

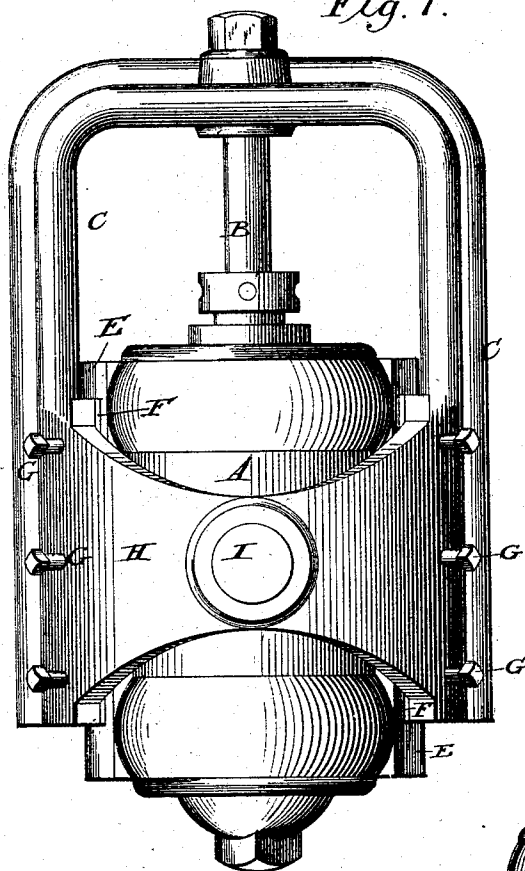
(No Model.)

I. B. DAVIS.  
DIRECT ACTING ENGINE.

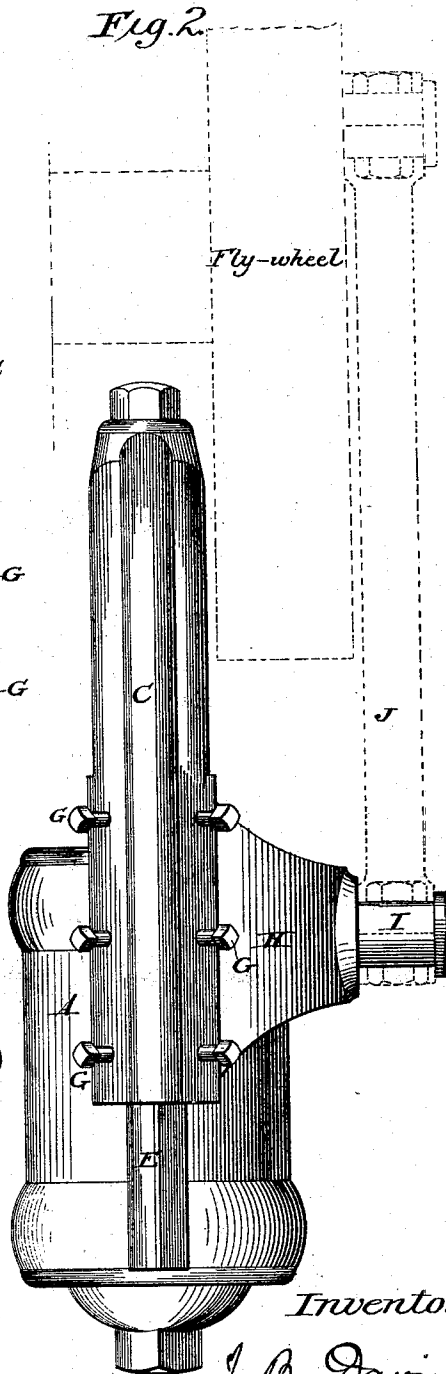
No. 282,503.

Patented Aug. 7, 1883.

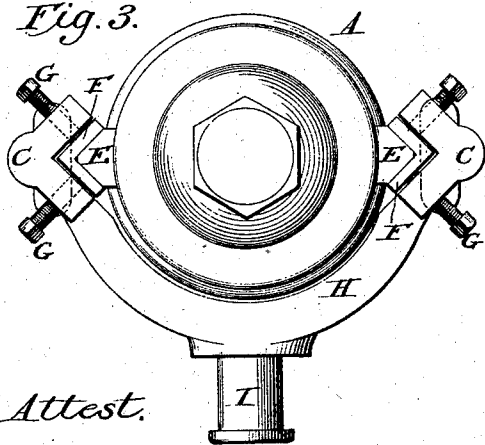
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



*Attest.*

*Edmund P. Hollingsworth*  
*W. H. Shipley*

*Inventor.*

*I. B. Davis.*  
*By his attorney*  
*Philip T. Dodge*

# UNITED STATES PATENT OFFICE.

ISAAC B. DAVIS, OF HARTFORD, CONNECTICUT.

## DIRECT-ACTING ENGINE.


SPECIFICATION forming part of Letters Patent No. 282,503, dated August 7, 1883.

Application filed April 27, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ISAAC B. DAVIS, of Hartford, in the county of Hartford and State of Connecticut, have invented certain Improvements in Direct-Acting Engines, of which the following is a specification.

The object of my invention is to provide a connection between the piston-rod of a pump or engine or other machine and a pitman operating therewith, the special aim being to provide a substitute for the ordinary cross-head and slides, which shall be cheaper in construction and more compact in arrangement.



To this end the invention consists, essentially, in combining with the piston-rod a yoke of  form, the arms of which are extended backward and mounted in longitudinal guides at the sides of the cylinder, the arms of the yoke being connected at or near the lower end by a side bar or projection extending laterally beyond the cylinder, and bearing the wrist-pin for the connection of the pitman.

The accompanying drawings represent the device in its preferred form; but it may be modified in form and arrangement within reasonable limits, provided no essential change is made in its mode of operation.

Referring to the accompanying drawings, Figure 1 is a side elevation of a cylinder and piston provided with my improved devices. Fig. 2 is an elevation looking against the yoke. Fig. 3 is a bottom plan view looking against the cylinder endwise.

Referring to the drawings, A represents the cylinder, which may be that of a steam-engine, pump, or other equivalent apparatus.

B represents the piston-rod extending centrally from one end of the cylinder, and connected at its inner end with a piston or plunger in any ordinary or approved manner, this feature constituting no part of the invention.

C represents my improved yoke, made in a  form, with its center perforated to receive the end of the piston-rod, and its two arms extended thence backward along opposite sides of the cylinder. As shown in the drawings, the cylinder is provided on each side with a straight guide or way, E, of  form. These guides, as shown in the drawings, are arranged to enter corresponding surfaces formed on the inner sides of the arms of the yoke, whereby the yoke is guided and caused to move to and

fro in line with the piston-rod. The form of the bearing and guiding surfaces in cross-section may be modified as desired. It is preferred, however, to retain the form shown. 55

For the purpose of permitting compensation for wear of the bearing-surfaces, I provide the arms on their inner faces with brass or composition face-plates F, secured in place by means of set-screws G, which admit of their being adjusted inward from the arms toward the stationary guides upon the cylinder, as may be required. It is obvious that, if preferred, the adjustable wearing-surfaces may be applied to the cylinder, instead of to the yoke, in which event the screws or other adjusting devices will be applied to force them outward. 60 65

At or near the lower end of the yoke its two arms are connected by means of a cross bar or plate, H, secured firmly thereto, and curved outward in such manner as to extend transversely around the side of the cylinder out of contact therewith. At the center of this connecting-plate, on its outer side, I form a wrist-pin or journal, I, adapted to receive a pitman, J, which will be connected with a crank or other device, as indicated by dotted lines in the drawings. 70 75

It will be observed that the yoke constructed and combined with the cylinder and piston, as above described, forms a strong and serviceable connection between the piston-rod and pitman, and that its construction is such as to admit of the pitman and crank and the parts connected therewith being brought into a much more compact form than when the cross-head and slides are employed, as usual. 80 85

The essential feature of the invention consists in the employment of the yoke or frame, attached to the piston-rod, and extending thence backward to bear upon the guides at or upon the sides of the cylinder, and the construction may be modified as desired, provided these characteristics are retained. 90 95

The present invention is restricted to those matters and things which are hereinafter claimed, and as to all matters which may be described or shown, but which are not claimed, the right is reserved to make the same the subject of a separate application. 100

Having thus described my invention, what I claim is—

1. In combination with the cylinder having

the two longitudinal guides upon opposite sides, the piston-rod, the yoke attached to the piston-rod and having its arms mounted upon the guides, and the cross-plate connecting the lower arms of the yoke, and provided with a journal upon its outer side.

2. The combination of the cylinder, the piston, the yoke having its arms mounted on guides at the sides of the cylinder, the cross-plate with the journal thereon, the crank, and the pitman, connected at one end to said crank and at the opposite end to the journal of the yoke, as described.

3. In combination with the cylinder having the longitudinal V-shaped guides upon its sides, the piston, the U-shaped yoke, and the bearing-plates inserted between the arms of the yoke and the guides upon the cylinder, and means, substantially as described, for effecting the adjustment of said plates to compensate for wear.

ISAAC B. DAVIS.

Witnesses:

JOHN O. DAVIS,  
ALLEN H. NEWTON.