

No. 628,811.

Patented July 11, 1899.

H. JONES.

SOUND RECORDING AND REPRODUCING MACHINE.

(Application filed June 11, 1898.)

(No Model.)

Fig. 1.

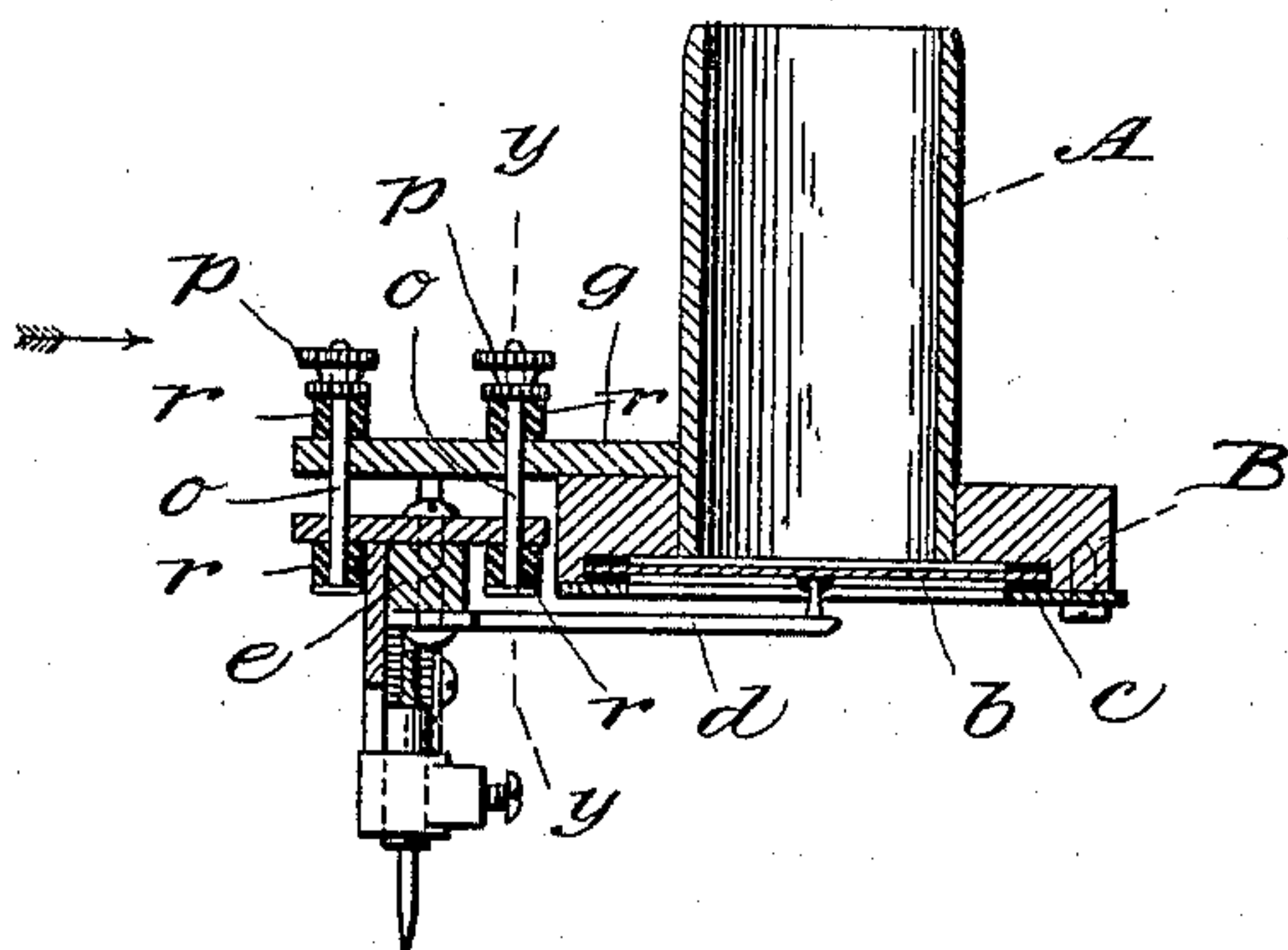


Fig. 2. x

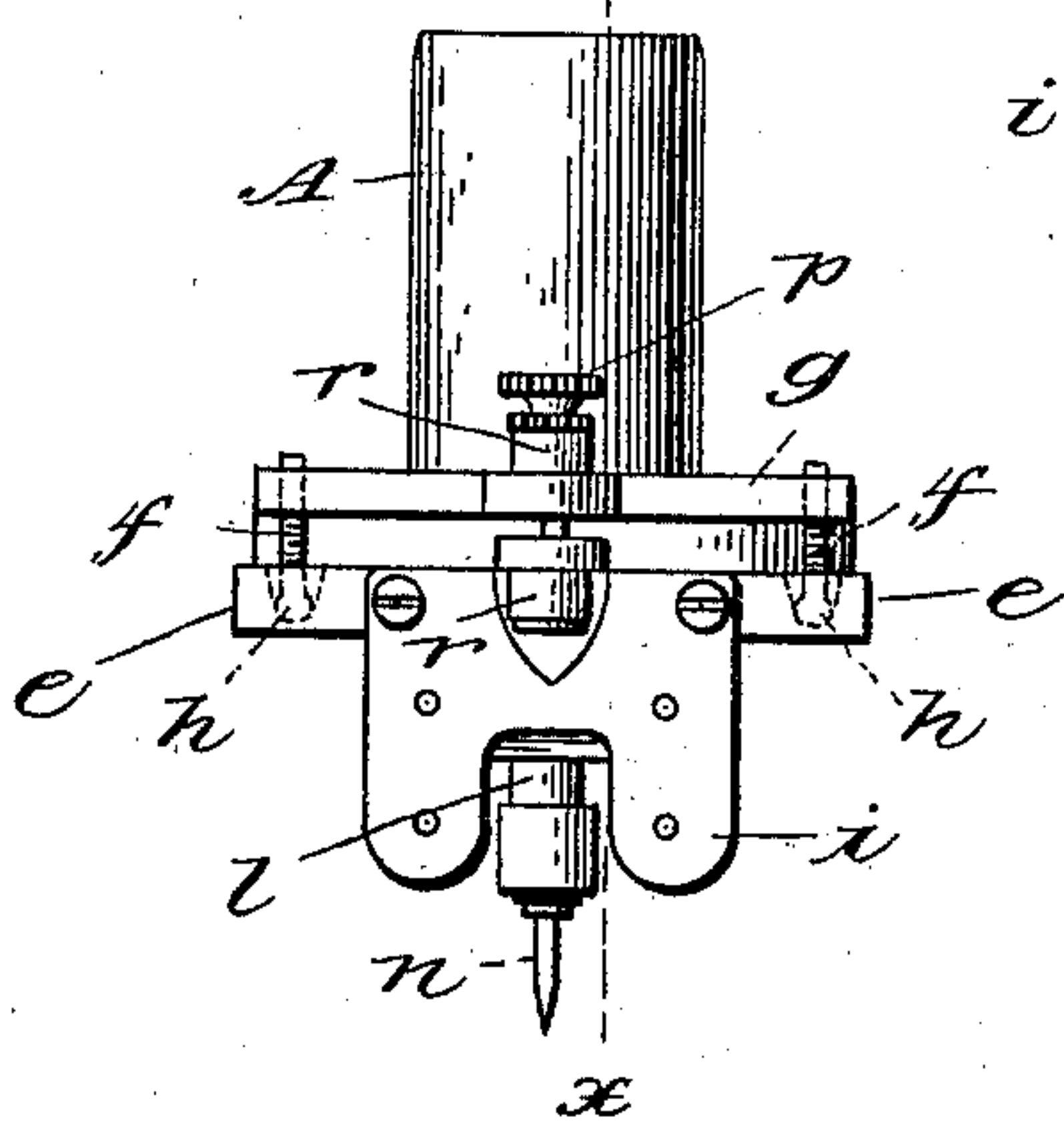


Fig. 6.

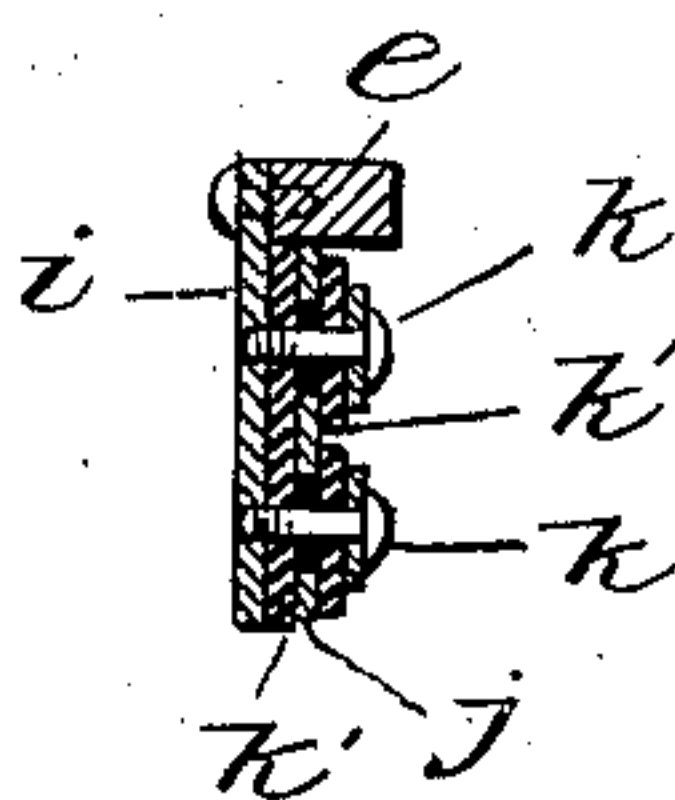


Fig. 3.

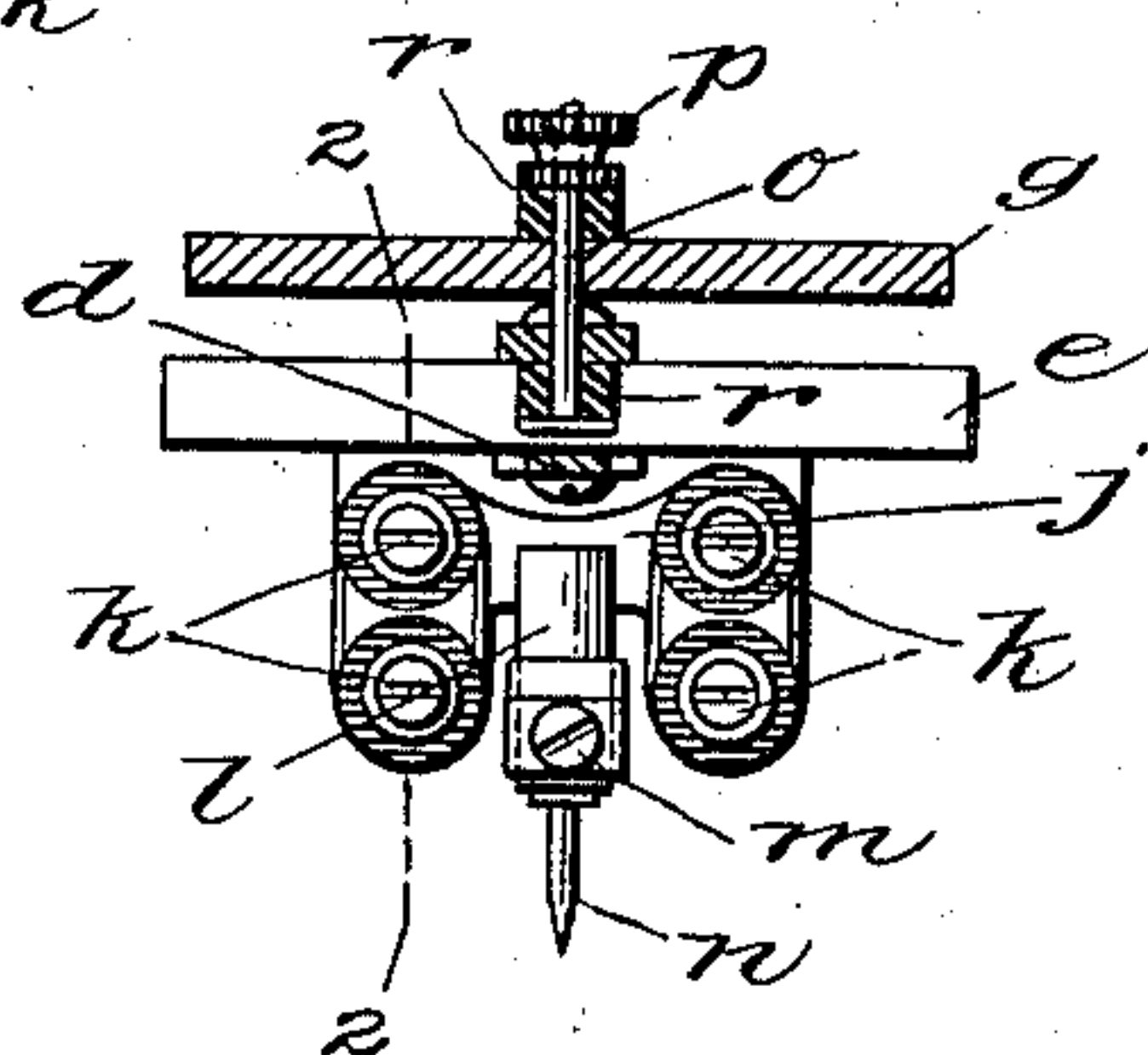


Fig. 4.

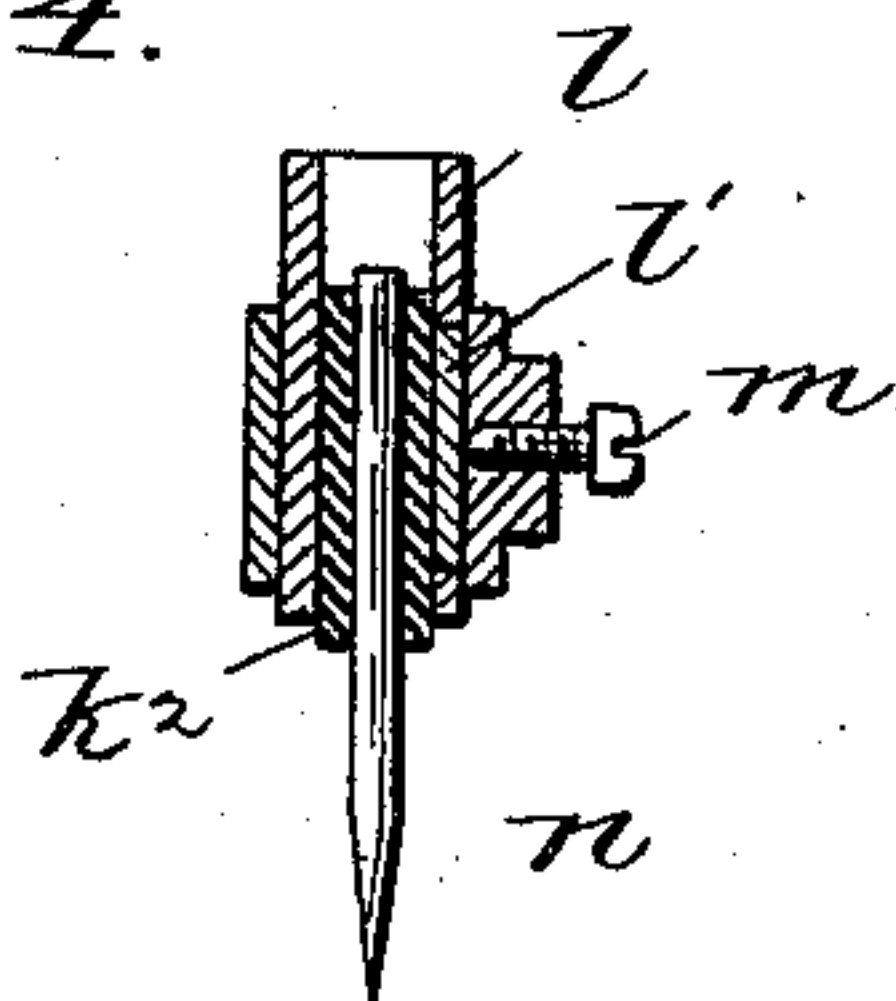
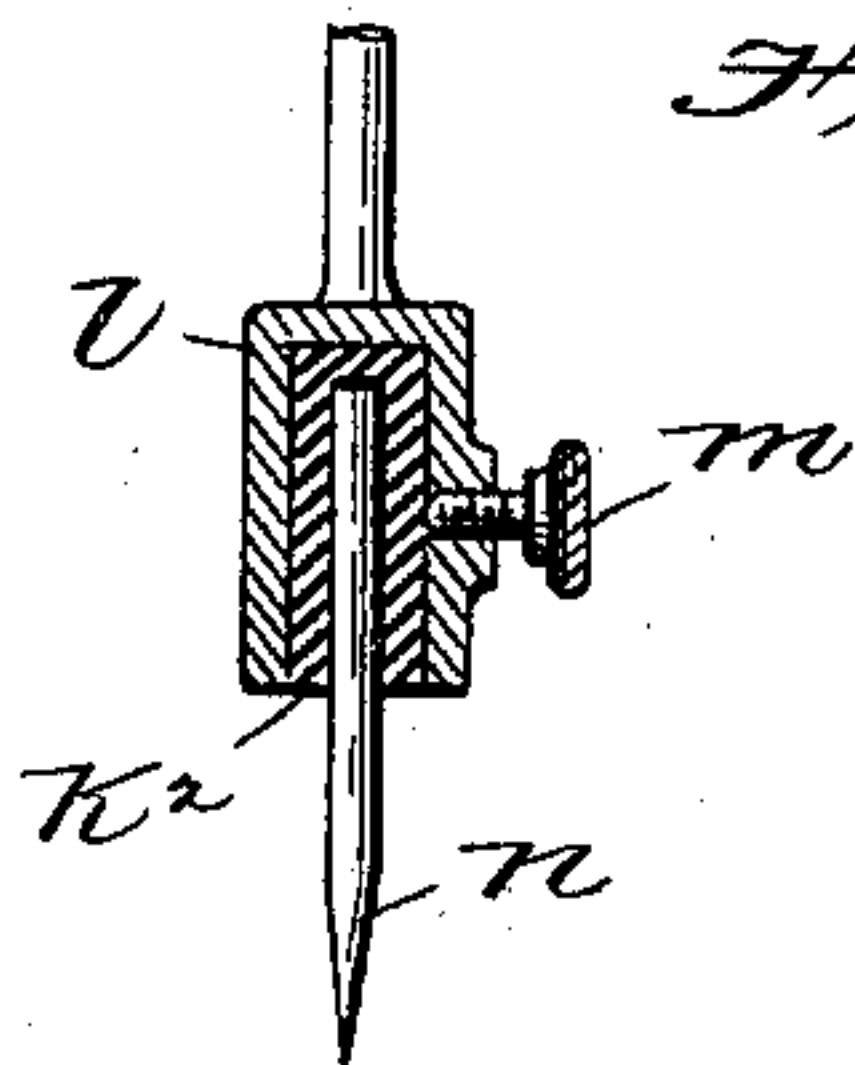


Fig. 5.



Witnesses.

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# UNITED STATES PATENT OFFICE.

HENRY JONES, OF PHILADELPHIA, PENNSYLVANIA.

## SOUND RECORDING AND REPRODUCING MACHINE.

SPECIFICATION forming part of Letters Patent No. 628,811, dated July 11, 1899.

Application filed June 11, 1898. Serial No. 683,183. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY JONES, a citizen of the United States, and a resident of the city of Philadelphia, State of Pennsylvania, have  
5 invented certain new and useful Improvements in Sound Recording and Reproducing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming  
10 part of this specification.

My invention has relation to sound recording and reproducing machines, and has for its principal object to provide a construction in what is known as the "sound-box" and its  
15 immediate attachments which will reduce to a minimum the "scratching" effect which is very noticeable and objectionable in most of the sound-boxes in use.

A further object of my invention is to provide an improved construction of mounting the stylus-bar upon the sound-box casing, whereby better results are produced than in  
20 constructions heretofore invented.

As is well known, in some talking-machines, as the phonograph and graphophone, the undulations of the sound-waves are recorded in the base of the grooves of the record. In others, as in the gramophone, the undulations of the sound-waves are reproduced in the sides  
30 of the grooves of the record. In the former cases the objectionable scratching effect is produced by microscopic unevenness of the sides against which the side or sides of the stylus come in contact. In the latter case the scratching effect is produced by the extreme point coming in contact with like unevennesses in the bases of the running grooves. These produce foreign and false notes or  
40 and tones of the record undulations. The true undulations in either construction of record are transmitted to the diaphragm by a positive true vibration of the stylus point and bar in given directions. The false accidental  
45 unevennesses of the sides or bases of the grooves, as the case may be, tend to vibrate the point and stylus-bar to which it is connected in the ordinary construction in producing a tremor in a direction substantially  
50 at right angles to the true vibrations, which if communicated from the stylus-point to the stylus-bar will then be communicated into or along the sound-box to the trumpet or re-

ceiver and produces the scratching effect, mingling with the true notes of the record. 55 The object of my invention is to nullify or minimize this false vibratory effect primarily by preventing as far as possible its communication from the stylus-point to the stylus-bar at the point of attachment and, further, 60 to nullify or minimize between this securing-point and the connection of the stylus-bar with the frame of the sound-box any of the false vibratory effects which may have been transmitted to the stylus-bar. 65

In the accompanying drawings, Figure 1 is a sectional view of a sound-box of a sound recording and reproducing machine embodying my invention, drawn on the line  $x x$  of Fig. 2. Fig. 2 is an end view of the same 70 looking in the direction of the arrow in Fig. 1. Fig. 3 is a cross-sectional view of the same on the line  $y y$  of Fig. 1. Fig. 4 is an enlarged detail view of one form of the stylus-point-securing device for securely holding the stylus-point and at the same time preventing to 75 a considerable degree the false vibrations occasioned in the point of the stylus and which prevents the scratching effect from being transmitted to the stylus bar and casing. Fig. 80 5 is a modification of the stylus-point-securing device for the same purpose. Fig. 6 is a sectional view on the line 2 2 of Fig. 3.

A represents the receiver or transmitter, as the case may be, secured to the disk-shaped 85 diaphragm-holder B, which is recessed in the ordinary manner for the reception of the diaphragm  $b$ , the diaphragm being held in place by the rings or gaskets  $c$ , of rubber or other suitable material, at its periphery on either 90 side. The stylus-bar  $d$  is in the construction shown secured to a transverse bar  $e$ , hinged or pivoted upon pins  $f$ , which are secured at their inner ends to a plate  $g$ , rigidly secured to the disk portion B. The pins  $f$  have on their 95 outer ends balls or knobs  $h$ , (shown in dotted lines in Fig. 2,) which are adapted to concaved recesses in the inner face of the bar  $e$ , forming substantially ball-and-socket joints. To this bar  $e$  is secured by screws or other- 100 wise, as shown in Fig. 2, a downwardly-projecting plate  $i$ , to which plate  $i$  is then secured the plate  $j$ , as through the medium of the screws  $k$ . This plate  $j$  is rigidly provided with a sleeve  $l$  and thumb-screw  $m$ , in which the 105 stylus-point  $n$  is adjustably attached. Be-



tween the plates *i* and *j* I provide a layer of sound-non-transmitting material *k'*—such, for instance, as rubber or other suitable material—and I also preferably provide a layer of the same material between the heads of the screws *k* and the plate *j*, also around the screws *k* where they pass through the plate *j*, the holes in the plate being enlarged for the purpose, as illustrated in Fig. 6. To hold the bar *e* and the parts which it carries in position upon the headed pins *f* and to prevent displacement, I provide in the bar *e*, midway in its length, the transverse bolts *o o*, secured at one end directly or indirectly in the bar *e* and having on the opposite end adjusting-screws *p p*. Between the inner head of these bolts and the bar to which they are attached and also between the adjusting-screws *p* and the plate *g* I provide rubber blocks or spiral springs *r*. By this construction the tension on the ball-and-socket joint of the combined plate and bars, forming practically the stylus-bar, is easily regulated and the relative position of the stylus-bar *d* to the diaphragm may be accurately adjusted.

In the construction shown in Fig. 4 the tubular section of sound-non-transmitting material is compressed around the needle or stylus-point *n* through the set-screw *m* in forcing the broken section *l'* of the tubular portion *l*, thus holding it firmly in position. The stylus-point, however, may be firmly held in position by other constructions—such, for instance, as that illustrated in Fig. 5. The material *k<sup>2</sup>* must be sufficiently rigid to firmly hold the point in the holder *l*, so that the true vibratory motion of the sound-waves shall not be lost at the point of connection, though the irregular undefined “scratching” will be deadened at the point of connection. It is clear that the intervening layers of sound non-transmitting or deadening material *k'* operates in a similar manner to still further deaden any scratching effect which may have been transmitted to the plate *j*, as hereinbefore described.

It is apparent that the construction herein described may be modified without departing from the spirit of my invention.

The structure which I have described is a preferable form of construction and well illustrates the invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a sound recording and reproducing machine, a stylus-bar mounted upon the sound-box frame in pivotal bearings having on either side of the line of the said pivotal bearings an adjustable tension device for regulating the tension of the bearing and the yielding of the stylus-bar in the operation of the device, substantially as described.

2. In a sound recording and reproducing machine, an L-shaped stylus-bar mounted upon the frame of the sound-box in pivotal bearings comprising the pins, *f*, adapted to re-

cesses in the plate, *e*, adjusting-rods, *o*, provided on either side of the pivotal bearing connected to the L-shaped stylus-bar and to the sound-box frame, intervening tension media, *r*, provided on said rods, and adjusting-nuts, *p*, substantially as described.

3. In a sound recording and reproducing machine, a sectional stylus-bar, having the depending sections, *i, j*, a layer of sound-deadening material, *k'*, interposed between said sections, a securing-section, *l*, and a layer of sound-deadening material, *k<sup>2</sup>*, provided in said securing-section around the stylus-point, substantially as described.

4. In a sound recording and reproducing machine, an L-shaped stylus-bar composed of the bar, *d*, transverse bar, *e*, plates, *i, j*, disposed at right angles to bar, *d*, stylus-point receiver, *l*, and tubular section of sound-deadening material, *k<sup>2</sup>*, provided in said section, *l*, around the stylus-point, *n*, the whole being yieldingly mounted upon the sound-box, substantially as described.

5. In a sound recording and reproducing machine, an L-shaped stylus-bar composed of the bar, *d*, transverse bar, *e*, plate, *i, j*, disposed at right angles to bar, *d*, stylus-point receiver, *l*, a tubular section of sound-deadening material, *k<sup>2</sup>*, provided in said section, *l*, around the stylus-point, *n*, the said sections forming the said L-shaped stylus-bar having a pivotal connection to the frame of the sound-box comprising the headed bolts, *f*, provided in the plate, *g*, adapted to concave recesses in the bar, *e*, and the rods, *o*, arranged centrally of the bar, *e*, and in a radial line with the diaphragm center, one end of each of said rods being adjustably connected to the bar, *e*, and the opposite end to the plate, *g*, rigidly secured in the sound-box, and adjusting-screws, *p*, and tension devices, *r*, provided on the outer ends of said rods, *o*, to regulate the tension of the joint, substantially as described.

6. In a sound recording and reproducing machine, a tubular section, *A*, a disk section, *B*, diaphragm, *b*, L-shaped stylus-bar comprising the bar, *d*, transverse bar, *e*, plates, *i, j*, intervening layers of sound-deadening material, *k'*, transverse securing-screws, *k*, tubular section, *l*, with adjustable section, *l'*, provided therein, securing-screw, *m*, intervening layer of sound-deadening material, *k<sup>2</sup>*, around the stylus-point in the section, *l*, headed bolts, *f*, secured to the plate, *g*, adapted to concave recesses in the bar, *e*, rods, *o*, connecting the bar, *e*, with the plate, *g*, encircling yielding media, *r*, provided upon the rods, *o*, and adjusting-nuts, *p*, provided upon the said rods, substantially as described.

In witness whereof I have hereunto set my hand this 8th day of June, A. D. 1898.

HENRY JONES.

Witnesses:

J. HENDERSON,  
HORACE PETTIT.