

G. BRAMANTI-MATTEI & P. BELTRAMO.  
 AIR CHAMBERED STUFFING BOX FOR SPIRAL PUMPS OR COILS.  
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1,021,714.

Patented Mar. 26, 1912.

Fig. 1

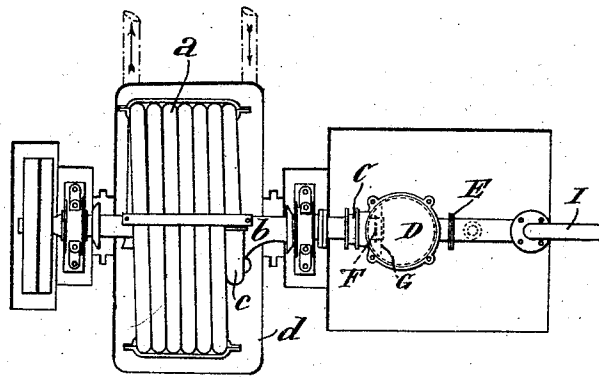
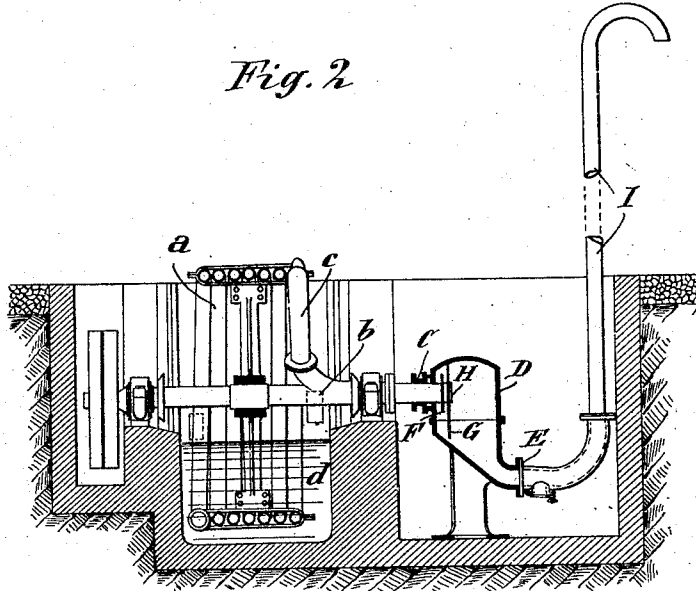


Fig. 2



WITNESSES:

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# UNITED STATES PATENT OFFICE.

GIUSEPPE BRAMANTI-MATTEI AND PAOLO BELTRAMO, OF SERAVEZZA, ITALY.

AIR-CHAMBERED STUFFING-BOX FOR SPIRAL PUMPS OR COILS.

1,021,714.

Specification of Letters Patent.

Patented Mar. 26, 1912.

Application filed April 21, 1911. Serial No. 622,484.

*To all whom it may concern:*

Be it known that we, GIUSEPPE BRAMANTI-MATTEI and PAOLO BELTRAMO, mechanical engineers, residing both at Seravezza, Italy, have invented certain new and useful Improvements in Air-Chambered Stuffing-Boxes for Spiral Pumps or Coils, of which the following is a specification.

The known spiral pumps or coils for elevating liquids, and especially slimy or sandy liquids comprise a cylindrical coiled tubing keyed on a rotating horizontal tube and connected at one end by a suitable tubing to the said axial tube, the said coil being immersed up to a variable level in the liquid to be elevated, which is contained in a tank. On rotating the apparatus, the coil with its free end alternately is immersed in the liquid and rotates through the air thus alternately admitting a given quantity of liquid or air which latter in the various revolutions of the coil is compressed up to a pressure sufficient to elevate the liquid to the desired height.

At the end of the rotary axial tube the liquid and air are admitted to a fixed tube, the connection between the said two tubes being hitherto obtained by an ordinary stuffing-box. When dealing, however, with unclean liquids such as sandy water, for instance a mixture of water and quartz sand such as used in stone sawing plants, the presence of the sand rapidly wears the stuffing-box off, so that after several fruitless attempts of improving the said stuffing-box system this was finally given up, and instead of being keyed to a horizontal shaft the coil was keyed to an inclined tube extended to the desired height, thus the whole tube being rotated, and the stuffing box done away with. However, the additional weight of the rotary tube and additional supports as compared with that of the fixed tube, the greater space required, and the greater power needed for driving the additional weight of rotating masses are no immaterial disadvantages in sawmills. The best course to be adopted would therefore be to revert to stuffing-boxes if wearing could be avoided.

The object of our present invention is therefore to provide an improved air chambered stuffing-box for coil pumps by which wearing-off is prevented.

In order that our said invention may be more clearly understood we have illustrated

same by way of example in the annexed drawing wherein;

Figure 1 is an upper view showing at the left a coil pump of known construction and at the right our improved air chambered stuffing-box connecting the rotary shaft to the fixed tube, and Fig. 2 a vertical longitudinal section of the above.

In the said figures, *a*— is the ordinary coil or spiral pump keyed on the known rotary tube or hollow shaft *b*— connected to a stuffing-box *C*— forming part of a tight closing funnel bottomed cast iron or metal casing *D*— having an opening *E* in its bottom, connecting it to the rising tube *I*. Tube *b*— passes through the stuffing-box *C*— and extends into the interior of casing *D*— toward the center of same. On the said tube *b*— one or more circular diaphragms *F*— are fixed, while tube *b*— passes through one or more diaphragms *G*— fixed to the walls of chamber *D*—. The said diaphragms prevent the liquid discharged from tube *b*— to come into contact with the stuffing-box.

The operation is as follows: When coil *a*— rotates partially immersed in the liquid *d*— to be elevated, from the outlet *H*— of the rotary tube *b*— a certain quantity of liquid is discharged into chamber *D*— and collected at the outlet *E*— of the funnel shaped bottom of chamber *D*—, whereupon a certain quantity of air compressed by the rotating coil *a*— is admitted to chamber *D*— and forces the first quantity of liquid into the rising tube *I*, whereupon the said two successive admissions of liquid and air to chamber *D*— are repeated, and so on, so as to obtain at the end of the rising tube *I* an alternate discharge of liquid and air, the compressed air in the chamber preventing the liquid from rising up to the level of the stuffing-box which latter therefore has only the function to keep the air in chamber *D*— under pressure.

Having now fully described our said invention and the manner in which the same is to be performed, what we claim and desire to secure by Letters Patent of the United States is:

1. In a pump of the character described, in combination, a rotatable tube, a coil supported thereby and rotatable therewith, one

end of said coil being free and the other end of said coil communicating with said tube, a rising tube operatively communicating with said rotatable tube, and an air chamber interposed between said tubes.

2. In a pump of the character described, in combination, a rotatable tube, a coil supported thereby and rotatable therewith, one end of said coil being free and the other end of said coil communicating with said tube, a rising tube operatively communicating with said rotatable tube, and a casing interposed between said tubes, said rotatable tube communicating with said casing at a point above that which said rising tube communicates with said casing.

3. In a pump of the character described, in combination, a rotatable tube, a coil sup-

ported thereby and rotatable therewith, one end of said coil being free and the other end of said coil communicating with said tube, a casing, a stuffing box adjacent the upper part thereof, said rotatable tube extending through said stuffing box and communicating with the interior of said casing at its upper part, and a rising tube communicating with said casing at its lower part.

In testimony whereof we have signed our names to this specification in the presence of two witnesses.

GIUSEPPE BRAMANTI-MATTEI.  
PAOLO BELTRAMO.

Witnesses:

ARTURO LANGUINETTI,  
GIUSEPPE VIRSCONIA.