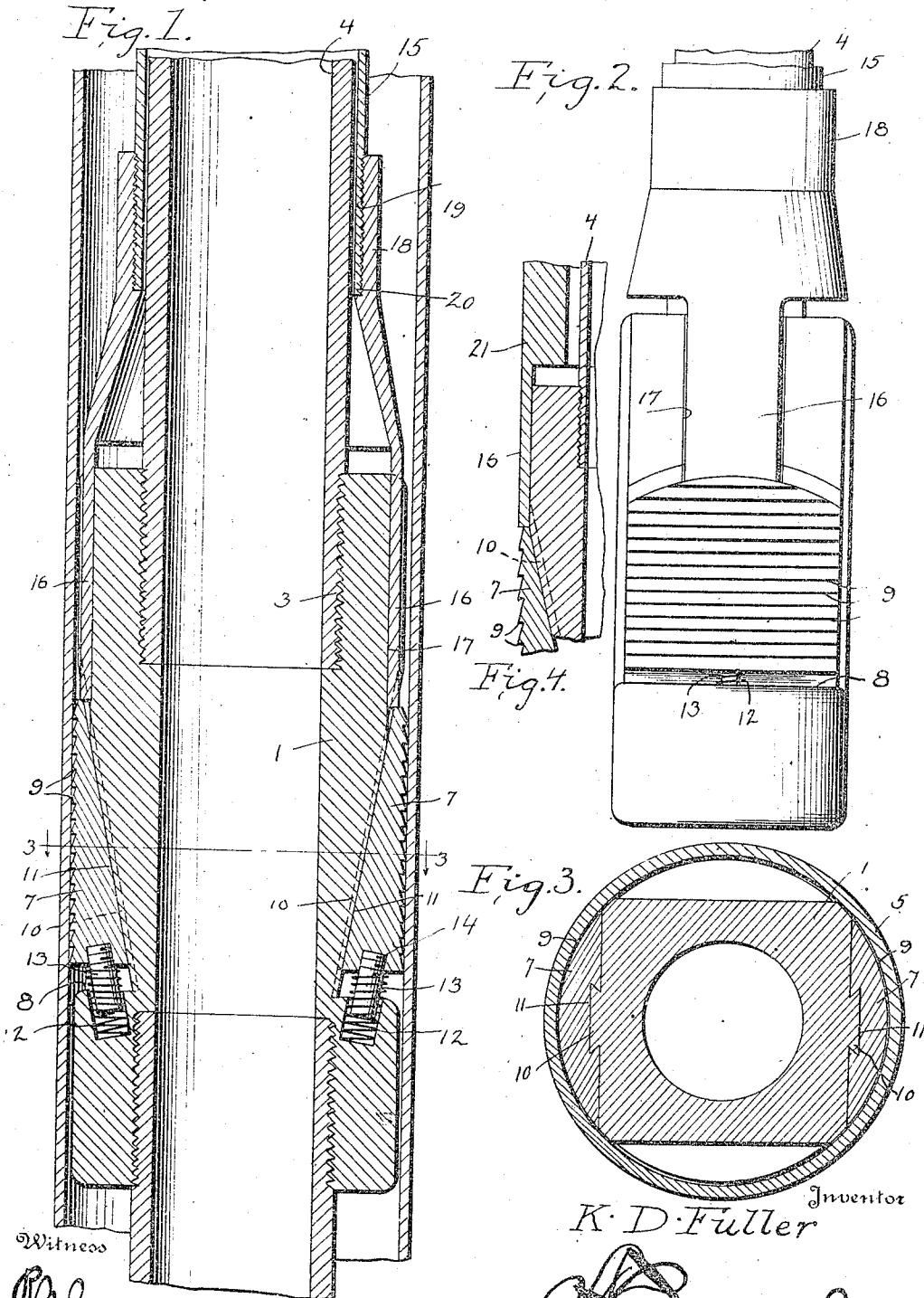


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SAFETY DEVICE FOR OIL PUMPS.
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1,242,539.

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Witness

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UNITED STATES PATENT OFFICE.

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SAFETY DEVICE FOR OIL-PUMPS.

1,242,539.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, KENNETH D. FULLER, a citizen of the United States, residing at Whittier, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Safety Devices for Oil-Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to a safety device for oil pumps, and the present application is for a modified form of the invention claimed in and as to the common subject-matter is a division of an application filed by me August 10th, 1915, Serial #44,772.

The object of the present invention is to improve the construction of safety devices for oil pumps and to provide a simple, practical and efficient safety device of strong, durable and comparatively inexpensive construction adapted to be readily applied to oil pumps and capable in event of the breakage of the operating means for reciprocating the inner tube to be thrown outward automatically into engagement with the well casing, whereby the inner tube will be effectually prevented from dropping to the bottom of the well.

It is also an object of the invention to provide a safety device of this character which will permit the operation of the pump at a moderate rate of speed such as is ordinarily employed in operating pumps of this character without causing the device to engage the well casing and which will not interfere with the free flow of oil through the pump.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawing, and pointed out in the claims hereunto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing

Figure 1 is a vertical sectional view of a portion of an oil pump provided with a safety device constructed in accordance with this invention,

Fig. 2 is an elevation of the safety device, the same being applied to the inner reciprocatory tube,

Fig. 3 is a horizontal sectional view on the line 3—3 of Fig. 1,

Fig. 4 is a detail view illustrating another form of weight for holding the springs in a compressed condition.

Like numerals of reference designate corresponding parts in the several figures of the drawing.

Referring to the accompanying drawing in which is illustrated the preferred embodiment of the invention, 1 designates a coupling member constituting the body of the safety device and having interiorly threaded terminal portions 2 for the reception of the threaded ends 3 of sections or members 4 of the inner reciprocatory tube of the oil pump. The inner tube which is designed to be reciprocated within the outer well casing 5 by the usual operating mechanism is of the ordinary construction and the coupling member or tubular body 1 of the safety device is provided at diametrically opposite points with upwardly tapered recesses 6 for the reception of upwardly tapered automatically operable dogs or catches 7, which when the operating mechanism of the oil pump operates, is caused to have a relative movement longitudinally of the inner reciprocatory tube and the body or coupling member 1, whereby the dogs or catches are wedged between the body or coupling member and the well casing to hold the inner tube and prevents the same from dropping to the bottom of the well. The recess 6 presents an inclined wall to the inner face of the wedge shaped dog or catch 7 and it forms a horizontal shoulder or face 8 upon which the catch or dog normally rests. The catch or dog presents an inclined inner face to the body or coupling member 1 and it is substantially segmental in cross section as clearly illustrated in Fig. 3 of the drawing, and it is provided at its curved outer face with horizontal teeth which are shouldered at the bottom and which are curved horizontally or transversely to conform to the configuration of the interior of the well casing. The dogs or catches are slidably interlocked with the tubular body or coupling member 1 by means of longitudinally disposed dove-tailed ribs 10 formed integral with the body or coupling member and engaging dove-tailed grooves 11 of the dogs

or catches. The coupling member or body is preferably rectangular in cross section as shown in Fig. 3 and the dogs or catches are located at two of the flat side faces of the said coupling member or body, the other two faces being adapted to be engaged by a wrench or other tool. The dogs or catches which are shown in their engaging position in Fig. 1 of the drawing, normally rest upon the shoulders 8 of the body or coupling member, which is provided at the said shoulders with sockets 12 extending downwardly from the said shoulders and receiving coiled springs 13. The coiled springs 13 which engage the lower ends of the dogs or catches are maintained normally compressed by a weight 15 located above the dog or catches and provided with arms 16 extending downwardly at opposite sides of the tubular body or coupling member and guided in vertical grooves 17 thereof. The springs may be supported by inclined pins fitted into the lower ends of the dogs or catches and extending into the sockets 12 of the coupling member or body 1. The sockets 14 are formed in the lower terminals of the dogs or catches and the arms 16 are preferably formed integral with a sleeve 18 interiorly threaded at 19 for engaging the lower threaded end 20 of the weight which is preferably in the form of a piece of pipe or tubing but the arms may be formed integral with the weight as shown at 21 in Fig. 4 of the drawing and as illustrated in the aforesaid application. The weight and the dogs or catches are just sufficient to maintain the coiled springs normally compressed but when the operating mechanism breaks and the inner tube 10 should drop with a sudden movement, there is a relative upward or outward movement of the dogs or catches to cause them to firmly engage and grip the well casing whereby the downward movement of the inner reciprocatory tube is checked and such tube effectually prevented from dropping to the bottom of the well. In this operation the dogs or catches are relieved of the action of the weight sufficiently to enable the springs to operate automatically and throw them into engagement with the well casing.

What is claimed is:—

1. In a pump of the class described, the combination with a well casing, and an inner reciprocatory tube, of a safety device comprising a coupling member carried by the inner tube, dogs or catches mounted on

the coupling member and arranged to engage the well casing, springs for urging the dogs or catches in such engagement, and a weight located above the coupling member and provided with arms engaging the said catches.

2. In a pump of the class described, the combination with a well casing, and an inner tube, of a safety device including opposite dogs or catches carried by the inner tube, a weight located above the dogs or catches for urging the same downwardly and yieldable means normally compressed by the dogs or catches, and the said weight and adapted when the dogs or catches are relieved of the weight to move the said dogs or catches outwardly into engagement with the well casing.

3. In a pump of the class described, the combination with a well casing, and an inner tube, of a safety device comprising a body having opposite inclined faces, dogs or catches movable upwardly and downwardly on the body, at the said inclined faces, a weight for urging the dogs or catches downwardly to hold the same out of engagement with the well casing and a spring normally compressed by the dogs or catches and the weight and adapted when the dogs or catches are relieved of the weight to move the dogs or catches upwardly with respect to the said inclined faces and cause the dogs or catches to be thrown into engagement with the well casing.

4. In a pump of the class described, the combination with a well casing, and an inner tube, of a safety device comprising a coupling member having a shoulder and provided above the same with grooves, said coupling member being provided between the shoulders and the grooves with inclined faces, dogs or catches slidable on the coupling member at the said inclined faces, springs mounted on the coupling member at the said shoulder and arranged to be normally compressed by the dogs or catches and a weight located above the dogs or catches and having arms arranged in said grooves and fitting against the dogs or catches to enable the same to compress the said springs.

In testimony whereof I affix my signature in presence of two witnesses.

KENNETH D. FULLER.

Witnesses:

CHARLES KAUB,
W. E. FRANTZ.