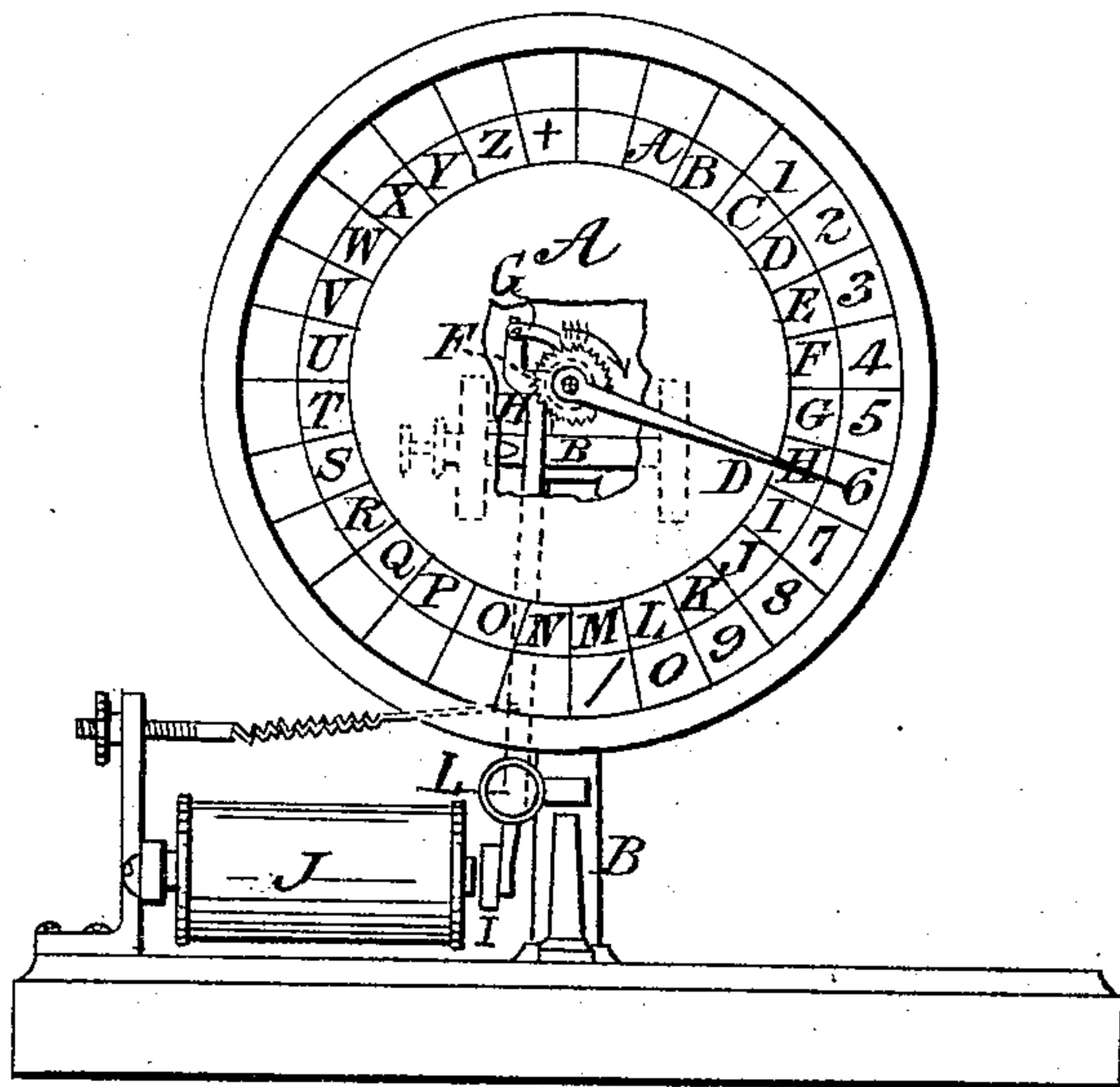


E. T. GILLILAND.  
Dial Telegraph.

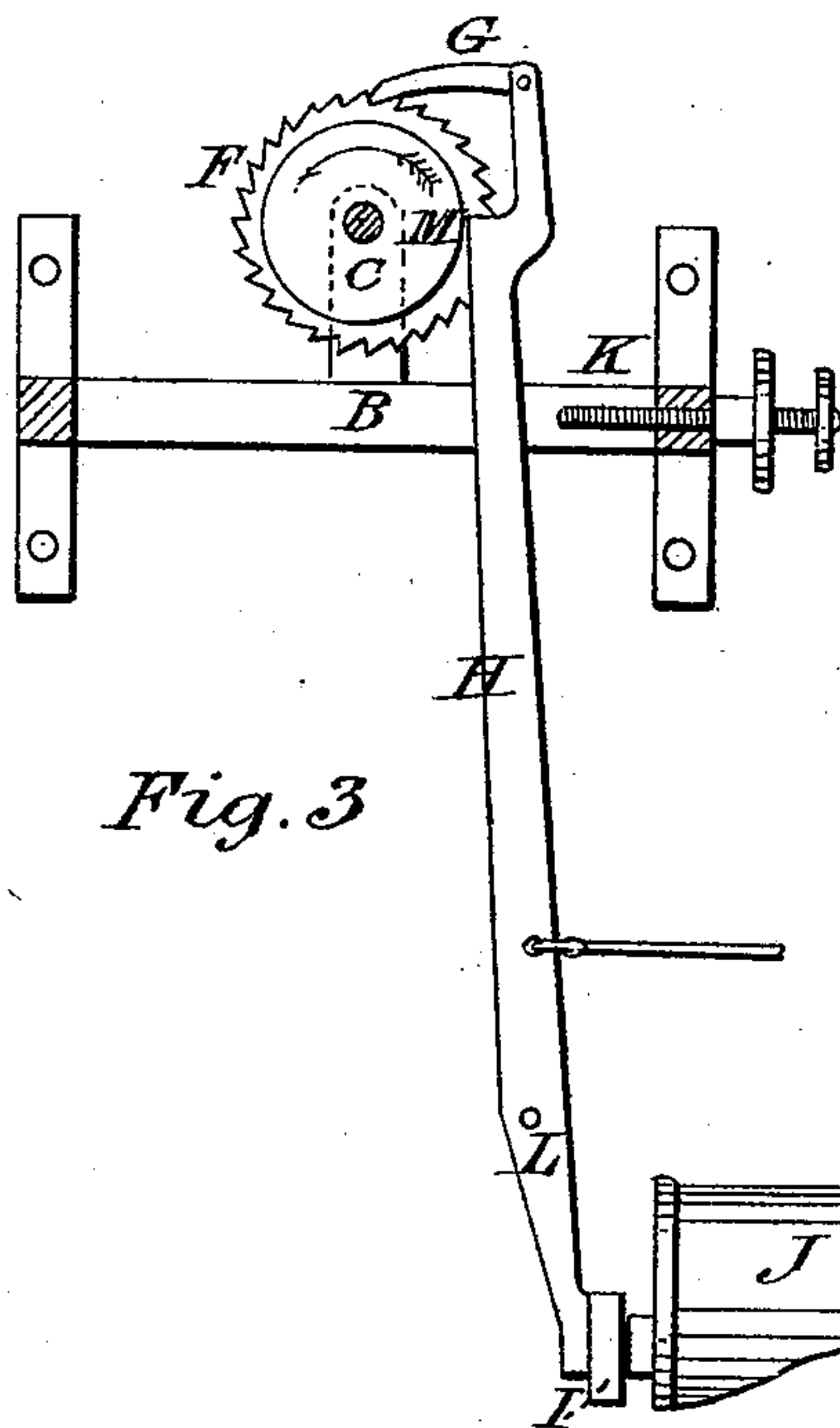
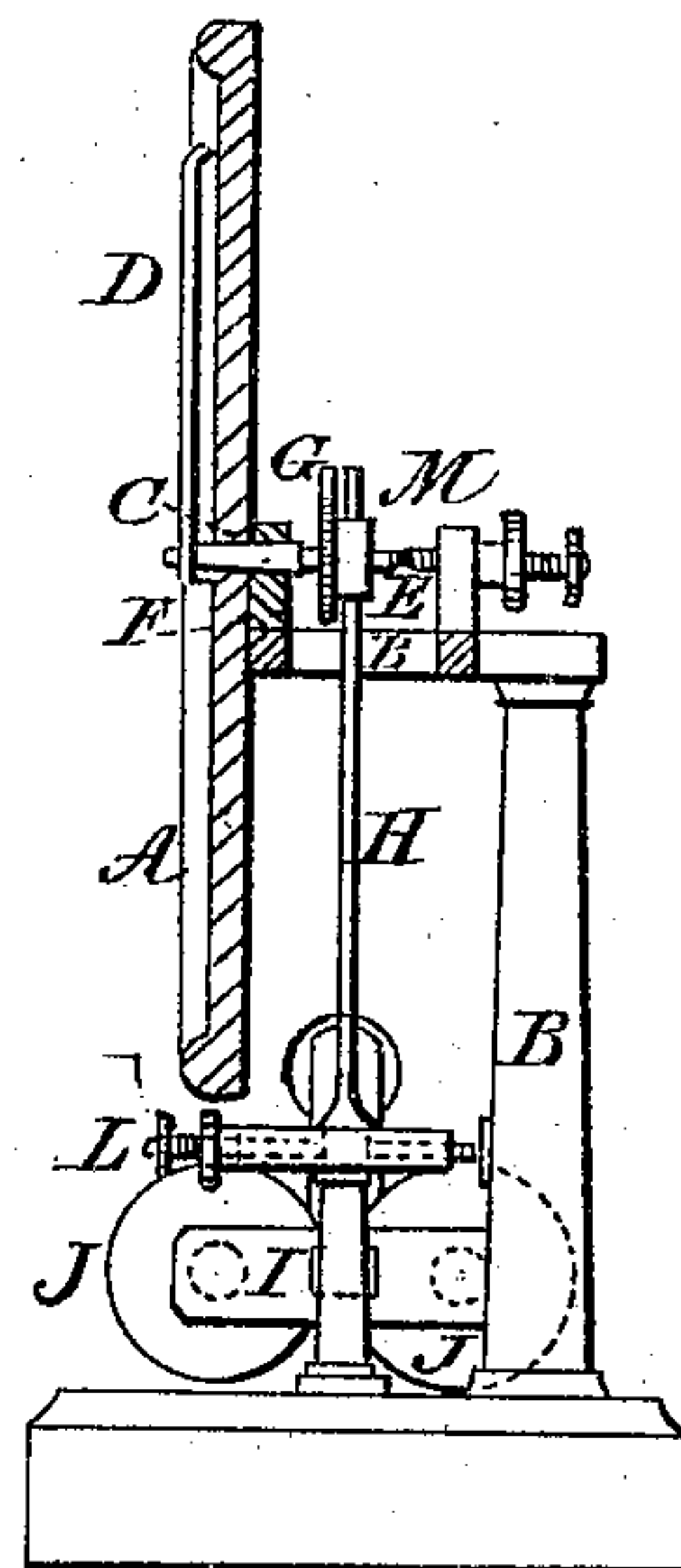
No. 97,076.

Patented Nov. 23, 1869.

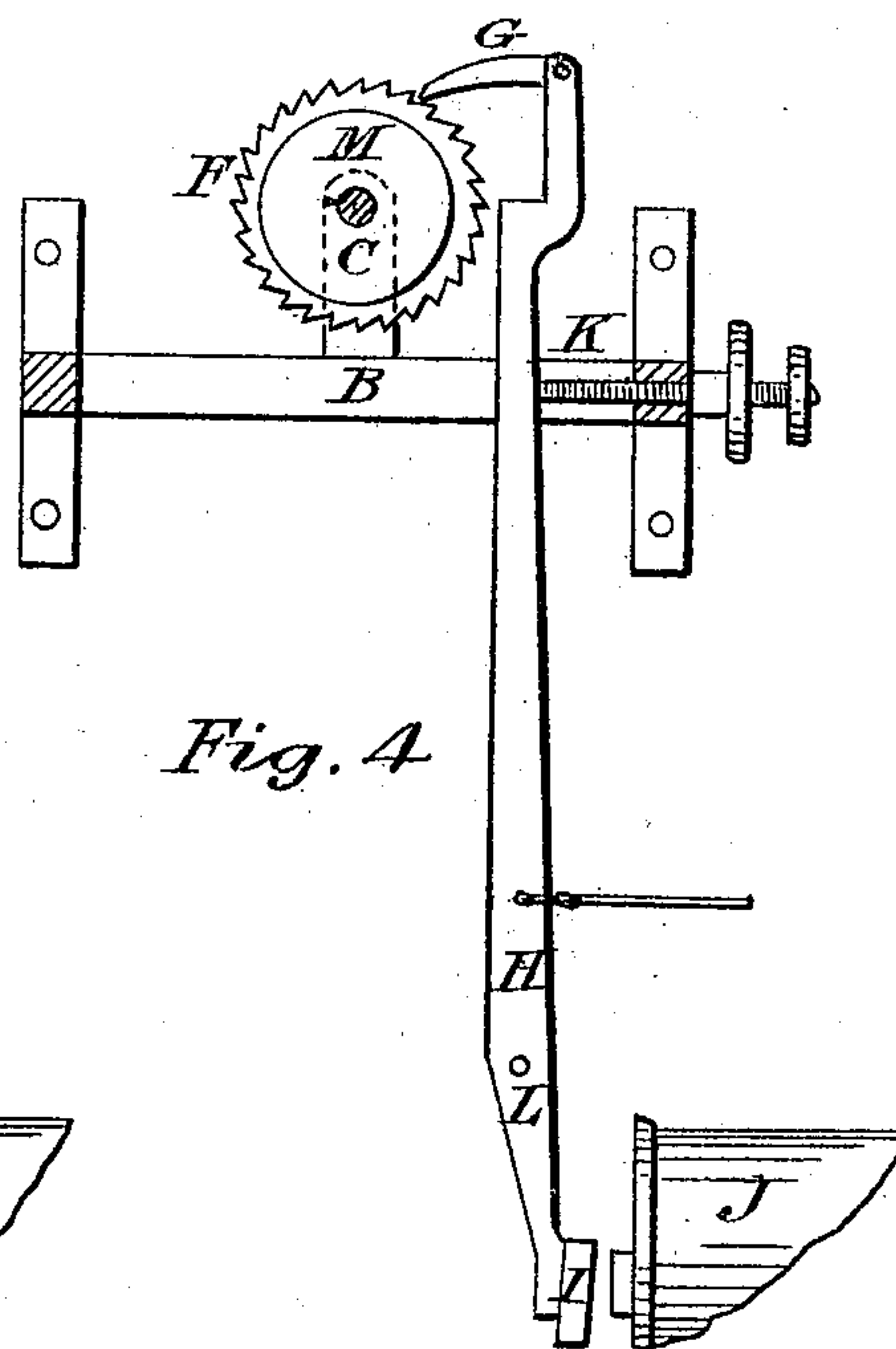
*Fig. 1.*



*Fig. 2.*



*Fig. 3*



*Fig. 4*

*Witnesses:*  
 *Jas. H. Layman.*  
 *William Bauer.*

*Inventor:*  
 *E. T. Gilliland*  
 *By Knight & Mos.*  
 *Attys.*

# United States Patent Office.

EZRA T. GILLILAND, OF CINCINNATI, OHIO, ASSIGNOR TO HIMSELF AND  
PETER NEFF, JR.

*Letters Patent No. 97,076, dated November 23, 1869.*

## IMPROVEMENT IN DIAL-TELEGRAPH APPARATUS.

The Schedule referred to in these Letters Patent and making part of the same.

### *To whom it may concern:*

Be it known that I, EZRA T. GILLILAND, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Improvement in Electro-Magnetic Telegraphs; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, making part of this specification.

This is an improvement in the class of electro-magnetic telegraphs which contain a dial and a revolving pointer; and

The invention consists in a provision for insuring the exact and positive advance of the pointer at each stroke of the pawl-arm, by the impingement of the latter against the pointer-shaft at the conclusion of each stroke.

Figure 1 is a front elevation of the indicating-mechanism of a dial-telegraph embodying my improvement, a portion of the dial-face being broken away.

Figure 2 is a vertical section of the same.

Figures 3 and 4 are enlarged rear elevations, showing the pawl-arm in the closed and open positions, respectively.

The dial A is firmly attached, in a stationary position, to the standard B, which also affords journal-bearing for the shaft or arbor C, of the hand or pointer D.

This shaft is mounted upon an adjustable centre, E, and has a ratchet-wheel, F, which receives an intermittent rotation from a common pawl, G, whose arm, H, vibrates upon an adjustable centre, L, and terminates in the usual armature I of an electro-magnet, J.

K is an adjustable stop, for determining the backward vibration or stroke of the pawl-arm.

All of the above parts may be of the represented, or of any customary or approved construction compatible with my improvement.

My said improvement or feature of novelty consists in the represented arrangement of pawl-arm and pointer-shaft, so that at the termination of each forward stroke of said arm, the side or edge of the latter impinges against the said shaft and arrests its further rotation, or, in other words, restricts its movement to one tooth at a time, and prevents the possibility of such irregular jumping or bounding forward as would give incorrect indications upon the dial.

For the purpose of insuring the requisite traction, that portion of the pointer-shaft which impinges with the pawl-arm may have a collar or enlargement, M, and one or both of the impinging surfaces may consist of India rubber or like substance.

My invention is manifestly applicable to that form of telegraphic-apparatus whose dial rotates, the pointer remaining stationary, the traction collar, in that case, being, of course, attached to and revolving with the dial.

I claim herein as new, and of my invention—

The provision, in a "dial"-telegraph, of the shaft C, ratchet F, pawl G, and arm H, or their equivalents, said shaft and arm being so arranged as to impinge at the termination of each stroke of the latter, as and for the purpose set forth.

In testimony of which invention, I hereunto set my hand.

E. T. GILLILAND.

Witnesses:

GEO. H. KNIGHT,  
JAMES H. LAYMAN.