

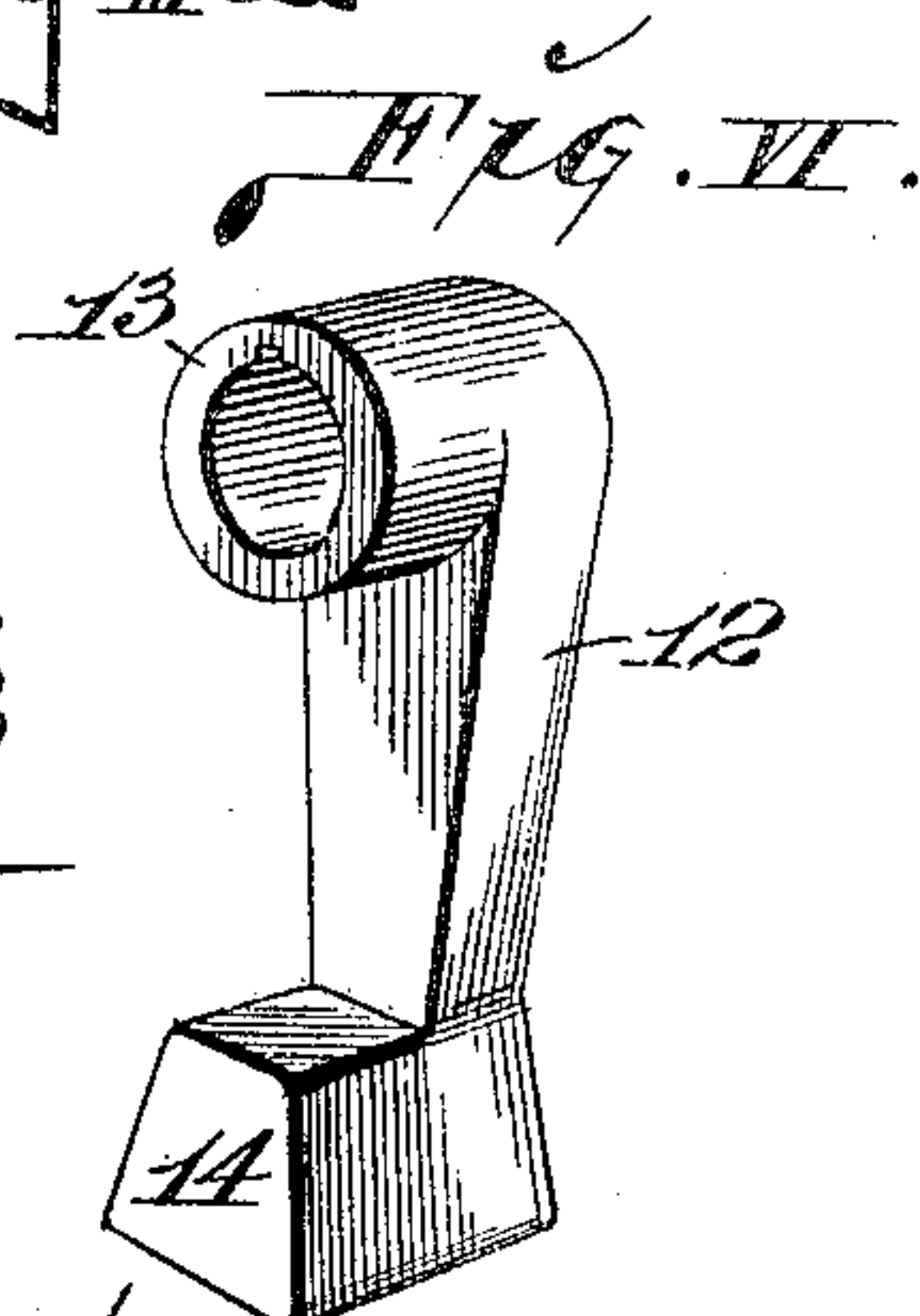
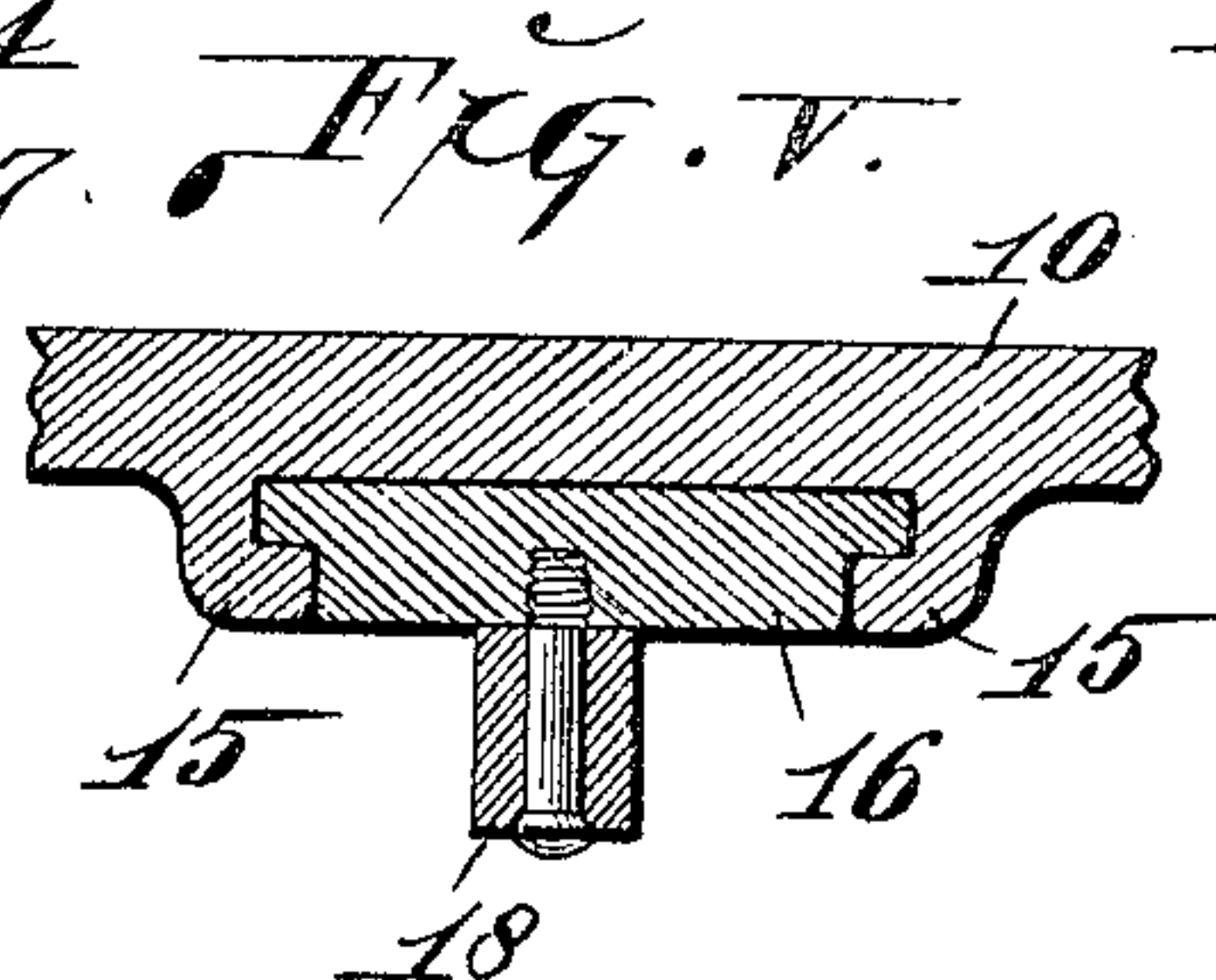
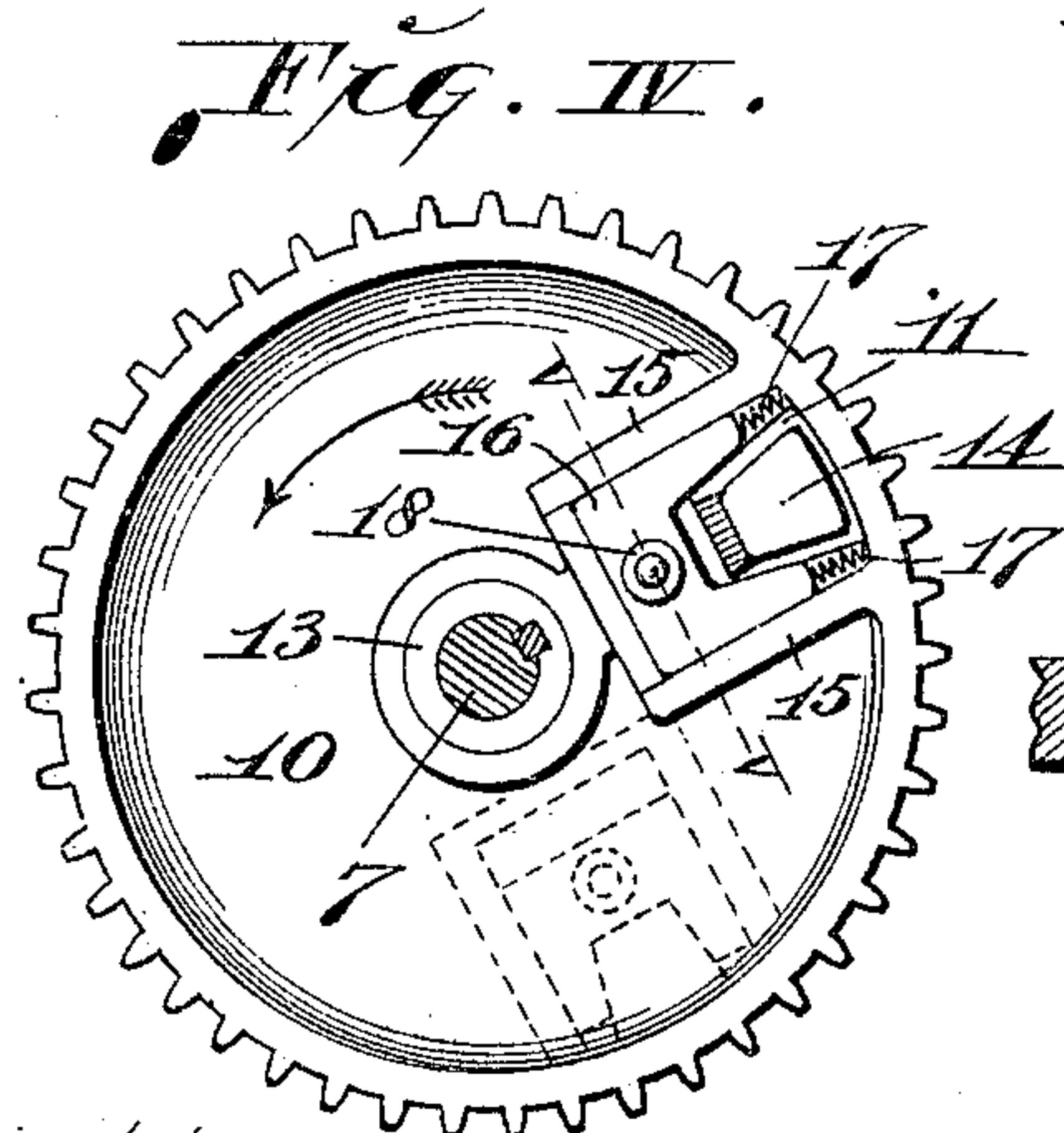
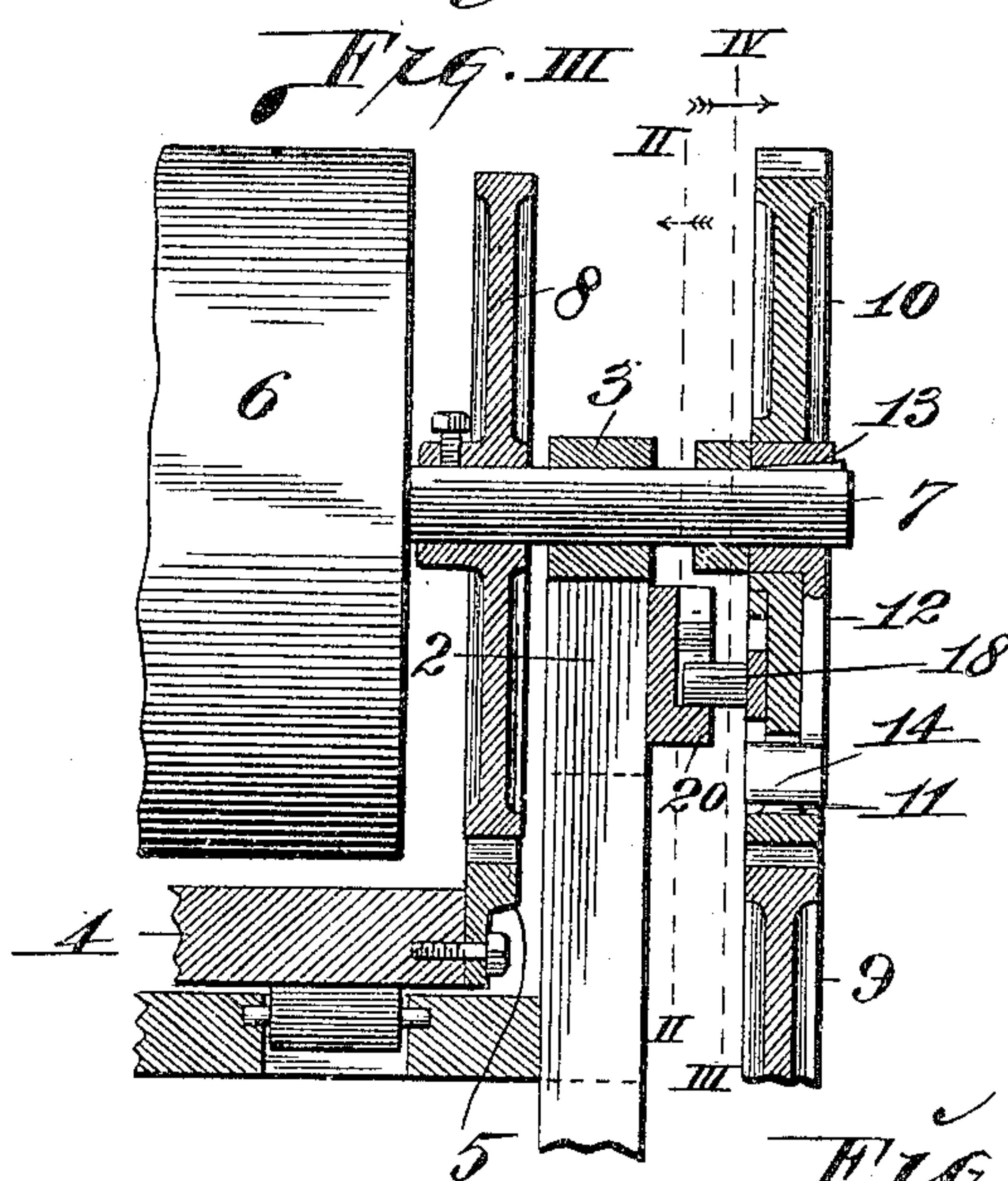
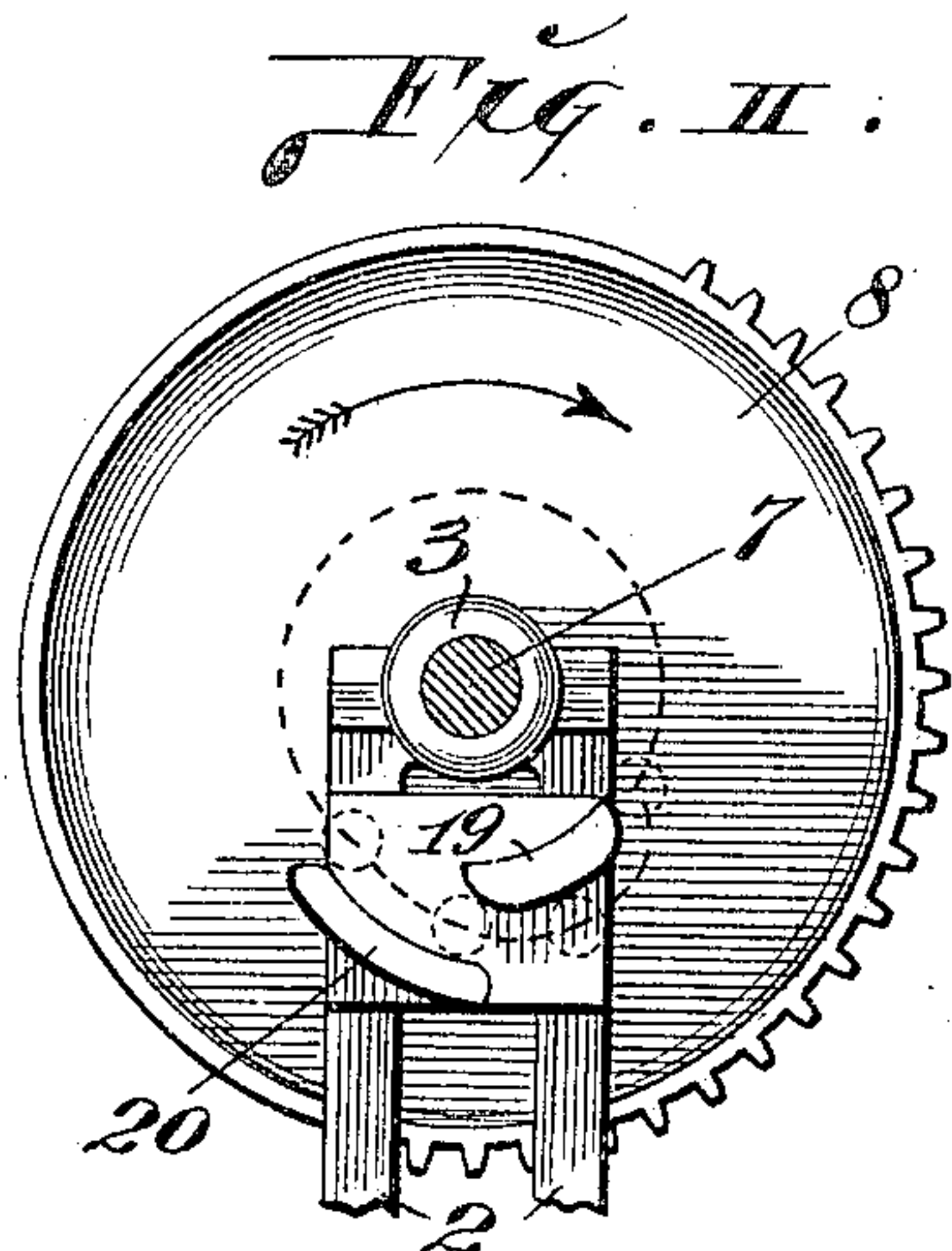
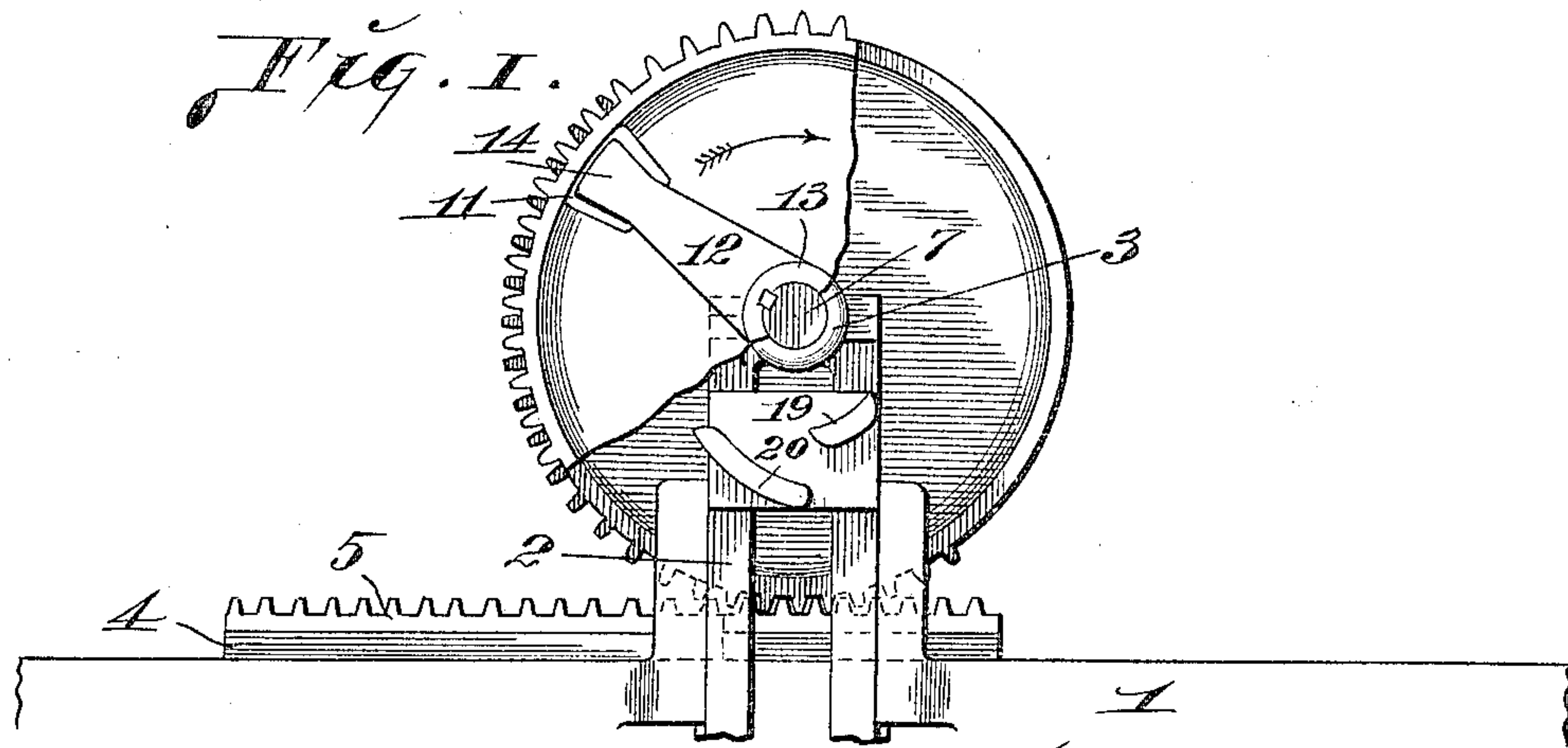
No. 812,632.

PATENTED FEB. 13, 1906.

B. F. BERRY.

TWO REVOLUTION CYLINDER PRINTING PRESS.

APPLICATION FILED DEC. 17, 1904.



Attest:—

M. P. Smith  
Blanche Hogan.

Inventor:—  
B. F. Berry.  
By Thight Bros. Attys.



# UNITED STATES PATENT OFFICE.

BENJAMIN F. BERRY, OF ST. LOUIS, MISSOURI, ASSIGNOR TO UNITED PRINTING MACHINERY COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION.

## TWO-REVOLUTION CYLINDER PRINTING-PRESS.

No. 812,632.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed December 17, 1904. Serial No. 237,194.

*To all whom it may concern:*

Be it known that I, BENJAMIN F. BERRY, a citizen of the United States, residing in the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Two - Revolution Cylinder Printing-Presses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

In the use of two-revolution cylinder printing-presses, as in other forms of printing-presses, it is common practice to pack the impression-cylinder with sheets of paper to compensate for the unevenness of the type or form printed from or for the existence of low type among higher type, all of which are carried by the bed of the press. This packing has the effect of increasing the diameter of the impression - cylinder, and as a consequence the periphery of the cylinder does not rotate in proper conformity to the positively-driven bed as provided for in the original construction of the press and a dragging effect is produced upon the type or form, due to which the printing accomplished is blurred and imperfect.

My invention relates to means whereby a limited degree of play may be rendered present in the driving-gear associated with the spindle of the cylinder of a two-revolution printing-press during the printing action of the press, thereby rendering it possible for the press cylinder and bed to travel in harmony with each other without the printing action being interfered with due to conflict between the gearing engagement of the cylinder and bed and the cylinder - driving gear. The improvement also embodies means by which the cylinder-driving gear is intermittently held from play with respect to the cylinder-spindle during the period of securing mesh of the cylinder and bed gear members.

By my improvement I secure in a two-revolution printing-press the merits of a stop-cylinder printing-press with greater printing speed.

Figure I is an end elevation of part of the printing-press with my improvement applied thereto, with parts broken away to afford an unobstructed view of parts at the rear thereof. Fig. II is a vertical section taken on line II II, Fig. III, looking in the direction of the

arrow at said line, with parts at the rear of the line shown in elevation. Fig. III is a vertical longitudinal section taken through the press-gearing and showing one end of the cylinder in elevation. Fig. IV is a vertical section taken on line IV IV, Fig. III, looking in the direction of the arrow at said line, with parts beyond the line shown in elevation. Fig. V is an enlarged cross-section taken on line V V, Fig. IV. Fig. VI is a perspective view of the crank-arm fixed to the cylinder-spindle and associated with the cylinder-driving gear-wheel.

1 designates part of the frame of a printing-press, in which are seated uprights 2, that are provided with journal-boxes 3, in which the spindles of the press-cylinder are positioned.

4 designates the reciprocating bed of the press, which is provided with the usual rack 5.

6 designates the press - cylinder, having spindles 7 that are journaled in the boxes 3.

8 is a gear-wheel fixed to one of the cylinder-spindles and arranged in mesh with the bed-rack 5.

The parts thus far described are common to printing-presses as at present in use, and no invention *per se* is herein claimed for them.

9 designates (see Fig. III) a power-wheel which is driven from any suitable source.

10 is a cylinder-driving gear-wheel that is arranged in mesh with the power-wheel 9 and is provided with an aperture 11.

12 designates a crank-arm having a collar 13, by which it is keyed to the cylinder-spindle 7 (illustrated in the drawings) and on which the cylinder-driving gear-wheel 10 is loosely mounted. The crank-arm 12 is provided with an extension 14, (see Figs. III, IV, and VI,) that is of less width in cross-section than the cross-section of the aperture 11 in the cylinder-driving gear-wheel, within which said extension fits. Due to this variation a limited degree of play in the cylinder-driving gear-wheel is permitted in either forward or reverse rotation of said wheel when the extension is free of restraint in the aperture 11.

At the inner side of the cylinder-driving gear-wheel 10 are guides 15. Between these guides is slidably positioned a locking member 16, that is adapted for movement toward and away from the crank-arm extension 14, so that it may engage said extension or be withdrawn therefrom to either hold the cyl-



inder-driving gear-wheel fixed with relation to the crank-arm 12 or free to partake of a limited degree of play with respect to said crank-arm. The locking member 16 is normally held separated from the extension 14 of said crank-arm by springs acting thereagainst and forcing the locking member toward the axis of the gear-wheel 10. The springs may be placed in the positions of those indicated at 17, Fig. IV.

18 is a roller or button projecting from the locking member 16 and adapted to travel in a circular path with the locking member and the gear-wheel, by which it is carried.

19 designates an upper cam mounted upon the upright 2 of the press adjacent to the cylinder-driving gear-wheel 10 and in the path of circular travel of the locking-member roller 18, so that said roller will strike thereagainst at a certain period during its travel. 20 is a lower cam also mounted upon the upright 2 adjacent to the upper cam 19 and adapted to be engaged by the locking-member roller 18 immediately after said roller moves away from the upper cam in the continuance of its movement.

In the practical use of a printing-press equipped with my improvement the operation of the parts is as follows: It will be assumed that the rack of the bed 4 and the gear-wheel 8, fixed to the cylinder-spindles, are free of mesh, which is the condition previous to the printing action. The driving-gear of the press being set in motion, the press-bed 4 is caused to approach a position beneath the cylinder, and at the same time the power-wheel 9 acts to rotate the gear-wheel 10. As the gear-wheel rotates the locking member 16 moves into juxtaposition with the upper cam 19, so that its roller 18 will engage said cam. The locking member is so positioned upon the gear-wheel 10 that the roller 18 will come into engagement with the cam 19 immediately before the forward end of the rack 5 is brought to the teeth of the gear-wheel 8, with which it subsequently meshes. When the locking-member roller rides into engagement with the cam 19, pressure is exerted thereagainst to force the locking member outwardly from the position seen in full lines, Fig. IV, to the position seen in dotted lines, Fig. IV, thereby causing the locking member to engage the extension 14 of the crank-arm 12, as a result of which the gear-wheel 10 is held from movement with respect to said crank-arm and caused to travel positively therewith without independent movement. As a consequence the gear-wheel 10, being locked to the crank-arm 12, is caused to drive the cylinder-spindles 7 positively, and the gear-wheel 8, fixed to the cylinder-spindle, is positively rotated until the last-named gear-wheel has entered partially into mesh with the rack of the bed 4. The cam 19 is of such extent as to maintain the

locking member in its outwardly-pressed position and in engagement with the crank-arm 12 only a sufficient length of time to provide for initial meshing of the gear-wheel 8 with the bed-rack, and as soon as the roller of the locking member moves away from the cam 19 it passes above the cam 20 and into engagement therewith. When the locking-member roller rides onto the lower cam, it is gradually carried toward the cylinder-spindles 7, with the result that the locking member is withdrawn from the extension 14 of the crank-arm 12, thereby again freeing said extension to permit of its partaking of limited play within the aperture 11 in the gear-wheel 10. From the foregoing it will be seen that each time that the cylinder 6 and bed 4 are placed into driving engagement with each other through the medium of the bed-rack and gear-wheel 8 the cylinder-driving gear-wheel 10 is locked positively to the cylinder-spindle 7 in a sufficient period of time to provide for the quick and positive intermeshing of the rack and gear-wheel 5 and 8. Immediately thereafter the cylinder-driving gear-wheel 10 is released from positive driving connection to the cylinder-spindle, due to the withdrawal of the locking member 16 from the extension of the crank-arm 12, thereby permitting play of said driving gear-wheel on the collar of the crank-arm. As a consequence, although the cylinder-driving gear-wheel continues to have rotation imparted thereto by the intermeshing power-wheel 9 the press-bed 4 is permitted to impart rotation to the press-cylinder during the rearward reciprocation of said bed, so that said parts move in absolute unison without conflict between the engagement of the cylinder with the bed and the cylinder-driving gear.

I claim as my invention—

1. In a cylinder printing-press, the combination of a cylinder, a bed adapted to move into driving connection with said cylinder, a driving member loosely associated with a spindle of said cylinder, a member fixed to said spindle and loosely fitted to said driving member, locking means adapted to connect said driving member and the member fixed to said spindle, and means for alternately shifting said locking means into and out of action, substantially as set forth.

2. In a cylinder printing-press, the combination of a cylinder, a bed adapted to move into driving connection with said cylinder, a driving member loosely associated with a spindle of said cylinder, a member fixed to said spindle and loosely fitted to said driving member, locking means adapted to connect said driving member and the member fixed to said spindle, and a cam with which said locking means engages to cause it to be shifted into locking action, substantially as set forth.

3. In a cylinder printing-press, the combi-



nation of a cylinder, a bed adapted to move into driving connection with said cylinder, a driving member loosely associated with a spindle of said cylinder, a member fixed to said spindle and loosely fitted to said driving member, spring - controlled locking means adapted to connect said driving member and the member fixed to said spindle, and means whereby said locking means is shifted against the action of the springs controlling it, substantially as set forth.

4. In a cylinder printing-press, the combination of a cylinder, a bed adapted to move into driving connection with said cylinder, a driving member loosely associated with a spindle of said cylinder, a member fixed to said spindle and loosely fitted to said driving member, locking means adapted to connect said driving member and the member fixed to said spindle, and cams arranged to shift said locking means into locking action and out of locking action, substantially as set forth.

5. In a cylinder printing-press, the combination of a cylinder, a bed adapted to move into driving connection with said cylinder, a crank-arm fixed to a spindle of said cylinder, a loosely-mounted gear-wheel to which said crank-arm is loosely fitted, a locking member carried by said gear-wheel and adapted to engage said crank-arm to hold said crank-arm and gear-wheel rigidly united, and means for moving said locking member to free said gear-wheel from said crank - arm, substantially as set forth.

6. In a cylinder printing-press, the combination of a cylinder, a bed adapted to move into driving connection with said cylinder, a crank-arm fixed to a spindle of said cylinder, a loosely - mounted gear - wheel associated with said spindle and provided with an aper-

ture adapted to receive said crank - arm, a locking member carried by said gear - wheel and adapted to engage said crank-arm, and means for moving said locking member to and away from said crank-arm, substantially as set forth.

7. In a cylinder printing-press, the combination of a cylinder, a bed adapted to move into driving connection with said cylinder, a crank-arm fixed to a spindle of said cylinder, a loosely - mounted gear - wheel associated with said spindle and provided with an aperture adapted to receive said crank - arm, a locking member carried by said gear-wheel and adapted to engage said crank-arm, and cams arranged to receive the engagement of said locking member to move it to and away from said crank - arm, substantially as set forth.

8. In a cylinder printing-press, the combination of a cylinder, a bed adapted to move into driving connection with said cylinder, a crank-arm fixed to a spindle of said cylinder and provided with a finger, a gear - wheel loosely associated with said spindle and provided with an aperture to receive said crank-arm finger that is of greater dimensions than said finger to permit freedom of movement of the finger therein, a spring-controlled locking member movably fitted to said gear-wheel and arranged for engagement with said crank-arm finger, and a cam located adjacent to said locking member arranged to be engaged by said locking member to move said member to said crank-arm finger, substantially as set forth.

BENJAMIN F. BERRY.

In presence of—

NELLIE V. ALEXANDER  
BLANCHE HOGAN.