

Nov. 25, 1969

A. HESSE ET AL

3,480,127

PRINTING PLATEN FOR CALCULATING AND BOOKKEEPING MACHINES

Filed May 18, 1967

FIG. 1

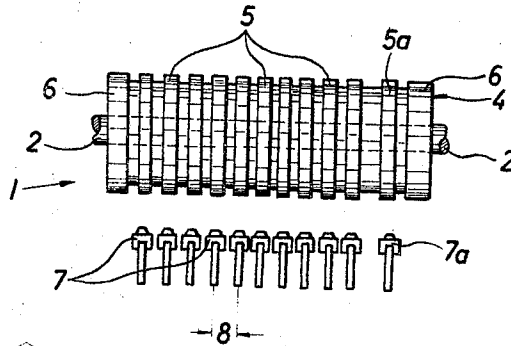


FIG. 2

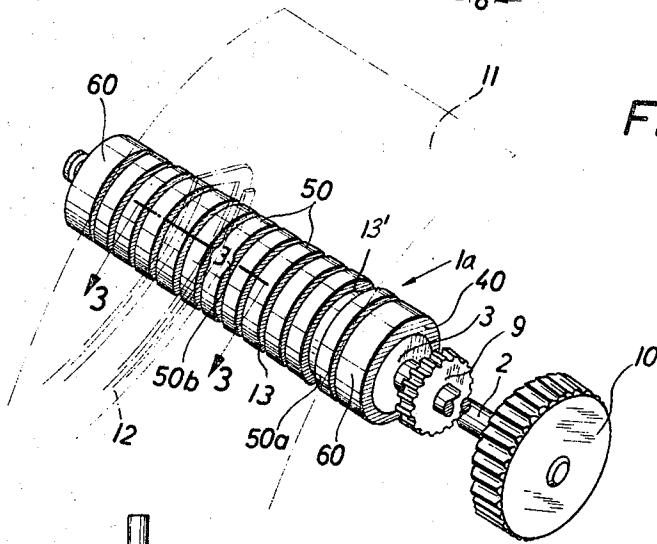


FIG. 4

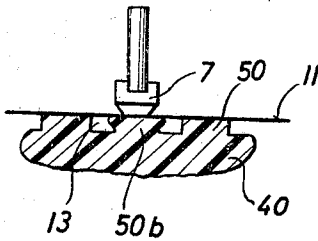
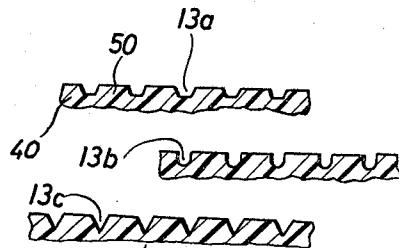


FIG. 3

alfred Hesse  
Wolfgang Bindel  
INVENTORS  
BY Michael S. Stricker  
ATTORNEY

1

2

3,480,127

## PRINTING PLATEN FOR CALCULATING AND BOOKKEEPING MACHINES

Alfred Hesse and Wolfgang Bindel, Wilhelmshaven, Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany

Filed May 18, 1967, Ser. No. 639,359

Claims priority, application Germany, June 16, 1966,

O 11,734

Int. Cl. B41j 11/05

U.S. Cl. 197-144

7 Claims

### ABSTRACT OF THE DISCLOSURE

A printing platen for calculating and bookkeeping machines is provided with an outer resilient surface consisting of spaced rings, the spacing being in correspondence to the spacing of the type carriers of the machine.

### BACKGROUND OF THE INVENTION

The conventional printing platens normally have an outside surface coating of elastic material and a smooth cylindrical periphery.

This type of conventional platen has a number of shortcomings. In order to avoid blurred imprints or so-called ghost prints due to deformation of the platen coat it is necessary to form the coat of a comparatively hard though resilient material. This in turn causes a comparatively high noise level particularly since the conventional printing platen requires a rather high speed of the type bars bearing on the platen.

It is therefore one of the objects of the present invention to provide for a printing platen which will avoid interference and deformation of adjoining print areas. It is a further object of the invention to provide a printing platen which will permit using rather soft rubber. It is a further object to provide a platen for the type of machines indicated which will permit lowering the noise level of the machine.

### SUMMARY OF THE INVENTION

The just stated objects are accomplished by means of a platen which comprises an axle, a platen body and a surface on said body which surface consists of resilient material and is in the form of a plurality of juxtaposed rings spaced against each other in correspondence to the spacing of the type bars of the machine. According to a preferred embodiment the platen is provided with a cylindrical outer jacket which is slotted in a direction transversal to the axis of the platen. The grooves thus formed are spaced against each other so as to form intermediate rings of the type just defined. The spacing between the rings must have a cross section of a width and shape sufficient to permit the lateral expansion due to the springy action of the material of the individual rings during the impact with the type bars.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawing.

### BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 shows in diagrammatic form a plan view of the platen and of the type carriers which face the platen;

FIG. 2 is a perspective view of a printing platen and shows a type carrier in position for printing.

FIG. 3 is an enlarged cross section on lines 3-3 of FIG. 2; and

FIG. 4 is a schematic representation of different cross sections of grooves as used in the invention.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

The platen of the invention is suited in particular for printing machines with so-called printing platens, that is, machines where the platen moves with comparatively low speed relative to type bars set in position and irrespective of whether one or several numerical values are simultaneously printed.

The device of the invention permits the use of soft rubber in the platen and therefore makes it possible to use type made of synthetic material. The type used in conjunction with the device according to the invention does not have to be actuated with a heavy touch. Rather it is possible to form clear imprints by merely printing or pressing which will reduce the noise level and also simplifies the drive mechanism of the platen. A preferred embodiment of the invention consists in providing the platen with a separate cylindrical jacket that forms the outer periphery of the platen body. The jacket is subdivided by transversal grooves into parallel rings corresponding in their spacing to the spacing of the type bars.

This embodiment has the advantage that the platen coat can be applied to the platen body as one single part.

The spaces between the rings or between the transversal slots should have a cross section of a shape and size to form individual springy deflection areas for the rings which are not subject to interference by the deflection of the adjoining ring.

With reference to the drawing which illustrates the invention it will be understood that 1 is the platen from which the axle 2 extends at both ends. To the platen body there is applied outwardly a surface coat 4 of an elastic material such as rather soft rubber. This surface coat 4 in the embodiment of FIG. 1 consists of individual rings 5 which are each disposed opposite one of the types 7 and are spaced from one another by a distance corresponding with the spacing of the types 7 as indicated at 8.

FIG. 1 also shows at the right end a ring 5a which is opposite the type 7a and is intended for the functional symbols. It is spaced from the inwardly adjacent ring 5 by a distance greater than the distance 8.

Platen 1 shown in FIG. 1 is intended for a ten place printing machine. At the right and left end there are reinforced border rings 6 which constitute the two ends of the platen coat 4.

FIG. 2 shows another embodiment of the platen 1a in a perspective view. On the axle 2 which preferably consists of metal there is provided in addition to the platen body 3 a line indexing gear 9 and a knob 10 for rotating the platen 1a. The platen body 3, the indexing gear 9 and the actuating knob 10 may be made of a suitable plastic.

A surface jacket or coat 40 is provided on platen body 3. The coat 40 is formed as a cylindrical jacket of elastic material such as fairly soft rubber. The jacket surface is subdivided by incision or notching into transversal grooves 13 corresponding to the spacing 8 of the type 7. There are thus formed juxtaposed annular projections 50. A ring 50a serves for the imprinting of the functional symbols and is spaced from the inwardly adjacent ring 50 by a groove 13' which is wider than the grooves 13, while the lateral border rings 60 are again formed as rather wide rings.

Shown in dotted lines is a type bar which is represented as a type rod 12 in position for printing. A paper strip or

sheet 11 is disposed between rod 12 and the opposite ring 50. At 50b it is shown how the imprint of a figure, for instance, the numeral "3" causes the expansion of ring 50 to both sides of the imprint place. As is apparent in FIGURE 2, the expansion of the ring 50 does not interfere with the neighboring rings 50.

FIG. 3 shows the imprint position of the platen 1a illustrated in FIG. 2 in a longitudinal section and on an enlarged scale. Type 7 is here in place on the paper 11 and causes a deformation of the printing space 50b of ring 50 which is disposed beneath the type 7 and paper 11. The transversal grooves 13 offer sufficient space for the laterally extending ring 50. As FIG. 3 clearly shows, the transversal grooves 13 are wide enough to receive even a strong lateral enlargement of the printing spot 50b of the adjoining rings 50.

The spacing between rings 5 as shown in FIG. 1 and in the same manner the transversal grooves 13 of FIGS. 2 and 3 have a cross section of a kind that the rings 5 and 50 may form a separate springy expansion area without interference from the expansion of the adjoining rings 5 and 50. In conventional platens the material of the platen coat 4 has been rigid to an extent that a spreading or lateral expansion of the printing area, for instance as shown at 50b in FIG. 2, was definitely avoided.

FIG. 4 illustrates different cross sections of the grooves. Whereas FIG. 1 shows that the cross sections can be square, FIG. 4 indicates that they can also be inwardly convergent in the manner designated by reference numeral 13a, or substantially U-shaped, as shown at 13b, or V-shaped, as shown at 13c.

We claim:

1. In a calculating or analogous office machine, in combination, a plurality of type bars spaced from one another in a given direction and at a predetermined distance; and a platen elongated in said given direction and arranged oppositely but spaced from said type bars for impacting by the same, said platen comprising an axle, a platen body on said axle, and an outer covering of resiliently deformable material provided on said platen body and comprising a plurality of raised annular portions surrounding said platen body and a plurality of annular grooves extending parallel to said annular portions and alternating therewith, consecutive ones of said annular portions being spaced from one another by said predetermined distance and each being located oppositely one of said type bars, said annular grooves each having a cross-section so dimensioned and configured as to provide a lateral expansion area for the respectively adjoining annular portions, whereby each of said annular por-

tions may undergo resilient lateral expansion on receiving impacts from its associated type bar without such expansion interfering with the adjacent annular portions.

2. The combination of claim 1, wherein the raised annular portions are formed by individual rings disposed on said platen body and spaced from each other so as to form said grooves therebetween.

3. The combination of claim 1, wherein the said outer covering of the platen is formed of a cylindrical jacket disposed on the platen body and wherein said grooves are formed in said jacket so as to provide for said alternating raised annular portions.

4. The combination of claim 1, wherein the raised annular portions are parallel and of equal width and equidistant from each other except for the two extreme lateral annular end portions which are of a greater width and except for one annular portion next to one of the said annular end portions which is spaced from the inwardly next-adjointing annular portion by a distance greater than said predetermined distance so as to correspond to a type bar carrying a functional symbol and being spaced from the next-adjointing type bar by said greater distance.

5. The combination of claim 1, wherein the cross-section of the grooves is square.

6. The combination of claim 1, wherein the cross-section of said grooves is substantially U-shaped.

7. The combination of claim 1, wherein the cross-section of said grooves is V-shaped.

References Cited

UNITED STATES PATENTS

635,609	10/1899	Stickney.	
666,663	1/1901	Graff	197-147
914,612	3/1909	Stickney	197-147 X
998,510	7/1911	Heron	197-147
999,942	8/1911	Yaw	197-144 X
1,116,395	11/1914	Dowd	197-147
1,200,779	10/1916	Thompson	197-144 X
1,288,896	12/1918	Houseman	197-144 X
1,386,379	8/1921	Stickney	197-147
1,804,160	5/1931	Froehlich	197-144 X
2,418,698	4/1947	Conard	197-147
3,057,450	10/1962	Gallagher	197-147
3,381,790	5/1968	Chaveneaud et al.	197-144 X

FOREIGN PATENTS

234,034	5/1925	Great Britain.
---------	--------	----------------

ERNEST T. WRIGHT, Primary Examiner

U.S. Cl. X.R.