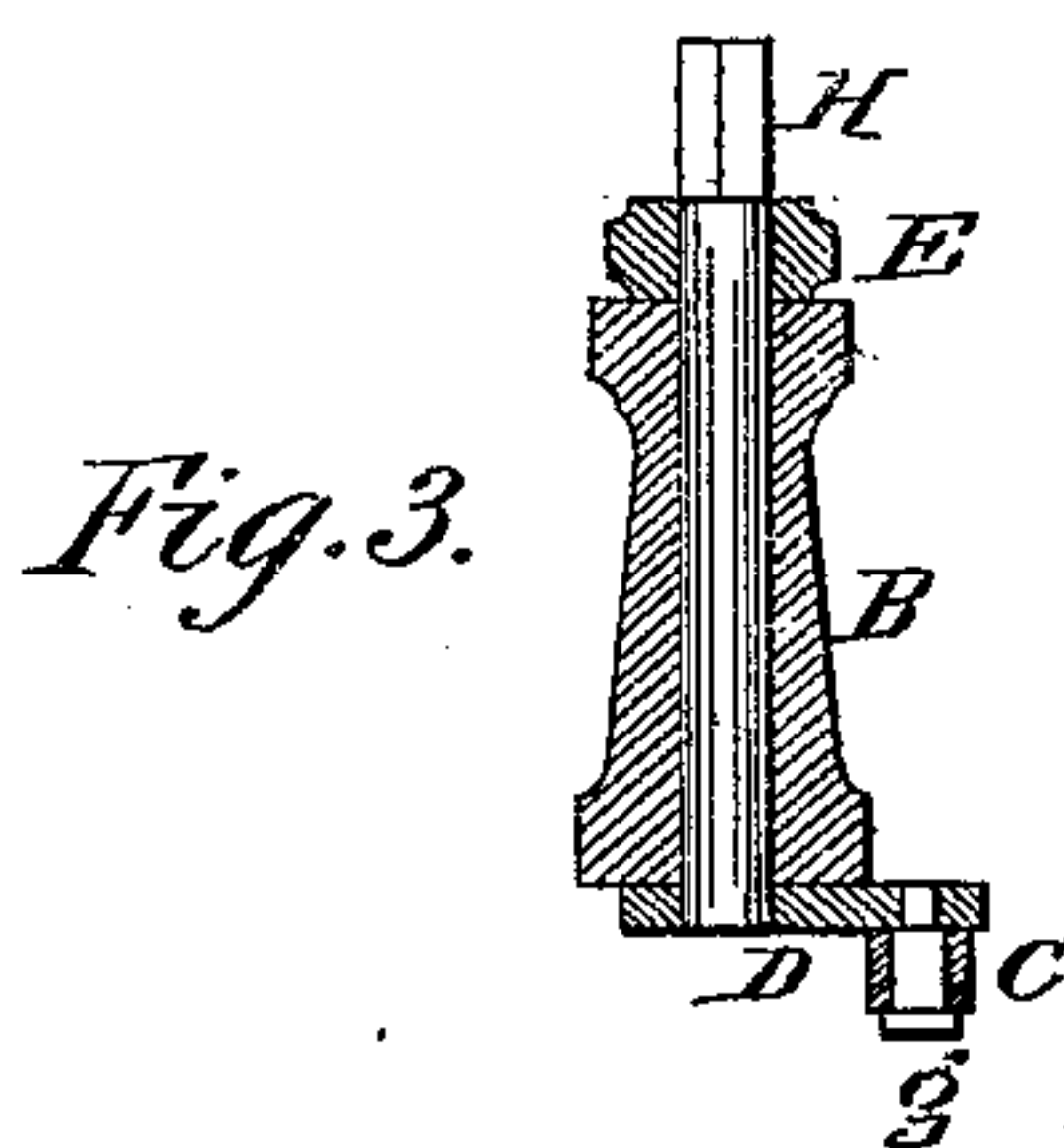
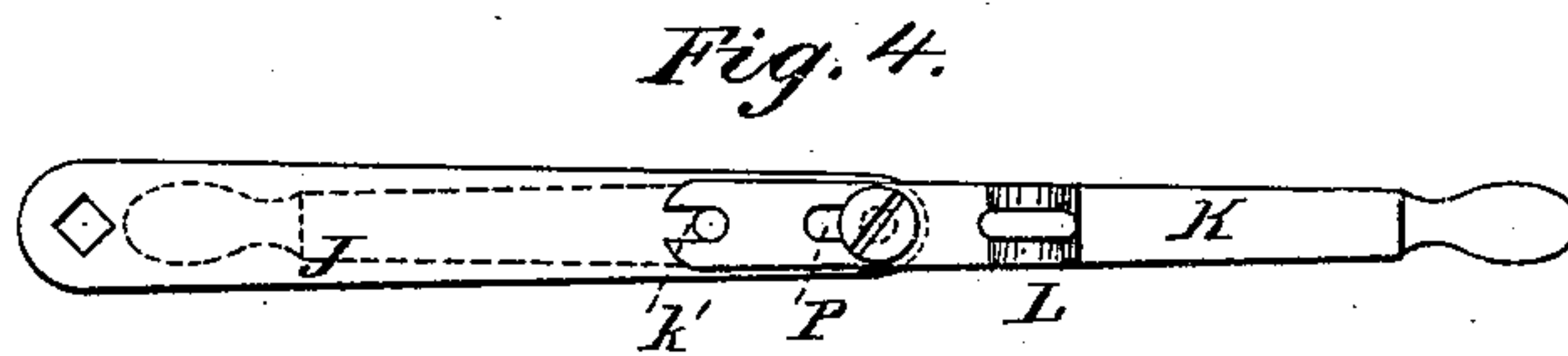
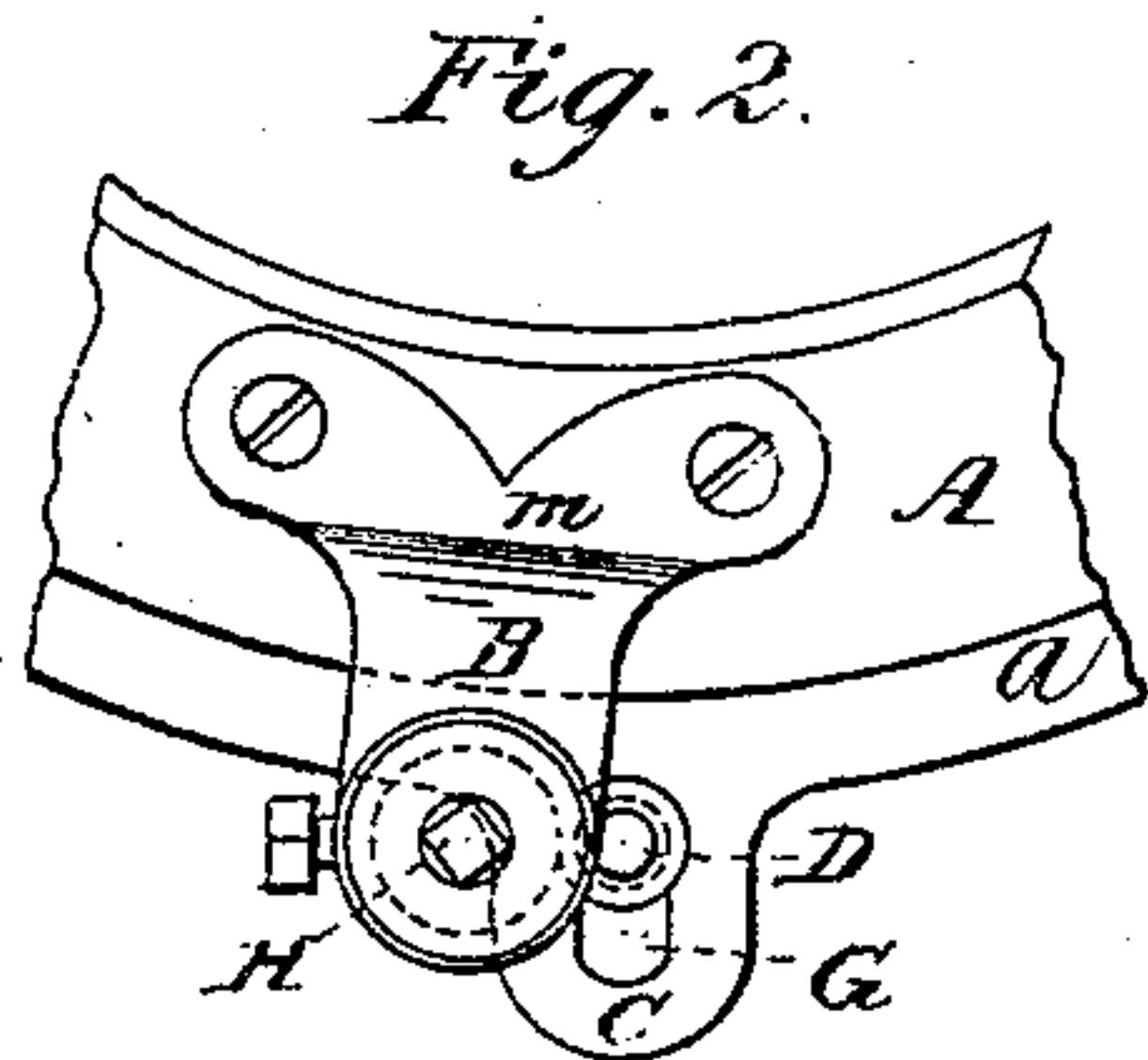
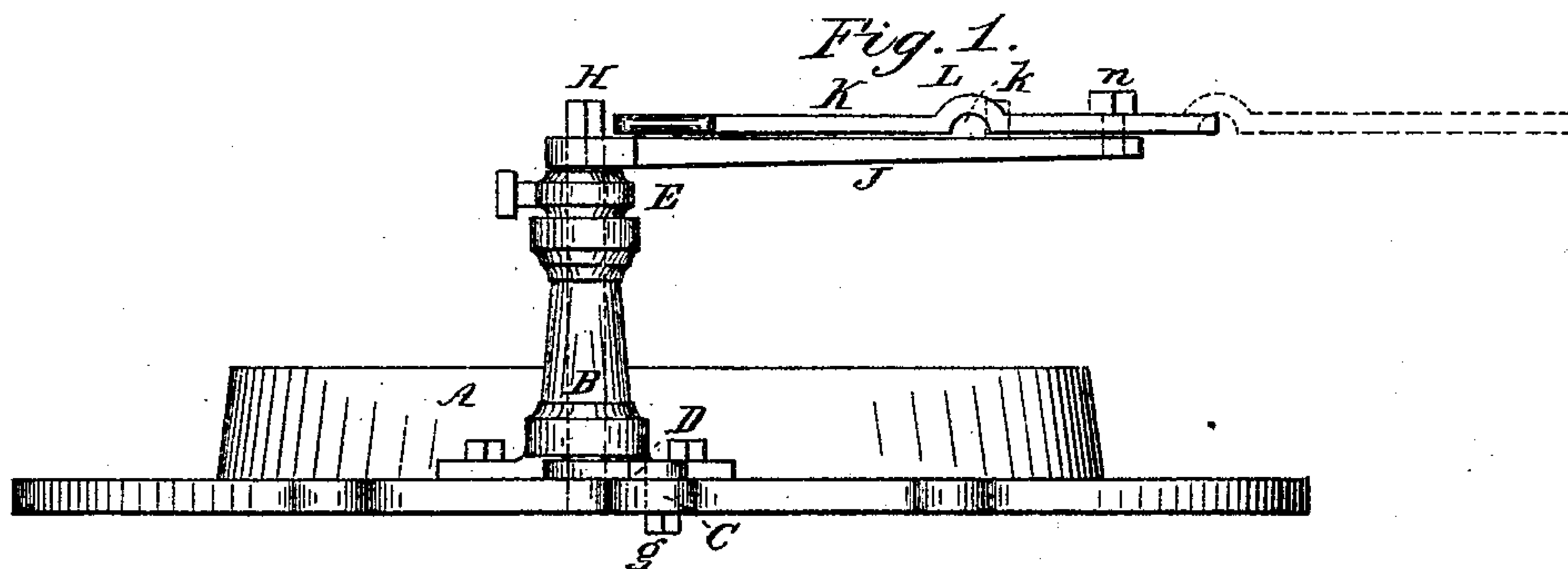


J. W. HILL.

Apparatus for Closing and Opening Annular Series  
of Water-Wheel Gates.

No. 130,918.

Patented Aug. 27, 1872.



Witnesses.

Judson Harmon.  
J. P. Lewis.

Inventor.

John W. Hill  
By Wood & Boyd  
Atty.

# UNITED STATES PATENT OFFICE.

JOHN W. HILL, OF DAYTON, OHIO, ASSIGNOR TO BARNETT, HERRMAN & CO.,  
OF SAME PLACE.

## IMPROVEMENT IN APPARATUS FOR CLOSING AND OPENING ANNULAR SERIES OF WATER-WHEEL GATES.

Specification forming part of Letters Patent No. 130,918, dated August 27, 1872.

Specification describing certain Improvements in Water-Wheels, invented by JOHN W. HILL, of Dayton, in the county of Montgomery and State of Ohio.

The first part of my invention relates to a device for opening and closing the gates or chutes of a water-wheel, and may be applied to any wheel whose gates or chutes open or close by the revolving of an annular ring or plate; the object of this part of my invention being to reduce the friction usual in opening and closing gates by dispensing with pinions, and to supply a device, which, in operating the annular ring, will move it concentrically without any central straining of the metal. The second part of my invention relates to a jointed lever to operate the first part of my invention.

Figure 1 is a side elevation of the upper half of a wheel-case, with my invention in place. Fig. 2 is a plan of a section of the case and annular ring, showing my invention. Fig. 3 is a vertical section through the center of the sleeve B in Fig. 1. Fig. 4 is a plan of the jointed lever embodying my invention.

A represents the case of a water-wheel. *a* represents an annular ring or plate, to which gates or chutes, not shown, are attached, and has a slotted projection, *c*, as shown in Fig. 2. H is a shaft, which has an arm or crank, D, extending to one side at its lower end, which arm has at its outward extremity a downward projection or pin, *g*, which enters the slot G of the projection *c* of ring *a*, as shown in Fig. 3, by means of which motion is communicated to the ring *a*, by revolving the shaft H, and through this ring to the gates or chutes attached thereto. B is a vertical sleeve, forming a bearing for the shaft H, and is rigidly attached to the case by means of the bracket-

step *m*. E is a collar, made fast to the shaft by an ordinary set-screw, and serves to keep the shaft in vertical position by its bearing upon the end of the sleeve. J is a lever, attached to the top of the shaft H, for the purpose of giving a revolving motion thereto, and is made in two pieces, J K, jointed in the middle by means of a set-screw, *n*, in the lever J, passing through a slot, P, in the lever K. This slotted joint is made for the purpose of allowing the part K to move longitudinally and become disengaged, so as to fold or double up. K' is a pin in the part J, for the slotted end of the part K to engage when the lever is extended, as shown in Fig. 4, and for the curved slot L of the part K to engage when the lever is folded, as shown in Fig. 1.

The object in thus making an extension lever is, that the power may be varied as necessity requires, and at the same time to conveniently economize space, by folding when not required.

The devices which I have described for transmitting motion from the lever to the gates or chutes may be operated in any ordinary manner without changing their character; but I prefer the lever described.

I claim as my invention—

The lever, slotted, as shown, and made in two parts, J K, and connected by the set-screw *n*, for the purpose specified, in combination with the shaft H, sleeve B, ring *a*, slotted projection *c*, crank D, and pin *g*, all constructed and arranged as and for the purpose set forth.

J. W. HILL.

Witnesses:

GEO. M. YOUNG,  
M. L. MOUSER.