

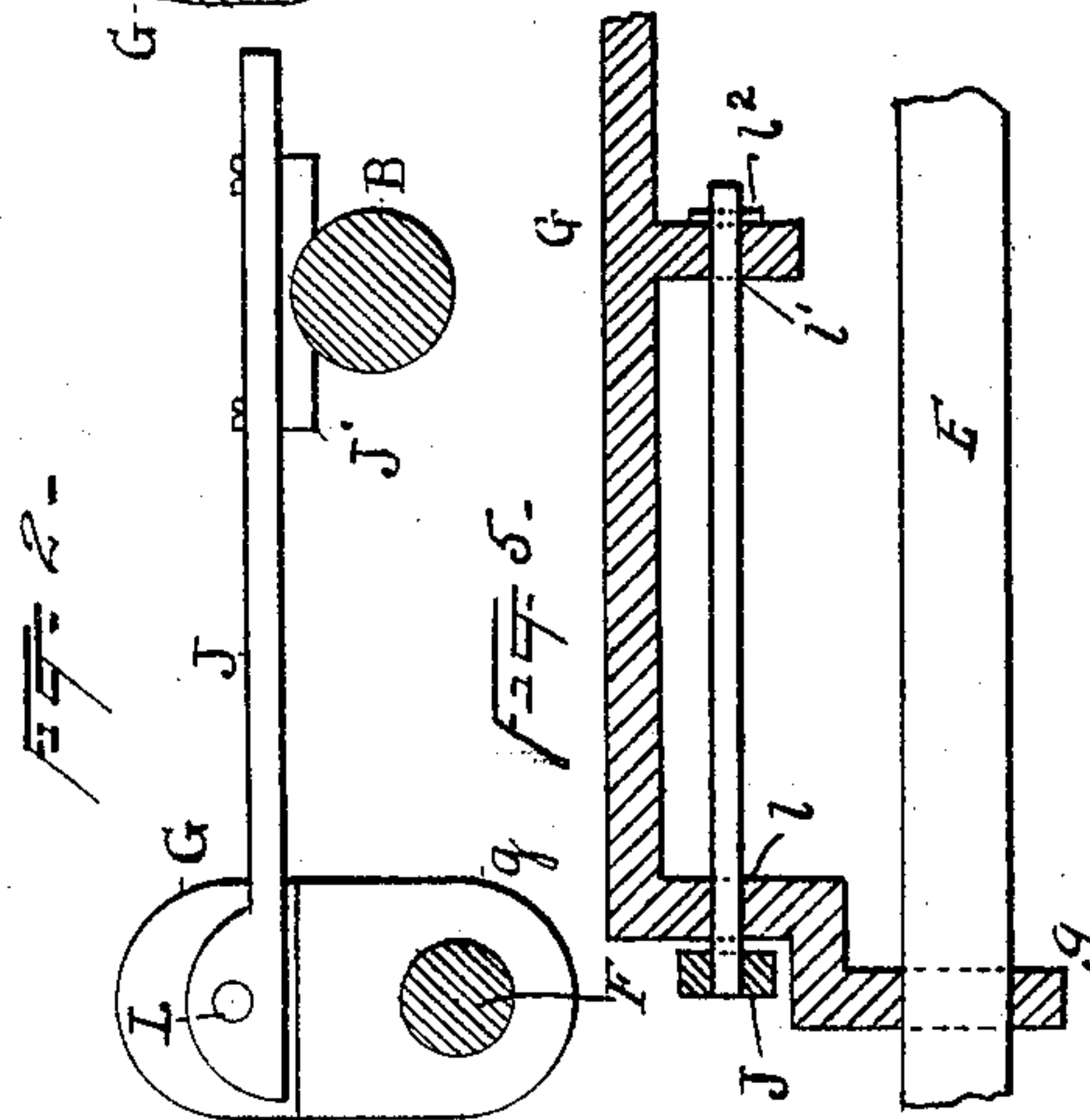
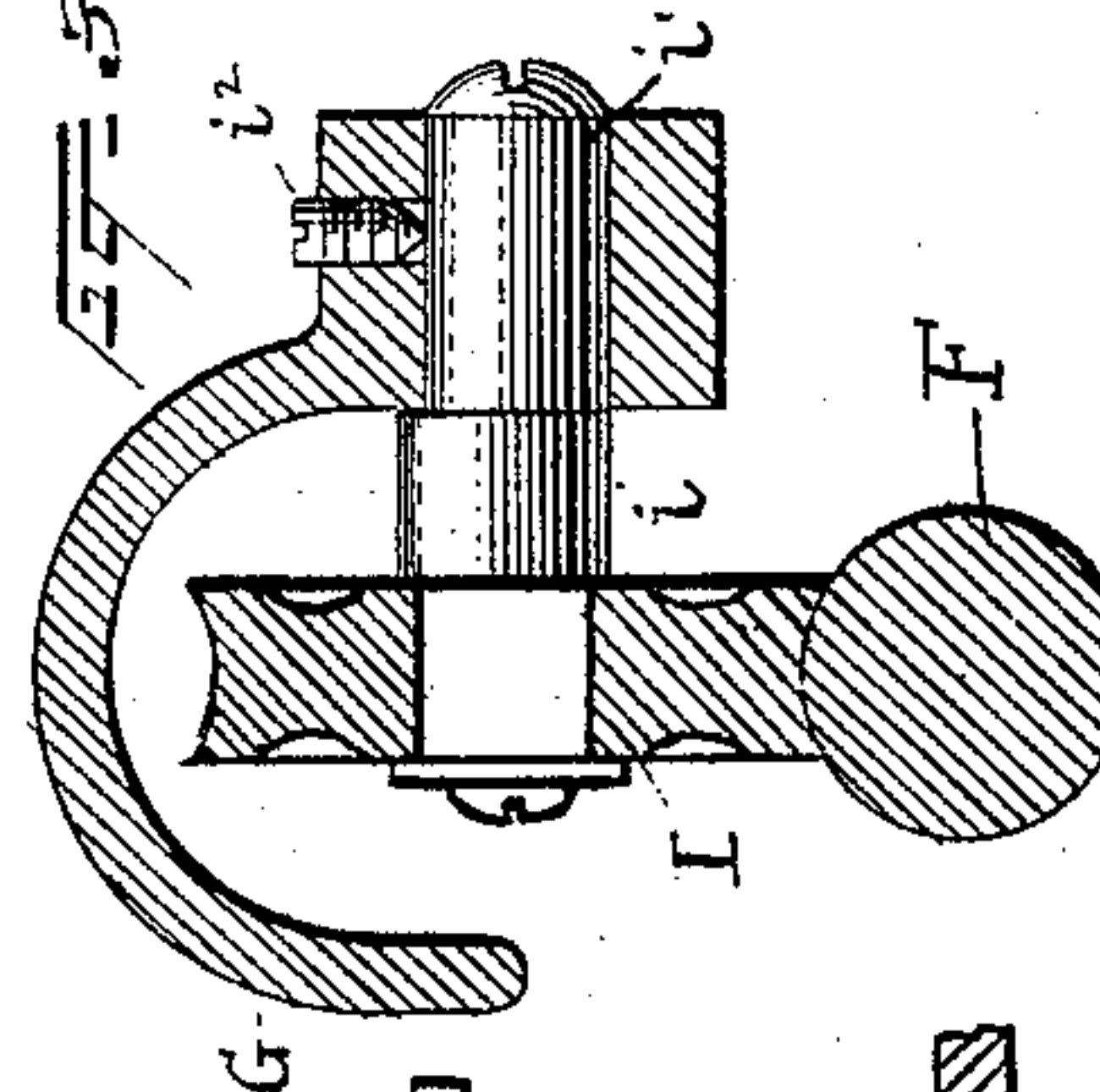
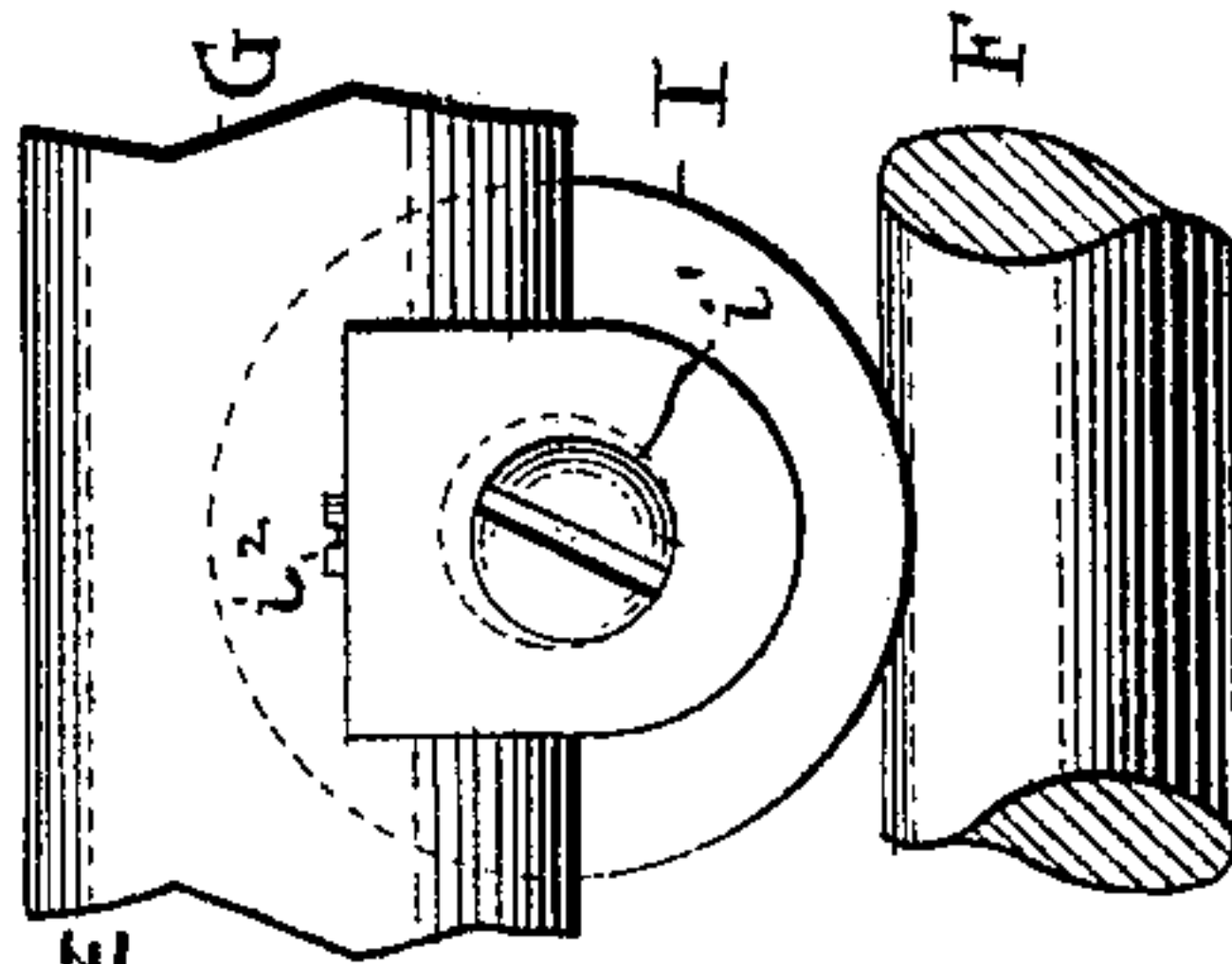
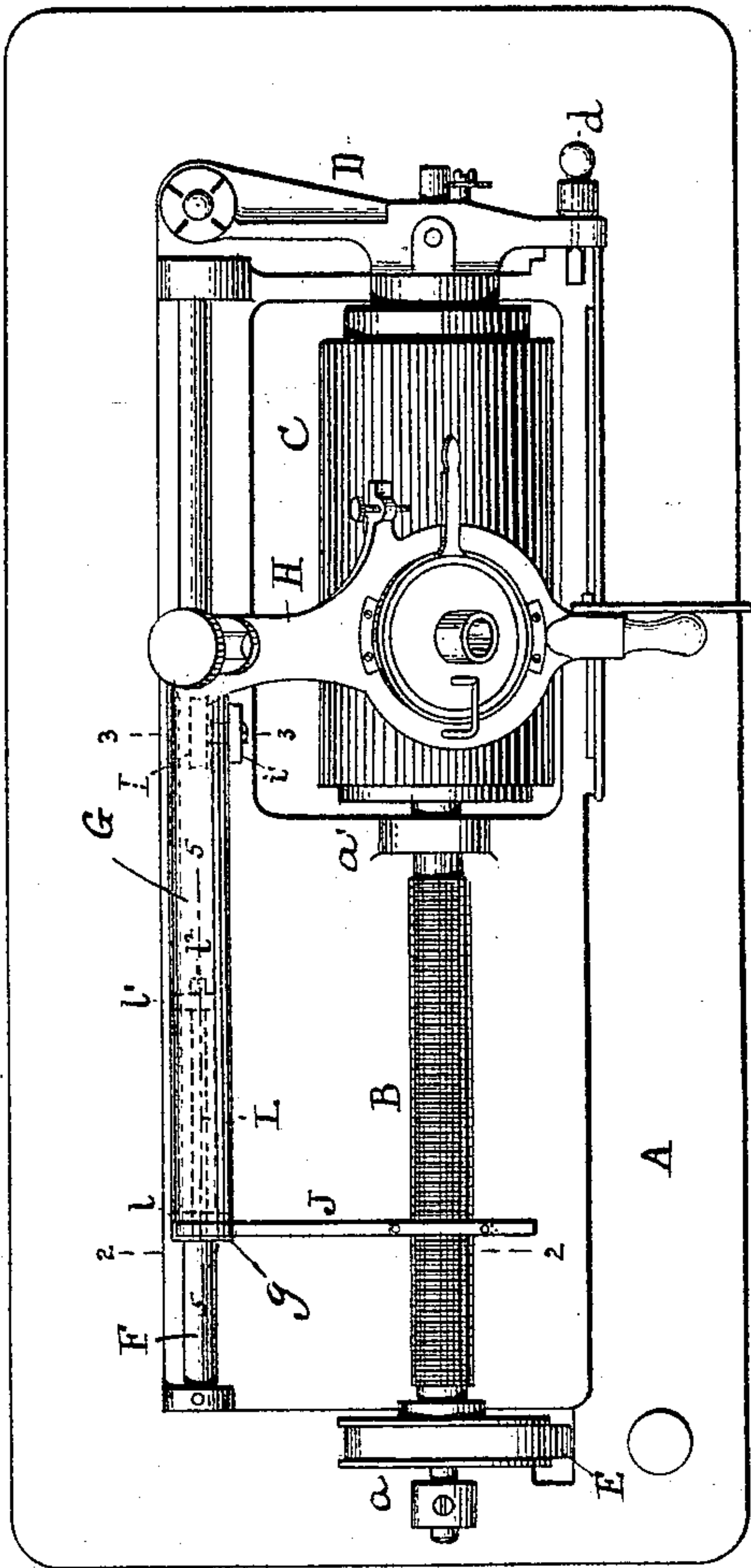
No. 607,588.

Patented July 19, 1898.

T. A. EDISON.
PHONOGRAPH.

(Application filed Jan. 27, 1897.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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PHONOGRAPH.

SPECIFICATION forming part of Letters Patent No. 607,588, dated July 19, 1898.

Application filed January 27, 1897. Serial No. 620,974. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Phonographs, (Case No. 971,) of which the following is a specification.

The object of my invention is to produce a light-running carriage for the recording or reproducing device in phonographs, and particularly for phonographs driven by a spring or weight motor.

The main feature of my invention is a device or devices for adjusting the carriage relative to the guide-rod upon which it travels. This device is preferably an adjustable roller-bearing, and in the preferred form I employ one roller, which is located as nearly as possible at the center of gravity of the carriage, so that it will be practically balanced. In practice the carriage is provided with a sleeve or collar at each end, through which the guide-rod passes freely, and by means of the adjusting device the carriage can be balanced to prevent cramping at the sleeves. By employing a roller for the adjusting device the freedom of movement is greatly increased. The roller may be provided with any suitable device for adjusting it relative to the carriage and guide-rod, but I prefer the simple arrangement illustrated. In that arrangement the roller is loosely mounted upon a pin which is inserted in a socket on the carriage and whose bearing in the socket is eccentric to the bearing of the roller, so that by turning the pin the carriage may be raised or lowered, as desired. While I have referred to one roller as the "adjusting" device, it may be stated that two or more rollers may be employed; but I prefer a single roller, since the adjustment may be more readily obtained.

Another feature of my invention is the feed-arm of the carriage, which engages with the feed-screw. This arm is pivoted to the carriage by a wide double bearing to reduce lateral motion and hence prevent cramping. The feed-arm is preferably a light gravity-arm carrying a small nut-section for engaging the feed-screw. The arm is made as light as possible to reduce the friction upon the screw.

In the accompanying drawings, which illustrate my invention, Figure 1 is a plan view of a phonograph embodying my invention, the motor being omitted. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a section on the line 3 3 of Fig. 1, but on a much larger scale. Fig. 4 is an enlarged view of the adjusting device for the carriage, looking from the front of the machine; and Fig. 5 is a longitudinal vertical section of part of the carriage, showing the bearings for the feed-arm.

Referring to the drawings, A is the base of the machine, having the usual bearings *a a'* for the feed-screw B. At the right-hand end of the feed-screw is the phonogram-cylinder carrying the phonogram-blank C, the free end of the cylinder being centered by a centering-pin in the swinging arm D, which arm is provided with a locking device *d*. The feed-screw B is provided with a pulley, which is driven by a belt E, passing through openings in the bed-plate to the driving-motor. Behind the feed-screw and parallel therewith is the guide-rod F, upon which is sleeved a carriage G by means of two sleeves or collars *g*, which move freely on the rod. The carriage has an arm H projecting over the phonogram-blank or phonogram and rests on the front guide-bar, as shown. This arm carries the recording or reproducing device, as is well understood. The carriage G is provided with an adjustable roller I, which travels on the upper side of the guide-rod F and is located at the center of gravity of the carriage, so as to evenly support and practically balance the carriage. The adjustment of the roller is obtained by an eccentric-pin *i*, (see Figs. 3 and 4,) upon which the roller is free to rotate. The roller I is placed concentrically on the pin *i*, and the outer end of the pin, as shown in Figs. 3 and 4, is turned off, (see dotted lines in Fig. 4,) so that that end of the pin will have a different center from that of the roller, and this end of the pin is inserted in a socket *i'* on the carriage G. By turning the pin with a suitable tool, such as a screw-driver, the carriage can be raised or lowered by reason of the bearing of the pin in the socket *i'* being eccentric to the center of the roller. Thus by this arrangement a very delicate adjustment of the carriage can be obtained to prevent the carriage from binding on the guide-rod. A set-

screw 2² is provided to lock the pin *i* in position when adjusted.

The carriage G is fed forward by means of the feed-arm J, having the nut-section J' engaging with the feed-screw B. The feed-arm is pivoted to the carriage by a long rod L, which has a bearing in the carriage at two points *l* and *l'*, a pin *l*² being inserted in the end of the rod L to prevent its removal from the bearings. The wide double bearing provided for the feed-arm by the rod L reduces the lateral motion of the arm relative to the feed-screw and carriage. The feed-arm is quite light and rests on the feed-screw by gravity only, thereby reducing the friction on the screw.

What I claim is—

1. In a phonograph, the combination with a recorder or reproducer, a mandrel for carrying the blank, and a feed-screw, of a carriage for the recorder or reproducer, a guide-rod to which the carriage is sleeved, a friction-roller supporting the carriage at its center of gravity, and a feed-arm pivoted to the carriage and engaging the feed-screw, whereby said feed-arm does not affect the balance of said carriage on the friction-roller, substantially as set forth.

2. In a phonograph, the combination with the recorder or reproducer, of a carriage therefor, a guide-rod and guide-bar on which said carriage travels, a roller-bearing for said carriage at its center of gravity, and means for

adjusting said roller-bearing to adjust the carriage relative to the guide-rod to reduce friction, substantially as set forth. 35

3. In a phonograph, the combination with the recorder or reproducer, of a carriage therefor, a guide-rod and guide-bar on which said carriage travels, a roller-bearing for said carriage at its center of gravity, and an adjustable eccentric bearing for said roller, whereby the carriage is adjusted relative to the guide-rod to reduce friction, substantially as set forth. 40

4. In a phonograph, the combination of a guide-rod, a recorder or reproducer carriage having collars or sleeves fitting said rod, a feed-screw, and a feed-arm adapted to engage said feed-screw, said arm being pivoted to the carriage by a rod having bearings at two distant points, substantially as set forth. 45

5. In a phonograph, the combination of a guide-rod, a recorder or reproducer carriage having collars or sleeves fitting said rod, a feed-screw, and a gravity feed-arm adapted to engage said feed-screw, said arm being pivoted to the carriage by a rod having bearings at two distant points, substantially as set forth. 50

This specification signed and witnessed this 25th day of January, 1897.

THOMAS A. EDISON.

Witnesses:

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