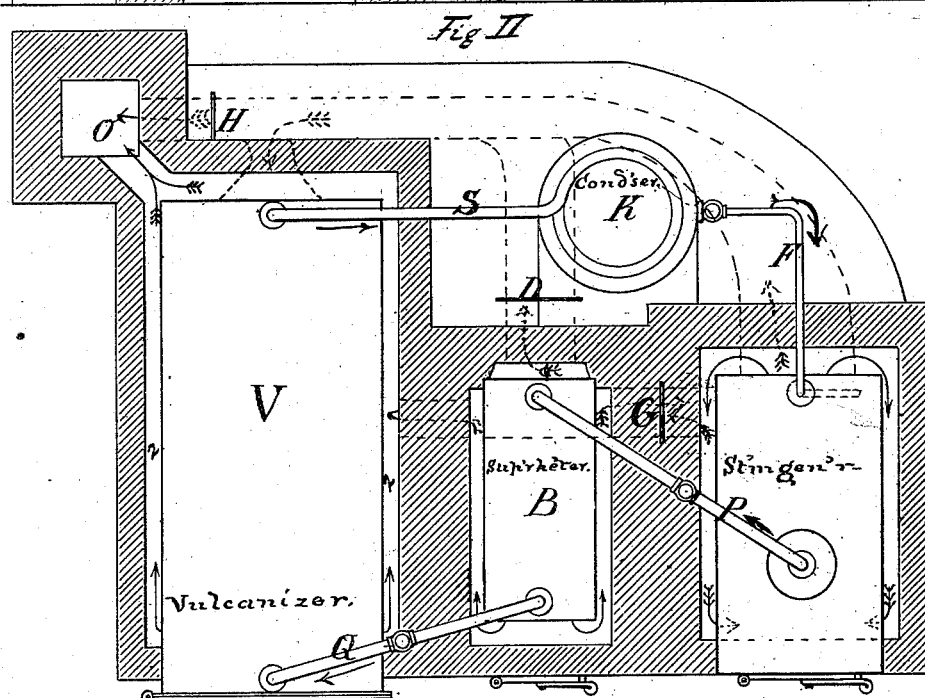
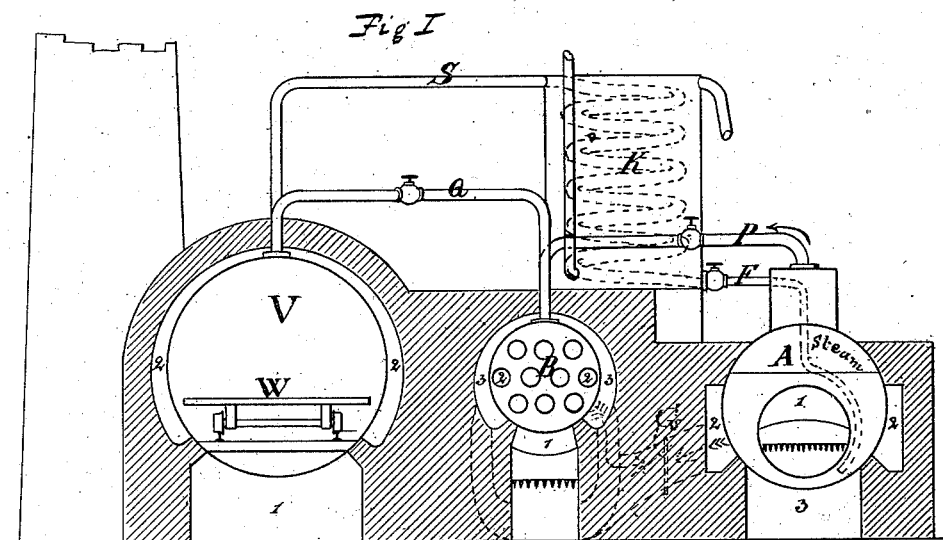


F. zur NEDDEN.
Apparatus for Vulcanizing Rubber, &c.
No. 216,527. Patented June 17, 1879.



Witnesses:

St. von Eberly
W. Meyer

Inventor:

Franz zur Nedden
Carl T. Burchard
Atty.

UNITED STATES PATENT OFFICE.

FRANZ ZUR NEDDEN, OF BERLIN, PRUSSIA, GERMANY, ASSIGNOR TO CARL T. BURCHARDT, OF NEW YORK, N. Y.

IMPROVEMENT IN APPARATUS FOR VULCANIZING RUBBER, &c.

Specification forming part of Letters Patent No. **216,527**, dated June 17, 1879; application filed April 18, 1879.

To all whom it may concern:

Be it known that I, F. ZUR NEDDEN, of Berlin, Germany, have invented new and useful Improvements in the Apparatus for Vulcanizing or Curing India-Rubber, Vegetable Fiber, or similar substances, of which the following is a specification.

This invention relates to an improved apparatus for vulcanizing rubber and similar substances by subjecting the same to the action of superheated steam that is deprived of its pressure to a certain extent.

The invention consists in surrounding a vulcanizing-chamber, which is connected with a smaller steam-superheating chamber and with a discharge, by a space that receives the heated products of combustion, all as is hereinafter more fully described.

Figure 1 is a vertical elevation, partly in section, and Fig. 2 a plan or top view, partly in section, of my improved apparatus for vulcanizing rubber.

Similar letters of reference indicate corresponding parts in all the figures.

In the drawings, the letter A represents a boiler, which is heated by a suitable furnace and in which steam is generated. This boiler A is by a pipe, P, connected with a superheating-chamber, B, the pipe P entering the chamber B preferably at or near one end thereof. By this pipe P the steam from the generator A passes into the superheater B, and is there superheated by a suitable furnace placed beneath the vessel B.

V is the vulcanizing-chamber. This chamber is by a pipe, Q, connected with the superheater B, and has a much larger capacity than the superheater, so that the steam on entering the vulcanizing-chamber through the pipe Q will be expanded and its pressure reduced.

S is a discharge-pipe applied to one end of the vulcanizing-chamber V, preferably opposite to the end at which the pipe Q enters the same, so that the steam will have to pass through the entire vulcanizing-chamber before it can be discharged. This pipe S may connect with a condenser, K, which converts the discharged steam into water, such water being by a pipe, F, fed back into the generator A, where it is again converted into steam and conducted into the superheater.

The condenser K should be placed at a con-

siderable height above the generator A, so that the water will be automatically fed into the generator, and without the use of any pumping mechanism.

The rubber to be vulcanized is placed upon a carriage, W, in the chamber V, and is there subjected to the gentle action of the superheated steam, which, by the expansion which it has undergone in entering from the small superheating-chamber B into the much larger vulcanizing-chamber V, is deprived of all injurious degree of pressure, and which, owing to its superheated condition, will vulcanize the rubber in a short time, and yet not injure the same by pressure.

The furnaces that heat the generator A and superheater B are by suitable flues connected with the smoke-stack O, and also with a chamber or space that surrounds the vulcanizing-chamber V. These flues are represented by dotted lines in the drawings, and are provided with a slide, H, which, when closed, will cause the products of combustion to enter the space that surrounds the vulcanizing-chamber V, and thus to aid in heating the same.

When the slide H is open the products of combustion will pass from the flues directly into the chimney.

Other flues connect the generator A and superheater B directly with the space surrounding the vulcanizing-chamber V, and the products of combustion may, by means of suitable slides D and G, be caused to enter such space or to be excluded therefrom.

The heat absorbed by the steam as it expands within the large vulcanizing-chamber will be supplied to it by the products of combustion which are carried around said vulcanizing-chamber.

I claim as my invention—

In an apparatus for vulcanizing rubber, the combination of the superheater B with the vulcanizing-chamber V, that is surrounded by a space, 2, for receiving the products of combustion, and is connected with a discharge, S, substantially as specified.

This specification signed by me this 18th day of May, 1875.

FRANZ ZUR NEDDEN.

Witnesses:

ALB. CREUTZBURG,
CARL S. MÜLLER.