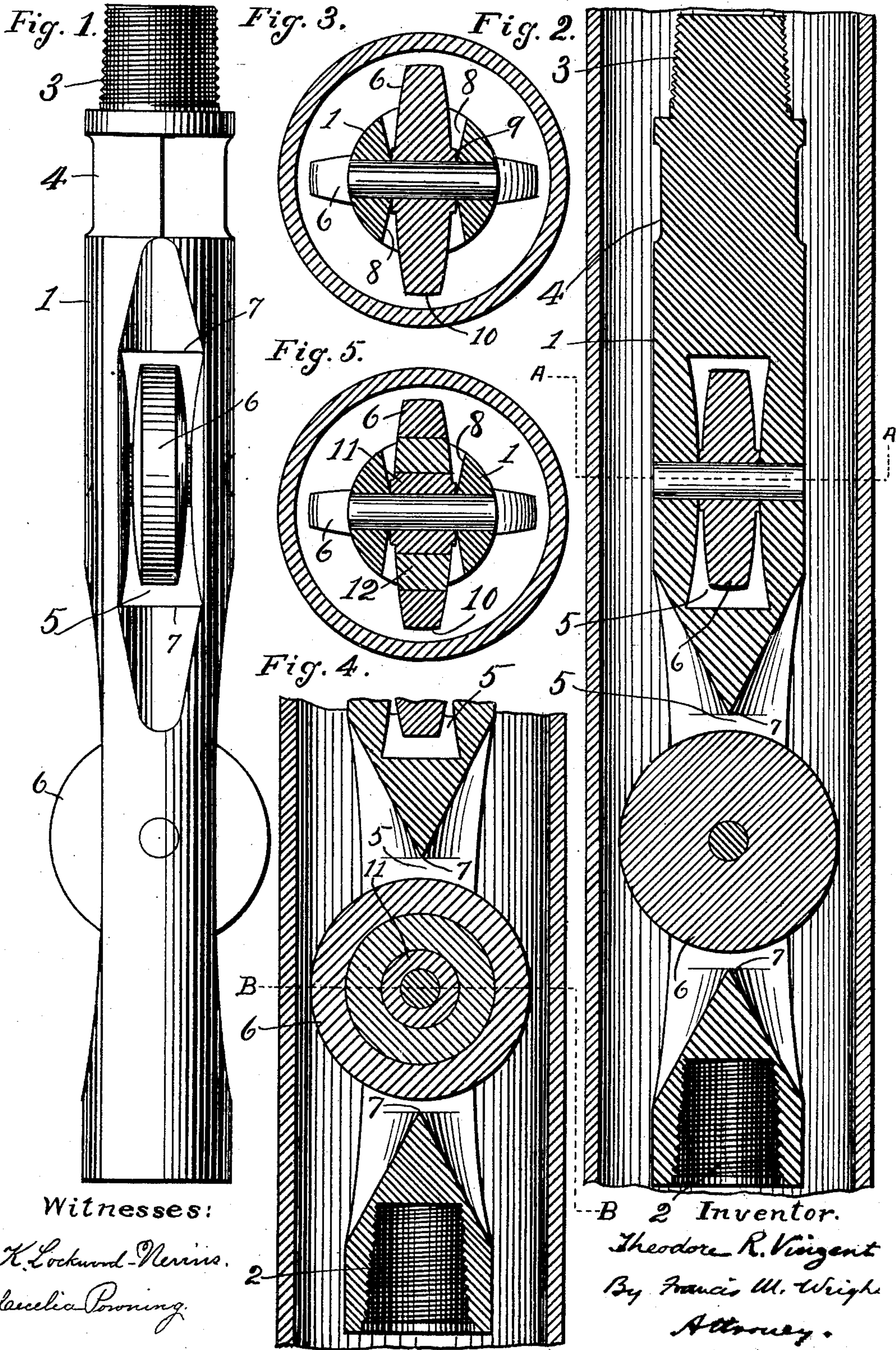


T. R. VINZENT.  
 PROTECTOR FOR RECIPROCATING RODS.

(Application filed Oct. 14, 1901.)

(No Model.)



Witnesses:

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# UNITED STATES PATENT OFFICE.

THEODORE R. VINZENT, OF BERKELEY, CALIFORNIA, ASSIGNOR TO W. G. LEALE MANUFACTURING & DEVELOPMENT COMPANY, OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

## PROTECTOR FOR RECIPROCATING RODS.

SPECIFICATION forming part of Letters Patent No. 713,723, dated November 18, 1902.

Application filed October 14, 1901. Serial No. 78,544. (No model.)

*To all whom it may concern:*

Be it known that I, THEODORE R. VINZENT, a citizen of the United States, residing at Berkeley, in the county of Alameda and State of California, have invented certain new and useful Improvements in Protectors for Reciprocating Rods, of which the following is a specification.

My invention relates to improvements in protective couplings for reciprocating rods, and is particularly adapted for rods used in deep pumping, as in oil-wells. Wherever the well deviates in the slightest degree from the exact perpendicular, the pumping-rod comes in contact with the casing of the well in its reciprocation. By continued abrasion of the couplings of said rods with the sides of the casing the couplings wear out, so as to break and require renewal, and the casing itself is perforated and has to be replaced, causing great delay, annoyance, and expense.

The object of my invention is to provide a coupling which will avoid this injury to itself and to the casing, and for this purpose I provide antifriction devices which will permit the coupling to roll against the inner surface of the casing, thereby eliminating the abrasive friction which is the cause of the injury. Great difficulty is experienced in furnishing antifriction devices which will accomplish this object on account of the tendency which the sand carried up by the oil has to enter the space between the rollers of said antifriction device and the parts of the device adjacent to said rollers. The sand will lodge and wedge itself in these narrow interstices and will accumulate therein to such an extent as ultimately to entirely stop rotation of the rollers. The resulting condition will be worse than that which it was attempting to remedy, since the rollers, necessarily projecting considerably beyond the face of the coupling, are more likely to come in contact with the inner surface of the casing, and, presenting a sharper cutting-surface than the coupling itself, their abrasive power when they no longer roll is more damaging to the casing than would be that of the coupling without the rollers.

The object of my invention is, therefore, to provide an apparatus of this character in

which antifriction-rollers can be used which will not clog up with sand.

My invention therefore resides in the novel construction, combination, and arrangement of parts for the above ends hereinafter fully specified, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my improved protective coupling removed from the casing. Fig. 2 is a vertical section of the same within the casing. Fig. 3 is a horizontal section on the line A A of Fig. 2. Fig. 4 is a partial vertical section of a modified form of the invention, and Fig. 5 is a horizontal section on the line B B of Fig. 4.

Referring to the drawings, 1 represents the body of the coupling, having a screw-threaded socket 2 at its lower end to fit upon the top of the rod-section next below it and having its upper end threaded, as at 3, to screw into the socket in the lower end of the rod-section next above it. Immediately below said upper threaded end 3 said body is formed with a neck 4, squared, as shown, the better to receive a wrench for the purpose of screwing and unscrewing said coupling.

The body of the coupling has formed therein two slots or channels 5, one above the other and at right angles thereto. In each of said channels is journaled a roller 6, said rollers being of greater diameter than the coupling, so that the rollers project on each side of the coupling, as shown.

For the purpose of preventing the lodgment of sand or dirt in the slots 5, which would clog the rollers 6, the following construction is adopted: First, said slots are formed with their upper and lower ends beveled or wedge-shaped at a sharp angle, as shown at 7; secondly, the sides of the slots are slightly sloped or flared outward from the center, as shown at 8 in Fig. 3; thirdly, the rollers themselves taper slightly in thickness from center to circumference, as also shown in Fig. 3; fourthly, the rollers are provided with thickened hubs 9, which fit closely against the sides of the slot, so as to form shoulders to prevent the entrance of sand between said hubs and the sides of the slot.



In order to obtain the best result, the rollers are formed with a convex edge 10, which is a short arc of a circle of the same diameter as that of the casing 11, in which the pump-rod reciprocates.

In Figs. 4 and 5 is shown a modified form of my invention in which the roller is formed in annular sections. Upon the axle of the roller is loosely mounted the inner section 11, forming a kind of hub for the roller and having a shoulder, as aforesaid. Upon the section 11 is loosely mounted a ring 12, and upon said ring 11 is loosely mounted a larger ring 13. This construction insures that the roller shall not be held fast by the clogging up of the sand wedged between said roller and the slot of the coupling, for in case the inner rings should become obstructed or stationary the upper ring of the roller would still revolve freely thereon.

I claim—

1. A protective coupling for reciprocating rods formed with slots therethrough in different planes, and rollers mounted to revolve in said slots and projecting beyond the periphery of the coupling, the metal of the coupling at the ends of the slots being wedge-shaped, in a section in the plane of the roller, the apex of the wedge being directed toward said roller, substantially as described.

2. A protective coupling for reciprocating rods slotted in planes at an angle with each other, and rollers in said slots, the sides of the slots flaring or sloping outward from the center, substantially as described.

3. A protective coupling for reciprocating rods slotted in planes at an angle with each other, and having rollers in said slots of diameter sufficiently great to extend wholly through the slots and to project beyond the sides of the coupling, said rollers tapering in thickness from the center to the circumference and having a broad smooth peripheral surface to roll against the inner surface of the casing of an oil-well, substantially as described.

4. In combination with the casing of an oil-well, a protective coupling for the pump-rods

thereof slotted in planes at an angle with each other and having rollers mounted in said slots, and extending entirely through said slots on both sides thereof so as to project beyond the sides of the coupling, the sides of the slots and the rollers being so formed as to leave spaces flaring outward between both sides and rollers, and the rollers being formed with a broad smooth peripheral surface to bear against the inner surface of the casing, substantially as described.

5. In combination with the casing of an oil-well, a protective coupling for the pump-rods thereof, slotted in planes at an angle with each other and having rollers mounted in said slots and extending entirely through said slots on both sides thereof so as to project beyond the sides of the coupling, the rollers being formed with transversely convex rolling edges to conform to the curvature of the casing, substantially as described.

6. In combination with the casing of an oil-well, a protective coupling for the pump-rods thereof slotted in planes at an angle with each other and having rollers mounted in said slots and extending entirely through said slots on both sides thereof so as to project beyond the sides of the coupling, the rollers being formed with a broad smooth peripheral surface to bear against the inner surface of the casing.

7. A protective coupling for reciprocating rods slotted in planes at an angle with each other, and rollers in said slots extending entirely through said slots and projecting beyond the sides of the coupling, said rollers tapering in thickness from the center to the circumference and being formed in annular sections, each section being loosely mounted upon the section within it, substantially as described.

In witness whereof I have hereunto set my hand in presence of two subscribing witnesses.

THEODORE R. VINZENT.

Witnesses:

FRANCIS M. WRIGHT,  
CECELIA POWNING.