May 7, 1968 R. CHAVENEAUD ETAL 3,381,790

ROLLING CONTACT TYPEWHEEL PRINTER

Filed May 10, 1967

Fig. 1

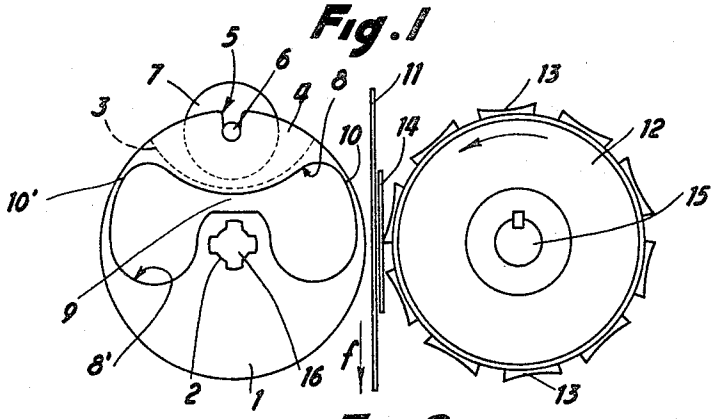


Fig. 2

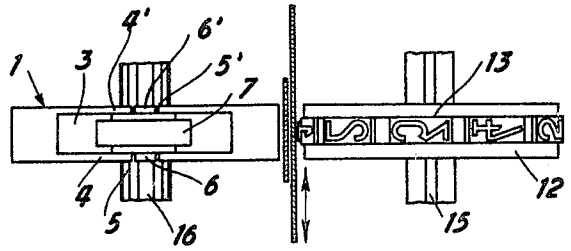


Fig. 3

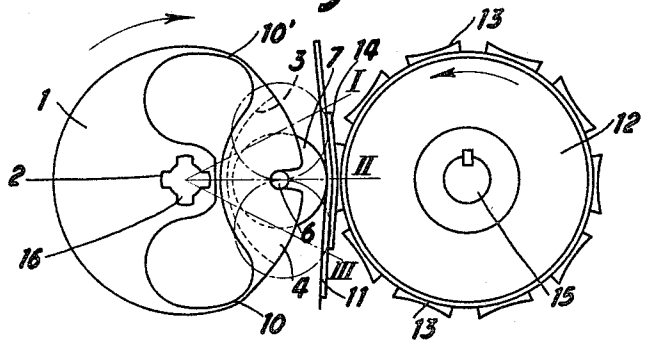


Fig. 4

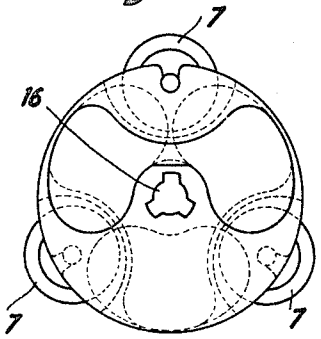
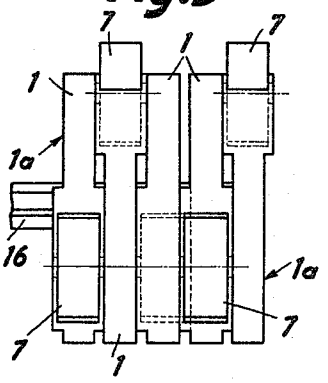


Fig. 5



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ROLLING CONTACT TYPEWHEEL PRINTER

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8 Claims. (Cl. 197—51)

ABSTRACT OF THE DISCLOSURE

The invention relates to a typewriter device wherein printing is effected by a platen roll or rolls mounted to revolve about centres arranged at the perimeter of a pressure disc or discs, the or each roll in operation entering into contact with a paper strip which is moved step by step between the disc or discs and an associated drum having characters on its surface.

The invention relates to a device for printing, for example, on a moving strip by means of an inked ribbon.

We know that printing, on paper or other base, of figures, letters or signs by means of inked ribbons is carried out generally by percussion.

This method of printing is noisy and requires several elements such as levers, rods, etc., the inertia and the plays of which unavoidably decrease the quality of the printing in relation to the speed.

The present invention has for its object to provide a very simple device making it possible to print silently figures, letters or signs on strips of paper or other supports with a quality independent of the speed of movement of the strip.

The device which is the subject of the invention consists essentially in a disc mounted on a shaft and carrying at at least one point on its periphery a rotating free platen roll, resiliently mounted on the disc and able to come in contact with a strip of paper or other material, placed before an inked ribbon situated forward of the printing types borne, for example, by a drum; the said roll being arranged in such a way that it can, on each turn made by the disc bearing it, compress while rolling the said strip and the said ribbon against the printing type, and this with a pressure which is all the weaker as the radius of the said roll is smaller.

In a preferred embodiment the disc is secured on a shaft rotatably driven in any known manner (continuous or intermittent). In another form of execution each disc mounted idle on a common shaft is capable of being driven individually.

In a preferred embodiment, the disc bearing the platen roll is formed of a synthetic plastic material possessing good elasticity in a small thickness and has, at a point of its periphery, a socket forming two notched cheeks to serve as a support for the axle of the platen roll partly housed in the said socket and able to rotate in the latter, the said disc being perforated below the said socket in such a way that the part of the disc comprising the latter be no longer connected to the body of the disc except by two blades of small thickness supplying the resilient means capable of ensuring the pressure of the platen roll and the strip and on the inked ribbon intended to effect the printing of a type on the said strip.

Various discs may be mounted on the same shaft to ensure the simultaneous or intermittent printing of various letters, figures or signs on the strip.

Several discs may be juxtaposed on one and the same shaft and imbricated one in the other by means of an

arrangement of the discs bearing the platen rolls in one or more helices or any other arrangement around the said shaft, a result obtained by decreasing the part of the disc other than that bearing a platen roll, and thus making it possible to house, in the lateral recesses made on both sides of each disc, the portions bearing platen rolls of two contiguous discs.

The fixing hole for each disc on the supporting shaft may be profiled to permit of the mounting of identical discs in different angular positions.

The strip of paper or other material and the inked ribbon may run in parallel or transversely in relation to each other.

The device now is described in more detail hereinunder, with reference to the attached drawings in which:

FIG. 1 shows the device in non-printing position, seen in profile;

FIG. 2 represents the device seen from above;

FIG. 3 represents the device in printing position;

FIG. 4 shows a group of discs in end view;

FIG. 5 shows an elevation of the said group of discs.

In the embodiment represented on FIGS. 1 and 2, for the sake of mere, non-limitative example, the device consists of a disc 1, of synthetic plastic material, having a good degree of elasticity.

Disc 1 has at its centre a hole 2 made so as to be able to steady the disc on a driving shaft comprising flutings, which may be, for example, rectilinear or helical.

At a point on the periphery of disc 1 there is made a socket 3 forming two cheeks 4 and 4' on the two faces of the disc. In the said cheeks there are made notches 5 and 5' into which there may engage journals 6 and 6' extending on both sides of a platen roll 7 housed in the socket 3. The edges of the notches are slightly convergent right down to the perfectly circular bottom so that the journals may be introduced, by forcing, right to the bottom of the notches where they can then rotate freely without danger of coming out of the latter.

Disc 1 has two large openings 8 and 8' joined together by a smaller opening 9 and having a shape such that they thin down considerably the parts 10 and 10' of the disc situated on both sides of socket 3, thus creating two elastic blades intended to ensure, through their bending, the yielding retraction of the platen roll 7 when printing as FIGURE 3 shows.

The impression on a strip 11 of paper or other material, moving along the direction of arrow *f* is obtained by placing, between the said strip and a drum 12 carrying characters or types 13, an inked ribbon 14 moving in parallel with, or perpendicular to the said strip 11.

The drum 12 is mounted on a shaft 15 operated by any suitable means to bring against ribbon 14 the type to be reproduced on strip 11.

The characters or types 13 represented by FIGURES 1 and 3 are concave but it is obvious that the profile of the types is determined by the relative movement of the platen roll and of the types and permits printing on a continuously moving strip. Discs 1 carrying the platen rolls are animated with an intermittent driving movement to enable the type to roll on the strip-ribbon assembly.

The inked ribbon 14 may be of any known type and driven in any conventional manner.

Of course, several discs 1 may be mounted on the same shaft 16 facing an equal number of type drums as also several platen rolls 7 may be carried by one and the same disc.

To reduce to a minimum the space separating the platen rolls 7, the said rolls may be angularly stepped around shaft 16, that is to say arranged for example spiral-wise around the latter as is shown in FIGURES 4 and 5. It is then possible to decrease the part of each disc, other than that carrying a platen roll 7, in such a way as to make

lateral recesses 1*a* in which the bearing portions of a platen roll of the two contiguous discs may be partly housed.

The platen rolls 7 then act successively upon the strip-ribbon-type assembly.

All other arrangements may moreover be adopted according to the application made of the device in conformity with the invention.

What is claimed is:

1. In a typewriting device, the combination of at least one type drum provided with relief printing type on its periphery and adapted to revolve about its axis, a pressure disc mounted to revolve about an axis parallel to that of the drum with the periphery of the pressure disc spaced from the drum, a platen roll rotatably mounted on said pressure disc with the periphery of the platen roll extending beyond the periphery of the pressure disc, the mounting of said platen roll on said pressure disc also being resilient so that the axis of the platen roll can move with respect to the axis of the pressure disc, rotation of said pressure disc carrying said platen roll into printing relationship with paper and ribbon means disposed between said platen roll and said type drum to thereby produce an imprint on the paper by rolling contact.

2. A typewriter device as claimed in claim 1 in which said pressure disc is provided with a peripheral recess, said recess being defined by wall portions, and means in each wall portion in which a shaft mounting said platen roll is journalled to revolve.

3. A typewriter device as claimed in claim 2 in which said pressure disc has a body portion formed of relatively resilient plastics material, and is formed with a cavity between said recess and the axis of rotation of the pressure disc.

4. A typewriter device as claimed in claim 3 in which the cavity formed in the body portion of the pressure disc has a figure of eight shape and the recessed portion of the pressure disc mounting the platen roll is united to the main portion of the pressure disc by a relatively thin strip of material.

5. A typewriter device as claimed in claim 2 in which said pressure disc is provided with a series of peripherally spaced recesses, each of said recesses being bounded partly by wall portions, and means in the wall portions of each of said recesses in which a shaft mounting the platen roll is journalled to revolve.

6. In a typewriter device as claimed in claim 1 in which said type drum has on its perimeter axially spaced series of printing types, there being a series of pressure discs mounted to revolve about a common axis, parallel to that of said drum, each of said pressure discs having a recess in its perimeter and means by which a platen roll is journalled to revolve in the recess and positioned to contact with characters of an associated series of types.

7. A typewriter device as claimed in claim 6 wherein the recesses in adjacent discs are staggered.

8. A typewriter device as claimed in claim 6 wherein the pressure discs comprise body portions of stepped formation on opposite faces, adjacent pressure discs being so arranged that part of each disc having a recess accommodating the platen roll is located partly in the space provided by two oppositely disposed stepped portions of two adjacent pressure discs.

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