2 Sheets—Sheet 1.

# F. MILLWARD.

## FOOT-POWER.

No. 192,272. Patented June 19, 1877.

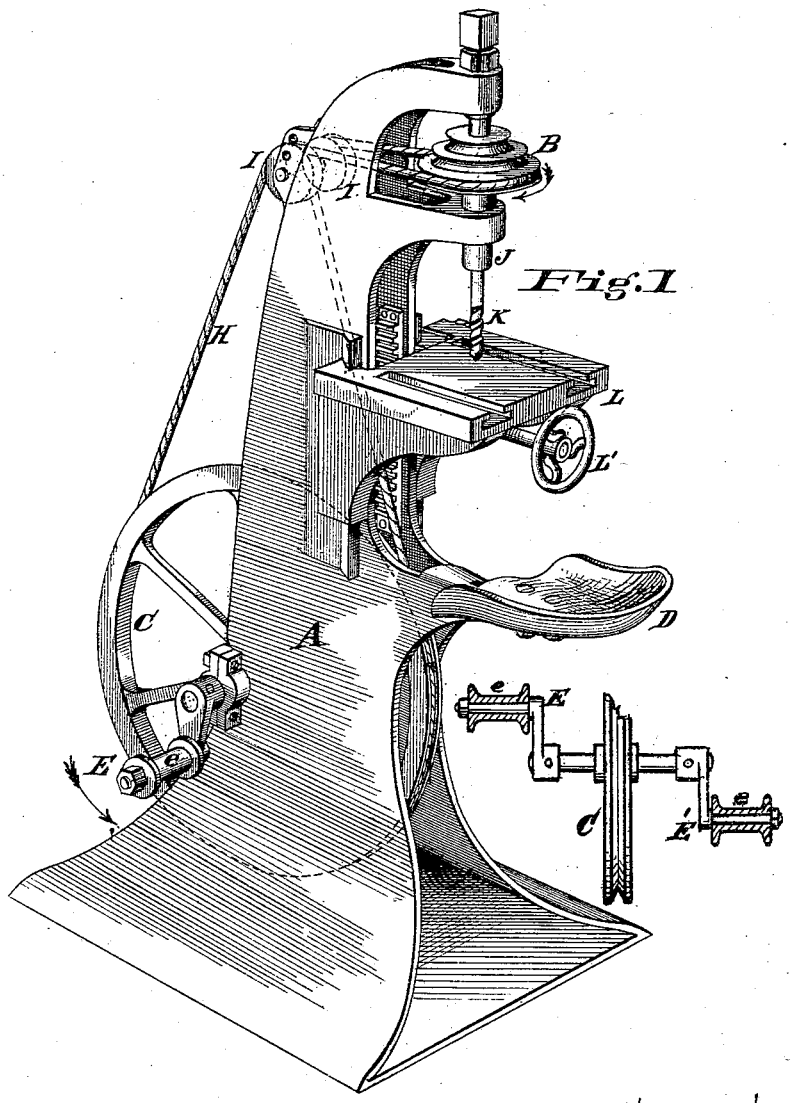


Fig. 1

Inventor

Attest

Edgar J. Gross

John L. Jones

F. Millward

2 Sheets—Sheet 2.

# F. MILLWARD.

## FOOT-POWER.

No. 192,272. Patented June 19, 1877.

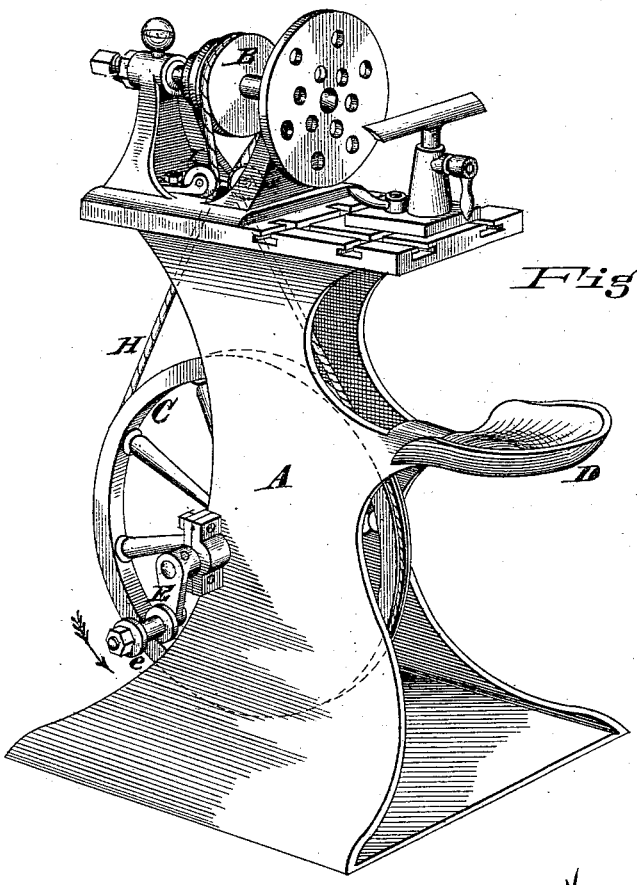


Fig. 2

Inventor

F. Millward

Attest

Edgar J. Gross

John. E. Jones

# UNITED STATES PATENT OFFICE.

FRANK MILLWARD, OF CINCINNATI, OHIO.

## IMPROVEMENT IN FOOT-POWERS.

Specification forming part of Letters Patent No. **192,272**, dated June 19, 1877; application filed May 15, 1876.

*To all whom it may concern:*

Be it known that I, FRANK MILLWARD, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in Foot-Powers, of which the following is a clear and exact description.

My invention is designed for the driving, by the foot-power of a sitting operator, of small wood and iron working machines, and such other light machinery as is adapted to be operated by foot-power; and consists, in combination with the stationary frame of the machine to be driven, of an operator's seat, forming an inherent part thereof, and a large driving-pulley mounted in said frame, provided on each side with opposite foot-cranks for the direct reception of the operator's feet, and communicating by belt-connection with the pulley of the machine to be driven.

In the accompanying drawings, Figure 1 is a perspective view of a boring-machine for wood or metal embracing my improvement. Fig. 2 is a similar view of a lathe embracing the same improvement.

A is the frame of the machine, B the driven pulley, and C the large driving-pulley. The stationary frame may be formed in one or more pieces, as may be preferred, and I project from it a seat, D, for the support of the operator's body on the machine, so that he may use the frame as an abutment from which his force may be exerted to propel the foot-cranks.

The seat may be adjustable on the frame to suit the requirements of different operators. Upon each side of the driving-pulley C crank-arms E E′ are provided, fitted with reels or spools *e*, which are common to velocipedes, and to which the feet of the operator are directly applied. H is the driving-belt, which communicates the motion from the driving-pulley C to the driven pulley B. It passes, in the machines shown in Fig. 1, over the idlers I, to so change direction as that the belt may drive the pulley B on a vertical spindle, J, to which the boring-tool K is secured. The pulley on the spindle may be a cone-pulley, and the idlers adjustable, so that the speed may be changed without changing the length of the belt. L is a sliding work-table, which may be raised and lowered by the hands of the operator to carry the work to and from the tool through the wheel L′, and the rack and pinion common in boring-machines.

In Fig. 2 the driving-belt passes over idler-pulleys I, which enable the belt to drive the spindle of the pulley B at right angles to the axis of the large driving-pulley C. The head-stock or upper part of the frame A in which the lathe-spindle of pulley B is journaled may be pivoted to swivel horizontally upon the main part of the frame, to permit the operator to swivel the lathe-spindle into line with the axis of pulley C, so that he may then face the periphery of the work, the idlers being so journaled as to permit this.

I claim—

The combination of the stationary frame A, carrying a seat, D, projected therefrom, the driving-pulley C mounted in said frame, and provided on each side with opposite foot-cranks E E′, the belt H, and the pulley B of the machine to be driven, substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

F. MILLWARD.

Witnesses:

EDGAR J. GROSS,

JOHN E. JONES.