Nov. 7, 1961 T. C. MILLS 3,007,730

SWIVEL CONNECTOR

Filed Nov. 4, 1959 2 Sheets-Sheet 1

Fig. 1

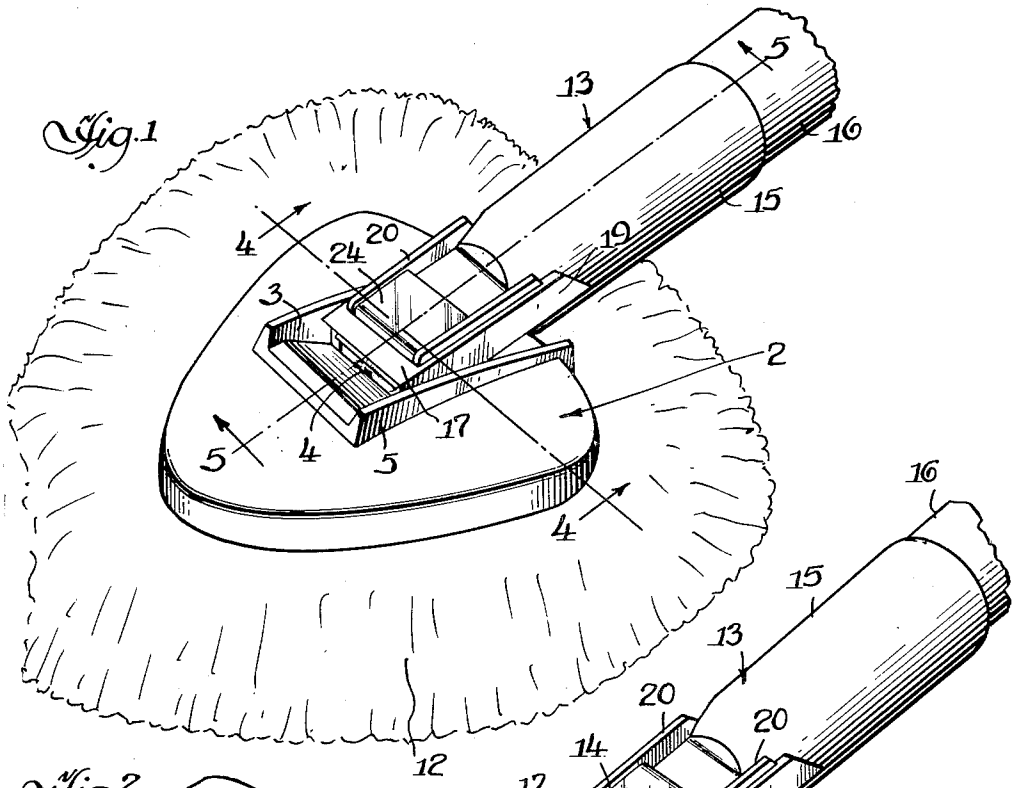


Fig. 2

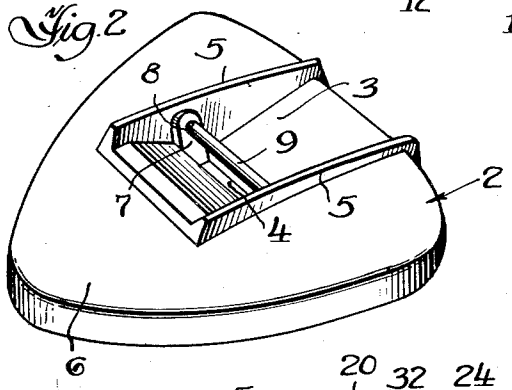
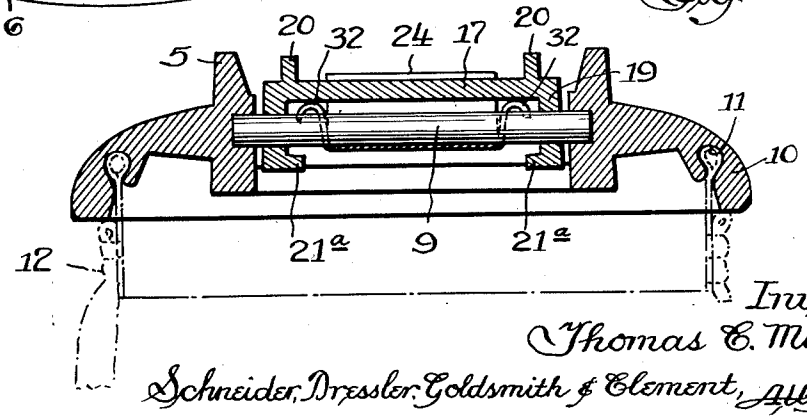


Fig. 3

Fig. 4



Inventor,
Thomas C. Mills,
Schneider, Dressler, Goldsmith & Clement, Attys.

Nov. 7, 1961 T. C. MILLS 3,007,730

SWIVEL CONNECTOR

Filed Nov. 4, 1959 2 Sheets-Sheet 2

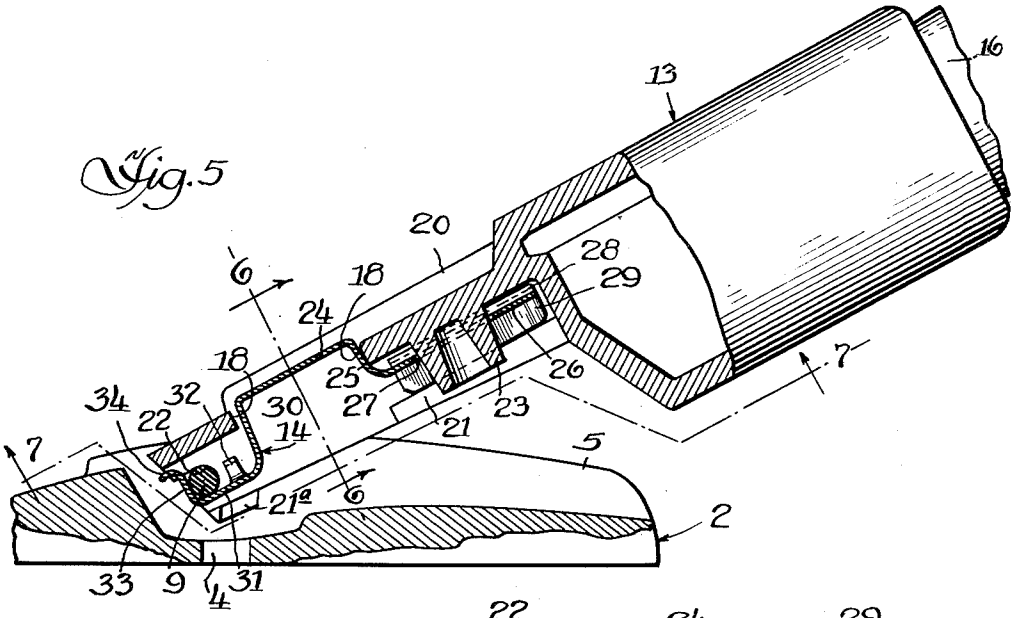


Fig. 5

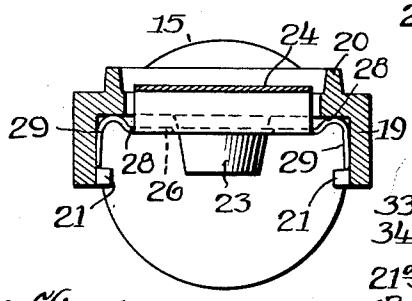


Fig. 6

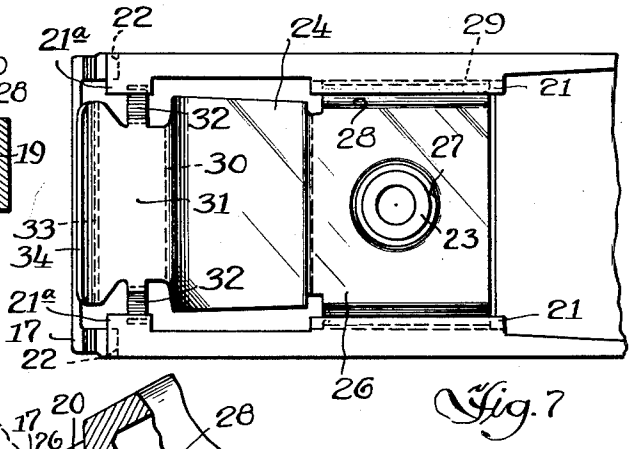


Fig. 7

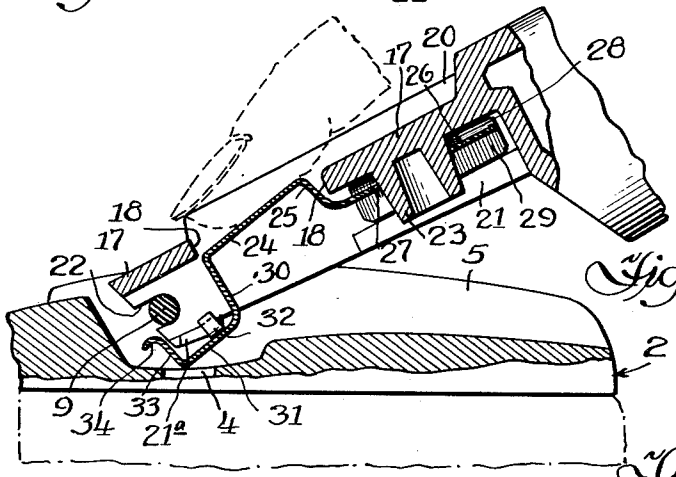


Fig. 8

Inventor,
Thomas C. Mills,
By: Schneider, Dressler, Goldsmith & Clement, Attys.

United States Patent Office 3,007,730 Patented Nov. 7, 1961

3,007,730

SWIVEL CONNECTOR

Thomas C. Mills, Wheaton, Ill., assignor to American-Marietta Company, a corporation of Illinois

Filed Nov. 4, 1959, Ser. No. 850,945
2 Claims. (Cl. 287—93)

This invention relates to a swivel connector for releasably securing a handle to a pivot member.

The invention will be described with particular reference to a structure in which the pivot member is mounted in a mop head, but it will be understood that the connector may be used to attach a handle to many different articles, such as, for example, brushes, brooms, squeegees, etc.

The swivel connector is provided with a clamping element adapted to hold the handle firmly secured to the pivot member—as, for example, on a mop head—and is provided with a push button control so that the handle may be readily attached to or detached from the mop head. The connector permits easy, convenient removal of the mop head from its handle so that the mop head can be thrown into an automatic washing machine for washing and later when clean can be readily snapped back into place on the mop handle.

The swivel connector comprises a socket for holding one end of a handle, and a resilient clamping element for detachably securing the socket to a stud or pivot member mounted in a mop head. The socket member has a journal portion that is open on one side. The resilient clamping member is secured to the socket in such a manner that in its operative position it blocks the open side of the journal portion so as to engage the socket and the pivot member, and when pressed away from the open side of the journal portion permits disengagement of those two members. When in its operative position the resilient member preferably presses against the pivot member (which in turn is pressed against the journal portion of the socket) with a rotatable, frictional, resilient engagement.

The resilient clamping element is provided with resilient flanges adapted to fit between the top of the socket and protuberances extending inwardly from the lower edges of the side walls of the socket to hold the clamping element against separation from the socket. The resilience of the flanges enables them to be pressed inwardly by the protuberances as the clamping element is pushed into engagement with the socket. When the flanges clear the protuberances they snap into place and and are practically inaccessible for removal.

The structure by means of which the above-mentioned and other advantages of the invention are attained will be described in the following specification, taken in conjunction with the accompanying drawings, showing a preferred illustrative embodiment of the invention, in which:

FIGURE 1 is a perspective view of a swivel connector embodying the nvention attached to a mop head and having a fragmentary portion of a handle secured thereto;

FIG. 2 is a detail perspective view of the mop head, showing the pivot member to which the swivel connector is adapted to be releasably attached;

FIG. 3 is a detail perspective view of the swivel connector;

FIG. 4 is an enlarged cross sectional view, taken along the line 4—4 of FIG. 1;

FIG. 5 is an enlarged longitudinal sectional view, taken along the line 5—5 of FIG. 1;

FIG. 6 is a cross sectional view, taken along the line 6—6 of FIG. 5;

FIG. 7 is a bottom plan view, taken substantially along the line 7—7 of FIG. 5; with the mop head structure omitted; and

FIG. 8 is a fragmentary longitudinal sectional view showing the push button control depressed to release the swivel connector from the mop head.

In the drawings, a mop head 2 has a tapered depression 3 with an opening 4 at the lowermost portion of the depression. Side walls 5 extend upwardly above the top 6 of the mop head at each longitudinal edge of the depression. A projection 7 integral with each side wall extends upwardly at each end of opening 4 and is apertured, as indicated at 8, to receive a stud or pivot member 9.

The peripheral edge 10 of mop head 2 is provided with a gooseneck recess 11 in which the upper beaded edge of a mop body 12 is secured.

The swivel connector comprises a socket 13 and a clamping element 14 secured thereto. The upper end of the socket is provided with a tubular extension 15 in which the lower end of a handle 16 is firmly secured.

The lower end of the socket comprises a top wall 17 having an opening 18 (shown in FIGS. 5 and 6) and a pair of depending side walls 19. Flanges 20 projecting above top wall 17 at each side of opening 18 extend from the front edge of opening 18 rearwardly to the lower end of tubular extension 15. Each side wall 19 has a lateral protuberance 21 extending inwardly therefrom between the rear edge of opening 18 and the lower end of tubular extension 15, and another lateral protuberance 21*a* at the forward end of the side wall. A boss 23 depends from the portion of top wall 17 between opening 18 and the lower end of tubular extension 15 to help secure clamping element 14 in place. Boss 23 is preferably annular, as shown, but may be solid, if desired, and may be of any desired shape.

The front edge of each side wall 19 is recessed to form a journal portion, as indicated at 22, in which stud or pivot member 9 is received.

Clamping member 14 comprises a strip of resilient metal having a flat section 24 fitting in opening 18 and normally projecting slightly above top wall 17. Section 24 acts as a push button control for the clamping member. The metal strip is bent downwardly at the rear end of section 24 to form a vertical section 25, and then rearwardly to form a flat section 26 parallel to section 24. Section 26 is provided with an opening 27 adapted to fit around boss 23. Opening 27 is shown as being circular, but may be of any shape to fit the outer perimeter of boss 23. Each longitudinal edge of section 26 is bent upwardly and then downwardly to form an upstanding rib 28 and a depending flange 29. Each flange 29 is substantially parallel to the inner surface of wall 19 against which it fits.

When the clamping element is to be assembled with socket 13, section 24 is pushed into opening 18 and boss 23 is pushed into opening 27. During the assembly, flanges 29 flex inwardly to pass protuberances 21. As soon as the lower end of each flange 29 clears its protuberance 21 it snaps outwardly into engagement with the inner surface of adjacent sidewall 19. As best seen in FIG. 6, flanges 29 fit so tightly against side wall 19 and between the upper surface of protuberances 21 and the underside of top wall 17 that it is practically impossible to dislodge either flange to remove clamping element 14 from socket 13 after they are assembled into a unit.

The metal clamping member is bent downwardly to form a vertical section 30 adjacent the front edge of opening 18 and then bent forwardly to provide another flat section 31 parallel to sections 24 and 26. Section 31 is provided with ears 32 that extend upwardly and out-

wardly to protuberances 21*a* to limit the downward movement of push button section 24. Ears 32 engage protuberances 21*a* and act as stop members if push button 24 is pressed downwardly far enough.

The forward end of flat section 31 of the clamping member is bent upwardly at right angles to form a lip 33 having its upper, free end curved forwardly, as indicated at 34. Lip 33 traverses the open front end of recess or notch 22 when the clamping element is in its normal operative position assembled with socket 13.

Push button 24 is depressed to move lip 33 downwardly far enough to clear recess 22 and is held against return movement by thumb pressure until the swivel connector is pushed forwardly and downwardly in depression 3 to cause recess 22 to engage pivot member 9. The thumb pressure is then removed from push button 24 and the forward end of the clamping element springs back into its operative position. Lip 33 extends across the open side of recess 22 to confine pivot member 9 in said recess or journal portion. Pivot member 9 acts as an axle around which handle 16 pivots.

Opening 4 provides sufficient clearance under the bottom of the front portion of the clamping member to permit downward movement of said front portion to release the clamping member from pivot member 9 when desired. The handle and clamping member are then pulled rearwardly to separate the swivel connector and handle from pivot member 9. The thumb pressure on push button 24 is released as soon as the separating movement of the clamping member from pivot member 9 is completed.

The above detailed description is given for clearness of understanding only. No unnecessary limitations should be understood therefrom, since modifications will be obvious to those skilled in the art.

I claim:

1. A swivel connector for releasably attaching a handle to a pivot member which comprises: socket means having a journal portion receiving said pivot member and having an upper end portion adapted to receive said handle, said journal portion being open on one side; a spring clamping element; and means for securing said clamping element to said socket means, said spring clamping element being disposed in its operative position to block the open side of said journal portion and being adapted to be pressed away from said open side to permit said pivot member to be engaged with and disengaged from said journal portion, said socket means having an aperture in one side thereof into which said spring clamping element extends, with a portion of said element exposed, to provide a push button control for moving the spring clamping element out of engagement with said pivot member.

2. A swivel connector for releasably attaching a handle to a pivot member which comprises: socket means having a journal portion receiving said pivot member and having an upper end portion adapted to receive said handle, said journal portion being open on one side; a spring clamping element; and protuberances on said socket means for engaging said clamping element and securing it to the socket, said spring clamping element being disposed in its operative position to block the open side of said journal portion and to be urged against and in rotatable, frictional, resilient engagement with said pivot member and being adapted to be pressed away from said open side to permit said pivot member to be engaged with and disengaged from said journal portion, said socket means having an aperture in one side thereof into which said spring clamping element extends, with a portion of said element exposed, to provide a push button control for moving the spring clamping element out of engagement with said pivot member.

References Cited in the file of this patent

UNITED STATES PATENTS

1,708,052	Channell	Apr. 9, 1929
1,909,713	Parsons	May 16, 1933
2,861,287	Scalf	Nov. 25, 1958

FOREIGN PATENTS

646,647	France	July 19, 1928
476,703	Great Britain	Dec. 14, 1937