

No. 680,339.

Patented Aug. 13, 1901.

T. H. MACDONALD.

GRAPHOPHONE.

(Application filed Nov. 22, 1897.)

(No Model.)

2 Sheets—Sheet 1.

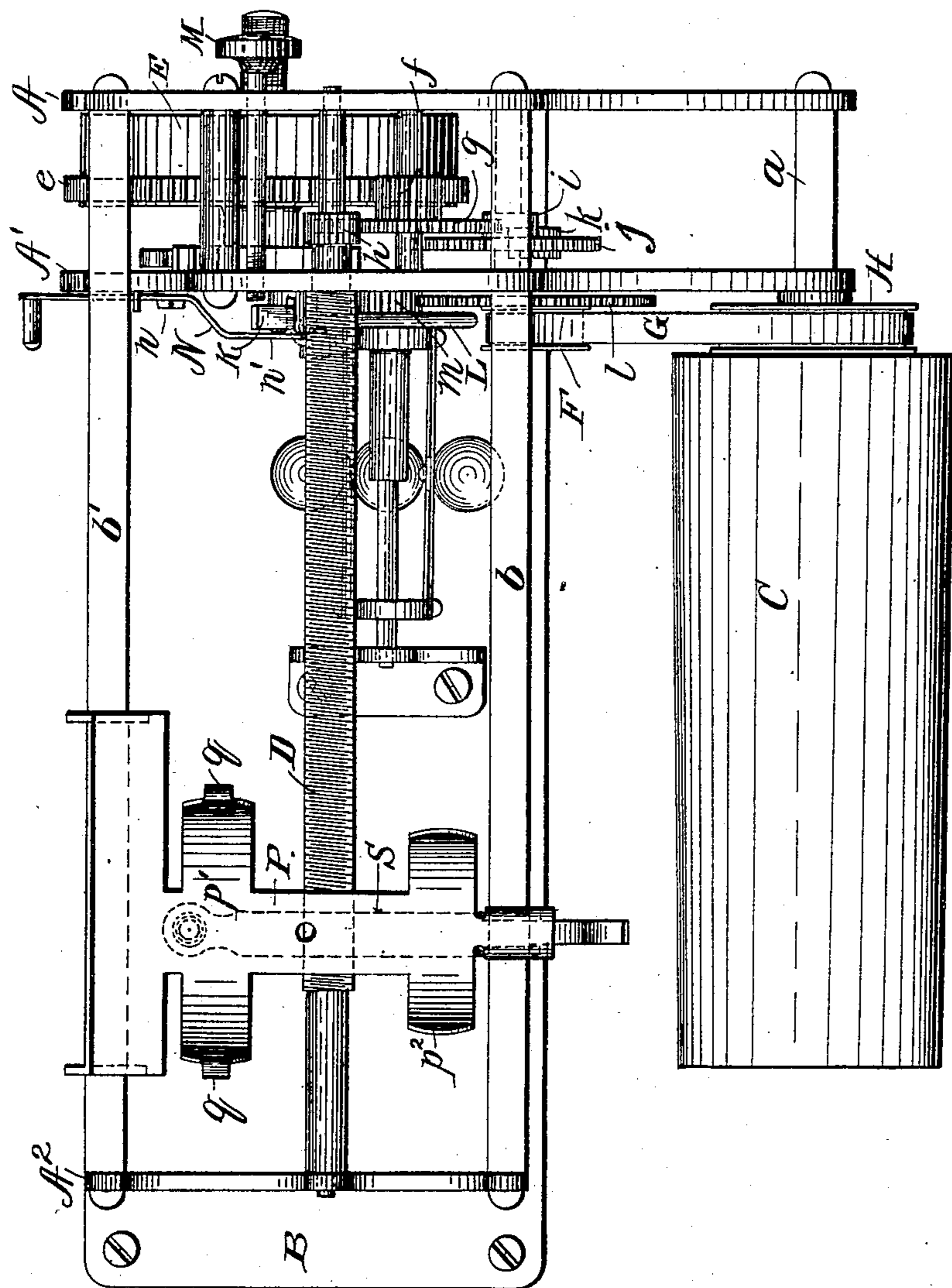


Fig. 1.

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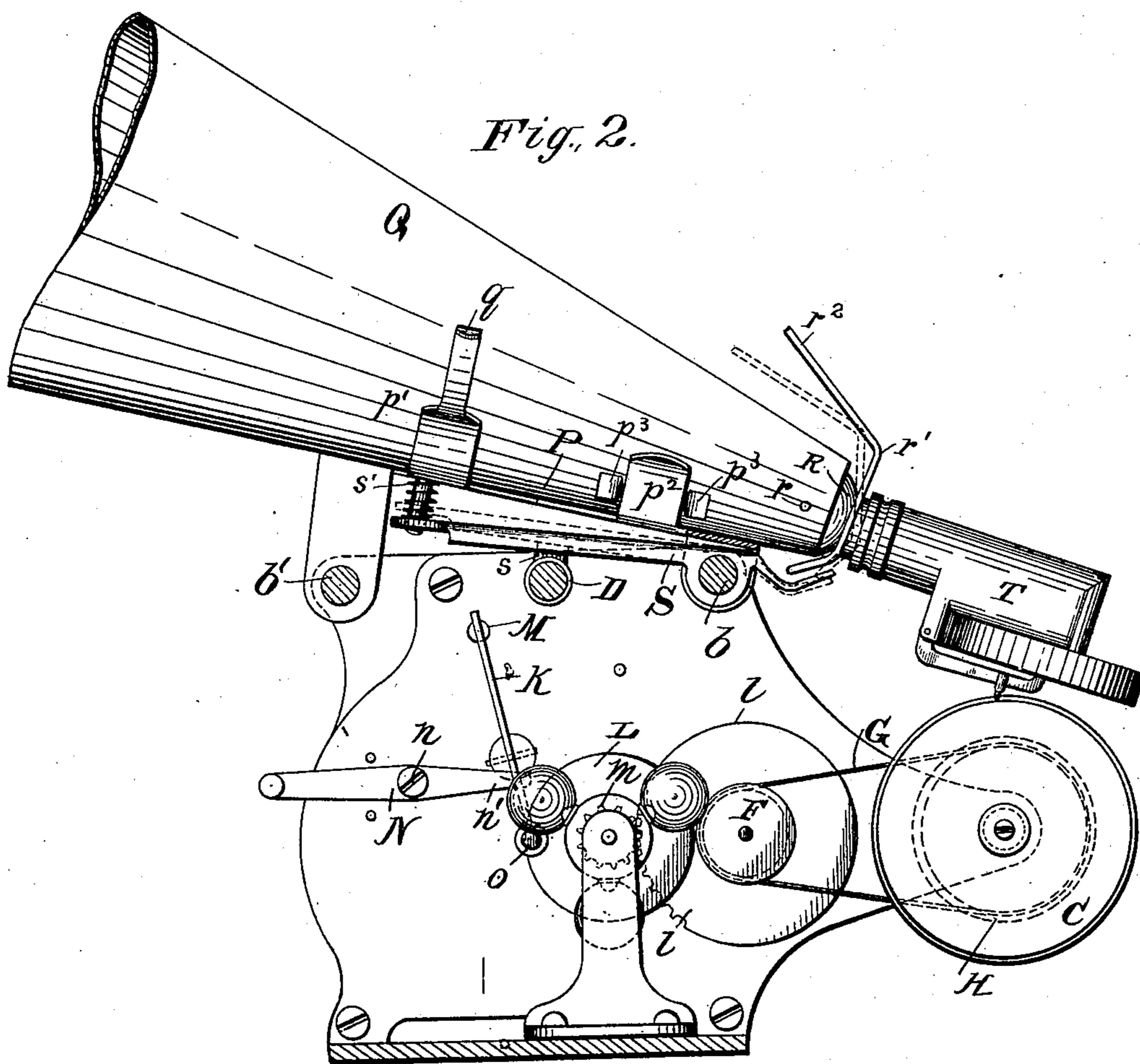
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2 Sheets—Sheet 2.

(No Model.)



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Robert Lewis.

Inventor.

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UNITED STATES PATENT OFFICE.

THOMAS H. MACDONALD, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO
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GRAPHOPHONE.

SPECIFICATION forming part of Letters Patent No. 680,339, dated August 13, 1901.

Application filed November 22, 1897. Serial No. 659,407. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. MACDONALD, of Bridgeport, Connecticut, have invented new and useful Improvements in Graphophones; which improvements are fully set forth in the following specification.

The object of the present invention is to produce a graphophone which while capable of giving results as good as formerly in the reproduction of musical and other sound records shall yet be light, small, compact, and of economical construction. To that end I have devised certain improvements in the arrangements of the motor, feed mechanism, reproducer-carriage, and other parts which can be most conveniently explained in connection with the accompanying drawings, in which—

Figure 1 is a plan view of a graphophone and its driving mechanism constructed in accordance with my invention. Fig. 2 is a vertical cross-section and side elevation.

The frame of the machine consists, mainly, of three upright plates A A' A^2 , all mounted on bed-plate B . Plates A A' have forward projections, between which is a tube a , which constitutes a long bearing for the mandrel-shaft, the mandrel C being unsupported at its other end. These plates also constitute the bearings for the spindles of the spring-motor, whose gears are between said plates. The three plates are held together at the top by a front tie-rod b and a rear tie-rod b' , which rods also constitute the guides or ways upon which the reproducer-carriage slides, as will be hereinafter described. About midway between these two rods is the feed-screw D , which is journaled in the end plates A A^2 and passes loosely through the intermediate plate A' .

E represents the barrel of the spring-motor. It carries a large gear e , which drives a pinion f . On the same shaft with the latter is a spur-gear g , which drives a pinion h on the feed-screw shaft. Motion is communicated from gear g to the mandrel C through pinion i , gear j , and pinion k to the shaft of the latter, which passes through plate A' and carries on the opposite side thereof a spur-gear l and a pulley F . The latter is connected by a belt G with a larger pulley H on the mandrel-shaft. Gear l engages a pinion

m on the rotating sleeve of the friction-governor, which is preferably of the type described in my Patent No. 587,265, dated July 27, 1897.

For operating the centrifugal governor as a brake, and also a speed-regulator for varying speeds, a lever K is pivoted on a projection of plate A' and carries at one end a leather stud o , adapted to make contact with the rotatory friction-disk L . The outer face of this lever K is inclined somewhat outwardly away from the plate A' , providing a slight cam-surface. An adjusting-screw M determines the normal position of the lever. An arm N , pivoted at n to plate A' and whose rear projection n' bears on lever K , serves in one position to press stud o forcibly against disk L by means of the cam-surface on lever K , and so arrest the motor, and in the other position to throw lever K into contact with adjusting-screw M .

P represents the carriage for the sound reproducer or recorder T , mounted to slide on the tie-rods b b' . It has a saddle formed of two curved plates p' p^2 , in which rests a horn Q , attached thereto by prolongations of one of these plates, as p' , which constitute spring-clips q q , or by other suitable attaching or clamping means. Lugs p^3 on horn Q engage plate p^2 and keep the horn from slipping. The hollow socket R , to which the recorder or reproducer is connected in the well-known way, is pivoted by pin r directly in the small end of the horn. Beneath carriage P and pivoted on rod b is a lever S , carrying a section of a nut s , which normally engages feed-screw D , being pressed into engagement therewith by a light helical spring s' . Socket R has a bent metal plate r' , the lower end of which is just above the end of lever S , the upper end r^2 constituting a finger-piece. By pressing on this finger-piece socket R is tilted on its pivot, thus raising the recorder (or reproducer) from the tablet, and by the same movement plate r' depresses the end of lever S , thus lifting the nut s from engagement with the feed-screw.

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

1. In a graphophone the combination of a

base, two upright plates secured thereto, a motor-spring between said plates and having its shaft journaled in said plates, a feed-screw journaled in one of said plates and in a third
 5 plate, a carriage actuated by said screw, a sound-conveyer supported by said carriage but removable therefrom, a recorder or reproducer supported by said sound-conveyer, a suitable gearing between the motor-shaft
 10 and the mandrel-shaft and between the motor-shaft and the feed-screw, substantially as described.

2. In a graphophone, the combination of a mandrel or tablet support, of a carriage,
 15 means for giving said carriage translatable motion relative to the tablet, a sound-conveyer supported on but removable from said carriage and a recorder or reproducer supported by said conveyer, substantially as described.

20 3. The combination of a carriage and means for moving the same with a horn supported by said carriage and a recorder or reproducer supported by said horn.

4. The combination of a horn and means
 25 for supporting the same, with a recorder or reproducer supported by said horn.

5. The combination of a horn and means for supporting the same, with a recorder or reproducer loosely mounted in and supported
 30 by the small end of the horn.

6. In a graphophone the combination with the feed-screw, of a carriage, a horn supported thereby, and a hollow socket for attachment of the recorder or reproducer sup-
 35 ported in the small end of said horn, substantially as described.

7. The combination with the feed-screw, of a sliding carriage adapted to be driven by said feed-screw, a horn supported by said car-
 40 riage, and a hollow socket swiveled in the small end of said horn and provided with means for attachment of a recorder or reproducer, substantially as described.

8. The combination with the carriage, and
 45 means for moving the same, of a saddle on said carriage, a horn provided at its small end with a socket attachment for the recorder or

reproducer, and means for attaching said horn to said saddle, substantially as described.

9. The combination with the feed-screw, of the carriage, the horn supported thereby, the nut for engagement with said screw movably supported by said carriage, the socket swiveled in the end of said horn, and connections
 55 between the socket and nut, whereby the tilting of the former moves the latter into or out of engagement with the feed-screw, substantially as described.

10. The combination with the feed-screw, 60 of the carriage, the horn supported thereby, the nut for engaging said screw, a lever pivoted on said carriage and connected with said nut the socket swiveled in the end of said horn, and a plate on said socket engaging said
 65 lever, substantially as described.

11. In a talking-machine, the combination with a motor and its train of gears supported by and between two bearing-plates, of a feed-screw that propels the carriage for a recorder
 70 or reproducer, a governor located below the said feed-screw, and a mandrel supported at one end from said bearing-plates and located in front of said feed-screw and governor, the said feed-screw, governor, and mandrel be-
 75 ing so arranged relative to each other and to the driving-gears, that motion is imparted to each of them from opposite sides of a common driving-gear.

12. In a talking-machine, the combination 80 of a recorder or reproducer supported by a sound-conveyer, said sound-conveyer being both supported and moved longitudinally by a carriage, and said carriage in combination with a mandrel and means for revolving said
 85 mandrel while moving said carriage longitudinally, substantially as described.

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

THOMAS H. MACDONALD.

Witnesses:

WM. IRELAND STAN,
 A. B. KEOUGH.