

(No Model.)

2 Sheets—Sheet 1.

J. W. AVERILL.
HAY KNIFE GRINDER.

No. 328,375.

Patented Oct. 13, 1885.

Fig. 1

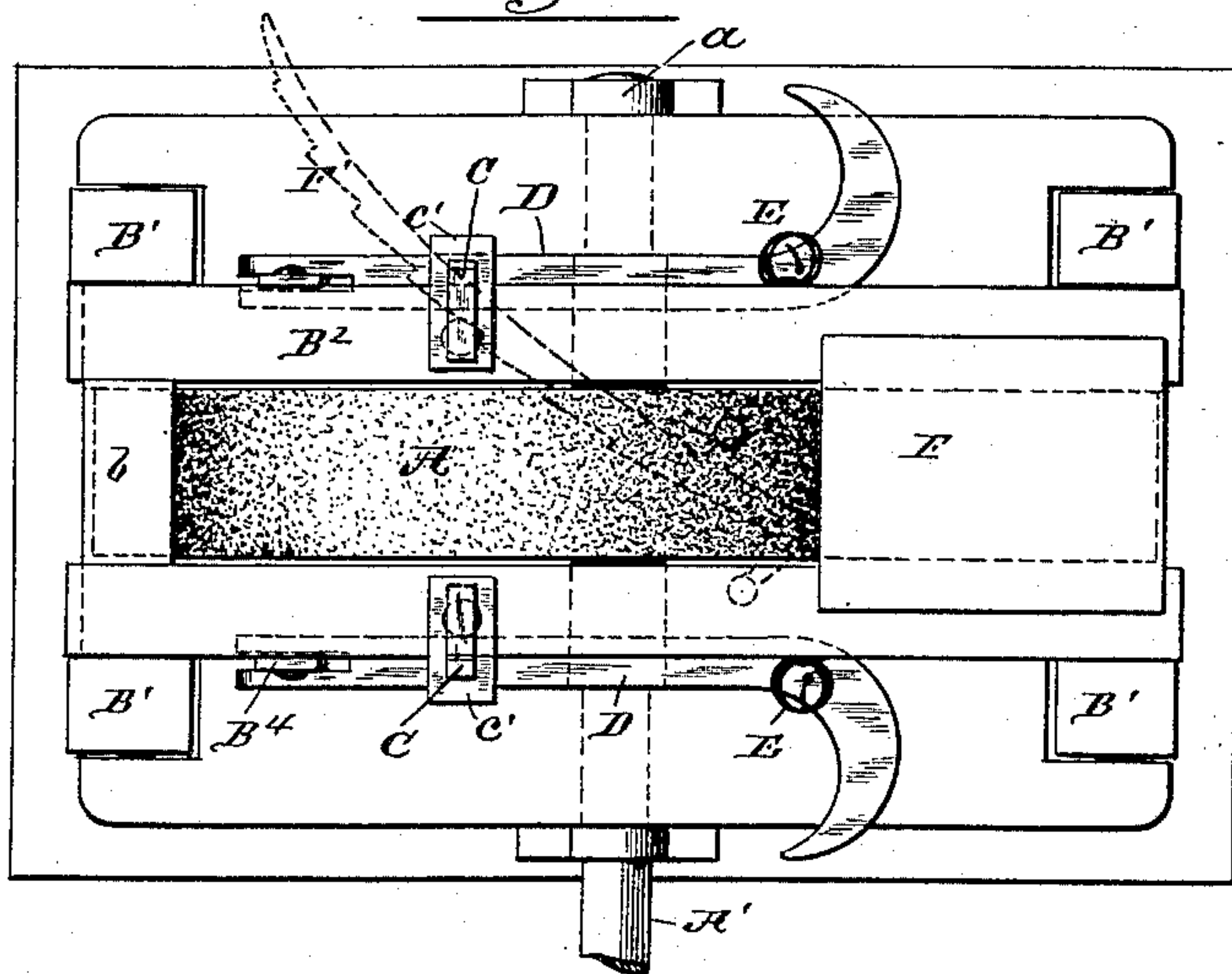
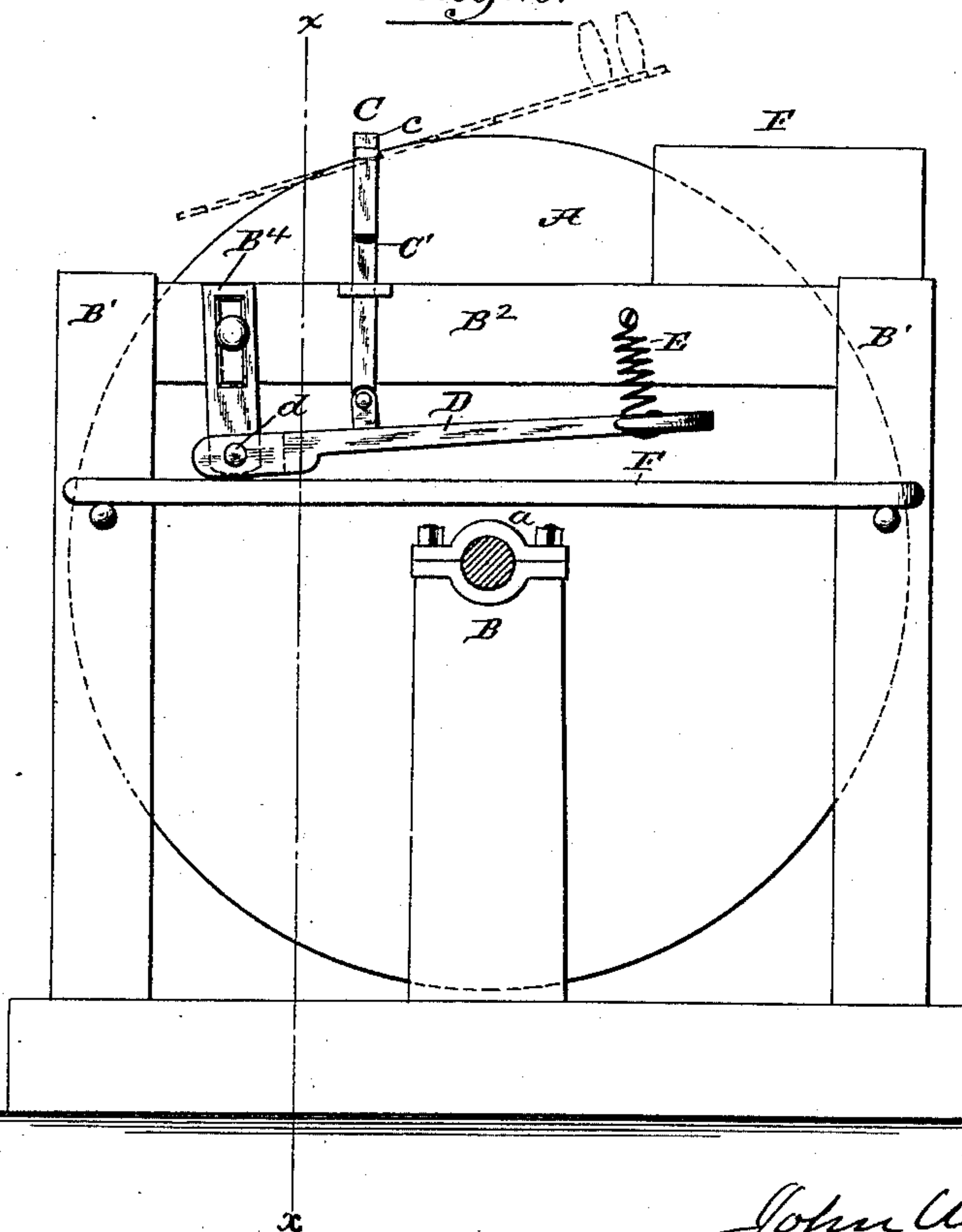


Fig. 2



Witnesses:

Louis M. Whitehead.

R. J. O. Pope.

Inventor:

John W. Averill
by: M. E. Dayton

Attorney:

(No Model.)

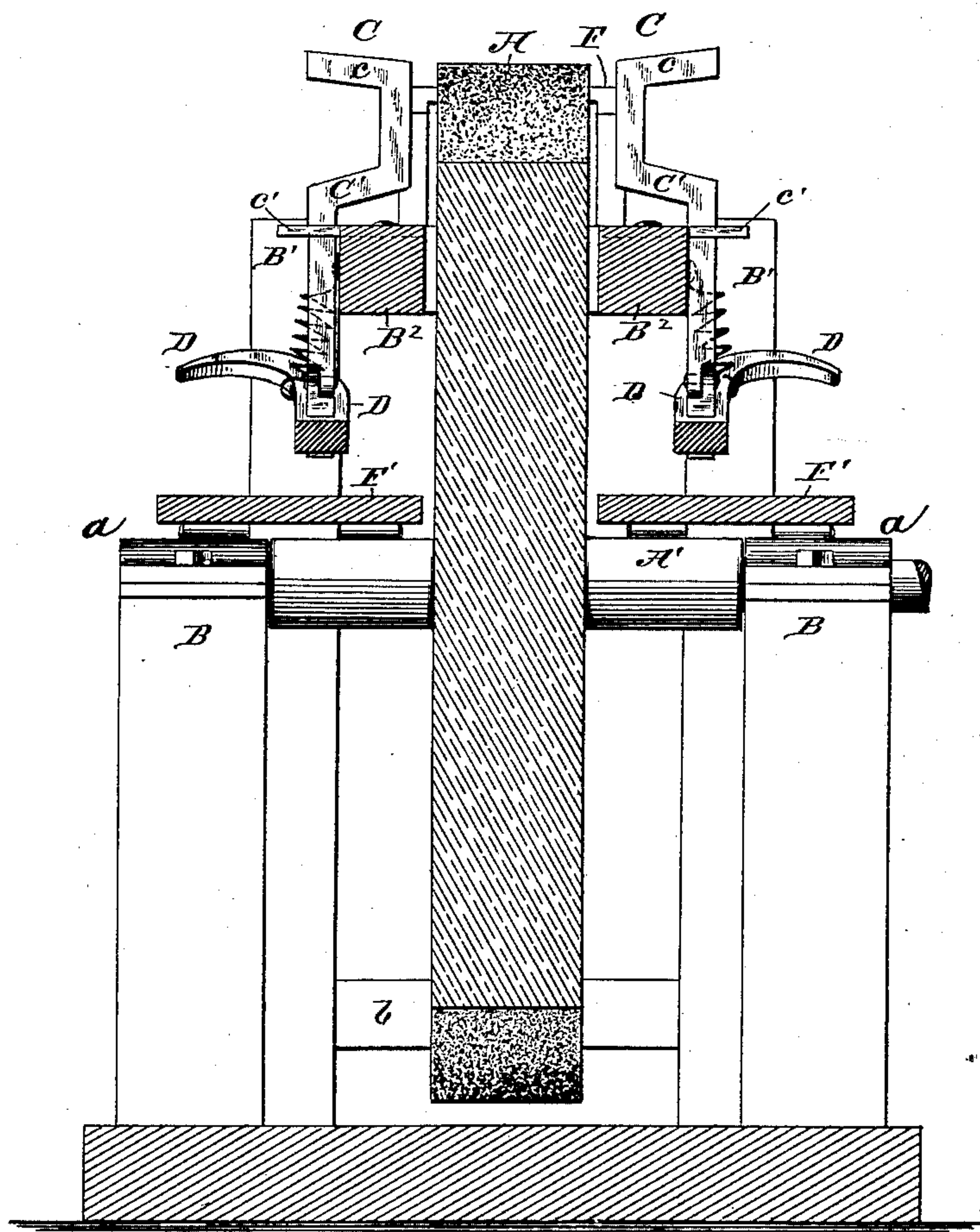
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Fig. 3.



Witnesses:-

Louis M. Whitehead.

R. J. O. Pope.

Inventor:-

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by *W. E. Davenport*

Attorney:-

UNITED STATES PATENT OFFICE.

JOHN W. AVERILL, OF WILTON, MAINE.

HAY-KNIFE GRINDER.

SPECIFICATION forming part of Letters Patent No. 328,375, dated October 13, 1885.

Application filed March 10, 1885. Serial No. 158,286. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. AVERILL, of Wilton, in the county of Franklin and State of Maine, have invented certain new and useful
5 Improvements in Hay-Knife Grinders; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon,
10 which form a part of this specification.

This invention relates to devices more especially designed for sharpening that class of hay-knives consisting of a curved blade provided with a suitable handle and having upon
15 its convex edge a series of serrations or teeth, the advance edges of which are approximately at right angles with the blade and are sharpened to form the cutting-edges thereof.

In sharpening hay-knives of the character
20 described the advance or cutting edges of the teeth may be ground upon an ordinary grindstone or grinding-disk by applying the knife to the disk, so that the edge of the latter enters the notches between the teeth. The edges
25 of the teeth can obviously be ground upon one side only at one side of the grinding-disk, and in grinding both sides thereof the knife is first applied, as above described, to one edge of the disk, and then reversed and
30 applied to the opposite edge thereof. The hay-knives mentioned being usually of considerable length, it is difficult, if not impracticable, to hold the knife in proper position to successfully grind the teeth in the manner
35 mentioned by the use of the hands alone; and the object of this invention is to provide means for partially supporting the knife with reference to the grinding-disk, whereby the knife may be held in a definite position with refer-
40 ence to the disk and at the same time readily moved and controlled by the operator in the operation of grinding.

The invention embraces a supporting device or holder located upon the frame of the grind-
45 ing-disk or other suitable support and arranged to hold one end of the knife in a desired position with reference to the periphery of the disk, the opposite end of the knife, in the use of such device, being grasped by the
50 operator and moved so as to apply the cut-

ting-edges of the teeth in the proper position to the disk. The said supporting device or holder is preferably made movable, so that its position may be changed with reference to the grinding-disk, and the position of the end of
55 the knife held therein thereby changed as found desirable in properly applying the edges of the teeth to the grinding-disk; and such holder is also preferably connected with a lever arranged in position to be moved by
60 the foot of the operator, so that the position of the holder can be readily controlled as desired when both of the operator's hands are engaged in supporting and guiding the knife. Two of said holders are usually used in con-
65 nection with the grinding-disk, one being placed at either side thereof, so that the knife may be applied to opposite sides of the disk in grinding it on both sides, as heretofore described.
70

In the form of device illustrating my invention shown in the accompanying drawings a grindstone is shown which is provided with a frame of ordinary construction, upon both
75 sides of which is located one of the movable holders above mentioned, the said holders being supported upon the upper ends of vertical rods constructed to slide upon the frame and attached at their lower ends to pivoted
80 levers, which are supported at one limit of their movement by springs and arranged with their free ends in position to be moved by the feet of the operator. The frame mentioned is provided with an elevated seat for the oper-
85 ator, and the holders are constructed with horizontal or nearly horizontal slots or shoulders constructed to receive the ends of the knife and to permit such end to be shifted therein, as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is
90 a plan view of a grinding-disk and frame and devices connected therewith embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a detail sectional view taken upon line *xx* of Fig. 2, showing the construc-
95 tion of the holders.

As shown in the drawings, A is a grindstone or grinding-disk, which is mounted upon a shaft, A', having bearings *a* upon suitable supports, B.

B' B' are uprights connected at their upper ends by ties *b*, and B² B² are bars supported by the uprights, one on either side of and near the disk A. The said grinding-disk may be driven by means of a belt placed over a pulley upon the shaft A'.

F is an elevated seat for the operator, and F' F' are boards on which his feet may rest when not bearing upon the foot-boards.

C C are holders for the end of the hay-knife, such holders, as shown, consisting of bent rods C', having outwardly-projecting arms *c* at their upper ends forming shoulders beneath which to receive the knife. The upper parts of the vertical rods C' stand proximate to the disk A, one on either side of the latter, and said rods have a vertical movement in suitable guides. The said guides, as herein shown, consist of loops or straps *c'*, secured to the exterior faces of the horizontal bars B² of said frame. The lower ends of the rods C' are pivotally connected with foot-levers D at points between the ends of the latter, said levers being pivoted by means of pivot-pins *d* to the brackets B¹, near one end of the frame, and extending to a point near the opposite end of the frame above the foot-boards F'. The free ends of the levers D are supported at the upward limit of their movement, so as to sustain the holders C in an elevated position by springs E, which may be attached to the bars B², as shown, and pull, or may be placed between the levers and the foot-boards and push, upward.

The seat F is so located that the handle of the knife may be easily grasped and the knife manipulated when the knife is in position for operation of the grinding-disk thereon. The free ends of the levers D also are so arranged with reference to the seat that the operator thereon may conveniently place his feet upon the said levers, and thereby depress the holders or allow them to rise by the action of the springs, as desirable or necessary in giving more or less pressure upon the knife, or in placing it at its desired angle or position with reference to the periphery of the grinding-disk.

It is obviously not necessary to the operation of the other parts of the device that the seat F should be used, as the operator may stand near the end of the frame or at the side thereof at which the implement is being held, and in position to conveniently operate one of the levers D with the foot during the operation of grinding. By the employment of said seat, however, the operator is obviously enabled to operate either lever without changing his position, and inasmuch as in grinding both sides of the knife both holders are used, the operation of grinding may be much more conveniently and readily performed with than without the seat. Said seat, in connection with the other several parts of the device, is therefore specifically claimed herein as part of my invention.

The arms *c* of the holders C or their under surfaces, as shown in Fig. 3, are somewhat inclined upwardly and outwardly, so as to bear squarely upon the knife-blade while the latter is properly inclined to the stone to give the desired inclination to the edge.

The position of the knife in the operation of grinding with the use of the device described is shown by the dotted lines in Figs. 1 and 2, said dotted lines representing the outlines of a hay-knife of a well-known construction and having saw-like teeth, the front edges of which are to be sharpened. The knife is shown as in position for grinding a tooth in the central portion thereof. In grinding the knife the latter is thrust beneath one of the holder-arms *c*, and the holders are raised or depressed, as necessary to bring the teeth to be ground in the proper position with reference to the disk and at the proper angle with relation to the cylindrical surface thereof to give a desired bevel to the cutting-edges thereof.

The machine described is of course not limited in its use to the grinding of hay-knives exclusively, but may serve for grinding other knives having serrations to which it is desired to give cutting-edges.

A particular advantage derived from the holders constructed and operated as described, is found in the certainty and accuracy with which the implement to be ground upon the front edge of its teeth may be held with reference to the stone, and in the uniformity and precision with which the cutting-edges may be formed. By the devices described the corners of the stone may also be preserved so that they will remain in condition to properly enter the angles of the serrations.

I claim as my invention—

1. The combination, with a rotary grinding-disk and a supporting-frame, of a vertically-movable knife-holder, C, supported upon said frame in position to engage one end of the implement to be ground, and means for moving the holder, substantially as and for the purpose set forth.

2. The combination, with a rotary grinding-disk and a supporting-frame, of a holder, C, provided with a supporting-rod, C', a suitable guide for said rod, and a lever, D, pivoted to the frame and connected with the rod C', substantially as and for the purpose set forth.

3. The combination, with a rotary grinding-disk and a supporting-frame, of a holder, C, provided with a supporting-rod, C', a suitable guide for said rod, and a lever, D, pivoted to the frame and connected with said rod, and a lifting-spring interposed between a part of the frame and the lever, substantially as and for the purpose set forth.

4. The combination, with a rotary grinding-disk and a supporting-frame, of two holders, C, located one at either side of the

grinding-disk and having supporting-rods C',
guides for said rods, levers D, pivoted to the
frame and connected with the rods, springs
applied to hold the free ends of the levers in
5 a raised position, and a seat, F, supported
upon the frame adjacent to and above the free
ends of the levers, substantially as and for the
purpose set forth.

In testimony that I claim the foregoing as
my invention I affix my signature in presence 10
of two witnesses.

JOHN W. AVERILL.

Witnesses:

JOS. C. HOLMAN,
E. E. RICHARDS.