July 4, 1939. C. P. HALL ET AL 2,164,709

SHOCK ABSORBER FOR WALKING BEAMS

Filed July 6, 1936 2 Sheets-Sheet 1

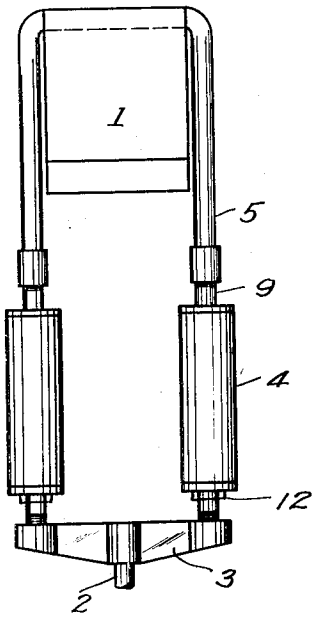


Fig. 2.

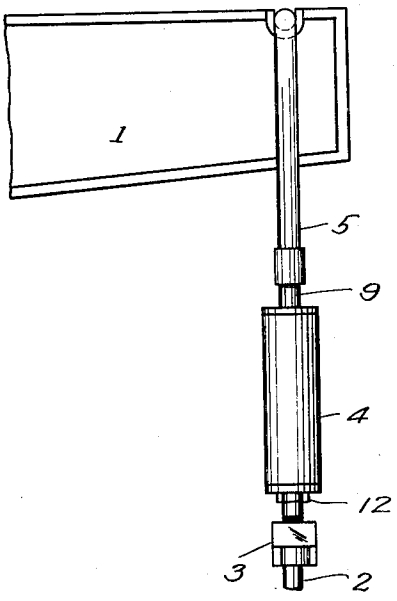


Fig. 1.

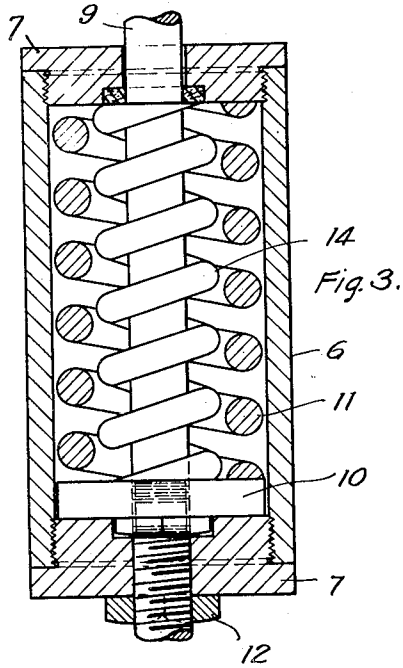


Fig. 3.

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SHOCK ABSORBER FOR WALKING BEAMS

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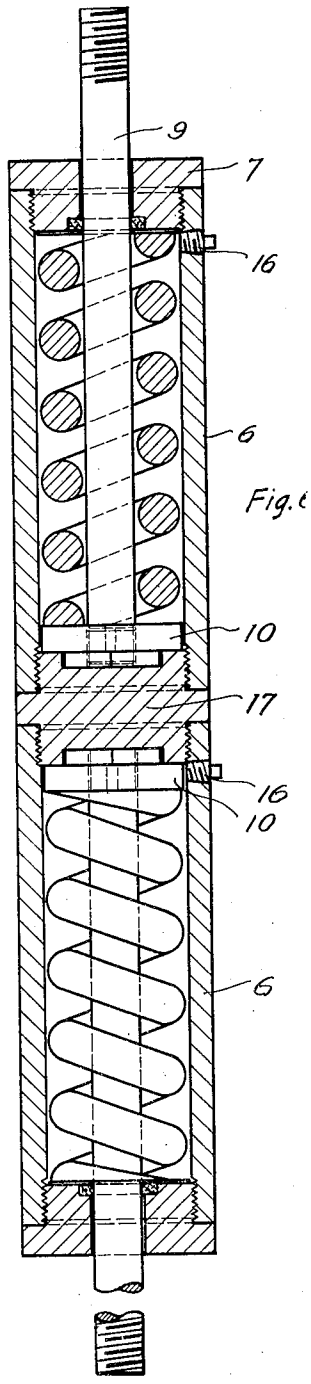


Fig. 3

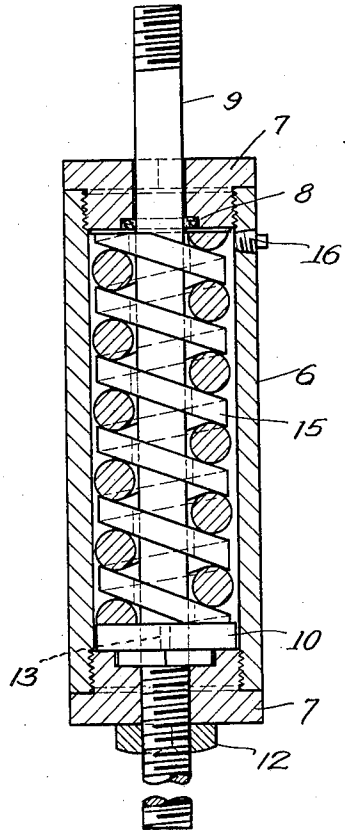


Fig. 4.

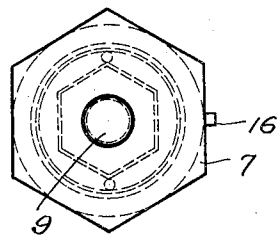


Fig. 5.

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Patented July 4, 1939

2,164,709

UNITED STATES PATENT OFFICE

2,164,709

SHOCK ABSORBER FOR WALKING BEAMS

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Application July 6, 1936, Serial No. 89,224

1 Claim. (Cl. 267—70)

This invention relates to shock absorbers especially adapted for deep well pumps such as employed in oil fields and which includes a walking beam driven by a band wheel and connected to a sucker rod of a pump. Such parts are subjected to excessive shocks due to a rotary motion being changed to a reciprocatory motion and the tremendous weight and strain on the sucker rod. The present invention has for its primary object the provision of a device which will provide an efficient connection between a walking beam and a sucker rod to absorb shocks and thereby eliminate wear and damage incident thereto.

With these and other objects in view, this invention consists in certain novel features of construction, combination and arrangement of parts to be hereinafter more fully described and claimed.

For a complete understanding of our invention, reference is to be had to the following description and accompanying drawings, in which

Figure 1 is a fragmentary side elevation showing a shock absorber connected to a fragmentary portion of a walking beam and to a fragmentary portion of a sucker rod and constructed in accordance with our invention.

Figure 2 is an end elevation illustrating the same.

Figure 3 is a vertical sectional view illustrating one of the units of the shock absorber.

Figure 4 is a view similar to Figure 3 showing a modified form of our invention.

Figure 5 is an end elevation illustrating the same.

Figure 6 is a vertical sectional view illustrating the units of this invention connected in tandem.

Referring in detail to the drawings, the numeral 1 indicates a fragmentary portion of a walking beam, 2 the sucker rod of a pump equipped with a coupling element 3. Our invention is employed between the walking beam 1 and the coupler 3 and consists of units 4 arranged in parallelism and connected to a substantially U-shaped yoke 5 which fits over the walking beam and rests within a notch provided therefor. Units 4 are also connected to the sucker rod by the coupler 3.

Each unit consists of a cylinder 6 having its ends closed by plug-like caps 7, the caps being provided with openings aligning with each other and have threaded connections to the cylinder. Any suitable locking means may be provided for securing the caps against accidental removal. Packing 8 is provided in the caps. Rods 9 extend through the caps and one is threaded to the coupler 3 and the other to the yoke 5. The rod 9 which is connected to the yoke 5 has secured thereto a disc-like member 10 forming a spring seat for one end of a coil spring 11. The other end of the spring bears against one of the plugs 7. The other rod has applied thereto lock nuts 12 engaging with opposite faces of a plug through which said rod extends thereby securing the latter-named rod to the cylinder against movement relative thereto. The disc-like element 10 has a port 13 therethrough through which a fluid may pass during the operation of the device and which acts to resist the movement of the spring seat. As shown in Figure 3, a coil spring 14 may be arranged within the coil spring 11 or, as shown in Figure 4, the convolution of the spring 11 may have positioned therebetween a coiled cushion strip 15. The cylinder 6 is provided with a removable plug 16 whereby a liquid lubricant may be placed in the cylinder to lubricate the moving parts and to act as a medium for resisting the movement of the disc-like member 10.

The units 4 constructed in accordance with the foregoing and connected with the sucker rod and the walking beam will absorb shocks and jars.

If desired, the units may be connected in tandem, as shown in Figure 6. In order to make up a unit in tandem manner a coupling member 17 is provided for joining the cylinders in endwise relation. Also, when employing the units in this fashion each cylinder has coil springs therein and the rods that extend into the cylinders carry the disc-like members 10 for the springs to seat upon.

The device as described combines hydraulic and mechanical features for the purpose of absorbing shocks and provides a device which will be durable, easily applied and efficient in operation.

Having described the invention, we claim:

A shock absorber comprising a pair of cylinders open at the ends thereof, apertured removable caps closing said ends of the cylinders, means for admitting fluid in said cylinders, rods slidable through certain of the caps of the cylinders and secured to a yoke of a walking beam, packing preventing leaks between the latter-named caps and said rods and arranged in the cylinders, rods extending through and adjustably secured to the other caps of the cylinders and secured to a coupler of a pump operating medium, disc-like members secured on the first-named rods within the cylinders and having ports to permit a retarded flow of liquid past said members during the latter's movement in said cylinders, and cushion coil springs surrounding the first-named rods within the cylinders and bearing against the disc-like members and the caps through which the first-named rods slide and the springs of each cylinder being arranged one within the other.

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