

N. Johnson,

Water Wheel

N^o 3,046.

Patented Apr. 15, 1843.

Fig. 2

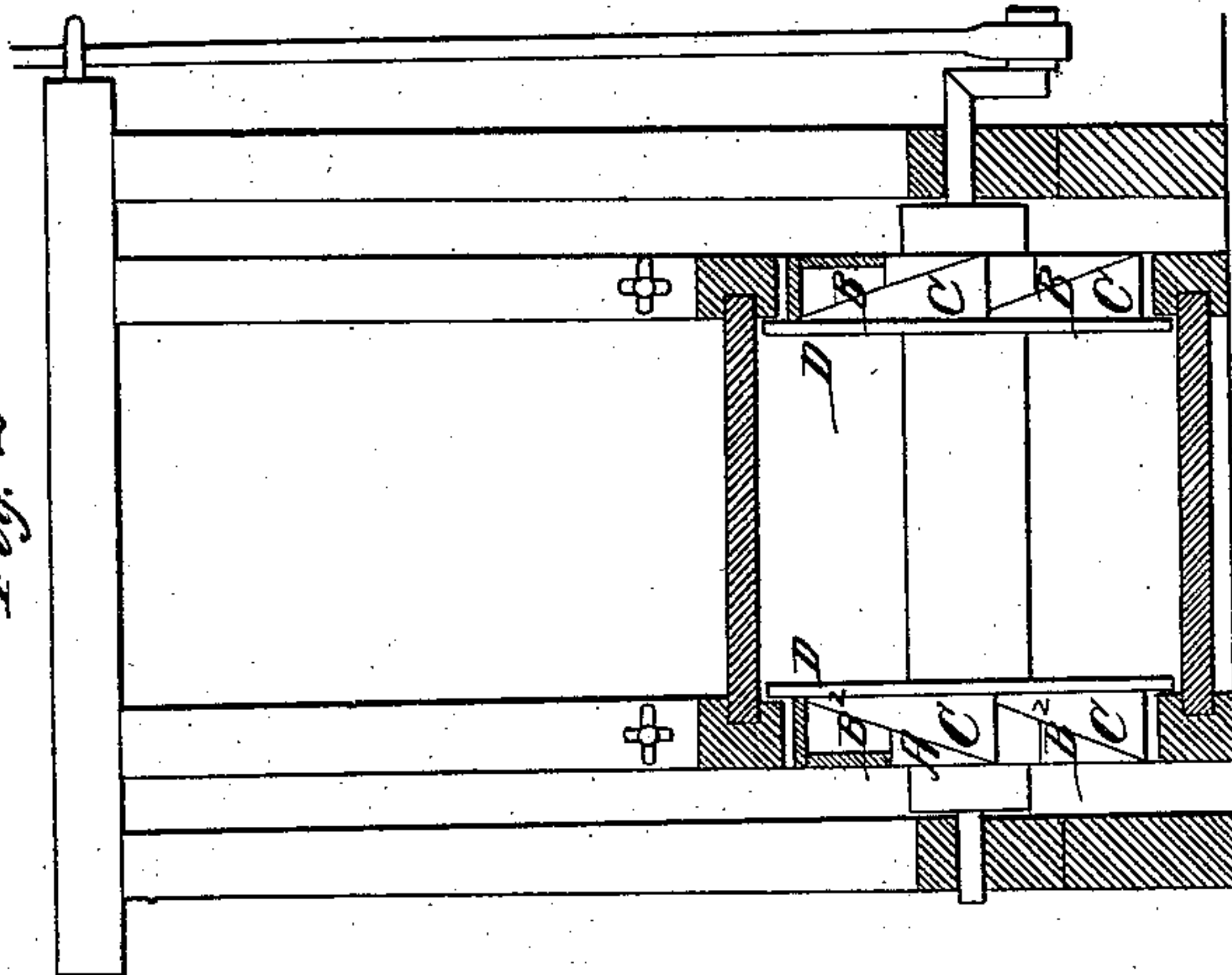


Fig. 1.

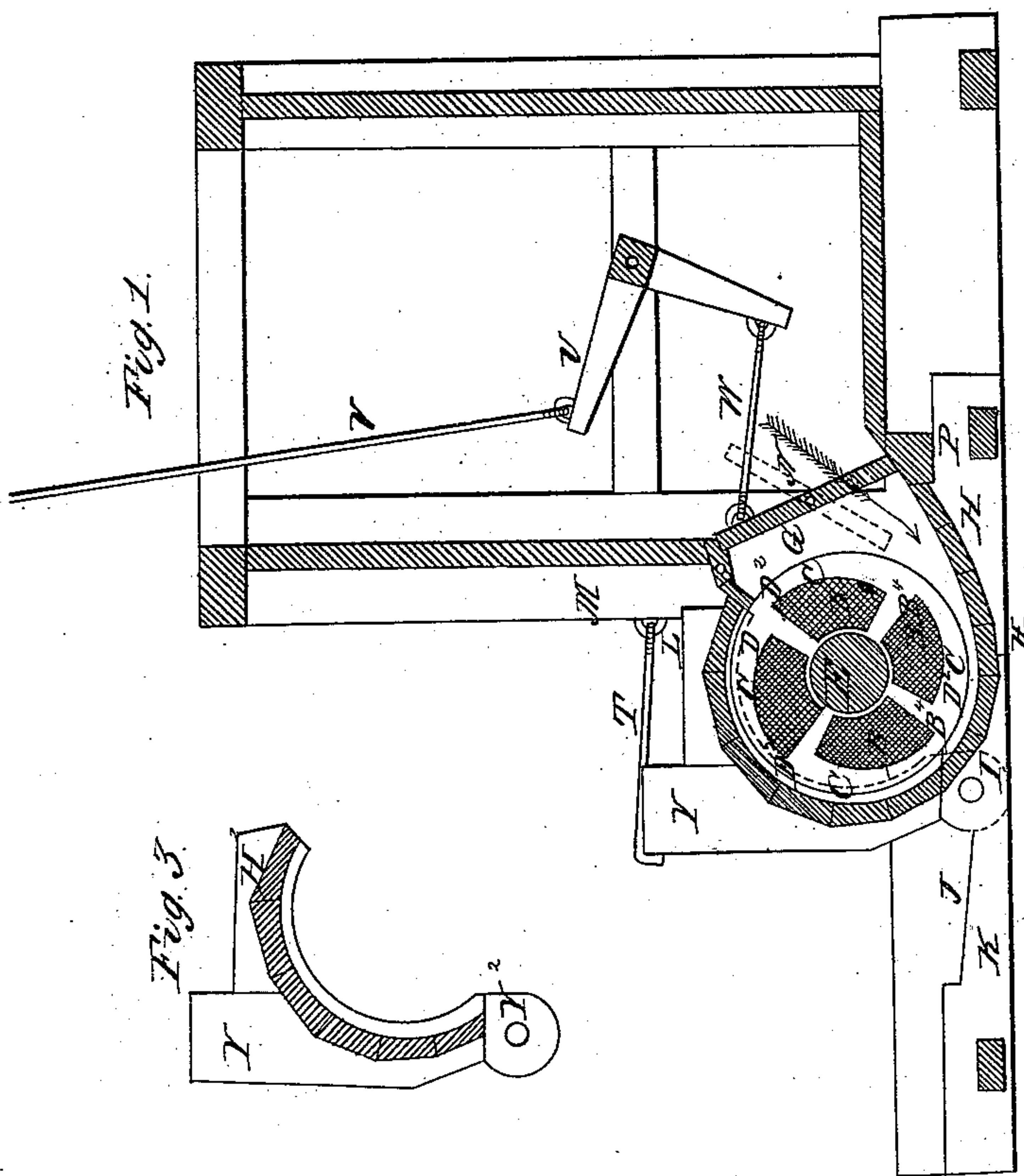
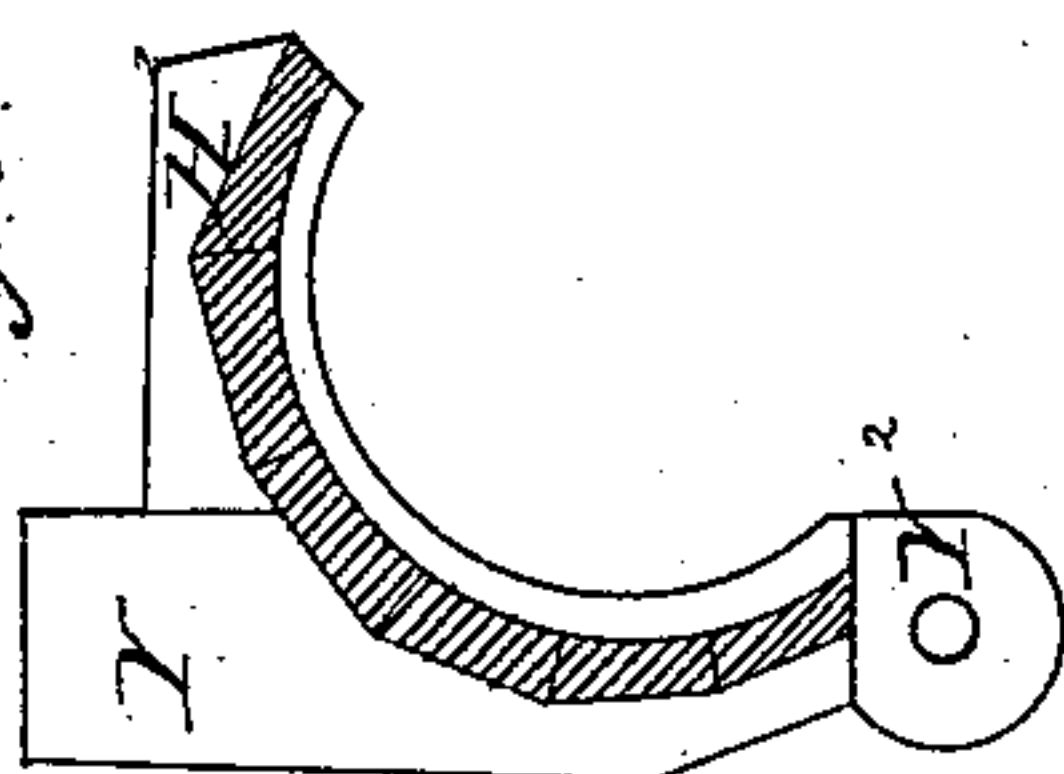


Fig. 3.



UNITED STATES PATENT OFFICE.

NELSON JOHNSON, OF TRIANGLE, NEW YORK.

IMPROVEMENT IN PENSTOCKS FOR WATER-WHEELS.

Specification forming part of Letters Patent No. 3,046, dated April 15, 1843.

To all whom it may concern:

Be it known that I, NELSON JOHNSON, of Triangle, Broome county, State of New York, have invented a new and useful Improvement in the Water-Wheel called "Johnson's Funnel-Issue Water-Wheel," which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a vertical section of the penstock and wheel. Fig. 2 is a transverse section; Fig. 3, the movable section of the case detached.

Similar letters refer to corresponding parts.

This wheel is designed to be made of cast-iron or other material in a single piece or in several pieces put together in any suitable manner. In order to describe it clearly and to avoid obscurity, we will suppose it to be made in separate pieces and to run horizontally.

The inner piece or center, termed the "hub," (represented at A in Figs. 1 and 2,) is made like the section of a hollow frustum of a cone or an inverted funnel having its lower edge or greatest diameter notched or scalloped to correspond with the shape of the concavity of the inner edge of the bottom of the buckets B and its upper edge made even, horizontal, and regular. Around this hub or inverted funnel are arranged a series of four or more concave buckets B or segment-plates, forming the bottoms of the funnel-shaped issues to be described, each segment extending from the top to the bottom of the hub, following the direction of the longer side of the scallops, and when inserted in its proper place following the direction of the line B² in Fig. 2, the portion lettered C being the side of the bucket to be described.

At or against the outer edge of each bottom segment B of the bucket is placed a side piece C of a triangular shape horizontal on one edge and slightly convex on the other edge and straight at the end next the outlet, concave on the side next the center and convex on the opposite or outer side, and inclining from the outer or convex edge of the bottom in a contrary direction to the sides of the core or hub A, its upper or top edge being on the same plane with the edge of the inverted funnel or hollow frustum of a cone A and even with the edge B⁴ of the bottom of the bucket,

which arrangement of the core or hub A, bottom B, and side C, all inclining toward the center of the issue, will form the funnel-shaped issue.

On the upper edges of the sides C of the buckets is placed a circular rim D, scalloped on the inner circumference at D², Fig. 1, to correspond with the shape of the aforesaid sides C of the buckets, against which top edges of the sides C it is placed.

The opening E in the center of the hub or inverted funnel or hollow frustum of a cone is to admit the shaft of the wheel. The wheel may turn horizontally; but by placing the shaft horizontal the wheel will turn vertically, as represented in the drawings, the penstock or other parts of the mill being made to correspond therewith, as represented in Figs. 1 and 2.

From the foregoing description it will be seen that the bucket is so constructed as to form a winding funnel from the inner to the outer face—that is to say, the inner or large ends of the funnel—commencing at the inner vertical plane, where the water is admitted, and ending at the outer plane, where it is discharged, which funnel shape of the buckets will have the effect of contracting or condensing the water as it discharges, instead of expanding it, as in the common reaction-wheel. The buckets being formed in the manner before described, with the bottom tapered and winding downward around the center in a spiral manner and the sides made to incline from the edges of the bottom of the bucket and the upper part of the bottom of the preceding bucket forming the top of the succeeding bucket, causes the water to approach the center of the wheel and act on the several inclined surfaces forming the bucket and the scallops in the hollow frustum of a cone at the outlets or lower ends of the buckets to permit the water to have a free vent toward the center of the wheel.

The penstock or bulk-head, in which the above-described wheel turns, is made in the manner described as follows. (See Figs. 6.) The case H' H², that surrounds about two-thirds of the wheel, is formed into a scroll for the purpose of condensing the water upon the wheel, and in two sections H' H², one of which being made to slide back, turn, or roll down for the purpose of taking out or putting

in the wheel with facility, in order to do away with the necessity of tearing to pieces the bulk-head, penstock, or case for that purpose. The upper or movable section H^2 of the penstock may be arranged in various ways to accomplish the aforesaid object. It may turn on a small bolt, as at I, Fig. 1, and when down enter a notch or recess J in the sill K, and when raised again to its proper position the upper end be made to enter a notch L in the main post M of the bulk-head, in which position it is held securely by a jointed bolt or hook T, attached to the main post. The swinging post Y, to which the movable part of the case is fastened, turns on a joint I, made like the joint of a rule, with a round tenon or other mode. The head of the swinging post is attached and held firmly by the aforesaid jointed bolt T, or by a notched timber attached to the main post, or by a jointed beam, or other means. The gate G swings on a center pin or pivot N, its lower end when closed resting against an inclined or beveled timber P of the foundation and its upper end against

one of the cross-timbers Q of the penstock at right angles, or nearly so, with the direction in which the water runs, and when open it is in a parallel line with the stream, as indicated by the dotted lines. The gate G is opened by a bell-crank U and connecting-rods V W.

The movable part H^2 of the case is represented in Fig. 3 as detached from the stationary part H' , in order to show the segment-perforated tenon Y^2 on the lower end of the post Y, through which the bolt passes on which it turns.

What I claim as my invention, and which I desire to secure by Letters Patent, is--

Constructing the penstock with a movable section to turn down or slide back, in order to have ready access to the wheel without disturbing the main body of the penstock, as described.

NELSON JOHNSON.

Witnesses:

DANIEL ROE, Jr.,
JAMES WRIGHT.