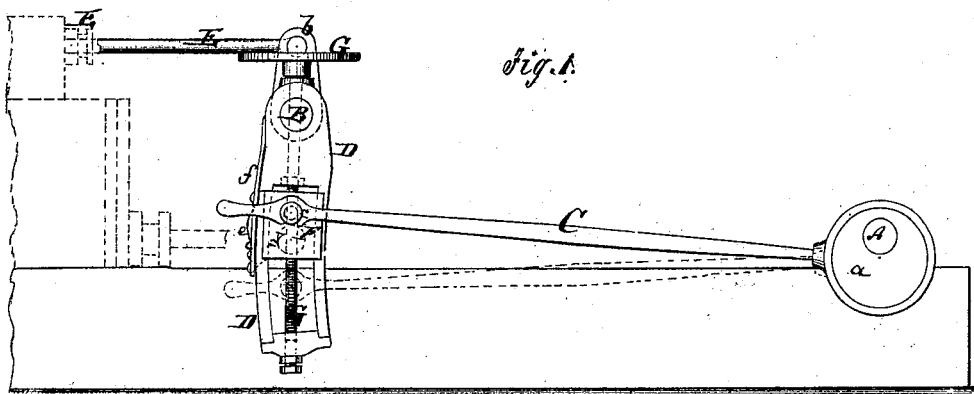


*H. Hendrickson,*

*Cut Off Valve.*

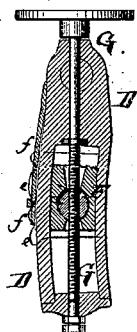
*No. 107,492.*

*Patented Sept. 20. 1870.*

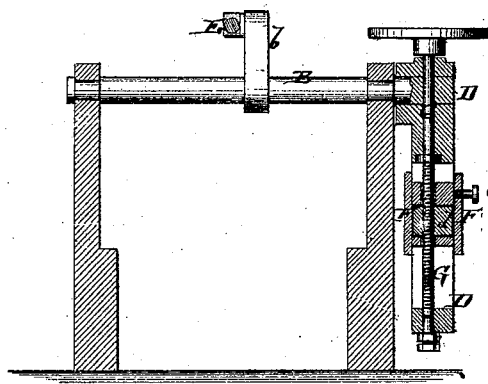


*Fig. 1.*

*Fig. 2.*



*Fig. 3.*



**Witnesses:**

*A. Bonnewendoff.*  
*Geo. N. Mabee*

**Inventor:**

*H. Hendrickson*  
**PER** *M. M. Co.*  
**Attorneys.**

# United States Patent Office.

HUBBARD HENDRICKSON, OF RED BANK, NEW JERSEY.

*Letters Patent No. 107,492, dated September 20, 1870.*

## IMPROVEMENT IN ADJUSTABLE ARMS FOR WORKING SLIDE-VALVES.

The Schedule referred to in these Letters Patent and making part of the same.

### *To all whom it may concern:*

Be it known that I, HUBBARD HENDRICKSON, of Red Bank, in the county of Monmouth and State of New Jersey, have invented a new and improved Adjustable Arm for Working Slide-Valves, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

Figure 1 represents a side view of my improved adjustable valve-crank.

Figure 2 is a longitudinal section of the same.

Figure 3 is a transverse section of the same.

Similar letters of reference indicate corresponding parts.

My invention relates to slide-valve adjusting arms; and

My object is to effect therein certain improvements, which will be first described in connection with all that is necessary to a full understanding thereof, and then clearly specified in claim.

A in the drawing represents the rotating driving-shaft of the engine, carrying the eccentric *a*, for working the steam-valve.

B is the rock-shaft, which receives motion from the shaft A, by means of the eccentric *a*, connecting-rod C, and crank D, and which, by means of a crank, *b*, imparts reciprocating or other suitable motion to the valve E in the steam-chest.

The crank D is provided with stops, the edges of which are arcs of circles struck from the axis of the rod C, on A.

In this slot is an adjustable slide, F, carrying a projecting pin, *c*, to which the end of the rod C is secured.

The slide F contains within its body a swivel-nut, *d*, which can swing within the slide, while the same is being adjusted in the slot.

A screw, G, fitted lengthwise through the crank D, and through the nut *d*, as shown in fig. 2, serves to adjust the slide higher or lower within the slot, and with it also the pin C.

It will be readily perceived that, by means of the arc movement of the pin *c*, the backward throw of the valve-slide is never changed.

Every adjustment of the pin toward or from the shaft to be rocked will increase or diminish the arc in which said shaft is vibrated, and, consequently, the forward throw of the valve.

If the pin was adjusted on a radial line from the rock-shaft B, both the forward and backward throw of the shaft and slide-valve would be equally affected.

The swivel-nut, moving on the straight screw, permits the slide, which moves in the curved track, to swing on it during the different movements.

The crank D may, instead of being slotted, as shown, be provided with a curved groove or rail for guiding the slide.

A notched or marked plate, *e*, may be secured to the slide F, to show, by means of a spring or pointer, *f*, fixed to the crank D, the position of the pin *c*, with reference to its effects upon the motion of the valve.

Having thus described my invention,

I claim as new and desire to secure by Letters Patent—

1. The arc slotted arm D and slide F *c*, combined with nut *d* and straight screw G, as and for the purpose described.

2. The slotted arm D and slide F *c*, combined with notated plate *e* and pointer *f*, as and for the purpose described.

HUBBARD HENDRICKSON.

Witnesses:

GEO. W. MABEE,  
T. B. MOSHER.