

M. McCAIN.
WELL DRILLING MACHINERY.
APPLICATION FILED JUNE 2, 1905.

Fig. 1.

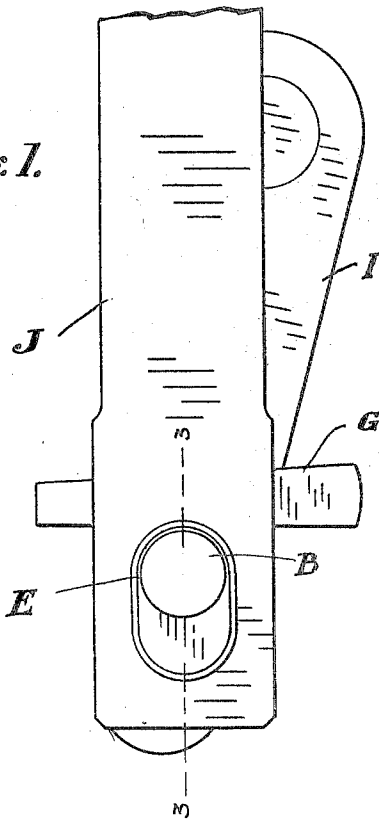


Fig. 2.

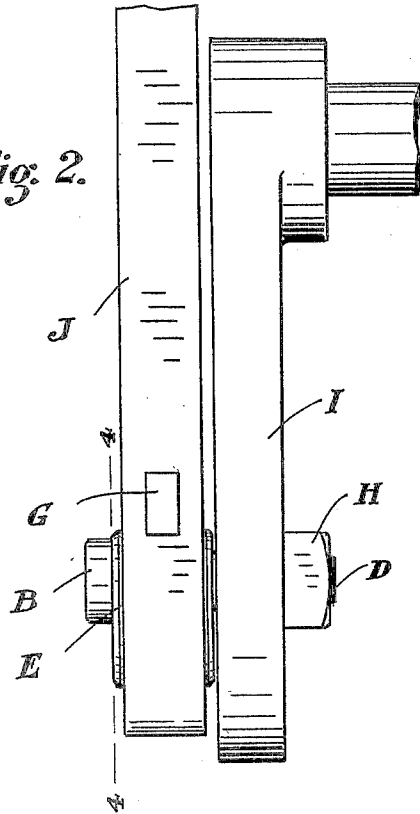


Fig. 4.

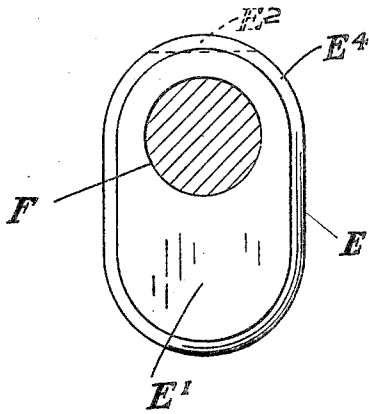
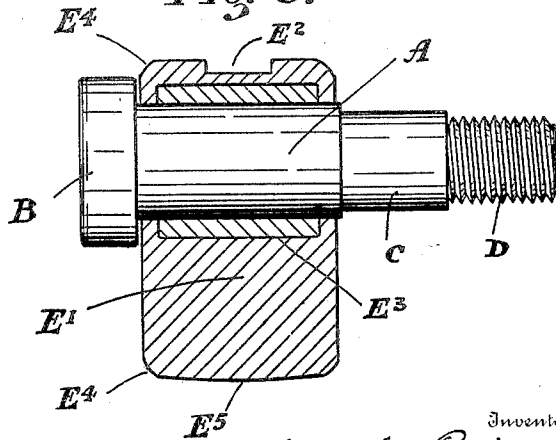


Fig. 3.



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UNITED STATES PATENT OFFICE.

MERT McCAIN, OF PORTLAND, INDIANA, ASSIGNOR OF ONE-HALF TO WILLIAM E. BROWN, OF MUNCIE, INDIANA, AND ONE-HALF TO WILLIAM McCAIN, OF JAY COUNTY, INDIANA.

WELL-DRILLING MACHINERY.

No. 802,521.

Specification of Letters Patent.

Patented Oct. 24, 1905.

Application filed June 2, 1905. Serial No. 263,498.

To all whom it may concern:

Be it known that I, MERT McCAIN, a citizen of the United States, residing at Portland, in the county of Jay and State of Indiana, have
5 invented a new and useful Wrist-Pin and Pitman Journal-Box for Machines for Drilling Wells, of which the following is a specification.

My invention relates to improvements in
10 well-drilling machinery wherein a pitman is employed to transmit the power from the driving-engine to the walking-beam, upon and by which is supported and operated the drilling tools and appliances.

15 In the use and operation of apparatus for drilling deep wells, such as oil and gas wells, it is necessary that the parts of the machinery used therefor be of large size and of great
20 solidity and weight, and it is very desirable that the parts and connections of such machinery and apparatus be so devised that the same may be handled and manipulated with the expenditure of the minimum amount of
25 time and labor, especially in the event any changes or repairs of such machinery are necessary after the same have been assembled and placed in readiness for operation. In the
30 standard drilling apparatus as now generally in use the power from the driving-engine is utilized for operating the drill by the transmission of the same from the engine-pulley by means of belting to a pulley secured on the shaft, upon which is rigidly connected the
35 crank, provided with an ordinary wrist-pin. Pivottally supported on the wrist-pin and reciprocated by the crank is a heavy pitman constructed of wood, having its upwardly-extending end pivottally connected to the walking-beam of like construction, carrying the heavy
40 drill or other appliances used in the operation for oil or gas.

The objects of my improvements are to provide a simple and effective device which may be economically manufactured and easily and
45 practically used upon the standard pitman now in use, which will provide a durable boxing for and which may at all times be normally retained upon the wrist-pin, and which may be easily inserted and easily and securely
50 locked in position in the pitman, obviating the necessity of temporarily placing out of

operation any part of the well-drilling apparatus except the pitman and walking-beam.

Another object is to provide for the pitman such a bearing for the wrist-pin that although
55 the pitman may be slightly out of correct alinement with the wrist-pin and the crank-shaft no abnormal strains will be produced upon the wrist-pin or the crank or any parts of the machinery or apparatus by which the
60 same may be abnormally weakened or worn.

In the process of operating for oil and gas and the drilling of deep wells it is necessary to frequently disengage the pitman from the
65 crank and wrist-pin, so that cleaning the well, raising and lowering the drill, and other operations in and about the well may be effected by means of the power supplied by the driving-engine other than the operation of the actual
70 drilling of the well. In the operation and manipulation of the details of connection now in use for this purpose the detaching and replacing of the pitman at the wrist-pin are accompanied with the expenditure of a great
75 amount of manual labor and the incident expense and loss of time, in that it is necessary to remove the head of the wrist-pin or such other means as may be in use for retaining
80 the pitman in normal operative position; also, the tightening means in the pitman-head, if any there may be, has to be loosened and removed before the pitman may be detached from the wrist-pin, during all of which time
85 the machinery is temporarily completely stopped and out of use, and, moreover, when the pitman is replaced upon the wrist-pin the operation of replacing the wrist-pin head or holding means and the tightening means in the pitman-head has all to be performed
90 before the machinery may again be used. Further, the only bearing provided in the pitman as at present devised for the wrist-pin is simply a transversely - extending aperture, from which extends longitudinally within the
95 pitman a slot in which is slidably secured a wooden plug, which plug when the pitman is in position upon the wrist-pin is forced and maintained against the wrist-pin by means of an ordinary tapered key extending transversely through the pitman and against the
100 end of the plug, thus forming a very imperfect and defective bearing for the wrist-pin

and one which by reason of the very heavy and intermittent strains imposed upon the parts so connected rapidly wears away and frequently becomes loose and defective in operation, especially when the shafting and wrist-pin or the pitman or any of the parts become slightly out of perfect alinement and true position.

These objects I attain by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front-view of my improved wrist-pin and pitman journal-box, showing the same in operative position with the crank and pitman. Fig. 2 is a side view of Fig. 1. Fig. 3 is a detached enlarged vertical cross-sectional view on the line 3 3, Fig. 1, of the pitman journal-box, showing the wrist-pin in elevation. Fig. 4 is a detached enlarged front view of the same on the line 4 4, Fig. 2.

A designates an ordinary wrist-pin provided with the head B and the rearwardly-extending portion C, adapted to be inserted and to rest within the suitable aperture in the crank by which the pin is carried. D designates the projecting threaded end adapted to receive the suitable nut H, by means of which the pin is secured rigidly to the crank I.

Loosely secured to the portion A of the wrist-pin is the elliptical-shaped box E, as plainly shown in Fig. 3 and Fig. 4, provided with the suitable annular chamber E³, adapted to receive and retain suitable bearing metal for boxing, such as Babbitt metal. Extending transversely through the box E and adapted to receive loosely the portion A of the wrist-pin is the suitable aperture F, the center of the same being a suitable distance removed longitudinally from the center of the box, so that the bulk of the same longitudinally is unevenly divided, forming the heavier portion E', as shown. On the periphery of the elliptical box E, longitudinally opposite the portion E', I provide the angular recess E², extending transversely across the periphery of the box, adapted to receive the one side of the tapered key G, by means of which the elliptical box E may be locked and retained firmly in its proper position in the pitman.

In the practice and use of my improved wrist-pin and pitman journal-box the portion C of the wrist-pin is simply inserted in the crank or other device, by which it may be carried and rigidly secured thereto by tightening the nut H. By reason of the novel and peculiarly formed and adapted journal-box E it is always in the position as shown, with the long diameter of the same extending downwardly with the annular recess or channel E³ above the center of the pin and in predetermined position in readiness to receive the key G when it is desired to secure thereto the pitman J. Thus I ob-

tain on the wrist-pin a loose, easy-operating, and durable bearing and boxing which by reason of the eccentricity thereof will invariably present the angular channel E² at such predetermined position relative to the corresponding key-slot in the pitman that it will properly register therewith without manipulation by the operative other than the placing of the elliptical box E in the aperture provided therefor in the pitman. By reason of the fact that the tapered key is the most commonly and probably the most practicably used means for tightening into position devices of this character I have designed the angular channel.

The function of the rounded edges E⁴ of the elliptical box E is to facilitate the sliding into position upon the same of the pitman J. The periphery E⁵ is slightly curved transversely convexly, so that in the use of the device in event the pitman or the wrist-pin may become out of correct alinement the surface of the same is free to slide transversely slightly upon the surface of the aperture in the pitman in which it is retained, thus permitting the bearing to at all times be in correct alinement with the wrist-pin and preventing abnormal strains upon the wrist-pin or the crank or any other part of the machinery.

By the mechanism described for accomplishing the desired results a durable bearing for wear upon the wrist-pin and simple means for connecting and securing the same in the pitman without the assistance of operatives to hold the same in position while being connected and secured are accomplished without the discontinuance of the operation of the machinery, except for the time necessary to remove the key G and the sliding off or on of the pitman, as the case may be. At the same time the defective bearing and tightening and securing devices as at present in use are remedied and the objectionable detachable wrist-pin heads and other faulty retaining means are dispensed with.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a device of the kind described, the combination with a wrist-pin having a head integral therewith, of an elliptical-shaped box loosely secured eccentrically to said wrist-pin, there being an angular channel in the periphery of the elliptical-shaped box extending transversely to the wrist-pin, the continuous outer edges of the periphery of said elliptical-shaped box being rounded, and the periphery of said elliptical box transversely continuously convex.

2. In a device of the kind described, the combination with a wrist-pin having a head integral therewith, of an elliptical-shaped box loosely secured eccentrically to said wrist-pin, there being an angular channel in the periphery of the elliptical-shaped box extending

transversely to said wrist-pin, the continuous
outer edges of the periphery of said elliptical-
shaped box being rounded, and the periphery
of said elliptical-shaped box transversely con-
5 tinuously convex, a pitman with suitable ap-
erture therein adapted to receive freely the
said elliptical-shaped box, there being a wedge-
shaped slot extending through the said pitman
transversely to and opening into said aper-
10 ture, and a tapered key adapted to fit within
said slot of the pitman and the angular chan-

nel of the elliptical-shaped box and to tighten
and retain the latter in position in the pit-
man, substantially as and for the purposes
set forth and described.

In testimony whereof I have signed my name
to this specification in the presence of two sub-
scribing witnesses.

MERT McCAIN.

Witnesses:

WILLIAM McCAIN,
W. M. DIKE.

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