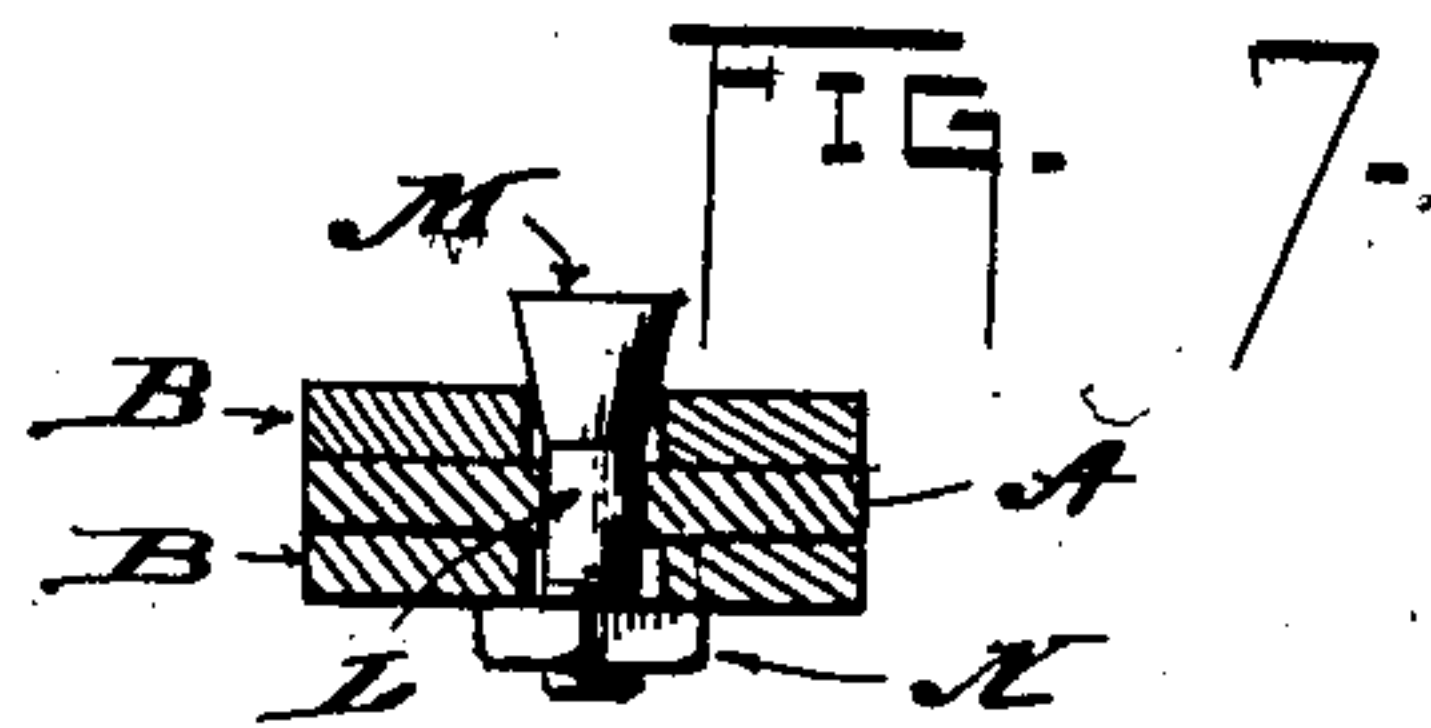
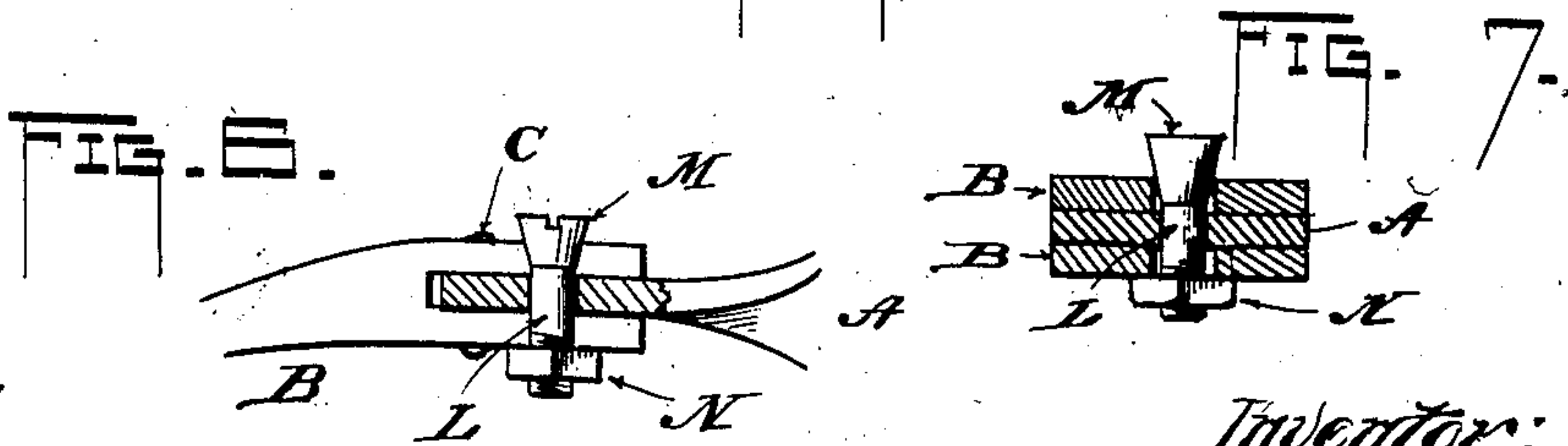
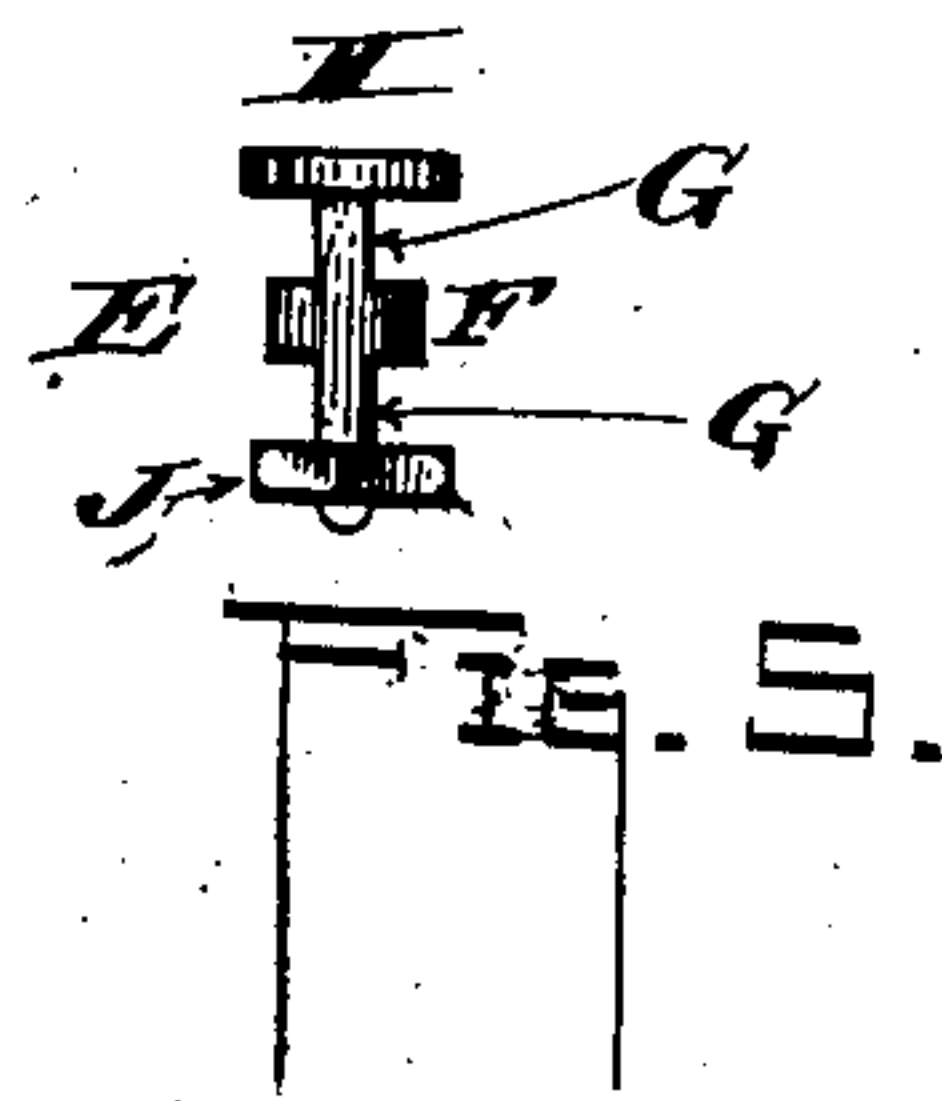
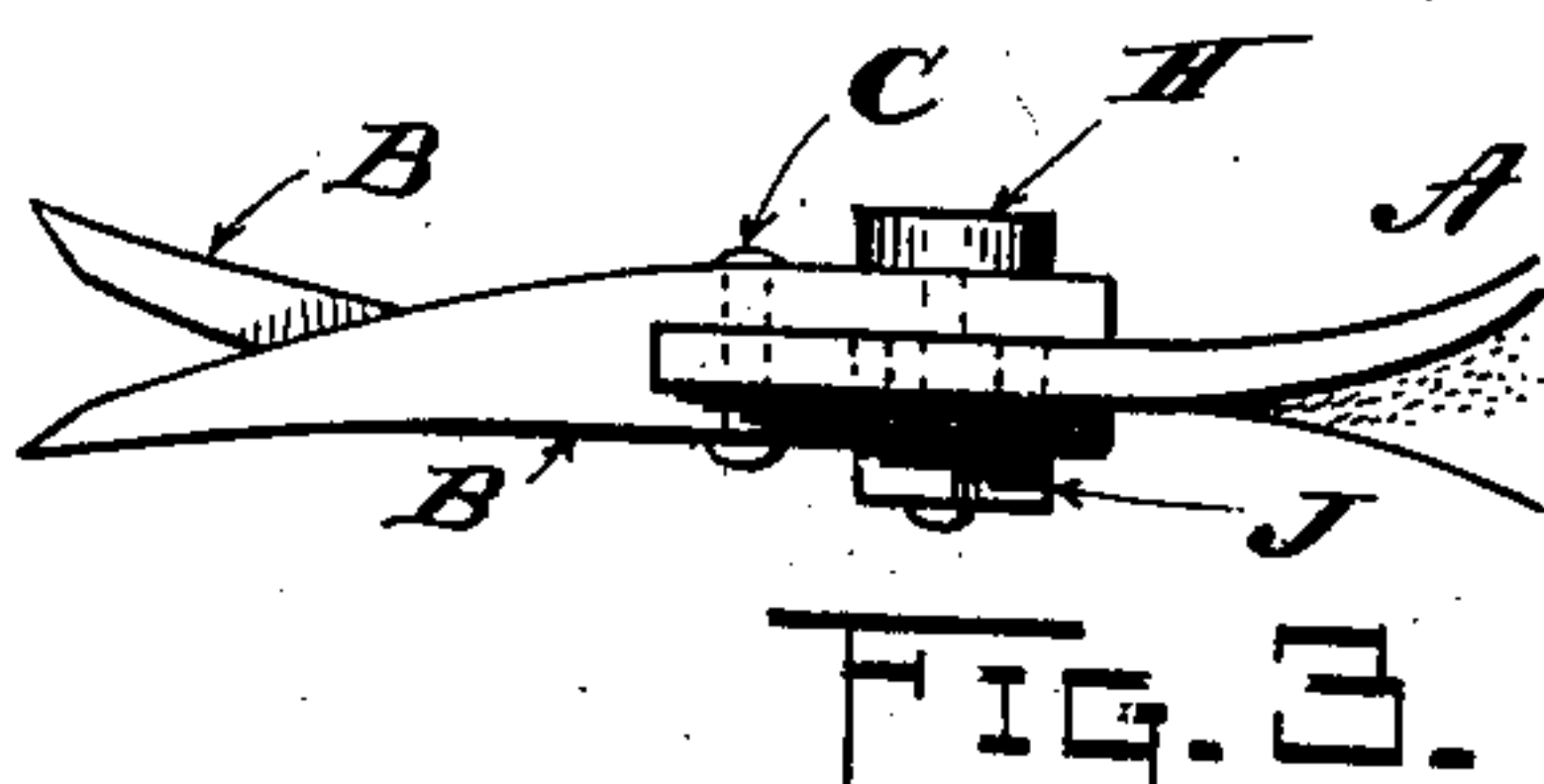
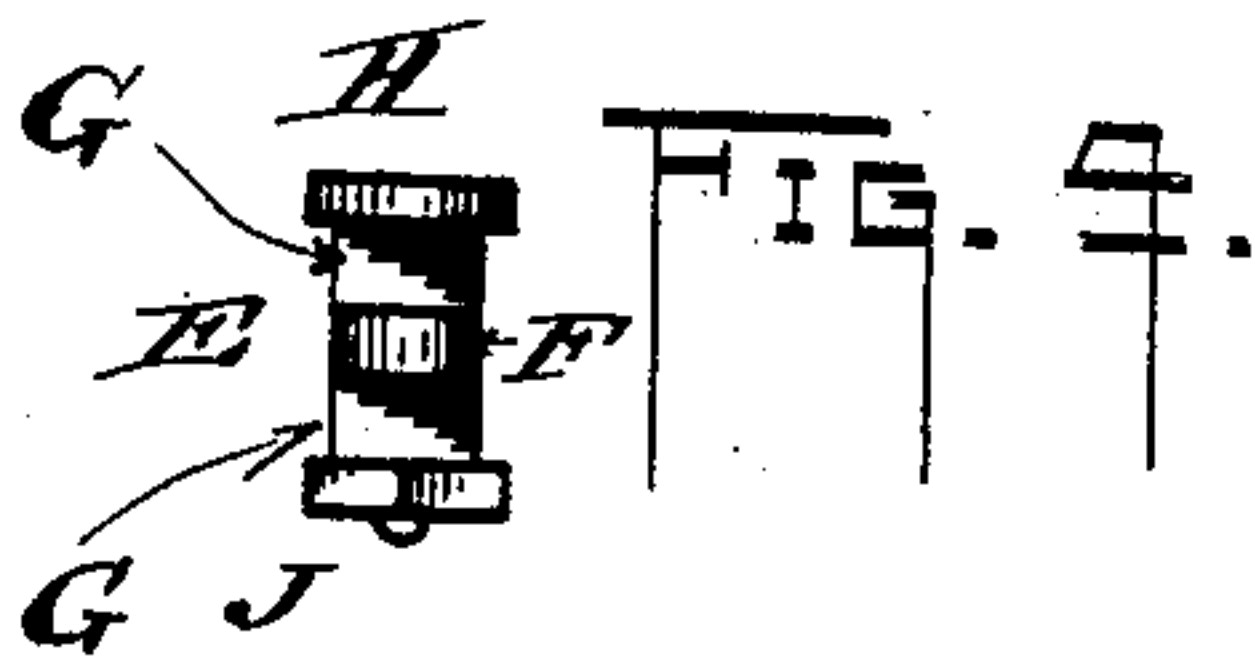
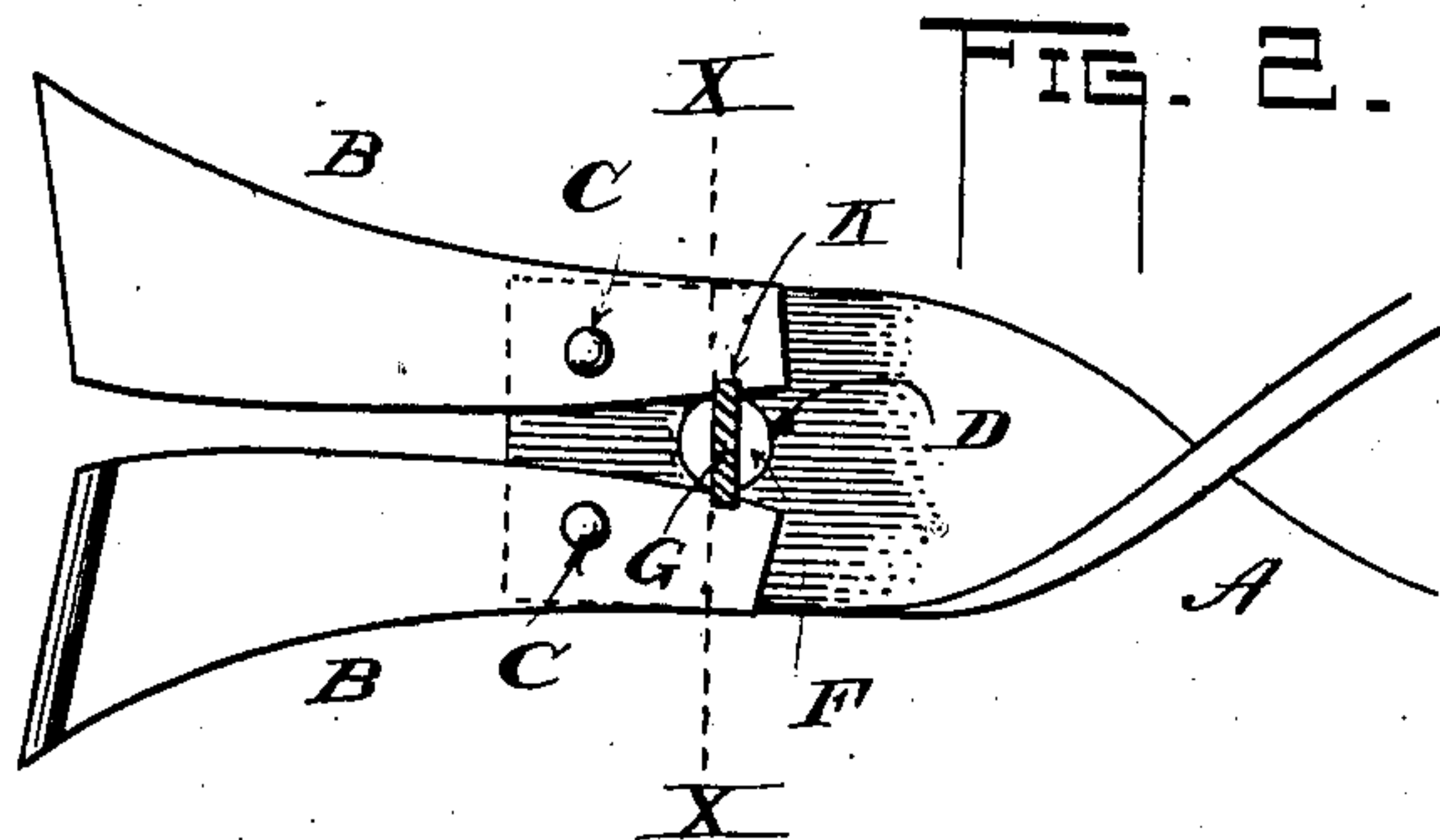
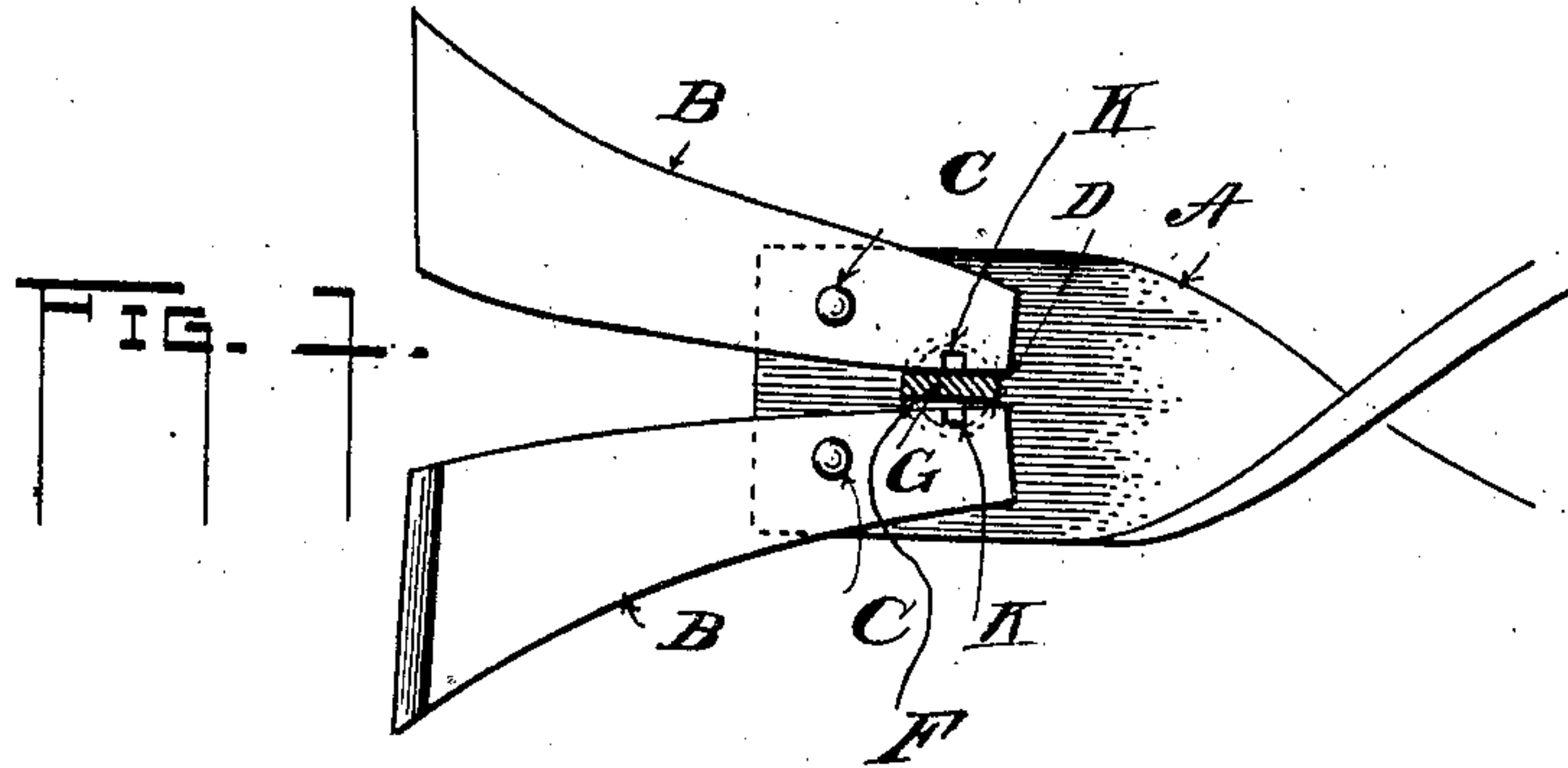


No. 814,768.

PATENTED MAR. 13, 1906.

W. H. CLARKSON.
EXPANSION BIT FOR COAL DRILLS.

APPLICATION FILED JAN. 30, 1905.



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UNITED STATES PATENT OFFICE.

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EXPANSION-BIT FOR COAL-DRILLS.

No. 814,768.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed January 30, 1905. Serial No. 243,443.

To all whom it may concern:

Be it known that I, WILLIAM H. CLARKSON, a citizen of the United States, residing at Edwards Station, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Expansion-Bits for Coal-Drills; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention pertains to extensible or expansion bit ends for coal-drills; but said invention is equally applicable to rock and other drilling of like nature.

The object of the invention is to provide a bit that can be employed for boring holes of varying diameters.

In drilling coal it has been found to be of advantage to bore a hole of any desired size to start with and then some distance within said bore to make a bore of greater diameter, thus forming a pocket in which to place the charge of powder for blasting purposes. By this means a larger charge of powder can be used in a given spot, and the likelihood of blowing out the plug of the first or smaller bore is reduced.

A further object of the invention is that one drill is all that is necessary to make borings of different diameters without the need of having several sized drills.

In the accompanying drawings, Figure 1 is view of my improved expansible bit in which two cutters are mounted on the end of a drill and shown separated. Fig. 2 is a similar view showing the cutters or jaws closed nearly together. Fig. 3 is an edge view of the device shown in Figs. 1 and 2. Fig. 4 is a general view of a member for separating the cutters or permitting them to approach one another. Fig. 5 is a similar view of said member, but showing the same as it appears when given a quarter-turn from the position shown in Fig. 4. Fig. 6 is a view of the bit similar to that shown in Fig. 3, but showing a modified form of the member for separating the jaws. Fig. 7 is an end section of the bit through line X X, Fig. 2, showing the modified form of separating member illustrated in Fig. 6.

A indicates the drill usually employed in drilling operations and which is of a spiral form, as suggested in the figures, though not

fully shown, but which will be readily understood by those skilled in the art to which the device relates.

At B B are two cutters or jaws of substantially the form shown in Fig. 3 and which are merely curved bodies of steel bifurcated at their rear ends, the forward or cutting ends of the cutters being curved in opposite directions, as shown. The cutting edges are beveled, preferably, so that they may be ground when desired to give sharp points. As shown in the first two figures, the jaws or cutters are curved or extended at each side, so as to drill a hole of larger diameter than the drill-body A even when the said cutters are brought close together. This allows the said drill A to be free of the material to be drilled into, so that there will be no binding during the boring operation.

C C represent pivots by which the cutters are mounted upon the drill-body A for permitting the said cutters to have free movement toward and away from each other, as will be understood. The flattened end of the drill is provided with a hole, as at D, between the cutters. In this hole is inserted a member E, having a middle circular enlargement F, which occupies a position within the said hole D. Extending above and below this enlargement are two flat portions G, designed to lie between the bifurcated ends of the cutters. At one end of the member is a head H and at the other a nut J. In Fig. 1 the said member E lies so that the flattened portions G (the upper one only being shown) lie parallel with the cutters, and this allows the extremities of the latter back of the pivots C to approach one another, the cutting ends in consequence being spread widely apart or to their limit of extension. In Fig. 2 the member E is given a quarter-turn from the position shown in Fig. 1, so that the said flattened portions lie at right angles to the length of the cutters. Preferably, though not necessarily, a notch K is cut in the adjacent edges of the cutters, as shown, into which the edges of the portions G enter, as shown in said Fig. 2. By this means the bit may be set to drill holes of two different diameters, and it will be observed that the head H and the nut J serve to firmly bind the cutters so that they will not rock or strain on the drill A. It will be seen, further, that by the use of the said nut J the parts may be tightened and loos-

ened when desired in order to make the changes above described.

In Figs. 6 and 7 a modified form of the adjusting means is illustrated. The cutters 5 and the drill-body are the same as shown in the other figures; but in lieu of the member E described is employed a member L, which has a straight body to enter the hole D and having a tapered head M, which lies between the 10 ends of the cutters. Any adjustment of the latter devices may be had by a simple turn of the nut N. As the head is drawn down it spreads the rear ends of the cutters, and consequently draws the cutting edges thereof 15 closer together, with the result that the hole bored thereby will be smaller than when the head is raised to permit the rear ends to approach each other for a larger hole. I may employ either form of adjusting means or 20 even others that may be adapted to accomplish the same end.

The advantages of my improved form of drill are manifest, and it will be seen that it may be used for all drilling purposes where 25 blasting is to be done.

The advantage of the form of adjusting means shown in Figs. 6 and 7 is that any sized hole within the range of the drill may be bored, since the tapering head will spread the 30 cutters in proportion to the adjustment of the nut N. When a boring has been made of the size produced by the device in its closed position, (shown in Fig. 2,) the bit is withdrawn, the adjusting member moved to permit the cutters to be free, and the drill reëntered. As the said cutters meet the work 35 they naturally spread as the pressure comes upon them until they are open to their fullest width, and thus the enlarged hole is bored. At many times a boring of this kind is found 40 to be desirable, and I have provided a device that will accomplish it in any easy and thorough manner. Another advantage is that if the operator wishes a hole of large size at 45 some depth it is not necessary to make that hole of large diameter for the entire boring, as that would make too much work; but a hole of small diameter can be more easily and quickly bored and then the larger one continued at the depth desired. 50

I claim—

1. In a coal-drill, the drill-body, cutting members bifurcated at one end and strad-

dling the said body, the same being pivoted to the body, adjustable means back of the 55 pivots of the members for closing such members together at their cutting extremities, said adjustable means capable of being adjusted to permit the members to separate at will when working within a boring. 60

2. In a coal-drill, the drill-body, a pair of bifurcated members straddling the extremity of the body, and pivoted to the said extremity, said members having cutting edges at their free extremities, and means rear- 65 ward of the pivots for separating the rear ends of the members to close the free ends together.

3. In a coal-drill, the drill-body, a pair of cutting members bifurcated at one end and inclosing the extremity of such drill-body, each being pivoted thereto, the free extremity of the members having cutting edges and adapted for separation by swinging on the 70 pivots, said cutting edges being substantially at right angles to the axis of the drill-body whether separated or closed together and means for closing the members together, such means also when adjusted permitting 75 the members to separate when a hole of larger diameter is to be bored. 80

4. In a coal-drill, the drill-body, a pair of bifurcated members straddling the extremity of the said body and pivoted thereto and adapted to separate or close together, a 85 member carried in the body rearward of the pivots of the members, the same adapted when in one position to close the free cutting ends of the members together and in the other position to permit the said cutting ends 90 to separate at will.

5. In a coal-drill, the drill-body, a pair of cutting members bifurcated at one end to straddle the extremity of the body and pivoted thereto, a member carried in the drill- 95 body between the members rearward of the pivots, the same being adjustable to permit the free ends of the members to separate or to positively close them together for the purposes set forth. 100

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM H. CLARKSON.

Witnesses:

L. M. THURLOW,
E. J. ABERSOL.