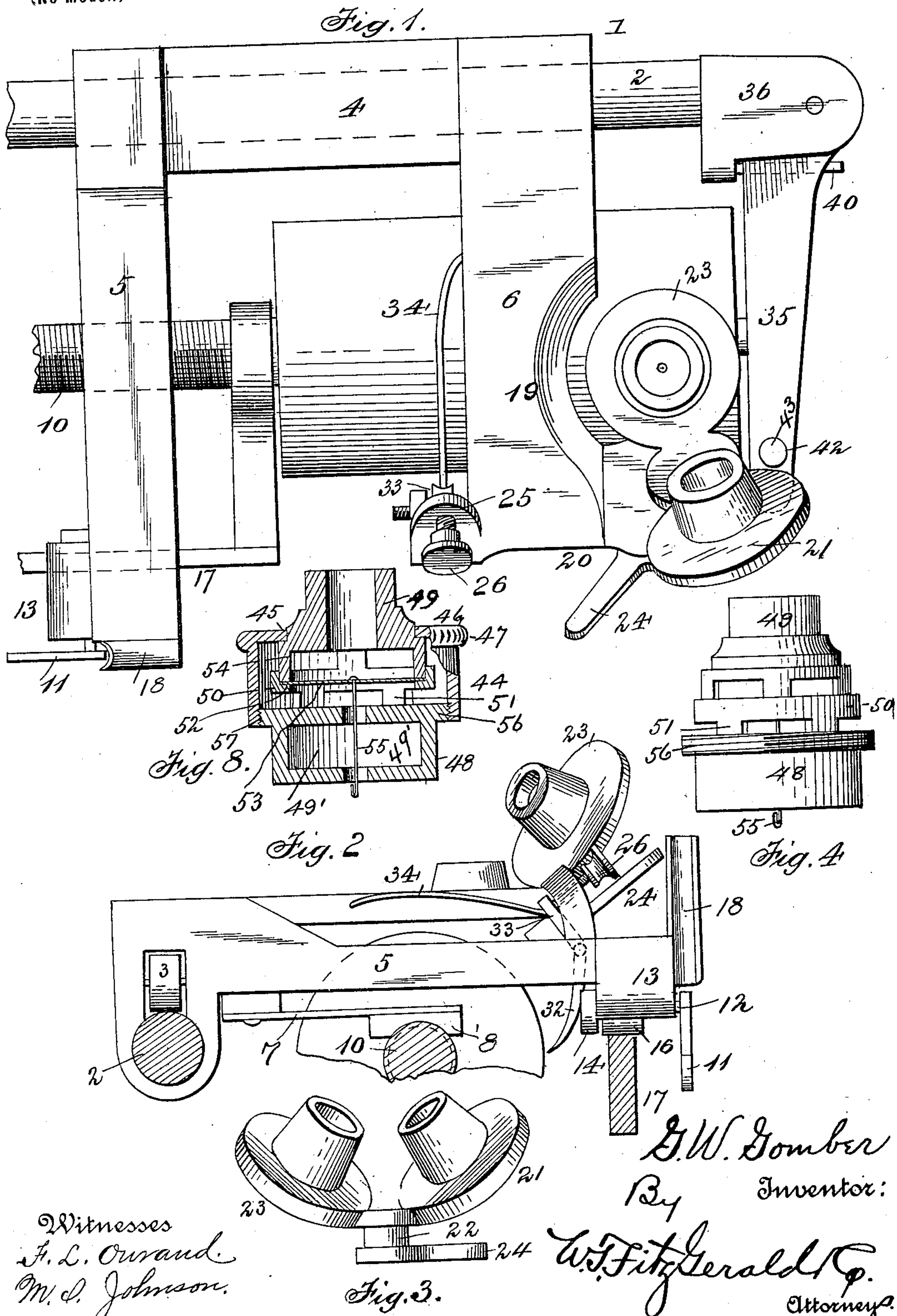


Patented Oct. 16, 1900.

(Application filed Sept. 5, 1896.)

2 Sheets—Sheet 1.

(No Model.)



THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 659,736.

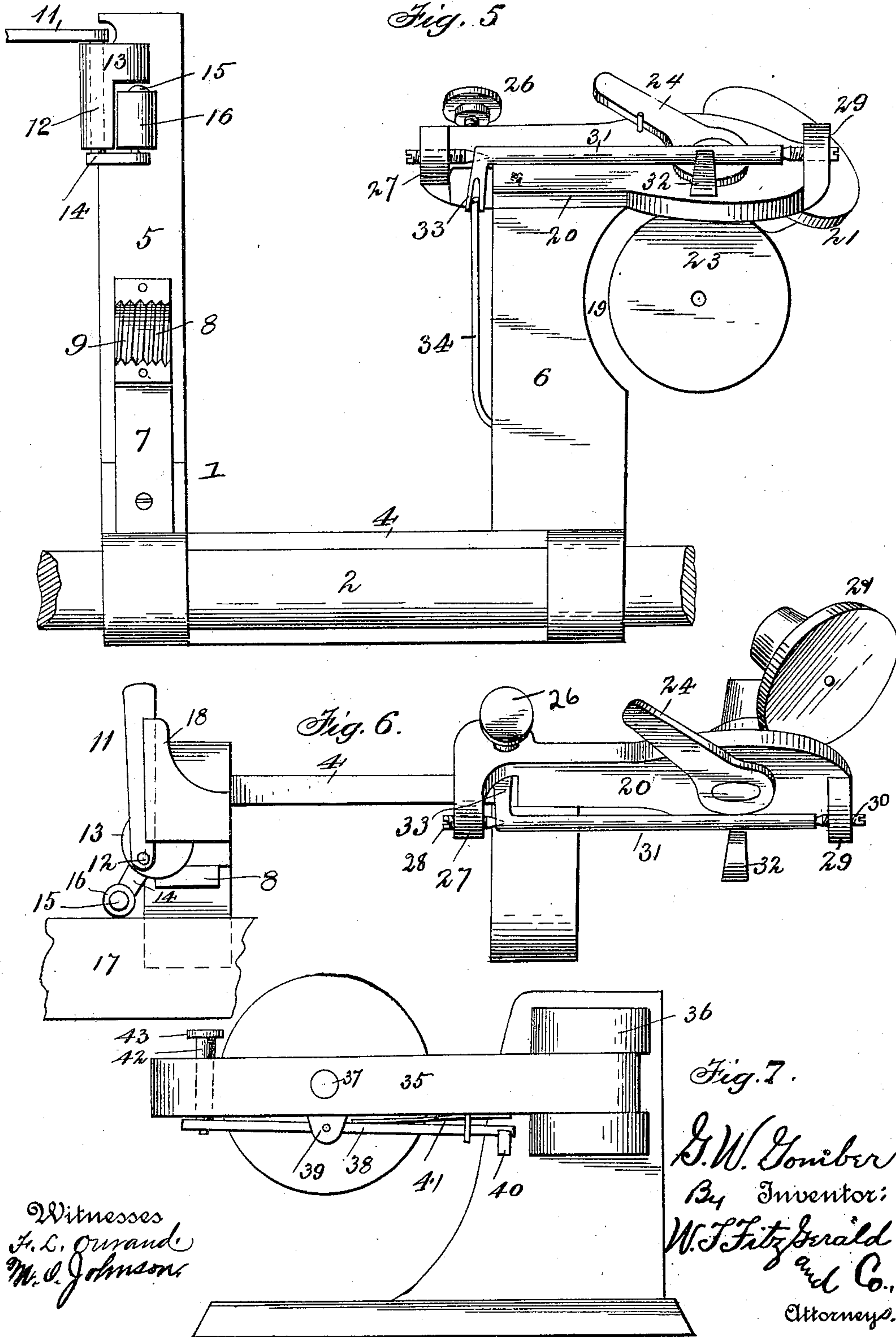
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G. W. GOMBER.
TALKING MACHINE.

(Application filed Sept. 5, 1896.)

(No Model.)

2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

GEORGE W. GOMBER, OF CONYNGHAM, PENNSYLVANIA, ASSIGNOR, BY
MESNE ASSIGNMENTS, TO THE AMERICAN MULTIPLEX TALKING
MACHINE COMPANY, OF WEST VIRGINIA.

TALKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 659,736, dated October 16, 1900.

Application filed September 5, 1896. Serial No. 604,968. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. GOMBER, a citizen of the United States, residing at Conyngham, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Talking-Machines; and I do hereby 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.

The object of the invention hereinafter described and claimed is to supplement certain details of construction fully set forth and claimed in my application for Letters Patent for improvements in talking-machines, filed August 18, 1896, Serial No. 603,128.

My invention also comprehends certain improvements in the formation of the diaphragm.

My invention relates to the improvement of certain details involved in the production of a completely-operative talking-machine, and relates more particularly to the formation of the carriage, to a paring apparatus mounted upon said carriage, and to a duplex diaphragm-holder, and, further, to means for providing a bearing-point and a holder therefor which will enable it to hold such bearing-point into engagement with the outer end of the tablet-cylinder, and means for locking such holder in its operative position.

It will be seen that the construction herein described, and illustrated by the accompanying drawings, is, aside from the diaphragm, practically a varied form from that set forth in my application above noted, and while in some particulars the variation may appear to be slight yet I have discovered by practice and demonstration that such changes are material and valuable, rendering the machine more complete and tractable.

The frame proper of the phonograph, it will be seen, is formed, substantially, in the usual manner and provides bearing-seats for the cylinder-carrying shaft and also for the fixed shaft, upon which the carriage rides.

Various details of my invention will be referred to in the accompanying drawings,

which are made a part of this application, and in which—

Figure 1 is a top plan view of the carriage and some of the contiguous parts of the talking-machine, showing the relative arrangement of such parts with respect to the carriage. Fig. 2 is a side elevation of the carriage. Fig. 3 is a detail in elevation of the duplex diaphragm-holder. Fig. 4 is a side elevation of the diaphragm. Fig. 5 is a bottom plan of the carriage. Fig. 6 is a front elevation thereof, while Fig. 7 is an end view showing the bearing-carrying gate. Fig. 8 is a vertical section of the diaphragm.

It will be seen from the foregoing figures that the illustration of my invention is confined to the carriage and the parts mounted thereon, as I deem it unnecessary to illustrate the complete talking-machine.

Only such parts of the machine are shown as are necessary to determine the relationship between the same and the carriage.

For convenience of referring to the details of construction each part will be designated by the same figure of reference throughout the several views.

In order to enable the carriage 1 to be freely and easily reciprocated upon the shaft 2, I provide the roller-bearings 3, which are suitably mounted in the end of the carriage, as shown, and are adapted to contact with the upper periphery of said shaft, thus reducing the strain or friction due to the movement of the carriage to the minimum.

It will be seen that the carriage proper consists of the end section or body 4 and the side sections 5 6. The object in thus providing the two separate side sections is to obviate the necessity of forming the carriage of one piece of material, resulting in lightness of weight for the carriage and also leaving the open section between the side pieces 5 6, permitting at all times a free inspection of the tablet or other parts under the carriage.

Upon the under side of the side section 5 of the carriage and at a point near the shaft 2 I secure the spring 7 in such a manner that its free end will be held slightly out of conflict with said section, as will be clearly seen

in Fig. 2 of the drawings. To the free end of the spring thus mounted I attach the bearing-block 8, having the threaded concave face 9, adapted for contact with the threaded shaft 10. By thus mounting the bearing-block upon the end of the spring a yielding contact will be provided for said shaft when the carriage is dropped into its operative place, thus taking up all jar or blows following a careless manipulation of the carriage.

In order to readily though slightly raise the carriage and its accompanying bearing-block out of contact with the threaded shaft 10, I provide the lever 11. Said lever 11 is rigidly connected at its lower end to the shaft 12, which passes through the bearing-seat 13, connected to the outer end of the section 5. The shaft 12 therefore is disposed parallel with said section and reaches through the bearing-seat 13 and is rigidly connected to the crank-arm 14, which in turn carries the outwardly-reaching axle 15, upon which is mounted the friction-roller 16, as more fully shown in Fig. 5 of the drawings. By this construction it will be seen that the friction-roller thus provided reaches downward into contact with the track 17, forming part of the framework of the machine, and is adapted to ride upon said track when the carriage is reciprocated upon its shaft.

The crank-arm 14 is so mounted upon the shaft 12 with respect to the operating-lever 11 that when said lever is resting in a vertical plane against the stop or support 18 said crank-arm will rest in an inclined position, its lower end reaching outward from the plane of the lever, and thus causing the weight of the carriage to hold said lever firmly against the stop provided therefor. It will be seen by this construction, more particularly illustrated in Fig. 6 of the drawings, that when the upper end of the lever is drawn away from its stop it will cause the friction-roller to travel inward toward the carriage until the plane occupied by the lever when in a vertical position is passed, when the weight of the carriage and the lever will both operate to cause said friction-roller to travel still farther inward and by such means lower the outer end of the carriage sufficiently to bring the bearing-block into contact with its threaded shaft.

By the construction above set forth it will be seen that the outer end of the carriage is provided with an antifriction device both when said carriage is in an elevated and depressed condition—a valuable consideration, reducing, as it does, to a minimum the power required to reciprocate the carriage.

The side section 6 of the carriage is adapted to carry a paring mechanism for the tablet and also provides a seat, upon which I pivotally mount my duplex diaphragm-holder. The outer edge of the section 6 is cut away, forming the concavity 19, the office of which is to enable the diaphragm-holder to be more closely adjusted or mounted to said section.

At the outer edge and preferably at the extreme end of said section 6 I erect the arm 20, which, it will be understood, may be formed integrally with said section or may be secured thereto in any preferred way. It will be seen that said arm is disposed radially with respect to the tablet-cylinder, the object of such disposition being to enable me to mount the diaphragm-holder 21 so that the same may be reciprocated upon the journal 22 when the latter is properly seated in bearings provided in the arm 20.

The diaphragm-holder 21 may be formed in any preferred manner and consists of the frame-section 23, adapted to encompass the diaphragm proper and securely hold the same therein. Said frame is so formed that the diaphragms carried thereby are disposed in an entirely different plane with respect to each other, the degree of inclination for which being determined by the requirements in each case, the object being to enable first one and then the other diaphragm to be brought into operative contact with the tablet when the journal 22 is rotated in its bearing by means of the lever 24. By this construction and by the peculiar arrangement of the arm 20, upon which the holder is mounted, I so adjust the diaphragms that they will be held when at work in such a position that the operator may at all times observe the working of either the recording or reproducing stylus without the necessity of changing his position or elevating the carriage.

Any suitable means, it will be understood, may be provided for holding the lever 24 in an adjusted position when the desired diaphragm is at work. This may be accomplished by means of a suitably-constructed spring or by simply providing that the journal 22 shall not turn freely in its bearing.

The inner end of the arm 20 terminates in the overreaching lip forming the seat 25 for the set-screw 26 and the depending terminal 27, the office of which is to provide a bearing-seat for the screw 28. The opposite end of the arm 20 terminates in a depending bearing-seat 29, which in like manner carries the threaded bearing-point 30, and the office performed by said bearing-points 28 30 is to adjust and hold in its operative position the knife-carrying shaft 31, the latter being provided with diametrical bores to receive said points.

The paring-knife 32 is attached to the shaft 31 at such a point thereon that its cutting edge will be disposed and adapted to follow the transcribing-stylus or to precede the recording-stylus. By this arrangement a paring mechanism is provided which will prepare the surface of the tablet for receiving a new record simultaneously with the action of the machine necessary to form such record upon the tablet. This result may be accomplished while either of the diaphragms is at work, as may be desired.

The shaft 31 terminates upon its inner end

in the operating-lever 33, which reaches inward along the inner edge of section 6 to a point opposite the protruding end of the set-screw 26, which is adapted to bear against the
 5 upperside of the lever for the purpose of overcoming the tension of the spring 34, mounted upon the inner edge of section 6, as shown. It will be seen that the free end of the spring 34 thus provided rests or bears against the
 10 under side of the lever 33, causing said lever to be normally elevated, though the degree of such elevation is fully controlled by the set-screw 26. This construction is more clearly brought out in Fig. 2 of the drawings,
 15 where it will be seen that by turning said set-screw home in its seat 25 the lever 33 will be depressed, resulting in the recession of the cutting-blade from contact with the tablet or control its cutting capacity, as may be de-
 20 sired. Turning the set-screw to effect its withdrawal enables the spring 34 to bring its tensile properties to bear against the lever, which by being elevated by such action causes the knife to engage with the tablet deeply or
 25 otherwise, as preferred.

In order that the tablet may be readily removed from its cylinder, I provide the laterally-swinging gate 35, connected to the frame of the machine by a suitably-formed hinge
 30 36. Said gate carries the bearing-point 37, which is adapted to engage with the diametrical bore provided in the cylinder-carrying shaft when the gate is closed.

In order to readily lock the gate in its operative position or open the same when it is desired to renew the tablet, I provide the locking-lever 38, mounted, preferably, upon the under side of the gate, substantially as shown—that is to say, said lever 38 is pivoted
 40 near its central section in the seat 39, the inner end of said lever reaching into engagement with the keeper 40, secured, as shown, to the frame of the machine. In order to hold the inner end of said lever for engagement with the keeper, I provide the spring
 45 41, one end of which is secured to the under side of the gate, while the free end thereof reaches downward and bears against the lever, or, if preferred, the spring may be attached to the lever and its free end arranged
 50 to bear against the under side of the gate, either construction subserving the same purpose. The outer end of the spring 38 has attached thereto the operating-handle 42, which
 55 reaches upward through a suitably-provided aperture in the arm and terminates in the knob or button 43 for manual control. By depressing the button 43 the outer end of the lever will be moved downward, while its inner
 60 end will be elevated, thus releasing such end from engagement with the keeper 40 and enabling the gate to be swung outward for access to the tablet. By swinging the gate in a closed position the bearing-point 37 will en-
 65 gage in the diametrical bore provided in the tablet-carrying cylinder and will be there

held in position by the locking device just described, as will be readily understood.

I desire now to call attention to the improvements involved in the production of my
 70 invention in diaphragms comprehending both the framework of the diaphragm and means for holding the diaphragm proper in its operative position and also for providing a greater
 75 resonancy for the complete device. The details of the formation of the same are clearly set forth in Figs. 4 and 8 of the drawings.

Referring to the various features involved in materializing my invention, 44 indicates the body proper, which is cup-shaped in form
 80 and is disposed in its operative position in an inverted condition and is provided with the central opening or aperture 45 in its upper side, and the upper enlarged rim 46, provided on its outer edge with the milled surface 47.
 85

What may be termed the "internal" parts of my improved diaphragm are illustrated by the sections 48 49, the former adapted to receive the enlarged end of the latter, as shown. Said section 48 consists of the hollow body 49
 90 and the suspended rim 50 erected thereon and held above the surface of said body by means of the supports 51. The inner face of the lower edge of the rim 50 is provided with the radial flange 52, and upon said flange the pe-
 95 riphery of the plate forming the diaphragm proper, 53, is adapted to rest, where it is securely held by the lower edge or rim 54, provided upon the section 49. The section 48 is provided with a diametrical bore, through
 100 which the link 55, connecting the stylus-arm with the diaphragm-plate, is designed to extend. By thus mounting the diaphragm-plate it will be seen that the same is held firmly in suspension and reliably to its work.
 105

The sections 48 49 may have a screw-threaded connection or the enlarged end of the section 49 may be merely entered loosely within the rim provided upon the section 48, so as
 110 to reach the rim of the diaphragm-plate and bear firmly thereon, either form of connection for these parts being equally effective. When the sections 48 49 are assembled by entering the smooth or threaded rims, as the
 115 case may be, and thus causing the same to bear firmly upon the rim of the diaphragm-plate, they are entered in the open end of the body, causing the neck formed upon the section 49 to protrude through the aperture 45, adapting said neck for ready engagement
 120 with the usual flexible tube employed to convey sound to the operator.

Section 48, it will be seen, is provided with the radial enlargement or rim 56, which is threaded upon its outer surface and adapted
 125 for engagement with the threaded seat 57, provided in the open end of the body. This arrangement enables the said body to be firmly secured to said section 48, and thus enable the parts to be held reliably in their
 130 respective operative positions.

It will be seen from the construction above

set forth that the diaphragm-plate is very sensitively poised in position, enabling it to readily register and accentuate all sounds conveyed thereto by means of its link connection with the stylus. An equally-sensitive adjustment of the diaphragm-plate has not to my knowledge heretofore been made, and I therefore desire to call particular attention to this part of the invention.

By providing the threaded connection for the several sections involved in the formation of the diaphragm they may be firmly and rigidly connected together, practically producing a diaphragm body or holder of one piece, resulting in great sensitiveness of vibration. It will also be seen that by providing a threaded connection for the section 48 and the body proper and a plain or telescoping connection for the sections 48 49 all of the parts will be bound firmly together when said section 48 is turned home in the seat provided in the body proper. The location of the track 17 at one side of the cylinder is a valuable feature of my invention, as it effectively performs its office of supporting the carriage, yet does not obstruct the view of the operator from the other parts of the machine.

Having thus presented the details involved in the formation of my improvements in talking-machines, I will state that what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with the carriage and the tablet-carrying cylinder, of a duplex diaphragm-holder, constructed substantially as described, and consisting of the frame, so formed that each end will rest in a different plane and having attached thereto the journal 22 and the operating-lever 24, as and for the purpose set forth.

2. In an elevating device for phonograph-carriages, the combination with the carriage of the lever 11, the shaft 12 connected thereto, the crank-arm attached to said shaft and anti-friction-rollers mounted upon said arm, all ar-

ranged and operatively combined as and for the purpose set forth.

3. The combination with a phonograph-carriage and tablet-carrying cylinder, of a paring device mounted upon said carriage and consisting of the shaft 31; an operating-lever attached thereto; center bearing-points for holding said shaft; a depending knife attached to the shaft and adapted to contact with the tablet at a point in advance of the recorder or following transcriber; a spring for normally holding said knife into engagement with the tablet, and a set-screw adapted to overcome said spring and regulate the cutting depth of said knife, substantially as and for the purpose set forth.

4. In a talking-machine the combination with the tablet-carrying cylinder, of a carriage, constructed substantially as shown, and provided with the diaphragm-carrying arm disposed radially with respect to the cylinder and adapted to form a seat upon its outer end for the diaphragm-holder and the paring-shaft, and upon its inner end provided with the bearing-seat for the set-screw 26 and the bearing-points 28 and 30, and anti-friction-rollers mounted upon the under side of said carriage, as and for the purpose set forth.

5. As an improvement in diaphragms the combination of the hollow plate-holding section; a suspended rim erected thereon; a terminal section having a collar or neck, substantially as described, adapted to bear against the diaphragm-plate mounted within said rim, and a housing adapted to partly inclose said terminal section and having a threaded connection with the hollow section and adapted to force the latter into close engagement with said terminal section, thus binding all the parts together, as and for the purpose set forth.

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

GEORGE W. GOMBER.

Witnesses:

HARRY F. GOMBER,
RALPH A. VOEGELE.