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SENSING BRUSH ASSEMBLY

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Fig. 3.

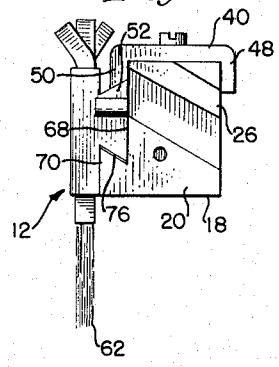
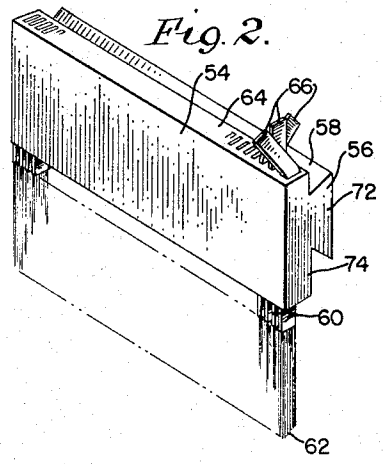


Fig. 1.

Fig. 2.



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SENSING BRUSH ASSEMBLY

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This invention relates to electrical contact sensing brush assemblies for use in association with data processing machines and the like, for sensing holes in machine-readable documents such as punched tabulating cards, perforated tape, and the like.

Sensing brush assemblies of the type described normally employ a substantial number of individual sensing brushes. For example, a common type of assembly requires a total of eighty-one brushes arranged in a row. These brushes are mounted on a suitable support to depend therefrom and extend into contact with an electrically common roll or plate, the punched card or the like being fed between the brushes and the roll or plate whereby the brushes may sense or detect the presence or absence of holes in a given row of the card, as indicated by the presence or absence of electrical contact between individual brushes and the electrically common contact member, all as is old and well known in the art. In such an environment, it can be appreciated that the disposition of the individual brushes, that is their adjustments relative to the electrically common roll or plate, is quite critical. On the other hand, each brush must be disposed so as to assure positive and proper electrical contact whenever a corresponding hole appears in the punched card or the like whereas, on the other hand, the brush-to-roll or plate contact should be sufficiently light in each case as to avoid undue bearing pressure between the brushes and cards. Additionally, the alignment of the brushes in the row which they form must be of sufficient accuracy as to assure simultaneous electrical contact of all those brushes corresponding to the holes appearing in a given row on the card; otherwise, the read-out will not be accurate. Because of the above requirements, present practice involves individual mounting of the brushes, with individual screwthread locking means being utilized to hold the individual adjustments; resulting in alignment problems due to the accumulation of tolerances and the inevitable variation in clamping or locking force applied by the individual fasteners. Furthermore, the utilization of individual mountings for the brushes represents substantial manufacturing cost, aside from the cost involved in assembling such devices; and, as might be expected, field replacement of the brushes is both difficult and time consuming. It is, therefore, of primary concern in connection with this invention to provide certain improvements in sensing brush assemblies whereby the problem of axial adjustment of the brushes is greatly simplified, the problem of roll alignment is obviated, and the consumption of time involved in initial assembly as well as in field replacement is greatly reduced.

Another object of this invention is to provide an improved form of sensing brush assembly which involves the combination of a platen member which mounts a plurality of brush block assemblies in end-to-end relation thereon, each of the brush block assemblies including a plurality of side-by-side individual brushes arranged in a row and with there being interacting means between the several brush block assemblies and the platen to assure

that the brushes of all of the brush block assemblies are arranged in a common row, in alignment with each other.

Still another object of this invention is to provide an assembly in conformity with the preceding object wherein the individual brush block assemblies are separately releasably secured to the platen and whereby each brush block assembly may be individually adjusted as to height. All of the brushes in the assembly may be adjusted to secure proper contact with an associated electrical contact member.

Stated another way, it is an object of this invention to provide an improved form of sensing brush assembly for data processing machines and the like wherein both the original assembly and subsequent field replacement of parts is greatly simplified and is relieved of any necessity for tedious and difficult manipulation.

Other objects and advantages of the invention will appear from the description hereinbelow and the accompanying drawing wherein:

FIG. 1 is a perspective view showing a sensing brush block assembly constructed in accordance with the principles of this invention;

FIG. 2 is a perspective view of one of the brush block assemblies; and

FIG. 3 is an end elevational view of the assembly shown in FIG. 1.

As is shown in FIG. 1, the construction according to the present invention embodies a platen assembly indicated generally by the reference character **10** which has associated therewith, a plurality of brush block assemblies indicated by reference characters **12**, **14** and **16**. The assembly **10** comprises a platen having an elongate body **18** having similarly formed opposite end portions such as the end **20** shown in FIGS. 1 and 3. Each end of the body **18** is provided with inclined or diagonally extending notches **22** and **24** defining an inclined land **26** therebetween and each is provided with a tap opening **28** whereby the opposite ends of the body **18** may be fastened securely to support portions of an associated data processing machine or the like (not shown) for interengagement therewith as achieved by the notches **22**, **24** and the intervening land **26** so that the platen assembly **10** can be bodily adjusted toward or away from a common electrical contact member such as a roll or a plate (not shown) to which the platen assembly **10** is disposed in spaced parallelism. For details of a conventional type of data processing machine with which a brush assembly is associated, reference may be had to Patent No. 2,716,684.

The platen body **18** is also provided with a flange **30** along its lower edge which defines a vertical face **32** and a downwardly and inwardly inclined face **34** substantially as is shown in FIG. 1. The body **18** is also provided with an upper vertical face **36** which may receive locating pin members **38** adjacent the opposite ends of the body, one of which is shown in FIG. 1, which locating pins provide abutment means for properly axially or longitudinally locating the several sensing brush block assemblies **12**, **14** and **16**. To complete the assembly **10**, there are provided a plurality of clamping members **40**, **42** and **44** having their web portions overlying the top face of the platen body **18** and detachably secured thereto as by the fasteners **46** with the depending legs **48** and **50** of each of the clamping members **40**, **42** and **44** straddling the upper side of the body **18**, substantially as is shown. The

legs 50 of each of the clamping members 40, 42 and 44 is provided with an upwardly and inwardly inclining face as at 52 and it is to be noted that the leg 50 of each of the clamping members defines, with the flange 30 of the platen body 18, a slotway adapted to mount the individual block assemblies 12, 14 and 16.

With reference now more particularly to FIG. 2, each of the block assemblies 12, 14 and 16 will be seen to include a main body portion 54 which is provided on its rear face with a flange, boss or key means 56 having beveled upper and lower edges as indicated by the beveled upper edge 58 in FIG. 2 to conform to the slotway previously mentioned so as to be clamped by the platen assembly 10. The body 54 is formed of suitable dielectric material and is preferably constructed of moldable organic resinous material which has embedded therein the shank portions 60 of a plurality of separate, side-by-side sensing brush members. Each shank 60 carries a plurality of wire strands or bristles 62 in depending relation therefrom, it being noted that the free ends of these wire strands or bristles terminate in coplanar relationship in the row defined by each brush block assembly. The upper extremity of each of the shanks 60 projects beyond the upper edge 64 of the body 54 to present terminal ends 66 substantially as is shown and which, preferably, are disposed at different angular positions as indicated best in FIG. 2 so as to receive individual electrical conductor clips such as those indicated in phantom lines in FIG. 1, without the danger of shorting out between adjacent conductor clips.

With the arrangement above described and as is shown, it is possible to manufacture the platen assemblies 10 and the brush block assemblies 12, 14 and 16 in such fashion not only so that these components may be easily and readily assembled initially, but also so that subsequent replacement of individual blocks 12, 14 or 16 may be made with a minimum of effort. In order to achieve this, the platen assembly 10 and the brush block assemblies are provided with mutually cooperable and interengageable index faces so that when these components are assembled together, such index faces are in contact and will properly position and align the individual brushes of each of the assemblies 12, 14 and 16 such that all of the brushes in the plurality assemblies will be in proper longitudinal alignment, in a common row. To achieve this, reference is had to FIG. 3. In FIG. 3, either the interface as designated by reference character 68 or the interface as designated by the reference character 70 may be employed as the interface provided between mutually cooperative index faces on the brush block assemblies 12, 14 and 16 and the platen assembly 10. Thus, by controlling, during manufacture, the disposition of the individual brushes of the assembly for example as is shown in FIG. 2 so that these brushes are aligned longitudinally or in a row in fixed and in variable fashion relation to either the rear surface 72 of the key means 56 or the rear surface 74 of the body 54, it will be readily apparent that longitudinal or common row misalignment as between any of the brush block assemblies 12, 14 and 16 may occur only to the extent of the manufacturing tolerance allowed for the relative disposition of the brushes relative to either the face 72 or the face 74. Thus, no alignment problem will be present when the assembly is initially assembled nor will any alignment problem exist as a result of subsequent replacement of any one or all of the brush blocks 12, 14 and 16 during the service of the assembly. To accommodate for the fact that replacement of only one of the several brush block assemblies may be required at a particular time, leaving the other two for further service, and under circumstances in which the remaining two older brush block assemblies might have become worn at the free ends of the brushes requiring a corresponding adjustment of the platen assembly 10 as aforesaid, the mounting for the individual brush blocks 12, 14 and 16 will be seen to permit of individual height

adjustment of the brushes thereof such as would be necessary under such circumstances. To accomplish this, the new brush block assembly may be adjusted as to height by the insertion of a shim 76 to elevate the free ends of the brushes 62 of that particular brush block assembly so that they are not only in the aforesaid longitudinal or row alignment, but are in coplanar relationship with all of the other brushes in the assembly. In this fashion, not only is longitudinal or row alignment of all of the brushes assured with a minimum of ease, but it is also a simple matter to vertically or height wise adjust the group of brushes of each of the assemblies 12, 14 and 16 independently of the others so that the brushes of the entire row are properly related to the common electrical contact member with which they cooperate.

It is to be understood that certain changes and modifications as illustrated and described may be made without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. A sensing brush assembly comprising, in combination,

a platen adapted to be fixed in spaced relation to an electrical contact member, said platen having an indexing face thereon,

a plurality of brush block assemblies, each including a body having an index face and a plurality of individual brushes joined at one end to said body to project, in side-by-side relation therefrom, each brush comprising a plurality of wire strands presenting flexible electrical contacts and with the strands of the several brushes having their free ends disposed in a common plane,

the brushes of the several block assemblies being identically aligned in a row relative to said index face of each assembly,

and means for detachably securing each brush block assembly to said platen with the index face of each brush block assembly contacting the indexing face of said platen, whereby the brushes of all said brush block assemblies are aligned in a common row.

2. A sensing brush assembly comprising, in combination,

a platen assembly adapted to be mounted in spaced, parallel relation to an electrical contact member and including an elongate platen body having a plurality of clamping members secured thereto, the clamping member and the platen body defining a slotway therebetween,

a plurality of brush block assemblies, each including a dielectric body having key means thereon frictionally engaged in said slotway with the brush block assemblies disposed in end-to-end relation, each brush block assembly also including a plurality of individual brushes disposed in side-by-side relation with one end of each such brush being embedded within and held by said dielectric body, the free ends of all of the brushes in each brush block assembly being coplanar and being disposed in side-by-side alignment,

there being a clamping member for each of said brush block assemblies,

and said dielectric bodies and said platen body having index faces held in interengagement by said clamping members to align the brushes of the several brush block assemblies in a common row.

3. The assembly as defined in claim 2 including means for altering the heights of the individual brush block assemblies relative to said platen assembly.

4. In a sensing brush assembly, in combination,

a platen adapted to be fixed in spaced relation to an electrical contact member,

a plurality of discrete brushes carried by said platen to extend therefrom for electrical contact at their free ends with said electrical contact member,

a body commonly mounting said brushes in an aligned row with their free ends in coplanar relation, said platen and said body having mutually cooperable index surfaces orienting the row defined by said brushes in an invariable fashion relative to said platen.

5. In the assembly as defined by claim 4 including means for adjusting said row of brushes relative to said platen in a direction within the plane defined by said row, to establish a desired free-end contact with the associated electrical contact member.

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