

No. 737,837.

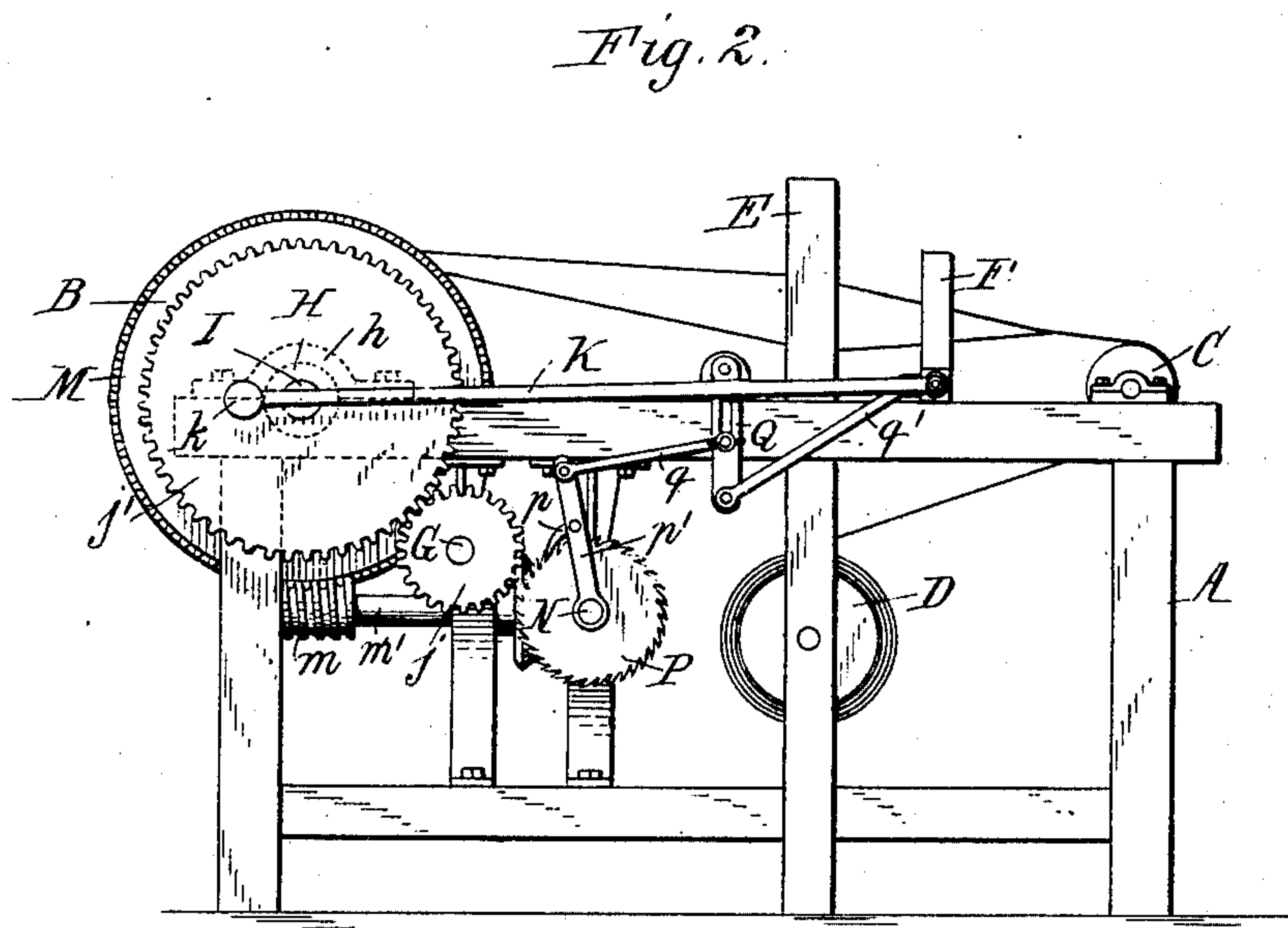
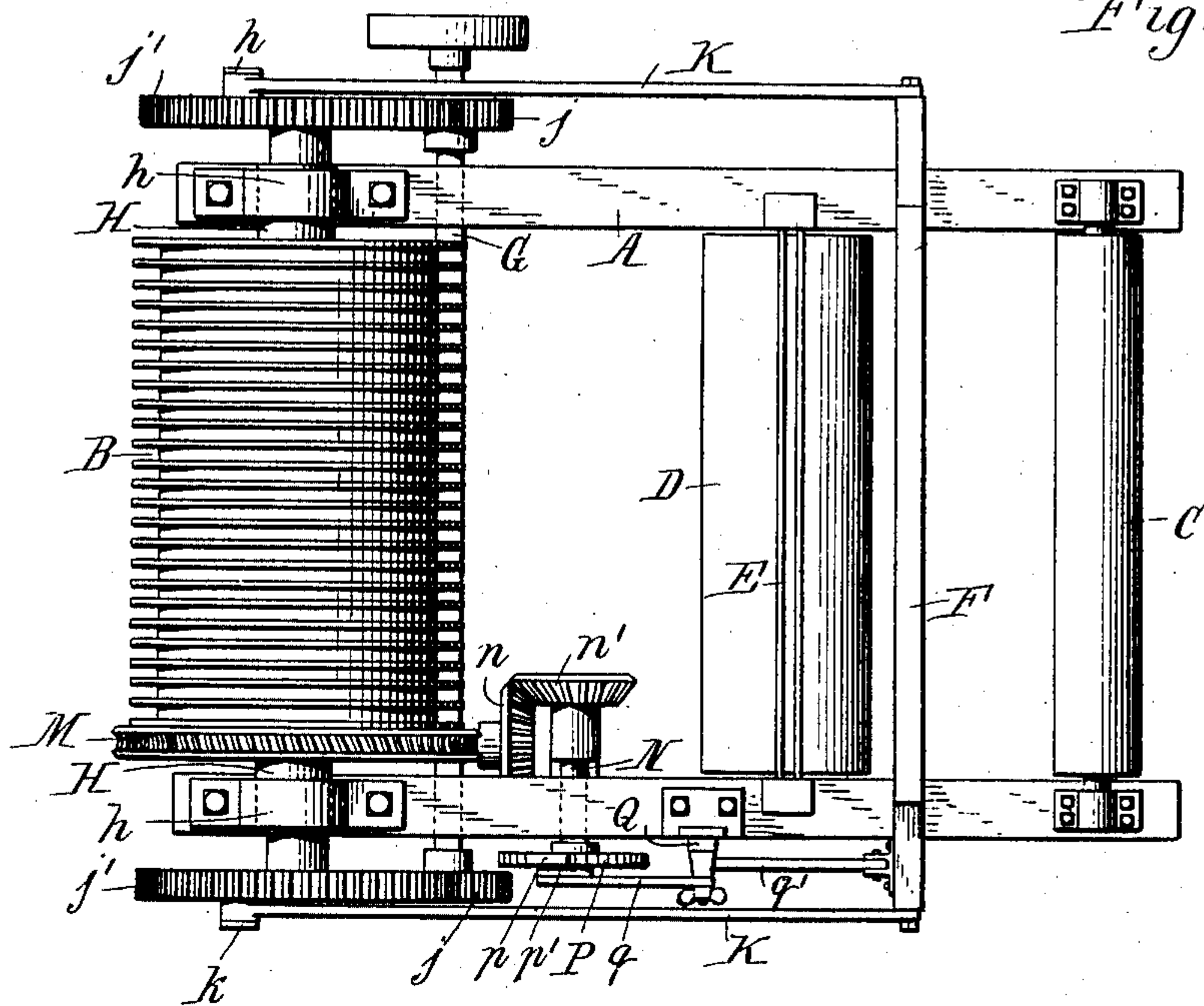
PATENTED SEPT. 1, 1903.

C. A. HERALD.  
LOOM.

APPLICATION FILED JAN. 21, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

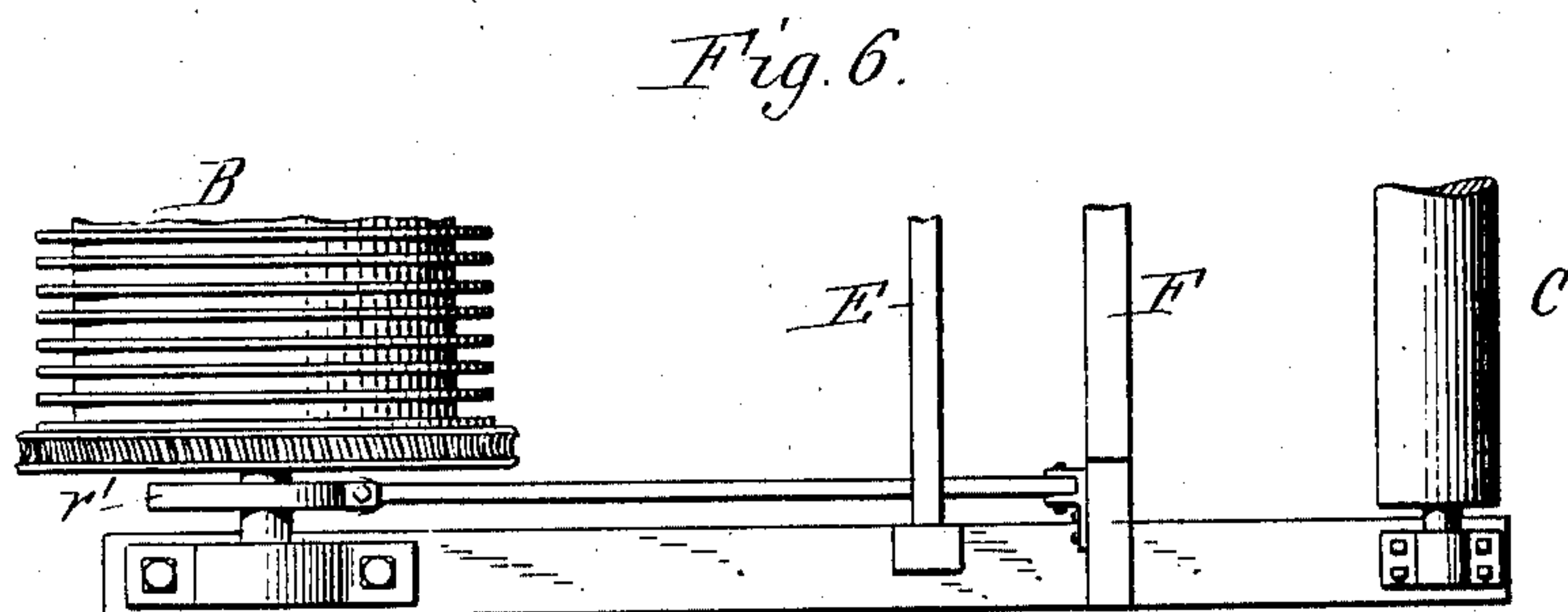
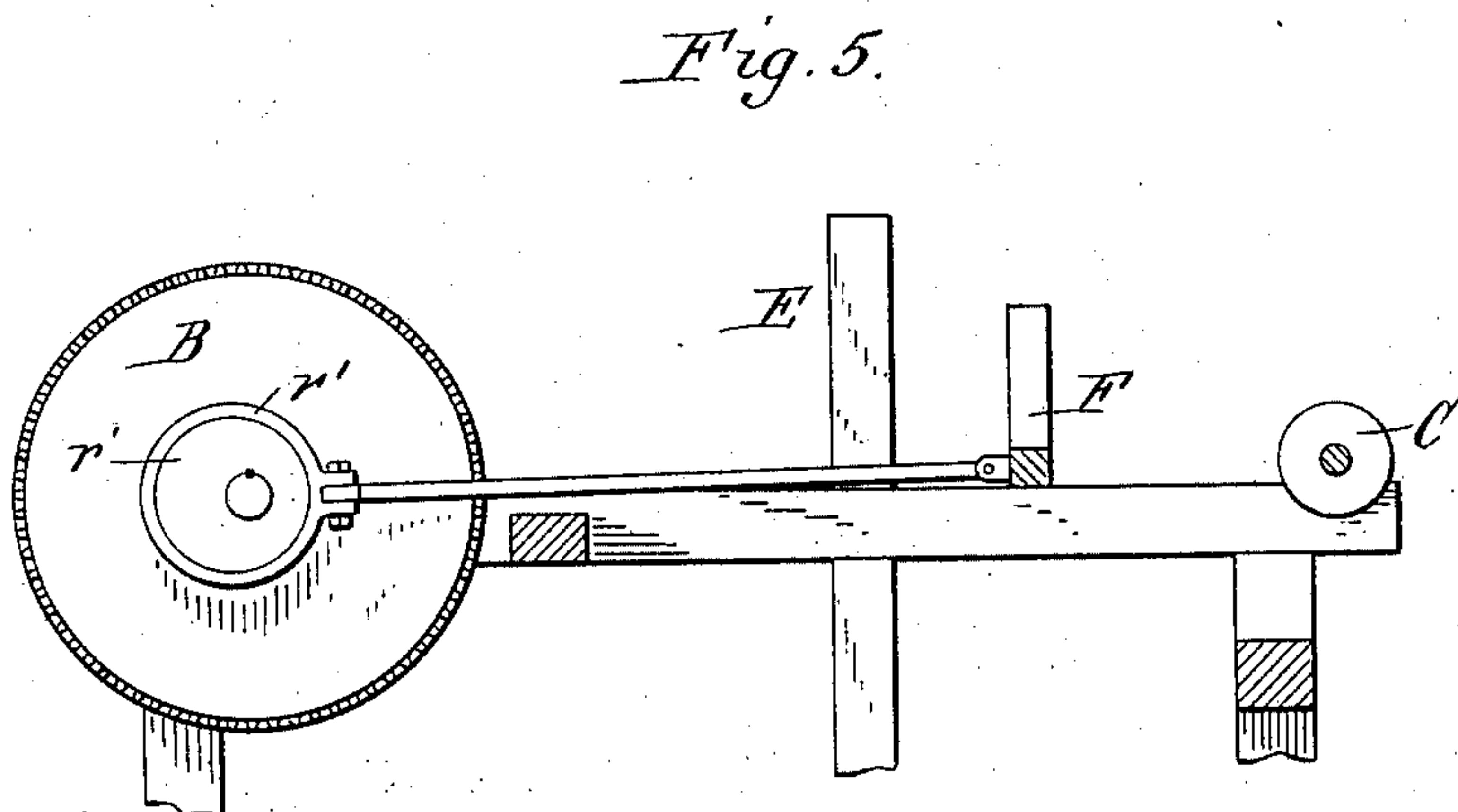
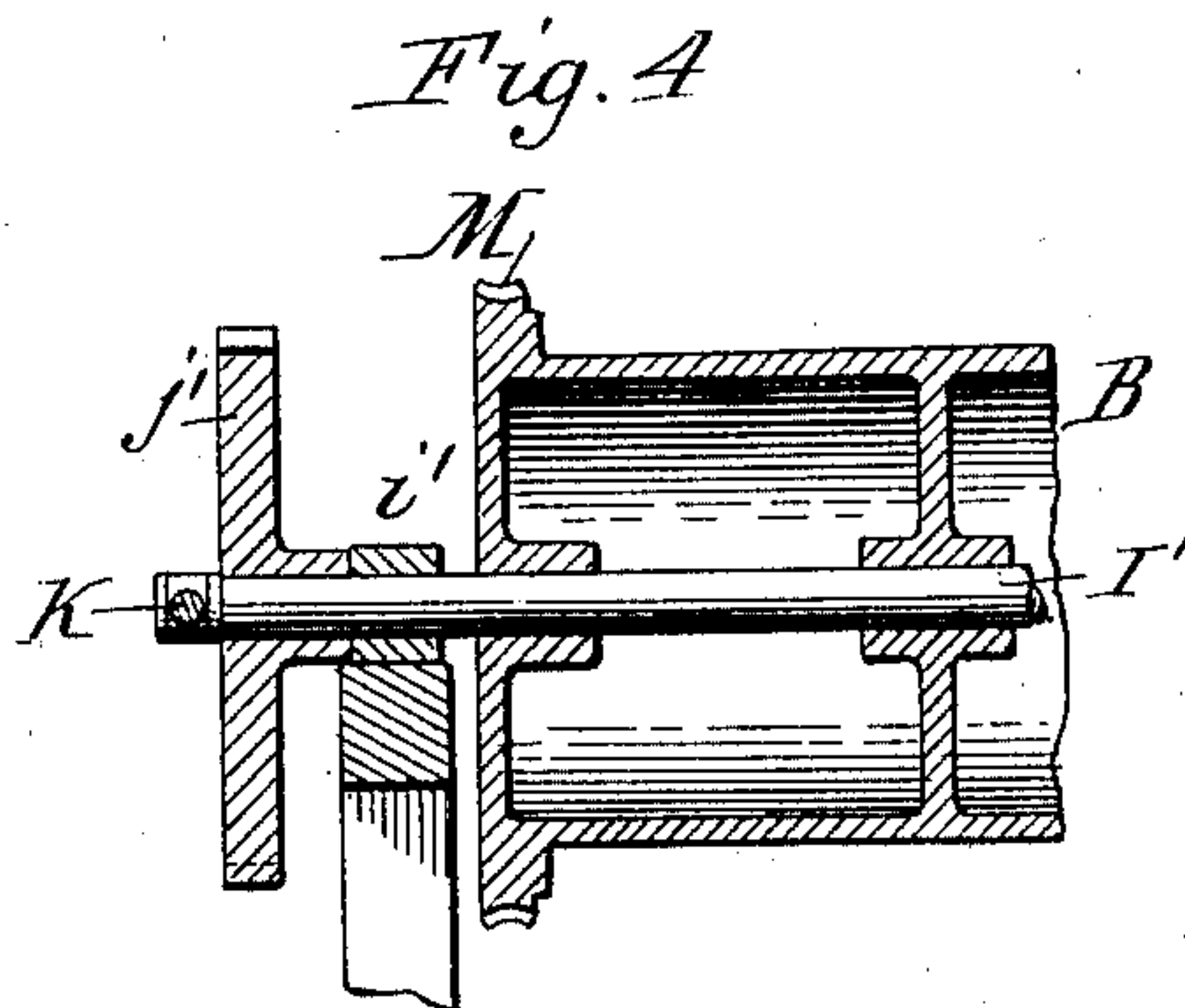
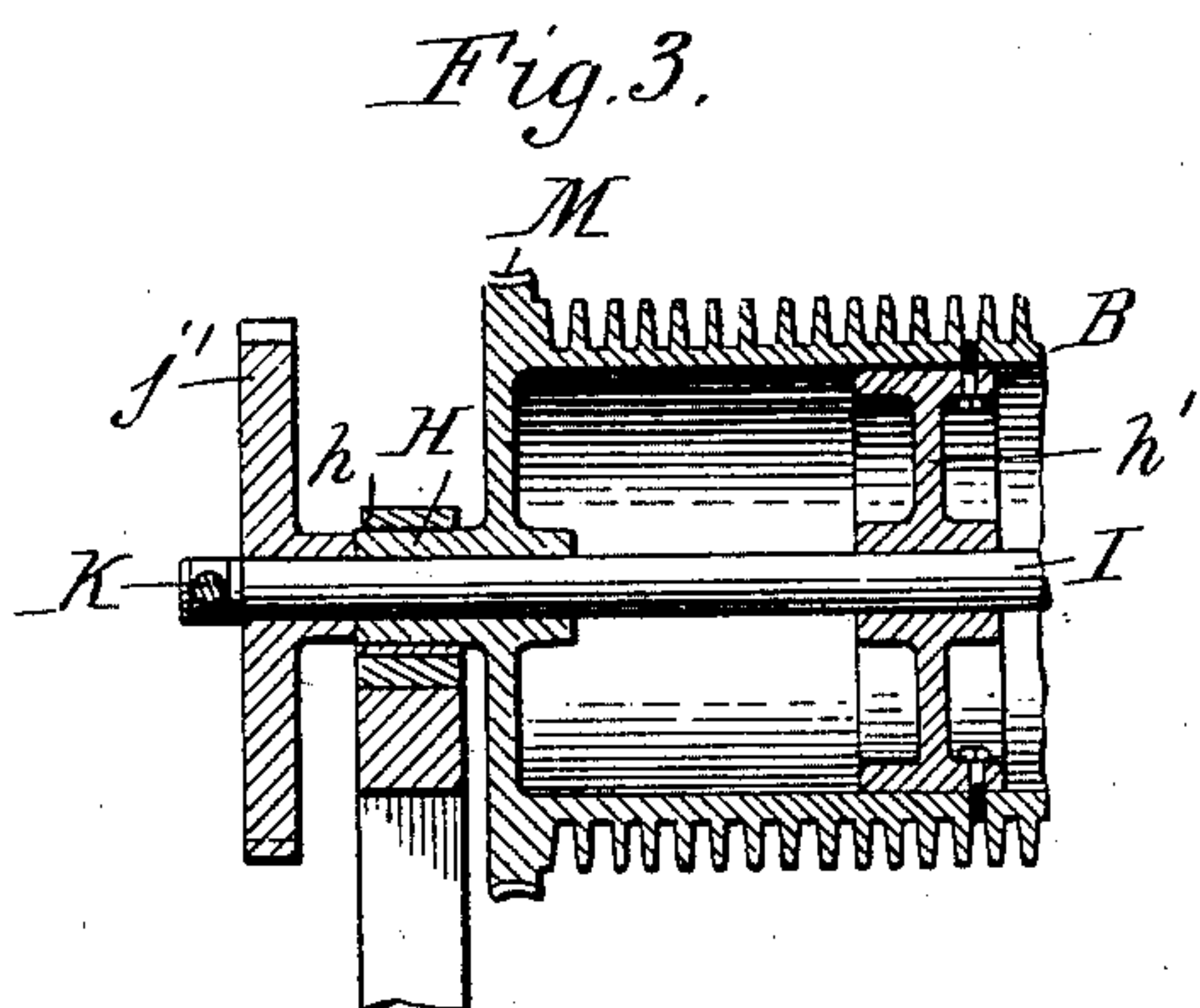


C. A. HERALD.  
LOOM.

APPLICATION FILED JAN. 21, 1903.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:  
Munster &  
E. A. Volk

Charles A. Herald Inventor.  
By Wilhelm Brunn  
Attorneys.



# UNITED STATES PATENT OFFICE.

CHARLES A. HERALD, OF HAMILTON, CANADA.

## LOOM.

SPECIFICATION forming part of Letters Patent No. 737,837, dated September 1, 1903.

Application filed January 21, 1903. Serial No. 139,973. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. HERALD, a subject of the King of Great Britain, and a resident of Hamilton, in the Province of Ontario, Dominion of Canada, have invented new and useful Improvements in Looms, of which the following is a specification.

This invention relates to a loom for weaving wire or fibrous material.

In looms as most commonly constructed the let-off beam and the crank-shaft for driving the slay or beater are arranged one in front of the other. This arrangement is objectionable in several respects, among which may be mentioned the following: The length of the loom is unnecessarily increased and more floor-space for the same is required, the exposed parts of the operating mechanism are multiplied and access to the working parts of the loom is rendered difficult, and in a loom of given dimensions a smaller beam must be employed and the length of the material produced decreased.

The object of the present invention is to provide a loom of simple, compact, and desirable construction in which the above objections are avoided.

In the accompanying drawings, consisting of two sheets, Figure 1 is a plan view of so much of a loom embodying the invention as is necessary to an understanding of the same. Fig. 2 is a side elevation thereof. Fig. 3 is a detail section showing the manner of journaling the beam and crank-shaft. Fig. 4 is a similar detail section showing a slightly-different manner of mounting said parts. Figs. 5 and 6 are respectively an elevation and a plan view showing different operating mechanisms for the beater.

Like letters of reference refer to like parts in the several figures.

A represents the main or supporting frame of the loom; B, the let-off beam or drum; C, the breast-roller, over which the woven fabric passes; D, the take-up roller for the woven fabric; E, the heddle-frames or harness provided with heddles; F, the beater or slay, and G the main drive-shaft of the loom. These parts may be of any well-known or suitable construction and arrangement and are merely shown in a conventional way in the drawings to better enable an understanding of the invention.

The let-off beam and operating crank-shaft for the beater instead of being arranged one in front of the other, as usual, are arranged concentrically.

Referring particularly to the construction shown in Figs. 1, 2, and 3, the let-off beam B is provided at its opposite ends with hollow journals H, which are supported and rotate in bearings h of any suitable form on the sides of the main frame. I represents the crank-shaft for operating the beater or slay. The crank-shaft is arranged concentrically within the beam and projects loosely through the hollow beam-journals H, which thus constitute bearings for the crank-shaft. The beam is also preferably provided with a central hub or bearing h', through which the crank-shaft passes loosely. The crank-shaft is driven from the drive-shaft G by pinions j on the drive-shaft which mesh with gear-wheels j', secured to the projecting ends of the crank-shaft. Any other usual drive mechanism between the drive-shaft and crank-shaft may be employed. The beater or slay F is connected to and operated from the crank-shaft by pitmen K, arranged outside of the loom-frame and connected to crank-pins k on the gear-wheels j', secured to the crank-shaft. The let-off beam is slowly rotated independently of the crank-shaft by drive mechanism of the usual type and which is as follows: M represents a worm-wheel secured to or formed on one end of the beam and meshing with a worm m on a shaft m', which is driven by intermeshing bevel-gear wheels n n', secured, respectively, to the worm-shaft and a ratchet-shaft N. The latter is provided with a ratchet-wheel P, which is rotated intermittently by a pawl p, pivoted on a pawl-lever p', pivoted on the ratchet-shaft and connected by a link q to an oscillating arm Q, pivoted on the main frame and connected by a link q' to the reciprocating beater or slay. The link q is adjustably connected to the oscillating arm to regulate the throw of the said lever and speed of the beam. This drive mechanism, which is well known, may be replaced by any other suitable drive mechanism.

In the construction shown in Fig. 4 the crank-shaft I' is arranged concentrically of the beam, as before described, but is journaled at its ends directly in bearings i' on the loom-frame, and the beam instead of being sup-



ported by journals in bearings on the frame is mounted directly on the crank-shaft to rotate independently thereof. The beam, it will be understood, may be provided with circumferential ribs, as shown in Fig. 3, or it may have a plain surface, as shown in Fig. 4.

In some looms it is desirable to operate the beater or slay by pitmen arranged inside of the frame. This is readily accomplished, as shown in Figs. 5 and 6, by securing eccentrics  $r$  directly to the crank-shaft adjacent to the ends of the beam and providing the pitmen with eccentric-straps  $r'$ , surrounding the eccentrics.

By the described concentric arrangement of the let-off beam and crank-shaft the latter does not occupy additional space and increase the length of the loom, there are fewer exposed parts of the operating mechanism, making it much easier for the operator to gain access to the working parts of the loom when necessary for any cause, a larger beam can be employed in a loom of given dimensions, thus increasing the possible length of material made by the loom, and the crank-shaft and beam mutually strengthen or stiffen each other, so as to cause them to operate more steadily, which results in the production of a better quality of material.

I claim as my invention—

1. In a loom, the combination of a rotatable let-off beam, harness, a beater, an operating-shaft for said beater journaled concentrically of said let-off beam and connected to said beater, and mechanism for independently rotating said let-off beam and beater-shaft, substantially as set forth.

2. In a loom, the combination of a rotatable

let-off beam, harness, a reciprocating beater, an operating crank-shaft for said beater journaled concentrically of said beam, a pitman connecting said crank-shaft and beater, and drive mechanism for independently rotating said let-off beam and crank-shaft, substantially as set forth.

3. In a loom, the combination of a rotatable let-off beam provided with hollow supporting-journals, harness, a beater, a rotatable operating-shaft for said beater passing through said hollow journals and connected to said beater, and means for independently rotating said let-off beam and beater-shaft, substantially as set forth.

4. In a loom, the combination of a frame, a rotatable let-off beam having hollow journals supported in bearings on said frame, harness, a beater, an operating-shaft for said beater arranged concentrically of said beam and journaled to rotate in said hollow journals, operative connections between said beater-shaft and said beater, and means for independently rotating said let-off beam and shaft, substantially as set forth.

5. In a loom, the combination of a rotatable let-off beam, harness, a beater, a rotary shaft journaled concentrically of said let-off beam and connected to said beater to operate the latter, and drive mechanism for said let-off beam operated by said beater, substantially as set forth.

Witness my hand this 8th day of January, 1903.

CHARLES A. HERALD.

Witnesses:

MINA THOMPSON,  
W. C. HERALD.