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VACUUM CLEANER COUPLING CONSTRUCTION

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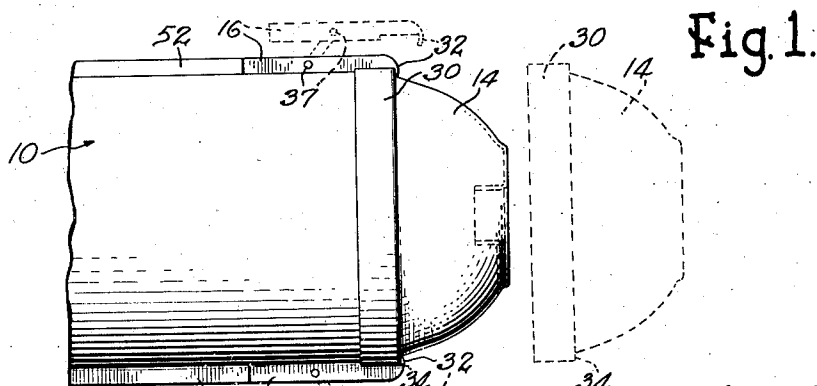


Fig. 1.

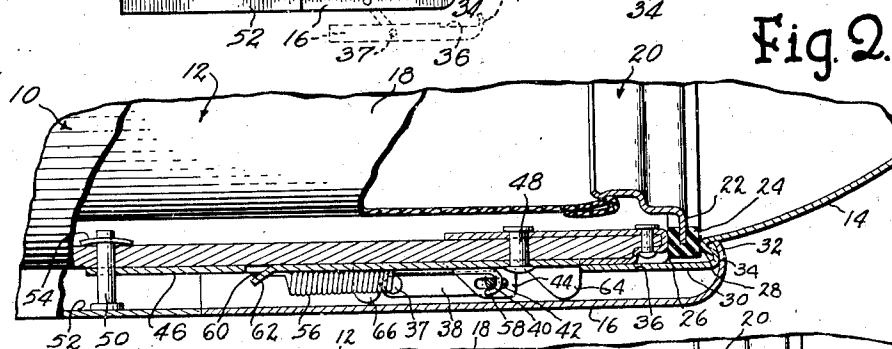


Fig. 2.

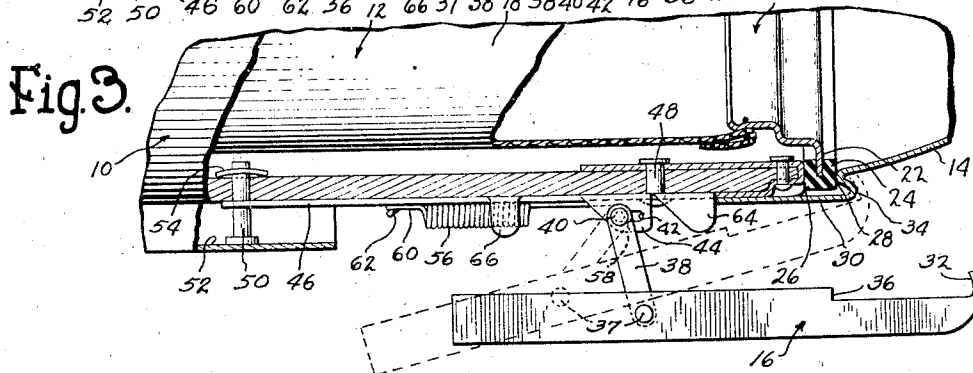


Fig. 3.

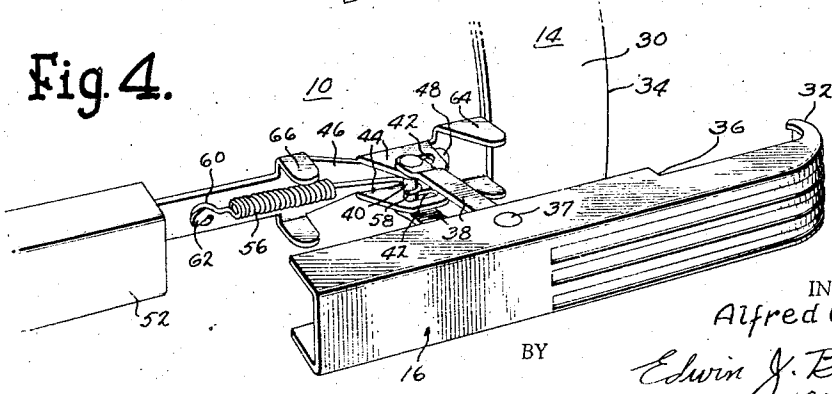


Fig. 4.

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VACUUM CLEANER COUPLING
CONSTRUCTION

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3 Claims. (Cl. 292—114)

This invention relates to vacuum cleaner construction and has particular reference to a novel and improved form of quickly detachable coupling means for removably securing one part of a vacuum cleaner to another part thereof.

In tank type vacuum cleaners the bag preferably should be emptied after each use and to expedite the removal of and reassembly of the bag with the machine it is desirable that a conveniently operated, quickly detachable coupling means be provided for clamping the end bell and bag of the cleaner in position.

This invention has for a principal object the provision of quickly detachable coupling means in which means are provided for clamping the several parts firmly together, the said coupling means being constructed and arranged so as to allow for wear and for variations in thickness of the parts due to manufacturing.

Other objects and advantages of the invention will be apparent from a consideration of the following specification taken in conjunction with the accompanying drawings, of which there is one sheet and wherein:

Fig. 1 is a fragmentary plan view of a part of a vacuum cleaner of the tank type embodying my invention;

Fig. 2 is an enlarged fragmentary view with parts broken away and others shown in section and illustrating certain details of the construction embodying my invention;

Fig. 3 is a view similar to Fig. 2 but illustrating certain of the parts in another position; and

Fig. 4 is a perspective view of the parts as illustrated in Fig. 3.

Referring now to Figs. 1 and 2, there is illustrated a tank type vacuum cleaner comprising a body 10 which forms a housing for the suction creating means and a bag or dirt collecting receptacle indicated generally at 12, the inlet end of the housing being closed by a cap 14 which is removably secured in position by a plurality of toggle clamps 16. In Fig. 1 the end cap is shown in dotted lines in a position separate from the housing 10 and in full line position clamped to the housing 10, and similarly, the clamps 16 are shown in their released position in dotted lines. The cap 14 is provided with a suitable inlet to which suction cleaning tools may be connected by means of a flexible hose. The bag 12 comprises a dirt collecting receptacle formed of air pervious material in the form of a sleeve 18 closed at one end thereof and fixedly secured at the other end thereof to an annular ring 20. A laterally extending flange 22 of the ring is provided

with an annular U-shaped gasket 24 which seats against the face or end 26 of the housing 10. The cap or end bell 14 is provided with an annular shoulder 28 which clamps the gasket 24 against the end 26 of the housing 10. The clamps 16 are each provided with a hook 32 which is adapted to engage the outside shoulder 34 formed on the end cap 14. The clamps 16 comprise channel shaped members which are cut away at 36 adjacent the hook 32 so as to accommodate the part 30 of the cap 14. The clamp 16 is pivotally connected at 37 to a double link 38 which in turn is connected to a pin 40 which extends through slots 42 formed in a pair of lugs 44 formed integrally with a plate 46. The plate 46 at one end is secured to the housing 10 by a screw or rivet 48 and at its other end is held in position by a pin 50. The head of the pin 50 as illustrated may be welded to the inside of a channel member 52 which extends along the side of the housing 10, the pin extending through an opening in the member 46, and through the wall of the housing 10 on the inside of which a nut or other securing means 54 is secured.

The pin 40 is slidable along the length of the slots 42 and a spring 56 having one of its ends 58 connected to the pin 40 and the other end 60 connected to a lug 62 formed on the member 46 is provided for biasing the pin toward the left-hand end of the slots 42. The member 46 may be further provided with lugs 64 and 66 which are adapted to engage the insides of the sides of the clamp 16 for aligning the clamp 16 with the channel member 52. When the clamp 16 is in the position illustrated in Fig. 3 the end cap 14 may be removed from the housing 10 by sliding the end cap 14 to the right, after which the bag 12 may be removed from the housing 10 by taking hold of the ring 24 and pulling the same to the right.

To reassemble the bag in the machine after cleaning, the bag 12 is simply reinserted in the housing 10 with the ring 24 seated against the end thereof, after which the cap 14 can be arranged so that the seat 28 thereof clamps the gasket or ring 24 against the end 26 of the housing. Thereafter, with the parts arranged as illustrated in Fig. 3, the hook 32 can be moved to engage the shoulder 34 and the clamp 16 then shifted rearwardly (to the left) to the position shown in Fig. 2. During this movement the links 38 will swing so as to move between the lugs 66 and the pin 40 upon which the links 38 pivot will slide forwardly (to the right) in the slots 42

a distance sufficient to permit the parts to assume the position illustrated in Fig. 2.

As the dimensions of the parts may vary due to wear or to manufacturing, the slot 42 provides an automatically adjustable pivot for the pin 40 and the spring 56 acting through the pin 40, the links 38, and the clamps 16 will firmly clamp the shoulder 28 against the bag ring 24, and the bag ring 24 firmly against the end face 26 of the housing 10, or the shoulder 28 directly against the end face of the housing 10. The construction of all of the clamps 16 on each side of the housing 10 is the same.

While the invention has been described with some detail, it is to be understood that the description is for the purpose of illustration only and is not definitive of the limits of the inventive idea. The right is reserved to make such changes in the details of construction and arrangement of parts as will fall within the purview of the attached claims.

I claim:

1. For use with a vacuum cleaner body member having a seat thereon, a member adapted to be removably seated thereon, and a shoulder on one of said members; a toggle comprising a pair of links pivotally connected together, one of said links being provided with a catch for engagement with said shoulder and the other of said links having a pin and slot connection with the other of said body members, said links being supported by said pin and slot connection in such a manner that said links may be arranged generally parallel to each other and to said body member and with said pin and slot connection disposed on a line and between said shoulder and said pivotal connection between said links, spring means acting on said pin and slot connection for biasing said other of said links away from said shoulder so that when said catch is engaged with said shoulder and said links are arranged generally parallel to said body member said member will be clamped to said seat, move-

ment of the links about said pivotal connection and out of parallelism with said body functioning to break said toggle and providing for movement of said catch out of engagement with said shoulder.

2. For use with a vacuum cleaner body member having a seat thereon, a member adapted to be removably seated thereon, and a shoulder on one of said members; a toggle clamp for releasably securing said members together comprising a pair of links pivotally connected together, one of said links being provided with a catch for engagement with said shoulder and the other of said links having a movable pivotal connection with the other of said body members which provides for slidable movement of such link relative to said body member in addition to the pivotal movement therebetween, and spring means on said other of said body members for moving said links in a direction to urge said catch against said shoulder when said toggle links are arranged parallel to each other, said movable pivotal connection being arranged substantially in line with and between the pivotal connection between said links and said catch when said toggle links are arranged parallel to each other.

3. For use with a vacuum cleaner body member having a seat thereon, a member adapted to be removably seated thereon, and a shoulder on one of said members; a toggle clamp for releasably securing said members together and comprising a U-shaped element having a catch at one end thereof for engagement with said shoulder, a link having one of its ends pivoted to said element intermediate the ends thereof, the other end of said link having a pin and slot connection with the other of said members and means biasing said other end of said link in a direction away from said one of said members, said link being arranged within and generally parallel to said element when said toggle clamp is closed.

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