F. G. BATES.
Clutch.

No. 206,072. Patented July 16, 1878.

Fig. 1

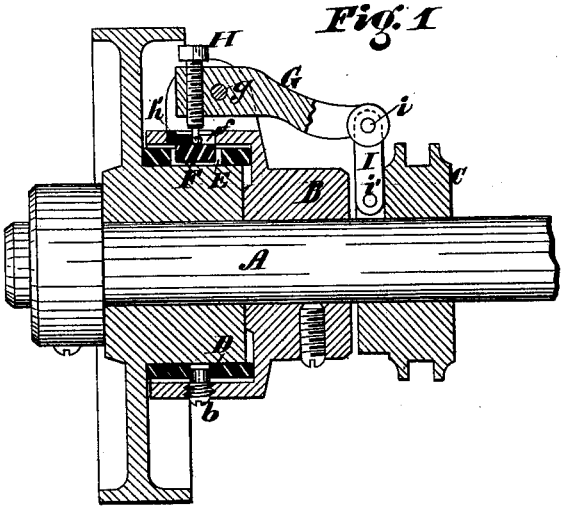


Fig. 3

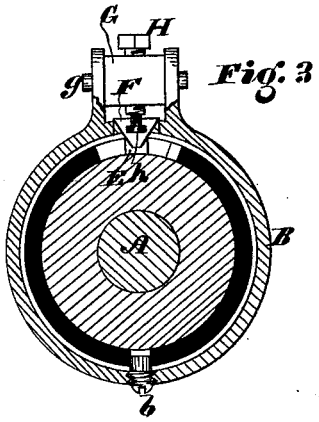


Fig. 2

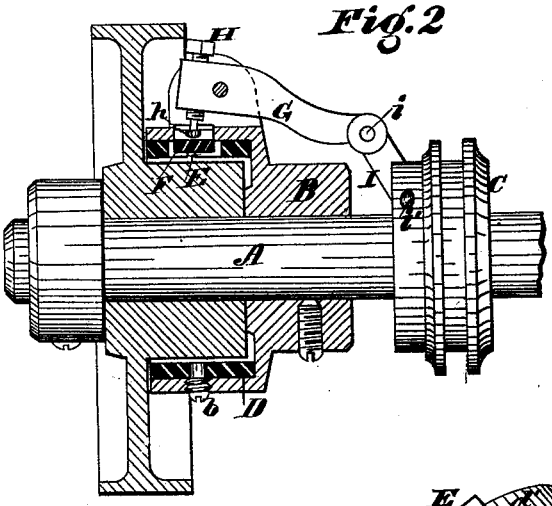
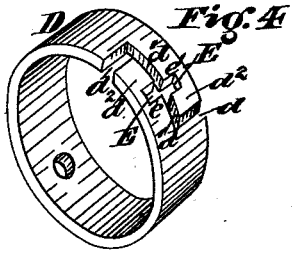


Fig. 4



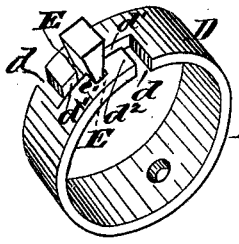


Fig. 5

Fig. 6

WITNESSES:

Saml. J. VanStavoren

Jos. B. Connolly

INVENTOR,

Francis G. Bates,

By Connolly Bros, ATTORNEYS.

UNITED STATES PATENT OFFICE.

FRANCIS G. BATES, OF SPRINGFIELD, MASSACHUSETTS.

IMPROVEMENT IN CLUTCHES.

Specification forming part of Letters Patent No. **206,072**, dated July 16, 1878; application filed March 27, 1878.

CASE B.

To all whom it may concern:

Be it known that I, FRANCIS G. BATES, of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Friction-Clutches; 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 pertains to make and use it, reference being had to the accompanying drawing, which forms part of this specification, in which—

Figures 1 and 2 are longitudinal vertical sections of my improvements. Fig. 3 is a vertical transverse section of the same. Figs. 4, 5, and 6 are perspective details.

My improvements have special relation to the following points: First, to constructing the friction-ring so that its ends will lap or break joints in order that a single wedge duly applied will operate to draw or compress said ring equally on either side of its point of attachment to the shell or false hub within which it is contained; second, to connecting the sliding wedge by means of which the friction-ring is compressed or contracted to its actuating-lever by a swivel-joint, so that said wedge on the backward movement of the lever will be drawn away from the friction-ring upward or outward by a positive motion; third, to connecting the lever which actuates the wedge or plug for compressing the friction-ring to the sliding spool by means of a link or pivoted arm, so as to diminish the distance which the spool is required to travel in raising said lever, and to cause said lever to be drawn down by the spool when the latter is slid backward.

Referring to the accompanying drawing, A is a shaft; B, a false hub or shell, and C a sliding spool or sleeve. D is a friction-ring fastened in the shell B at *b*. Said ring is cleft in a peculiar manner, having two transverse slits or kerfs, *d d*, each of which extends half-way across the ring, and an annular slit or kerf, d^1, which joins the other two kerfs and completes the cleft. The ends d^2 d^2, therefore, of the friction-ring lap or break joints. E E are slots formed in said ring for the entrance of a sliding plug or wedge, F. These slots are not directly in line, but are so disposed that the wedge, when forced inwardly, will act on the edge *e* of one and the opposite edge *e'* of the other of said slots, the result being an equal drawing action on both ends of said ring and an equal contraction on either side of the fastening-pin *b*. G is a lever fulcrumed at *g* on the shell B, and H is an adjusting-screw passing downward through the head of said lever. The lower end of said screw terminates in a ball or head, *h*, which enters a dovetailed groove or socket, *f*, formed in the head of the sliding plug or wedge F, being retained therein by a spline, *h'*. I is an arm, pivoted at *i* to the lever G and at *i'* to the spool or sleeve C. By reason of this connection the spool C need not be slid on the shaft A but a very short distance to duly move the lever G, and will, when drawn backward, as well as when pushed forward, act on said lever by a positive motion, thereby dispensing with the spring heretofore required for raising said lever when the spool was drawn back or away from the shell B. In like manner the swivel-connection of the lever G with the plug or wedge F will cause the said wedge to be drawn outward or from the friction-ring when the spool C is moved backward.

In two applications of even date herewith, Cases A and C respectively, I have shown and described, and in application A have claimed, the friction-ring held in place in the shell by means of a pin entering said ring at a point diametrically opposite the cleft. I therefore disclaim this feature, broadly, as pertaining specially to the subject-matter of this application.

What I claim as my invention is—

1. The friction-ring D, cleft so as to cause its ends to lap or break joints, substantially as shown and described.

2. The friction-ring D, having lapping ends d^2 d^2 and slots or openings E E, in combination with the sliding plug or wedge F, substantially as shown and described.

3. The combination of the sliding plug or wedge F and lever G with a swivel-connection, *h f*, substantially as shown and described.

4. The combination of shaft A, shell B, spool C, friction-ring D, sliding plug or wedge F, lever G, swivel-connection *h f*, and arm I, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 26th day of March, 1878.

FRANCIS G. BATES.

Witnesses:

SAML. J. VAN STAVOREN,

CHAS. F. VAN HORN.