

(No Model.)

P. A. MYERS.
WINDMILL AND PUMP REGULATOR.

No. 495,992.

Patented Apr. 25, 1893.

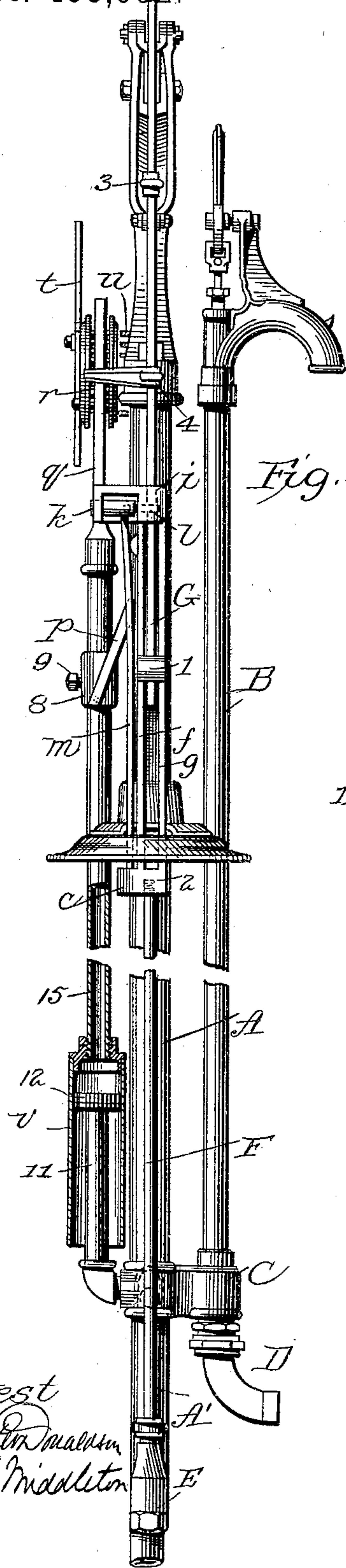


Fig. 1.

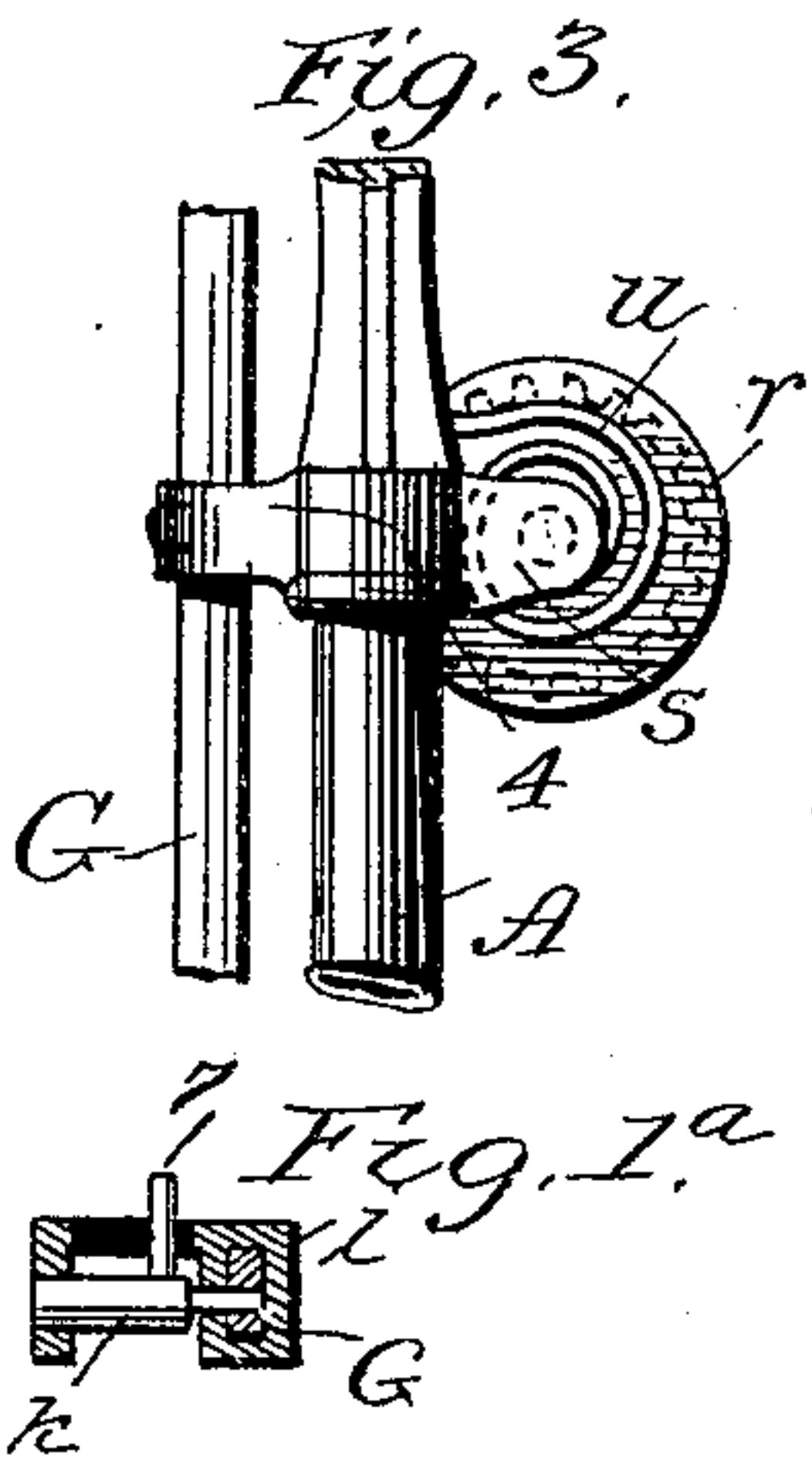
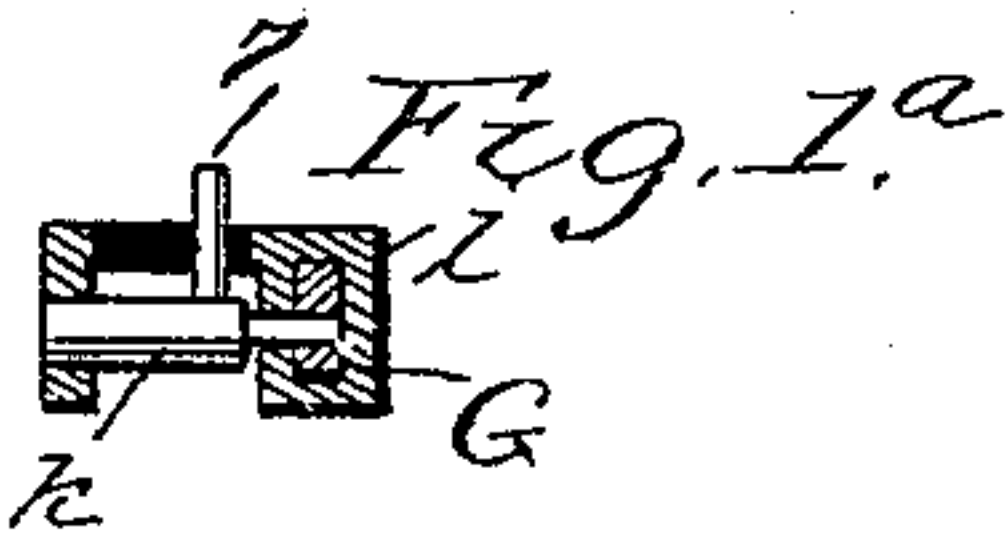


Fig. 3.



UNITED STATES PATENT OFFICE.

PHILIP A. MYERS, OF ASHLAND, OHIO.

WINDMILL AND PUMP REGULATOR.

SPECIFICATION forming part of Letters Patent No. 495,992, dated April 25, 1893.

Application filed April 19, 1892. Serial No. 429,751. (No model.)

To all whom it may concern:

Be it known that I, PHILIP A. MYERS, a citizen of the United States of America, residing at Ashland, in the county of Ashland and State of Ohio, have invented certain new and useful Improvements in Windmill and Pump Regulators, of which the following is a specification, reference being had therein to the accompanying drawings.

10 In regulators for pumps in which hydraulic pressure, generated by the force of the mill, is utilized to turn the wheel out of the wind there is always liability of injurious action, especially in high winds, arising from excessive pressure and the heavy strain thereby put upon the pump and pipes. It has been demonstrated by experience that while hydraulic pressure will control the wheel under favorable circumstances, yet in high winds, when the wheel has unusual power, it runs at such a high speed that its momentum, even when it is effectually turned out of the wind, operates to strain the pipes and fittings and thereby occasionally deranges the pump.

15 The main feature of my invention herein-after described consists in combining with a device for throwing the wheel out of the wind, a disconnecting device operated by the device which throws the wheel out of the wind to disconnect the mill from the pump rod at the same time that it throws the wheel out of the wind. I have shown this device in connection with a hydraulic pressure device and particularly with a hydraulic cylinder but I do not confine myself to this particular pressure device. In connection moreover, with this particular device, which consists of a movable cylinder, I have devised a pipe connection between said cylinder and the device which communicates the pressure to the wheel to turn it out of the wind. This pipe forms a stem or extension of the cylinder and serves as an air chamber as well as a part of the transmitting connection.

45 My invention is illustrated in the accompanying drawings in which:—

Figure 1 shows the pump in side elevation. Fig. 1^a is a cross section on line $x-x$ of Fig. 1.

Fig. 2 shows the same parts one-quarter turned. Fig. 3 shows the back side of the wheel with the back lash spring. Fig. 4 is a section on line $x-x$ of Fig. 1 showing the lower part only of the pump.

The principal parts of the machine shown are of known construction.

The main part or barrel of the pump is shown at A the upper end of it being closed so that the upper part above the cylinder serves as an air reservoir, and on the top of it is the ordinary extension supporting the handle.

The discharge pipe leading to the spout is indicated at B. Its lower end is in connection with the passage in the casting C which passage also connects with the tank pipe D, with the barrel A and its extension A' which latter leads through the casting E to the main or pumping cylinder. The stems of the pumping valves in this cylinder are connected with the pumping rod F, which at its upper end is in connection with the pitman of the wind mill and which is provided with a disconnecting device above referred to. The pump rod F is directly connected at its upper end with the bars f, g , which are connected to each other by stay pieces 1 and 2, and form a guide way, in which guide way the bar G is held or slides. The bar G moves in guides 3, 4, on the pump stock extension in the usual manner and is connected to the pitman of the wind mill. The upper ends of these bars carry a head i in which is set a bolt k one end of which carries a pin l which passes through one of the bars and engages with a hole in the bar G. This bolt is pressed normally into the hole or against the bar G by a spring m . I have found it very convenient to make the bars with their stay pieces with the head i and the connecting block 2, at the lower end, all in one piece and of cast metal, and the rod F is screwed into the block at the lower end. The block is also extended as shown at c to receive and hold the lower end of the spring. The bolt k has a pin 7 extending inwardly and in range with an inclined arm p on the stem of pressure device. This

arm is preferably made as shown, in which form it may be cast. It is formed with a sleeve 8 fitted to the stem, on which it may be properly set by means of a screw 9. The parts are so arranged that when the pressure of the water in the pump due to the closing of the pipe in the tank, has raised the stem to a height sufficient to throw the wheel out of the wind, the inclined arm passes under the pin 7 and withdraws the said bolt against the force of the spring and this disconnects the bar and pump rod and by this disconnection the mill is entirely freed from the pump. The stem has a rack bar *q* on its upper end, which engages with the teeth of a wheel *r* journaled on an arm *s* on the pump stock extension. This wheel carries an arm *t*, which is connected to the mechanism for turning the wheel out of the wind and also with any suitable means for returning the cylinder when the pressure has been removed. There is a coiled spring *u*, on the back of the wheel, one end of which is fast to the arm and the other to the wheel. It is arranged to act against the force of the pressure device and to prevent back lash.

The devices above described may be used with any form of pressure apparatus for transmitting to the wind mill the force of the hydraulic pressure when the tank pipe is closed. But I have shown an improved form and arrangement of the hydraulic pressure devices. These consist of a cylinder *v*, set upon a pipe 11 extending upward from its point of junction with the pump barrel, the cylinder being connected directly to the rigid stem which directly operates the mechanism for turning the wheel out of the wind. The pipe 11 is connected by a quarter turn to couple with the casting, and is thereby made to communicate with the interior of the pump. It extends upward, parallel with the pump barrel and has a piston 12 upon its upper end. This fits snugly in the cylinder with suitable water tight packing and water, under the conditions assumed, is forced through the pipe 11, into the interior of the cylinder above the piston. The stem of the cylinder is a pipe 15 (ordinary gas pipe will serve the purpose) which is fixed rigidly to the cylinder in line with its axis. Upon the upper end are means for connecting it with the mechanism which transmits the movement of the cylinder to the wind wheel. This as shown consists of the rack bar *q* which forms a prolongation of the stem, and engages with the gear wheel *r*. This pipe 15 is closed at its upper end, and the lower opens to the interior of the cylinder. The interior therefore of this pipe which forms the stem of the cylinder serves as an air chamber, containing air which is in contact with the water, and which thus, by its elastic quality serves to break the force of any sudden action of the mill. The hollow construction of the stem serves also the purpose of preventing any tendency of the stem

to buckle under the thrust of the cylinder, as the stem acts under compression in throwing the wheel out of the wind.

In the chamber of the casting and at the entrance of the pipe A' I have located a valve 16. It is shown as a ball valve, the seat of which is on the end of the pipe, being held thereon by the cage 17, so that it is removable with the pipe A'. As this valve is above the pump cylinder and between it and the pressure cylinder, it automatically closes the pressure cylinder, as soon as the pressure in the pump outside of the pressure cylinder is relaxed. All strain of the valve held under pressure is therefore taken from the packings and stuffing box, excepting in the pressure cylinder itself.

I claim as my invention—

1. In combination with a wind mill and force pump, a pressure device arranged to turn the wheel out of the wind, and a connecting device between the pump rod and the wind mill arranged to be disconnected by the action of the pressure device substantially as described.

2. In combination with the pump the cylinder working upon the vertical pipe connected with the interior of the pump; a stem on said cylinder connected with the mechanism for turning the wheel out of the wind, the connecting device between the pump rod and the wind mill, and means carried by the stem for disconnecting said connecting device substantially as described.

3. In combination with the pump, the pressure cylinder pipe connected to the casting C and arranged vertically, a pressure cylinder, a hollow stem closed at its upper end and in connection with the intermediate mechanism for turning the wheel out of the wind, said stem carrying means to disconnect the pump and wind mill, substantially as described.

4. In combination with the pump, the pressure cylinder having a stem arranged to move vertically, a locking bolt pressed into connection by a spring to connect the pump rod with the pitman of the wind mill and a device on the stem for withdrawing the locking bolt substantially as described.

5. In a force pump, having wind mill connections, and in combination, a pressure device having a stem a rack bar on the end of said stem, and a wheel having teeth engaging with the rack bar, with connections from said wheel to the wind wheel for turning the wheel out of the wind, substantially as described.

6. In combination, the pump, the pressure device with connections therefrom to the wheel said connections including the rack *q* and the gear wheel *v* and the back lash spring connected to said wheel, substantially as described.

7. In combination, the pump the pressure device the mill rod G, the pump rod F and the connection between them comprising

the guides *f, g*, and the locking bolt operated from the pressure device, substantially as described.

5 8. In a force pump having wind mill connections, the combination of the wind mill pitman, the pump rod, and detachable connections between the pitman and pump rod, normally in engagement, and a disconnecting

device, operating automatically on detachable connections, substantially as described. 10

In testimony whereof I affix my signature in presence of two witnesses.

PHILIP A. MYERS.

Witnesses:

F. B. KELLOGG,
J. L. GRINDLE.