Circumferential types of pressure drums for pressing and de-watering pulp and the like are known which are provided with grooves extending circularly or helically around the periphery of the drum. If such grooves have too great a depth the web to be treated cannot be fully freed from water, because the water which has entered the grooves again goes into the web as the latter leaves the drum.

It has been proposed to provide such drums with external suction boxes adapted to take up the said water and thus preventing it from re-entering the web. As the grooves extend continuously around the drum, tightening means must be provided, one for each groove, in order that air shall not penetrate into the suction box and disturb the vacuum therein. This arrangement is very complicated by reason of the great number of tightening means necessary, and the wear thereof on the grooves is objectionable.

The present invention aims at removing the above named drawbacks. This is accomplished by providing the drum with grooves which do not extend round the entire periphery of the drum, but form oblong apertures in communication with vacuum channel or channels in the drum.

The annexed drawings show by way of example different embodiments of my invention.

Fig. 1 shows the press drum seen from the end, one half of the cover ring being removed.

Fig. 2 shows part of the drum, partly seen from above and partly in horizontal section.

Figs. 3 and 4 are views similar to Figs. 1 and 2, showing a modified form of press drum.

Fig. 5 is a cross section through a drum and its surrounding shell.

The drum shown in Figs. 1 and 2 is intended to be used at high pressures. The drum consists of a hollow cylinder, the walls of which are given a desired thickness to resist the high pressure. In the periphery of the drum is provided numerous oblong grooves arranged in sections, the grooves of each section extending in parallel relationship as indicated at the right half of Fig. 2.

Extending lengthwise in the wall of the drum are a number of channels or bores B, preferably one channel for each of the said sections of grooves, which extend so deep into the drum wall that they reach the corresponding channel B. In order that the number of channels B shall become the lowest possible the length of the grooves H should at least be 30 times the width thereof.

One end of each of said channels B is filled with a suitable plug (as indicated at A in Fig. 4) whereas the other end is covered by a common suction ring R. This ring is provided with a circular groove V in connection with a stud U which is connected to a suitable vacuum pump (not shown).

Figs. 3 and 4 show a modification in which both ends of each channel B may be filled with a plug A, apertures C connecting each channel with the interior W of the drum. The stub shaft of the drum is hollow as at T, and is connected with a vacuum pump.

In order to limit the action of the suction mostly to that section of grooves H which is, at any time, in contact with the web of pulp under treatment, the arrangement shown in Fig. 5 is used, where the drum is partly surrounded by a non-rotating adjustable shell D. Suitable packing means may be provided between the said shell and the drum if necessary.

The action of my new combined pressure and suction drum is as follows:

When the vacuum pump provides a vacuum in the channel or channels B in question the water penetrates from the web or sheet P (Fig. 5) under treatment into the grooves H and goes further to the conduit leading to the vacuum pump, from which conduit the water may be branched off at a suitable point if desired. At that portion E (Fig. 5) where the drum just has left the web and not yet reached the lower edge F of the shell, the water taken up from the web and still remaining in the grooves H will be forcibly sucked into the channels B, whereby the said water is prevented from again being taken up by the web at the said portion E. Along the remainder of the surface of the drum the shell D prevents the air from penetrating into the drum.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to
be performed, I declare that what I claim is:

1. A combined suction and pressure drum for fibrous mass, having apertures or grooves communicating with suction chamber within the drum, the said apertures or grooves having a length of at least 30 times the width thereof and being arranged sectionally around and in series along the drum to such depth that they communicate with a collecting channel arranged underneath each section, bored in the drum wall proper and communicating with the said vacuum chamber.

2. A combined suction and pressure drum according to claim 1, having practically the entire portion of the surface thereof which is not contacting with the web to be treated covered by a stationary adjustable shell, which at that portion prevents air from penetrating into the drum.

In testimony whereof I affix my signature.

JULIUS STEPHANSEN.