

No. 654,785.

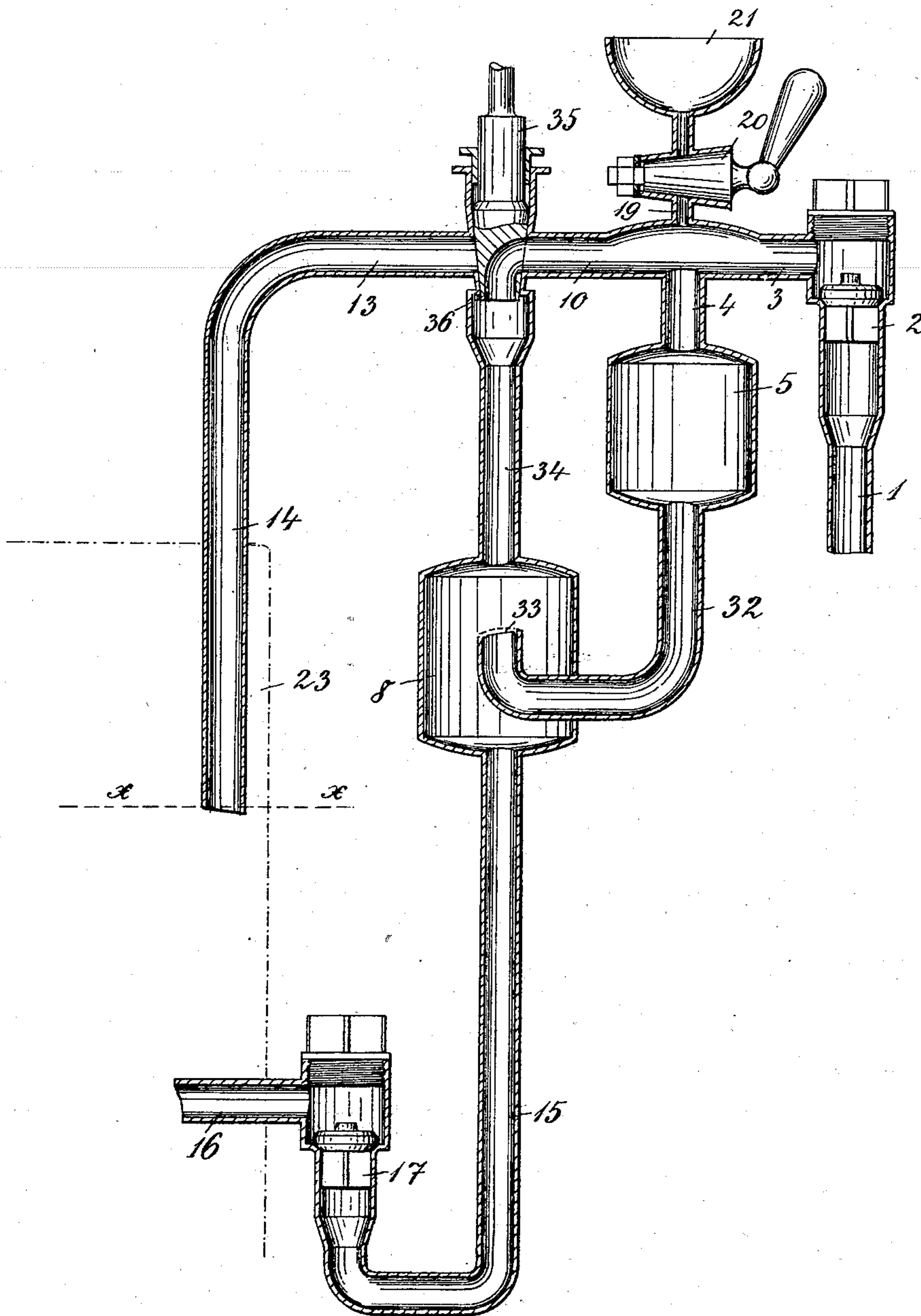
Patented July 31, 1900.

A. COUFALIK.

SELF ACTING FEED APPARATUS FOR BOILERS.

(Application filed Mar. 8, 1900.)

(No Model.)



WITNESSES:

*Ella L. Giles*  
*Otto Munk*

INVENTOR

*Antonin Coufalik*  
BY *Richard L. ...*

ATTORNEYS



# UNITED STATES PATENT OFFICE.

ANTONIN COUFALIK, OF KREPICE, AUSTRIA-HUNGARY.

## SELF-ACTING FEED APPARATUS FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 654,785, dated July 31, 1900.

Application filed March 8, 1900. Serial No. 7,872. (No model.)

*To all whom it may concern:*

Be it known that I, ANTONIN COUFALIK, a subject of the Emperor of Austria-Hungary, residing in Krevice, Moravia, Austria-Hungary, have invented a new and useful Self-Acting Feed Apparatus for Boilers—the “Infuser with Distributer”—of which the following is a specification.

My invention relates to improvements in self-acting feed apparatuses for steam-boilers which act by condensation; and the objects of my improvements are, first, to provide a steady and regular feeding of the boiler, and, second, to assure the self-acting working of the feeder without any float, counterweight, or whatever such auxiliary part of similar apparatuses may be simply in alternately moving, sliding, or turning a distributer of steam, which may be a cock, valve, or the like. I attain these objects by the mechanism illustrated in the accompanying diagram, which shows it in axial section.

X X is the water-level in the boiler 23. This boiler is fed through the pressure-tube 16, which is fitted out with a forcing-valve 17 and communicates with the condenser 8, which is situated higher than the highest water-level X X. The apparatus consists, further, of a steam-pipe 14 13, which rises from the highest water-level X X in the boiler and leads to the distributer 35, which may be a cock, valve, or the like. The drawing shows a cock with the channel 36. This distributer is alternately turned in such manner that its channel 36 forms connection first with the steam-pipe 13 with the vertical pipe 34, leading to the condenser 8, and then with the water-pipe 10 3 with the pipe 34, the latter position being shown in the drawing. Tube 3 leads to the tube or pipe 1 or to the water-supply. 2 is the sucking-valve. The water-pipe 10 3 has a vertical branch 4 connecting it with a water-tank 5, which is situated higher than the condenser 8. The tank 5 is connected with the condenser 8 by means of a pipe 32 33, which in the condenser is turned toward the mouth of the pipe 34; which leads from the steam-cock into the condenser. The outlet 34 is provided with a sieve for the sake of a better distribution of the water in the condenser.

On the top of the water-tube 10 3 there is an air-pipe 19, which is provided with an air-

cock 20 and a goblet 21, this being continually filled with water. The air or gas which accumulates from the water escapes through this pipe 19, for which purpose the cock 20 has to be kept open as little and as much as needed.

Before the working the space between the clack-valves 2 and 17 or their equivalents and between the steam-cock 35 or distributer is completely filled with water, and the working can begin when there is sufficient steam in the boiler. This position is indicated in the drawing. If after this the cock 35 is turned the opposite way, so that the channel 36 connects the tube 13 with 34, steam enters from the boiler 23 into the pipe 34, and therefore into the condenser 8, the connection to the pipe 10 being closed. This steam is partly condensed; but fresh steam follows from the boiler, and the column of water in and under the condenser, being exposed to equal pressure from beneath and from above, falls by its proper weight into the boiler, whatever the pressure may be. In this moment the distributer 35 is turned or slid, so that its channel 36 or its equivalent forms connection between the condenser 8 and the upper pipe 10, which leads to the water-supply or the aspiring-tube, while the steam is at the same time shut off. The column of water in the tank 5 and its tubes being exposed now to equal pressure from beneath and from above must fall down into the condenser, where the steam has in the meantime been condensed. Water will rush in from the water-supply or from the pipe 1; because of the vacuum in tank 5 and the connecting-pipes, and the space between the valves 2 and 17 and the cock 35 will again be filled by water. Now the distributer 35 can again be turned as before, so that the same process will repeat itself. The cock 20 is kept open as much as to give egress to the air and gas from the water, and thus to assure the good working of the apparatus. The outlet 33, which preferably is provided with a sieve, acts as an ejector of water when there is steam in the condenser and upward, and the condensation is thus finished more completely at the end of each period. The infuser continues to feed regularly at each turning of the steam-cock respectively at each stroke of the valve, and



if the infuser is well proportionated the boiler will be fed with hot water and the water-level in the boiler will mount till it reaches up to the inlet of the steam-pipe 14 at X X.

5 As soon as the inlet reaches down to the water the tube will take water instead of steam. Thus the effect of feeding will diminish, causing the level X X to fall, so as to again let steam rush into the condenser instead of water. The effect of this is that the water in  
10 the boiler keeps practically on the same level.

I am aware that prior to my invention different self-acting apparatuses for boilers have been made operating with steam cocks or  
15 valves. I therefore do not claim such a combination broadly; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

The combination in a self-acting boiler-

feeder, with a boiler, of a condenser, a pipe 20  
15 interposed between the same and the boiler, a supply-pipe, a pipe connection therefrom connecting with a like connection from the boiler, a pipe connection from said latter connection to the condenser, a valve located at 25  
the intersection of the latter pipe and the pipes leading from the boiler and feed-pipe, and a connection leading to the condenser from the feed-pipe back of said valve, and a tank interposed in said latter connection, substantially as described. 30

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

ANTONIN COUFALIK.

Witnesses:

W. DRAHOKONJUL,

M. TOMAS.