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INTERNALLY FLUSH LATCH FOR VACUUM CLEANER PIPES

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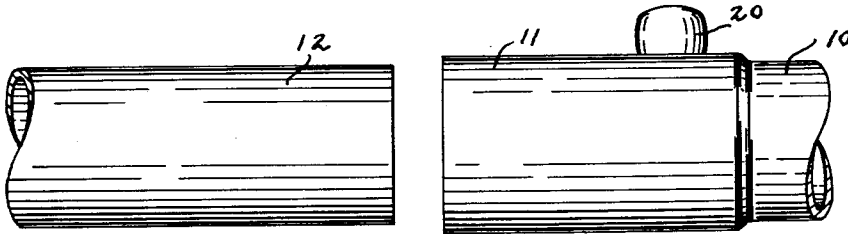


Fig-1

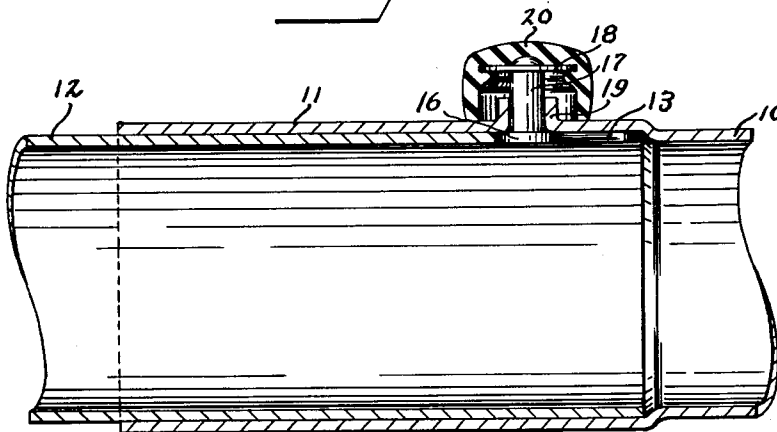


Fig-2

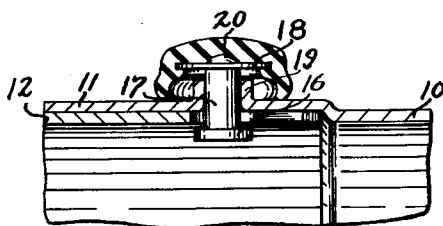


Fig-3

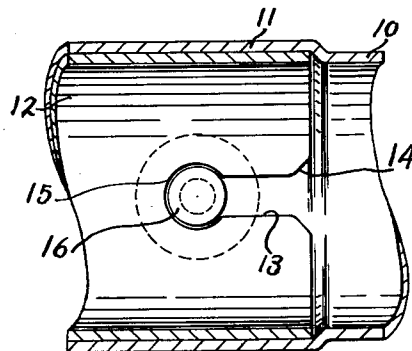


Fig-4

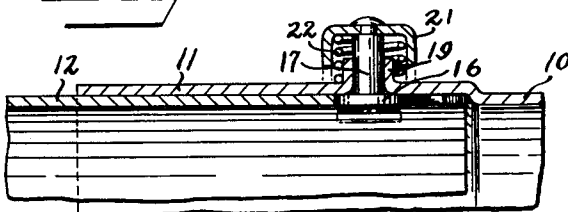


Fig-5

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INTERNALLY FLUSH LATCH FOR VACUUM
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4 Claims. (Cl. 285—7)

This invention relates to latching connections for spigot joints, but more particularly to latching devices for the several interchangeable fittings that make up the tubular equipment of a suction cleaner such, for example, as sections of the so-called wand and the attaching of tools to the wand.

An object is to produce a new and improved latching device of the above character, which provides a smooth and unobstructed interior of the spigot joint for free and unrestricted air passage; affords a positive seal against leakage; is simple to operate; affords an effective and positive latch to secure the parts against accidental or unwarranted separation; and is relatively simple and inexpensive to manufacture and install.

Other objects and advantages will hereinafter appear, and for purposes of illustration but not of limitation, embodiments of the invention are shown on the accompanying drawings, in which:

Figure 1 is a side elevation of portions of two tubular members separated from each other, one of the members being equipped with the latching device;

Figure 2 is an enlarged longitudinal sectional view showing the two tubular members joined and latched together;

Figure 3 is a fragmentary sectional view showing the latching device depressed preparatory to the separation of unlatching of the tubular members;

Figure 4 is a fragmentary sectional view showing the inside of the tubular members in latched position; and

Figure 5 is a longitudinal fragmentary sectional view showing an alternate form of latching device.

The illustrated embodiment of the invention comprises a spigot joint made up of a metallic tube 10 having an enlarged end portion into which fits the end portion of a metallic tube 12, the arrangement being such that the tubes 10 and 12 are of substantially the same internal diameter so as to afford a free flow of air therethrough. The free end portion of the tube 12 is provided with a key hole slot 13 which has an outwardly tapered edge portion 14 to facilitate the application of the latch shank, as will hereinafter appear, and a rounded end portion 15 disposed at the inner end thereof.

Adapted to fit into the rounded inner end portion 15 of the key hole slot is a disc-like head 16, whose thickness is approximately the same as the wall thickness of the tube 12. Rigid with the head 16 is a cylindrical shank or pin 17 which has a riveted-on disc 19 at the opposite end thereof. The cylindrical shank 17 is slidable through an integral bearing sleeve 19 formed by outwardly extruding a portion of the wall of the enlarged tubular or socket portion 11. Fitting over the disc 18 and recessed internally to grip the same is a resilient rubber cup member 20, the skirt of which bears against the outside of the socket portion 11 and normally urges the latching head 16 outwardly into engagement with the inner wall of the tube portion 11, thus in the latching position, seating the head 16 within the rounded end portion 15 of

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the key hole slot. In order to release the latch, it is merely necessary to depress the rubber cup or button 20 to move the head 16 out of the rounded end 15 of the key hole slot and enable the tubes to be relatively shifted so that the shank 17 will ride through the slot 13, as will be readily understood. In order to assemble the tubular parts, it is merely necessary to depress the cup or button 20 so that the head 16 will be free of the key hole slot until the parts have been slid into proper engagement with each other, whereupon the button 20 is released and the resiliency of the rubber will force the head 16 into its rounded opening 15 where it is in latching position.

In the alternate form shown on Figure 5, instead of employing a rubber cup or button 20, an inverted metallic cup 21 is riveted to the outer end of the shank 17 and a helical coil spring 22 is interposed between the bottom of the cup and the outer surface of the enlarged socket portion 11. Manifestly, the operation of this latching device is the same as that above described.

It will be understood that although the drawing illustrates a joint between the ends of the two similar lengths of metal tubing, they may represent the ends of various other parts which make up the tubular equipment of a vacuum cleaner, such, for example, as the sections of a wand or the attachment of dusting tools or the like to the wand portion, as will be readily understood by those skilled in this art. Regardless of the particular elements to be connected or joined together, the action is quite the same as in completing the latching engagement as well as the unlatching operation. It will be understood that the above described latching device is not only exceedingly simple in its structure and operation, but is of importance in that it completely eliminates obstructions in the air passages so that a free and unrestricted stream of air may pass through the tubes. Another important feature is that it effects a positive seal against air leakage. The rubber button or cup form is desirable in that it presents a more sightly appearance, provides a more efficient seal against air leakage and obviates the liability of marring furniture.

It is to be understood that numerous changes in details of construction, arrangement and operation may be effected without departing from the spirit of the invention especially as defined in the appended claims.

What I claim is:

1. In a coupling, a first tubular wall, a second tubular wall having a free end normally telescoping within the first wall and having a keyhole slot therein, said slot having a neck extending axially from the free edge of the second wall and a head larger than the neck at the other end thereof, said first wall having a hole therethrough registering over the head of said slot, a latch comprising a shank slidable through said hole and having inner and outer ends, an enlargement rigidly affixed on the inner end of the shank, said shank being narrower than said neck, said enlargement being larger than said hole and neck and engageable in said head, the thickness of said enlargement being substantially equal to the thickness of the second tubular wall, said shank sliding in said hole between an outer position in which said enlargement engages in said head whereby to latch said walls together and an inner position in which said head lies inwardly of the second wall whereby said shank may pass through said neck, and an inverted cup secured to the outer end of said shank, said cup having a resilient skirt disposed towards and engaging the first tubular member for yieldably retaining said enlargement in said outer position.

2. In a coupling, a first tubular wall, a second tubular wall having a free end normally telescoping within the first wall and having a keyhole slot therein, said slot having a neck extending axially from the free edge of the second wall and a head larger than the neck at the other

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end thereof, said first wall having a hole therethrough registering over the head of said slot, a tubular bearing surrounding said hole and extending radially outward from the first tubular wall, a latch comprising a shank slidable through said bearing and having inner and outer ends, an enlargement rigidly affixed on the inner end of the shank, said shank being narrower than said neck, said enlargement being larger than said hole and neck and engageable in said head, the thickness of said enlargement being substantially equal to the thickness of the second tubular wall, said shank sliding in said hole between an outer position in which said enlargement engages in said head whereby to latch said walls together and an inner position in which said head lies inwardly of the second wall whereby said shank may pass through said neck, and an inverted cup or resilient material secured over the outer end of said shank, said cup having a resilient skirt disposed towards and engaging the first tubular member for yieldably retaining said enlargement in said outer position.

3. In a coupling, a first tubular wall, a second tubular wall having a free end normally telescoping within the first wall and having a keyhole slot therein, said slot having a neck extending axially from the free edge of the second wall and a head larger than the neck at the other end thereof, said first wall having a hole therethrough registering over the head of said slot, a latch comprising a shank slidable through said hole and having inner and outer ends, an enlargement rigidly affixed on the inner end of the shank, said shank being narrower than said neck, said enlargement being larger than said hole and neck and engageable in said head with the inner surface of said enlargement substantially flush with the inner

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surface of said second wall, said shank sliding in said hole between an outer position in which said enlargement engages in said head whereby to latch said walls together and an inner position in which said head lies inwardly of the second wall whereby said shank may pass through said neck, resilient means engaged between said first wall and said shank for yieldably retaining said enlargement in said outer position, and means accessible from the exterior of said first wall for depressing said shank so as to move said enlargement to said inner position.

4. The combination claimed in claim 3, a tubular bearing surrounding the hole in the first tubular wall and extending radially outward therefrom, said shank being slidably supported in and guided by said bearing, the means accessible from the exterior comprising a cup-shaped finger piece having an end portion affixed on the outer end of said shank and a skirt portion extending towards said first wall, said resilient means comprising a compression spring surrounding said bearing and surrounded by said skirt portion.

References Cited in the file of this patent

UNITED STATES PATENTS

278,617	Smith	May 29, 1883
557,423	Outhouse et al.	Mar. 31, 1896
873,625	Starrett	Dec. 10, 1907
939,019	Hartwell	Nov. 2, 1909
981,705	Spencer	Jan. 17, 1911
1,403,655	Tirrill	Jan. 17, 1922
1,790,238	Klein	Jan. 27, 1931
2,582,446	Martinet	Jan. 15, 1952