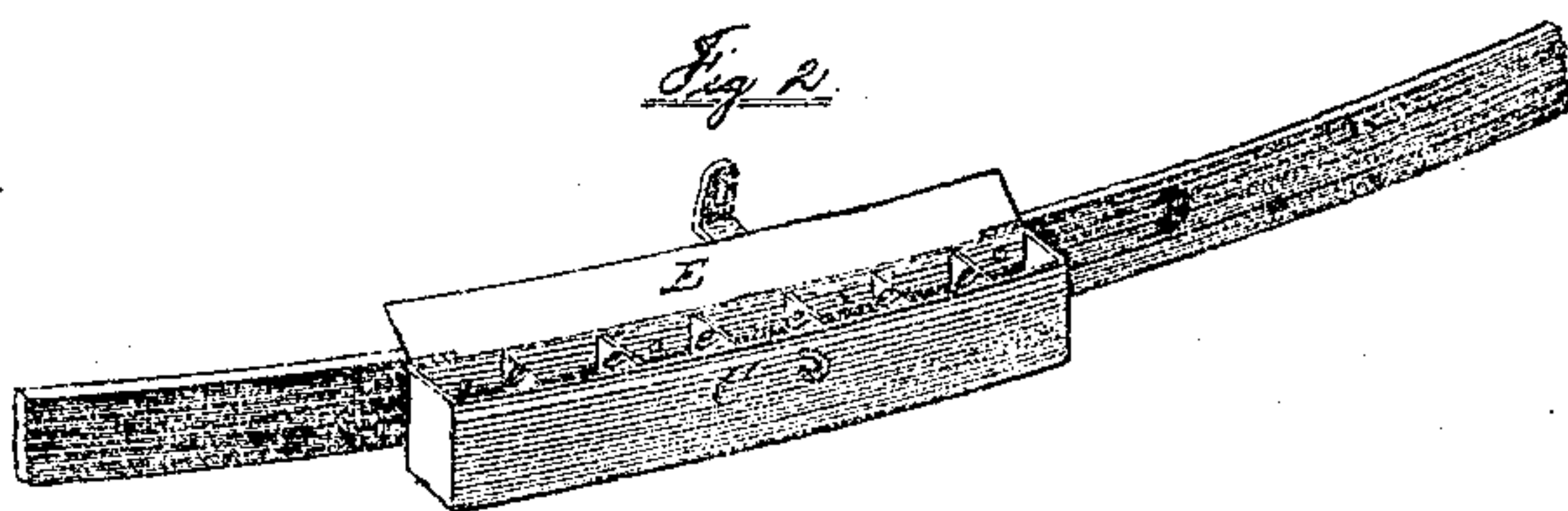
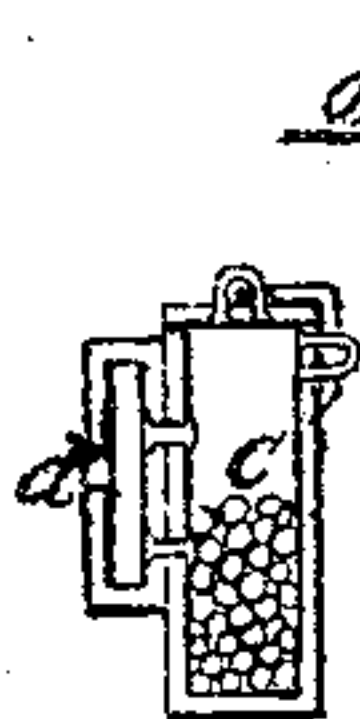
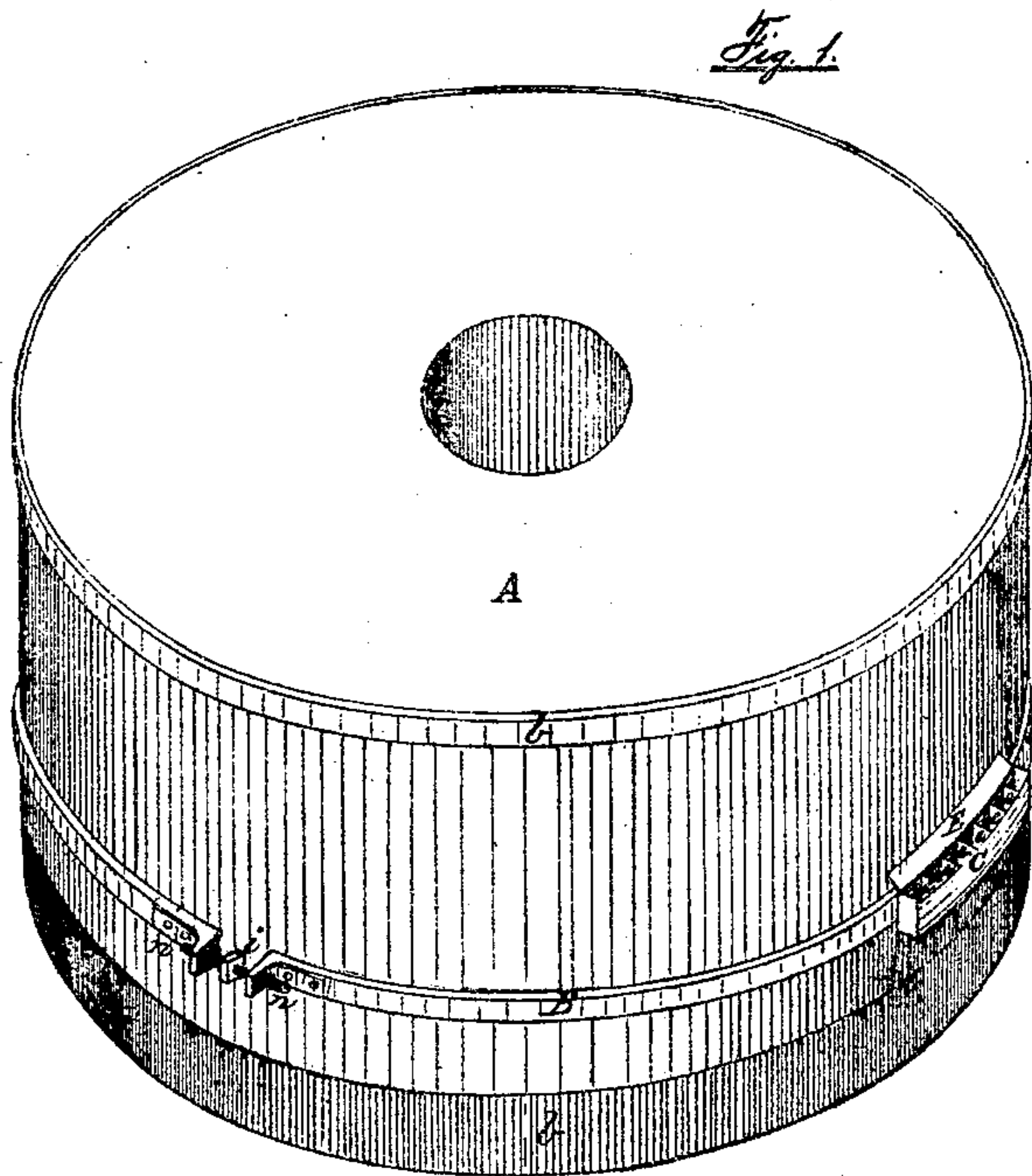


WILLIAM A. VANCE.
 Improvement in Millstone-Balances.
 No. 114,890. Patented May 16, 1871.



Witnesses.
 Frank Beach
 C. H. Cook

George H. Clark
 Administrator of Estate of
 William A. Vance, deceased
 by his Attorney George Johnson.

United States Patent Office.

GEORGE THOMAS CLARK, OF KALAMAZOO, MICHIGAN, ADMINISTRATOR.
OF WILLIAM A. VANCE, DECEASED.

Letters Patent No. 114,890, dated May 16, 1871.

IMPROVEMENT IN MILLSTONE-BALANCES.

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

I, GEORGE THOMAS CLARK, of Kalamazoo, in the county of Kalamazoo and State of Michigan, administrator of the estate of WILLIAM A. VANCE, of said village and county, deceased, present the following specification of Improvements in Balancing Millstones, the invention of said WILLIAM A. VANCE.

Nature and Object of the Invention.

This invention relates to the combination and connection, with one or more of screw-clamping bands, (to encircle and secure the periphery of a runner millstone,) of a weight-receiving box, having several compartments arranged circumferentially to receive the balancing-weights, the object being to facilitate the application and concentration of the counter-balance at the precise point where it is needed, after the bands carrying such weight-receiving boxes have been approximately adjusted, fitted, and clamped around the runner-stone, as will hereinafter more fully appear.

Description of the Accompanying Drawing.

Figure 1 is a perspective view of a runner millstone carrying one clamping-band, with weight-receiving box attached.

Figure 2 is a similar view of the box connected to a broken section of the band on an enlarged scale.

Figure 3 is a cross-section of the weight-box and band, with sliding clasp attached.

General Description.

A is the runner millstone, and

b b are top and bottom hoops or bands of the ordinary kind.

B represents one of the screw-clamping bands.

C is one of the balancing weight-boxes riveted to the band B, or so connected by a sliding clasp, *a*, as to permit the boxes to be adjusted circumferentially on the bands when slackened.

The bands B may be tightened up by the right-and-left-threaded tightening-bolt *i*, tapped into angle-nuts or ears *n*, riveted to the ends of the band, as shown, or by a common nutted bolt passing through said ears.

The weight-boxes C are usually cast in thinnish metal, with curved sides, the concave or inner side to match the convexity of the band, and the convex side to clear the concave inner surface of the curb, for the said boxes must run in the annular space between the side or edge of the stone and its curb, without touching the latter.

The interiors of the boxes are divided by partitions *e* into several compartments, in order that when the

said boxes are adjusted by their bands on the stone, and are loaded by the placing of weights in the central compartments, so as to bring the stone to a standing balance as near as may be, then the box-carrying bands may be raised or lowered on the stone, the weights moved from one compartment to another, and also increased or diminished in such compartment at pleasure, until experimental trials by running the stone up to speed shall prove it to be in exact running balance.

Although in the case of a well-constructed stone, truly hung, but a single weight-box may be required to put such stone in running balance, as shown in the drawing, it must not be inferred that this invention is limited to but one, for there are many stones that will need more than one hoop so weighted, and perhaps more than one weight-box to each hoop.

The general rule is that where a stone is out of balance at but one well-defined point, and that point is in some horizontal plane between the point of suspension on the cock-head of the spindle and the grinding face of the stone, then such stone may be put in correct running balance by a corresponding counter-balance placed exactly opposite in a radial line, and in the same plane.

If a stone is so constructed that the overbalance is either wholly or partially in a plane above that of suspension, and is not confined to one point, then more than one weight-box will be needed, and they must be placed at such circumferential points in such planes, and so weighted, as not merely to establish a standing balance, but to counteract the tendency which centrifugal force (generated by the stone's rotation) exerts to make the plane of preponderating gravity coincident with the plane of suspension.

Balancing-weights of lead in the form of crescents, placed between the hoop and runner, have been used before. But in this mode of application it is extremely difficult to get the correct running weight, and such weight is diffused necessarily over too large a portion of the circumference of the stone.

The weight-boxes C have certain advantages over other modes. They are cheaply constructed, readily applied to the stone, and, as far as their gravity goes, aid in balancing.

When once placed in approximately correct position at the periphery of the stone the miller can readily balance it with great exactitude to running speed by raising or unscrewing and removing the cover E, with which the box is provided, removing part of the contained weights, or adding more, as required, sliding the box along the hoop by its clasp to adjust it,

if secured in that way, or moving the weights in the box from one to another of the compartments.

When the weights are so adjusted in the boxes that the stone runs without jar and wobble, the covers E may be replaced to secure the weights and enable the stone to be turned for dressing without spilling the said weights.

I claim—

The adjustable box C, divided into separate com-

partments by partitions e, and provided with the hook d, in combination with the clamping-band B, all constructed, arranged, and operating substantially in the manner described.

GEO. THO. CLARK,
Administrator.

Witnesses:

M. W. BORROWS,
WILLIAM FLETCHER.