Dec. 23, 1941. E. CLOTZ 2,267,493

SEWER CLEANING MACHINE

Filed Aug. 5, 1940 4 Sheets-Sheet 1

FIG. 1.

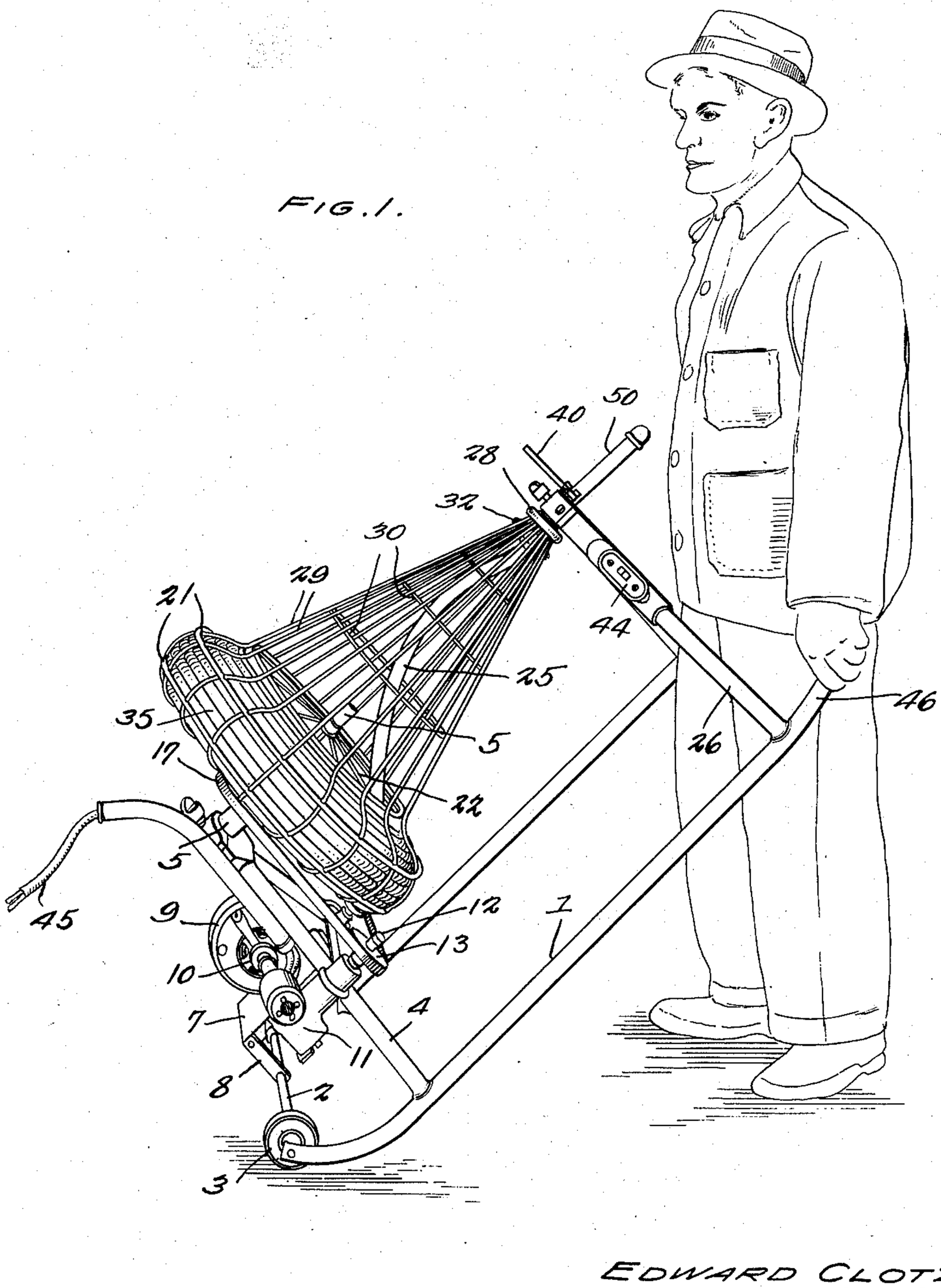

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FIG. 2.

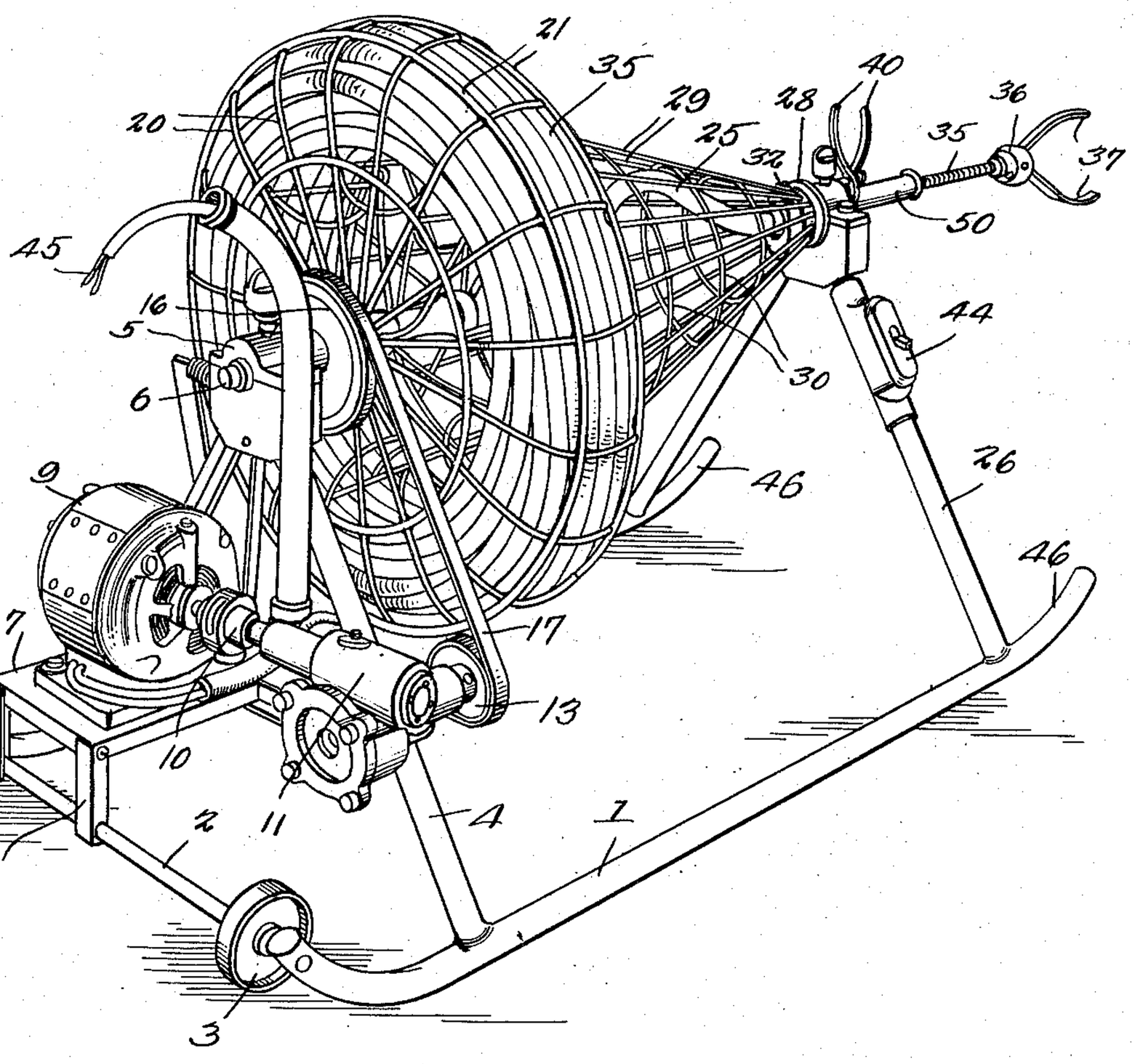


FIG. 8.

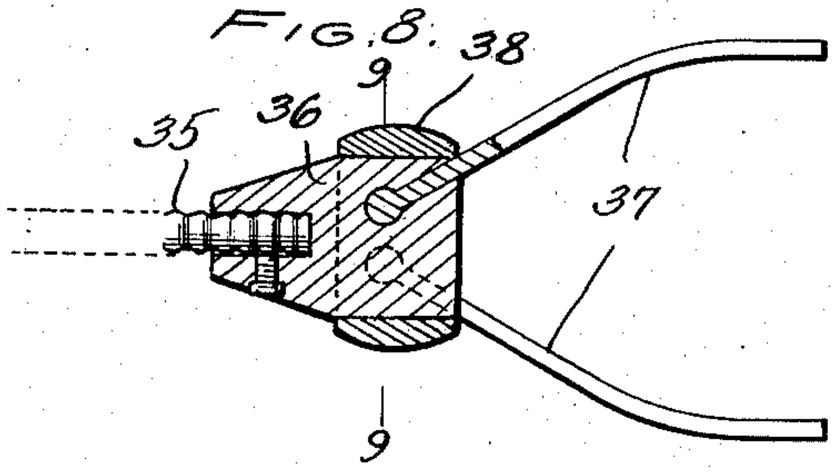
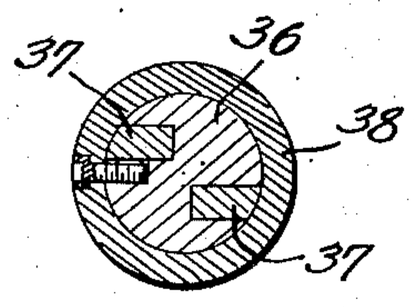


FIG. 9.



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SEWER CLEANING MACHINE

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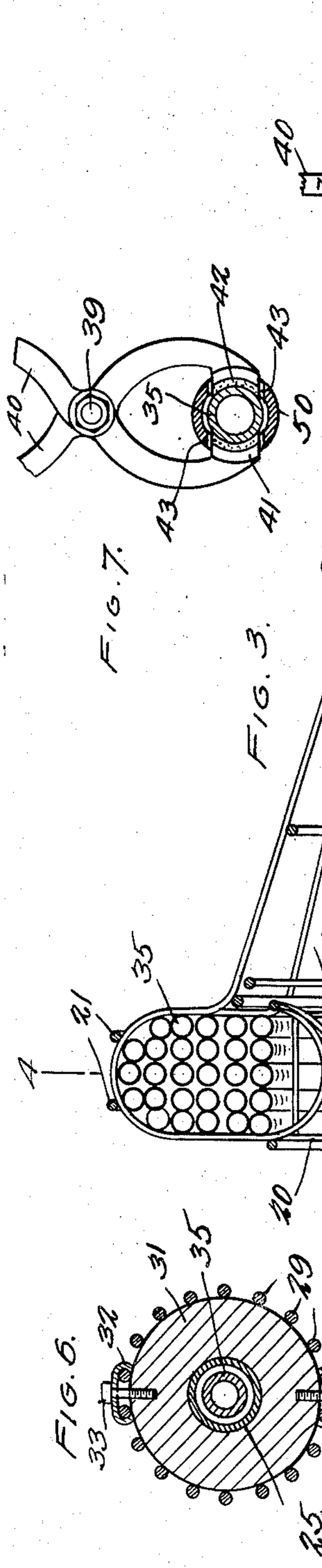

FIG. 7.

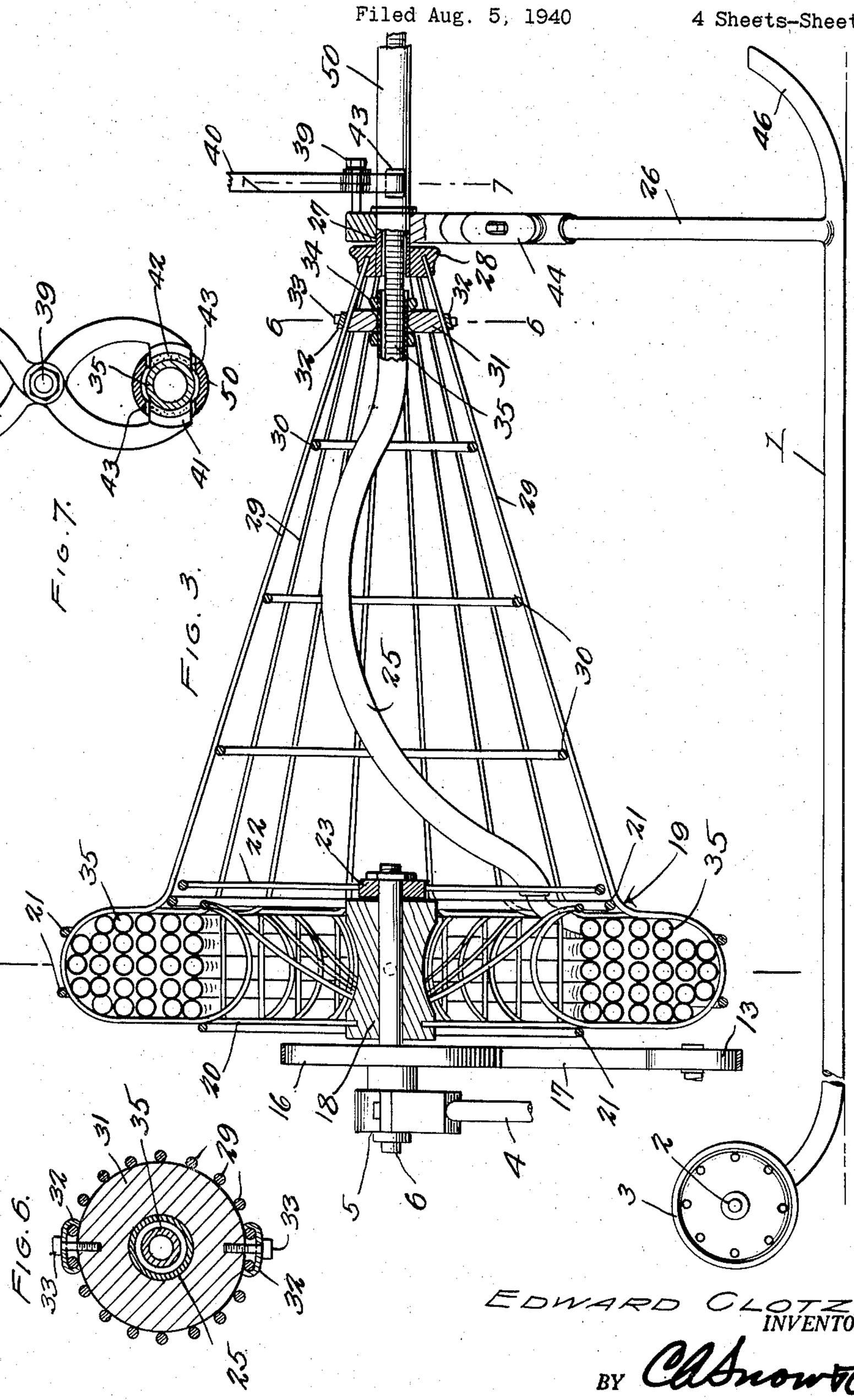

FIG. 3.

FIG. 6.

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SEWER CLEANING MACHINE

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FIG. 5.

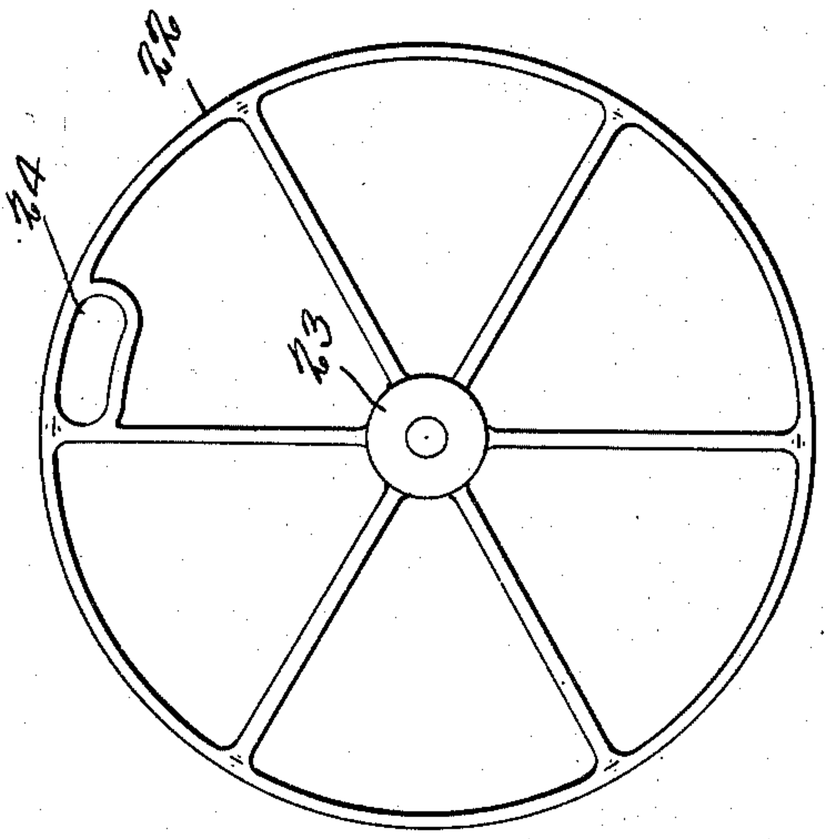
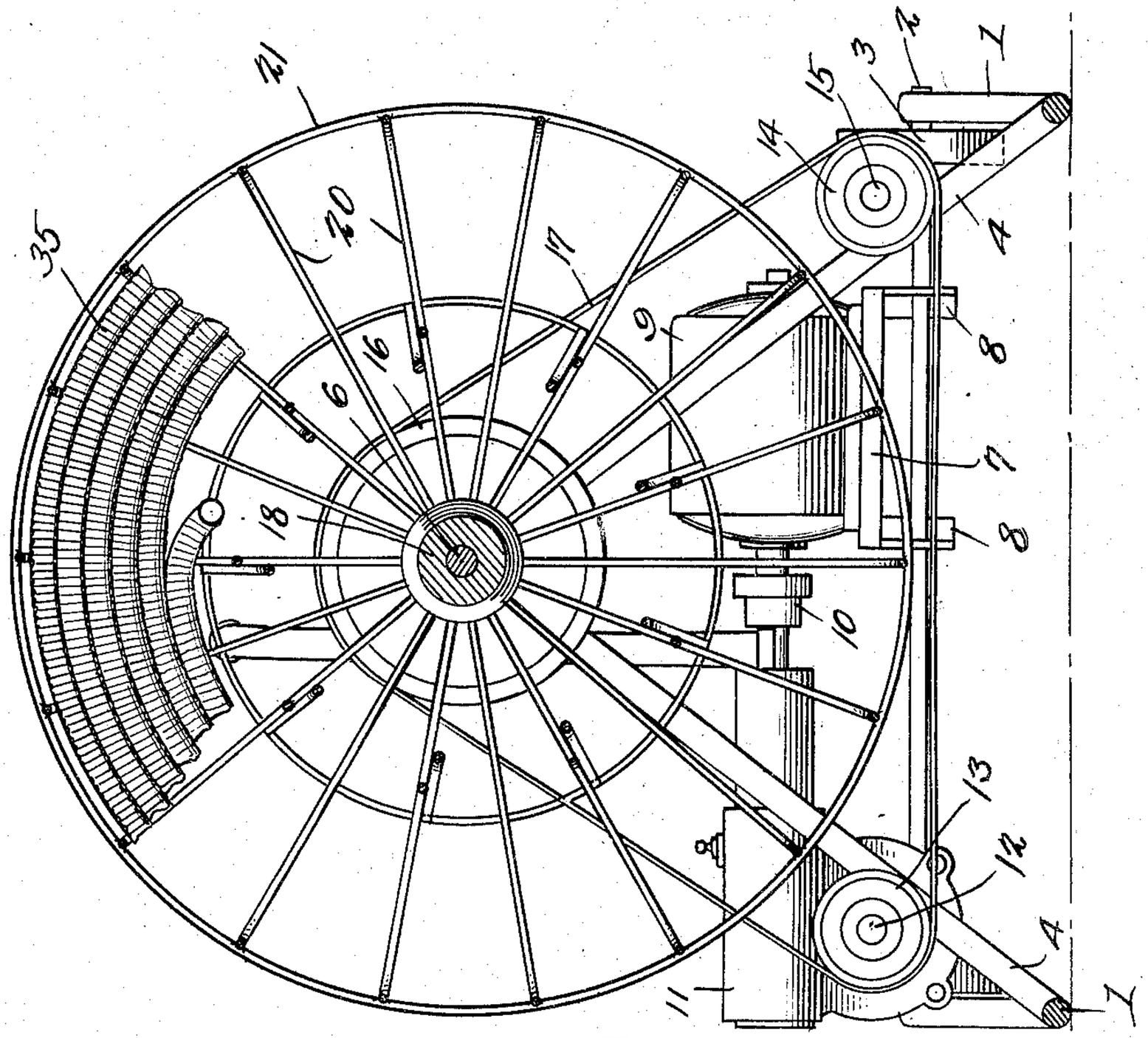


FIG. 4.



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UNITED STATES PATENT OFFICE

2,267,493

SEWER CLEANING MACHINE

Edward Clotz, Lorain, Ohio

Application August 5, 1940, Serial No. 351,532

1 Claim. (Cl. 15—104.30)

This invention relates to improvements in sewer cleaning machines, and more particularly to a portable motor operated machine which may be transported readily to a section of sewer pipe which is clogged, and which will be provided with a rotatable snake provided with cutting knives on its end, whereby said cutting knives may be inserted within the sewer pipe, and rotated as the flexible snake is fed into the pipe, whereby the stoppage in the sewer pipe may be opened.

An object of my invention is to provide an improved sewer cleaning machine which will be supported on a suitable wheeled truck or carrier, and will be provided with a motor for operating the same to impart a twisting of the snake and cutter blades or knives on the end of the snake, as the same is fed into a sewer pipe to clean the pipe and open the stoppage therein.

Another object of my invention is to provide an improved sewer cleaning machine which will be provided with motor driven means for rotating a snake in the form of a flexible shafting or cable upon which one or more cutting knives will be supported, and the further provision of means for feeding the flexible snake into a sewer pipe, and for effecting a quicker speed of rotation when the knives engage a stoppage in the sewer pipe, whereby the same may be quickly and efficiently opened.

Another object of my invention is to provide an improved sewer cleaning machine, which will be highly efficient in operation, and which will be relatively inexpensive to manufacture.

A still further object of my invention is to provide an improved sewer cleaning machine which will comprise a wheeled truck upon which a motor driven reel is supported and means for feeding and imparting rotation to a flexible snake which supports one or more cutting blades at its outer end, and the further addition of means for braking the rotation of the snake temporarily, to automatically effect a more rapid whirling of the cutter knives when the said brake is released.

Other objects will appear as the description proceeds.

In the accompanying drawings which form a part of my application,

Figure 1 is a perspective view of my improved sewer cleaning machine;

Figure 2 is a perspective view of the sewer cleaning machine showing the same in position upon the ground;

Figure 3 is a longitudinal sectional view through my improved sewer cleaning machine;

Figure 4 is a transverse sectional view through my improved sewer cleaning machine on line 4—4 of Fig. 3;

Figure 5 is a front elevation of the free guide wheel associated with my machine;

Figure 6 is a sectional view taken on the line 6—6 of Figure 3;

Figure 7 is a sectional view taken on the line 7—7 of Figure 3;

Figure 8 is a sectional view of the specific tool, and

Figure 9 is a sectional view taken on the line 9—9 of Figure 8.

Like characters of reference are used throughout the following specification and the accompanying drawings to designate corresponding parts.

In carrying out my invention, I provide a portable truck frame 1 formed of tubular piping, and provided at one end with a cross axle 2, and the supporting wheels 3 mounted on said axle interiorly of the side elements of the portable truck frame 1.

Mounted adjacent the wheel end of the truck frame 1, I have provided an inverted V-shaped supporting frame 4, also made of tubular piping, and provided at its apex with the bearing 5 in which the stub shaft 6 is mounted.

Suitably supported upon the cross axle 2, I have provided a motor base 7 having the angle iron supporting legs 8, and adapted to support an electric motor 9, which is connected by the coupling 10 to the reduction gear mechanism 11. The shaft 12 of the reduction gear mechanism 11 is adapted to support a pulley 13 which cooperates with the pulley 14 suitably supported upon the stub shaft 15 carried by the motor base 7. A large pulley 16 will be secured to the stub shaft 6, and will be connected to the pulleys 13 and 14 by means of the belt 17.

A hub 18 is secured to the shaft 6, and is adapted to receive the composite reel structure 19, which is formed of the several radially extending wires or rods 20, and the annularly disposed rods or wires 21, which are suitably secured together, by welding, or in any other suitable manner.

The free wheel 22 is formed with a hub portion 23 and is provided for free rotation upon the end of the stub shaft 6, and is formed with an arcuate slot 24 through which the guide loop 25 is adapted to extend.

Disposed at the opposite end of the portable truck frame 1, is a second inverted V-shaped supporting frame 26, formed of tubular piping,

and also formed at its apex with the fixed bearing 27. Mounted upon the bearing 27 is a rotatable collar 28, which supports the ends of the wires or rods 29, which are flared to extend outwardly to the composite reel structure and are looped over the same and serve to form a part of said reel structure. The several rods or wires 29 serve to form a cage, which is reinforced by the several internal reinforcing rings 30, arranged in spaced longitudinal relation throughout the length of the cage. A bearing block 31 is supported within the smaller end of the cage, and is secured thereto by means of the clips 32 and bolt 33, and is adapted to rotate with said cage as a unit. Disposed within the bearing block 31, I have provided a bearing collar 34, which is freely rotatable within the bearing block 31, and through which the end of the guide loop 25 is adapted to be received.

A snake in the form of a flexible shafting or cable 35 is adapted to be wound within the reel 19 beginning at the outer or peripheral portion thereof, and wound inwardly as the cable is fed into the reel. The snake 35 is adapted to extend through the guide loop 25, and through the bearing collar 34 and through the bearing 27 and guide tube 50, and is provided on its outer end with a head member 36 which is adapted to receive the cutting blades 37 which are suitably disposed in slots formed in the head 36, and held in position by means of the collar or ferrule 38 suitably supported upon the said head 36. Arranged at the apex of the inverted V-shaped supporting frame 26 and extending forwardly thereof, I have provided a stub shaft 39 upon which are pivotally mounted the cross brake arms 40, provided at their lower ends with the arcuate braking surfaces 41 which are covered with any suitable brake material 42. The arcuate brake members 41 are adapted when compressed to extend through openings 43 in the guide tube 50 to engage and clamp against the snake to stop the feeding and rotation of the same.

A suitable switch 44 will be disposed within one leg of the inverted V-shaped supporting frame 26, and will be connected by means of electrical conductors to the electric motor 9, which in turn will be connected by means of the electric conductors 45 to a suitable source of electrical energy (not shown).

From the various figures of the drawings, it will be seen that the supporting wheels 3 are arranged so that the same will be spaced from the ground when the intermediate portion of the frame 1 is in contact with the ground. Likewise the handles 46 will be rounded and spaced from the ground when the truck frame 1 is in contact with the surface of the ground.

From the foregoing description, it will be apparent that the operation of my improved sewer cleaning machine will be as follows:

In the event that the sewer pipe is clogged, the sewer cleaning machine will be pushed to a point adjacent the clogged section of pipe, and the motor will be connected by means of the conductors 45 to a suitable source of electrical energy, and the cutting blades 37 carried by the head 36 on the free end of the snake 35, will be inserted within the sewer pipe at any opening nearest to the stoppage. The motor will be started, and the snake 35 will be fed manually into the pipe, all the time being rotated, due to the action of the rotating reel and the associated rotating guide loop supported between the bearing 34 and the free wheel 22. When it is apparent that the cutting blades have reached the stoppage in the sewer pipe, the operator of the machine will squeeze the handle portions of the brake mechanism, and will stop the rotation of the portion of the snake 35 within the sewer pipe. This braking of the snake, will result in the additional winding or twisting of the snake by the guide loop 25, inasmuch as the same will still be rotated, but movement of the full length of the snake will be prevented due to the braking action, and after the snake has been wound tightly, the brake is released whereupon the unwinding of the guide loop 25 will result in a whipping or increase in speed of the cutting blades, which action will result in the cutting loose of the stoppage, thereby opening the sewer pipe.

The device will be operated until all stoppage has been opened, whereupon the same may be withdrawn from the sewer pipe and wound upon the reel 19.

While I have described and illustrated one form or embodiment of my improved sewer cleaning machine, it will be understood that I do not intend to limit myself to this exact or specific construction, as it will be apparent that many minor changes in detail of construction may be resorted to without departure from the spirit of the invention.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is:

In a sewer cleaning machine the combination with a frame, a reel therein proportioned to hold a coiled snake, and means for rotating the reel, of a fixed tubular bearing member secured in the frame and constituting a support for the reel, said bearing member having an extension projecting outwardly from the frame and constituting a guide tube, said bearing member and guide tube being proportioned to permit the snake to slide therethrough, a brake including pivotally mounted brake levers carried by the frame and brake elements on the levers positioned to grip the snake at a point outside of the reel, thereby to confine the stressed portion of the snake to the enclosed reel and transmit the stressing torque to the frame, and a curved freely rotatable guide tube extending into the reel from a point adjacent to the brake, thereby to confine the twisted portion of the snake within the reel.

EDWARD CLOTZ.