F. H. S. SHEPHERD.

MACHINE FOR CLEANING TOBACCO PIPES AND THE LIKE.

APPLICATION FILED DEC. 16, 1915.

1,233,410.

Patented July 17, 1917.

3 SHEETS—SHEET 1.

Fig. 1

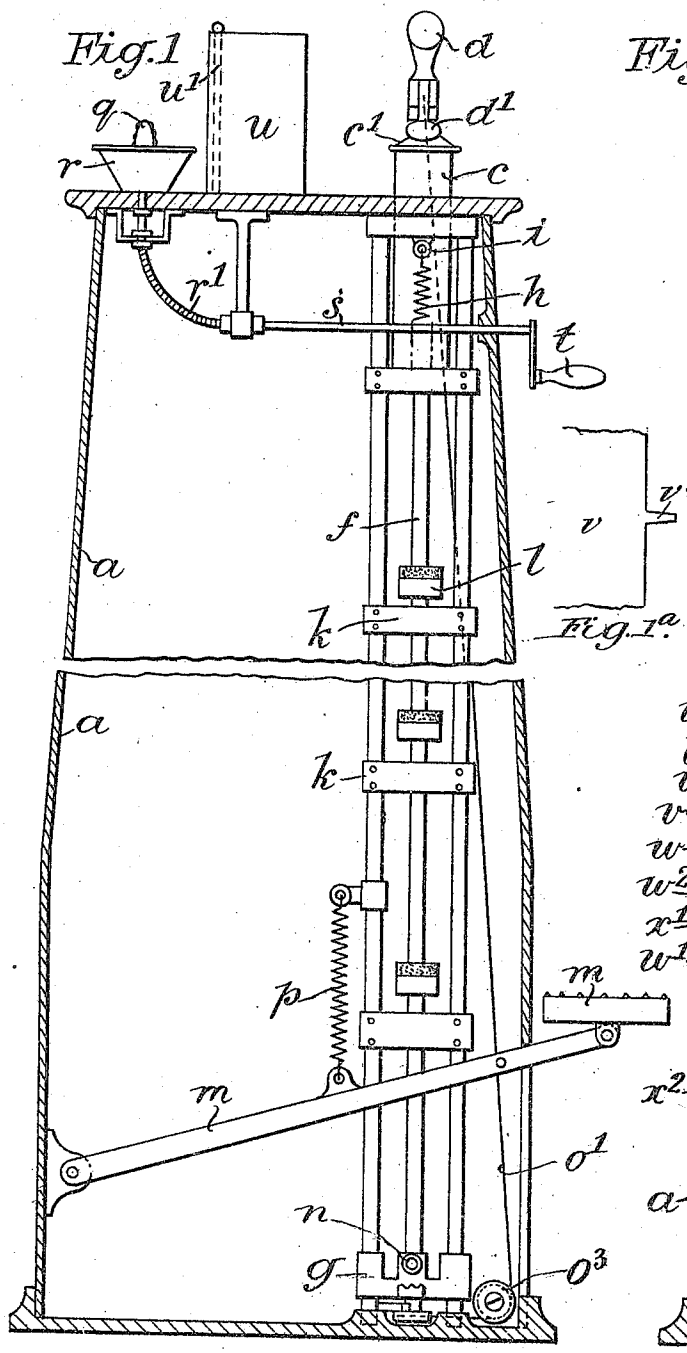
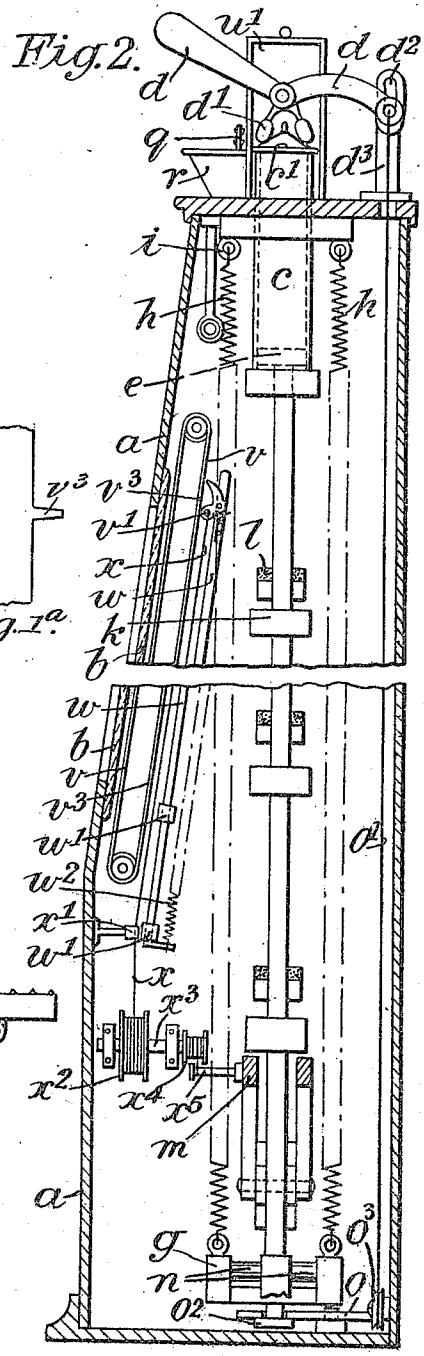


Fig. 2.



WITNESS

George H. Giovanpettis

INVENTOR

F. H. S. SHEPHERD

Dickerson & Brown

ATTORNEYS

F. H. S. SHEPHERD.

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3 SHEETS—SHEET 2.

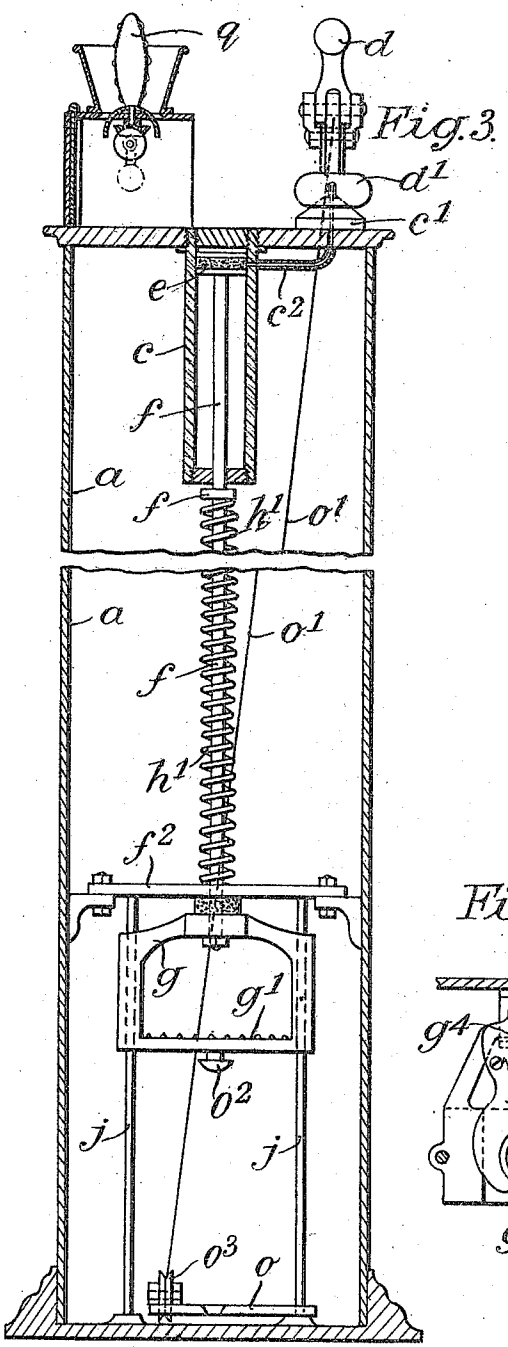


Fig. 3.

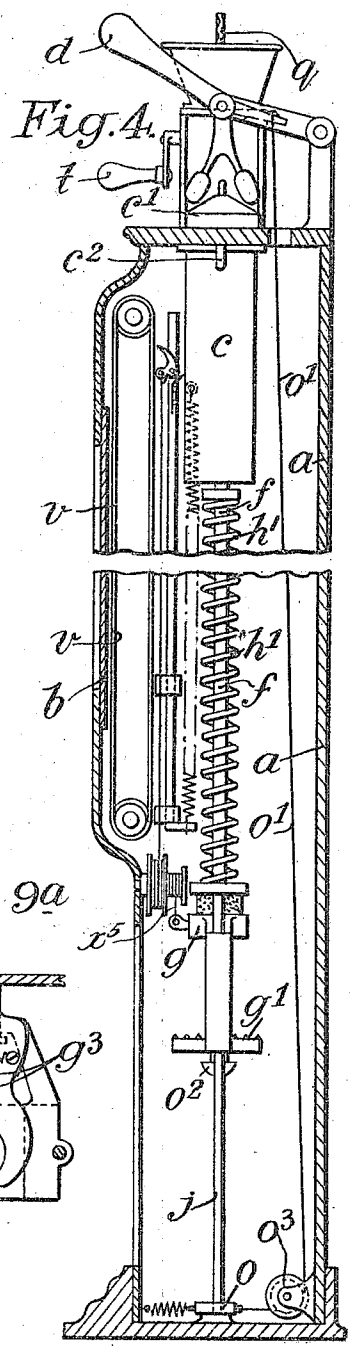


Fig. 4.

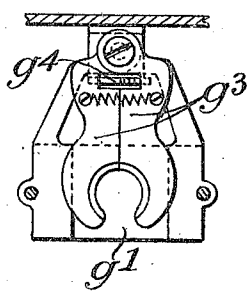


Fig. 9a

WITNESS

George W. Giovannetti

INVENTOR

F. H. S. SHEPHERD

Wilkinson & Co

ATTORNEYS

F. H. S. SHEPHERD.

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3 SHEETS—SHEET 3.

Fig. 5.

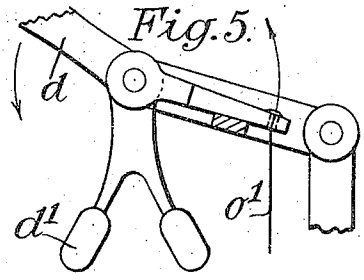


Fig. 6.

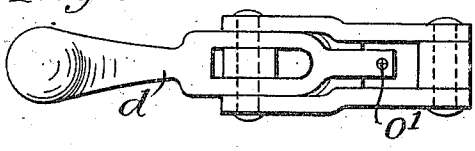


Fig. 7.

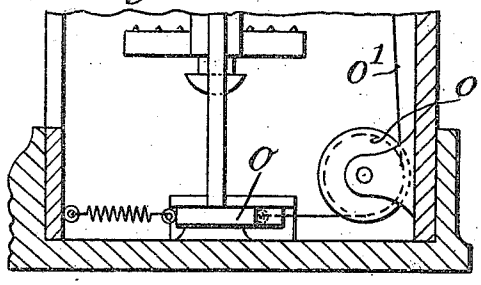


Fig. 8.

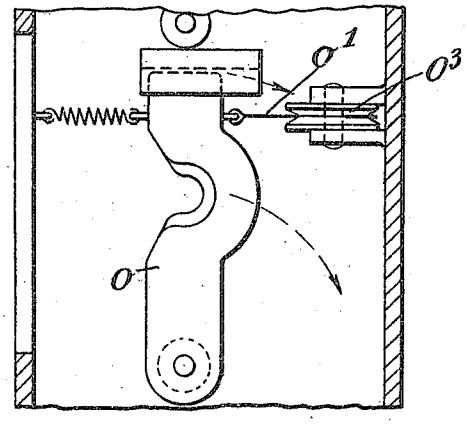
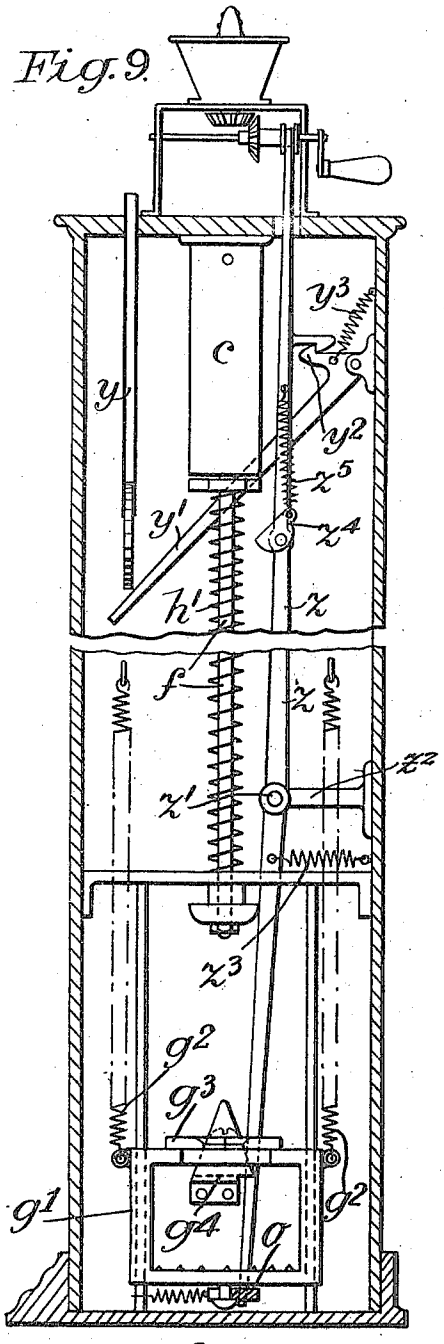


Fig. 9.



INVENTOR

F. H. S. SHEPHERD

Witness

George W. Giovannetti

Attorneys

UNITED STATES PATENT OFFICE.

FREDERICK HUDSON SHEPHERD SHEPHERD, OF LONDON, ENGLAND, ASSIGNOR TO PIPE CLEANERS LIMITED, OF CHEAPSIDE, LONDON, ENGLAND.

MACHINE FOR CLEANING TOBACCO-PIPES AND THE LIKE.

1,233,410. Specification of Letters Patent. Patented July 17, 1917.

Application filed December 16, 1915. Serial No. 67,287.

To all whom it may concern:

Be it known that FREDERICK HUDSON SHEPHERD SHEPHERD, a subject of the King of Great Britain and Ireland, residing at 9 and 10 King street, Cheapside, London, E. C., England, has invented certain new and useful Improvements in Machines for Cleaning Tobacco-Pipes and the like, of which the following is a specification.

This invention relates to machines for cleaning tobacco pipes and the like in which air is forced through the bowl and stem of the pipe to blow out the nicotin and other substances which usually accumulate in the bore of the pipe, and has for its object to provide a pneumatic pipe cleaning machine that shall be inexpensive as regards both cost of construction and maintenance, easy of operation, highly efficient and generally superior in point of simplicity of construction to known machines.

With the above objects in view, the invention comprises a spring or springs whereby energy can be stored gradually and released suddenly to force air at high velocity from a container through a suitable nozzle in communication with the bore of the pipe or the like to be cleaned.

It may be pointed out that small hand appliances working on this principle have been suggested, the spring being compressed by moving back the plunger of a hand pump which was held and released by a trigger.

In other machines for cleaning tobacco pipes with compressed air, it has also been proposed to employ a compressed air container connected through a non-return valve with the barrel of a pump, and provided with an outlet valve which is opened to admit the compressed air to the pipe, by pressing the pipe against the valve. Such machines had a receptacle for expelled matter and in some cases coin freed mechanism.

It has also been proposed to employ a pump capable of being locked in an inoperative position by coin controlled locking mechanism.

Now the improved machine consists of a stand or casing arranged to stand on the floor, a cylinder mounted in the casing and connected with a nozzle at its upper end, a plunger working in the cylinder, and a spring or springs capable of being set for effecting the working stroke of the plunger by depressing a cross-head guided in the casing, the power for setting the spring or springs being applied either manually or by means of a motor and with hand or coin freed control. The machine also carries a bowl scraper operated as hereinafter described and a receiver for nicotin.

The invention is hereinafter fully described with reference to the accompanying drawings in which:

Figures 1 and 2 are sectional elevations taken at right angles through a machine constructed according to this invention,

Fig. 1[a] is a detail view of the advertising band.

Figs. 3 and 4 are sectional front and side elevations illustrating a slightly modified form of construction of the machine.

Figs. 5 and 6 are side elevation and plan respectively showing in detail a lever for holding the bowl of the pipe in position during the cleaning process.

Figs. 7 and 8 are respectively vertical and horizontal sections taken through the lower part of the casing of the machine to clearly show the catch lever for holding the piston when the spring or springs is or are fully tensioned or compressed.

Fig. 9 is a sectional elevation of a machine fitted with coin freed mechanism.

Fig. 9[a] is a plan of the stirrup shown in Fig. 9.

In the form of the invention shown in Figs. 1 and 2 the machine comprises a closed casing *a* made of metal or wood or in part of each of these materials, with an aperture *b* in the front wall, which may be glazed or not and serves for the displaying of advertising matter.

The container from which air is adapted to be forced at high velocity consists of a cylinder *c* which is fixed vertically in the top of the casing, its upper end projecting above the casing and being provided with a nozzle c^1 over which the bowl of the pipe is adapted to fit tightly, a lever *d* being provided to hold the bowl in position over the nozzle by means of fingers d^1. A plunger or piston *e* operates in the cylinder and is provided with a long rod *f* having a cross head *g* fixed at the outer end thereof, to which a pair of long helical springs *h* are attached, the springs extending from the cross head toward the cylinder near which they are fixed to lugs *i* supported from the top of the casing.

The cross head g is mounted to slide on parallel guide rods j fixed in the framing or casing of the machine, and serving to guide the piston rod, said guide rods being connected at intervals as shown by cross pieces k against which shock absorbing stops or buffers l on the piston rod are arranged to strike. These stops prevent shock when the piston reaches the end of its working stroke. Means may also be provided whereby an air cushion is formed in the cylinder for the same purpose.

The springs h are normally under tension, but this tension is increased to impart the required velocity to the piston, by means of a foot lever m which bears on a roller n on the cross head, and is depressed to move the piston into position ready for the working stroke, drawing air into the cylinder and at the same time tensioning the springs. When the springs are fully tensioned the piston rod is engaged and held by a spring catch o clearly shown in Figs. 7 and 8 which slips over an enlargement o^2 on the lower end of the rod while the foot lever is returned to a raised position by a suitable spring p. Catch o is adapted to be released by the hand lever d when it is desired to operate the piston by the energy stored in the springs. For this purpose, the lever d is pivoted at one end in an arcuate slot d^2 in a bracket d^3 so that it can be tilted on the bowl of the pipe, and by this means caused to pull on a cord o^1, which passes around a pulley o^3 and is attached to the catch o. The catch may be held by a second catch under the control of the foot lever which prevents the release of the springs until the foot lever has returned to the raised position. It will be seen that as soon as the piston is released it travels rapidly from the lower to the upper end of the cylinder forcing the air out at the nozzle and through the bowl and stem of the pipe.

In some cases the foot lever is held inoperative by a locking lever which can only be released by the insertion of a coin.

In a modified form of construction the springs are tensioned by an electric motor instead of by a foot lever.

In this case a cam driven by the motor through suitable reducing gear is arranged to move the cross head against the action of the springs into engagement with its retaining catch from which it is capable of being released as hereinbefore described. The electric motor may be set in operation by the insertion of a coin.

In addition to the blowing through device the machine is preferably provided with a rotary bowl scraper q driven by hand or otherwise. As shown the scraper is mounted to rotate in a funnel shaped receptacle r and driven through a flexible shaft r^1 and shaft s provided with a hand crank t.

A receiver u for nicotin or waste matter blown from the pipe is located on the machine adjacent the nozzle c^1 and is provided with a slide or receptacle u^1 removable for cleaning purposes.

As illustrated in Fig. 2, the machine is fitted with suitable supports for an endless advertising band v to which an intermittent movement is imparted when the machine is operated by a hook v^1 arranged to engage fingers or rods v^3 on the band. The hook is carried on a rod w which is mounted to slide in guides w^1 in the casing and is normally held in a raised position by a spring w^2.

A cord x attached to the hook v^1 is passed through a guide bracket x^1 and connected to a drum x^2, mounted on a shaft x^3 supported in bearings in the casing and carrying a second drum x^4 from which a cord x^5 is led to an arm on the foot lever m.

At each depression of the lever m the pull on the cord x^5 rotates the drum x^4, shaft x^3 and drum x^2 thereby winding up the cord x, tilting the hook v^1 into engagement with the advertising band to actuate the same, the hook being returned to the raised position by the spring w^2 when the foot lever m is released, at the same time unwinding the cord x from the drum x^2 and winding the other cord x^5 on its drum ready for the next operation of the lever m.

In the modified form of construction shown in Figs. 3 and 4 a single helical spring h^1 is employed in place of the two springs h shown in Figs. 1 and 2, the spring h^1 being placed directly on the piston rod f between a collar f^1 on the rod and a fixed guide plate f^2 bolted to brackets in the casing. In this case the cross head g slides on short vertical guide rods j fixed between the plate f^2 and the bottom of the casing and is formed with a stirrup g^1 so that the foot can be inserted to operate the piston, the separate foot lever being dispensed with.

As shown in Fig. 3 the upper end of the cylinder c does not project in this form of construction above the top of the casing a but is connected by a tube c^2 with a separate nozzle piece c^1 over which the bowl of the pipe is pressed by the fingers or pads d^1 of the lever d. The bowl scraper q is driven in this modification through bevel gear by the crank t. An advertising band v is also moved intermittently behind a glazed opening b in the casing a, being actuated by a cord x^5 connected with the cross head g and operating in the manner already described with reference to Figs. 1 and 2.

By forcing down the stirrup with the foot the piston e is moved to the bottom of the cylinder c by the rod f, the spring h^1 is put under compression. In the depressed position the stirrup is held by a catch o as already described which engages a stud o^2 in

the stirrup and is released by the tilting of one member of the compound lever d clearly shown in Figs. 5 and 6 connected by the cord o^1 with the catch o.

Fig. 9 illustrates a modified form of the improved pipe cleaning apparatus with coin freed control.

A coin chute y depends from the top of the casing, and the long arm of a lever y^1 is arranged to project across the delivery end of the chute so as to be in a position to be tripped by the coin inserted in the chute. Normally, a hook or catch y^2 on the lever y^1 is held by a spring y^3 in engagement with another hook formed on a long upright lever z pivoted at z^1 on a bracket z^2 in the casing and engaging with its lower end the retaining catch o of the stirrup g^1 which operates the piston rod f. At its upper end the lever z engages a sleeve connected with a movable bevel pinion employed to drive the bowl scraper and normally holds the pinion out of gear so that the bowl scraper is inoperative.

Upon the insertion of a coin the lever y^1 is depressed and releases lever z which is turned about its pivot by a spring z^3 to throw the movable pinion of the bowl scraping mechanism into gear, and simultaneously withdraw the catch o to release the stirrup g^1. This stirrup is normally detached from the piston rod f but as soon as released is pulled up by springs g^2 and automatically coupled to an enlargement on the lower end of the rod by coupling jaws g^3 Fig. 9^a which are pulled toward each other by a spring, but separated to release the piston rod, when the stirrup reaches its lowest position, by a cam or wedge g^4 adapted to enter between the jaws.

After the stirrup g^1 has been raised and coupled to the rod as described, the stirrup and rod are depressed by the foot to compress the spring h^1, the rod being released automatically when the stirrup arrives at the bottom of its stroke, and being driven rapidly upward by the spring actuates the piston in cylinder c to force air at high velocity from said cylinder. Lever z is reset in engagement with lever y^1 by the collar on the piston rod striking a tappet z^4 on the lever z which is held in the path of the collar by a spring z^5.

I claim:—

1. A pneumatic pipe cleaning machine comprising a cylinder mounted vertically in a casing and connected with a nozzle at its upper end over which the bowl of the pipe is held, a plunger mounted in the cylinder and provided with a long rod having a vertically guided cross head fixed at its lower end capable of being depressed to move the rod and plunger downward until the plunger reaches the lower end of the cylinder when it is ready for the working stroke, a spring in which energy is stored gradually as the plunger rod is moved down, and a catch arranged to engage and hold down the plunger rod and plunger until released, substantially as described.

2. A pneumatic pipe cleaning machine comprising a cylinder mounted vertically in a casing and connected with a nozzle at its upper end over which the bowl of the pipe is held, a plunger mounted in the cylinder and provided with a long rod having a vertically guided cross head fixed at its lower end capable of being depressed to move the rod and plunger downward until the plunger reaches the lower end of the cylinder when it is ready for the working stroke, a catch arranged to engage and hold down the plunger rod and plunger until released, and long compression springs for operating the plunger.

3. A pneumatic pipe cleaning machine comprising a cylinder mounted vertically in a casing and connected with a nozzle at its upper end over which the bowl of the pipe is held, a plunger mounted in the cylinder and provided with a long rod having a vertically guided cross head fixed at its lower end capable of being depressed to move the rod and plunger downward until the plunger reaches the lower end of the cylinder when it is ready for the working stroke, a catch arranged to engage and hold down the plunger rod and plunger until released, long compression springs for operating the plunger, and a foot lever operatively connected with said piston rod for depressing said springs.

4. A pneumatic pipe cleaning machine comprising a cylinder mounted vertically in a casing and connected with a nozzle at its upper end over which the bowl of the pipe is held, a plunger mounted in the cylinder and provided with a long rod having a vertically guided cross head fixed at its lower end capable of being depressed to move the rod and plunger downward until the plunger reaches the lower end of the cylinder when it is ready for the working stroke, a catch arranged to engage and hold down the plunger rod and plunger until released, long compression springs for operating the plunger, and a foot lever operatively connected with said piston rod for depressing said springs, said lever being raised independently after being depressed.

In testimony whereof I have affixed my signature.

FREDERICK HUDSON SHEPHERD SHEPHERD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."