

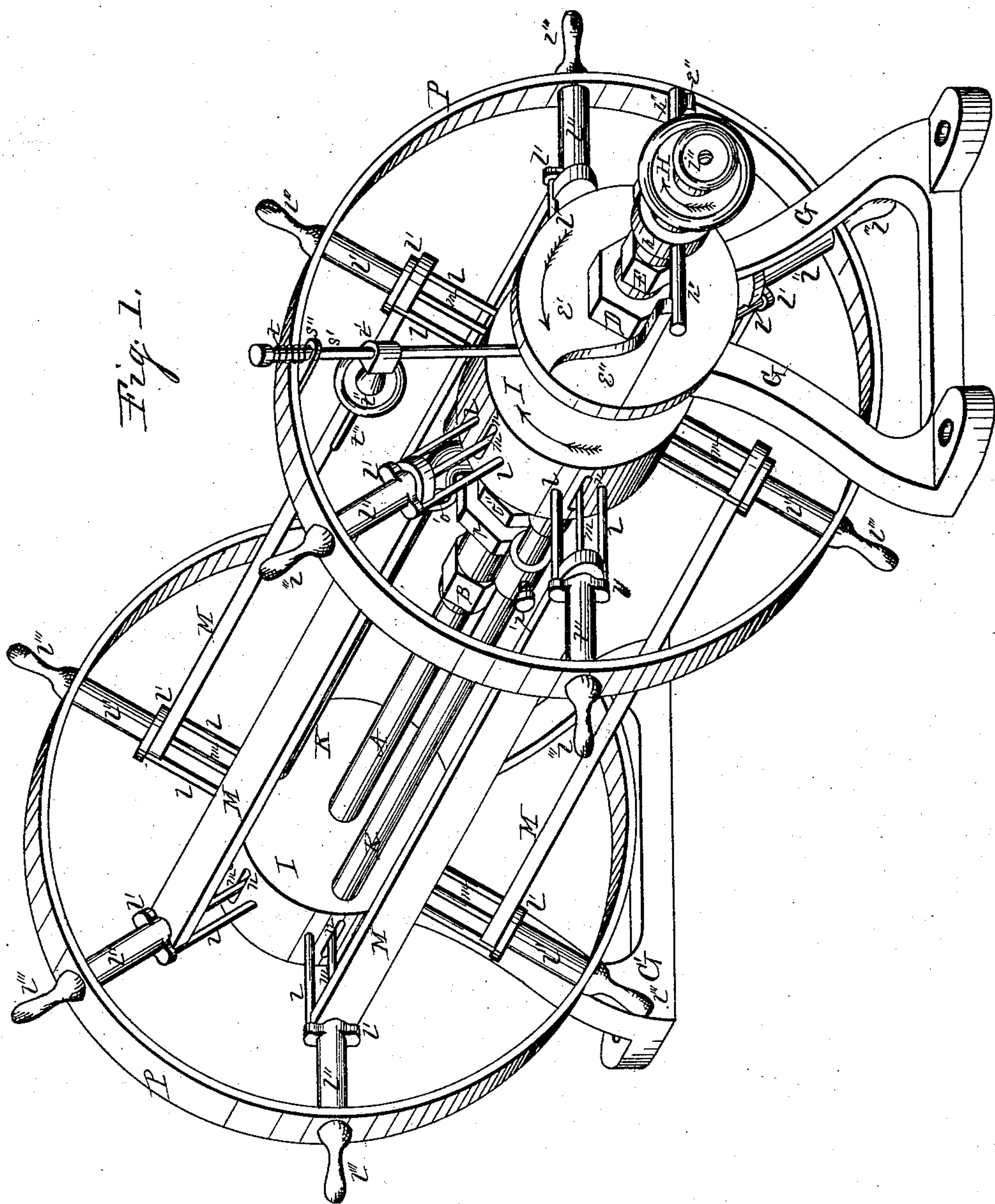
(No Model.)

5 Sheets—Sheet 1.

C. H. SHAFFER.
HOSE REEL.

No. 290,806.

Patented Dec. 25, 1883.



Witnesses.
A. O. Behel
O. A. D. Behel

Inventor.
Charles H. Shaffer.
Per Jacob Behel,
Atty.

(No Model.)

5 Sheets—Sheet 2.

C. H. SHAFFER.
HOSE REEL.

No. 290,806.

Patented Dec. 25, 1883.

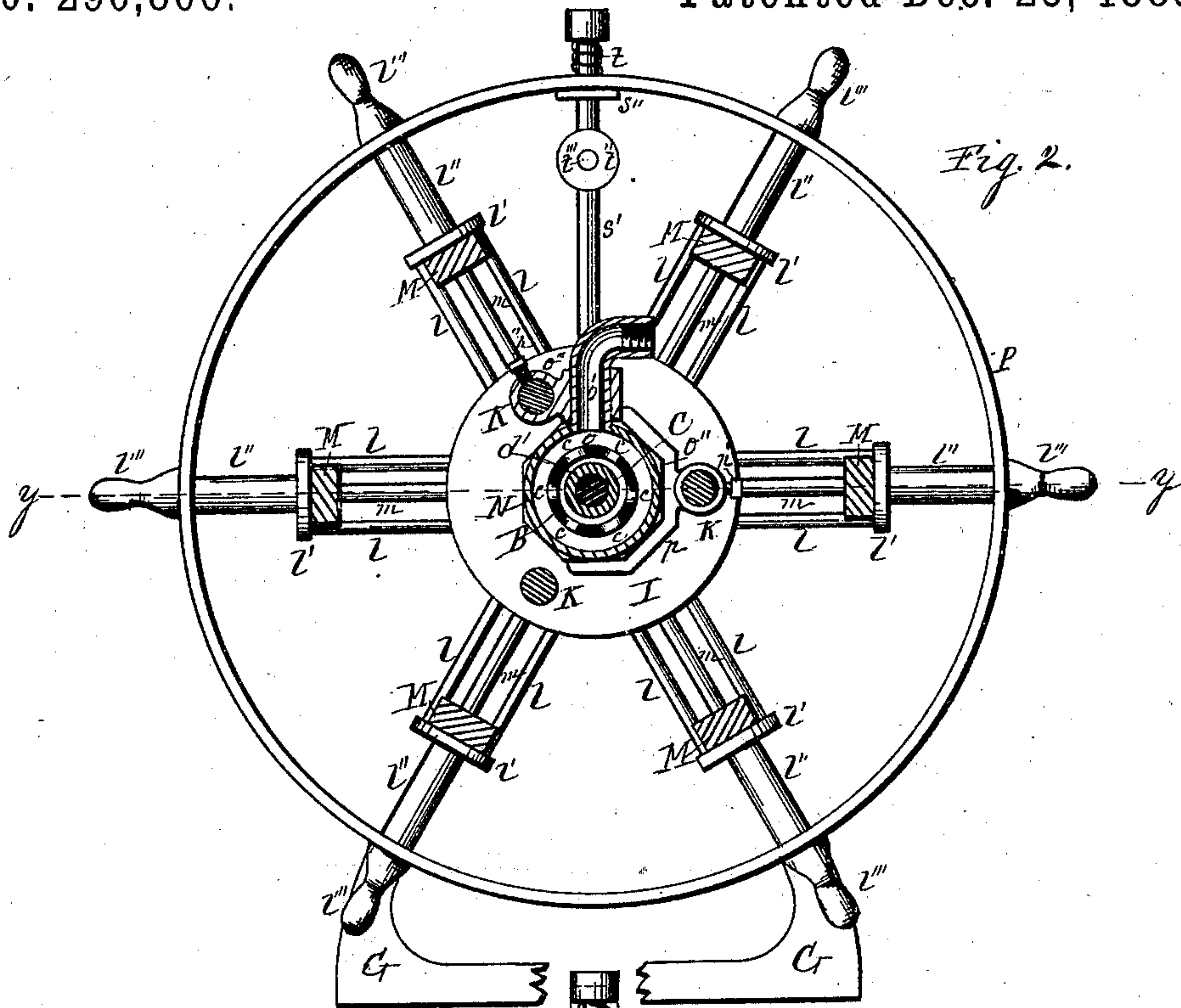


Fig. 2.

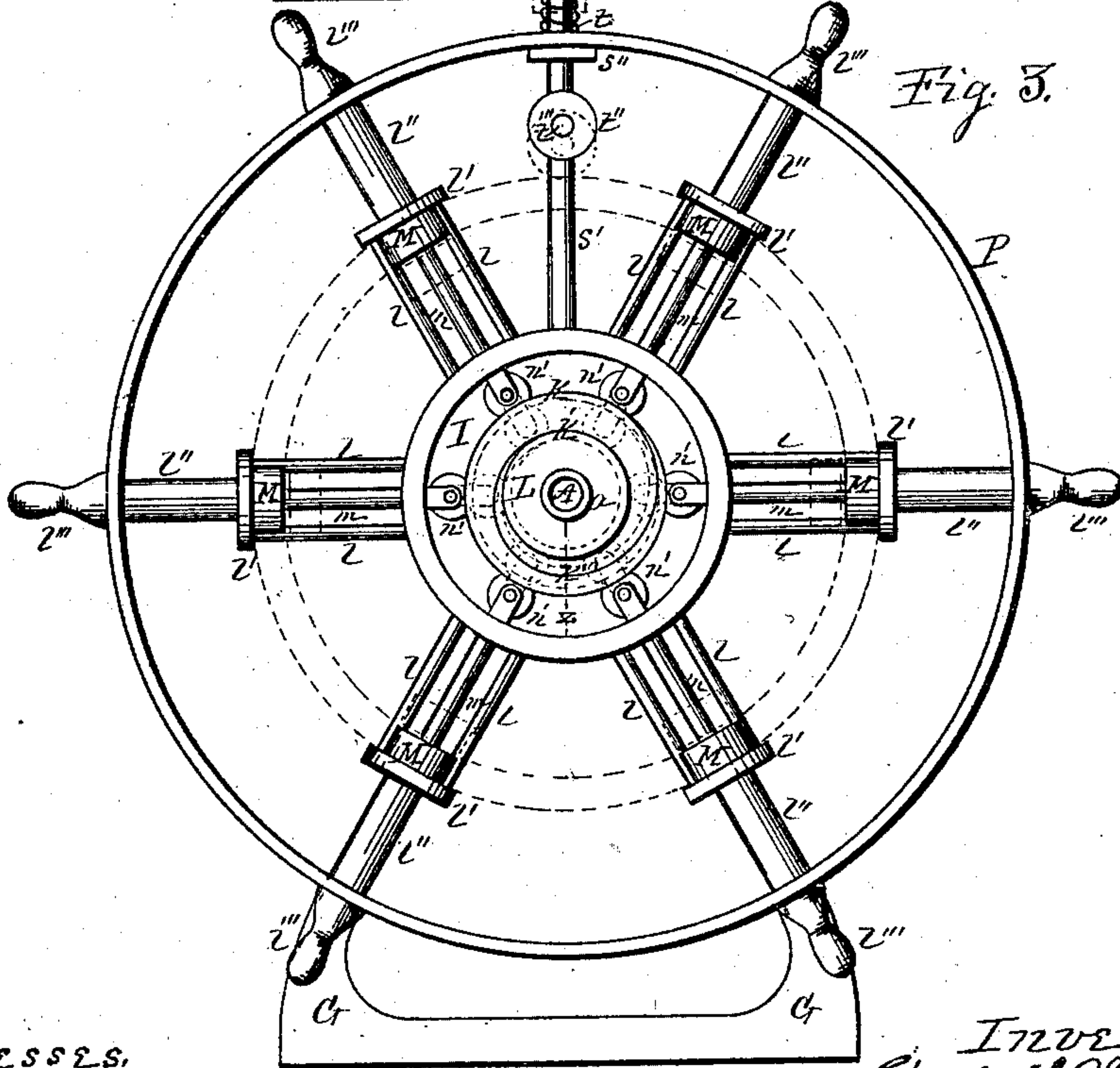


Fig. 3.

Witnesses,
A. O. Behr
J. A. L. Behr

Inventor,
Charles H. Shaffer
Per Jacob Behr
Atty

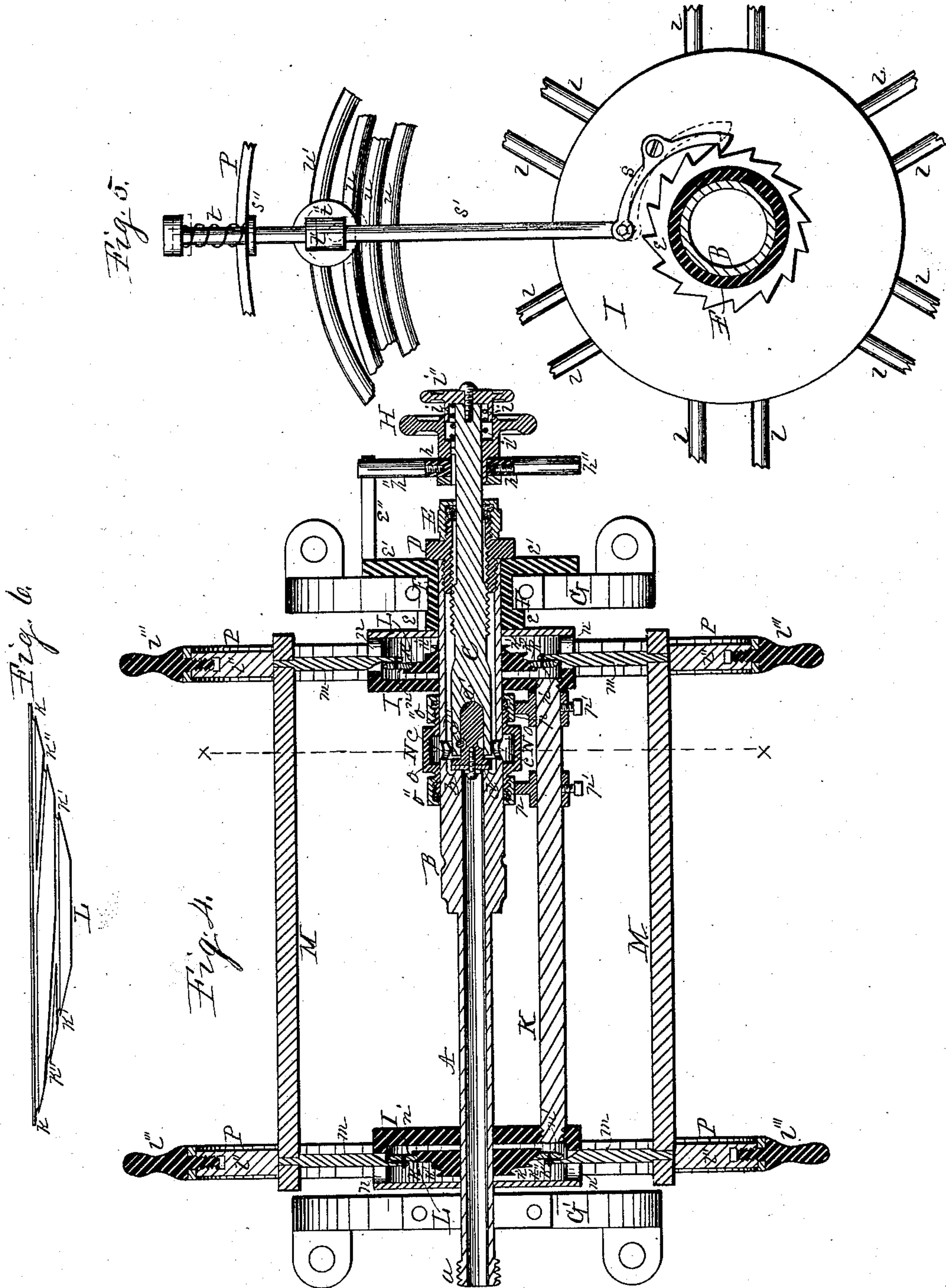
(No Model.)

5 Sheets—Sheet 3.

C. H. SHAFFER.
HOSE REEL.

No. 290,806.

Patented Dec. 25, 1883.



Witnesses,
O. D. Behel
C. A. L. Behel

Inventor,
Charles H. Shaffer
Per Jacob Behel
Atty.

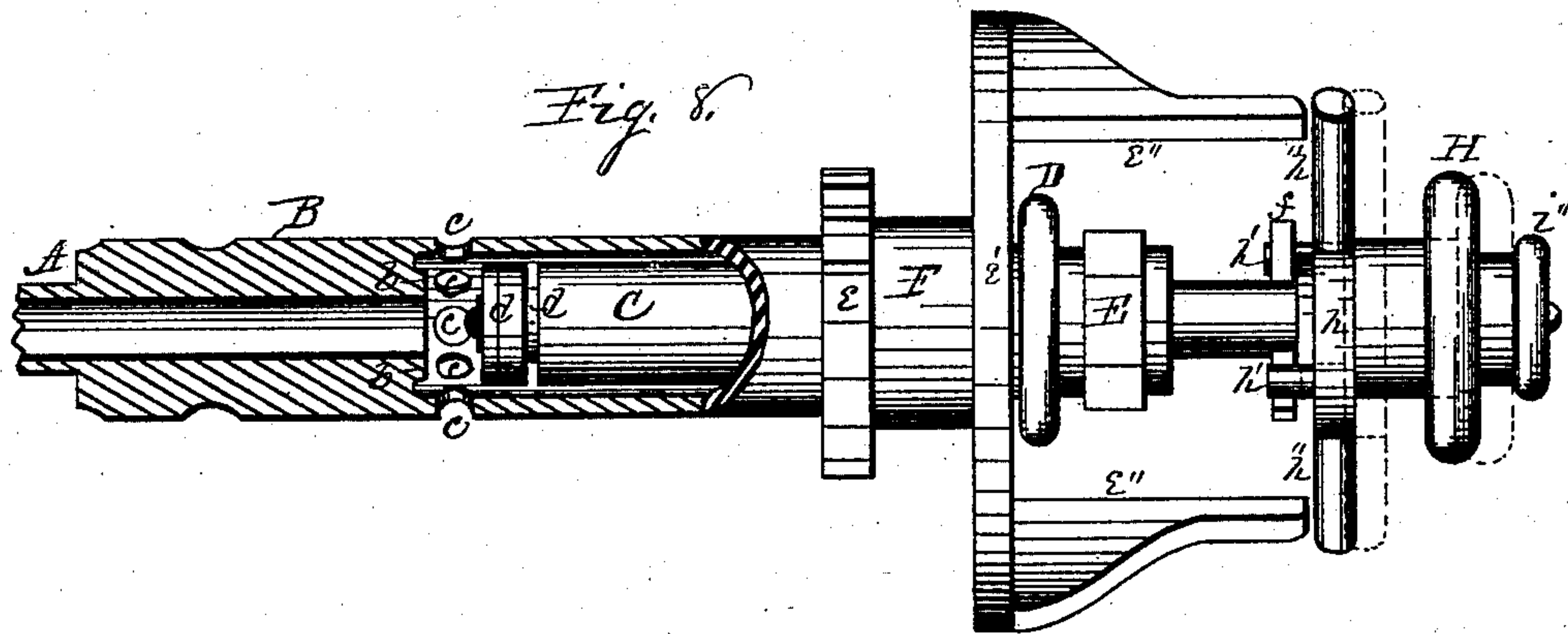
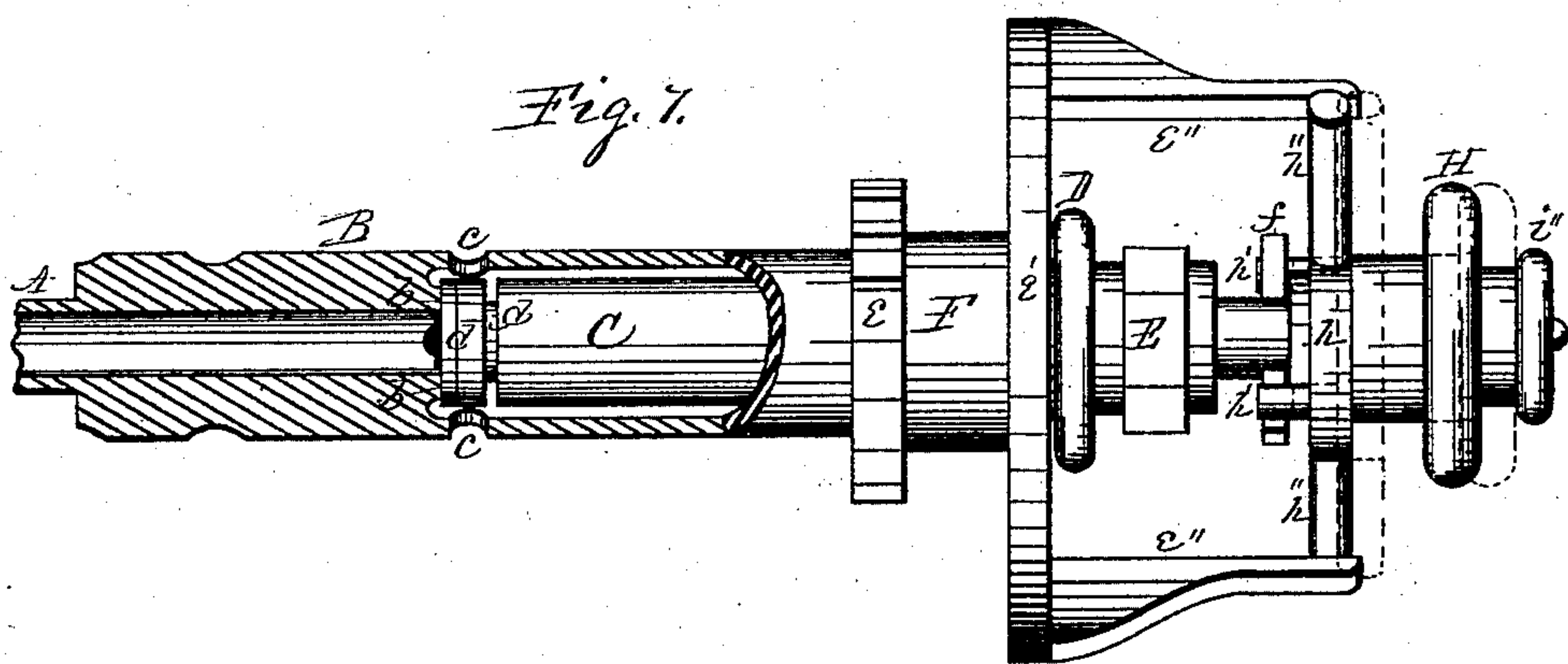
(No Model.)

5 Sheets—Sheet 4.

C. H. SHAFFER.
HOSE REEL.

No. 290,806.

Patented Dec. 25, 1883.



Witnesses.
A. V. Behel
J. A. D. Behel.

Inventor.
Charles H. Shaffer.
Per Jacob Behel.
Atty.

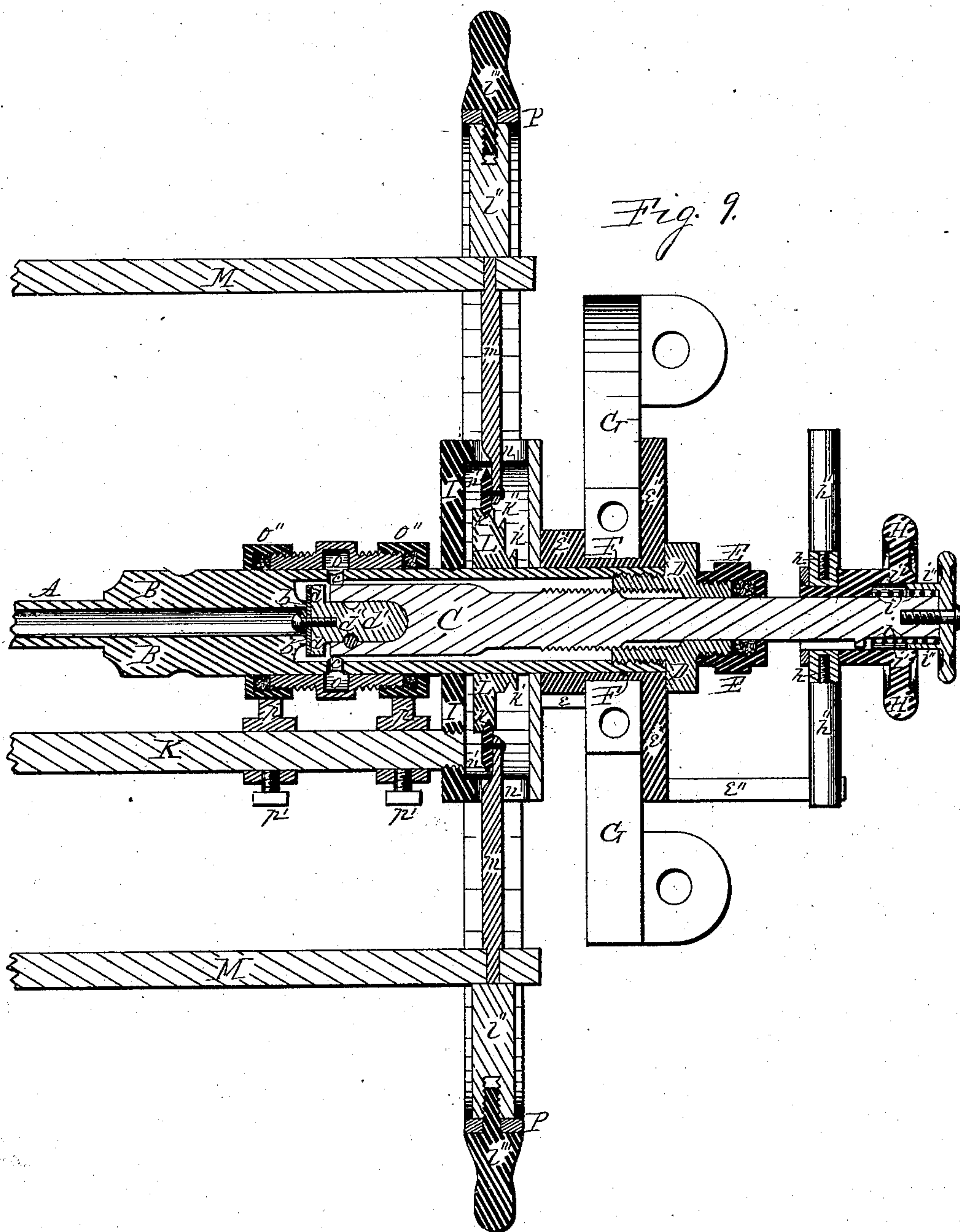
(No Model.)

5 Sheets—Sheet 5.

C. H. SHAFFER.
HOSE REEL.

No. 290,806.

Patented Dec. 25, 1883.



Witnesses,
A. O. Behel.
Israel Sovereign

Inventor,
Charles H. Shaffer.
Per. Jacob Behel,
Atty.

UNITED STATES PATENT OFFICE.

CHARLES H. SHAFFER, OF ROCKFORD, ILLINOIS, ASSIGNOR OF ONE-HALF TO
SAMUEL N. JONES, OF SAME PLACE.

HOSE-REEL.

SPECIFICATION forming part of Letters Patent No. 290,806, dated December 25, 1883.

Application filed March 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. SHAFFER, a citizen of the United States, residing in the city of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Hose-Reel, of which the following is a specification.

This invention relates to that class of hose-reels designed mainly as stationary reels, to be employed in buildings or other situations requiring a reel on which to wind hose to be used in connection with a water-supply as a protection against fire, or for other purposes requiring a hose mounted in a convenient manner for handling; and the object of this invention is to produce a hose-reel of a construction to render it convenient in handling hose in connection with a water-supply; and it consists in a reel capable of a connection with the water-supply, having its hose-supporting reel made to contract in unwinding the hose in such a manner that the empty hose wound thereon may be filled under water-pressure while on or partially on the reel, and that the unwinding of the hose will contract the reel and open the valve to admit the water to the hose; in adjusting devices to regulate the quantity of hose that may be unwound before admitting the water to the hose; in a valve and valve-operating mechanism, in connection with the rotating reel, to admit the water to the hose wound on the reel. These and other improvements, all of which will be hereinafter more fully described, constitute the subject-matter of this specification.

In the accompanying drawings, Figure 1 is an isometrical representation of a hose-reel embodying my invention. Fig. 2 is a vertical transverse section on dotted line *x*, Fig. 4. Fig. 3 is an end elevation in which the end frame and the cap of the cam are omitted. Fig. 4 is a horizontal section on dotted line *y*, Fig. 2. Fig. 5 is an elevation of the ratchet mechanism enlarged. Fig. 6 is a stretch-out diagram in isometrical elevation of the cam-groove trackways employed to contract and expand the reel, cut on the dotted line *z*, Fig. 3. Fig. 7 is a plan view of the valve-operating mechanism, showing the parts in their po-

sition when the valve is closed, and in which a portion of the tubular shaft is in section, showing the valve closed on the valve-seat; and Fig. 8 is a plan view of the valve-operating mechanism, showing the parts in their positions when the valve is open, and in which a portion of the tubular shaft is in section, showing the valve in its open position lifted from the valve-seat. Fig. 9 is an enlarged sectional view of a portion shown in Fig. 4.

The axial support of my improved reel is composed of a tubular shaft in two sections differing in diameter. The smaller section of this tubular shaft is represented at A, and its bore is of a proper size to admit the free passage of a sufficient quantity of water to properly fill the hose to be wound on the reel, and its outer end portion, at *a*, is screw-threaded to fit it for a connection with the water-supply. The larger section of this tubular shaft is represented at B, and the diameter of its bore is such as to admit a valve of a proper construction to properly close the bore of the smaller section by engaging the valve-seat *b*, formed at the junction of the large and small bores of the tubular shaft. The larger portion of this tube, near its junction with the smaller section thereof, is provided with radial outlet-openings *c*, to permit the water to flow from the tube.

At *d* is represented a valve of such diameter as to enter and slide freely endwise in the larger portion of the tubular shaft, and is fitted to engage the valve-seat *b*, formed at the junction of the large and small sections of the tubular shaft, to close the openings or bore of the smaller section against the water-pressure, and to regulate the flow of water through it. This valve is provided with an axial journal-formed stem, *d'*, fitted to enter and oscillate or revolve in a socket-bearing in the end of the valve-stem C, and is held in position therein by means of a pin, *d''*, passed transversely through the socket portion of the stem at one side of its center in such manner as to engage an annular groove formed in the axial journal-formed stem of the valve, to hold it in place in its socket-support in a free manner. This valve-stem C is screw-threaded to engage the

internal screw-thread of the tubular screw-plug D. This tubular screw-plug D is provided with an external screw-thread to engage the internal screw-thread of the outer end of the large portion of the tubular shaft.

At E is represented a screw-threaded cap fitted to the outer screw-threaded end of the tubular screw-threaded plug D in stuffing-box form, to prevent the escape of water round the valve-stem. From the foregoing it will be seen that if the valve-stem is turned or made to revolve to the right hand an endwise movement will be imparted to the valve-stem by reason of its screw-threaded connection with the tubular screw-plug, which action will operate to press the valve to its seat and prevent the flow of water, and the reverse or left, hand movement of the valve-stem will operate to open the valve and permit the water to pass through the radial outlet-openings *c*. The outer end of the large portion B of the tubular shaft is supported in a tubular bearing, F, having its inner end provided with a ratchet-wheel, *e*, the periphery of which is produced in saw-tooth-ratchet form, and the outer end of this tubular bearing is provided with a disk, *e'*, having bracket-formed clutch-arms *e''* projecting from the peripheral edge of its outer face on opposite sides thereof, and extending parallel with its axis. This tubular bearing, with the tubular shaft supported therein, is mounted in a supporting-frame, G, in such a manner as to revolve therein and permit the tubular shaft to remain stationary, having the end portion of its smaller section mounted in an end supporting-frame, G', in which it is fixed, to prevent rotation.

At *f* is represented a clutch-arm fixed in the outer end portion of the valve-stem, having its end portions extending radially from opposite sides of the shaft. At H is represented a hand-wheel having a socket or tubular connection with the outer end portion of the valve-stem, and its tubular portion is provided with a spline or feather connection with the valve-stem in such a manner as to permit of an endwise sliding movement on the stem, and that the stem shall be made to rotate with the hand-wheel.

At *h* is represented an annular ring fitted to oscillate or turn freely in an annular groove formed on the inner end of the tubular portion of the hand-wheel. This annular ring is provided with stud clutch-pins *h'*, projecting from its inner face on opposite sides, to engage the clutch-arms *f*, which project from the valve-stem.

At *h''* are represented clutch-bars radiating from the periphery of the annular ring *h*, on opposite sides thereof, and are of sufficient length to engage the bracket-formed clutch-arms *e''* of the disk *e'*.

A *i* is represented a spiral spring surrounding the outer end portion of the valve-stem, and is incased in a recess, *i'*, in the outer end of the tubular portion of the hand-wheel

H, and in a cup-formed cap, *i''*, fixed to the end of the valve-stem. This cup-formed cap is of a proper construction and size to freely enter the recess *i* in the hand-wheel, and to receive the spiral spring wound on the valve-stem in such a manner that the hand-wheel is capable of a sliding movement toward the outer end of the stem against the action of the spiral spring, to disengage the stud clutch-pins *h'* from the clutch-arms *f* in the valve-stem, to permit the valve-stem to be rotated by means of the hand-wheel, independent of the annular ring and its radial clutch-bars *h''*. In this arrangement the spring action operates to hold the stud clutch-pins *h'* in position to engage the clutch-arms *f* projecting from the valve-stem. By this arrangement the hand-wheel and the parts connected therewith may be held in its outward position, as shown in dotted lines at Figs. 7 and 8, by an attendant, disengaged from the clutch-arms of the valve-stem, which will permit the valve-stem to be rotated by means of the hand-wheel in the direction indicated by the arrow thereon to close the valve to its seat, and then, if the hand-wheel is liberated, the spring-action will force it inward in position on the valve-stem to cause the stud clutch-pins of the annular ring to engage the clutch-arms of the valve-stem and the radial clutch-bars of the annular ring to engage the bracket-formed clutch-arms of the disk *e'* in such a manner that the rotations of the disk in the direction indicated by the arrow will cause the valve-stem to rotate with it in the same direction and disengage the valve from its seat. When this action has carried the clutch-bars of the annular ring beyond the action of the bracket-formed clutch-arms, the disk, with its bracket-formed clutch-arms, can rotate in either direction without further action on the valve.

At I are represented cylindrical drum-formed reel-heads, mounted to revolve on the fixed tubular shaft, one at each end, within the end supporting-frames. These reel-heads are held in their relative positions by means of bars K, placed parallel with their axes of rotation, and having their ends securely fixed in the inner end walls of the reel-heads. The outer end walls of these reel-heads are made removable, and are held in position by means of suitable screws, screw-bolts, or otherwise.

At L are represented disk-heads, produced in conic form, provided at or near their base with an annular groove-trackway, *k*, and at or near their apex with a like annular groove-trackway, *k'*, and are also provided with a spiral-groove trackway, *k''*, which connects with both the annular grooves about on the same radial line in the disk. These grooved disks are fixed in position on the fixed tubular shaft within the cylindrical or drum-formed reel-heads.

At *l* are represented guide-bars fixed in the peripheral rim of the reel-heads, at proper intervals, in pairs, having their outer ends sup-

ported in a cross-head, l' , from the central portion of which a single arm, l'' , extends outward to engage the inner face of the outer annular rim, P , of the reel-heads. These arms are connected to the outer annular rim, P , of the reel-head by means of an axial screw, l''' , which extends through the rim and into the single arm l'' , and their outward-projecting portions are produced in handle form, by means of which the reel may be rotated to wind the hose on the reel or unwind it therefrom.

At M are represented reel-bars, preferably of wood, of proper dimensions, having the edges of their end portions beveled to engage the guide-bars l in such a manner as to be capable of a sliding movement to and from the center of the reel lengthwise of the guide-bars.

At m are represented reel-bar supports, of bar or rod form, one end of which is securely fixed in or to the end portion of the reel-bars, from which they extend through slotted or elongated openings n , formed in the peripheral rim of the drum-formed reel-heads, and their inner ends are provided with traveling wheels n' , fitted to traverse the groove-trackways formed in the conic disk-heads. The construction and arrangement of these parts are such that if the reel is turned or made to revolve in the direction indicated by the arrow on its drum-formed head, the traveling wheels will ascend the spiral-groove trackway k'' and traverse the groove-trackway k at the base of the cone, which action will expand the reel by forcing the reel-bars outward, and the reverse movement or rotation of the reel to unwind the hose will cause the traveling wheels to descend the spiral-groove trackway k'' and traverse the groove-trackway k' at the apex of the cone, which action will contract the reel by permitting its reel-bars to approach the center of the reel.

At N is represented a sleeve produced to receive the larger portion of the tubular shaft freely, and its center portion is provided with an internal annular chamber, o , to span the radial outlet-openings c . This sleeve is provided with an outlet-tube, o' , which connects with the internal annular chamber, o , from which it radiates, having its outer end curved and screw-threaded to receive the hose-coupling to connect the hose with the reel. This outlet-tube o' is connected to one of the bars K , connecting the drum-formed reel-heads by means of a clasp, o''' , embracing the connecting-bar in such a manner as to cause the sleeve, with its outlet-tube, to rotate with the reel, and this clasp o''' is fixed in position on the bar by means of a set-screw, p'' , to prevent endwise displacement of the sleeve. The end portions of this sleeve N are screw-threaded to receive the screw-threaded caps o'' in stuffing-box form, to produce a water-tight connection with the shaft.

At p are represented clasps of a construction

to span the stuffing-boxes in the manner of a wrench. These clasps are supported on one of the bars K connecting the reel-heads, and are held in position thereon by means of set-screws p' . This construction and arrangement serves to connect the sleeve N with the reel, to cause it and its parts to rotate with the reel.

At s is represented a pawl pivoted on the drum-formed reel-head, in position to engage the teeth of the ratchet-wheel e . To the free end of this pivoted pawl is pivoted a rod, s' , which rises through a support, s'' , fixed to the outer rim of the reel, and a spiral spring, t , surrounds its outer portion outside of its bearing-support, operating to hold the pawl in contact with the teeth of the ratchet, but in such a manner as to permit the rod to be depressed to disengage the pawl from the ratchet-teeth. This rod is provided with a slide, t' , made adjustable on the rod by means of a set-screw, t'' , which is provided with an arm, t''' , extending at a right angle from the rod. The object of this part of my invention is to regulate the quantity of hose to be unwound or run from the reel before the valve is opened, and for this purpose, when the required quantity of hose remains unwound upon the reel, the slide is adjusted upon the rod with the arm t''' inward, overlapping the coils u wound upon the reel in such a manner that the next coil (represented at u') wound upon the reel will overlap the arm t''' and depress the rod and disengage the pivoted pawl s from the saw-toothed ratchet-wheel, as represented in the dotted lines. The remaining portion of the hose may then be wound upon the reel.

In use my improved hose-reel is designed to be located in any convenient or proper position and securely fixed to prevent accidental displacement, and the outer screw-threaded end of the smaller section of the tubular shaft is suitably connected with the water-supply. The hose is then connected to the outer screw-threaded end of the outlet-tube o' , from which it extends outward between the reel-bars and is wound upon the reel by turning the reel in the direction indicated by the arrow on its drum-formed head. In this operation the reel-bars on which the hose is supported will be expanded, as hereinbefore described, to receive the hose, and when the hose is wound thereon and the slide, with its set-screw arms, adjusted to receive the hose at the desired point, as hereinbefore stated, and the hose wound upon the reel, it will be fitted for use. When the hose thus wound upon the reel is required in actual use, the attendant takes hold of the nozzle of the hose wound upon the reel, and, traveling from the reel, will unwind the hose, causing the reel to rotate, which action will cause the reel to contract to render the hose slack on the reel-bars to permit it to fill with water; and when the quantity of hose to which the reel is adjusted is unwound therefrom to liberate the set-screw arm t'' , the pivoted pawl will engage the ratchet-wheel

and cause the disk *e'*, with its bracket-formed clutch-arm *e''*, to revolve with the reel, and by reason of their connection with the radial clutch-bars *h''* and the stud clutch-pins *h'* with the radial clutch-arms *f* of the valve-stem, the valve-stem will also be made to revolve with the reel, which action will operate to open the valve by reason of its screw-threaded connection with the tubular shaft or with the tubular screw-threaded plug connected therewith; and when this action has caused a sufficient endwise movement of the valve-stem to open the valve the clutch-bars *h''* will have been carried beyond the action of the bracket-formed clutch-arms *e''* and the valve-stem will be disconnected from the action of the rotating reel.

In the foregoing I have described my improved hose-reel as a stationary reel, to which purpose it is especially adapted; but it may be employed as a portable hose-reel mounted upon a suitable carriage for transportation, and rendered capable of perhaps all the uses to which such mounted hose-reels are applicable.

I claim as my invention—

1. The combination, with the tubular shaft, in sections differing in their tubular bore, fitted with a valve-seat at the junction of the sections, of a valve to engage the valve-seat, said valve having a screw-thread and stuffing-box connection of its stem with the tubular screw-thread plug fixed in the end of the large section of the tubular shaft, substantially as and for the purpose set forth.

2. The combination of the valve-stem having clutch-arms projecting radially therefrom, a hand-wheel provided with an annular clutch-ring fitted to engage the clutch-arms of the valve-stem, said hand-wheel having a spline

or feather connection with the valve-stem, and a spring-action to engage the clutch mechanism, substantially as and for the purpose set forth.

3. The combination, with the clutch-bars of the annular clutch-ring, of a tubular bearing provided with clutch-arms to engage the clutch-bars of the annular clutch-ring, substantially as and for the purpose set forth.

4. The combination, with the hose-reel and with the ratchet-wheel of the tubular bearing, of a pivoted spring-actuated pawl to engage the teeth of the ratchet, as and for the purpose set forth.

5. The combination, with the reel and with the clutching mechanism of the valve-stem, of an intermediate clutching mechanism having a pawl-and-ratchet connection with the reel, substantially as and for the purpose set forth.

6. The combination, with the conic-formed disks provided with groove-trackways, of the reel-bar supports provided with traveling wheels to engage the groove-trackways in the conic disks, substantially as and for the purpose set forth.

7. The combination, with the reel and with the stuffing-box heads of the chambered sleeve on the tubular shaft, of wrench-formed clasps to engage the stuffing-box heads, substantially as and for the purpose set forth.

8. The combination, with the rod having a pivotal connection with the pivoted pawl, of a slide made adjustable on the rod, said slide provided with an arm to overlap the hose wound upon the reel, substantially as and for the purpose set forth.

CHARLES H. SHAFFER.

Witnesses:

JACOB BEHEL,
A. O. BEHEL.