

P. Sicouret,

Well Packing,

Nº 49,590.

Patented Aug. 22, 1865.

Fig. 1

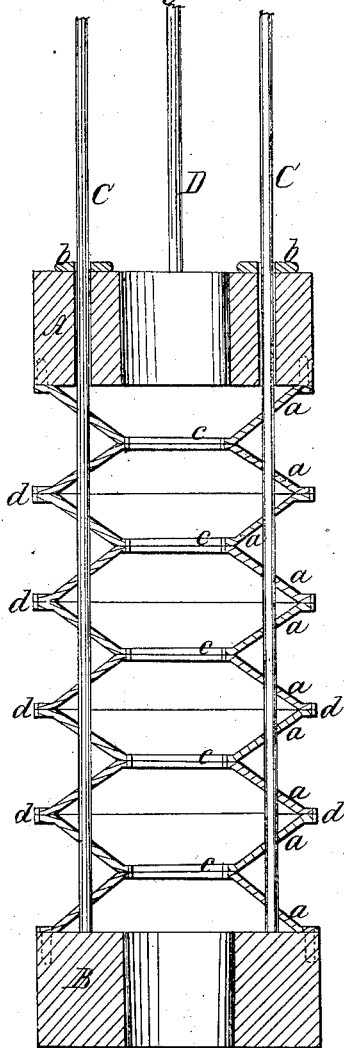


Fig. 3

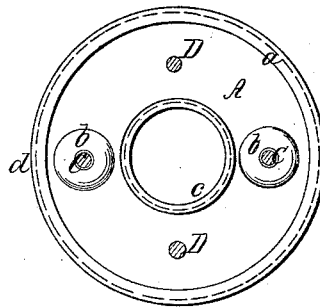
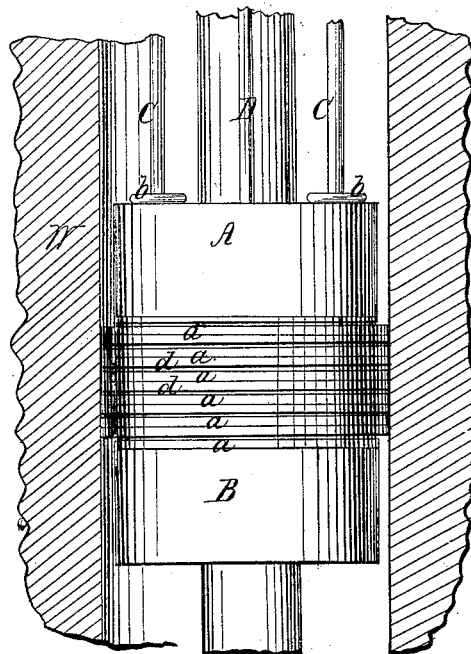


Fig. 2



Witnesses

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P. SICOURET, OF SARAGOSSA, SPAIN.

IMPROVEMENT IN PACKING FOR WELL-TUBES.

Specification forming part of Letters Patent No. 49,599, dated August 22, 1865.

To all whom it may concern:

Be it known that I, PEREGRINE SICOURET, of Saragossa, in the Kingdom of Spain, have invented a new and useful Improvement in Apparatus for Packing the Tubes of Oil and other Wells; and I do hereby declare that the following is a full and correct description of the same, which will enable persons skilled in the art to make and use the same, reference being had to the accompanying drawings, of which—

Figure 1 is an axial section of an apparatus made according to my invention, the view being taken when it is drawn out or elongated. Fig. 2 is a peripheral view taken when the apparatus is compressed, as when it is applied to pack the tube of an oil-well. Fig. 3 is a plan view of the apparatus when compressed.

The object of this invention is to produce a packing apparatus for oil and other deep wells which may be applied when the tube is in the well and removed without disturbing the tube. It consists, in general terms, of an upper and lower head or collar, each consisting of an annular plate of metal, between which are placed annular plates or rings of leather, felt, rubber, gutta-percha, or other elastic or flexible substance, which rings are connected to each other along their outer and inner edges in alternation, the first and last of the series being also connected severally to the said metallic rings. By drawing out the apparatus lengthwise the rings are drawn asunder in angular directions, and their edges consequently approach a common vertical line in proportion to the greatness of the angle made between adjacent rings. By letting the rings come together their edges resume their places in a horizontal plane, in which position their inner and outer edges touch the sides of the well-tube and of the well respectively.

In packing the tubes of oil-wells with seed-bags it is found to be difficult to break away the packing when the tube is to be drawn out to repair the pump, or for other reasons, the tube sometimes being broken in the well by reason of the resistance of the packing, in which case the well is necessarily abandoned. On this account it is desirable that the packing be made so that it can be removed and replaced at pleasure, to allow the tube to be withdrawn from and replaced in the well. My invention

is designed to supply such a packing, which will be found to be a great improvement upon the several methods practiced of expanding split metallic rings and fibrous and other flexible packings by mere compression between collars, independent of any precise arrangement for the folding or settling of the material to be expanded.

A and B designate strong annular metallic plates or collars of a diameter a little less than that of the well to be operated. Their central openings are to be a little greater than the outer diameter of the well-tube. They are connected severally to the upper and lower ones of a series of annular plates or rings of leather, india-rubber, gutta-percha, felt, cloth, or other flexible or elastic substance, the edges of which rings are firmly connected to each other air and water tight in alternation—that is to say, the outer edges of two adjacent rings are secured to each other, and the inner edges of the same rings are connected severally to the inner edges of the rings next above and next below, so that the said rings which are adjacent can be drawn apart in the manner seen in Fig. 1.

The outer edge of the ring which lies next to the collar A is firmly secured by bolts or otherwise to the said collar, and the outer edge of that ring which is next to the collar B is in like manner secured to that collar. The outer edges of the annular plates (designated by the letter *d*) are to be very firmly united, as are also their inner edges, *c*.

In this example of my invention I have shown the annular plates or rings *a* to be made of leather, and have united their edges by strong stitching. Their outer diameter, when they are flat, as in Figs. 2 and 3, at which time they are also close together, is a little greater than the diameter of the well, wherefore their outer edges, *d*, will then be crowded against the sides of the well more or less snugly, according to the closeness of their contact with each other, or, in other words, according to the nearness of their approach to a flat or horizontal position, thereby preventing any liquid from passing down into the well between the said edges and its sides and any gas or liquid from passing upward. The central opening of said annular plates *a* is a little less than the outer di-

ameter of the well-tube, so that when the said plates are flat or in a horizontal position, or nearly so, their edges *c* will in like manner be crowded snugly against the well-tube and prevent fluids and liquids from passing between the tube and said edges *c*. When the annular plates are in this position, as shown in Figs. 2 and 3, the well-tube will be packed, and while they remain in such position the tube itself will be firmly held in place, so that it cannot be easily withdrawn. In order, now, to enable one to remove the tube, it is only necessary to raise the upper collar, A, and draw the sides of the plates *a* apart, when they will take an angular position, each of their edges (the inner and outer) being made to approach a common vertical line, which is also midway, or nearly so, of the width of the annuli of said plates. This action will have the effect of increasing the diameter of their central openings, so as to cause their edges *c* to recede from the sides of the well-tube, and also to lessen the outer diameter of the plates, so as to make their outer edges, *d*, fall away from the sides of the well, thereby releasing the well-tube from all restraint. In order to effect this disposition of the parts I provide two sets of rods, C and D, the rods C being fixed to the lower collar, B, and the rods D to the upper one, A. Both sets are placed in diametrical lines. The rods C C pass upward from the collar B through the sides of the several annular plates *a*, and through the upper collar, A, to the surface of the earth. They are provided with stuffing-boxes *b b* where they pass through the collar A, so as to make them work with tight joints. The rods D D are fixed to the upper collar, A, and are likewise carried to the surface of the earth.

When the apparatus is to be lengthened, so as to release the well-tube, the rods D D are drawn upward, causing the collar A to ascend in the well and causing the annular plates *a* to take the positions seen in Fig. 1, when their edges *c* will recede from the well-tube and their edges *d* from the sides of the well, as before explained. In the meanwhile the rods C C and the lower collar, B, are held stationary. When it is desired to pack the tube the collar B may be held stationary and the upper collar allowed to fall, forcing the plates *a* into contact with

each other or into, or nearly into, horizontal positions; or force may be applied to the rods D in order to force the said collar down; or the said upper collar may be held stationary and the lower one may be lifted upward by drawing on the rods C C.

In order to operate the collars and move them toward and away from each other their upper ends may be provided with screw-threads, and they may severally pass through nuts so fixed in a frame as to be capable only of rotary but not of vertical motion, so that when the nuts shall be turned the rods C or D, as the case may be, will be moved up or down about the well-tube.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A removable packing for tubes of oil and other wells, composed of annular plates united alternately at their inner and outer edges, so as to be capable of being drawn away from each other when the packing is to be removed, substantially as and for the purpose above described.

2. In combination, a series of annular plates of elastic or of flexible material, connected to each other, and annular metallic collars or heads above and below them, substantially as above described.

3. In combination, a series of annular plates of elastic or flexible material, connected to each other, as shown, annular metallic collars or heads above and below them, and a set of lifting-rods for each collar or head, substantially as described.

4. In packing the tubes of oil or other wells, applying the packing apparatus by bringing the packing-surface or the edges of the material used into, or nearly into, a flat or horizontal position, and of collapsing and retiring the same from the sides of the tube and of the well by bringing such surfaces or edges into angular positions, all substantially as above described.

The above specification of my invention signed by me this 27th day of May, 1865.

P. SICOURT.

Witnesses:

M. M. LIVINGSTON,
C. L. TOPLIFF.