Oct. 6, 1942. C. W. FAUST 2,297,755

PORTABLE ELECTRIC DRAIN-PIPE CLEANER

Filed Aug. 1, 1940 2 Sheets-Sheet 1

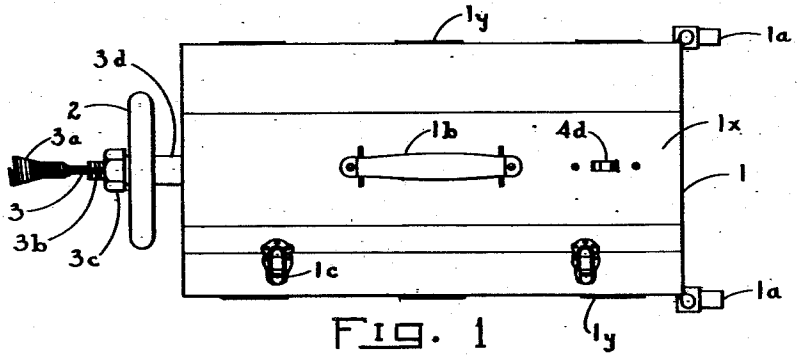


FIG. 1

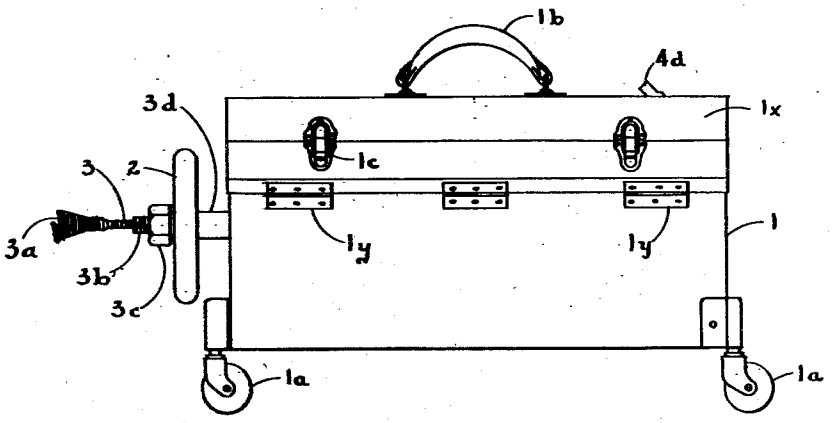


FIG. 2

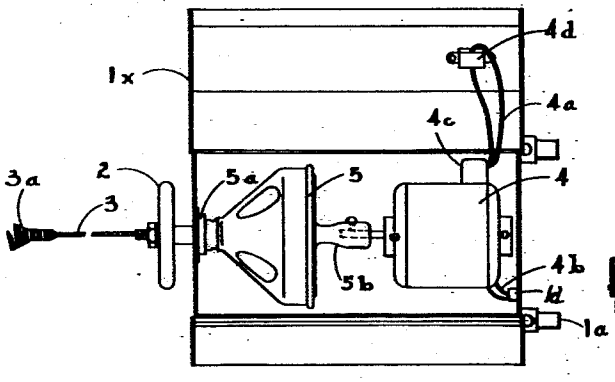


FIG. 3

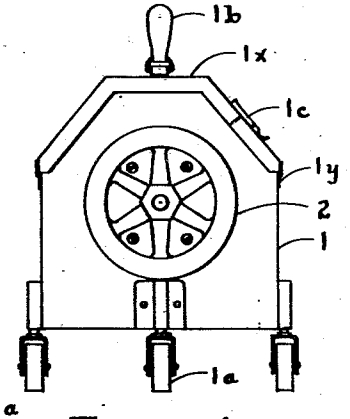


FIG. 4

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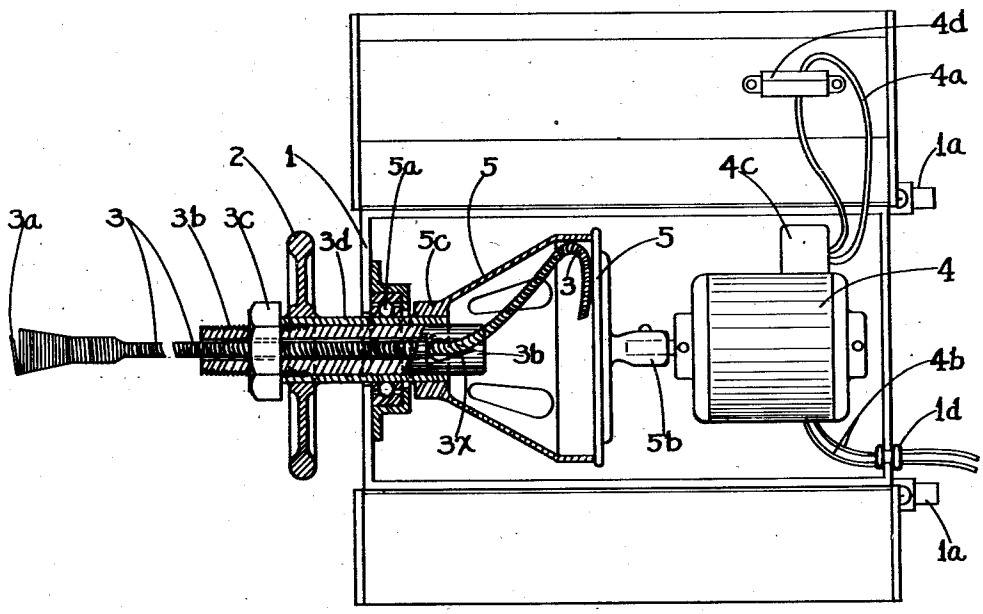


FIG-5

INVENTOR - Conrad W. Faust

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PORTABLE ELECTRIC DRAIN-PIPE CLEANER

Conrad W. Faust, Louisville, Ky.

Application August 1, 1940, Serial No. 349,186

1 Claim. (Cl. 15—104.30)

My invention relates to improvements in devices for cleaning drain-pipes choked or clogged with an accumulation of foreign matter. And the principal object of my invention has been to design a hand-portable electrically-driven device provided with a long flexible helical spring-cable having a circular hook on the front end thereof, that can be quickly adjusted as to the desirable length and pushed into the open end of the drain-pipe and rotated rapidly to break through the accumulation therein and clean the pipe. Another object of my invention has been to design a strong and light housing or carrying case for my complete equipment, provided with a handle and casters thereon and a small electric motor having a toggle switch and wires for readily connecting to the ordinary lighting circuit of a residence; the motor being adapted to rotate said spring cable rapidly to loosen said accumulation and clean said drain-pipe. Other objects of my present invention will be disclosed in the accompanying specification.

The foregoing objects have been attained in my present invention, and my new and useful improvements in my portable electric drain-pipe cleaner, illustrated in the accompanying drawings, constitute a complete and practical machine, including the aforesaid novel means and other new and useful details of construction, arrangement and combination of parts which I will now describe in detail with reference to said drawings. Following the description, I will point out definitely in my claims the new and useful features of my invention, so that any person skilled in the art may be able, to construct and use my portable electric drain-pipe cleaner.

In said drawings:

Fig. 1 is a plan view of the upper outside of my new device closed, but showing a part of the tubular shaft and the hand-wheel fixed thereon, and also showing the relative position of the carrying-handle and the latches and hinges of the compound cover of the housing.

Fig. 2 is a side elevational view of my new device closed for transportation, and showing the circular integral wire grapple on the end of the spring-cable, and the outer end of the threaded cable-sleeve with the clamping-nut thereon.

Fig. 3 is a plan view of the inside of my new portable electric drain-pipe cleaner, showing the electric motor with its toggle switch and wires, fixed therein, and the rotary conical housing installed between the motor shaft and the tubular shaft with the hand-wheel rigidly mounted thereon.

Fig. 4 is an elevational view of the front end of said device, showing the form of the hand-wheel and the heads of the screws holding the ball bearing installed on the inside of the front end-plate of the housing.

Fig. 5 is a plan view of the inside of my new portable electric drain-pipe cleaner with both wings of the compound cover wide open, showing the relative positions of the internal parts thereof, the electric motor with its toggle switch and supply-wires attached thereto, the clamping nut and the inner end of the threaded sleeve, in elevation, while the rotary conical housing, the tubular shaft and its contiguous circular collar and the hand-wheel as well as parts of the threaded cable-sleeve, are shown in section, the upper parts thereof being removed to show the detail construction of the internal parts thereof.

This invention has been designed and experimentally developed in its details of construction for the purpose of producing at a reasonably low cost a portable electric drain-pipe cleaner for breaking through accumulations of matter in drain-pipes. And with said purpose and the special objects aforesaid in view, I will now describe my invention more fully in detail, pointing out the new and useful features of the construction and the operation of the individual parts and the combination thereof, as illustrated in the drawings hereinabove described forming part of the specification, in which similar letters and characters refer to similar parts throughout the several views.

In the development and adaptation of the novel features of my present invention, for the sake of economy in production and efficiency in operation, I have devised an oblong carrying-case 1 provided on the bottom thereof with two casters, 1*a*, 1*a*, at the back-end for balancing the case and one caster at the front end thereof. I have found that one caster under the front end allows me to shift the position of the case readily in service. The carrying handle 1*b* for the complete equipment I have riveted on the central part of the compound cover 1*x*. Both sections of the compound cover 1*x* are strongly attached to the upper edges of the sides of the housing 1 by means of three strong flat hinges, 1*y*, 1*y*, shown in Figs. 1 and 2. When the housing is closed, the two sections of the compound cover are securely locked together by means of two latches 1*c*, 1*c*, as shown in Figs. 1 and 2. The spring-cable 3 has an integral conical enlargement 3*a* at its outer end; and the end of the outside coil of said enlargement is bent outward.

sharpened and adapted, in rotating, to hook into any conglomerate mass of matter with which it comes in contact and tear the mass apart. The back of housing **5** is closed with a metal disc having at its center a solid integral knob **5***b*, in whose axis is a deep boring for attaching the shaft of motor **4**.

The tubular shaft **3***d* with the hand-wheel **2** rigidly mounted on the outer end, thereof, extends back through the ball bearing **5***a* and the contiguous circular collar of the housing **5**, in the front end of which said collar is rigidly fastened, so that, when the housing **5** is rotated, the tubular shaft and the hand-wheel thereon are also rotated therewith. The threaded sleeve **3***b* is long enough to extend all the way through the tubular shaft **3***d* and a short distance into the rotary housing **5**, said sleeve having a solid or closed inner end. As the inner end of said cable is being pushed into said sleeve, just before reaching the solid or closed inner end of said sleeve, the end of said cable comes to a tapered opening **3***x* cut large enough in one side of said sleeve to allow said cable to slide easily out of said sleve into the housing **5** and to coil therein. This is the manner of installing the spring-cable **3** into its housing **5** for storage therein; although said cable may be 25 or 30 feet long. The peak of the tapered opening **3***x* in the side of the threaded sleeve **3***b*, points toward the inner end of said sleeve, as shown in Fig. 5. After said cable has been thus pushed into the housing **5** and coiled therein, it may be locked in that position by means of the clamping-nut **3***c*, for transportation or storage, as shown in Figs. 1 and 2. The operator, in locking the cable **3** so it cannot be moved into or out of the housing **5**, first places one hand on the hand-wheel **2** to hold the tubular shaft **3***d* from turning, while he places his other hand on the clamping-nut **3***c*, and screws the nut against the smooth end of said tubular shaft. This operation forces the threaded sleeve **3***b* outwardly along said tubular shaft. This outward movement of the threaded sleeve draws that part of the cable **3** projecting out of said tapered opening in the side of the inner end of said sleeve, forcefully against the inner edge of said circular collar fastened in the front end of the housing **5**, and thereby locks the cable **3** by the forceful pressure upon said cable now held between the inner edge of said circular collar and the converging edges of said opening in the side of said sleeve, out through which said cable extends, so that cable **3** cannot be moved into nor out of the housing **5** until released again therefrom by the reverse movement of said clamping nut.

In Fig. 5 are shown the open carrying case **1** and the enclosed parts of my portable electric drain-pipe cleaner. The conical cable housing **5** and the circular contiguous collar **5***c* are shown in section. Also the tubular shaft **3***d*, the hand-wheel **2**, and the ball-bearing **5***a* are shown in section; while the outer portion of the threaded cable-sleeve is shown in section, a short part of the inner portion of said sleeve where the tapered opening **3***x* is cut, is shown in elevation to illustrate the position and the shape of the tapered opening **3***x*; the spring-cable being shown in a position to be locked by means of the inner ends of the tubular shaft **3***d* and its contiguous collar **5***c* pressing the cable **3** against the converging edges of the inner end of the tapered opening **3***x*, when the clamping nut **3***c* has been given a few more turns to force the cable-sleeve outward a little farther.

There is ample room in this carrying-case **1** for the operator thereof to take along therein a coil of electric wire for the purpose of connecting his motor **4** to a convenient electric circuit. As he goes on a job with this portable electric drain-pipe cleaner, to clean an accumulation of matter from a drain-pipe, he places the front end of the device near the trap or other opening of said pipe. He then unhooks the latches, **1***c*, **1***c*, of the compound cover, **1***x* and opening the case, takes therefrom his coil of electric wire, adapted for connecting his motor **4** with an adjacent electric supply circuit.

The operator is now ready to insert the enlarged hook-end **3***a*, also called the auger-end, of the spring-cable **3**, into the drain-pipe, through the trap or other opening therein. He first unlocks the cable **3**, by placing one hand on the hand-wheel **2** and his other hand on the clamping-nut **3***c*, unscrewing the nut away from the end of the tubular shaft **3***d*, thus allowing the threaded sleeve **3***b* to move inwardly in the tubular shaft and so release the locking pressure on that part of said cable extending out of said side-opening in said sleeve. The operator now pulls out of the housing **5** three or four feet of the cable **3** and with said clamping-nut locks the cable again. Then he pushes some of this cable into said drain-pipe, through the trap or other opening therein. He then closes the cover **1***x* of the carrying-case, and proceeds to connect one end of his connecting wire to an adjacent electric supply circuit, and plugs the other end of said wire into the socket **1***d* fixed in through the back end of the case **1** for the installation of the supply wires **4***b* for driving the motor **4**. One of these supply wires runs directly into the motor **4** through the wire-box **4***c* and the other supply wire **4***a* runs up through the toggle switch **4***d* and back through box **4***c* into the motor **4**. The operator now throws his toggle switch for electric connection starting his motor, and allowing it to run 40 or 50 revolutions, while he pushes the cleaning equipment slowly up near the opening in said drain-pipe. The operator then stops the motor and unlocks the cable, pulls the equipment back a few feet from said trap and proceeds to push into said drain-pipe as much of the cable as he can, and then he turns the motor on and lets it run a few minutes at full speed after pulling the equipment out gradually for 5 or 6 feet from said trap. The operator then shuts off the motor, unlocks the cable and pushes more of the cable into the drain-pipe, if necessary; then locking the cable, he turns on the motor again for a thorough cleaning of said pipe. He now stops the motor, unlocks the cable and pulls it from the drain-pipe by hand, turning the hand-wheel to help. He then replaces the trap-plug and flushes the drain-pipe, finding the accumulation of matter in the drain-pipe broken up by the rotating cable and its enlarged hook-end and completely washed away.

It should be thoroughly understood that the specific detail of the various parts of the present embodiment of my invention, as I have illustrated in the drawings thereof and fully described, are not to be considered as limitations in the construction of the detail parts of my portable electric drain-pipe cleaner, and that I may make desirable modifications in these details, to facilitate production or to economize in

the fabrication of the parts thereof, provided I keep within the scope of my invention and claim.

Now, having thus described the various features of my invention, the detail construction, arrangement and combination of its parts, as well as its functions and the ways and means of operation and application; those features and accessories of my invention that I consider new and useful and on which I desire Letters Patent granted to me, I have hereinbelow set forth and specifically described in the following claim.

I claim:

In a portable electric drain-pipe cleaner of the character described, the combination with a conventional sheet-metal carrying-case having hinged and latched top-covers and an ordinary carrying handle securely fastened thereon, said case having installed therein an electric motor and a conventional conical rotary cable-housing having a circular collar fastened in the front end thereof, said housing being rotatably attached to the shaft of said motor and adapted to rotate therewith, of a conventional flexible, spring-cable having the customary integral conical enlargement and hook on the outer end thereof, adapted, in rotating, to hook into a conglomerate mass of matter in a drain-pipe and tear it apart; a perforation in the rear end of said carrying-case; a rubber bushing fixed therein designed for the entrance of electric supply-wires for said motor; customary rubber-tired, swiveled casters fixed on the underside of said carrying-case for the easy movement of said case and its equipment; a toggle-switch for starting and stopping said motor, fixed to the inner side of said top-cover means and adapted to be operated from the outside thereof; a perforation in the middle front end of said carrying-case provided with a ball-bearing fastened to the inner side of said front end; a tubular shaft passing through said perforation and rotatable in said ball-bearing and having its inner end rigidly fixed in said circular collar fastened in the front end of said conical cable-housing; a hand-wheel to help lock and unlock said cable, fastened on the outer end-portion of said tubular shaft and adapted to rotate therewith; a sleeve for said cable fitted slidingly into said tubular shaft, and having its outer end-portion threaded and standing out a short distance beyond said hand-wheel and a smooth end of said tubular shaft, the inner end of said cable-sleeve being solid or closed and standing a short distance into said cable-housing; a tapered opening in one side of said cable-sleeve near the solid or closed inner end thereof, said opening being large enough for the passage therethrough of said spring-cable; and a clamping-nut fitted on the threaded outer end of said cable-sleeve as a means for locking and unlocking the movement of said cable, said clamping-nut being adapted to be screwed against a smooth outer end of said tubular shaft for forcing said cable-sleeve outward thereby locking said cable by means of the inner ends of said tubular shaft and its contiguous collar pressing said cable into the converging edges of the inner end of said tapered opening, thus preventing said cable from moving in or out of said cable-housing.

CONRAD W. FAUST.