Aug. 28, 1951 H. SIEMUND 2,566,294

SQUEEGEE TYPE CLEANING TOOL

Filed July 10, 1948

FIG. 1.

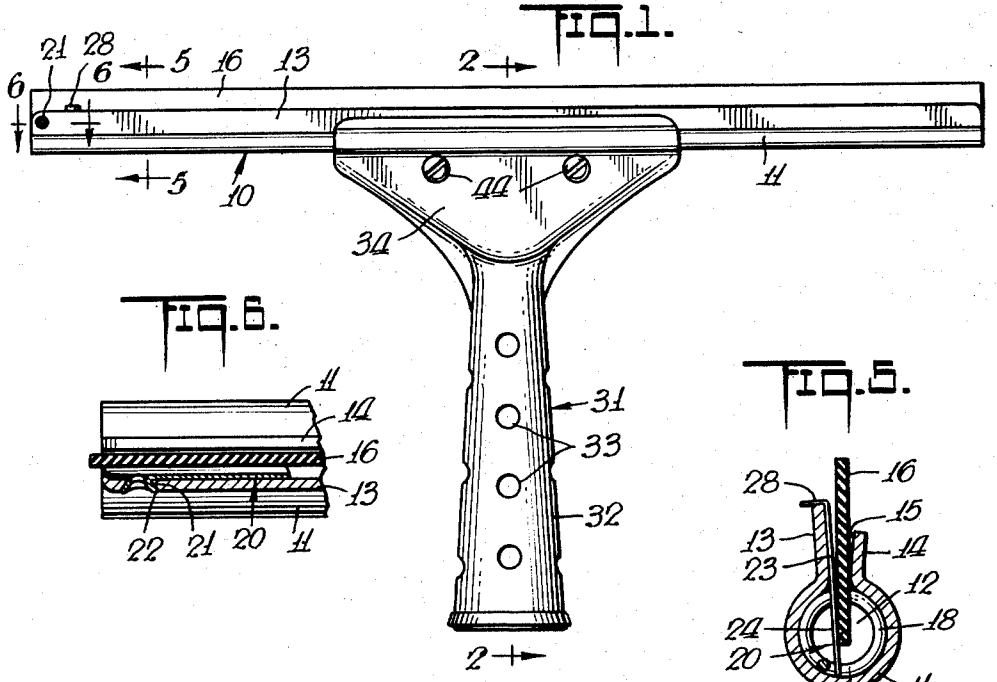


FIG. 6.

FIG. 5.

FIG. 2.

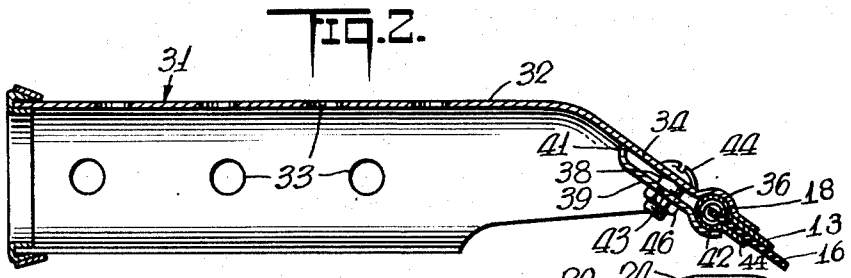


FIG. 4.

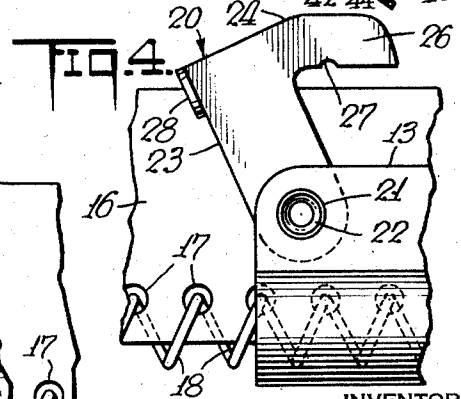
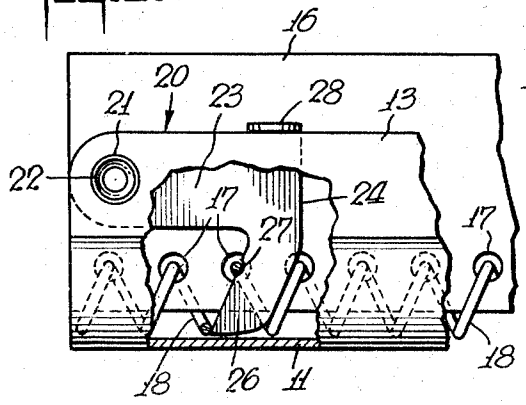


FIG. 3.



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SQUEEGEE TYPE CLEANING TOOL

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Application July 10, 1948, Serial No. 38,052

6 Claims. (Cl. 15—245)

1

The present application is a continuation-in-part of my now abandoned co-pending application Serial No. 773,186, filed September 10, 1947, entitled "Squeegee Type Cleaning Tool."

The invention relates generally to improvements in a squeegee type of cleaning tool adapted for use in cleaning windows, floors and the like, and it has particular relation to a tool consisting of an elongated channel-like frame or holder having a flexible wiping blade that is easily and quickly removed and replaced without requiring the use of tools of any kind.

One form of conventional devices of the character described, which are found in extensive use today, consists of an elongated channel-like holder having a flexible wiping blade made of one or more strips of flexible wiping material secured tightly therein by means of machine bolts, wedging bars, and other similar types of fastening means. Another form consists of a holder having an internal channel adapted to receive a molded wiping element having an integrally formed and enlarged molded bead or edge adapted to fit slidably within said channel.

The conventional devices hereinabove described have a great many disadvantages. The former type is exceedingly heavy to manipulate, requires considerable time and also the use of tools to remove and replace the wiping element. In this type of squeegee, the anchoring perforations are quite widely spaced and few in number, and the strain imposed on the wiping element in actual use frequently tears it at the perforations, requiring replacement long before the wiping element is actually worn out. In the molded bead type of wiping element, it is exceedingly difficult to secure a wiping blade having a fastening bead of the exact cross-sectional dimensions for a proper fit. The molded edge or fastening bead, being formed of the same flexible material as the wiping blade, which is generally a high grade rubber, does not lend itself to molding within exacting small tolerances. Therefore, it is quite difficult to secure molded blades of satisfactory cross-sectional dimensions for these holders. A molded edge of too small a cross-sectional diameter permits the wiping element to fall out or slide out in use, and a molded edge of too large a diameter cannot be inserted in the holder. The time, trouble, patience and risk involved in securing accurately molded wiping elements for this latter type of squeegee make them unattractive to large commercial users.

An object of the present invention is to provide a simple, efficient and inexpensive squeegee

2

type of cleaning tool that is of a durable construction, and exceedingly light in weight.

A further object of the invention is the provision of a cleaning device of the character described wherein the flexible wiping strip may be removed and replaced quickly with great ease, without requiring the use of tools of any kind.

Another object of the invention is to provide a cleaning device of the character described wherein the flexible wiping element may be provided with satisfactory flexible fastening means of an exact cross-sectional dimension for mounting the same within the holder without difficulty or danger of damaging the same during the assembly operation.

A further object of the invention is the provision of simple, efficient and durable fastening means for the flexible wiping element which will outlast the useful life of said wiping material.

Another object of the invention is to provide a simple, inexpensive and effective locking means for preventing longitudinal movement or accidental separation of the wiping blade from the holder while it is in use.

A further object of the invention is the provision of a simple and efficient manipulating handle that is mounted slidably on the holder, whereby its longitudinal position may be changed rapidly and efficiently from time to time for cleaning behind signs and/or other obstructions mounted adjacent the surface to be cleaned.

Other and further objects and advantages of the invention reside in the detailed construction of the holder, which result in simplicity, economy and efficiency, and which will be apparent from the following description, wherein a preferred form of embodiment of the invention is shown, reference being had to the accompanying drawings, forming a part hereof, in which;

Figure 1 is a top plan view of a squeegee type of cleaning tool constructed in accordance with the principles of the invention;

Figure 2 is a cross-sectional view of the tool shown in Figure 1, the same having been taken substantially along the line 2—2 thereof, looking in the direction of the arrows;

Figure 3 is an enlarged fragmentary top plan view of the holder, with parts broken away to illustrate the locking means for holding the flexible wiping element therein, the same being shown in its locked position;

Figure 4 is another enlarged fragmentary top plan view of the holder, illustrating a flexible wiping element being inserted therein, and showing the locking means in its unlocked position;

Figure 5 is a cross-sectional view, on a slightly larger scale, of the tool shown in Figure 1, the same having been taken substantially along the line 5—5 thereof, looking in the direction of the arrows; and

Figure 6 is a fragmentary cross-sectional view, on a slightly enlarged scale, of the tool shown in Figure 1, the same having been taken substantially along the line 6—6 thereof, looking in the direction of the arrows.

Referring now to the drawings, wherein like numbers indicate like parts, there is shown an elongated metal channel-like holder or frame member 10 of substantially a U-shaped or bifurcated construction. The base 11 of the holder 10 is enlarged slightly and is of an arcuate cross-section, forming an inner channel 12 of substantially circular shape in cross-section, which is open at opposite ends. The holder 10 has a spaced pair of integrally formed forwardly extending and diverging arms 13 and 14 of different lengths, forming an elongated longitudinally extending horizontal radial slot 15. The back or inner side of the lateral slot 15 is in open communication with the channel 12.

A flexible elongated squeegee wiping element 16, which is made of rubber or other suitable wiping material, is adapted to have one edge mounted slidably within said channel 12 and its opposite edge extending outwardly through the slot 15 of said holder 10. The wiping element 16 is perforated along one edge, as indicated at 17, at regularly spaced intervals. A coiled or spirally wound spring wire 18 is adapted to be mounted through said perforations 17, as best shown in Figures 3 and 4. The diameter of the convolutions of the coiled wire 18 is of a dimension equal to the distance between centers of adjacent perforations 17. Obviously, the wire 18 may be easily and quickly mounted on the flexible rubber wiping element 16 by merely inserting one end thereof in one of the end perforations and rotating the same about its longitudinal axis, which will cause said end to feed through the succeeding perforations. The coiled or spirally wound wire 18 is formed with a diameter slightly less than the diameter of the circular channel 12 so that it can be mounted slidably therein, but with a snug fit. The spirally wound wire 18 is, obviously, flexible axially in any direction and may be compressed or extended longitudinally, but its coils are strong enough and of such a short radius that they are incapable of compression or flexibility radially under normal compression strains. Obviously, the spring wire member 18 can readily be made within small satisfactory tolerances for snugly fitting the channel 12. The flexibility of the spirally wound spring wire 18 longitudinally and axially facilitates easy assembly and removal of the wiping element or blade 16 from the holder 10, and also permits the flexible wiping element 16 to be wrapped or packaged in a compact, coiled position. These unique and novel features permit packaging and storage in relatively small compact containers, requiring very little material and storage space.

The coiled wire 18, which fits snugly within the channel 12 of the holder 10, may have a tendency to slide longitudinally thereof when under normal wiping stresses and strains of actual use. Accordingly, there is provided a latch member 20, which is mounted pivotally in any suitable manner on the inner side of one end of the arms 13 or 14. In the construction shown, the latch member 20 is mounted on the inner side of the top arm 13 adjacent one end, and is secured pivotally thereto in a small opening or aperture 21 extending therethrough. The latch member 20 has an opening 22 punched therein, and its punched out material is wedged into the opening 21 to fasten the same pivotally thereto, as best shown in Figure 6. The latch member 20 is of substantially a L-shaped construction, having a relatively wide base arm 23 adapted to extend longitudinally of the holder when it is in its locking position. The base arm or member 23 has a relatively narrow locking arm or member 24 extending inwardly at substantially right angles thereto with its forward end inclined obliquely inwardly, as indicated at 25. The base arm 23 extends between the bifurcated arms 13 and 14 and the locking arm 24 extends through the slot 15 into the channel 12. The forward end 26 of the locking arm 24 is of a width adapted to extend slidably between adjacent convolutions of the wire coil 18, and has a receiving notch 27 intermediate the ends of its inner side edge adapted to receive and engage the wire of one of the coils 18, as best shown in Figure 3. The latch member 20 is provided with an upwardly and outwardly extending stop and projection 28 adapted to extend outwardly and above the top arm 13. The projection 28 acts as a stop to limit the inward movement of the latch 20 and also may be used as a finger engaging means for operating the same from its locking position, which is shown in Figure 3, to its open or receiving position, which is shown in Figure 4.

A handle 31 is provided for manipulating the holder 10. The handle 31 has a conventional hollow receiving socket member 32, having a series of openings 33 extending therethrough. The socket member 32 is adapted to receive wedgingly a wooden or other extension handle member (not shown) for use in cleaning places beyond the normal reach of the operator.

The front end of the handle 31 is flared outwardly and bent slightly downwardly, as best shown in Figure 2, to provide a substantially triangularly shaped attaching plate 34. An arcuate groove 36 is formed on the inner side of the plate 34 adjacent its forward edge. The arcuate groove 36 has substantially the same radius as the base 11 of the holder 10, being adapted to engage the same. The plate 34 is apertured by a punching operation, and the punched out material is bent downwardly to form circumferentially extending axial collars or flanges 38. (See Fig. 2.) The inwardly projecting hollow collars or flanges 38 provide spacing members for a lower and separate attaching plate 39.

The lower attaching plate member 39 is substantially triangular in shape, being similar in shape to the plate 34 of the holder 10, but is of slightly smaller dimensions. It has an upstanding or inwardly bent inner edge, forming a laterally projecting flange 41 of a length equal to the projecting collars 38 of the plate 34. The forward or opposite edge of the plate 39 is provided with an arcuate groove 42 on its inner side that is of a size and shape adapted to fit and engage snugly the lower side of the base 11 of the holder 10. The lower plate 39 is apertured, as indicated at 43, in Figure 2. The apertures 43 are spaced for alignment with the apertures extending through the collars 38 when the plates 34 and 39 are in assembling position. Machine screws 44 mounted through the collars 38 of the upper plate 34 extend downwardly through the apertures 43 and below the lower plate 39. Nuts 46 are

mounted threadingly on the lower ends of the screws 44, projecting below the plate 39, and, when drawn tight, secure the two plates 34 and 39 together. The collars 38 and flange 41 prevent the plate 39 from being drawn so tightly to the plate 34 that the handle member 31 cannot be mounted slidably on the base 11 of the holder 10. There is sufficient frictional contact between the handle 31 and the base 11 of the holder 10 to hold the former in a fixed position, but the frictional resistance is insufficient to prevent slidably moving the handle 31 along the base 11 when desired. This slidable feature of the handle 31 facilitates cleaning behind signs and/or other obstructions mounted frequently adjacent the glass of show cases, show windows, etc.

Although I have only described in detail one embodiment of the invention, it will be readily apparent to those skilled in the art that the invention is not so limited, but that various other modifications may be made therein without departing from the spirit thereof.

What I claim is:

1. A cleaning device comprising an elongated bifurcated holder having spaced arms forming a channel longitudinally thereof which is open along its forward edge, an elongated flexible squeegee wiping element having wire coils mounted around only one elongated edge thereof fitted slidably within said channel while its free edge projects outwardly thereof, and a handle member mounted on said holder for manipulating the same.

2. A cleaning device comprising an elongated bifurcated holder having spaced arms forming an arcuate channel longitudinally thereof which is open along its forward edge, an elongated flexible substantially flat squeegee wiping element including an elongated wire coil having a series of convolutions mounted around one side edge thereof fitted slidably within said channel while its free wiping side projects outwardly thereof, latching means secured to said holder and extending between adjacent convolutions of said coil for securing the same removably within said holder, and a handle mounted on said holder for manipulating the same.

3. A cleaning device comprising an elongated bifurcated holder having spaced arms forming an arcuate inner channel longitudinally thereof which is open along its forward edge, an elongated flexible substantially flat squeegee wiping element including a series of spaced wire coils mounted so as to encircle one elongated side edge thereof fitted slidably within said channel with its free wiping side projecting forwardly between said arms, pivotal latching means mounted on one of said arms for locking said coil removably within said holder, and a handle member mounted on said holder for manipulating the same.

4. A cleaning device comprising an elongated bifurcated holder having spaced diverging arms forming a channel longitudinally thereof which is open along its forward edge, the back edge of said channel being enlarged and of substantially circular shape in cross-section, said channel being open at its opposite ends, an elongated flexible squeegee wiping element having a wire mounted spirally around one side edge thereof, said wire spirals being of a diameter to fit snugly and slidably within said circular portion of said channel when the free wiping edge projects forwardly between said arms, a pivotal latch member mounted on said holder for locking said wiping element removably within said channel, and a handle member mounted on said holder for manipulating the same.

5. A flexible wiping element for a cleaning squeegee consisting of a piece of thin substantially flat squeegee wiping blade of greater length as compared to its width dimensions having spring wire coils mounted around only one elongated side edge thereof.

6. A flexible wiping element for a cleaning squeegee comprising a relatively thin and narrow substantially flat rubber strip having only a single row of longitudinally spaced holes adjacent one elongated side edge thereof, and having a spirally wound spring wire mounted within said holes and around said side edge of said wiping element.

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