

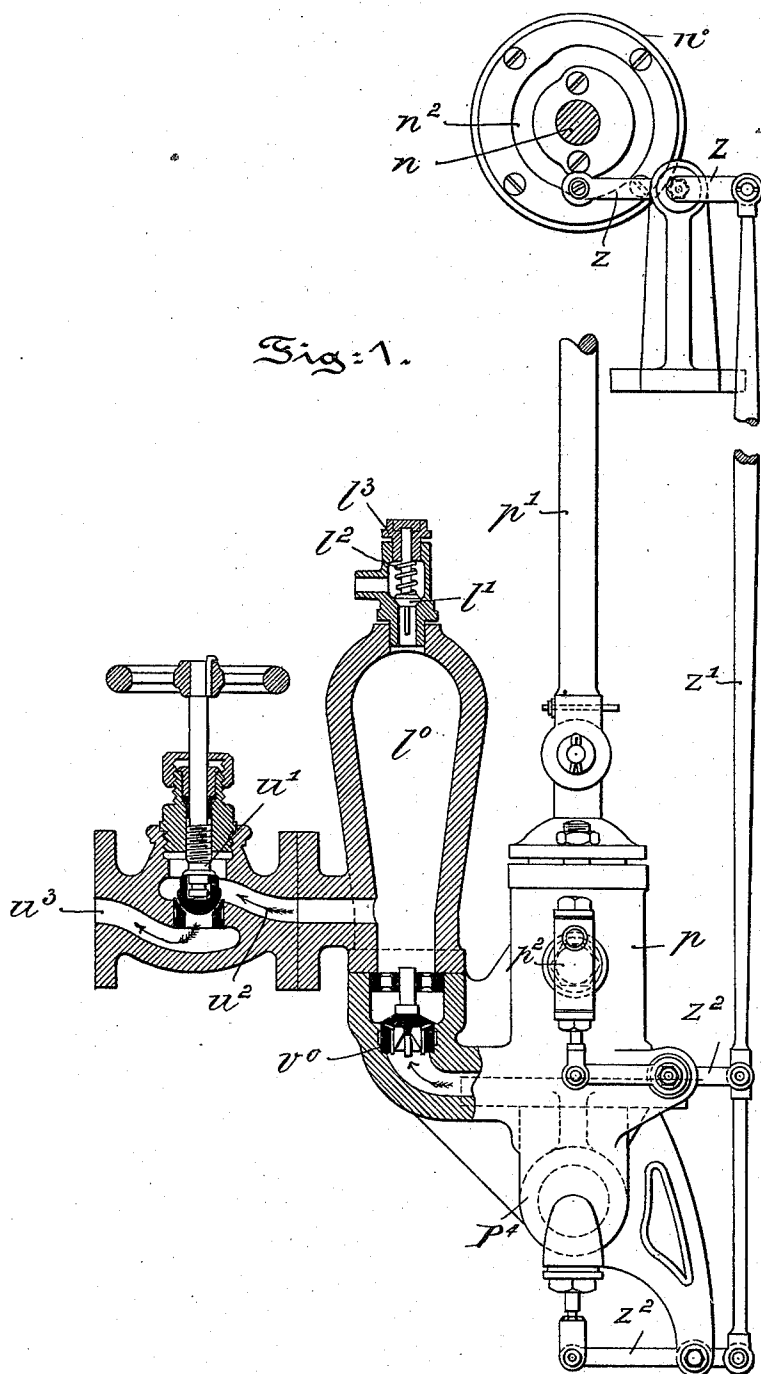
(No Model.)

2 Sheets—Sheet 1.

J. GRUBINSKI.
FEED PUMP.

No. 573,085.

Patented Dec. 15, 1896.



Witnesses:

Thomas M. Smith,

Richard C. Maxwell.

Inventor:
Jan Grubinski,
By J. Walter Douglas
Attorneys.

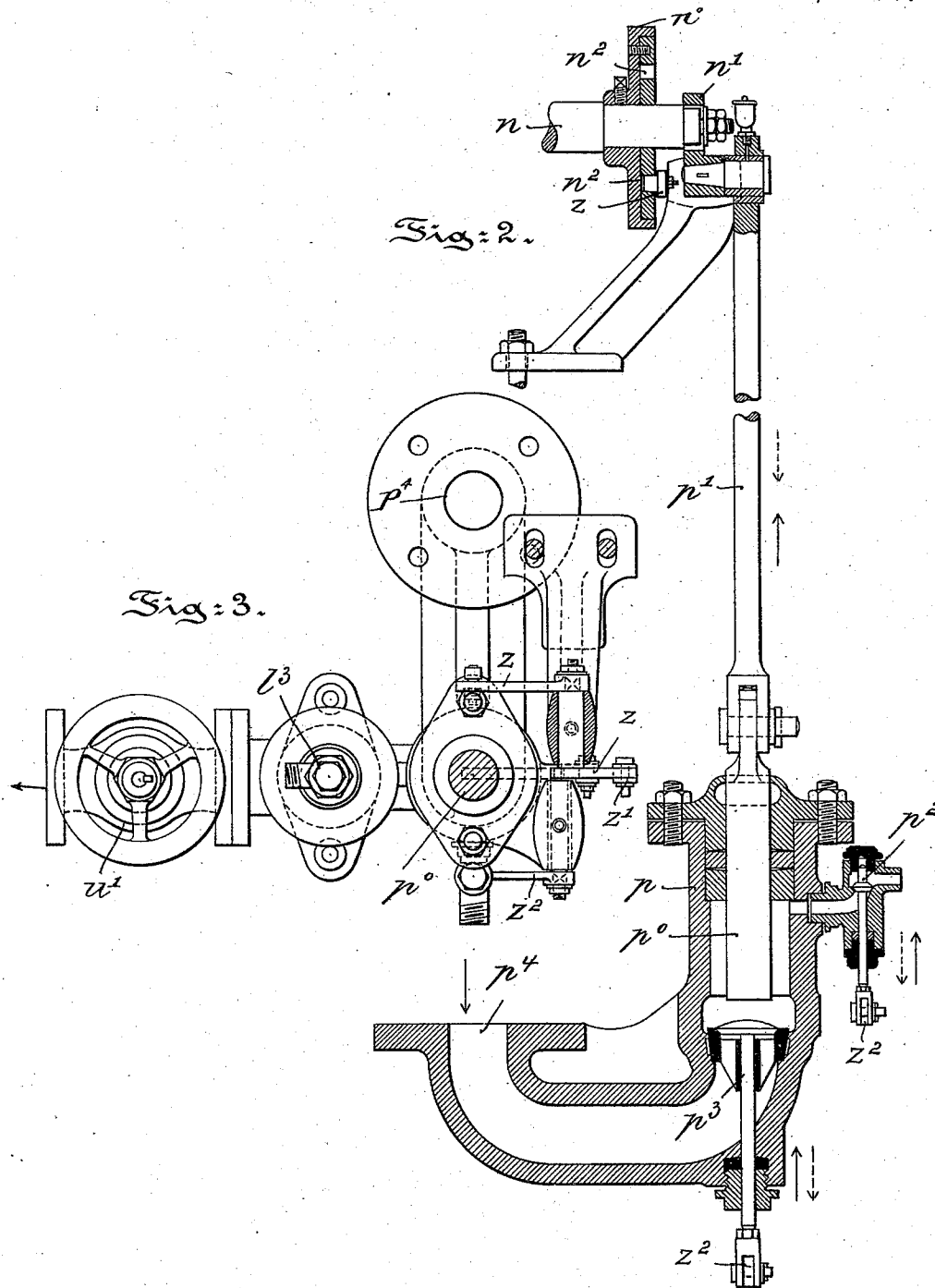
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UNITED STATES PATENT OFFICE.

JAN GRUBINSKI, OF WARSAW, RUSSIA.

FEED-PUMP.

SPECIFICATION forming part of Letters Patent No. 573,085, dated December 15, 1896.

Application filed April 10, 1896. Serial No. 586,960. (No model.)

To all whom it may concern:

Be it known that I, JAN GRUBINSKI, a subject of the Czar of Russia, residing at Warsaw, in the Province of Poland and Empire of Russia, have invented certain new and useful Improvements in Feed-Pumps, of which the following is a specification.

My invention has relation to a feed-pump, and in such connection it relates to the construction and arrangement of the same.

The principal objects of my invention are, first, to provide a feed-pump of simple construction by means of which water fed by gravity from an elevated reservoir to the pump may be discharged wholly or partially from the pump to the boiler, and second, to provide a feed-pump in which the inlet-valve of the pump and a valve through which exhaust-steam arising from the heated feed-water passing into the pump are both opened on the upstroke of the piston of the cylinder and closed during the downstroke of said piston, the pump being provided with a pressure-chamber the outlet of which is regulated by a valve.

My invention, stated in general terms, consists of a feed-pump constructed and arranged in substantially the manner herein-after described and claimed.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming a part hereof, in which—

Figure 1 is an end elevation, partly sectioned, of a feed-pump embodying the main features of my invention. Fig. 2 is a transverse vertical sectional view of Fig. 1, and Fig. 3 is a top or plan view of the pump.

Referring to the drawings, the piston p^0 of the pump p through its rod p' is operated by the crank n' , located on the driving-shaft n of an engine. This crank n' is adjustably located on the shaft n , so as to permit of the adjustment of the stroke of the piston p^0 . On the driving-shaft n is a disk n^0 , provided with a cam-groove n^2 , wherein works a roller connected by a bolt with a rod z . This rod z is pivotally secured in a standard or bracket and is movably connected at its free end to a vertical link z' , which in turn is pivotally secured at its lower end to two horizontally-ar-

ranged arms z^2 , movably attached to the housing of the pump p . One of the arms z^2 operates a valve p^2 , controlling an outlet from the upper end of the pump p , while the other of these arms z^2 operates an inlet-valve p^3 , arranged in the lower end of the pump p . The cam-groove n^2 of the disk n^0 is so arranged that when the piston p^0 is raised the link z' will be depressed and the valves p^2 and p^3 will through the arms z^2 be both opened. On the downward movement of the piston p^0 the link z' will be raised, and through the arms z^2 both valves p^2 and p^3 will be opened. The pump p is connected by an inlet p^4 with an elevated reservoir (not shown) in which hot feed-water is contained.

The water-chamber l^0 of the pump is provided with a pressure-valve l' , located at the top of the chamber, as illustrated in Fig. 1 of the drawings. The stem of this valve is normally controlled by a spring l^2 , the tension of which may be adjusted by screwing a nut l^3 up or down in the housing of the valve. When the pressure of water in the chamber l^0 is sufficient to open the valve l' , the water will escape through the valve to the open air or to a suitable receiver. (Not shown.) The discharge of water from the chamber l^0 is further regulated by the valve u' , the housing of which is secured to the walls of the chamber l^0 . The housing is provided with two channels u^2 and u^3 , one of which, u^3 , leads to the boiler. When the valve u' is opened, the channels u^2 and u^3 communicate, and when the valve is closed communication between channels u^2 and u^3 is also closed. Thus by regulating the valve u' the entire quantity of water in the chamber l^0 or only a portion thereof may be discharged into the boiler. The inlet to the chamber l^0 from the outlet of the pump p is closed by a check-valve v^0 of any ordinary construction, which permits the passage of water into the chamber, but prevents a return of the same to the pump.

In operation previously-heated water from an elevated reservoir flows by gravity through the inlet p^4 to the pump. When the piston p^0 is raised, the valve p^3 is opened to permit the water to enter the pump. At the same time the valve p^2 is opened to permit vapor or steam evolved from the water in the pump

to escape to either the open air or into any suitable receptacle. On the downstroke of the piston p^0 the valves p^2 and p^3 are both closed and water in the pump is forced to the chamber l' , from whence under pressure it is directed, as above described, either in whole or in part to the boiler.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a feed-pump, a cylinder having an inlet at its lower end and an outlet at its upper end, valves controlling the inlet and outlet, two arms each adapted to control one of said valves, a link pivotally connected with

said arms, a piston traversing said cylinder, a rod operating said piston and a cam-disk adapted to actuate both piston-rod and link, whereby upon the downstroke of the piston the link is adapted to close both valves and on the upstroke thereof it is adapted to open both valves, substantially as and for the purposes described.

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

JAN GRUBINSKI.

Witnesses:

MARJAN WOLOWITZ,
WLADYSLAW ZANIAWSKI.