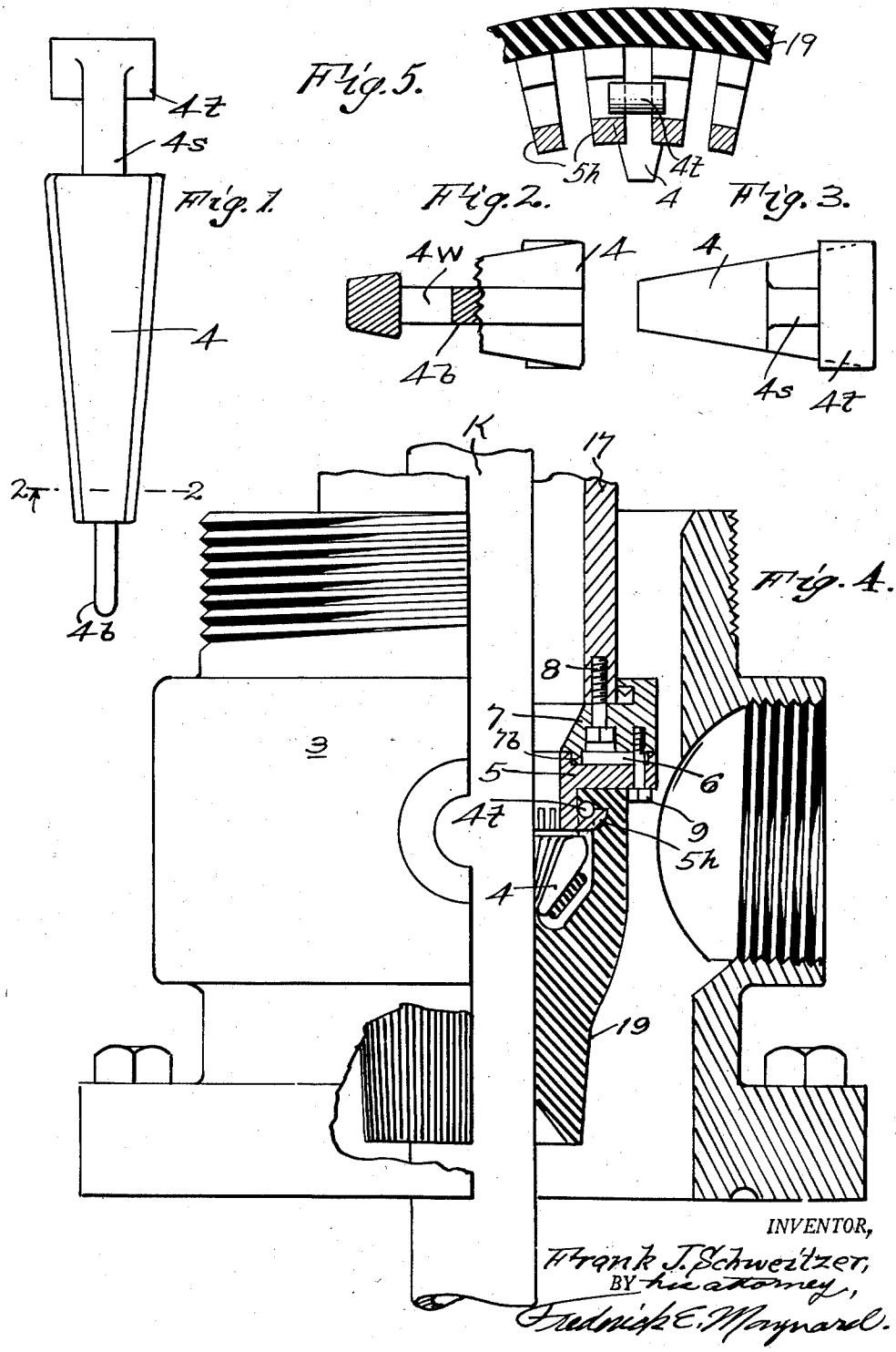
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RIBBED-STRIPPER PACKER UNIT

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RIBBED-STRIPPER PACKER UNIT

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5 Claims. (Cl. 286—16)

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This invention concerns deep well drilling apparatus and is a stripper packer unit for rotary strippers of the class shown in Pat. No. 2,170,916, to Schweitzer and Shaffer, August 29, 1939.

Such strippers involve a very substantial rubber or equivalent nipple constantly contracting onto a central Kelly bar or drill pipe working longitudinally in the rotary stripper assembly.

It is an intent of the present invention to provide a simple, substantial, compact and readily handled packer unit to be easily and quickly installed or removed as may be necessary in a respective rotary stripper assembly.

Further, it is an aim of the invention to provide a stripper nipple incorporating an inseparably organized combination of the needed parts and wherein a basket-like group of buttressing ribs are securely interhooked in a hanger ring and are reliably bonded in place in the respective bearing hooks of the ring by the upper and encompassing end of the rubber nipple. Additionally, the invention has as an object the pivotal support of each rib independently in the hanger ring and the bonding of the pivoted part of each rib in the said ring by the adjacent end of the rubber nipple.

The invention resides in certain advancements in this art as set forth in the ensuing disclosure and has, with the above, additional objects and advantages as will develop hereinafter, and whose construction, combinations and details of means and the manner of operation will be made manifest in the following description of the herewith illustrative embodiment; it being understood that modifications, variations, adaptations and equivalents may be resorted to within the scope, spirit and principles of the invention as it is claimed in conclusion hereof.

Figure 1 is an inside face elevation of one of the nipple ribs.

Figure 2 is a partial cross-section, looking up, on line 2—2 of Fig. 1, and Figure 3 is a top end plan of the rib.

Figure 4 is an elevation partly in axial section of the packing unit as installed in a stripper sleeve combination.

Figure 5 is a detail section horizontally on the axis of the suspending trunnion of a rib unit.

Of a rotary stripper assembly only so much is here shown as is needed to illustrate an installed nipple packer unit. The assembly shown includes a main casing head body 3 through which axially extends a fragment of a working element K such as a Kelly bar or a drill pipe.

Spaced concentrically about the bar K is a

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rotary sleeve 17, and the present packing unit is securely attached to said sleeve to rotate therewith and includes a rubber nipple 19 whose lower end snugly contracts onto and is cross-sectionally complementary to the bar (or pipe) K, which axially shifts therein. This contracted end of the nipple is sufficiently expansive to permit shoulders or collars of the bar to pass down or up through the nipple, as needed.

In order to prevent the nipple being bodily or fractionally blown up into and through the sleeve 17, which is spaced about the bar K, an annular group of elongate, downwardly tapering ribs 4 is substantially embedded in the upper and enlarged end of the nipple 19. The ribs are also wedged shape in end plan, Figs. 2 and 3, so that they may close in close relation in the normal contracted position, Fig. 4, of the nipple, and the ribs have windows 4*w* in back webs 4*b*.

Means are provided for the safe attachment of the nipple and its group of ribs to the lower end of the rotary sleeve 17 and here is shown a radially wide hanger ring 5 which is recessed in its top face to receive a suitable packing disc 6 which is held tight up to a foot band 7 bolted at 8 to the end face of the sleeve.

The hanger ring has screws 9 fixing it to the bottom face of the band 7; this being shown as having a centering bead 7*b* fitted in the recessed top face of the ring. Thus the sleeve 17, its foot band 7 and the ring 5 rotate as a rigid unit; the bore of the ring opening toward the exposed surface of the group of ribs 4.

Underhanging the ring 5 is an annular set of hooks 5*h* so spaced one from the other and all below the ring as to receive trunnions 4*t* which are respectively made integral with the ribs, each of which has a top shank 4*s* for its respective trunnion whereby to permit the trunnions to be engaged onto the hanger ring hooks 5*h*.

In event of high, up-direction well fluid pressure against the nipple the top ends of the several ribs can shift solidly against the superjacent surface of the body to the hanger ring.

A feature of this invention is that the rib trunnions, when interhooked into the ring hooks, are solidly, through pivitally, bound in place under the said ring. To accomplish this bonding of the rib trunnions the upper end of the rubber nipple 19 is, at the time of its molding cast about the group of ribs 4 while the rib trunnions are in their interhooking position with the hanger ring, as shown in the made up unit, Fig. 1.

During operation of the rotary stripper assembly the nipple will be expanded by a passing

shoulder or collar of the bar K and the basket of ribs 4, whose webs and windows are embedded in the rubber nipple, will expand or will contract in accordance with the nipple; the rib trunnions working in their supporting hooks 5*h*.

What is claimed is:

1. A rotary stripper assembly of the kind set forth and including a bearing part, an elastic nipple, and an expansive and contractive annular system of buttress ribs partly countersunk in the bore surface of the nipple and presenting inwardly directed swinging tips to normally engage an axial object passing through the nipple; said ribs each having at their upper ends trunnions partly countersunk in internal seats in the upper portion of the nipple and pivoted on said bearing part of the assembly.

2. An assembly as in claim 1; and the ribs having windows in which the material of the nipple interlocks.

3. An assembly as of claim 1; the tips of the ribs being exposed in a circle coincident with the bore surface of the nipple, to effect normal operative engagement on said object under normal contraction of the elastic nipple.

4. An assembly as in claim 1; said part consisting of a castellated ring and the ribs having reduced top end necks to interhook in said bearing ring and from which necks the trunnions extend laterally to lodge on the ring.

5. A rotary stripper assembly of the kind set forth and including a rotary sleeve having an outturned flange part serrated to form a circle of hooks, an annular system of buttress ribs having top end transverse trunnions hung in the serrations and on said hooks to provide for oscillation of the lower end ribs, and an elastic nipple in which said ribs are countersunk and which overhangs and holds the trunnions in place on said hooks; the ribs having tips exposed in the nipple bore and which are yieldably contracted onto the surface of an axial object in the bore of the nipple by inherent contraction of the nipple; the outer surface of the nipple being exposed to and for contractive effect of fluid under pressure passing the nipple.

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