

F. J. MATCHETTE & C. MOUKOS.
 COUPLING VALVE FOR PNEUMATIC CLEANING TOOLS.
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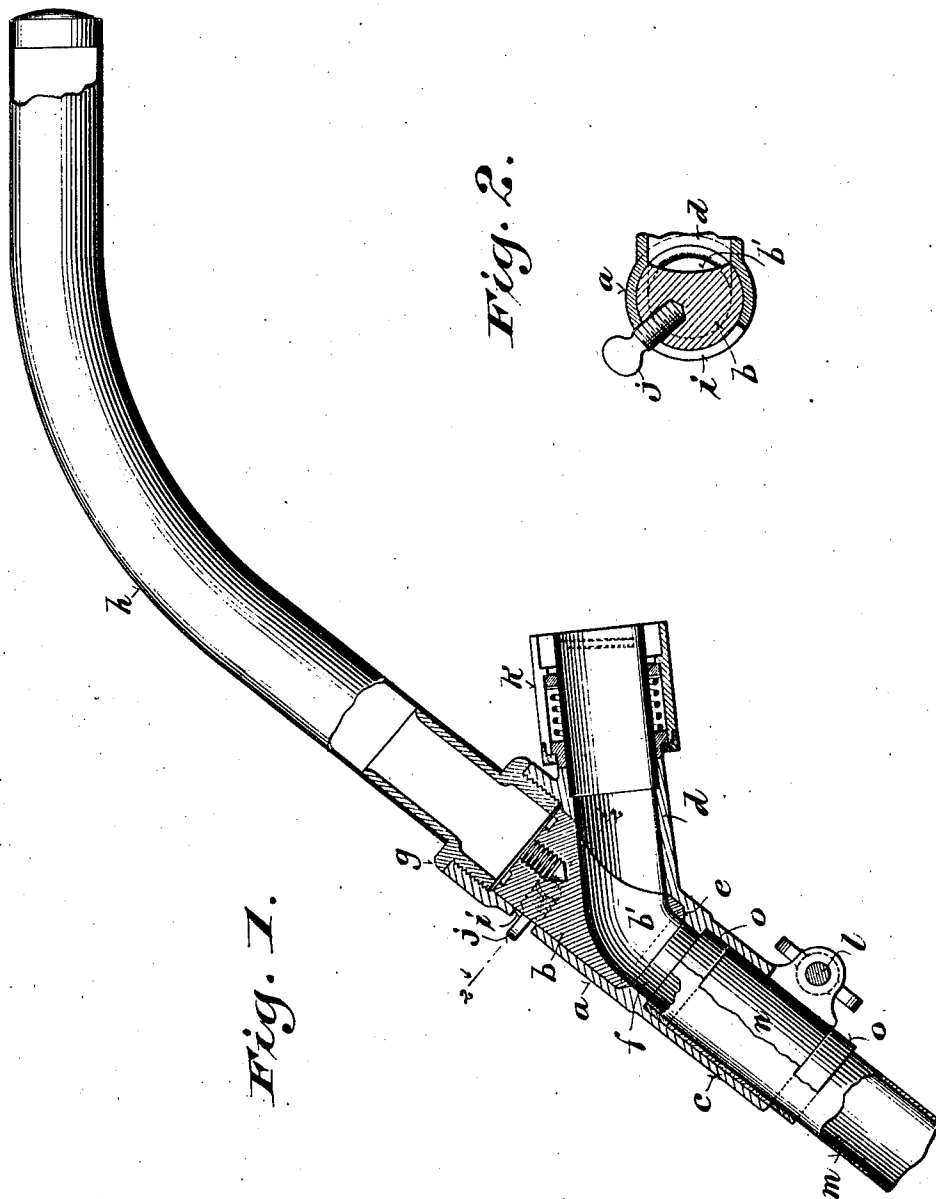


Fig. 1.

Fig. 2.

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UNITED STATES PATENT OFFICE.

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COUPLING-VALVE FOR PNEUMATIC CLEANING-TOOLS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, FRANK J. MATCHETTE, a citizen of the United States, and CHARLES MOUKOS, a subject of the Kingdom of Greece, both residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Coupling-Valves for Pneumatic Cleaning-Tools, of which the following is a specification, reference being had to the accompanying drawing, forming a part thereof.

This invention relates more particularly to vacuum cleaning apparatus. Its main objects are to facilitate changing from one implement or tool to another, without waste of power and time; to prevent waste of power and noise when a cleaning implement connected with the apparatus is not in use; to avoid obstruction to the escape of dust or dirt laden air from the implement when it is in operation; to permit and facilitate the movement of the implement over the article or surface to be cleaned, and to maintain its proper working relation thereto without abruptly bending the hose to which it is attached; and generally to improve the construction and operation of devices of this class.

It consists in certain novel features of construction and in the peculiar arrangement of parts hereinafter particularly described and pointed out in the claims.

In the accompanying drawing like letters designate the same parts in both figures.

Figure 1 is a view partly in axial section and partly in elevation of a valve and coupling embodying the invention; and Fig. 2 is a cross section on the line 2 2, Fig. 1.

The device comprises a case *a*, formed with a cylindrical chamber in which a plug or head *b* is fitted to turn, a contractible tubular extension or socket *c* at one end of the valve chamber for detachably connecting therewith a pneumatic cleaning implement, and a tubular hose connection *d* opening into one side of the valve chamber at an oblique angle to the extension *c* at its lower end.

At the lower end of the valve chamber the case is formed with an inwardly projecting beveled seat *e* around a port *f* between the valve chamber and tubular extension or socket *c*. The valve plug or head *b* which is

beveled at its lower end to fit said seat, is formed with a curved passage *b'* opening through its lower end in register with the port *f* and through one side of the plug so as to register with the lateral port or passage of the hose connection *d* when said plug is turned into the proper position therefor, as shown in the drawing. The valve plug *b* for convenience in manufacture is formed in its upper end with a threaded hole, as shown in Fig. 1, but this is not an essential feature of the invention and may be omitted.

The valve chamber is closed at its upper end and the plug *b* is held therein by a screw cap *g* or removable closure, to which a handle *h* for operating the tool or implement may be attached, as shown in Fig. 1. This handle may however, be omitted, and the tool or implement manipulated by the laterally projecting hose connection *d*, which may be extended if desired, for this purpose.

The case *a* is formed with a transverse slot *i*, and a removable thumb screw *j*, tapped into the plug *b* and projecting radially therefrom through said slot, affords convenient means close to the operator's hand for opening and closing the valve, and also serves to hold the plug in place in the valve chamber. The hose connection *d* is provided with one member *k* of a coupling for readily connecting and disconnecting the valve and hose.

The extension or socket *c* is split lengthwise to make it contractible at its lower end, and is provided with a transverse clamping screw *l* passing through lugs or ears on opposite sides of the slit in said extension. Each tool or implement to be operated in connection with this device is provided with a tubular arm or shank *m*, which is fitted to turn in a sleeve *n*, held in place thereon by collars *o*. This sleeve fits into the tubular extension or socket *c* of the valve case and is adapted to be clamped and held therein by the screw *l*, while the tubular shank or arm *m* is left free to turn, thus providing a swivel connection between the valve case and tool and permitting the tool or implement to assume different positions or angles and to maintain its proper relation to the article or surface to be cleaned without abruptly bending the hose. This connection also affords convenient means for

changing tools or implements without loss of time or waste of power, the valve being closed while the change is being made.

The valve plug *b* when closed is firmly held to its seat and leakage and consequent waste are thus avoided by the unbalanced atmospheric pressure upon the larger area at the upper end of the plug. By removing the cap *g* and the thumb screw *j*, the plug *c* can be easily withdrawn from the case, inspected, reground or replaced.

The tubular hose connection *d* is formed at such an angle to the case *a* as will permit the hose to which it is attached to lead away therefrom without abrupt bend, while the handle and tubular arm or shank *m* of the tool or implement are held and carried in working positions.

When one tool is changed for another, or work is interrupted or temporarily suspended, the cut off valve being close at the operator's hand and easily and quickly operated, is naturally closed, thus preventing waste of power and the noise resulting from an open pipe, besides avoiding the trouble and loss of time required to go to and from a distant point to close and open a valve.

The passage *g* making a gradual turn in the plug *b* and being of the same area in cross section as the port *f* and the bore of the tube *m* at its lower end and the port or passage in the tubular hose connection *d* at its upper end, a continuous smooth and unbroken conduit is provided for the escape of dust and dirt laden air from the cleaning tool or implement, thus avoiding diminution in the force of the exhaust and producing the most effective and economical operation of the tool or implement.

Various changes in minor details of construction and in the arrangement of parts may be made without departing from the principle and intended scope of the invention.

We claim:

1. The combination of an elbow-shaped case having a socket at one end adapted for the detachable and swivel connection therewith of a tubular tool shank, a hose coupling at the other end and an intermediate valve chamber having side and end ports communicating with said socket and hose coupling, and a valve plug fitted to turn in said chamber and having a passage in constant register at one end with one of said ports and adapted to be turned at the other end into and out of register with the other port.

2. The combination of an elbow-shaped case having a socket at one end adapted for the detachable and swivel connection therewith of a tubular tool shank, a hose coupling at the other end and an intermediate valve chamber having side and end ports communicating with said socket and hose coupling,

a valve plug fitted to turn in said chamber and having a passage in constant communication at one end with one of said ports and adapted to be turned at the other end into and out of register with the other port, and a handle attached to said case in line with said socket.

3. The combination of a case having a cylindrical valve chamber with a port and inwardly projecting valve seat at one end and a removable closure at the other end, a port in one side and a transverse slot in the other; a cylindrical plug fitted to turn in said chamber upon said seat and having a passage opening at one end through the side thereof in position to be turned into and out of register with said side port and registering at the other end with said end port; an operating piece detachably secured in said plug and projecting through the slot in said case and a tubular tool shank having a swivel connection with said case, substantially as described.

4. The combination of a case having a valve chamber, a contractible tubular extension at one end provided with a clamping screw and a tubular hose connection on one side at an angle to said extension, a valve fitted in said chamber and adapted to open and close communication between said tubular extension and hose connection, and a tube having a sleeve in which it is fitted to turn and which is fitted and adapted to be clamped in the tubular extension of said case, substantially as described.

5. The combination of a case having a cylindrical valve chamber, a contractible tubular extension at one end and a tubular hose connection opening into the side of said chamber, a cylindrical plug fitted to turn in said chamber and having a passage opening through one end and the side thereof, a sleeve removably fitted in the tubular extension of said case, a screw adapted to clamp said extension on said sleeve, and a tube fitted to turn in said sleeve and provided with collars for holding it therein, substantially as described.

6. The combination of a case having a valve chamber, a contractible tubular extension at one end, a detachable handle and closure at the other end and a tubular hose connection opening into the side of said chamber at an angle thereto, a cylindrical plug fitted to turn in said chamber and having a passage opening through one end in communication with said tubular extension and through the side in position to be turned into and out of register with the hose connection, a sleeve removably fitted in said tubular extension, means for securing said sleeve in said extension, and a tube revolvably held in said sleeve, substantially as described.

7. The combination of a case having a

valve chamber, side and end ports and a contractible extension at one end, a sleeve removably fitting in said extension, a tube revolubly mounted in said sleeve, and a
5 valve plug having a passage extending through it and adapted to register at the ends with the side and end ports in said case, substantially as described.

In witness whereof we hereto affix our signatures in presence of two witnesses.

FRANK J. MATCHETTE.
CHARLES MOUKOS.

Witnesses:

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