L. C. ALLEN.

COMBINED WATER AND AIR PUMP MECHANISM.

APPLICATION FILED JUNE 9, 1910.

997,891. Patented July 11, 1911.

Fig. 1.

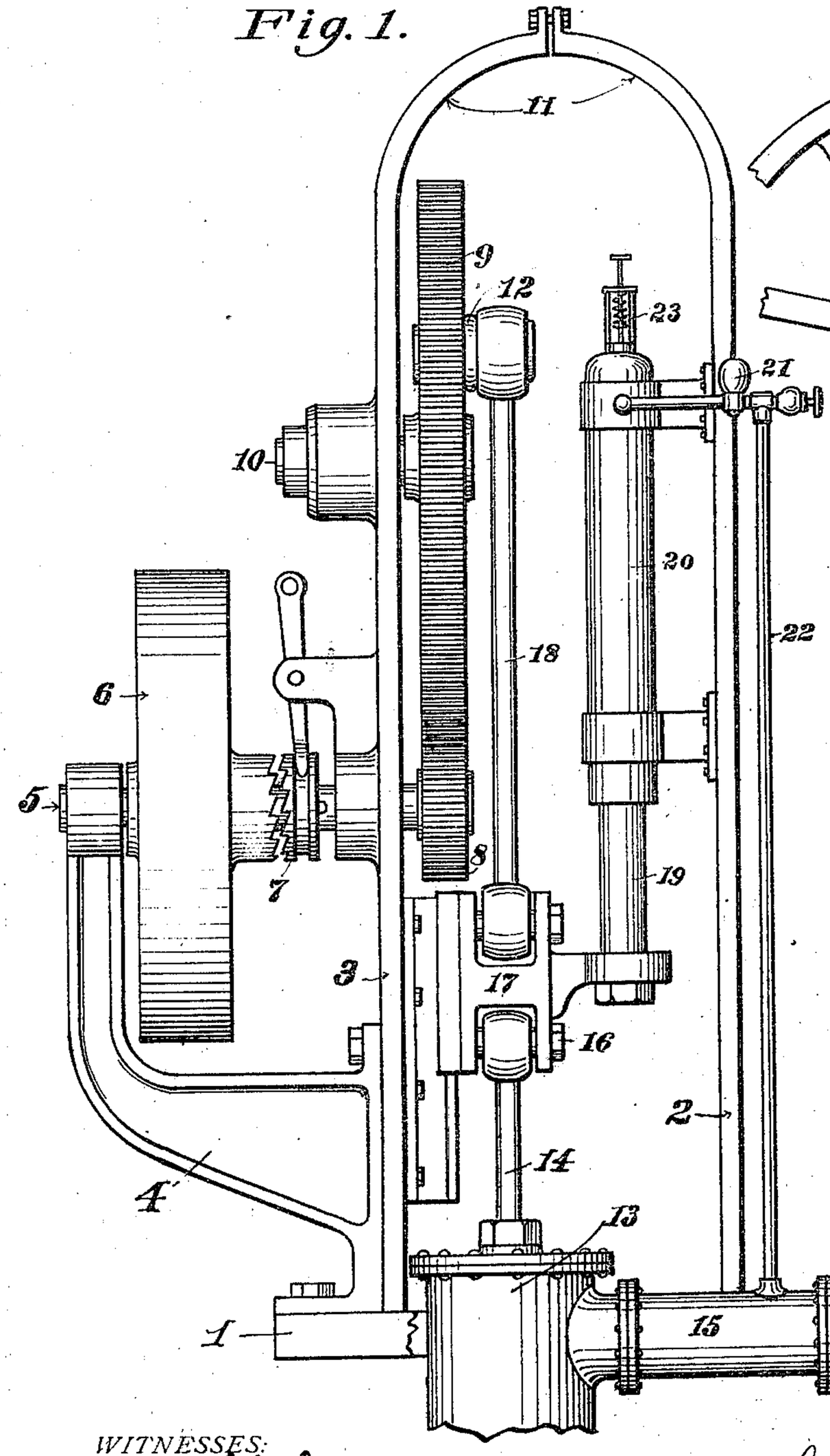
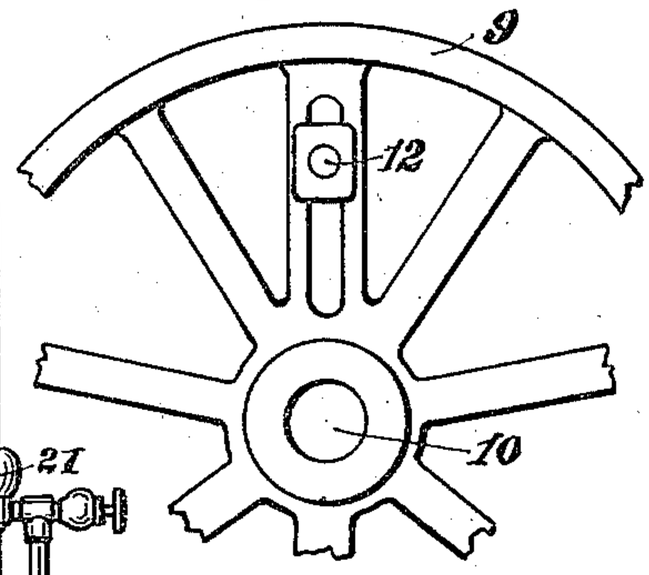


Fig. 2.



WITNESSES:

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COMBINED WATER AND AIR PUMP MECHANISM.

997,891. Specification of Letters Patent. Patented July 11, 1911.

Application filed June 9, 1910. Serial No. 566,068.

To all whom it may concern:

Be it known that I, LEWIS C. ALLEN, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented new and useful Improvements in Combined Water and Air Pump Mechanism, of which the following is a specification.

My invention relates to a system of water distribution in which water pumped from a source of supply, such as a well or cistern, into a distributing tank, is by means of air pressure forced thence through distributing mains to points where and as needed; and its object is to provide an efficient embodiment in one structure of means for delivering and maintaining the supply of water and also of air under pressure, to the distributing tank, the details and incidental purposes of which improvement will more fully and at large appear in the following description, and the novel features thereof will be set forth in the claims subjoined thereto.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved pump mechanism, and its connections, complete—(omitting the well-structure, and distributing tank). Fig. 2 is a detail of the crank construction, showing the provision for adjustable stroke.

Referring now to the accompanying drawings, in which the parts of the structure described herein are designated by corresponding reference numbers, 1 designates the base plate, and 2, 3, the flat front and rear sides, respectively, of an upright frame work supporting the mechanism—said front and rear sides being flat webs or plates bolted below to the base plate, and brought together at the top with bolt connections to form a protecting hood, 11, for said mechanism, and being detachable above and below for convenient access to the working parts. A countershaft 5 projects through a journal bearing on the rear side 3 of the frame, and is journaled at its outer end upon a detachable bracket or pillar 4; and carries a band pulley (or gear) 6, normally loose upon the countershaft, but connected rotatively thereto by a suitable clutch 7, when desired to operate the pump. The countershaft carries at its projecting end within the supporting frame, a spur pinion 8, through which power communicated to the pulley 6, is transmitted by means of the spur pinion 8 to a gear 9 secured to a short shaft 10, journaled in and through the side 3 of the frame, above and in line with the countershaft 5. The gear 9 is provided with a crank pin 12 adjustable in a radial slot of one of its spokes to lengthen or shorten the length of stroke, as shown in Fig. 2.

Upon the base, vertically beneath the crank shaft 10, and in line with the crank pin, 12, at its extreme upper and lower positions, is located the pump head 13 of a lift pump, through which passes a pump rod, 14. The water lifted by the pump is discharged outwardly through a lateral extension 15 of the pump head 13, into the distributing tank (not shown) for distribution by air-pressure, in the mode common in such distribution systems, to the points where needed.

The pump rod 14 is detachably connected by means of a removable pin 16 or other suitable fastening, with a cross head 17 and a pitman 18 connects the cross head with the crank pin 12, whereby the cross head reciprocates the pump-rod as the gear 9 is rotated. Secured to a lateral extension of the cross head is a vertical plunger 19 operating telescopically with a close sliding fit in a corresponding pump-barrel 20 mounted, as shown, vertically upon the contiguous wall of the frame 2—the structure serving as a guide for the cross head and also as an air-pump. For its latter function, suitable check valves are provided in a valve casing 21, to enable the air pump to draw in air on its down stroke, and force it through a pipe 22, into the water discharge conduit 15, whereby as water is lifted from the well or cistern and forced into the distributing tank, a given quantity of air is likewise forced into the said tank. A relief cock 23 is attached to the valve casing so that the air pump may continue its operation without forcing air into the distributing tank; and likewise, when desirable to operate the air pump alone, without the water pump, the pump rod 14 may be detached by withdrawing its pin 16.

The operation of the device is sufficiently apparent from the foregoing description.

It will be seen that the machine embodies in compact form, and arranged to be operated by the same immediate driving mecha-

nism, the air and water pump; and is so arranged as that either or both may be thrown into or out of operative connection with the distributing tank.

The structural features of the device, as a whole, are designed to afford protection to the working parts by a frame that has also the function of a hood or cover, and also convenience of manipulation, accessibility for repairs, adjustments to the varying demands of use under a continuous and uniform driving force. As such devices are to be used in dwellings, hotels, etc., where skilled labor and attention is frequently wanting, it is purposely designed to embody the simplest forms of mechanism, whose use and manipulation will be obvious and within the capacity of unskilled attendants, and so protected in its frame as to be less liable to accidental injury and derangement, and less likely to cause injury to others.

I claim as my invention, and desire to secure by Letters Patent of the United States:—

1. In a combined pump of the character indicated, the combination of a supporting frame, a driven crank-shaft, a pitman connected with the crank, a cross head reciprocated by the pitman, and operating the water pump rod connected therewith; an air pump barrel secured rigidly to the frame and a plunger attached to the cross head and operating telescopically in said pump barrel as a guide for the reciprocating cross head.

2. In a combined pump of the character indicated, a common base; two vertical walls, mounted and spaced apart thereon, and brought together and united at the top to constitute a supporting and protecting frame open at the sides; driving mechanism for the main pump attached to the inner side of one of said walls and having the shaft bearings in and through the same; and an air pump mounted upon the inner side of the other wall in operative relations with said driving mechanism.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LEWIS CHARLES ALLEN.

Witnesses:

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HELEN ALLEN.