

"Improvements in and relating to printers"

The invention relates to printers, and especially to a printer for use in a hand labeller, that is to say, in a portable device that prints
5 labels and dispenses the printed labels and attaches them to goods. Hand labellers are used, for example, to attach price-labels to goods in shops.

One previously proposed form of printer for a hand labeller has several type wheels side-by-side
10 and several headline wheels side-by-side, each meshing or otherwise engaging with a respective one of the type wheels. Each type wheel bears on its rim a variety of printing types and each headline wheel displays a corresponding variety of reference
15 characters. A selection shaft can be moved axially through hollow centres of either the type wheels or the headline wheels, and has a head that can engage and turn a selected one of the wheels, to change the individual type that is presented for printing. An
20 indicator outside the headline wheels, linked to the selection shaft, shows with which headline wheel and type wheel the head on the selection shaft is engaged.

That type of printer must be inked by an ink
25 roller mounted in the hand labeller to fulfill its printing function. However, because of the large contact area between the print wheels, the ink tends

in use to permeate between the type wheels by capillary action, together with dust and paper lint, and in addition selection of the type wheel becomes difficult because of adhesion due to dryness, resulting on occasion in the type
5 wheel adjacent to the desired type wheel rotating as well.

Thus, type is selected in this way by aligning the head of the selection shaft with each type wheel or headline wheel in turn and, once the shaft has been rotated and selection is complete, the head is moved to the next
10 wheel and the shaft is again rotated to select the correct type. If at this point the adjacent type wheel which has already been set rotates as well, print wheel selection is impossible, posing an obstacle to the effective operation of the printer.

15 In an attempt to solve this problem, it has been proposed to insert metal spacers between adjacent type wheels, but that increased the number of parts and resulted in a different problem of increased assembly time.

In consideration of the above problems, it is an
20 object of the invention to provide a printer which, without an increase in the number of parts and without increased assembly effort, enables a desired type wheel to be set without affecting adjacent rows.

The invention provides a printer comprising a plural-
25 ity of typewheels mounted side-by-side on a first common axis, each having various types on its rim, a plurality of indicator wheels mounted side-by-side on a second common

axis parallel to the first, each indicator wheel being in operative engagement with a respective typewheel and having on its rim indicator characters corresponding to the types on that typewheel, and a setting mechanism that comprises a shaft axially displaceable along one of the said common axes and bearing means for engaging one of, and selectively rotating both of, a selected pair of typewheel and an indicator wheel and indicating means comprising an indicator member that extends across the indicator wheels and is axially displaceable with the said shaft, an indicator on the indicator member that indicates the selected indicator wheel, and a pair of locking members mounted on the indicator member on either side of the indicator, each of which is arranged to engage and prevent rotation of a single indicator wheel immediately adjacent to the selected pair of wheels.

One form of printer constructed in accordance with the invention, and a hand labeller incorporating it, will now be described by way of example only with reference to the accompanying drawings, in which:

Fig. 1 is a somewhat schematic side elevation view of a printer mounted in a hand labeller;

Fig. 2 is an exploded perspective view of a printer;

Fig. 3 is a perspective view of an indicator

forming part of the printer shown in Fig. 2; and

Fig. 4 is a perspective view showing the engagement between the indicator shown in Fig. 3 and other parts of the printer shown in Fig. 2.

5 Referring to the drawings, and initially to Fig. 1, a hand labeller indicated generally by the reference numeral 2 has a pivotally mounted handle 3 on a front end portion of which is attached a printer 1 which moves downwards as shown in Fig. 1 when the 10 handle 3 and a grip 4 are grasped and squeezed together. The printer is inked by a rotating ink roller 5 movably mounted in the hand labeller 2, and prints the required characters, for example, the price of a product or a product code, on a label 6. 15 Then, the printed label 6, which is drawn out of the lower front part of the hand labeller 2, is stuck onto the required product by an attachment part 7.

Referring now to Fig. 2, the printer 1 is composed of a plurality of hollow-centred type wheels 20 12 between end frames 10 and 11, and a corresponding plurality of hollow-centred headline wheels 15 having on their rims headline characters 14 which correspond to types 13 on the rims of the type wheels 12.

The type wheels 12 and the headline wheels 15 25 are connected by the meshing of concavities 16 constructed between the types 13 with convex portions 17 constructed between the headline characters 14.

The type wheels 12 are permitted to rotate,

while being biased into predetermined rotational positions in which a type is correctly aligned for printing by spring detents on cores 19 that are received within the hollow centres of the type wheels. The cores 19 are carried on a print shaft
5 core bar 18, which is fixed using screws 20 to the end frames 10 and 11. The cores 19 are linked to each other and to the end frames 10 and 11 by pins and sockets to prevent them from rotating.

10 The headline wheels 15 are mounted on and rotated by a selection shaft 21. A selection connection part 22 provided at the end of the selection shaft 21 has projections that engage with internal surfaces of the headline wheels 15 to link
15 the shaft non-rotatably to any one of those wheels.

An indicator 24 and a knob 25 are fixed by a screw 23 at the end of the selection shaft 21.

The selection connection part 22 can be positioned to select a desired headline wheel 15
20 through the action of a steel ball 28 captive in a bore in one end frame 11 and biased radially inwards by a coil spring 27, to engage a series of detent grooves 26 formed in the selection shaft 21. The indicator 24 bears a pointer 29 that is aligned with
25 the same headline wheel 15 with which the connection part 22 is engaged at any time, enabling a desired headline wheel to be easily selected by aligning the pointer with the required headline wheel 15.

The end plate 11 is attached to the end frame 10 by screws 30.

To select a desired type 13, the pointer 29 of the indicator 24 is aligned to the desired headline wheel 15 using the knob 25, connecting the selection connection part 22 from the inside to the desired headline wheel 15. The knob 25 is then rotated, rotating the headline wheel 15 and, through the convex parts 17 and the concavities 16, the corresponding type wheel 12.

Referring now to Fig. 3, which shows an end portion 29 of the indicator 24 including the pointer 29, stoppers 40 for preventing rotation are constructed as integral parts on either side of the pointer 29 and protruding downwards as seen in Figs. 2 and 3.

As shown in Fig. 4, the stoppers 40 for preventing rotation are constructed to fit between the convex parts 17 of the headline wheels 15, and are spaced on either side of the pointer 29 so as to align with the headline wheels 15 immediately on either side of the headline wheel indicated by the pointer 29 of the said indicator 24.

When the knob 25 is operated to move the selection shaft 21 in its axial direction to align the selection connection part 22 and the pointer 29 of the indicator 24 with a selected headline wheel 15, the stoppers 40 travel freely across the wheels

between two lines of adjacent convex parts 17, each coming to rest between two convex parts of a respective one of the headline wheels adjacent to the one that is to be turned.

5 The necessary rotation of the headline wheel 15 pointed to by the pointer 29 is ensured through its connection with the selection connection part 22. Unnecessary rotation of the headline wheels 15 adjacent on either side is prevented because of the
10 insertion between the convex parts 17 of the stoppers 40 preventing rotation. Therefore, even if permeation of ink between the type wheels 12 makes relative rotation more difficult, only the type wheel 12 and the headline wheel 15 selected are rotated, and the
15 problem of rotation of wheels in other rows is solved.

The indicator 24 may be of any shape, and also the stoppers for preventing rotation may be constructed in any shape as long as they effectively
20 engage the concavities 16 or the convex parts 17.

Although the printer shown in the drawings has a selection shaft 21 which connects with the headline wheels 15, the invention also applies to printers in which the selection shaft 21 connects with the type
25 wheel 12.

As described above, according to this invention, stoppers on either side of the pointer can be used to prevent rotation of type wheels other than the type

wheel to be selected, thus ensuring correct functioning of the print selection function.

claims

1. A printer comprising a plurality of typewheels mounted side-by-side on a first common axis, each having various types on its rim, a plurality of indicator wheels
5 mounted side-by-side on a second common axis parallel to the first, each indicator wheel being in operative engagement with a respective typewheel and having on its rim indicator characters corresponding to the types on that typewheel, and a setting mechanism that comprises a shaft
10 axially displaceable along one of the said common axes and bearing means for engaging one of, and selectively rotating both of, a selected pair of typewheel and an indicator wheel and indicating means comprising an indicator member that extends across the indicator wheels and is axially
15 displaceable with the said shaft, an indicator on the indicator member that indicates the selected indicator wheel, and a pair of locking members mounted on the indicator member on either side of the indicator, each of which is arranged to engage and prevent rotation of a
20 single indicator wheel immediately adjacent to the selected pair of wheels.

2. A printer as claimed in claim 1, wherein the locking members engage with the connection means that connect the typewheels with the indicator wheels.

25 3. A printer as claimed in claim 2, wherein the connection means comprises projections on each indicator wheel engaging in concavities in the respective typewheel, and each locking means is received between two said



projections on its respective indicator wheel.

4. A printer substantially as hereinbefore described with reference to, and as shown in, the accompanying drawings.

5. A hand labeller having at least one printer as claimed in any one of claims 1 to 4.

