R. D. GRANT.

ROCK SHAFT.

APPLICATION FILED AUG. 4, 1916.

1,231,015. Patented June 26, 1917.

Fig. 1.

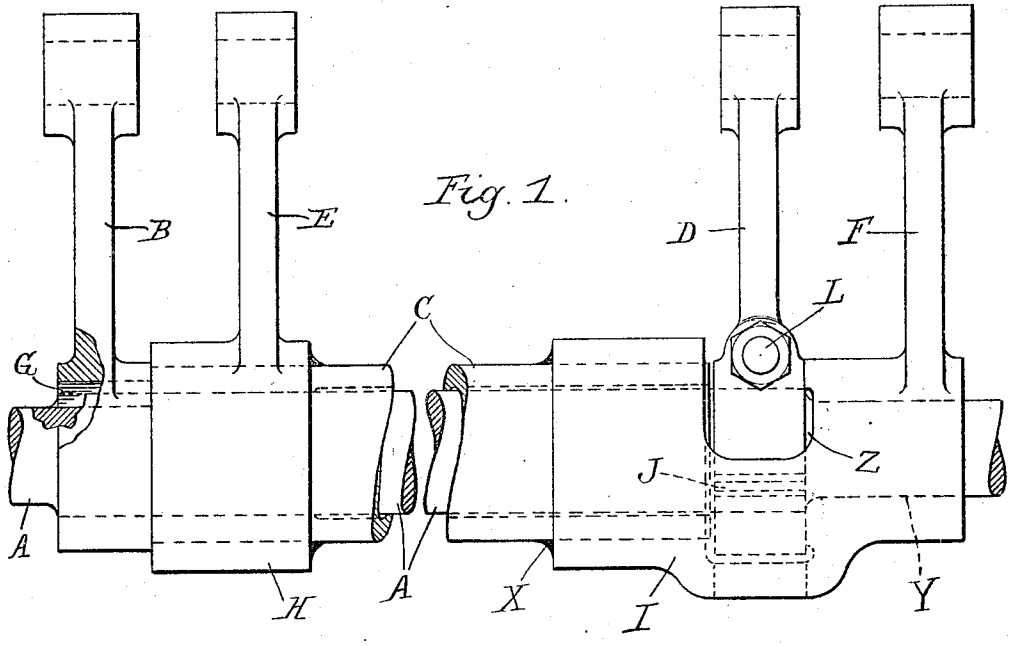


Fig. 3.

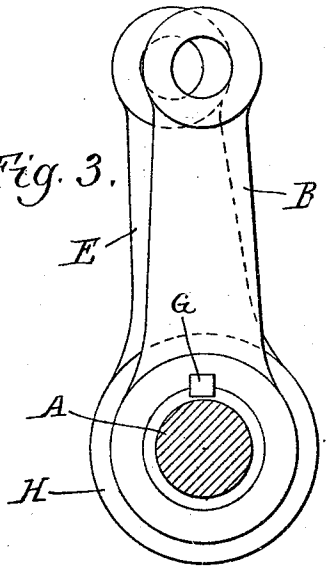
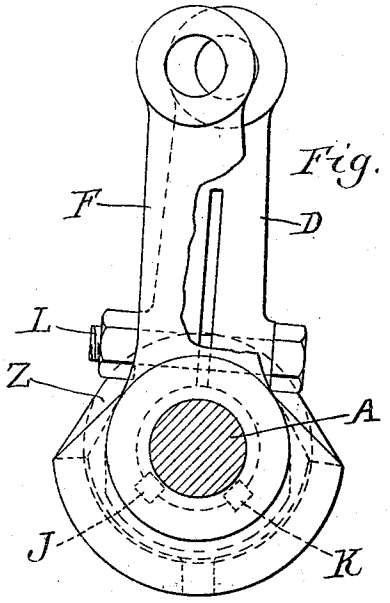


Fig. 2.



Witnesses.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

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ROCK-SHAFT.

1,231,015. Specification of Letters Patent. Patented June 26, 1917.

Application filed August 4, 1916. Serial No. 113,033.

To all whom it may concern:

Be it known that I, ROSWELL D. GRANT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Rock-Shafts, of which the following is a specification.

My invention relates to rock shafts. In the form here shown it consists of two shafts concentrically arranged, each shaft being provided with a pair of lever arms, the arms so arranged that those of one shaft alternate with those of the other.

It is illustrated in the accompanying drawing, wherein—

Figure 1 is an elevation of the rock shaft and couplings;

Fig. 2 is a right end view; and

Fig. 3 is a left end view.

Like parts are indicated by like letters in all the figures.

A is a shaft having rigidly mounted upon it the lever arms B and D.

C is a tubular shaft inclosing the shaft A and concentric with it and having lever arms E and F rigidly mounted upon it. The lever arm B is keyed to the shaft A by the key G or it may be secured in any other desired manner. The lever arm D is inserted in the slot Z cut in the collar I and, upon the shaft A being driven through it, is keyed to the shaft by the keys J and K and is further held to the shaft A by the bolt L. The lever arm E is integral with or secured to the collar H which is welded or otherwise secured to the hollow shaft C. At the other end of the hollow shaft C is the slotted collar I welded or otherwise secured to the shaft at X and bearing upon the shaft A at Y. The arm F is integral with or otherwise attached to the collar I.

The form, size, proportion and arrangement of these several parts could be greatly altered without departing from the spirit of my invention and I wish, therefore, to have these drawings taken as in a sense diagrammatic, although they do in a sense show an operative structure.

The use and operation of my invention are as follows:—

In the form illustrated the rock shaft and coupling are adapted to be applied to the operation of locomotive valve gears. The lever arm B is connected to an engine which engine imparts motion to it and through it and the rock shaft A to the arm D. A similar connection is made between the engine on the right of the locomotive frame and the arm F and through it and the shaft C to the arm E. If we assume that the arm B communicates the lap and lead motion to the valve on the left side of the locomotive, the arm D will communicate travel motion to the valve on the right side of the locomotive, and similarly if the arm F is connected to the engine on the right of the locomotive, it communicates the lap and lead motion to the valve on the right of the locomotive and through the rock shaft C and the lever arm E it communicates travel motion to the valve on the left of the locomotive.

These several connections and arrangement of parts are, of course, not necessary to be shown here and I have only suggested this form of use of the device to illustrate or suggest its practical application for a particular purpose. Such a rock shaft arrangement as I have here illustrated in its essential particulars might be employed for a variety of uses.

I claim:

1. In a rock shaft device two concentric shafts one inclosing the other and each shaft having mounted upon it a pair of lever arms, the arms of each pair alternating with those of the other pair.

2. In a rock shaft device two concentric shafts one inclosing the other and each shaft having mounted upon it a pair of lever arms, the arms of each pair separated by a distance substantially equal to the distance which separates the other pair.

3. In a rock shaft device two concentric shafts one inclosing the other and each shaft having mounted upon it a pair of lever arms, the arms arranged in two groups of two arms each, one arm of such group attached to each shaft.

4. In a rock shaft device two concentric

shafts one inclosing the other and each shaft having mounted upon it a pair of lever arms, the hollow shaft slotted to allow the lever arm from the other shaft to project through and oscillate in such slot.

In testimony whereof, I affix my signature, in the presence of two witnesses, this 1st day of August, 1916.

ROSWELL D. GRANT.

Witnesses:
MINNIE M. LINDENAU,
ESTHER VAN FRANK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."