

No. 693,487.

Patented Feb. 18, 1902.

R. C. M. BOWLES.
STETHOSCOPE.

(Application filed Nov. 8, 1901.)

(No Model.)

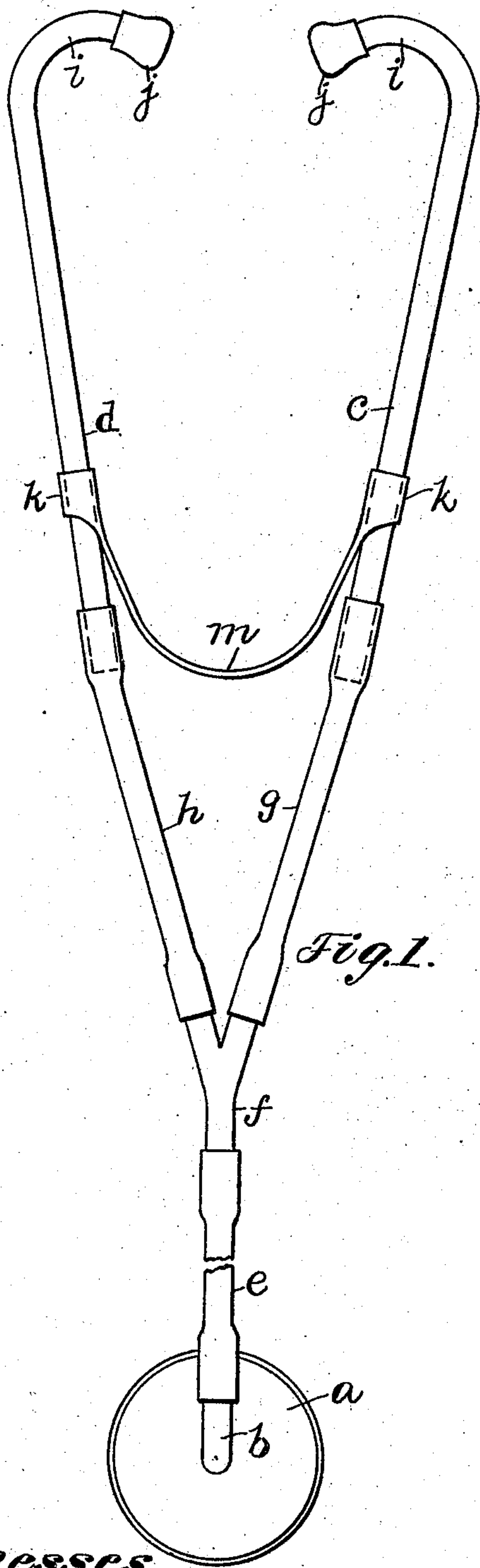


Fig. 1.

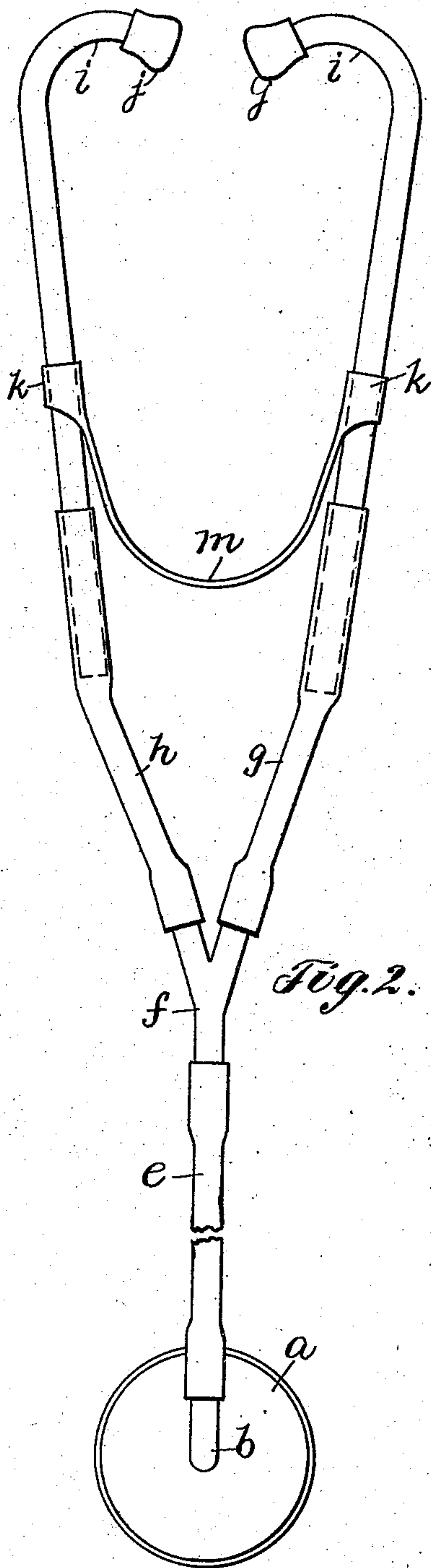


Fig. 2.

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UNITED STATES PATENT OFFICE.

ROBERT C. M. BOWLES, OF BOSTON, MASSACHUSETTS.

STETHOSCOPE.

SPECIFICATION forming part of Letters Patent No. 693,487, dated February 18, 1902.

Application filed November 8, 1901. Serial No. 81,570. (No model.)

To all whom it may concern:

Be it known that I, ROBERT C. M. BOWLES, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Stethoscopes, of which the following description, in connection with the accompanying drawings is a specification, like letters on the drawings representing like parts.

10 This invention relates to stethoscopic instruments, and has for its object to improve the construction of the same, as will be described. Instruments of this class as now commonly constructed and known to me are provided with two metal tubes having bent ends provided with small ear-bulbs adapted to enter the ears of the physician or other person using the instrument. The metal tubes referred to are provided with angles which decrease the volume of sound and are commonly connected together by a piece of spring metal which is soldered or otherwise rigidly fastened at its ends to the said tubes, the said spring serving to hold the ear-tubes to the ears, and thus support the instrument when in use. Instruments of this class as now commonly constructed and known to me are objectionable, inasmuch as the ear-tubes not being adapted to fit the ears of different physicians, owing to the different formations of the ears, in many cases exert an aggressive pressure, which is cruel in its effect upon the ear.

35 This invention has for its object to overcome the objections or defects above referred to and to increase the efficiency of instruments of this class, and I accomplish this result by making the ear-tubes rotatable, so that the said tubes may be turned to adjust the ear pieces or bulbs to the ears of the physician, and by making said tubes longitudinally movable, so as to regulate the spring-pressure of the ear-tubes upon the ears of the physician, whereby the said ear-tubes may engage and bear against the ears of physicians with a pressure which is adapted to the head of the particular physician, and thus relieve the sensitive ear from a heavy or excessive pressure, consequently avoiding disagreeable and cruel or evil effects upon and possible injury to the ear from constant use of the instrument. These and other features of this

invention will be pointed out in the claims at the end of this specification.

Figure 1 is an elevation of one form of stethoscope embodying this invention with the ear-tubes in one position, and Fig. 2 an elevation of the instrument with the ear-tubes in a different position.

The stethoscope *a*, provided with the sound-delivery tube *b*, is and may be substantially the same as shown and described in United States Patent No. 677,172, granted to me June 25, 1901. The sound-delivery tube *b* is connected to the rigid ear-tubes *c d*, (usually of metal,) and this connection may be effected, as shown, by a flexible tube *e*, a rigid Y-shaped tube *f*, and flexible tubes *g h*.

The rigid ear-tubes *c d* are provided with bent outlet ends *i*, which for the best results are curved, as shown, and have caps or bulbs *j*, of hard rubber or other suitable material, and in accordance with this invention the said rigid ear-tubes are supported by means of socket pieces or arms *k* on the ends of a piece *m* of spring metal interposed between said ear-tubes; the said ear-tubes being extended through said arms or socket-pieces and fitting therein sufficiently tight to frictionally hold the said ear-tubes in any position into which they may be turned to adjust the caps *j* to the ears of the physician, in order to obtain a perfect fit with the least possible discomfort to the physician.

In order to adjust the tension of the spring *m* according to the width of the head of the physician, the ear-tubes are longitudinally movable in their spring-sockets *k*, being also movable into and out of the flexible tubes *g h*.

In Fig. 1 the ear-tubes are represented as drawn substantially out of the flexible tubes *g h*, so that their lower ends are engaged by the spring-sockets *k*, whereas in Fig. 2 the said ear-tubes are represented as inserted into the flexible tubes *g h* for a substantial distance, so that the spring-sockets *k* engage said tubes nearer the curved ends of said tubes, thus drawing said ends nearer together and adjusting the ear-tubes so as to fit the ears of a doctor having a narrower face than the one for whom the ear-tubes shown in Fig. 1 are adjusted.

The ear-bulbs should be slightly conical up to a diameter sufficient to close—not en-

ter—the external auditory canal, and as sound cannot be transmitted over curves and twists without loss of volume the curving of the ear-tubes should be no more than sufficient to bring the ear-bulbs squarely upon the ear-openings, and to this end and also for the purpose of facilitating longitudinal adjustment the ear-tubes *c d* are made straight for the greater portion of their length. Furthermore, by making the ear-tubes straight for substantially their entire length the instrument is rendered more compact and its portability increased.

I claim—

1. In an instrument of the class described, the combination with rigid ear-tubes bent at one end, of flexible tubes into which the opposite ends of said ear-tubes are inserted, sockets engaging said ear-tubes intermediate their bent ends and the said flexible tubes and in which the said ear-tubes are rotatable and longitudinally movable, and a spring con-

necting said sockets, substantially as described.

2. In an instrument of the class described, the combination with a rigid Y-shaped tube *f*, the flexible tubes *h, g*, connected therewith, the rigid ear-tubes *c, d*, made straight for the greater portion of their length and having one end bent and their opposite ends inserted into the flexible tubes *h, g*, rigid sockets *k* engaging the straight portion of the ear-tubes intermediate the flexible tubes *h, g*, and the bent ends of said ear-tubes, and in which said ear-tubes are rotatable and longitudinally movable, and a spring connecting said sockets, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT C. M. BOWLES.

Witnesses:

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J. MURPHY.