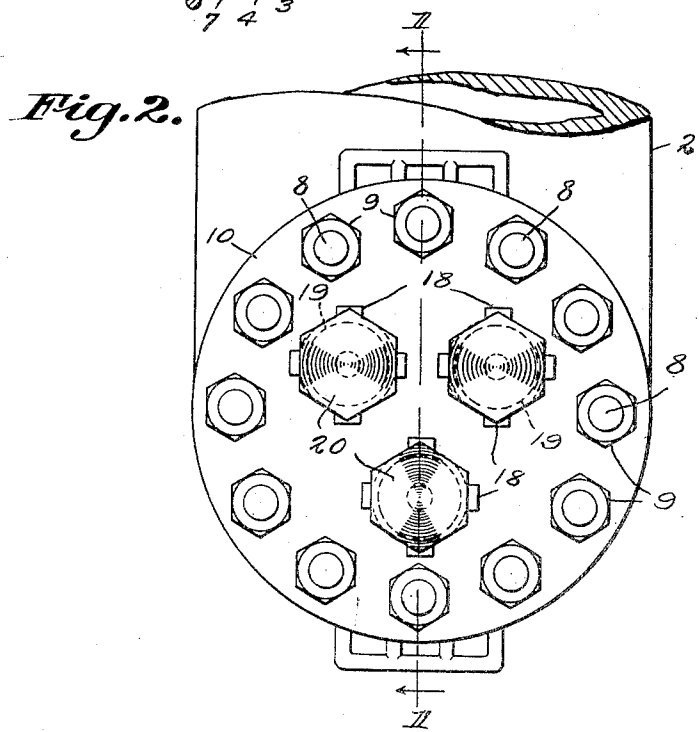
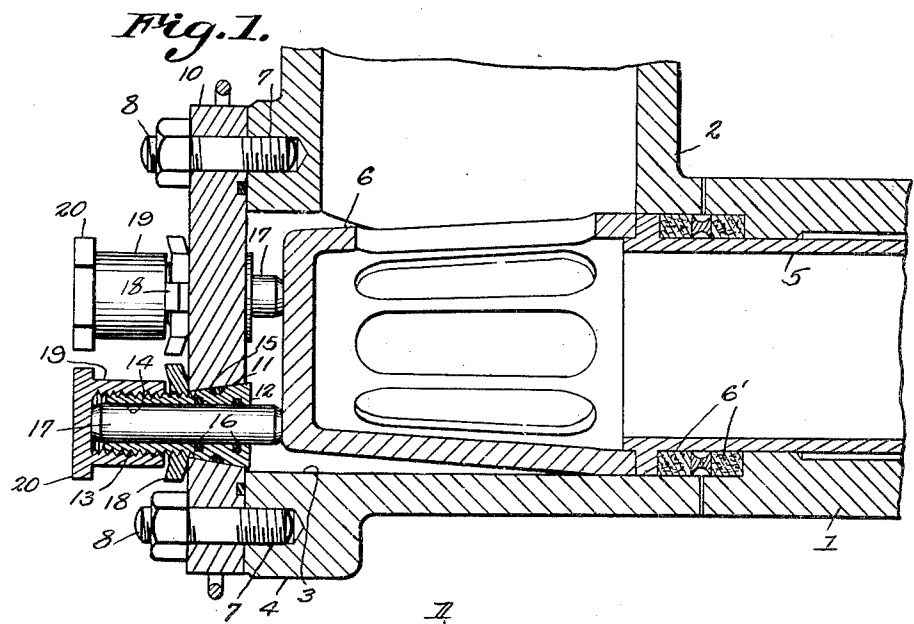


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FLUID END PUMP HEAD
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FLUID END PUMP HEAD

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2 Claims. (Cl. 309—3)

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This invention relates to pump construction, and more particularly, has reference to pump heads including means extending therethrough and adjustably positioned in the head to engage one end of a cylindrical liner that constitutes a conventional part of said pump construction.

Pumps used for delivering a fluid under pressure, for example a well drilling fluid, are provided with liners which are shiftable longitudinally of the pump cylinder, so as to be adjustably tightened to seal the packing normally interposed between shoulders on the liner and cylinder respectively. Customarily, the pump head is provided with a threaded opening, in which is threadably engaged set screws that are threadable through the head and against the end of the liner.

This arrangement, however, has a pronounced disadvantage, arising from the fact that the co-operating threads in the head and screws "wash out" or loosen, so as to permit leakage there-through or corrosion of the threaded engaged portions. This, in turn, prevents proper tightening of the liner to seal the packing.

The main object of the present invention is to provide a pump head construction in which the threads conventionally formed in the head will be completely eliminated, eliminating in turn threads on the adjusting means that extends through the head into abutting relationship with the end of the liner.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts, herein-after more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

Referring to the drawings,

Fig. 1 is a longitudinal section through the end of a pump cylinder and head mounted thereon.

Fig. 2 is an end elevation.

Referring to the drawings in detail, a conventional pump cylinder 1 in the present instance, but not necessarily, is provided with the up-standing extension 2. The cylinder is counter-bored at 3, the counterbore being formed in the bell end 4 of the cylinder.

A liner 5 fits within and is adjustable longitudinally of the cylinder 1, and at one end is provided with the liner cage 6. Interposed between opposed shoulders on the liner and cylin-

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der 1 is packing 6'. Adjustment of the liner to the right in Fig. 1 tightens the liner against the packing.

Formed in the bell end 4 is a circumferential series of threaded recesses 7 receiving threaded studs 8 on which are provided nuts 9, to secure tightly to the cylinder a circular pump head 10.

The construction which has so far been described is conventional and does not constitute, per se, part of the present invention.

In accordance with the present invention, I form in the head 10 one or more tapered openings 11 extending completely therethrough. Three such openings are provided in the present instance. The number can, however, be more or less.

In each opening 11 is tightly wedged the frusto-conical base 12 of a tubular member that has, integral with the base, an externally threaded extension 13 outstanding from the exterior surface of the head. The tubular member is formed with a smooth-walled cylindrical bore 14 extending completely therethrough.

To prevent leakage between the base and head an outer sealing ring 15 is recessed in the exterior surface of the base, while inner sealing rings 16 are recessed in the surface of the bore 14.

A smooth-surfaced piston 17, having one end projecting into the interior of the pump cylinder 1, is snugly fitted in the bore of the tubular member, and is adjustable longitudinally thereof into engagement with the liner cage 6.

For the purpose of retaining the tubular member in tightly wedged relationship with the openings 11 of the head, jam nuts 18 are threaded upon the threaded extensions 13 against the exterior surface of the head.

Also threaded on the extensions 13 are adjusting sleeves 19, having closed ends 20 the outer configuration of which is proportioned to receive a wrench or the like.

The closed ends of the adjusting sleeves 19 engage the outer ends of the pistons 17, and I believe it will be apparent that upon threading of the sleeves 19 toward the pump head, the piston 17 will be adjusted slidably of the tubular member, to the right in Fig. 1, so as to shift the liner 5 to the right in Fig. 1, thereby to tighten the liner within the pump cylinder.

By reason of the arrangement illustrated and described, it is seen that the piston which engages the liner does not have threaded engagement with the pump head, and eliminates the "washing out" of threads formed in the pump head. As a result, proper tightening of the liner

is continuously assured, thereby to seal the packing 6'.

I prefer that the threaded portion 13 of the tubular member be substantially long, and that the adjusting sleeve 19 be proportionately long, so as to provide sufficient threads for proper adjustment of the liner.

The arrangement, additionally, has the important characteristic that it permits repairs to be made directly on the site, without necessity of removing the pump head and taking it to a repair shop for remachining thereof. In the event the tubular member needs replacement, this can be extracted from the head on the site, and a new one substituted.

What is claimed is:

1. The combination, with a pump cylinder and with a liner mounted within and adjustable longitudinally of said cylinder, of a head secured to and closing one end of the cylinder, said head having at least one tapered opening; a tubular member having a base tapered correspondingly to said opening, said base being wedgably engaged in the opening, said tubular member including an exteriorly threaded extension outstanding from the external surface of the head; a jam nut threaded on said extension and against the external surface of the head, there being an end-to-end bore formed in said tubular member; a piston slidable in said bore and abutting at one end against the liner; and an adjusting sleeve threaded on said extension, said adjusting sleeve

having a closed end engaging the other end of the piston, whereby to adjust the piston longitudinally of said tubular member responsive to threading of said sleeve upon the extension.

2. The combination, with a pump cylinder and with a liner mounted within and adjustable longitudinally of said cylinder, of a head secured to and closing one end of the cylinder, said head being provided with an annular series of tapered circumferentially spaced openings extending therethrough, tubular members having correspondingly tapered exteriors extending through and wedgably engaging the walls of the openings, said tubular members projecting beyond the outer surface of the head and being externally screw threaded, jam nuts threadedly engaging the thread on the tubular extensions for engaging the head and tightly wedging the tubular members in the tapered openings, pistons mounted in the tubular members for projecting longitudinally therethrough, and adjusting sleeves threadedly engaging the threads on the extensions and carrying end closing heads for engaging the pistons for advancing the pistons toward the cylinder liner.

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