

(No Model.)

2 Sheets—Sheet 1.

H. H. BARNARD.

MEANS FOR CONVERTING RECIPROCATING INTO ROTARY MOTION.

No. 311,407.

Patented Jan. 27, 1885.

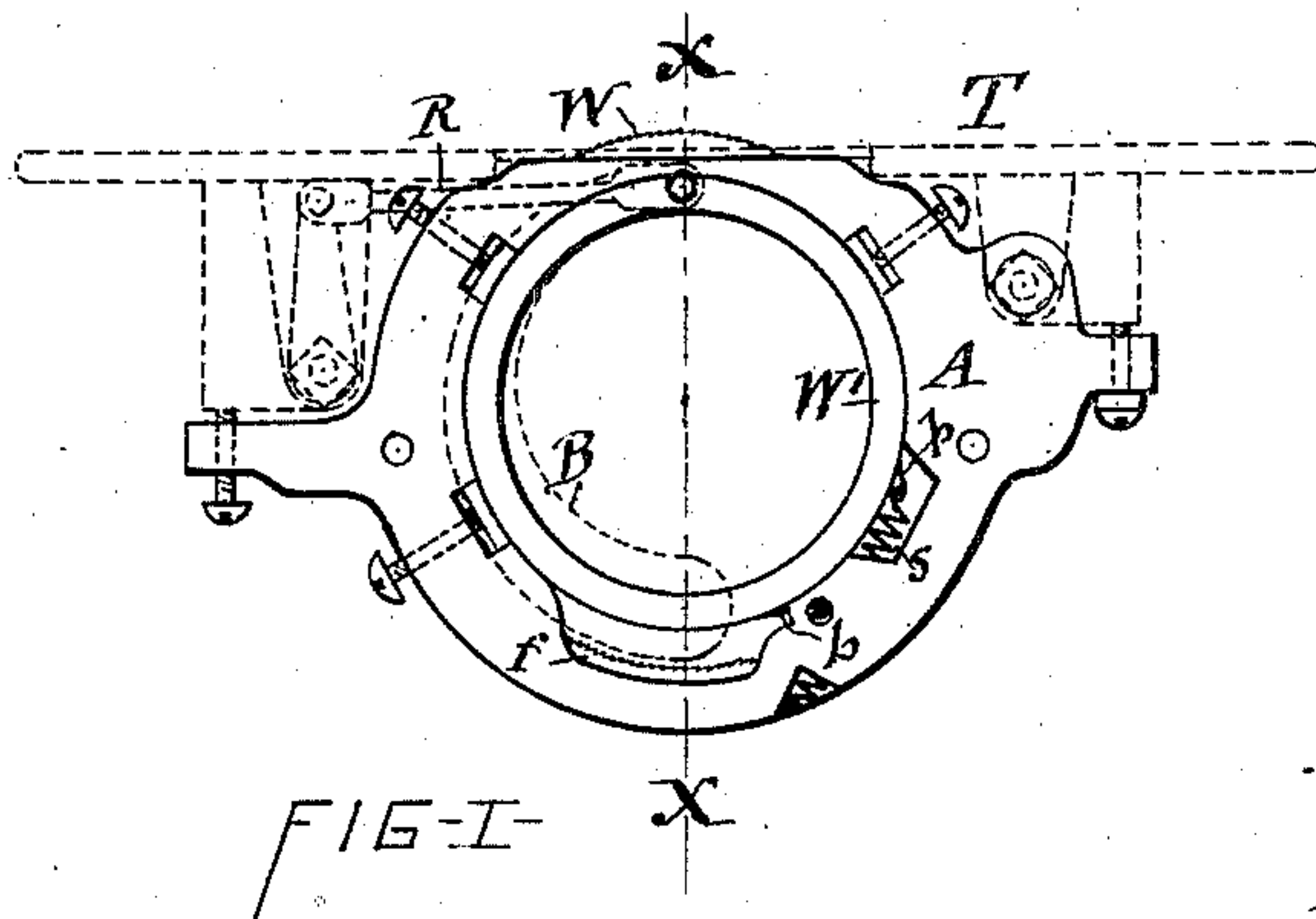


FIG-I-

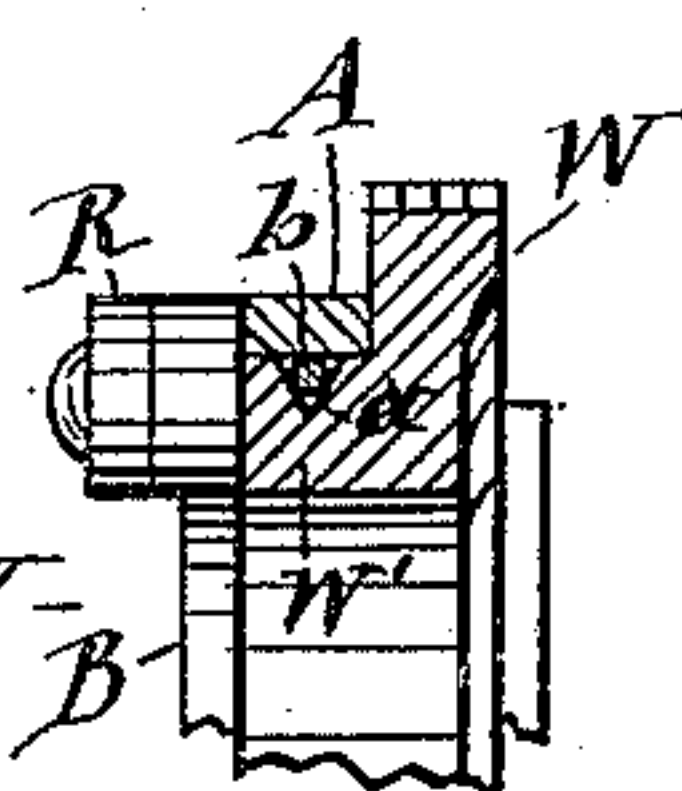


FIG-V-

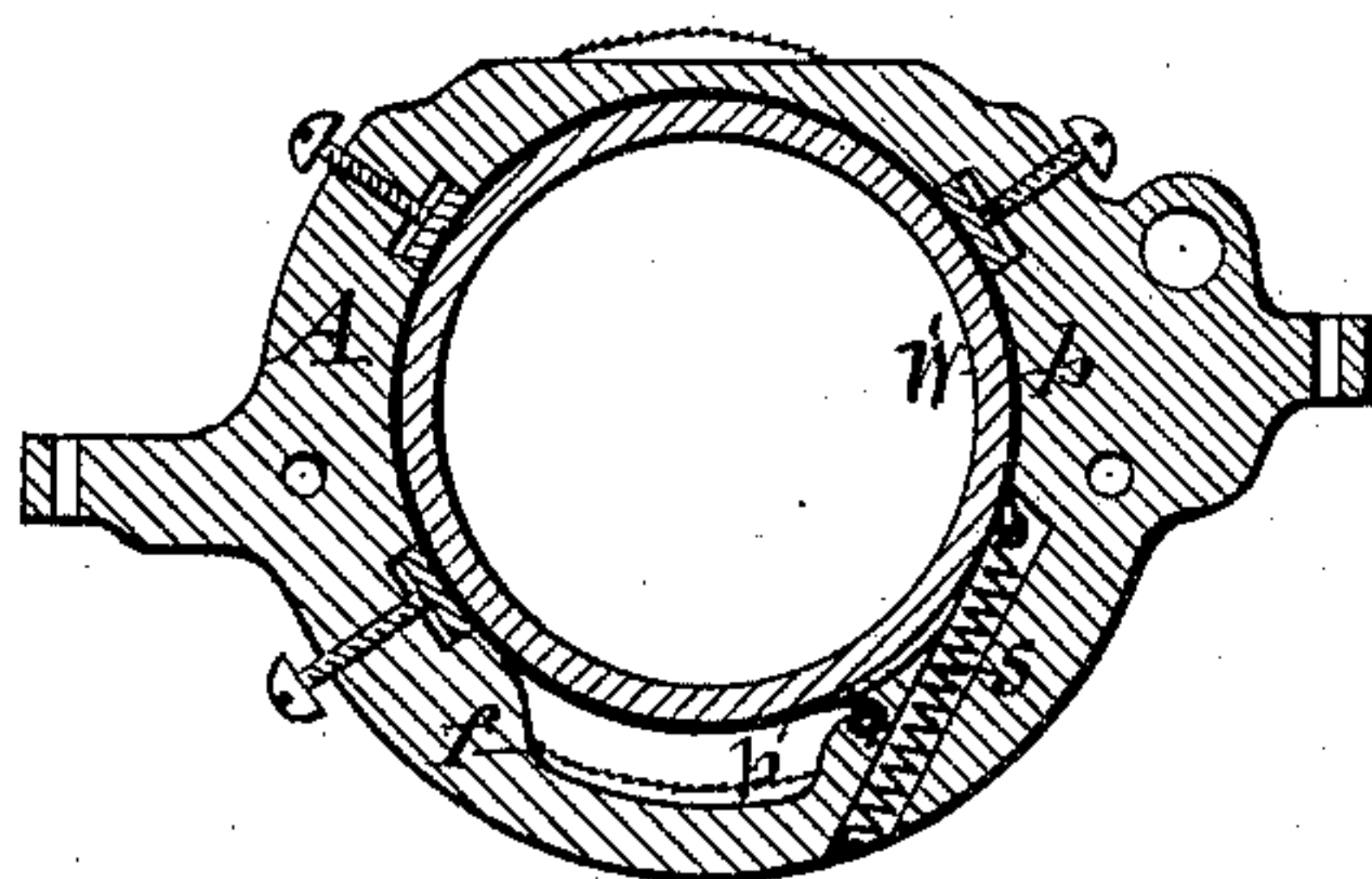


FIG-II-

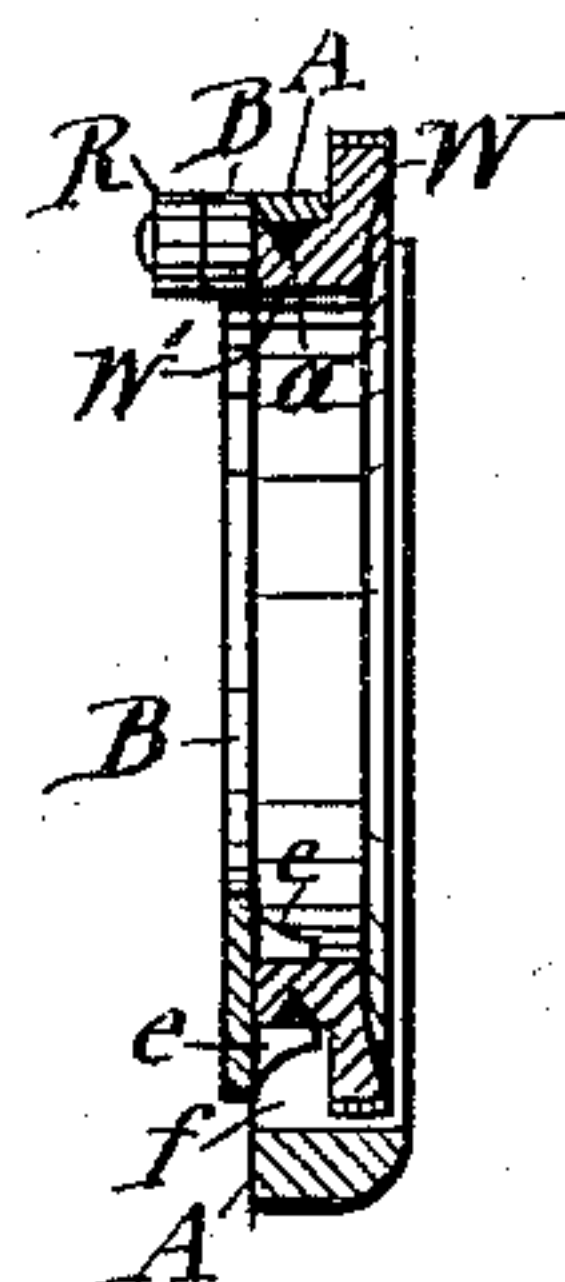


FIG-III-

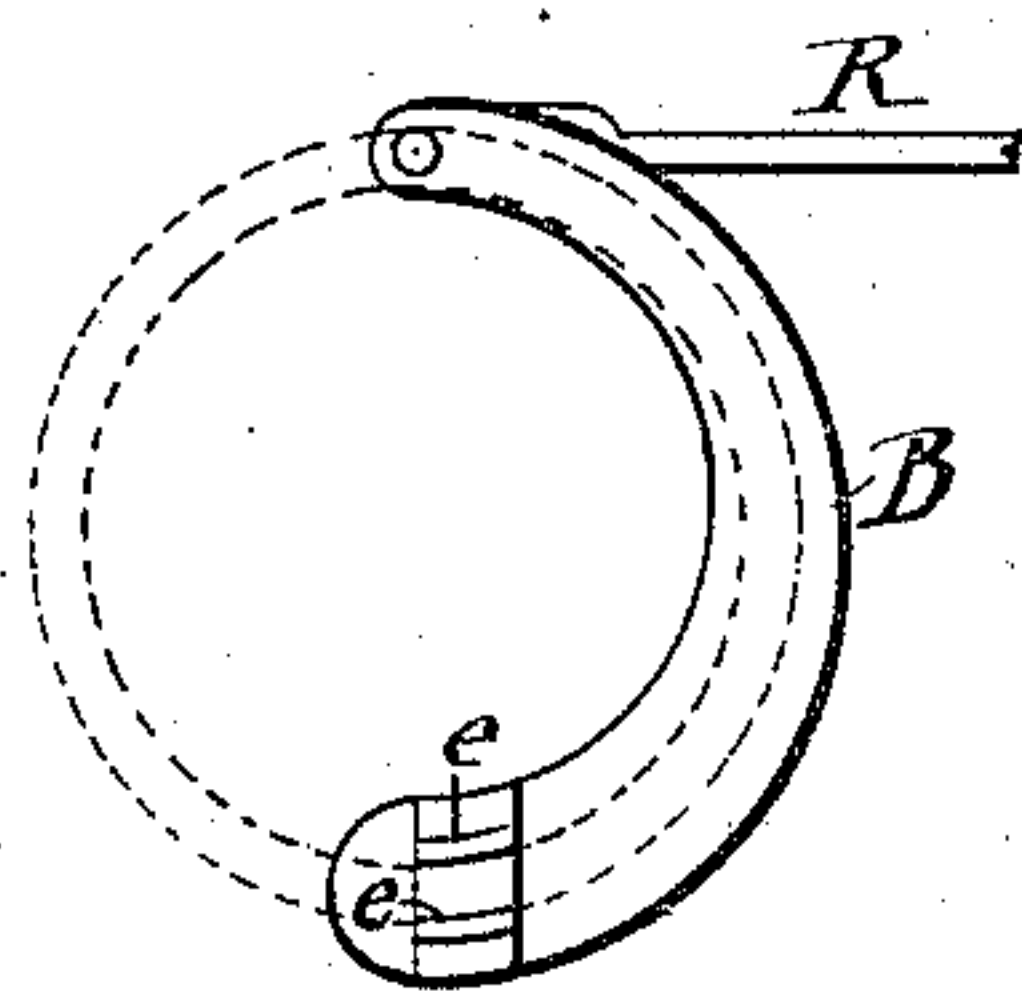


FIG-IV-

WITNESSES.

Er. Bendixon

Wm. C. Raymond

INVENTOR

Henry H. Barnard

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his Atty.

(No Model.)

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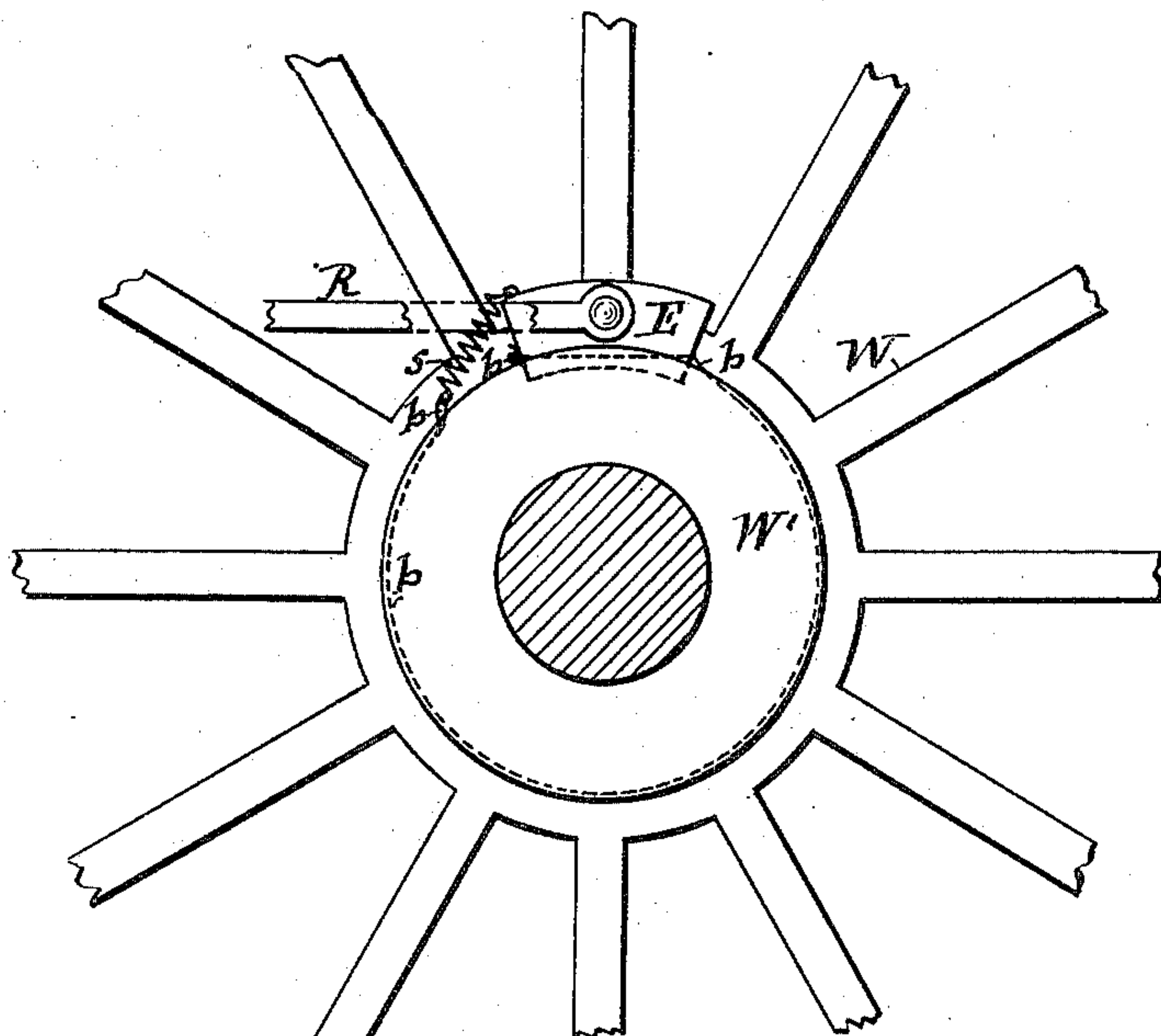


FIG- VI-

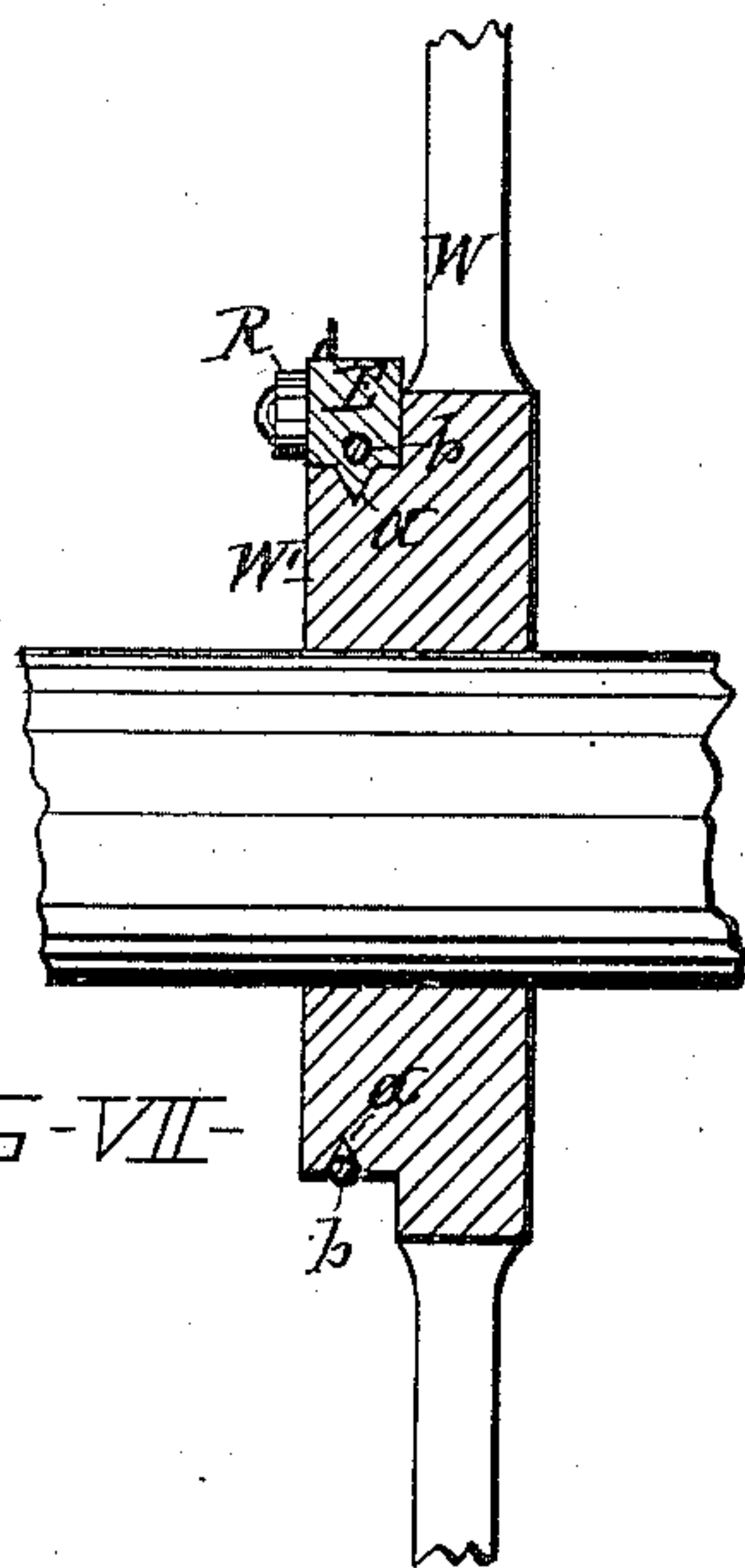


FIG- VII-

WITNESSES:

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Wm C. Raymond

INVENTOR:

Henry H. Barnard
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UNITED STATES PATENT OFFICE.

HENRY H. BARNARD, OF SYRACUSE, NEW YORK, ASSIGNOR OF ONE-HALF
TO JOHN D. GRAY, OF SAME PLACE.

MEANS FOR CONVERTING RECIPROCATING INTO ROTARY MOTION.

SPECIFICATION forming part of Letters Patent No. 311,407, dated January 27, 1885.

Application filed December 13, 1884. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. BARNARD, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and
5 useful Improvements in Means for Converting Reciprocating Motion into Intermittent Rotary Motion, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

10 The object of this invention is to provide simple, inexpensive, and effective means for imparting positive intermittent rotary motion to the feed-wheels of sewing-machines, and to other wheels generally requiring such action.

15 The invention consists, essentially, in the combination, with a wheel and reciprocating mechanism for rotating said wheel, of a friction band or wire encircling the wheel or its hub, and arranged to alternately engage and
20 release said wheel automatically with the movement of the reciprocating mechanism, all as hereinafter more specifically described, and set forth in the claims.

In the accompanying drawings, Figure I is
25 a side elevation of my invention as applied to the feed-wheel of a sewing-machine. Fig. II is a transverse section taken in a plane parallel to the plane of the wheel. Fig. III is a transverse section on line *xx* in Fig. I. Fig.
30 IV is an inverted face view of the clutch or lever by which motion is transmitted from the reciprocating rod to the wheel. Fig. V is an enlarged sectional detail view of the brake-wire and the V-shaped groove of the wheel-hub, in
35 which groove said wire lies. Fig. VI is a side view of my invention as applied for transmitting intermittent motion direct from the reciprocating rod to the wheel, and Fig. VII is a transverse section of the same.

40 Similar letters of reference indicate corresponding parts.

In the operation of sewing-machines it is very essential to feed the article to be sewed under the needle of the machine with a very
45 accurate and properly-timed intermittent motion, and various devices—such as cams and friction-bearings—have been resorted to to hold the wheel dormant during the reversed motion of the reciprocating rod which transmits motion to said wheel; but said devices
50 have proven unsatisfactory, owing either to

the wear and abrasion, and consequent lost motion of said devices, or to their want of positive action and general deficiency in operation. To overcome these defects I employ
55 the following instrumentalities.

Referring to the annexed drawings, T represents the table of a sewing-machine, and W the usual serrated feed-wheel, which by its intermittent motion carries the article to be sewed
60 under the needle of the machine, (the latter and its appurtenances varying in construction, and being so well understood by the public as not to require an illustration in this case.) The serrated periphery of the wheel
65 W projects through a slot in the table to engage the article to be sewed.

Underneath the table T the wheel W is provided with a hub, W', which projects from the side of the wheel, and is movably mounted
70 in a supporting-ring, A, which encircles said hub, and is adjustably connected to the under side of the table in the usual and well-known manner. The outer circumferential face of the hub W', I provide with a circumferential
75 groove, *a*, and in said groove I place a band or wire, *b*, one end of which I connect rigidly to the supporting-ring A, and the opposite end I connect to said ring yieldingly by means of a spring, *s*, as illustrated in Fig. II of the
80 drawings.

B represents a clutch or lever provided at one end with two lugs, *e e*, which loosely embrace portions of the inner and outer peripheral faces of the hub W', the ring A being provided with a slot, *f*, for the reception of the
85 outer lug *e*. The opposite end of the lever B is connected with the rod R, which in turn is connected with a crank-arm, *g*, attached to a rock-shaft, *h*. The rod R thus receives a re-
90 ciprocating motion, which imparts an oscillatory motion to the lever B. The movement of the rod R toward the hub W' throws the lever B into such a position as to cause the lugs
95 *e e* thereof to loose their hold on the hub of the wheel W and allow the lever to slide part way around said hub. The movement of the rod in the opposite direction draws the lever B back, and thereby causes the lugs *e e* thereof to grip the hub and draw the same part way
100 around.

It is to securely retain the wheel in its po-

sition after the last-described movement thereof, and during the reverse motion of the rod toward the hub *W'*, and during the sliding motion of the lever *B* on said hub, which is the chief object of this invention, and this I accomplish most effectually and automatically by means of the brake band or wire *b* and its spring-connection with the supporting-ring *A*, the spring *s* being arranged in such relation to the movement of the wheel *W* as to allow the band or wire *b* to yield to and liberate the hub *W'* when turned by the engagement of the lugs *e e* of the lever *B* during the movement of the latter in one direction. In moving the lever in the opposite direction the rigid attachment of the opposite end of the band or wire causes the same to bind so tightly on the hub *T'* as to effectually confine the wheel *W* in its position until the lever again swings back and grips the hub, and as soon as said lever exerts its power on the hub the spring *s* again releases the same, thus producing a most positive intermittent rotary motion of the wheel *W*.

Aside from the advantages derived from my invention, it will be observed that by the employment of the band or wire *b*, encompassing the hub *W'*, I obviate unequal wear and abrasion of the parts in contact with each other, inasmuch as the frictional bearing of the band or wire is distributed over nearly the entire circumference of the wheel *W'*, and by using a round wire in connection with a V-shaped groove *a*, as best seen in Fig. V of the drawings, a still stronger frictional hold between said parts is obtained.

It is obvious that my invention is applicable for the purpose of transmitting intermittent motion to the wheel direct from the reciprocating rod by mounting on the periphery of the hub *W'* a slide, *E*, and connecting one end of the band or wire *b* rigidly with said slide, and the other end yieldingly to the same by means of the spring *s*, as shown in Figs. VI and VII of the drawings. The slide, being connected to the reciprocating rod *R*, moves back and forth on the hub, and causes the band or wire to alternately engage and release the wheel-hub *W'*. The momentum of the wheel, together with the intermittent im-

pulses received from the engagement of the band or wire during the movements of the slide *E* in one direction, produces a continuous rotary motion of the wheel.

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

1. As a means for imparting intermittent rotary motion to a wheel mounted loosely on its axial support, a clutch adapted to alternately engage and release the wheel, a reciprocating rod connected with said clutch, and a brake-band encircling the wheel, and having one end rigidly and the opposite end yieldingly attached to the axial support of the wheel, substantially as described and shown.

2. In combination with the feed-wheel *W*, its axial support, and mechanism for imparting intermittent motion to said wheel, a brake band or wire encircling the feed-wheel, and having one end rigidly attached to the axial support, and a spring connecting the opposite end of said band or wire with said axial support, substantially as and for the purpose set forth.

3. In combination with the supporting-ring *A*, the feed-wheel *W*, provided with the circumferential groove *a*, the band or wire *b*, lying in said groove and rigidly connected at one end to the ring *A*, and the spring *s*, connecting the opposite end of the band or wire with the said ring, substantially as described and shown.

4. In combination with a wheel and reciprocating mechanism for rotating said wheel, a friction band or wire encircling the wheel or its hub, and arranged to alternately engage and release said wheel automatically with the movement of the reciprocating mechanism, substantially as set forth and shown.

In testimony whereof I have hereunto signed my name and affixed my seal, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 22d day of November, 1884.

HENRY H. BARNARD. [L. s.]

Witnesses:

C. H. DUELL,
WM. C. RAYMOND.