

A. C. ZIERATH.
 DRILLING RIG,
 APPLICATION FILED MAR. 20, 1911.

1,048,632.

Patented Dec. 31, 1912.

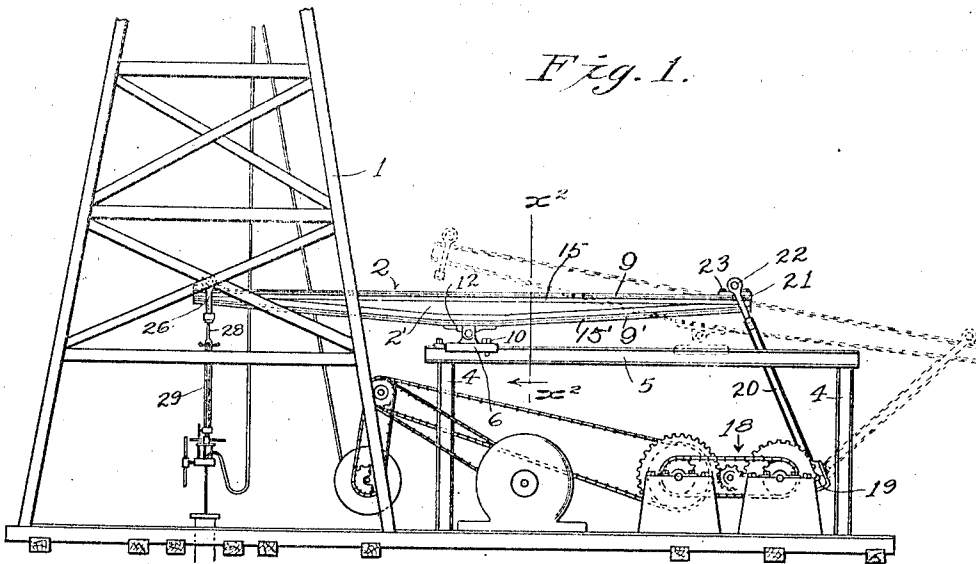


Fig. 4.

Fig. 5.

Fig. 2.

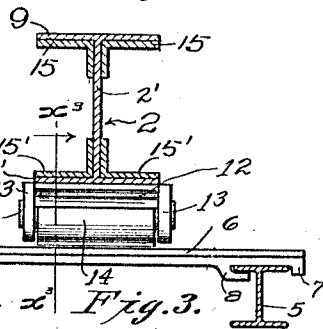
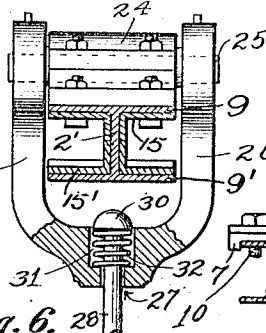
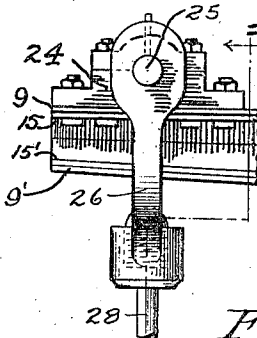
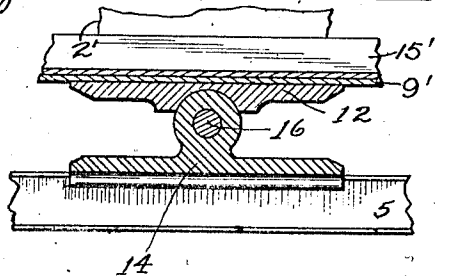
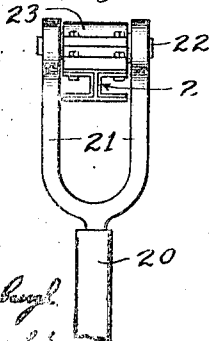


Fig. 6.



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UNITED STATES PATENT OFFICE.

AUGUSTUS C. ZIERATH, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO ZIERATH COMBINATION DRILL COMPANY, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

DRILLING-RIG.

1,048,632.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, AUGUSTUS C. ZIERATH, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Drilling-Rigs, of which the following is a specification.

One object of the present invention is to provide a drilling rig in which the walking beam and connected parts are of great strength and durability.

Another object of the invention is to provide, in a drilling rig, for elastic or yielding support for the temper screw and parts suspended thereby.

Another object of the invention is to provide, in a drilling rig, improved means for shifting the walking beam so as to move it out of operative position and away from the derrick so as to leave the derrick clear for use with a rotary rig, for example.

Other objects of the invention will appear hereinafter.

The accompanying drawings illustrate the invention, and referring thereto: Figure 1 is a side elevation of a part of the derrick and the operating mechanism of the drilling rig, including the walking beam and connected parts. Fig. 2 is a section on line x^2-x^2 in Fig. 1. Fig. 3 is a section on line x^3-x^3 in Fig. 2. Fig. 4 is a side elevation of the upper end of the temper screw frame with the adjacent portion of the walking beam. Fig. 5 is a section on line x^5-x^5 in Fig. 4. Fig. 6 is an elevation of the end of the walking beam which is connected to the operating pitman.

1 designates a derrick of any usual or suitable construction. The walking beam 2 is supported on a frame located adjacent to the derrick 1, said frame comprising standards 4 and longitudinal rails 5, said rails supporting a slide member 6 adapted to slide longitudinally on the rails and provided with flanges 7 extending down outside of the rails to hold the slide member from lateral displacement. Said rails 5 are preferably formed as I-beams and the slide member 6 is provided with lugs 8 extending beneath the upper flanges of said I-beams on the inside of the rails to insure retention of the slide member on the rail. One of rails 5 is perforated near the end

which is adjacent the derrick to receive bolt 10, whereby the walking beam may be held in operative position.

The walking beam 2 preferably consists of metal formed as a beam tapering from the middle toward the ends. Said beam consists of a central vertical plate 2' with flanges 9 and 9' extending at each side thereof, respectively, at the top and bottom of the beam, and reinforcing angle irons or bars 15 and 15' in the angles between said flanges 9 and 9' respectively, and the plate 2', the lower flanges 9, and lower angle irons 15' extending obliquely upward from the middle of the beam to the ends of the beams so as to approach the upper flanges, at said ends. This construction gives maximum stiffness for given weight and cost. Secured to the lower flange of beam 2, at the midlength of said beam, is a bracket 12 having down-turned lugs 13 and the slide member 6 is formed with an up-turned lug 14 extending between said down-turned lugs 13, and a hinge pin 16 is provided extending through the lugs 13 and 14 pivotally connecting and supporting the walking beam on the slide member 6. Frame 4, 5 is sufficiently elevated to support slide member 6 substantially at the height of the pivot of the walking beam, this construction giving maximum strength and facilitating the shifting of the walking beam.

At its outer end, the walking beam is connected to operating mechanism of any suitable kind, indicated at 18, said operating mechanism comprising a crank 19 pivotally connected to a connecting rod or pitman 20, the upper end of which is provided with a yoke 21 embracing the walking beam and carrying a cross pin 22 journaled in bearings 23 on the outer end of the walking beam.

The inner end of the walking beam is provided with bearings 24 in which is journaled a cross pin 25 on the upper end of a temper screw yoke 26, said yoke embracing the walking beam and being perforated at 27 to receive a bar 28 extending upwardly from the temper screw frame 29. Said bar 28 is provided at its upper end with a head 30 and the yoke 26 is recessed as at 31 below said head to receive a spring 32 which engages between said head and the lower end of said recess, so as to elastically or yield-

ingly support the bar 28 and the temper screw and drilling members supported thereby.

In the drilling operation, when it is carried on by standard or reciprocating process, the walking beam is pushed forward to position shown in full lines in Fig. 1, so that the inner end thereof overhangs the well and supports the temper screw and depending parts within the well. In the operation of the drilling tools by the walking beam, any jar due to the weight and movement of the tools is taken up by the spring 32, so that the bearings of the walking beam and connected parts are protected from injury by such jar. The temper screw frame member 28 slides in perforation 27 in the yielding movement. In the reciprocating drilling operation, the walking beam works up and down in the space between rails 5. In case it is desired to clear the space within the derrick, for example, in using a rotary drill, the bolt 10 is removed and the walking beam is pushed back to position shown in dotted lines in Fig. 1, the slide member 6 sliding on the rails 5 in this operation.

What I claim is:

1. In a drilling rig, in combination with the base, supports extending upwardly from said base, two parallel rails carried by said supports, said rails having flanges at the top thereof, a slide member supported on said rails and extending between the rails and slidably mounted thereon, said slide mem-

ber being provided with means extending under said flanges on the top of the rails to retain the slide member in place, and a walking beam carried by, and pivoted on said slide member, and adapted to swing in a vertical plane between the said two parallel rails.

2. In a drilling rig, in combination with the base, supports extending upwardly from said base, two parallel rails carried by said supports, said rails having flanges at the top thereof, a slide member supported on said rails and extending between the rails and slidably mounted thereon, said slide member being provided with means extending under said flanges on the top of the rails to retain the slide member in place, and a walking beam carried by, and pivoted on said slide member, and adapted to swing in a vertical plane between the said two parallel rails, a flange at the top of one of said rails being perforated, in combination with a bolt extending through said perforation in the flange, and engaging said slide member to hold said slide member in fixed position on the rails.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 9th day of March, 1911.

AUGUSTUS C. ZIERATH.

In presence of—

ARTHUR P. KNIGHT,
FRANK L. A. GRAHAM.