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PRINT WHEEL MOUNTING ASSEMBLY

The present invention relates to a print wheel mounting assembly, for example for use in printing units of franking and stamping machines and portable stamping and numbering devices.

For the relative alignment of print wheels, e.g. for the printing of multi-digit numbers formed from a corresponding number of adjacently located print wheels, it is known to mount a helical spring into the recess of a support used as a mounting shaft for the print wheels (DE-PS-30 43 683). In this construction, the base of the print wheels is made of plastics which allows a resilient deformation when the print wheels are adjusted.

It is also known to use plastic stop shafts as a mounting means, in the bores of which springs act on balls so that the balls engage in recesses of the print wheels as stop elements (DE-OS 31 40 982). In this type of mounting assembly, the ball channels are narrowed at their ends so that the balls cannot jump out.

These types of mounting means for aligning print wheels are costly as regards the production of tools, assembly and maintenance required due to fatigue of individual springs. In addition, when using comb-like springs, generally only one direction of adjustment is possible for the print wheels.

According to the present invention, there is provided a mounting assembly for print wheels in which a plurality of print wheels are arranged next to each other on a bearing shaft and are held by means of resilient ball stops in the position set, and can be adjusted against the spring force of the ball stops, wherein the bearing shaft is provided in an axial direction with a bore, and perpendicular to the axial

of stepped bores corresponding to the number of print wheels, and in which each stepped bore is in registry with a respective print wheel, and at least one respective ball of complementary diameter is placed in
5 each part of each stepped bore, one of the balls in each stepped bore providing a stop element which engages with depressions in the respective print wheel, and said at least one other ball serving to transmit a resilient force from a resilient insert disposed in the
10 bore of the shaft.

An embodiment of the invention may provide a mounting assembly for print wheels which allows economical manufacture, is also practically maintenance-free and makes possible adjustment of the
15 print wheels in two directions.

One embodiment of the invention will now be explained in more detail, by way of example, with reference to the accompanying Figure (Figure 1), which is a sectional view through a portion of a printing
20 unit.

As shown in the Figure, a bearing shaft (10) is provided with cylindrical pins (11,12). A blind bore (13) is formed through one pin (12) into the bearing shaft (10) in the axial direction of the pins (11,12).
25 The bearing shaft (10) is also provided on its periphery, perpendicular to the axial direction, with a number of stepped bores (50) corresponding to the number of print wheels (20) to be received.

When a printing unit is assembled, a resilient
30 insert (40) is placed into the blind bore (13) of the bearing shaft (10). A rubber cord of circular cross section is preferably used as the resilient insert (40).

Balls (30,31) are placed into the stepped bores
35 (50). The stepped bores (50) are sized in proportion to the diameter of the balls (30,31) so that the larger

balls (31) adjacent to the print wheels (20) can only be moved to a restricted extent out of their position in the axial direction of the stepped bores (50), e.g. typically 1/10 to 1/8 of the diameter of the ball. The
5 freedom of movement of the smaller balls (30) resting on the resilient insert (40) corresponds to that of the larger balls (31). The step at the transition from the larger to the smaller diameter of each stepped bore (50) is formed as a sloping wall (51), the angle of
10 which corresponds to the tangential angle of the bearing point of the larger balls (31).

After two balls (30,31) have been inserted into one of the stepped bores (50), the associated print wheel (20) is pushed onto the bearing shaft (10), and
15 thereby the balls (30,31) are secured against loss. The print wheels (20) have depressions (preferably cup-shaped) on their inner periphery, which correspond in number at least to the number of different printing characters on their outer periphery, into which the
20 respective associated larger ball (31) engages.

By this arrangement, the print wheels (20) are lockedly adjustable in two directions. During adjustment the balls (30,31) move out into the resilient insert (40) and again engage into the next
25 depression of the moving print wheel (20). The material of the resilient insert (40) is selected so that there is no permanent deformation.

The printing unit as shown in the drawing is attached into a special carrier device (not shown)
30 which secures the outer print wheels (20) against sliding from the bearing shaft (10).

CLAIMS:

1. Mounting assembly for print wheels in which a plurality of print wheels are arranged next to each other on a bearing shaft and are held by means of resilient ball stops in the position set, and can be adjusted against the spring force of the ball stops, wherein the bearing shaft is provided in an axial direction with a bore, and perpendicular to the axial direction with a plurality of stepped bores, the number of stepped bores corresponding to the number of print wheels, and in which each stepped bore is in registry with a respective print wheel, and at least one respective ball of complementary diameter is placed in each part of each stepped bore, one of the balls in each stepped bore providing a stop element which engages with depressions in the respective print wheel, and said at least one other ball serving to transmit a resilient force from a resilient insert disposed in the bore of the shaft.
2. Mounting assembly as claimed in claim 1, wherein a rubber cord of circular cross section is used as the resilient insert.
3. Mounting assembly as claimed in claim 1 or 2, wherein the stepped bores are dimensioned so that only a limited displacement of the larger ball, which is slight in proportion to its diameter, is possible in the axial direction of each stepped bore.
4. Mounting assembly as claimed in claim 1, 2 or 3, wherein the balls are secured against loss by the print wheels.
5. Mounting assembly as claimed in any preceding claim, wherein the transition between the smaller and the larger diameter of each stepped bore is formed as a sloping wall.
6. Mounting assembly as claimed in any preceding claim, wherein in each stepped bore, the larger of the



two balls engages in a cup-shaped depression in the corresponding print wheel, and is urged by the smaller of the two balls, the smaller ball being in contact with the resilient insert.

- 5 7. Mounting assembly for print wheels, substantially as hereinbefore described with reference to the accompanying Figure.
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