

No. 689,124.

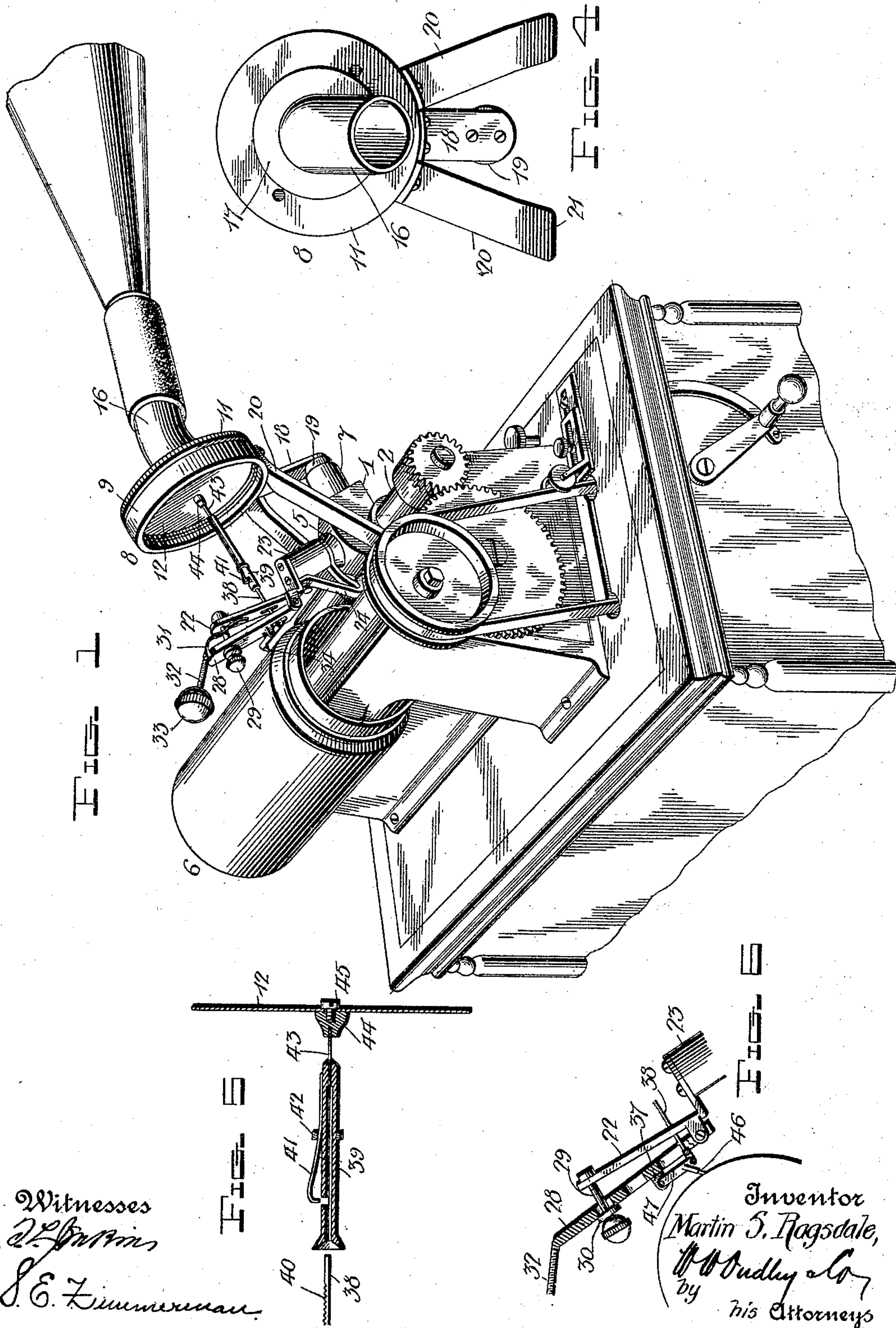
Patented Dec. 17, 1901.

M. S. RAGSDALE.
GRAPHOPHONE.

(Application filed Sept. 16, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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Patented Dec. 17, 1901.

M. S. RAGSDALE.
GRAPHOPHONE.

(Application filed Sept. 18, 1901.)

(No Model.)

2 Sheets—Sheet 2.

FIG. 2

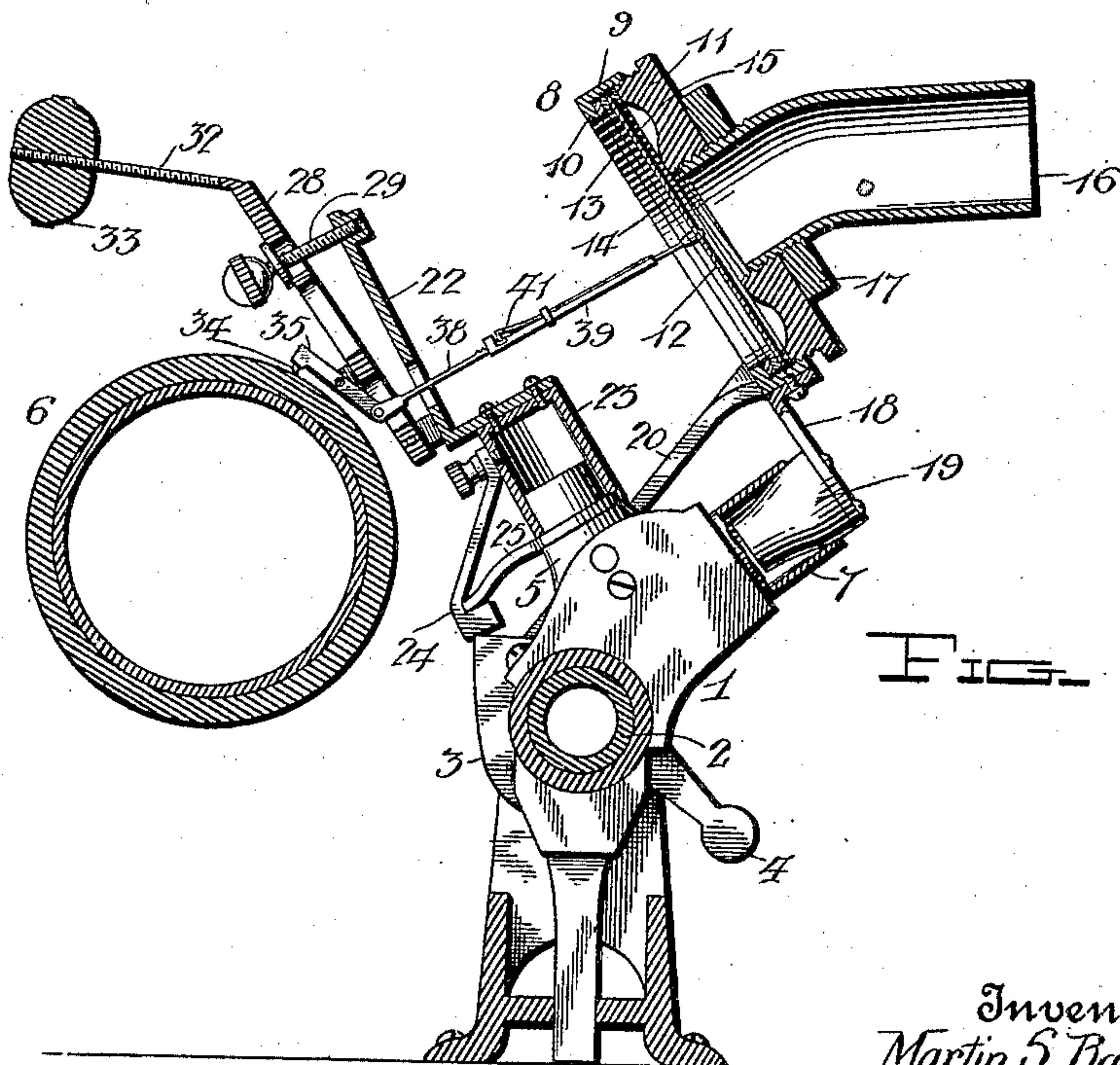
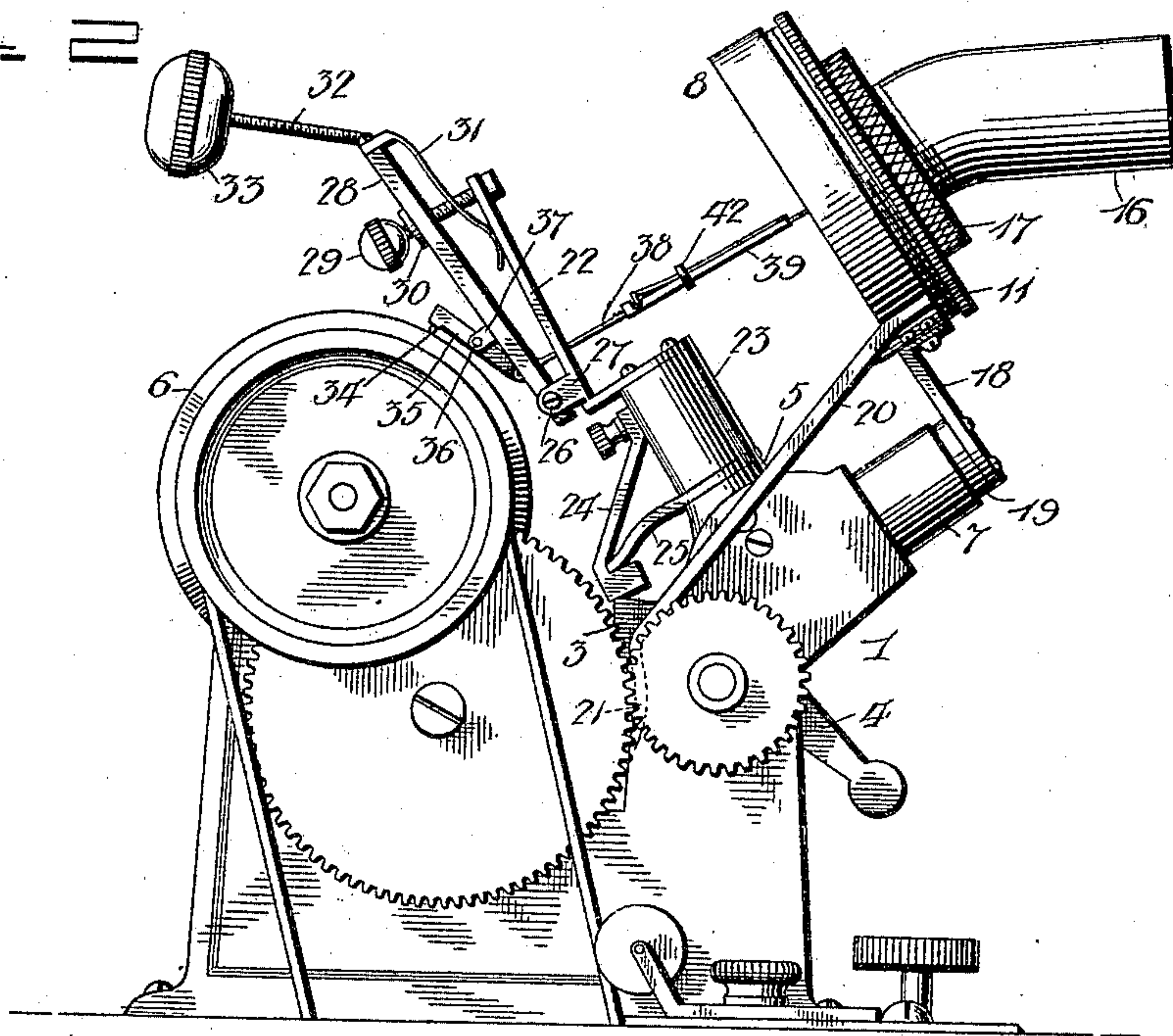


FIG. 3

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UNITED STATES PATENT OFFICE.

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GRAPHOPHONE.

SPECIFICATION forming part of Letters Patent No. 689,124, dated December 17, 1901.

Application filed September 16, 1901. Serial No. 75,571. (No model.)

To all whom it may concern:

Be it known that I, MARTIN S. RAGSDALE, a citizen of the United States, residing at Petworth, in the District of Columbia, have invented certain new and useful Improvements in Graphophones; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in graphophones, phonographs, and the like, and has for its object, primarily, the reproduction of recorded sound free from the rasp and harshness and other objectionable sound transformations produced by existing machines.

Another object of the invention is the preservation of the record-cylinders while in use from strain and wear by relieving them of undue pressure, whereby their period of usefulness is greatly prolonged and their utility largely enhanced.

Other advantages possessed by the invention are set forth in the following description, which is directed to the details of construction and operation and in connection with which attention is called to the accompanying drawings, illustrative of the preferred way in which the invention is carried into effect.

In the drawings, Figure 1 is a perspective view of the improvement applied to a graphophone. Fig. 2 is a side elevation of the same. Fig. 3 is a transverse sectional view. Fig. 4 is a rear elevation of the sound-box. Fig. 5 is an enlarged sectional view of the diaphragm and its connection with the stylus. Fig. 6 is a detail sectional view of a recording device embodying the invention.

Referring to the drawings by numerals, 1 represents the carriage, slidably mounted on the guide-tube 2 and moved by suitable means, such as the usual feed-screw, segmental nut, and the ring 3, the latter being manipulated through its handle 4 to disengage the nut and screw and elevate the reproducer. On the carriage is pivoted a tubular arm 5, which extends in the direction of the recording-cylin-

der 6, and 7 denotes a socket-piece extending from the carriage at the front thereof.

The sound-box 8, which is of peculiar construction, consists of a cylindrical casing 9, having at its rear side an inwardly-extending flange 10, between which and a nut 11 the diaphragm 12 is tightly clamped, the nut having threads which engage threads on the inner side of the casing. Interposed between the flange 10 and the diaphragm is a metallic ring 13 and also preferably a rubber or other ring 14, and between the diaphragm and the inner side of the nut is a beaded metallic ring 15. The nut is centrally apertured and threaded to receive the threaded end of a tube 16, to which is attached the horn or the ear-piece tube, and 17 is a jam-nut to maintain the joint. The sound-box is mounted on and supported wholly by the carriage. Depending from the casing 9 is an arm 18, and projecting from the lower end thereof is a tapered plug 19, which enters the socket 7 of the carriage. Secured to the casing at the sides of the arm 18 are two spring-arms 20 20, which extend at an inclination and terminate in bent ends 21 to engage the rear side of the sleeve portion of the carriage, whereby the sound-box is firmly secured to but easily removed from the carriage.

22 denotes a bracket having at its lower end a tube 23, removably fitted on the upper end of the pivoted arm 5. A pivoted laterally-swinging hook 24 on the tube 23 is brought into engagement with the end of the arm 25 on the pivoted arm 5 to secure the bracket 22 to the latter. The lower end of the hook 24 is engaged by the shoulder on the ring 3, whereby movement of the ring effects the raising and lowering of the bracket. Toward the lower end of the bracket is pivoted, by means of screws 26, passed through ears 27, a bar 28, having slots, through the upper one of which is passed an adjusting-screw 29, the end of the screw engaging a threaded opening in the bracket. A rubber or other ring 30 is interposed between the head of the screw 29 and the bar 28, and 31 is a light spring carried by the bar and pressing at its free end against the bracket to force the latter against the screw-head. Extending at an angle rearwardly from the upper end of the

bar is a threaded stem 32, and 33 is a weight adjustable on said stem.

The reproducing-stylus 34 is fixed to the outer end of a lever 35, pivoted intermediate of its ends on a pin 36, which is passed through ears 37 on the bar. To the other end of the lever is pivoted a rod 38, which is passed through the lower slot of the bar and enters the opening of a tubular rod 39, the outer end of the latter being flared and the opening tapered to facilitate the entrance of the rod. The rod is provided along its upper side with teeth 40, engaged by a spring-catch 41, carried by the tubular rod 39, and which is depressed to engage the toothed rod by the movement of a ring 42. A flexible wire 43 connects the inner end of the tubular rod with the diaphragm 12, the ends of the wire being fastened to said rod and to a clamping-piece 44, between which latter and the head of a screw 45 the diaphragm is firmly clamped.

The recording-stylus 46 (shown in Fig. 6) is fixed to a lever 47 intermediate of the end thereof, and said lever is fulcrumed at its outer end to the ears 37 to bring the stylus into proper recording relation to the cylinder. It will be observed that the sound-box is supported wholly by the carriage and that therefore the record-cylinder is entirely relieved of its weight, with the resultant advantages above stated. The pressure exerted by the stylus against the record-cylinder is readily controllable, being produced by the slight inherent weight of the parts, but mainly by the weight 33 and the bar 28. The bar and weight are shiftable, and consequently the pressure of the stylus may be nicely adjusted. The connection between the stylus and diaphragm is practically direct, whereby lost motion is avoided and very sensitive transmissions obtained. The adjustability of the connection between the stylus and diaphragm enables proper positioning of the stylus, despite variations of angle of the supporting-bar 28 to regulate the pressure, which adjustment may be easily and quickly effected, due to the simplicity of construction. The flexible connection between the rod 39 and diaphragm enables the requisite play of the parts without affecting the vibratory movements of the diaphragm, the support for which is rigid, and also obviates the necessity for great care and skill in assemblage. But little time and no especial skill are required to convert the reproducer into a recorder, and vice versa, and when changed to record the improvement possesses all of the advantages described in connection with the reproducer.

My improvements may be applied to existing machines without structural modifications and are adapted for use in connection with any type of sound-reproducing appliances.

I claim as my invention—

1. In a graphophone or the like, the combi-

nation of a traveling carriage having separate supports, a sound-box having a diaphragm and mounted upon one of the supports, stylus mechanism supported on the other support, and means connecting the stylus mechanism with the diaphragm.

2. In a graphophone or the like, the combination of a traveling carriage having separate supports, a sound-box having a diaphragm and mounted upon one of the supports, stylus mechanism supported on the other support, and an adjustable connection between the stylus mechanism and the diaphragm.

3. In a graphophone or the like, the combination of a traveling carriage having separate supports, a sound-box having a diaphragm and mounted upon one of the supports, stylus mechanism supported on the other support, and a flexible connection between the stylus mechanism and the diaphragm.

4. In a graphophone or the like, the combination of a traveling carriage having separate supports, a sound-box having a diaphragm and mounted upon one of the supports, stylus mechanism supported on the other support, and a flexible adjustable connection between the stylus mechanism and the diaphragm.

5. In a graphophone or the like, the combination of a traveling carriage having separate supports, a sound-box having a diaphragm and mounted upon one of the supports, stylus mechanism supported on the other support, means for varying the pressure of the stylus mechanism against the record-cylinder, and a connection between the stylus mechanism and diaphragm.

6. In a graphophone or the like, the combination of a traveling carriage having separate supports, a sound-box having a cushioned diaphragm and mounted upon one of the supports, stylus mechanism including a cushioned support for the stylus supported on the other support, and a flexible connection between the stylus mechanism and diaphragm.

7. In a graphophone or the like, the combination of a bracket, a bar pivoted at its lower end thereto, an adjusting-screw connecting the bar and bracket at their upper ends, a stem extending from the bar, a weight adjustable on the stem, a stylus-lever pivoted on the bar, a diaphragm, and an adjustable connection between the lever and diaphragm.

8. In a graphophone or the like, the combination of a diaphragm, a stylus-lever, a toothed rod pivoted to the lever, a tubular rod fixed by a flexible wire to the diaphragm and telescoping with the toothed rod, a spring-catch on the tubular rod, and means for moving the catch to engage the toothed rod.

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

MARTIN S. RAGSDALE.

Witnesses:

W. T. NORTON,
A. BROWNING.