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T. M. HOLGATE

2,969,864

ATTACHMENT FOR PRINT HEAD

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FIG. 1

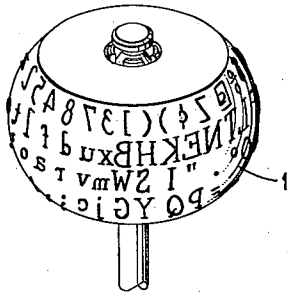


FIG. 2

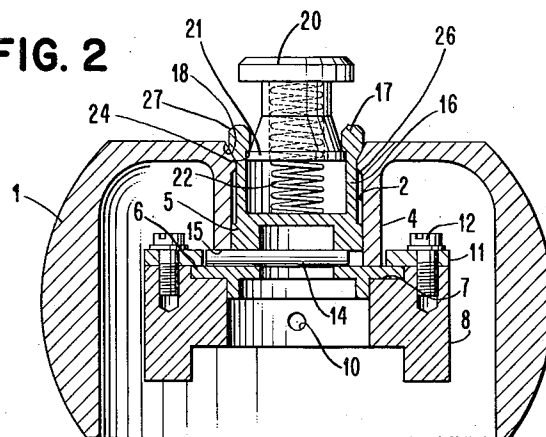
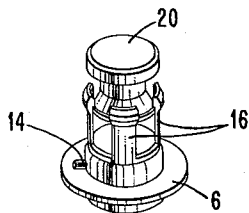


FIG. 3



INVENTOR.

TERENCE M. HOLGATE

BY

*Ralph C. Dustin*

ATTORNEY.

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## ATTACHMENT FOR PRINT HEAD

Terence M. Holgate, Lexington, Ky., assignor to International Business Machines Corporation, New York, N.Y., a corporation of New York

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4 Claims. (Cl. 197—52)

This invention relates to printing mechanisms, and more particularly to a single element print head having means associated therewith for releasably attaching it to an operating device.

There is shown in Patent No. 2,895,584 to J. E. Hickerson et al. a single element printing head in the form of a truncated sphere having all the characters formed on its surface in a manner to effect printing when engaged with a platen. The head is rotatably mounted on a block which may be tilted about a horizontal axis, and means are provided for selectively rotating the head on the block and tilting the block to effect a tilting of the head, thereby moving any one of the characters to printing position.

It is desirable that the mechanism for attaching the printing head to the block be designed to permit easy removal so it may be replaced by another having characters of a different style. As shown by the Hickerson et al. patent, a screw clamps the head to a stud rotatably supported on the block and connected to a driving shaft. If one is not careful to hold the head while turning the screw, damage may be done to the driving means. By providing a button which may be depressed axially of the driving shaft to release flexible arms engaging a shoulder on the head, the latter may be removed easily without damaging any of the driving connections.

An object of this invention is to provide an improved mechanism for releasably connecting a printing head to driving means.

Another object is to provide for a single element printing head an improved attaching mechanism including flexible arms held by a spring actuated button in positions to engage the head and movable, on depression of the button, to positions for releasing the head.

Other objects of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawings, which disclose, by way of example, the principle of the invention and the best mode, which has been contemplated, of applying that principle.

In the drawings:

Fig. 1 is a perspective view of a single element printing head held in position by the improved attaching mechanism.

Fig. 2 is an enlarged vertical sectional view of the printing head and its attaching mechanism.

Fig. 3 is a perspective view of the attaching mechanism shown in Fig. 2.

As shown in the drawings, a single element printing head 1 is provided on its surface with characters which may be moved selectively to a printing position by rotating and tilting the head. The structure of the head is generally like that shown in the Hickerson et al. patent mentioned above. It is in the form of a truncated spherical shell which is open at its lower end and closed at its upper end except for a cylindrical opening 2 extending axially through the top of the head and through a sleeve shaped portion projecting into its interior. A drive member 5 fits within the sleeve shaped portion 4

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and has a flange 6 resting upon a shoulder 7 on a supporting block 8 pivoted at 10 for tilting motion about a horizontal axis. A plate 11 is connected to the top of the block by screws 12 and overlies the flange 6 for holding the member 5 in place during tilting and yet permitting rotation of the member 5 relative to the block.

The lower end of the sleeve shaped portion 4 rests upon the flange 6, and a pin 14 extends through openings in the member 5 and a notch 15 in the lower end of the sleeve portion for connecting the head to the member 5 for rotation therewith. As shown by the Hickerson et al. patent, a forked member engages the pin 14 for rotating the member 5 and the head 1 while permitting a tilting of both with the supporting block.

The present invention lies in the mechanism for releasably holding the printing head in place on the member 5. As shown by Figs. 2 and 3, the member 5 is provided with flexible fingers 16 projecting upwardly through the opening 2 and having enlarged portions 17 at their upper ends engaging a beveled surface 18 on the printing head surrounding the upper end of the opening 2. Located between the fingers is a button 20 having at its lower end a flange 21 which slidably engages the inner surfaces on the fingers with a close fit. A spring 22 acts between the member 5 and the button 20 for urging the latter upwardly to a position in which the flange 21 engages shoulders 24 on the enlarged portions 17 of the fingers. When the button is pressed downwardly to its lower position, the fingers 16, being unsupported by flange 21, are free to flex inwardly and free the head 1 so it may be removed from the member 5. As the head is lifted from the member 5, the beveled surface 18 acts on the finger portions 17 for camming them out of its path.

At the lower side of the surface 18 is another beveled surface 26 which acts against inclined surfaces 27 on the finger portions 17 for camming the latter inwardly during a mounting of the head. The button 20 is held depressed during this time to permit free movement of the fingers inwardly. As soon as the printing head has been mounted on the member 5 with the notch 15 in the sleeve portion 4 receiving the pin 14, the button 20 is released. The spring 22 then moves the button upwardly causing its flange 21 to force the fingers outwardly until their portions 17 engage the beveled surface 18, as shown in Fig. 2.

To remove the printing head, it is only necessary to press the button 20 downwardly and lift the head from the member 5. Mounting is accomplished by placing the head over the button so it projects through the opening 2 and then pressing the button down while the head is lowered to a position in which the end of the sleeve portion 4 rests on the flange 6 with the pin 14 received within the notch 15. The button is then released for moving the fingers 16 into clamping engagement with the head.

While there have been shown and described the fundamental novel features of the invention as applied to a preferred embodiment, it will be understood that it may be modified and embodied in various other forms without departing from the spirit of the invention. It is the intention to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. The combination with a print head and a drive member which extends into an opening in said head, of a mechanism for releasably attaching said print head to said drive member comprising, in combination, flexible fingers extending from said drive member upwardly through said opening, surfaces on said fingers adjacent their upper ends extending outwardly from the axis of said opening and engageable with said head at different points around the end of said opening, a button having a

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flange slidably engaging the inner sides of said fingers, a spring acting between said drive member and said button for urging the latter upwardly, and shoulders on said fingers adjacent their upper ends engageable by said flange for limiting upward movement of said button, said flange operating when engaging said shoulders to hold said surfaces on said fingers in engagement with said head.

2. The combination with a print head and a drive member which extends into an opening in said head, of a mechanism for releasably attaching said print head to said drive member comprising, in combination, flexible fingers extending from said drive member upwardly through said opening, a beveled surface on said head surrounding the upper end of said opening, outwardly inclined surfaces on said fingers engageable with said beveled surface for holding said head on said drive member, a button having a flange slidably engaging the inner sides of said fingers, a spring acting between said drive member and said button for urging the latter upwardly between said fingers, and shoulders on said fingers engageable by said flanges for limiting upward movement of said button, said flange operating when engaging said shoulders to hold said surfaces on said fingers in engagement with said beveled surface.

3. The combination with a print head and a drive member having a portion projecting into an opening extending through said head, of a mechanism for releasably holding said print head against a surface on said drive member comprising, in combination, flexible fingers extending from the projecting portion of said drive member through said opening, a beveled surface on said head sur-

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rounding the end of said opening opposite said drive member, outwardly inclined surfaces on said fingers engageable with said beveled surface for holding said head against said surface on said drive member, a button having a flange at one end slidably engaging the inner sides of said fingers, a spring acting between the projecting portion of said drive member and said button for urging the latter away from said drive member, and shoulders on said fingers engageable by said flange for limiting movement of said button by said spring, said flange operating when engaging said shoulders to hold said surfaces on said fingers in engagement with said beveled surface, and said beveled surface acting, when said button is depressed and said head is lifted, against the inclined surfaces on said fingers for camming the latter inwardly to release said head.

4. The combination of claim 3 in which said opening has a portion adjacent said drive member freely receiving said fingers and has another short portion of slightly reduced diameter at its opposite end, inwardly inclined surfaces on said fingers at their outer ends, and an inwardly inclined beveled surface on said head at the lower edge of said reduced opening portion, said inwardly inclined beveled surface acting on said inwardly inclined surfaces on said fingers when mounting said head for camming said fingers inwardly.

#### References Cited in the file of this patent

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