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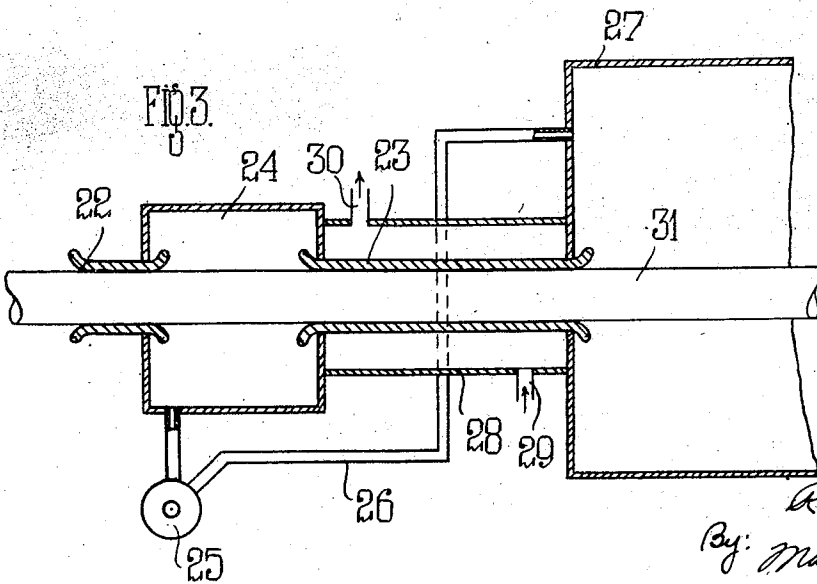
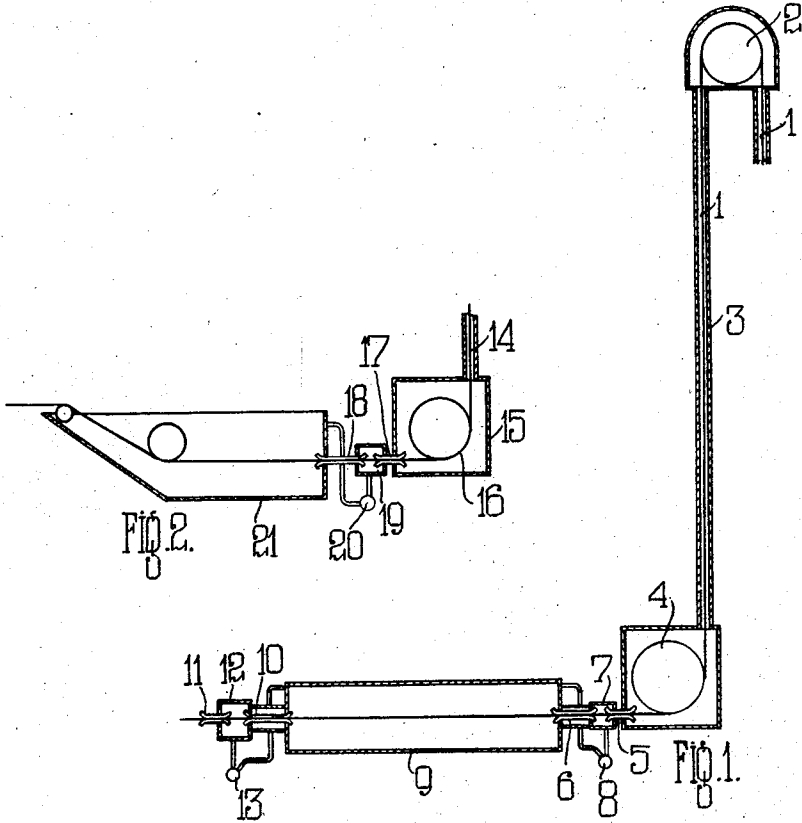
F. PEEL ET AL

2,357,686

PROCESS FOR CONTINUOUS IMPREGNATION OF CABLES AND THE LIKE ARTICLES

Filed April 29, 1940

2 Sheets-Sheet 1



Inventors:
F. Peck
R. S. Vincent
By: Mason & Porter
Attorneys

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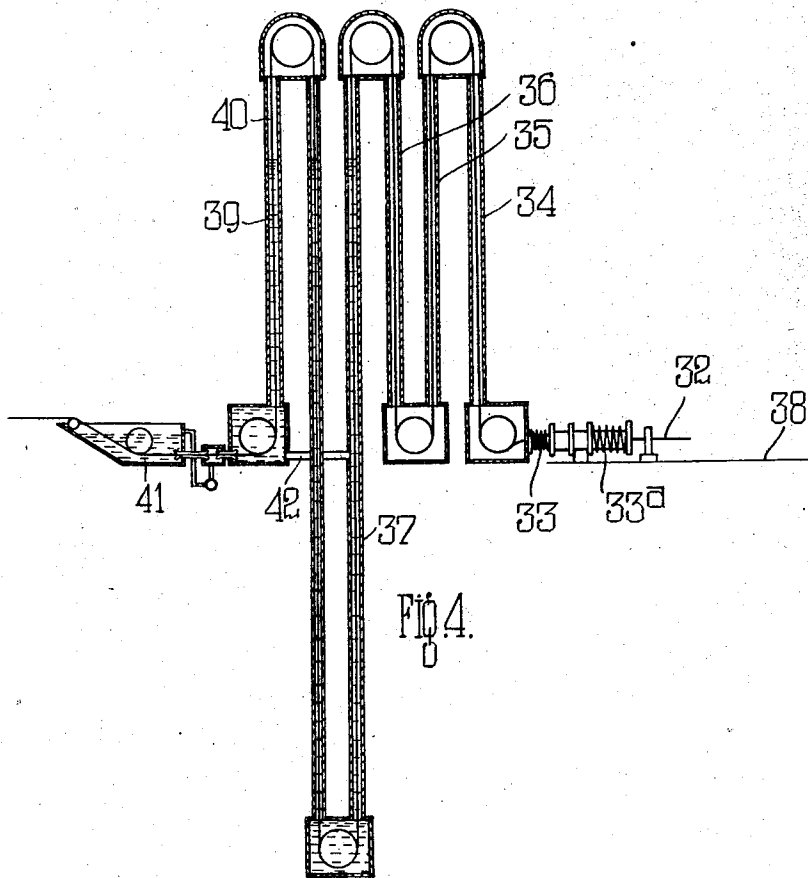
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PROCESS FOR CONTINUOUS IMPREGNATION OF CABLES AND THE LIKE ARTICLES

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2 Sheets-Sheet 2



Inventors:

*Frederick Peel
Russell S. Vincent*

*By: Mason & Porter
Attorneys*

UNITED STATES PATENT OFFICE

2,357,686

PROCESS FOR CONTINUOUS IMPREGNATION OF CABLES AND THE LIKE ARTICLES

Frederick Peel, Gidea Park, and Russell Swale Vincent, London, England, assignors to Calender's Cable & Construction Company Limited, London, England, a British company

Application April 29, 1940, Serial No. 332,380
In Great Britain May 13, 1939

3 Claims. (Cl. 117—61)

This invention relates to an improved process for continuous impregnation of cables and the like articles. One of the principal objects of the invention is to provide improved outlet glands for removing the cable from a treatment zone which is under vacuum or under superatmospheric pressure, i. e. in either case at a pressure other than atmospheric. A further object of the invention is to provide improved means of impregnating cable under superatmospheric pressure. Further objects will appear from the following description and the scope of the invention will be defined in the claims. The general method of treatment of cables is that described in co-pending application No. 253,454 of R. S. Vincent for Process and apparatus for impregnating cables filed Jan. 28, 1939, but according to one of the principal features of the present invention the outlet gland consists of a viscosity gland, in which the cable is passed through a closely fitting member, preferably a bell-mouthed tube which is sealed by a viscous liquid preferably the impregnating liquid itself. It is preferred to provide means for cooling the hot impregnating liquid at the viscosity gland, especially when impregnation has been conducted under heavy pressure. It is convenient to provide a plurality of viscosity glands in series with an intervening vessel provided with a pump to return to the system any liquid which has leaked through the gland.

The high pressure may be obtained by using a U-tube sunk below atmospheric datum i. e. the level at which the pressure in the liquid columns is atmospheric and this is particularly convenient when pressure and vacuum treatments are to be alternated.

The invention also includes the provision of means to heat the air surrounding the dry gland at the inlet. This reduces the total mass of air which leaks through the gland partly because of the lower specific gravity of hot air as compared with cold air and partly because the volume of leakage is reduced since hot air has a viscosity greater than that of cold air. This heating may be effected by an electrically heated tube.

The invention will be illustrated by way of example in the accompanying drawings which represent diagrammatic vertical sections through suitable apparatus. For details apart from the viscosity gland and impregnation under superatmospheric pressure reference may be made to co-pending application No. 253,454.

In Fig. 1, 1 is the cable which is passed through a treatment zone or zones (not shown), as in co-

pending application No. 253,454 which zones may be entered through a dry gland. The cable passes over the pulley 2 and through the elongated pipe 3 which may be under vacuum, and then over pulley 4 through the viscosity glands 5 and 6 connected by the intervening vessel 7. Liquid leaking through the gland is passed by pump 8 into the pressure zone 9. The cable emerges through the viscosity glands 10 and 11 and in intermediate vessel 12 from which liquid is returned to the pressure zone through the pump 13. Additional means may be provided for increasing the pressure in the impregnating zone 9 if desired.

Fig. 2 shows a similar arrangement in which the final pressure zone is not employed. In this case the cable 14 which may have been impregnated under vacuum as described in co-pending application No. 253,454 enters a vessel 15 containing a pulley 16 and then passes through the viscosity glands 17 and 18 separated by an intervening vessel 19 provided with a pump 20. The cable emerges into the tank 21 which is open to the atmosphere.

Fig. 3 is a detail of the arrangement of the viscosity glands 22 and 23 where 24 is the intervening vessel and 25 is the pump which returns the liquid through a pipe 26 to a pressure impregnating zone 27 containing liquid impregnating composition. The gland tube 23 is surrounded by a cooling jacket 28 having an inlet 29 and an outlet 30. 31 is the cable, which travels from right to left. The tubes gland may be removable so that different sizes may be inserted according to the diameter of the cable used. The length of the tubes depends upon the viscosity and upon the composition and the pressure in the impregnating zone.

In Fig. 4 there is illustrated the use of a U-tube sunk below atmospheric datum. The cable 32 enters through the air heater 33a which consists of an electric heating coil and dry gland 33 and passes through three legs 34, 35 and 36 under vacuum. The U-tube 37 is filled with impregnating composition and sunk below the atmospheric datum line 38. There is a final barometric leg 39 to provide a vacuum impregnation following the pressure impregnation in the lower part of the U tube 37 and the space 40 is therefore evacuated. The cable emerges through a sealed tank 41 which is open to atmosphere. 42 is a pipe connecting the tank 41 with the first leg of the U tube 37 at atmospheric datum line.

We declare that what we claim is:

1. In a method of impregnating cables and like

articles which comprises continuously passing the article through a treating zone in which it is subjected to heat and a pressure other than atmospheric, the step which consists in removing the article from said zone through a closely fitting surface sealed by a cooled viscous impregnating liquid.

2. A method of impregnating cables which comprises passing the cable continuously through a heated impregnating composition zone at a pressure other than atmospheric and removing it from said zone through a closely fitting cylindrical surface sealed by the cooled viscous impregnating composition.

3. A method of treating cable which comprises continuously passing the cable through a dry seal, an evacuated heated drying zone, an impregnating zone, then passing the cable far below ground level through a U-shaped impregnating zone in which high superatmospheric pressure is obtained and removing the article from said zone through a closely fitting surface sealed by a cooled viscous impregnating liquid.

FREDERICK PEEL.
RUSSELL SWALE VINCENT.