

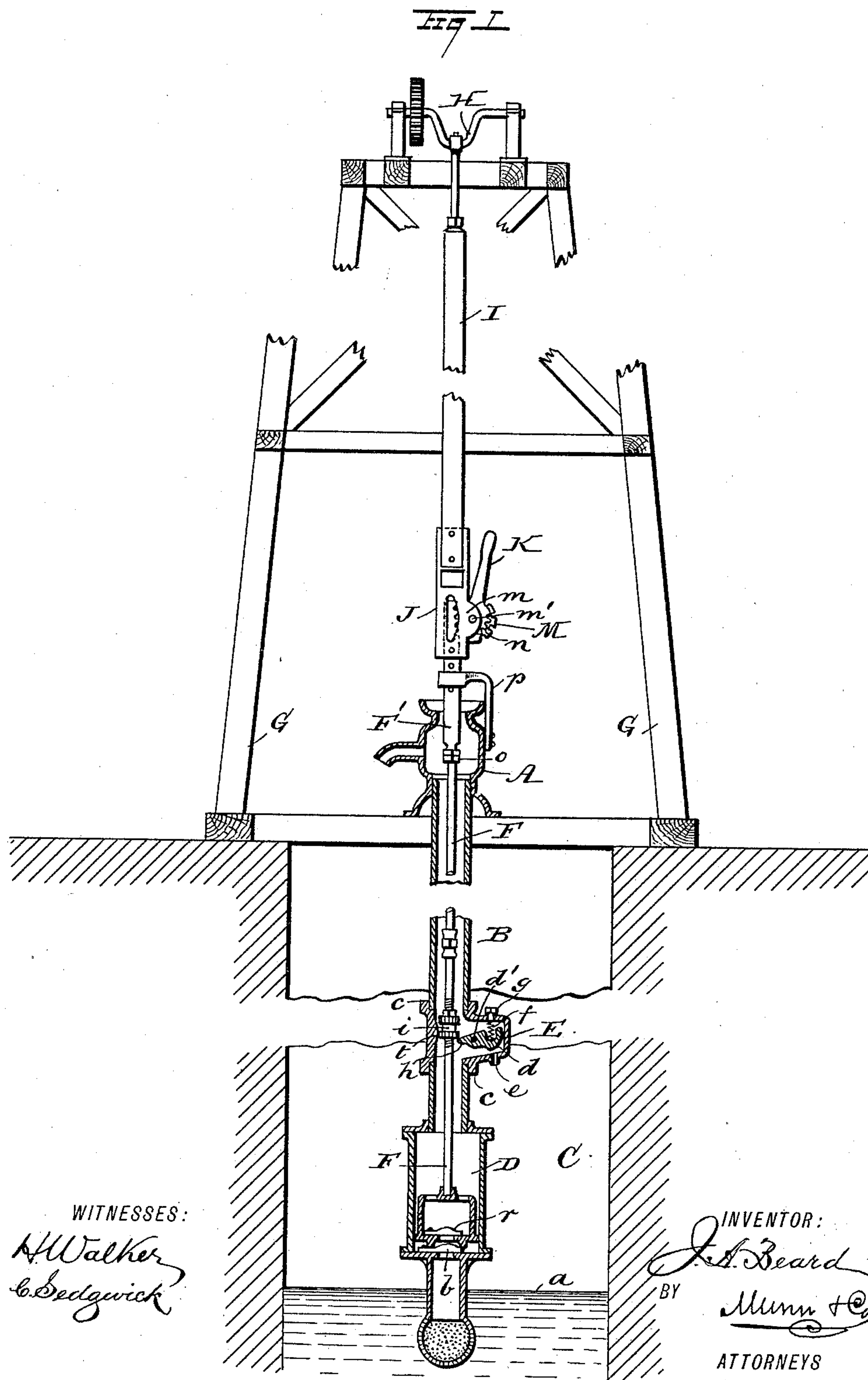
(No Model.)

2 Sheets—Sheet 1.

J. A. BEARD.
ANTI-FROST ATTACHMENT FOR PUMPS.

No. 440,458.

Patented Nov. 11, 1890.



WITNESSES:

H. Walker
C. Sedgwick

INVENTOR:

J. A. Beard
BY *Munn & Co*

ATTORNEYS

(No Model.)

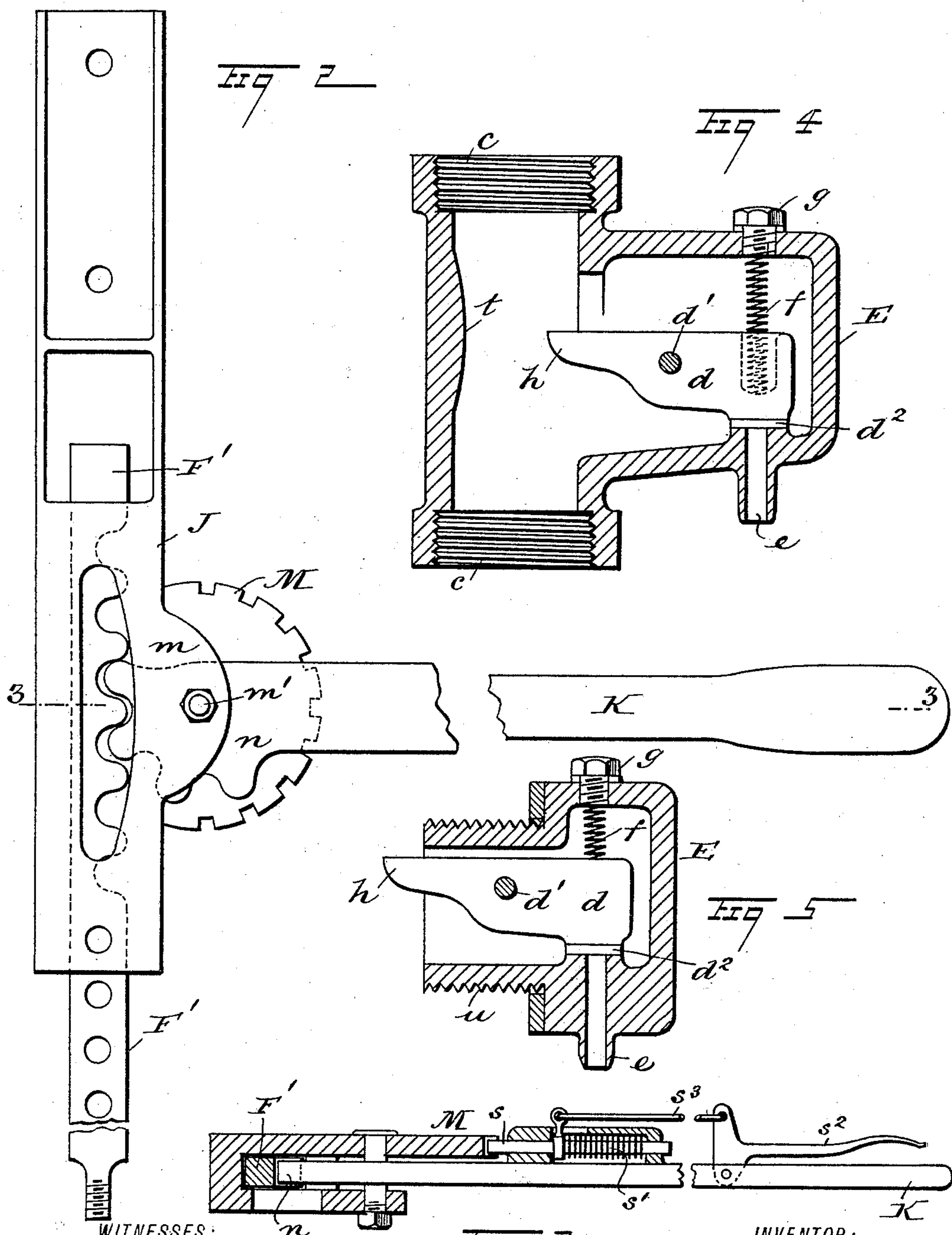
2 Sheets—Sheet 2.

J. A. BEARD.

ANTI-FROST ATTACHMENT FOR PUMPS.

No. 440,458.

Patented Nov. 11, 1890.



WITNESSES:

H. Walker
C. Sedgwick

INVENTOR:

J. A. Beard
BY Minn H.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JONATHAN A. BEARD, OF HILDRETH, NEBRASKA.

ANTI-FROST ATTACHMENT FOR PUMPS.

SPECIFICATION forming part of Letters Patent No. 440,458, dated November 11, 1890.

Application filed June 26, 1890. Serial No. 356,818. (No model.)

To all whom it may concern:

Be it known that I, JONATHAN A. BEARD, of Hildreth, in the county of Franklin and State of Nebraska, have invented a new and useful Anti-Frost Attachment for Pumps, of which the following is a full, clear, and exact description.

This invention relates to an improved means for relieving pump-barrels from contained water when not in service to prevent their rupture from the action of frost.

In sections of the country where windmills are used as a source of power for the operation of pumps if suitable provision is not made to discharge water that would otherwise remain in the pump stock or barrel the action of frost in cold weather will split the barrel if the pump is not in operation constantly.

The object of this invention is to provide an improved means for the speedy emptying of the pump-barrel of a hand or power actuated pump, and thus avoid injury to the pump from frost action.

To this end my invention consists in the construction and combination of parts, as hereinafter described and claimed.

Reference is to be made to the accompanying drawings, forming a portion of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a pump in section located in a well, the pump-barrel being broken, the pump-rod proper having novel means of connection with a pitman that is loosely jointed above to the crank-shaft of a wind-motor and the pump-rod and pump-barrel being provided with a water-discharge attachment that constitutes a principal feature of the invention. Fig. 2 is an enlarged detached side view of an appliance connected with the pump-rod and wind-wheel pitman, which affords means to quickly arrest the action of the pump, and simultaneously open the water-discharging vent-aperture in the pump-barrel. Fig. 3 is a transverse section of the parts shown in Fig. 2, taken on the line 3 3 in Fig. 2. Fig. 4 is a detached enlarged vertical section of the novel water-discharging attachment for the pump-barrel, which is adapted to be secured to a metal tubular pump-barrel; and Fig. 5 represents an attach-

ment similar to that shown in Fig. 4, but adapted for connection with a wooden pump-stock.

A indicates the case or metal body of an ordinary pump, to which the barrel B, made of metal tubing, is secured, and from it extends downwardly into the well C a sufficient distance to allow the valve-chamber D to be supported near to the water-line *a*, the barrel portion below the foot-valve *b* being inserted into the water, as usual.

At any preferred point near to the valve-chamber D, or at such a distance from the pump-case A, that rests on flooring above the well C, as will be below a freezing-point in the well, the waste valve-pocket E is introduced into the tubular pump-barrel B.

To effect a neat and substantial connection of parts, the valve-pocket E is constructed having an integral socket-section that is adapted to connect two aligning portions of the pump-barrel, as shown at *c* in Fig. 1, which will project the pocket laterally from the pump-barrel.

Within the valve case or pocket E a waste-valve *d* is pivoted, as at *d'*, the face *d*² of the valve being located above a waste-aperture *e*, that is formed in the lower wall of the pocket, which wall is shaped as a seat on its interior surface around the aperture *e*, thereby affording a water-tight joint with the valve-face when the latter-named is forced into close contact with said seat.

The valve-face *d*² may be made of leather or other suitable material—such as vulcanized gum—and directly above this face the valve-body is perforated to form a socket, wherein a spiral spring *f* is placed, which spring may be introduced after the valve is in position by a removal of the screw-plug *g*, that is afterward restored to place in the pocket-wall.

From the pivot-point *d'* the valve-body is extended to enter the socket portion of the pocket E, this projection *h* being properly shaped as a toe, upon which an adjustable tappet-flange *i* will impinge when the pump-rod F, upon which it is mounted, has been lowered to effect such a result, as will be further explained.

When the pump is designed for use in connection with a wind-motor as a source of power to operate it, the usual derrick-frame G is pro-

vided, whereon a wind-wheel (not shown) is utilized to drive the crank-shaft H by means of proper geared attachments thereto, and upon the crank-shaft H the pitman-bar I is loosely secured. The pitman-bar I is downwardly extended to a point near the pump-case A and in vertical alignment with it when the crank is on its dead-center at either terminal of its stroke.

Upon the lower end portion of the pitman-bar I a guide-box J is secured by its upper end. Said box consists of an elongated rectangular sleeve having opposite ears *m* formed on one side of the box, which side is cut away to provide an aperture between the ears into the box for the entrance of the gear-segment head *n*, that is formed on the handle-bar K, which is pivoted between the ears *m*, as shown at *m'* in Fig. 2.

On the upper end portion of the pump-rod F a toothed rack-bar F' is removably secured, as at *o* in Fig. 1, the teeth on which bar may be engaged by the teeth on the gear-segment head *n* when the handle-bar K is properly adjusted.

The rack-bar F' is supported to slide vertically by a bent arm *p*, which embraces the bar loosely with its apertured upper end, the lower portion of the arm being secured to the pump-case.

It will be seen that the connection of the pitman-bar I with the pump-rod F may be made or broken by the manipulation of the handle-bar K, as, if said bar is elevated, as shown in Fig. 1, the teeth on its head *n* will be removed from contact with the rack-bar F' and the pump-rod be allowed to drop by gravity, the depression of the handle-bar re-engaging the toothed segment-head *n* with the rack-bar teeth and elevating the rack-bar in an evident manner.

In order to retain the handle-bar K at any desired point of vibratory adjustment, a circular rack M is secured to the side of the guide-box J having its radial center opposite the pivot of the handle-bar K, so that the curved face of the rack M will be concentrically engaged by a slide-bolt S, (see Fig. 3,) that is loosely secured upon the side of the handle-bar and forcibly depressed by a spring *s'*, so as to enter any desired notch in the circular rack, the disconnection of said bolt being effected by the vibration of the tripping-lever *s*², which is connected to the slide-bolt by a link *s*³.

The waste-valve *d* is held normally closed by the spring *f*, and, as before indicated, has its toe *h* projecting toward the pump-rod F, whereon the adjustable tappet-flange *i* is placed. Said tappet-flange *i* is preferably made as shown in Fig. 1, and serves as a socket to connect aligning portions of the pump-rod that are threaded to engage therewith, the lower end portion of the piece *i* having contact with the toe *h* when the rod is sufficiently depressed. There is an inwardly-projecting swell *t* formed on the inner surface of the

socket portion of the valve-pocket E, which is so relatively located that the tappet-flange *i* will engage the swell, and by the lateral deflection of the pump-rod thus produced be caused to impinge upon the toe *h* of the waste-valve *e*, as before mentioned.

In operation the handle-bar K is set at such a point as will connect the pump-rod F and pitman-bar I, so elevating the lifting or upper valve *r* within the chamber D that a proper reciprocation of the valve and elevation of water by the pump will result. The length of the pump-rod F is so proportioned that when the handle-bar K is elevated to release its segment-head from the rack-bar F' the lifting-valve *r* on the lower end of the pump-rod will be nearly in contact with the lower valve of the pump.

When the device is to be applied to a pump having a wooden stock, the valve-pocket E is provided with a threaded nipple *u* integrally formed with it, as shown in Fig. 5, which may be inserted into a lateral perforation formed in the pump-stock at a proper point below frost-line in the well, so that the other parts of the device may act conjunctively therewith and relieve the pump barrel or stock of water when the handle-bar is K properly set to open the waste-orifice *e*.

If the waste-valve attachment is to be utilized upon an ordinary hand-operated pump having either a metal or wooden stock, the device shown in Fig. 2 for lowering the pump-rod will be dispensed with and the waste-valve *d* opened by lifting the pump-handle high enough to cause the tappet-flange *i* to strike upon the toe of the waste-valve, as will be readily understood.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a pump, a case or tube having at or near its lower end a waste-aperture, and a self-closing valve for the latter, of a pump-rod made in two aligned parts, of which the upper one is provided with a tappet adapted to strike the said valve, and means attached to such upper part for the purpose of adjustably connecting it with the lower part and abnormally lowering the latter to open the waste-outlet, substantially as shown and described.

2. The combination, with a pump-barrel having a waste-outlet, a waste-valve having a toe extending in the path of the pump-rod, a pump-rod provided with a tappet, and an actuating-pitman for the rod, of a guide-box attached to the pitman, a rack attached to the pump-rod and entering the guide-box, and a gear-segment pivoted in the guide-box and provided with a handle and a locking mechanism, substantially as set forth.

3. The combination, with a pump having its depending barrel within a well or other water-source, a wind-motor mechanism above, a jointed pitman-bar pendent therefrom, a pump-rod, a rack-bar thereon which slides in

a box on the end of the pitman-bar, a handle-bar having a toothed segment-head that may engage or release the rack-bar, and a device which will hold the handle-bar at a desired point of vibratory adjustment, of a valve-pocket on the side of the pump-barrel, a spring-actuated waste-valve within the pocket which normally closes a waste-aper-

ture in the valve-pocket, and an adjustable tappet-flange which may engage the toe of the waste-valve, substantially as set forth.

JONATHAN A. BEARD.

Witnesses:

ROBERT A. GLENN,
H. A. GLENN.