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3,095,592

PIPE CLEANING MACHINE

Filed June 5, 1961

2 Sheets-Sheet 1

Fig. 1

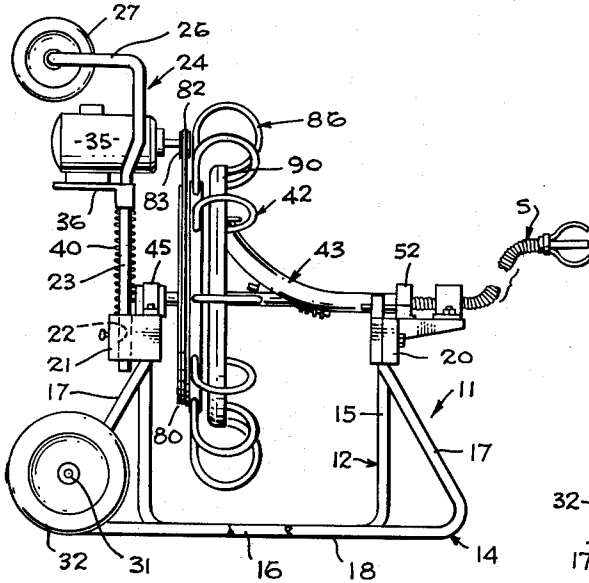


Fig. 2

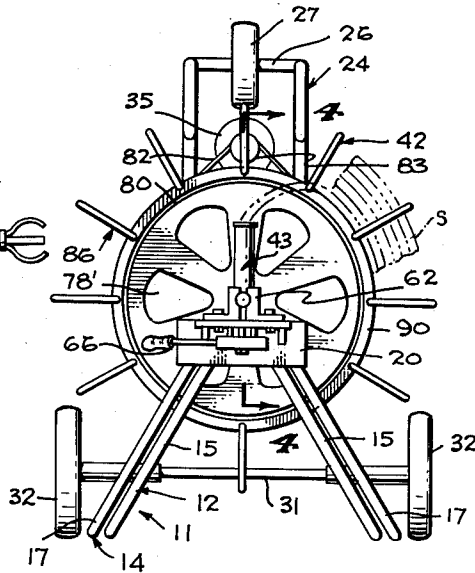


Fig. 3

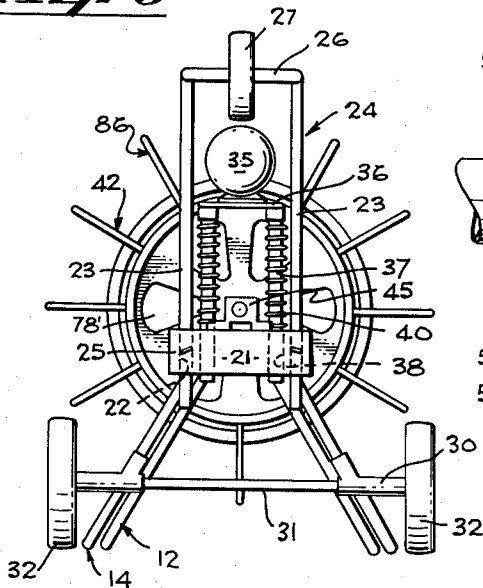
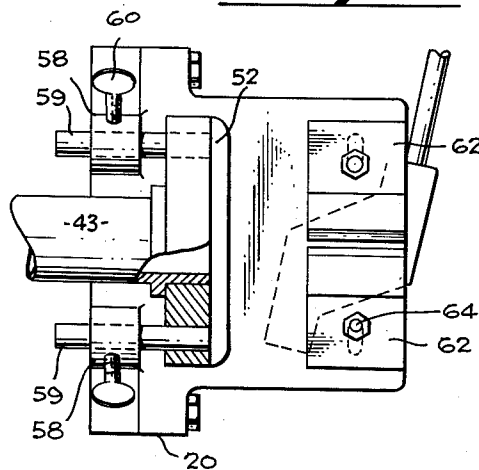


Fig. 4



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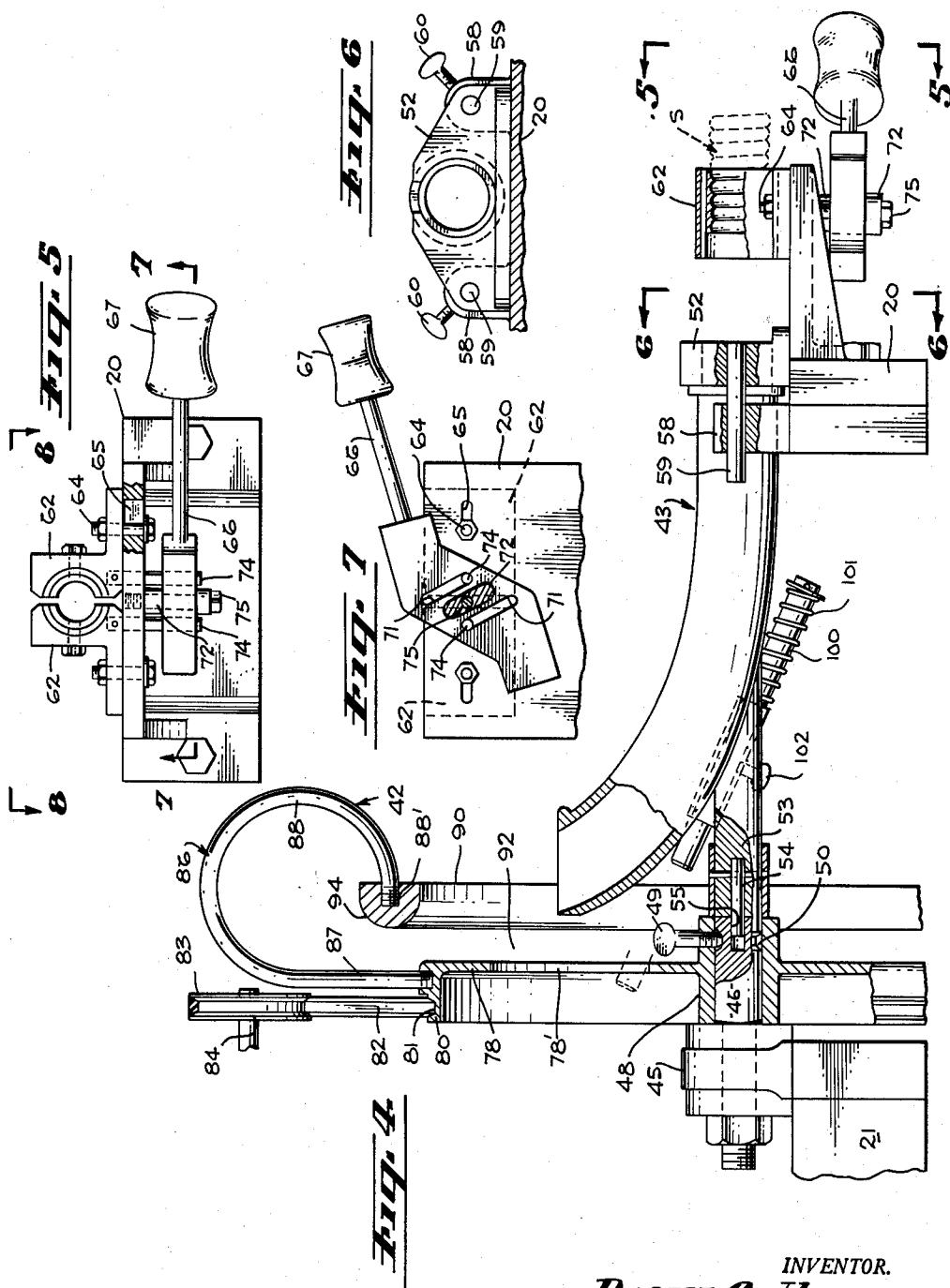
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PIPE CLEANING MACHINE

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This invention has to do with power-driven devices for storing and rotatively feeding and retracting flexible plumbers' snakes.

An object of the invention is to provide a new and improved power-driven machine for handling flexible plumbers' snakes of the type comprising a coil spring wire.

Another object is to provide a machine of the type indicated embodying a readily demountable cartridge or drum for containing a limited length of plumbers' snake to enable the quick-change of the cartridges or drums as where successive cartridges are used to supply the needed length of snake.

A further object is to provide a novel storage cartridge or container in which the snake can be readily wound and retained which is of a unique open-type construction and relatively lightweight, and which is so constructed that kinking of the snake is prevented.

Another object is to provide a machine which can be readily manufactured and which one person can easily handle both in transporting and operating the same.

These and other objects will be apparent from the drawings and the following description. Referring to the drawings:

FIG. 1 is a side elevational view of a machine embodying the invention;

FIG. 2 is an elevational view of the front of the machine of FIG. 1;

FIG. 3 is an elevational view of the rear of the machine of FIG. 1;

FIG. 4 is a central sectional elevational view on an enlarged scale on line 4—4 of FIG. 2;

FIG. 5 is an elevational view on line 5—5 of FIG. 4;

FIG. 6 is a sectional view on line 6—6 of FIG. 4;

FIG. 7 is a fragmentary inverted plan view on line 7—7 of FIG. 5; and

FIG. 8 is a plan view on line 8—8 of FIG. 5.

More particularly describing the invention, the machine includes a base frame, designated generally 11, including inner frames 12 and outer frames 14. Each inner frame is generally U-shaped and has parallel legs 15 and a connecting section 16. Each outer frame 14 has two upwardly converging legs 17 extending from a base section 18. Sections 16 and 18 of the frames form a stable base for the machine since the sections 16 and 18 on one side of the machine are widely spaced from the sections 16 and 18 at the other side due to the diverging relation of the frames 12 and 14 as best seen in FIGS. 2 and 3.

The inner and outer frames 12 and 14 have their upper ends rigidly secured in front and rear supports 20 and 21. The rear support 21 is provided with parallel vertical bores 22 which receive vertical legs 23 of an upper frame 24. The latter is detachably secured at the proper elevation by thumbscrews 25. The frame 24 includes a U-shaped upper section 26 which serves both as a handle for an operator in transporting the device and as an axle for a wheel 27.

The rear legs 17 of the outer frames 14 are provided with brackets 30 to receive an axle 31 which carries wheels 32.

The construction of the frame is such that the machine normally stands upon the base sections 16 and 18 of the two frames 12 and 14, but it will be apparent that by tipping the device rearwardly and using the upper frame section 26 as a handle, the machine may be readily wheeled. Also the machine may be turned 90° from

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FIG. 1 counterclockwise so as to rest on all three wheels and become a self-supporting vehicle.

A motor 35 is carried upon a motor-support plate 36, the latter being provided with two depending rods 37 which are slidably received in bores 38 of the rear support member 21. Coil springs 40 on the rods are interposed between the parts 21 and 36 to yieldably support the motor at the proper elevation.

Mounted between the front and rear supports 20 and 21, respectively, is a cartridge, container or reel assembly including a cartridge or reel 42 and a guide tube 43. The rear support is provided with a bearing 45 to rotatably support a stub shaft 46 therein which projects forwardly thereof for a limited distance, as best seen in FIG. 4. The cartridge or reel 42 is provided with a central hub 48 adapted to receive the stub shaft and be retained thereon by a setscrew 49 which enters a groove 50 in the shaft.

The guide tube 43 is journaled at its forward end in a bearing 52 provided on the forward support 20. At its other end the tube is supported by the stub shaft 46 and for this purpose is provided with a short shaft 53 fitted with a projecting pin 54 for reception in a bore 55 of stub shaft 46.

The guide tube itself, through which the flexible member or snake S travels, has an internal diameter substantially greater than the outer diameter of the snake so that the latter can readily move therethrough.

For the purpose of disassembling the parts to change reels the bearing 52 is mounted to be moved forward from the position in which it is shown and thus enable the guide tube to be removed. This is accomplished by providing two apertured lugs 58 in which are slidably mounted short shafts 59 upon which the bearing is carried. Setscrews 60 provide for anchoring the parts in the proper position. With this construction, the bearing 52 can be moved forward far enough to permit removal of the guide tube 43 and thus allow quick removal of the reel or cartridge and the replacement thereof with another.

The forward support 20 is provided with a pair of jaws 62 for receiving the snake S, these jaws preferably being formed internally as half-nuts to threadedly engage the snake and permit the same to be advanced by rotating the snake relative to the jaws, the snake itself being of spring wire wound helically. The jaws are mounted for limited movement toward and away from each other by a bolt 64 mounted in each jaw and extending through a slot 65 in the support 20. The jaws are controlled by a lever 66 with a handle 67. The lever is provided with two parallel slots 71 which receive pins 74 mounted in and depending from the respective jaws. The lever has a central, double boss 72 which receives a stud 75 serving to retain the parts. It will be apparent that pivotal movement of the lever serves to open and close the jaws.

One of the features of the invention is the construction of the reel or cartridge itself. This includes the aforementioned hub 48 and a disk wheel portion 78 extending radially therefrom and terminating in a circular, axially extending flange 80. The latter is provided with a groove 81 to receive a belt 82 which is driven by a sheave 83 on the motor shaft 84.

Mounted in the flange 80 of the reel at circumferentially spaced regions and extending radially therefrom are a plurality of bent rods 86. Each of these includes a straight, radially extending section 87 and a semicircular arcuate section 88 therebeyond which terminates in a region spaced axially of the straight section and short of the end thereof, the section 88 extending through approximately 270°. The ends 88' of the arcuate sections are mounted in a ring 90 which is positioned forwardly of the wheel disk 78 of the device leaving an annular space 92 of sufficient size to readily pass the snake S so

that the same may be coiled within the rods 86. While it is not essential, ring 90 preferably is provided with a rounded face 94 opposite the disk portion 78 of the device to facilitate passage of the snake.

In the normal feeding and retracting of the snake by rotation of the reel 42 with jaws 62 engaging the snake, the reel and the guide tube are rotatable independently of each other. However, under certain conditions, as when the snake meets an obstruction, the snake must be rotated without feeding the same and it is then desirable to be able to lock the reel and guide tube together to prevent independent movement thereof. This is accomplished by a locking pin 100 which is normally held retracted (as FIG. 4) by a spring 101. In order to lock the parts against relative rotation the pin is pushed forward, compressing the spring and locating the end of the pin in one of the apertures 78' of the reel disk 78. A setscrew 102 is provided for holding the pin in extended position. With the reel and guide tube locked together, and the jaws 62 retracted, the guide tube acts as a torque arm during rotation of the reel and tube.

It should be pointed out that the motor mount serves through its springs 40 to maintain proper tension on the belt which drives the reel. At the same time the motor can be readily depressed to remove the belt, or it can be readily removed altogether from the frame where this may be desirable.

Another feature of the invention is the construction of the reel wherein the snake feeds into the reel at the rear of the space in which it coils and then moves forwardly to coil first in the front portion of the space and progressively coil from front to rear thereby avoiding kinking.

Although I have illustrated and described preferred forms of my invention, I contemplate that various changes and modifications can be made therein without departing from the invention, the scope of which is indicated by the following claims.

I claim:

1. A reel for housing a flexible plumbers' snake formed of helically coiled spring wire, comprising a circular wheel disk having a central hub and having a rim with a drive belt-receiving peripheral groove therein, a plurality of rod-like members mounted in said rim at circumferentially spaced points in a plane adjacent but axially spaced from the groove, said members each including a straight radially projecting section immediately beyond the rim and a circularly curved forwardly projecting arcuate section therebeyond extending through about 270°, and a ring of somewhat greater diameter than said wheel disk spaced axially forward thereof, the arcuate sections of said rod-like members having their ends mounted in and supporting said ring, said ring and wheel disk defining an annular opening into the annular snake-receiving space defined by said rod-like members.

2. The reel set forth in claim 1 in which said ring projects radially into the annular snake-receiving space defined by said rod-like members to form a forwardly facing abutment shoulder.

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