2 is a partly sectional view as indicated by line II-II in Fig. 1.

Referring to Figs. 1 and 2, the printing portion of a cancellor is shown. On a frame 1 a lead-screw 2 is journaled for rotation in either direction by means of a motor 3. A guide 4 is movable back and forth on the lead-screw 2 so as to displace a drive wheel 5 along a shaft 6 driving the drive wheel, said shaft 6 being also journaled in the frame 1 and being driven by a motor 6a. Another shaft 7 is journaled in the frame 1 and carries a number of individually rotatable type wheels 8. These type wheels are rotated intermittently into positions defined by a spring loaded locking pin 9 adapted to engage with recesses 10 at the inside of the type wheel. As is best shown in Fig. 1, the type wheel is provided along its circumference with projections 11, at the outer ends of which types with characters, such as numerals and/or letters, are disposed. These characters are adapted to be transferred onto a ticket or the like at the location 12 by way of pressing a die 13 by means of a punch magnet 14 against a row of such projections. As is likewise best shown in Fig. 1, the individual type wheels are driven by the drive wheel 5 in that the drive wheel is provided with teeth 15 engaging between the projections 11.

The surfaces 16 located between the projections 11 on the circumference of the type wheel are intended for visual indication.

In each locked position each type wheel has a zero position, which corresponds to the locked position and is constituted by a hole 17 extending axially through the type wheel. Thus, a light beam, generated by a transmitter 18, can reach a receiver 19 in each locked position by propagating through

the whole package of type wheels, as is best shown in Fig.2. Between said holes 17 there is in a corresponding position of each type wheel a code position 20 which passes by the light beam generated by the transmitter 18 when the type wheel is displaced between two locked positions. The code of this code position is either another hole 21 made between two zero position holes or no such hole. Hereby, one obtains from the receiver a signal "1" or a signal "0" when a code position passes by the receiver. By giving the various code positions binary codes in this way, one can easily determine the position of each type wheel, so that the particular projection with the character to be printed is brought to the die 13 at the location 12 and is printed on the ticket to be cancelled.

As will be seen from Figs. 1 and 2, a toothed gear 22 is secured on the lead-screw 2 and meshes with a toothed gear 23 mounted on the shaft 7. By arranging corresponding holes and code positions at the gear 23, the position of the guide can also be determined by rotating the screw 2 by means of the motor 3 and sensing the position by means of the transmitter 18 and the receiver 19.

The receiver 19 is preferably connected to a micro processor which receives information on the positions of the type wheels and the guide and thereupon, by actuating the motors 3 and 6a, sets the right characters at the type wheels.

In order to determine the correct positions of the type wheels, in the embodiment shown in Figs. 1 and 2, each wheel must be rotated to four consecutive locked positions, in view of the number of projections on the type wheels, in order to determine the particular position.

At a wheel having the illustrated number of projections 11, these four rotating steps can be reduced to only one rotation to the adjacent locked position in case four transmitters and four receivers are disposed on the one hand in registry with four consecutive holes corresponding to the holes 17 in the preferred embodiment or, on the other hand,

in registry with four holes located along the radius of the type wheel repeatedly around the whole type wheel at the same location as the holes 17 of the preferred embodiment, wherein, e.g. in level with the location 12 in Fig. 1, four transmitters and receivers are arranged in a row along the radius of the type wheels.

In the inventive cancellor, the type wheels can have different widths in accordance with the particular character to be printed or, advantageously, distance wheels without characters can be placed between the type wheels.

In order to simplify the hole making in the production of the type wheels, in case the code position should be a hole, a slot can be made instead of two adjacent holes, said slot extending through the hole 17 as well as the corresponding code position 20, 21.

It is also possible to make recesses at the circumference of the wheels instead of the holes at the zero and code positions.

Of course, the invention can be modified within the scope of the appended claims.

CLAIMS

1. A cancellor for tickets or the like, comprising a number of wheels (8) being rotatably mounted on a common shaft (7) and individually settable in locked positions (10) each corresponding to a position of types disposed on the wheels for the printing of characters on a ticket or the like, c h a r a c t e r i z e d in that each wheel (8) in every locked position (10) has at least one zero position (17) corresponding to said locked position, wherein the zero positions of each wheel are located at the same distance from the centre of the wheel, and wherein each zero position in the respective locked position permits free passage for a sensing means (18,19), and in that a code position (20,21) is disposed on the wheel between each pair of adjacent zero positions for the determination of the position of each wheel, so that when the wheel to be set is rotated between two adjacent locked positions, one of said code positions (20,21) will pass by said sensing means.

2. A cancellor according to claim 1, c h a r a c t e r i z e d in that each zero position is constituted by a hole (17) through the wheel.

3. A cancellor according to claim 1, c h a r a c t e r i z e d in that each zero position is constituted by a recess at the circumference of the wheel.

4. A cancellor according to anyone of claims 1-3, c h a r a c t e r i z e d in that codes readable by said sensing means are provided at said code positions (20).

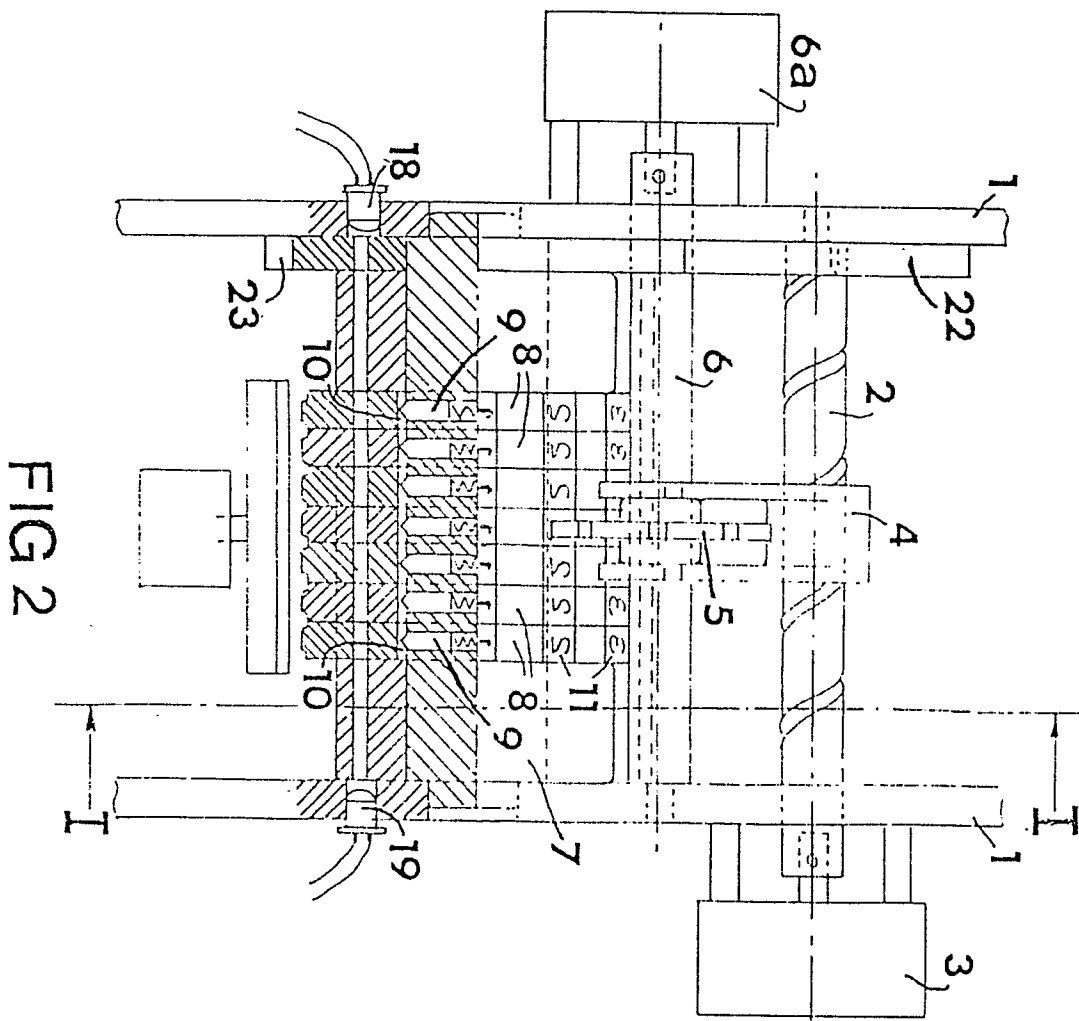
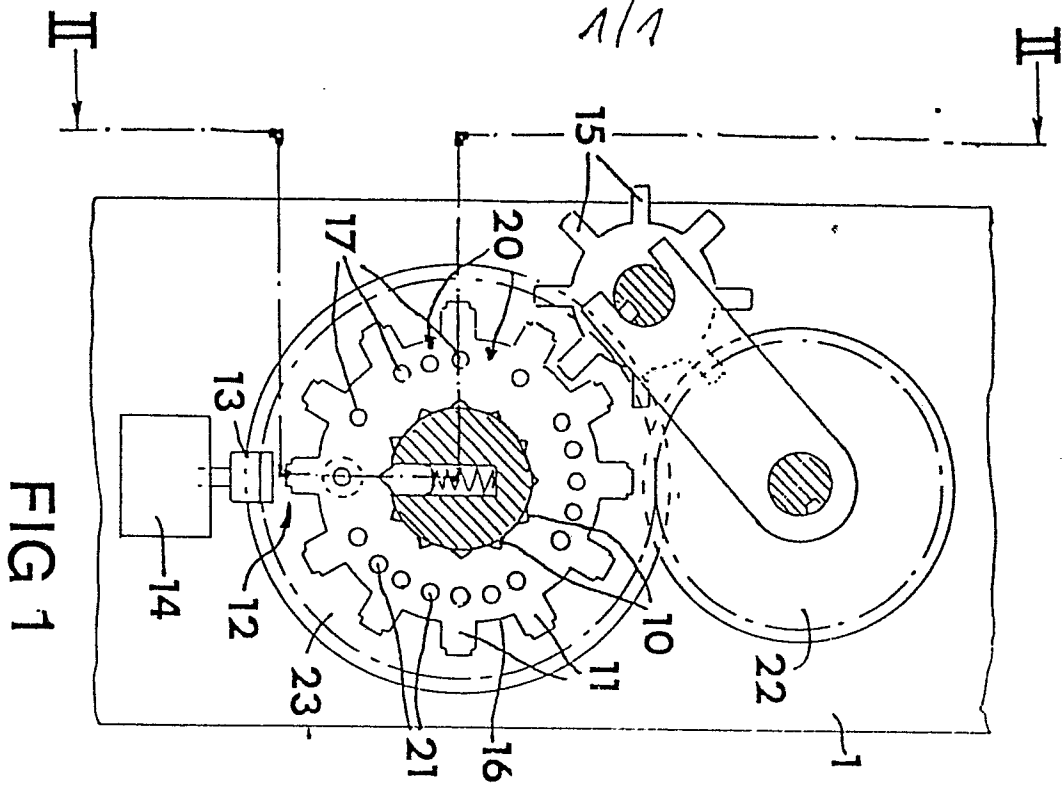
5. A cancellor according to anyone of claims 1-4, c h a r a c t e r i z e d in that at least two zero positions (17) and at least two code positions (20) are provided for each locked position (10) in pairs one after the other radially on the wheels.

6. A cancellor according to anyone of claims 1-5, characterized in that the sensing means (18,19) is adapted to read the codes of said code positions optically, pneumatically or mechanically, or by means of ultra sonic sound.

7. A cancellor according to anyone of claims 1-6, characterized in that a driving device (4,5) for driving the wheel to be set is provided so as to be axially displaceable relative to said wheel for setting the same.

8. A cancellor according to claim 7, characterized in that the driving device comprises a drive wheel (5) being displaceably mounted on a shaft (6) and being adapted to engage with teeth (11) provided on said wheels (8).

9. A cancellor according to claim 8, characterized in that one of said type wheels consists of a toothed gear connected to a gearing, by means of which said drive wheel (5) is displaceable back and forth, whereby the position of the drive wheel on the shaft (6) is determinable by means of zero positions (17) and code positions (21,21) provided on said toothed gear.





European Patent
Office

EUROPEAN SEARCH REPORT

0064963

Application number

EP 82 85 0100

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
Y	US-A-3 399 297 (R.L. MILLER) * Column 1, line 9 - column 6, line 49; figures 1,2 *	1-6	B 41 J 7/34 B 41 K 3/08 G 07 B 11/02
Y	--- US-A-3 015 265 (P. GMEINER) * Column 1, line 9 - column 3, line 30; figures 1-3,5,6 *	1-3,6	
A	--- GB-A-2 018 684 (McCORMQUODALE MACHINE SYSTEMS LTD.) * Page 1, line 5 - page 2, line 4; figure 1 *	1,3-6	
A	--- US-A-3 747 517 (E. ROBACZEK) * Abstract; figures 1-4 *	1,4-6	
A	--- US-A-3 929 276 (G.I. LUUDSTROM) * Abstract; column 2, line 24 - column 3, line 31; figures 1-3 *	1,4,6	TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 23-08-1982	Examiner RUDOLPH H.J.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			