

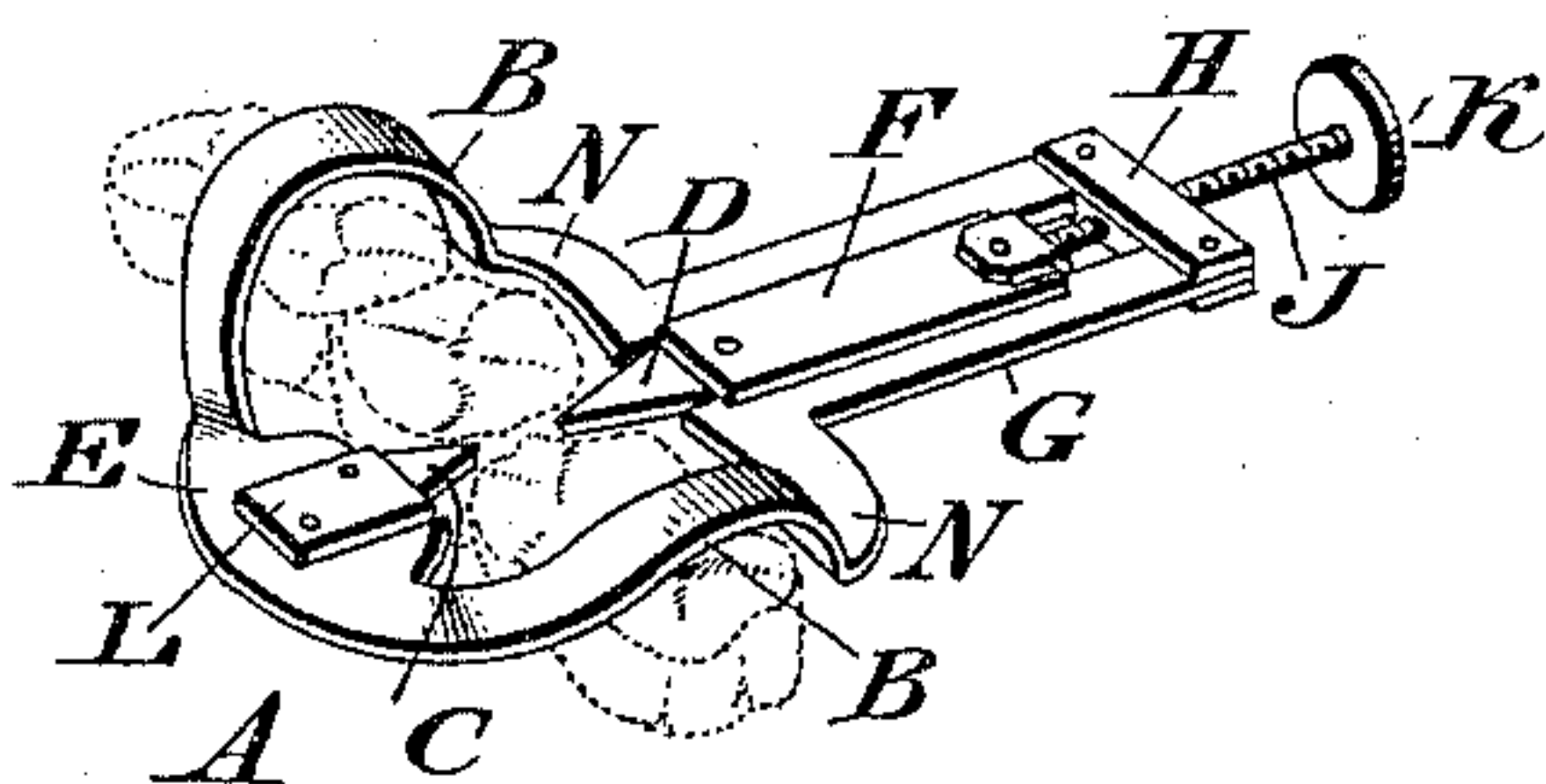
(No Model.)

J. W. IVORY & A. WAYNE.  
TEETH SEPARATOR.

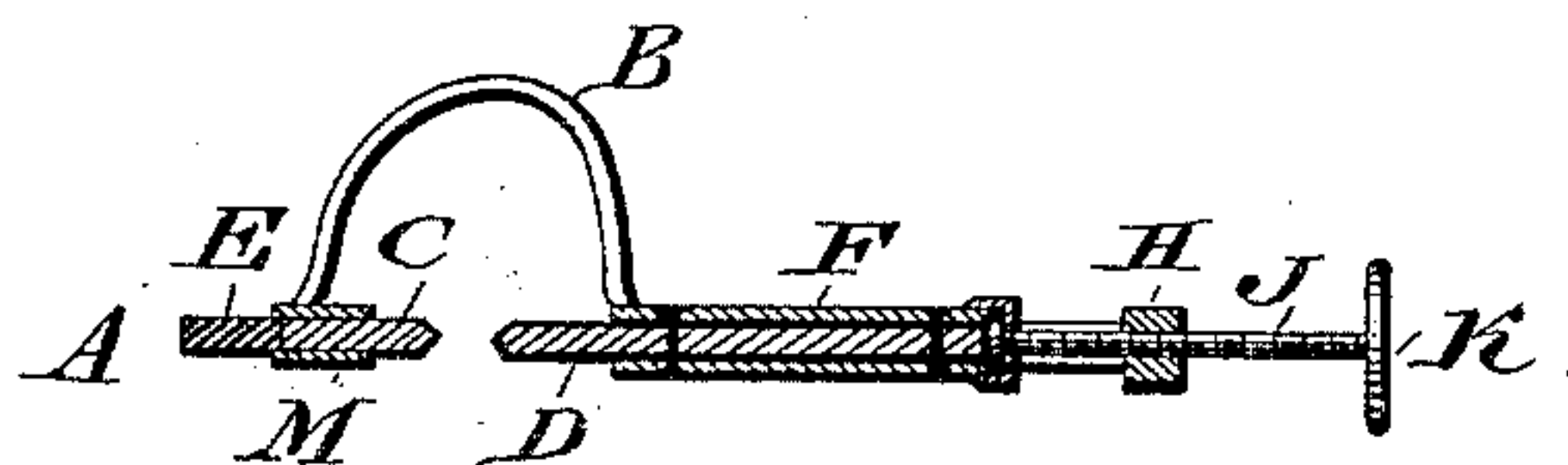
No. 436,603.

Patented Sept. 16, 1890.

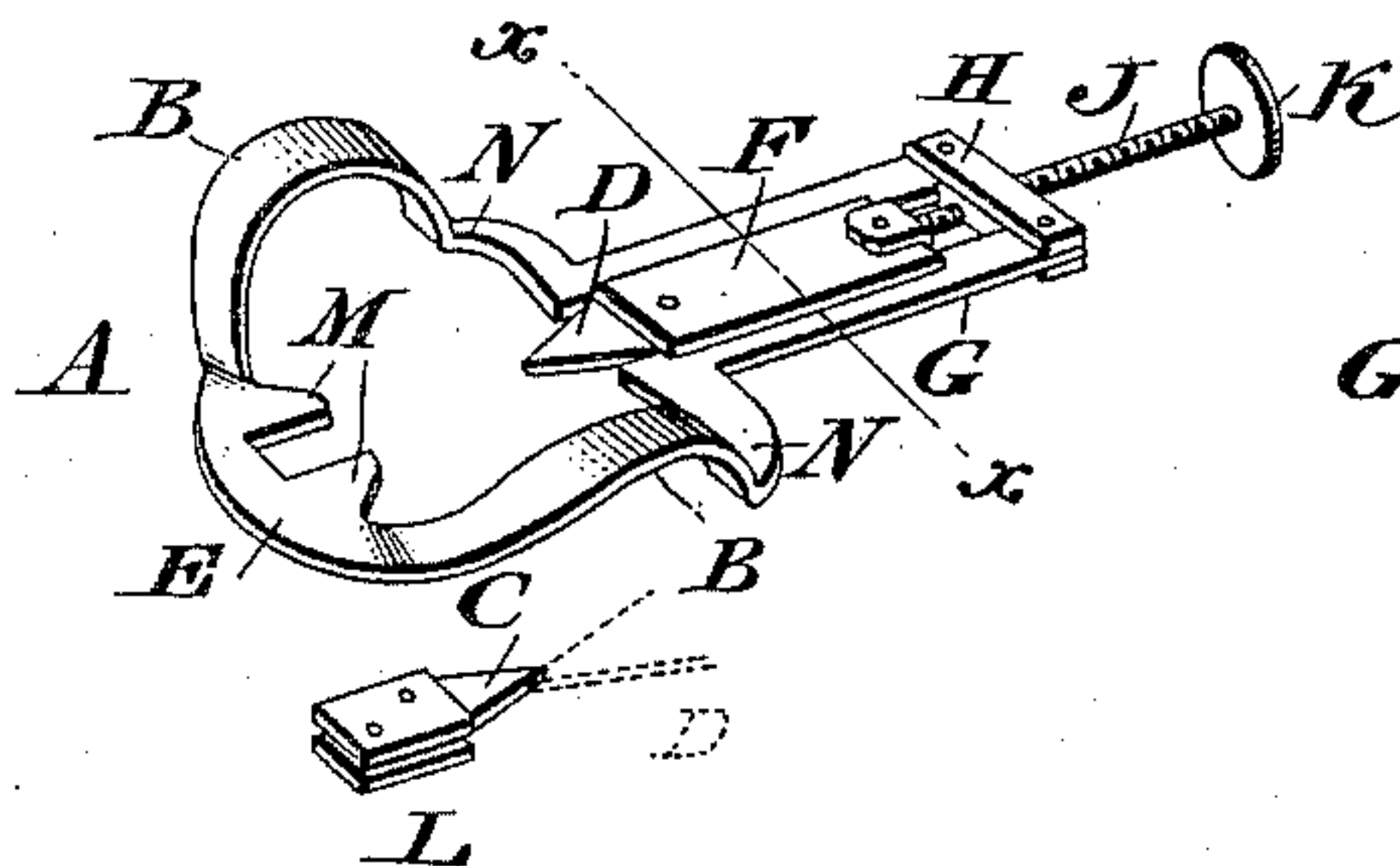
*Fig. 1.*



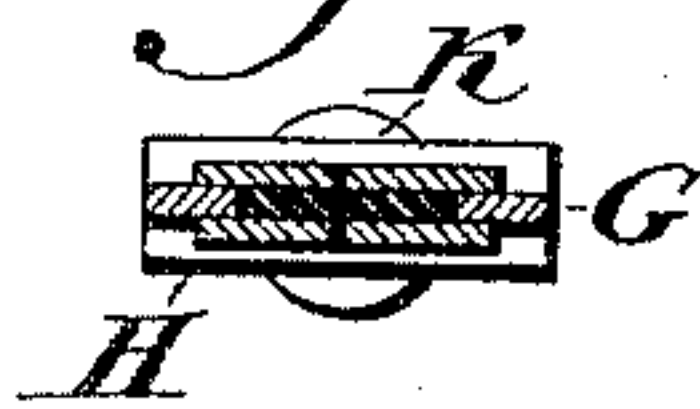
*Fig. 2.*



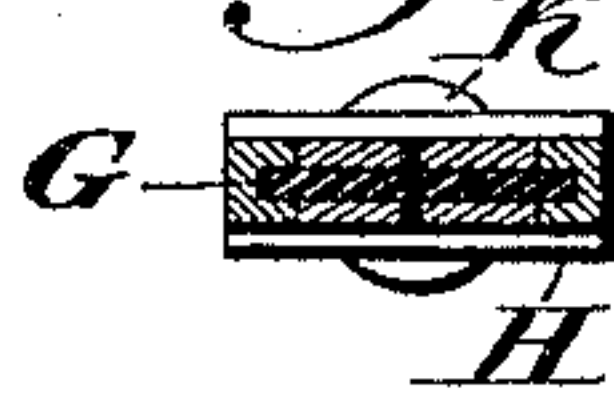
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

JAMES W. IVORY AND ALFRED WAYNE, OF PHILADELPHIA, PENNSYLVANIA;  
SAID WAYNE ASSIGNOR TO SAID IVORY.

## TEETH-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 436,603, dated September 16, 1890.

Application filed January 24, 1890. Serial No. 337,993. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES W. IVORY and ALFRED WAYNE, both subjects of the Queen of Great Britain, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Teeth-Separators, which Improvement is fully set forth in the following specification and accompanying drawings.

Our invention consists of a teeth-separator having points adapted to enter between the teeth, and so arranged that the ends of said points are prevented from abutting.

It also consists in providing the device with arches or bows, so that the frame readily passes over the lateral teeth.

It also consists in making the points removable, so that different sizes and shapes of the same may be employed.

Figures 1 and 3 represent perspective views of a tooth-separator embodying our invention, one of the points being shown separated in Fig. 3. Fig. 2 represents a central longitudinal section thereof. Fig. 4 represents a section on line  $x x$ , Fig. 3, and Fig. 5 represents a similar section of a modification.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates an open frame, the sides of which have arches B.

C D designate points which are opposite to each other, the point C being supported on the side E of the frame A, and the point D connected with a head F, which is movably fitted in guiding-arms G, projecting from the frame A opposite to said side E, said points being of the form of wedges.

H designates a cross-bar connecting the outer ends of the arms G, and to the same is fitted a screw J, having an operating-head K. The inner end of said screw J is swiveled to the head F of the point D, whereby said point may be conveniently moved in opposite directions. It will be seen that the frame A may be readily located in position, so as to present the points C D to the teeth to be separated, the arches B passing over the lateral teeth, so as not to interfere with the proper disposition of the frame. The screw is then rotated, whereby the points advance between the teeth, and owing to the wedge shape of

the same the teeth may be effectively separated. The points C and D are not directly opposite to each other, but slightly out of line, whereby when they reach each other they do not abut, but are enabled to pass each other. The point C is connected with a head L, whose sides are grooved, and the relative portion of the frame A is formed with tongues M, the same projecting inwardly, and are adapted to receive the grooved sides of the head L, whereby the point C may be readily removed and substituted by one of a different length or angle for purposes requiring the same. The arches converge at the inner part of the frame and diverge at the outer part, it being noticed that the frame has laterally-projecting pieces or arms N, which extend at or about a right angle with the inner ends of the arms G, and join the arches at the diverged ends, thus providing increased space or room for operations, while the arms N hold the rubber, &c., employed to keep parts down and out of the way.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A tooth-separator consisting of a frame with an extension having a slide therein and supporting-points and a screw swiveled to said slide, substantially as described.

2. In a tooth-separator, a frame having an extension having a slide therein, and carrying separating-points and side arches constructed and arranged as set forth, and an adjusting-screw swiveled in said slide in the extension of the frame for engagement with one of the points, substantially as described.

3. A tooth-separator having separating-points arranged out of line, substantially as described.

4. A tooth-separator having a frame with an adjustable point therein and a point removably fitted to the said frame, substantially as described.

5. A tooth-separator consisting of a frame having points located opposite to each other, one of the said points being attached to a sliding support in an extension of said frame and having connected with it a screw which is fitted to said frame, substantially as described.

6. A tooth-separator having vertical arches

which diverge at the end where they join the lateral arms of the frame, substantially as described.

7. In a tooth-separator, a frame having an adjustable point therein and a slot or recess opposite to said point, and a point having guides removably mounted in said slot or recess, substantially as described.

8. In a tooth-separator, a frame having ex-

tending arms, a sliding head mounted in said arms and having a point attached thereto, and a screw attached to said head for adjusting the same, substantially as described.

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Witnesses:

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