

S. HIPKINS, Jr.  
Boring-Bits.

No. 140,370.

Patented July 1, 1873.

Fig. 1.

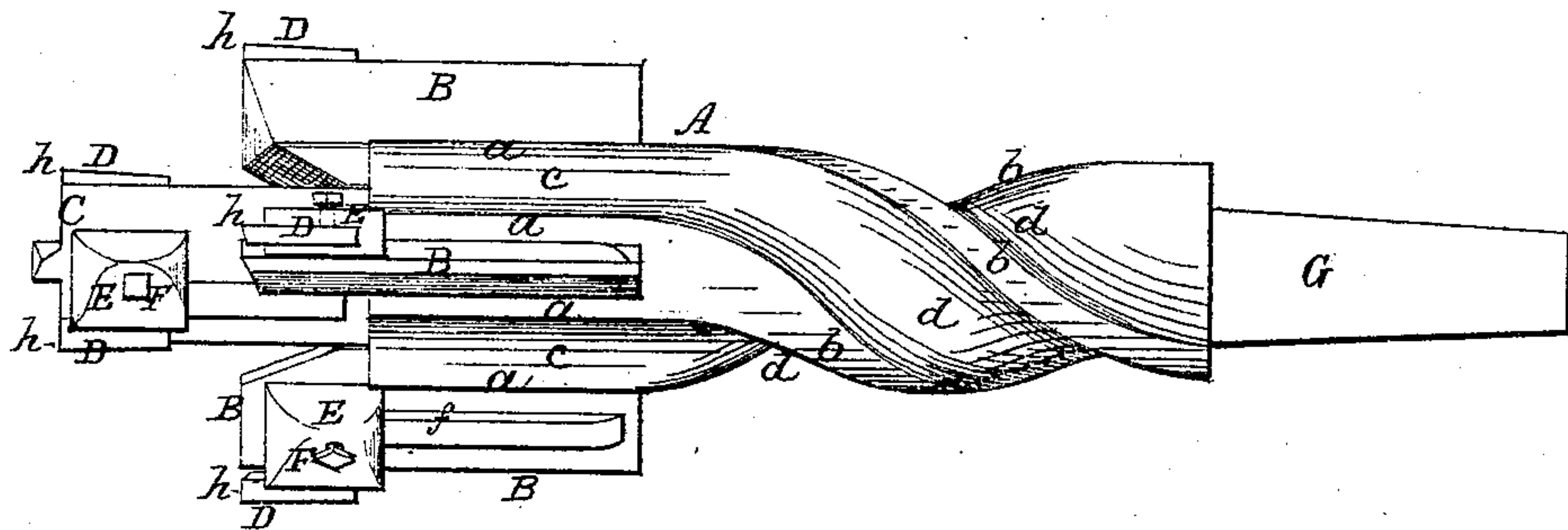


Fig. 2.

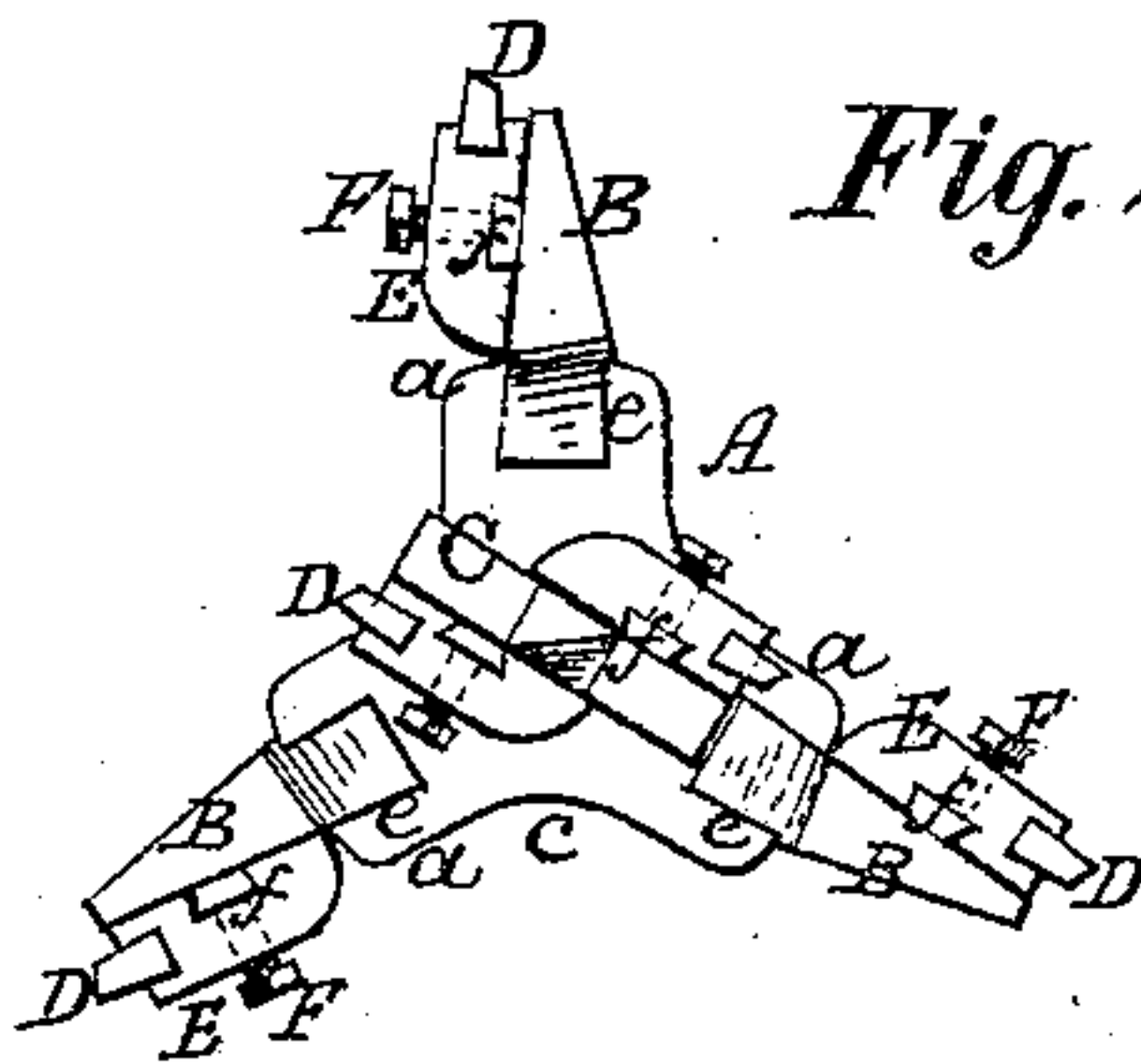
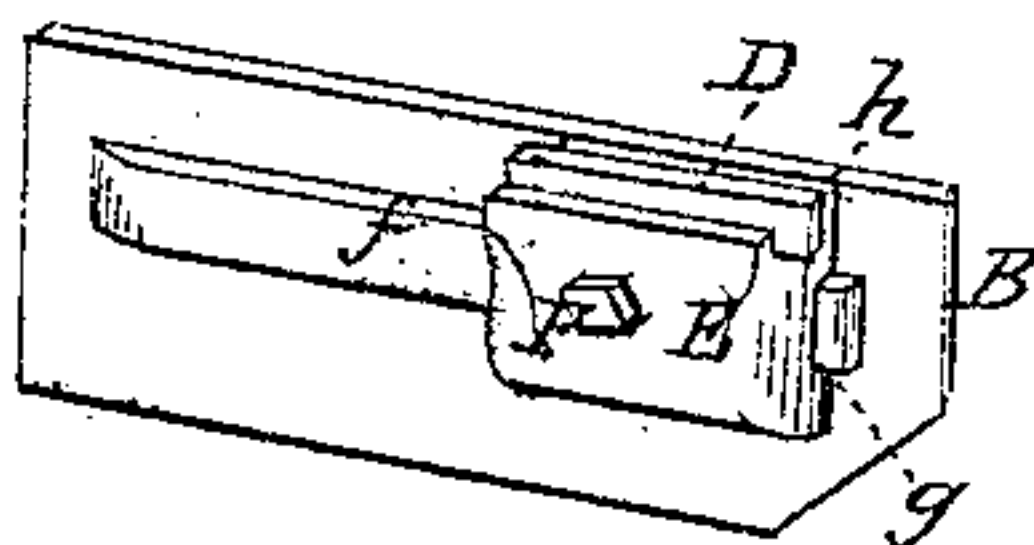


Fig. 3.



Witnesses:

Eugene C. Adams.  
West Wagner.

Inventor.

Stephen Hipkins, Jr.  
By Johnson, Klauke & Co.  
His Attorneys

# UNITED STATES PATENT OFFICE.

STEPHEN HIPKINS, JR., OF SOUTH WHEELING, WEST VIRGINIA, ASSIGNOR  
OF ONE-HALF HIS RIGHT TO RALPH HEATHERINGTON, OF SAME PLACE.

## IMPROVEMENT IN BORING-BITS.

Specification forming part of Letters Patent No. **140,370**, dated July 1, 1873; application filed  
January 8, 1873.

*To all whom it may concern:*

Be it known that I, STEPHEN HIPKINS, JR., of South Wheeling, in the county of Ohio and State of West Virginia, have invented certain new and useful Improvements in Boring-Bits, of which the following is a specification:

My improved bit is designed specially for boring coal, but may be used for other purposes, and the improvements which form the subject-matter of this patent consist of a bit-auger, the front end of the body of which is made with a series of straight ridges for the main cutters, and terminating in the rear of the latter in spiral ridges and grooves at the end of the stock for receiving the cut material and working it out at the rear end of the body, thus combining, with parallel projecting cutters, auger ribs, which form both sockets for the cutters and clearing-grooves.

My invention also consists in combining, with straight removable cutters, short adjustable clearing-cutters, fitted upon the former so as to project slightly beyond the edge thereof to relieve the main cutter of friction throughout its length, and serve also to keep up its outer corner when worn away, the clearing attachment being removable at pleasure, and the clearer or cutter thereof being either diamond or steel, fitted and held in the adjustable holder; also, in providing the center cutter with short supplemental clearing cutters arranged upon its opposite faces, and projecting beyond its opposite parallel edges, for forming both a shield and clearer thereto in penetrating the coal; and, finally, of an auger-bit, having boring and clearing-cutters, constructed and arranged for operation as will be hereinafter more fully described.

In the accompanying drawings, Figure 1 represents a side view of my improved auger-bit. Fig. 2 represents an end view thereof; and Fig. 3 a view in perspective of one of the cutters detached.

The body A of the bit at its front end is of triangular or other form, the ridges *a* whereof are parallel to each other and to the axis of the body for a short distance, within which are formed grooves to receive the main cutters B, while back of these the ridges *b* are made spiral, so as to form grooves *c d*, both

straight and spiral—the straight portions *c* serving to receive the cuttings or particles of coal, and the spiral grooves *d* to work and force them out of the bore, thus making an auger-bit body with radial parallel cutters. These cutters B are held firmly in the ridge seats *a* by dovetail grooves *e*, whereby they can be removed and replaced by others when worn off at the point, which may be of any suitable form and projection beyond the end of the body A, while their radial projection beyond the surface of the holding-ridges *a* will be sufficient to make the proper bore. A point or center cutter, *c*, is secured into the end of the body, and projects in advance of the outer cutters B, for cutting out the center of the bore and dividing the work between it and the outer cutters.

In boring, the long outer edges of the cutters B would offer considerable friction to the operation of the tool, to avoid which I employ an adjustable cutter, D, in connection with each main cutter B, arranged to project slightly beyond the outer long edge to cut out the bore a little greater diameter than the main cutters B would make, so that those portions of the latter back of the supplemental or clearing cutters D will be free and out of contact with the walls of the bore. These clearing-cutters D are mounted in holders E, which are secured by dovetail tongues *f* and grooves *g* to the sides of the main cutters B, so as to allow them to be adjusted thereon and clamped by means of a set-screw, F, and removed at pleasure, because, if made of diamond or other valuable material its removal would be highly desirable to prevent loss. These supplemental cutters D are secured by dovetail groove, or in any other manner that will give them a firm bearing in their holders E, with their front points extending beyond the holders, so that, when adjusted flush with the ends of the main cutters B, they will form corner-cutters *h*, and answer the purpose of keeping up the outer corners of the main cutters when worn away, and in this respect they are of great advantage in relieving the outer corners of the cutters B from undue wear, while, by clearing the way in the walls, they render the tool lighter to work. These sup-



plemental adjustable cutters D are secured upon the front sides of the main cutters B, so that the latter will support them as the tool is revolved. The center cutter C is provided with these supplemental cutters D on both sides, arranged in the same manner and for the same purpose and advantage as those described. The two working from the opposite edges, and from the opposite faces of the single cutter, makes it a boring point and side cutter, having an armor or shield for the protection of its outer edge and point. In this respect each cutter, B, carries not only a device for clearing its path, but for protecting it from undue wear in operation. The body A has a stem, G, by which it is secured in the bit-stock and fastened in any suitable way, and suitable number of cutters may be used.

Having described my invention, I claim—

1. In a boring-bit, the adjustable supplemental or clearing cutters D, in combination with the main cutters B, for the purpose described.

2. In a boring-bit, the combination of the main cutters B and the bit-shank consisting of the parallel straight-holding ridges *a*, with the discharging spiral ribs *b*, and grooves *c d*, constructed as and for the purposes described.

3. In a boring-bit, having the main cutters arranged upon its shank, as described, the center projecting cutter *c*, having adjustable supplemental or clearing cutters D arranged upon its opposite faces, and to project from its opposite edges, as described.

4. The combination in a boring-bit of the straight and spiral ribs *a b*, grooves *c d*, main cutters B, the center cutter *c*, and the adjustable clearing-cutters D and holders E, the several parts being constructed and arranged for operation as described.

STEPHEN HIPKINS, JR.

Witnesses:

GEO. D. HEATHERINGTON,  
JOSEPH W. HEATHERINGTON.