United States Patent

[11] 3,557,694

[72] Inventors **Harry L. Wallace**
Garden City, Mich.;
Bruno Parysek, Livonia, Mich.

[21] Appl. No. **817,718**
[22] Filed **Apr. 21, 1969**
[45] Patented **Jan. 26, 1971**

[73] Assignee **Burroughs Corporation**
Detroit, Mich.
a corporation of Michigan

[54] **PRINT HEAD LATCHING MECHANISM**
4 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **101/375,**
101/328, 64/11, 29/453
[51] **Int. Cl.** **B41f 13/10,**
F16d 3/28
[50] **Field of Search** 101/375,
378, 212; 29/450, 453, 525; 64/5, 11, 23, 24;
74/548; 101/328; 29/444

[56] **References Cited**
UNITED STATES PATENTS

2,599,279	6/1952	Osgood	101/375
2,693,146	11/1954	Mason et al.	101/375
3,065,004	11/1962	Laich	29/525
3,340,804	9/1967	Price	101/375

Primary Examiner—William B. Penn
Assistant Examiner—E. M. Coven
Attorneys—Edwin W. Uren and Paul W. Fish

ABSTRACT: The disclosure embodies a latching mechanism to properly position and secure a print head or the like on a shaft and to facilitate the removal and replacement of the print head. The mechanism comprises a plurality of resilient armlike members fixedly mounted on the insertable end of the shaft, said resilient armlike members are angularly displaced inwardly against bias during insertion and return to their normal outwardly biased position when the print head is properly seated on the shaft, and a plunger which is inserted to prevent angular inward displacement of the resilient armlike members.

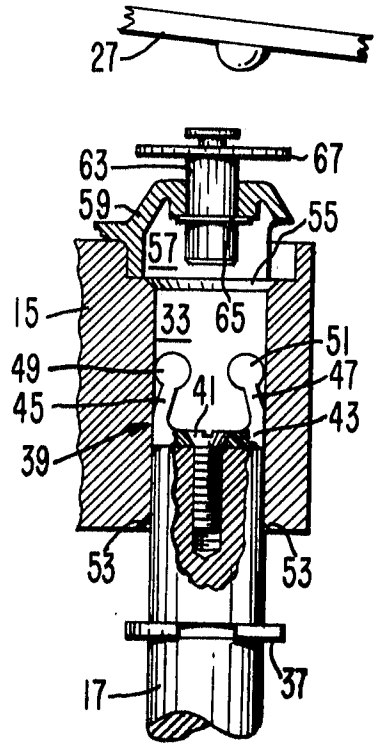


FIG. 1.

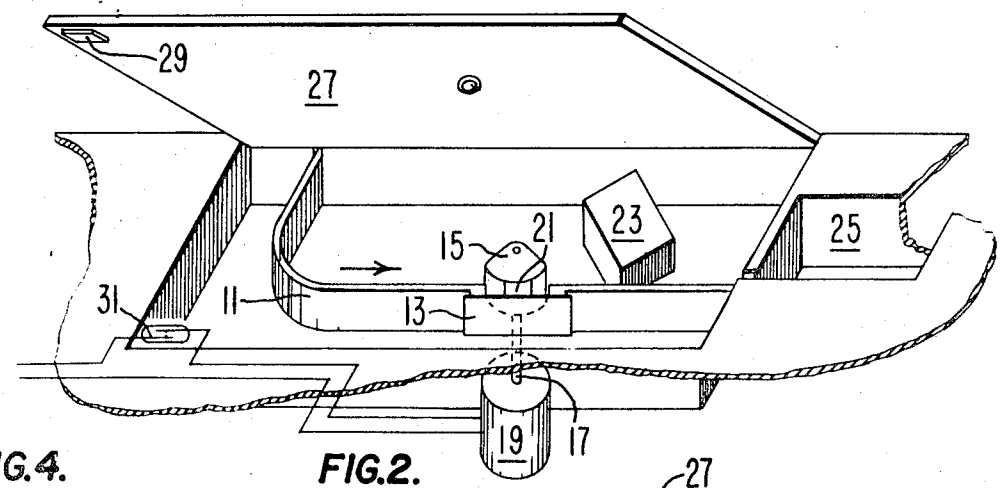


FIG. 4.

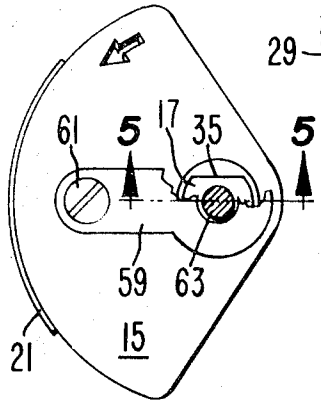


FIG. 2.

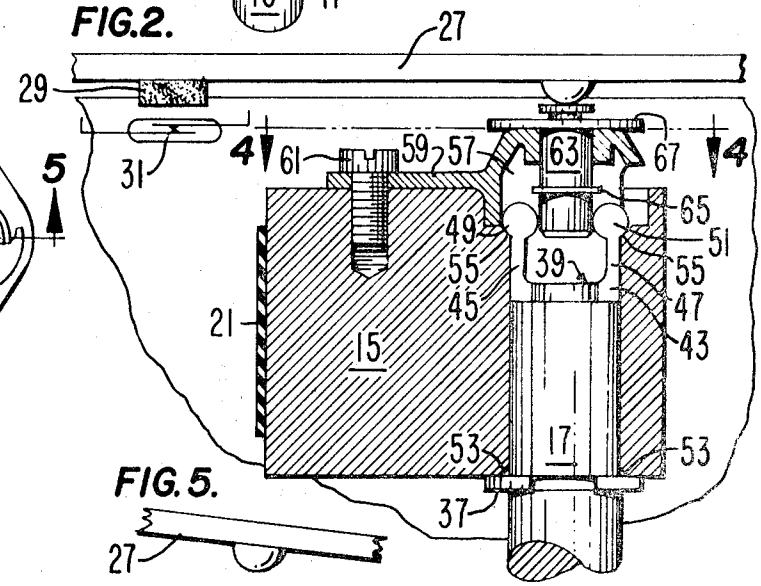


FIG. 6.

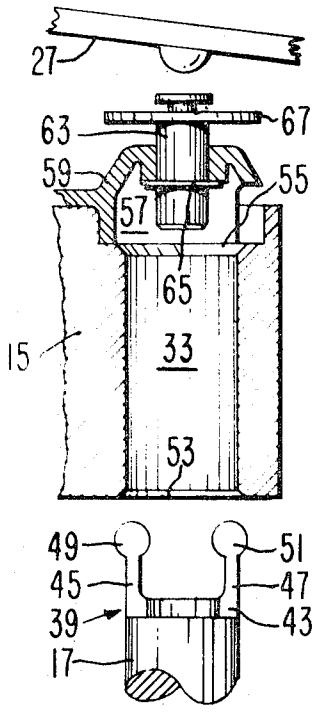


FIG. 5.

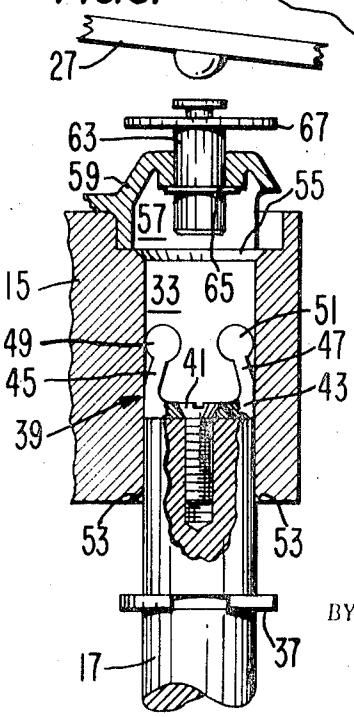
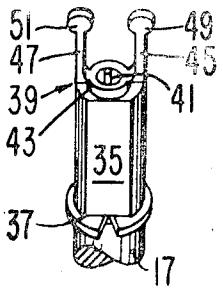


FIG. 3.



INVENTORS.
HARRY L. WALLACE.
BY BRUNO PARYSEK.

PRINT HEAD LATCHING MECHANISM

BACKGROUND OF THE INVENTION

In the past, print heads were secured on rotatable shafts by various means. The various means ranged from pressure fittings to retainer pins. The one thing in common with all of these various securing means was the f difficulty incurred in removing the printed head. The difficulty consisted in the necessity of tools to accomplish removal, the handling of separate retaining parts and the soiling of the operator's hands in removing the print head itself.

SUMMARY OF THE INVENTION

It is accordingly an object of the present invention to provide an improved latching mechanism that is effective to facilitate positioning, securing and removing a print head or the like in relation to a shaft imparting rotational movement to said print head.

Another object of the invention is to provide a latching mechanism that allows the positioning and removal of the print head or the like without the necessity of tools.

A further object of the invention is to provide a latching mechanism which will render the rotational shaft inoperative when the print head is improperly positioned.

An important aspect of the invention is the use of a resilient member on the insertable end of the shaft. The resilient member terminates in a plurality of armlike extensions which are displaced against bias during insertion and return to their normal outwardly biased position when the print head is properly seated on the shaft.

Another aspect of the invention is the insertion of a movable plunger between the armlike extensions when they have returned to their normal outwardly biased position after insertion into the print head. The plunger prevents the armlike extensions from being displaced and thus keeps the print head in position.

BRIEF DESCRIPTION OF THE DRAWINGS

The objects, aspects and advantages of the invention will be more clearly understood from the following description when read in conjunction with the accompanying drawings, in which:

FIG. 1 is a partial isometric view of a bank check endorsing assembly wherein the endorser head is latched to the rotational shaft by the latching mechanism in accordance with the present invention;

FIG. 2 is a sectional view taken along the line 5–5 of FIG. 4 showing the endorser head seated and latched on the rotational shaft;

FIG. 3 is a perspective view of the rotational shaft insertable into the endorser head;

FIG. 4 is a sectional view taken along line 4–4 of FIG. 2 showing the top of the endorser head;

FIG. 5 is a sectional view taken along line 5–5 of FIG. 4 showing the rotational shaft during insertion;

FIG. 6 is a sectional view similar to FIG. 5, showing the rotational shaft prior to its insertion into the endorser head.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to FIG. 1 there is shown a partial isometric view of a bank check endorsing apparatus wherein checks are transported along a horizontal selected path of travel in a check transport guideway 11 to a point of endorsement 13. At the point of endorsement, transportable motion is terminated and the endorsing procedure commences. Rotatable motion is imparted to the endorser head 15 through a vertical rotatable shaft 17 driven by an electrically powered motor 19.

With the check at the point of endorsement 13, rotational motion in a counterclockwise direction is imparted to the endorser head 15 by the motor 19. The endorser head is inked by means of a printing element 21 on the endorser head being brought into a contiguous relation with an ink transfer apparatus 23 by virtue of the imparted rotational motion. The endorser head 15 continues its rotational motion until the printing element of the endorser head has completed an endorsing impression on the check to be endorsed. The check, having been endorsed, has transportable motion imparted to it to transport it through the remainder of the check transport guideway 11 to the check stacking bin 25. For a more detailed description of the check endorsing apparatus reference may be had to the pending application Ser. No. 835,145 of Harry L. Wallace, filed Jun. 20. 1969 for Endorsing Apparatus assigned to the same assignee as the present application.

For the motor 19 to be operable, the cover 27 of the check endorsing assembly must be in a closed position to allow the magnetic portion 29 of the interlock located on the cover to effect the reed switch portion 31 of the interlock located on the housing of the assembly and thus complete the electrical circuit to the motor 19.

The endorser head 15 is provided with a bore 33 into which the rotatable shaft 17 is slidably inserted as illustrated in FIGS. 1 and 3. The body of the rotatable shaft is keyed to the bore 33 in the endorser head 15 to prevent slippage during rotational movement. The key means employed in the present embodiment is a flat 35 on the shaft 17, however, any other means may be used for keying the shaft to the endorser head. A limit ring 37 is circumferentially affixed to the shaft 17 providing an external flange to limit downward slidable axial travel of the endorser head 15.

A resilient member 39 made of plastic, rubber, nylon or any other suitable resilient material is securely mounted on the insertable end of the rotatable shaft 17 by any suitable fastening device. The mounting means employed in the present embodiment is a nylon screw 41.

The resilient member 39 is composed of a base 43 which abuts the insertable end of the shaft and a plurality of resilient armlike extensions 45 and 47 extending upwardly from the base 43. The present embodiment shows two resilient armlike extensions 45 and 47. The fact that only two extensions are illustrated in the present embodiment is not intended to limit the number of extensions to two, as three or more extensions may be used depending on the size of the bore 33 in the endorser head 15. The resilient extensions 45 and 47 terminate in respective camlike enlargements 49 and 51. In the present embodiment, the camlike enlargements 49 and 51 are cylindrically shaped; however, spherical or other camlike surfaces may be employed.

The bore 33 formed in the endorser head 15 (see FIGS. 2 and 6) preferably has two chamfered shoulders or surfaces 53 and 55 and an expanded volume portion 57 of the bore 33. The first chamfered surface 53 is located on the bottom of the endorser head 15 to facilitate slidable mounting of the endorser head 15 onto the shaft 17. The second chamfered surface 55 is located at the base of the expanded volume portion 57 of the bore 33 to permit the seating of the camlike enlargements 49 and 51 of the resilient extensions 45 and 47 respectively. The distance between the chamfered surfaces 53 and 55 is equal to the distance on the rotatable shaft 17 from the limit ring 37 to the camlike enlargements 49 and 51. This predetermined distance is utilized to properly seat the endorser head 15 on the rotatable shaft 17.

Outwardly disposed at the top of the endorser head 15 is a plunger holder 59 affixed to the endorser head of the present embodiment by a screw 61. Seated in the plunger holder 59 is a movable retractable plunger 63 in axial alignment with the shaft 17. The plunger 63 is made of nylon or any other suitable durable material and has a diameter substantially equal to the distance between the two camlike enlargements 49 and 51 when they are seated in the first chamfered surface 53. The diameter of the plunger 63 is large enough, however, to prevent inward angular displacement of the resilient armlike extensions 45 and 47. A limit ring 65 is preferably circumferentially affixed to the lower portion of the plunger 63 to define an upward (as shown) limit to axial travel of the plunger 63 and to prevent removal of the plunger 63 from the

plunger holder 59. The other limit of axial travel of the plunger 63 is defined by an oversized limit ring 67 integrally formed with the plunger 63. Instead of being an integral part of the plunger 63, the oversized limit ring 67 may be affixed to the plunger by any other well-known means. The shape of the oversized limit ring 67 affords itself to be easily grasped by the operator when removing the endorser head 15 and when positioning the plunger 63 between the camlike a enlargements 49 and 51.

Referring to FIG. 6, prior to insertion of the rotatable shaft 17 into the bore 33 of the endorser head 15, the resilient armlike extensions 45 and 47 on the rotatable shaft 17 are in their normal positions in which the arms 45, 47 are contiguous and their outer surfaces coincident with the periphery of the shaft 17. Upon being inserted, the resilient armlike extensions 45 and 47 are angularly displaced inwardly against bias by the camming action of the external portion of the camlike enlargements 49 and 51 and the first chamfered surface 53. Referring now to FIG. 5, the resilient armlike extensions 45 and 47 remain angularly displaced inwardly during insertion until the camlike enlargements 49 and 51 reach the expanded volume portion 57 of the bore 33 proximate the second chamfered surface 55.

Referring now to FIG. 2, the camlike enlargements 49 and 51 having reached the second chamfered surface 55, the resilient armlike extensions 45 and 47 return to their normal outwardly biased position and the camlike enlargements 49 and 51 seat themselves against the second chamfered surface 55 in the expanded volume portion 57 of the bore 33 thereby releasably latching the endorser head 15 to the shaft 17. Further axial travel in the insertable direction is prevented by the limit ring 37.

The plunger 63 is adapted to be positioned between the inside surfaces of the camlike enlargements 49 and 51 by lowering the plunger 63 the full extent of travel as defined by the oversized limit ring 67. With the plunger 63 positioned between the inside surfaces of the camlike enlargements 49 and 51, the endorser head cannot be removed because the plunger 63 prevents angular, inward displacement of the resilient armlike extensions 45 and 47 thereby retaining the camlike enlargements 49 and 51 respectively in the expanded volume portion 57 of the bore 33.

The plunger 63 will not enter into engagement with the camlike enlargements 49 and 51 unless they are fully seated against the second chamfered surface 55 and the resilient armlike extensions 45 and 47 are in their normal outwardly biased position. Unless the plunger 63 is fully positioned between the camlike enlargements 49 and 51, the cover 27 will not close and the two portions 29 and 31 of the interlock will not interact to complete the circuit to the motor 19. This feature ensures that the endorser head is properly seated before operation can begin.

Removal of the endorser head is accomplished by grasping the oversized limit ring 67 and raising the plunger 63 the full extend of travel as defined by the limit ring 65. The endorser head 15 is then slidably raised off the rotatable shaft 17 by the continued pulling up of the oversized limit ring 67 and thereby causing the resilient armlike extensions 45 and 47 to be angularly displaced inwardly by the camming action of the second chamfered surface 55 and the camlike enlargements 49 and 51 respectively. The resilient armlike extensions 45 and 47 remain angularly displaced inwardly until the endorser head 15 is completely removed off of the rotatable shaft 17 and then they return to their normal outwardly biased position.

It will be understood that various changes in the details, materials, steps and arrangements of parts, which have been herein described and illustrated in order to explain the nature of the invention, may by made by those skilled in the art within the principle and scope of the invention which is described with particularity in the appended claims.

We claim:

1. In a document endorsing device, an upright driven shaft having an annular flange on a lower portion thereof, a type carrying rotatable head having a bore therethrough receiving an upper end portion of said shaft and seating on said annular flange, means coupling said head to said shaft for rotation therewith, said bore having a portion of enlarged diameter above the upper end of said shaft when said shaft is fully received in said bore, an annular chamfered shoulder at the junction of said bore and the enlarged diameter portion thereof, a pair of oppositely disposed detents yieldably mounted on the upper end of said shaft and biased laterally of said shaft into engagement with said annular chamfered shoulder to oppose relative axial movement of said head on said shaft, and a retractable stop member, movably mounted on a portion of said endorsing device normally positioned between and opposing movement of said detents away from said annular shoulder.

2. The mechanism of an endorsing device as defined in claim 1 wherein said means coupling said head to said shaft for rotation therewith comprises: an extended flatted portion formed on said shaft between said annular flange and said pair of oppositely disposed detents, and an extended flatted portion formed in said bore exclusive of said enlarged diameter portion, said flatted portions of said shaft and said bore engageably cooperating as said bore of said head receives said upper end portion of said shaft.

3. The mechanism of an endorsing device as defined in claim 1 wherein said retractable stop member is a plunger movably mounted in said enlarged diameter portion of said bore of said type carrying rotatable head, said plunger being depressibly activatable to assume said normal position between and opposing movement of said detents away from said annular chamfered shoulder.

4. The mechanism of an endorsing device as defined in claim 3 wherein said plunger is operatively responsive to the closing of a lid portion of the endorsing device to effectuate said opposing movement of said detents away from said annular chamfered shoulder.