

(No Model.)

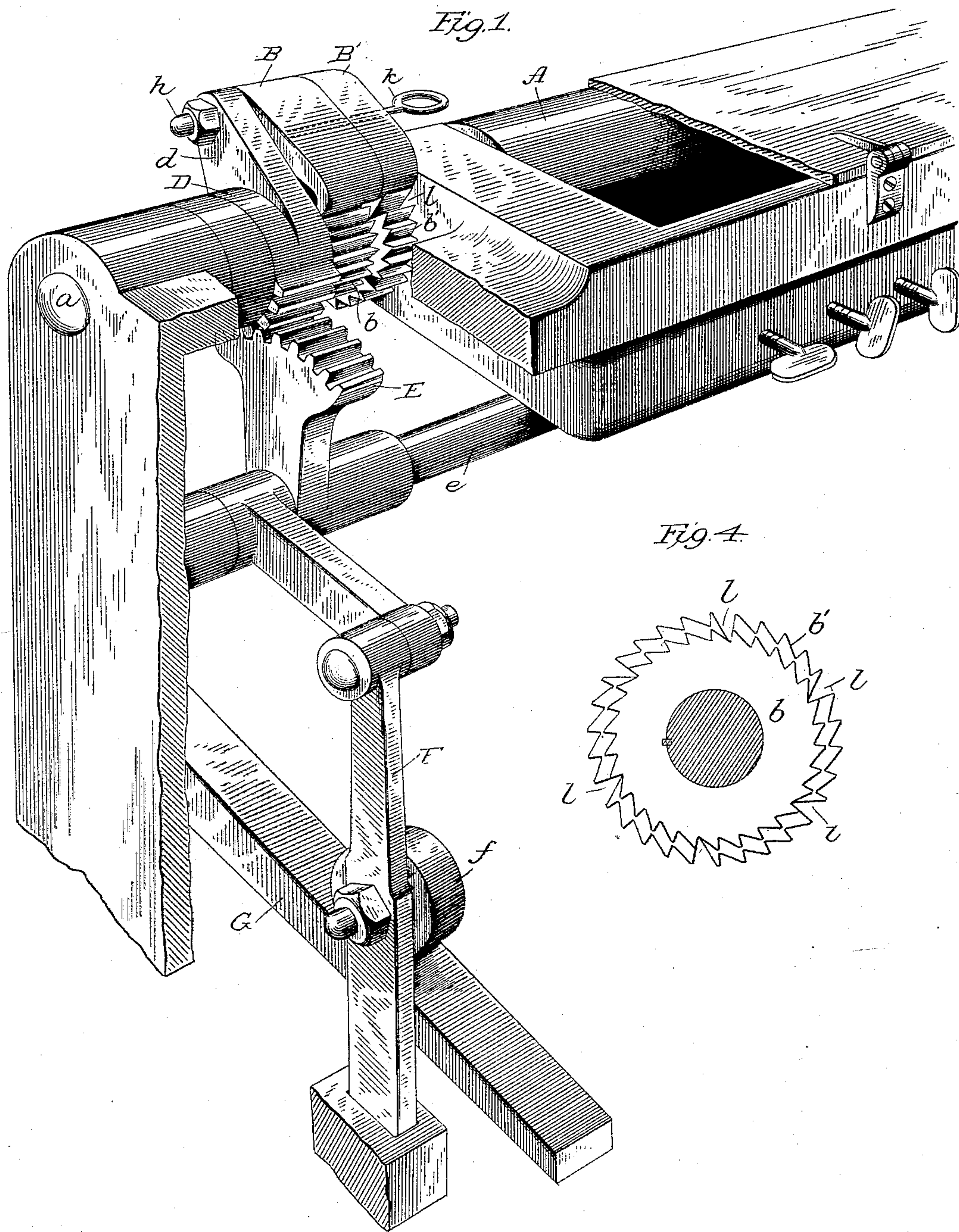
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T. H. FITNAM.

INKING APPARATUS FOR PRINTING MACHINES.

No. 327,248.

Patented Sept. 29, 1885.



Attest:
Walter Donaldson
F. L. Middleton

Inventor:
Thos. H. Fitnam
by *Joyce & Spear*
Attys.

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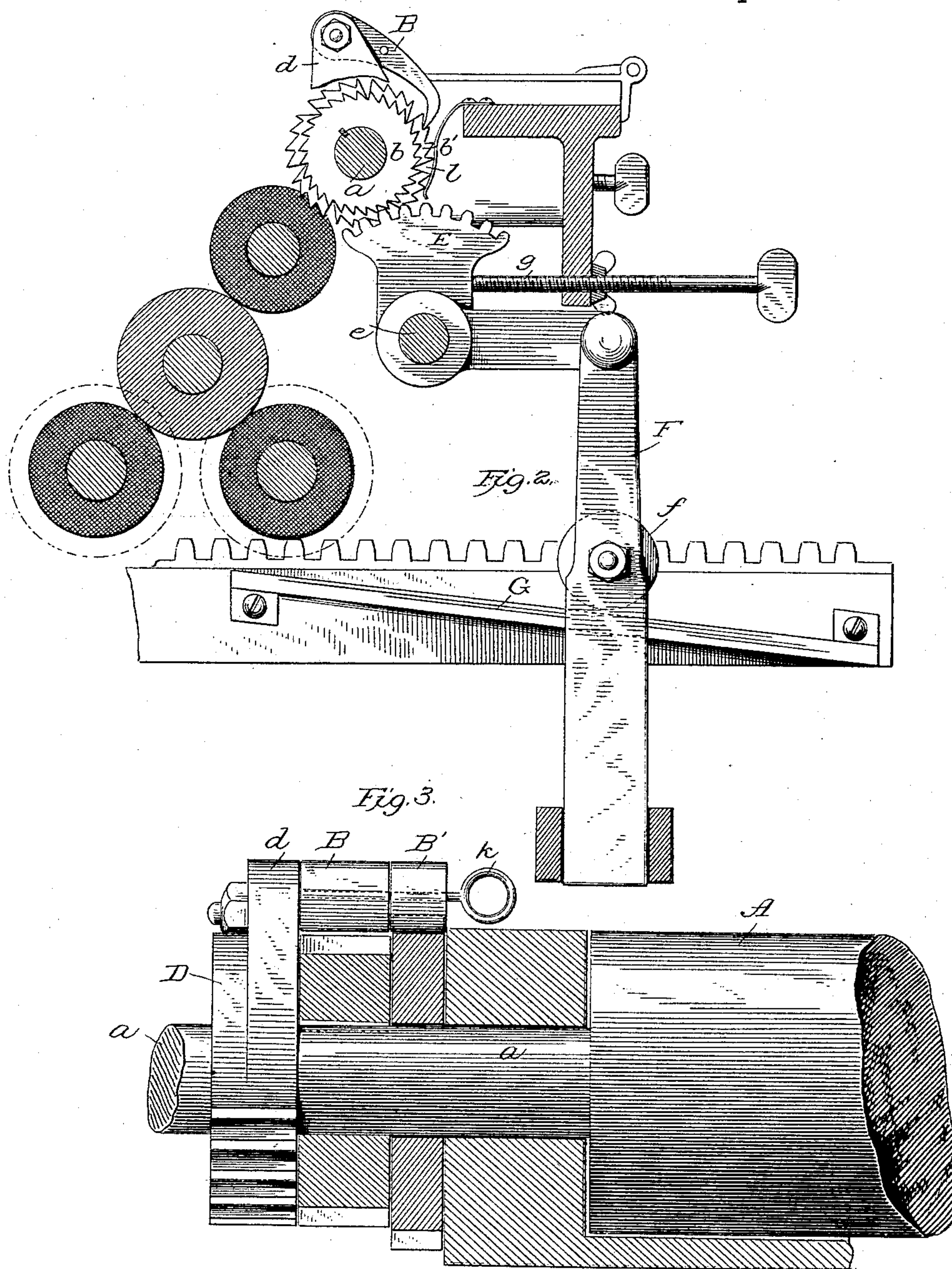
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INVENTOR

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BY

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ATTORNEY

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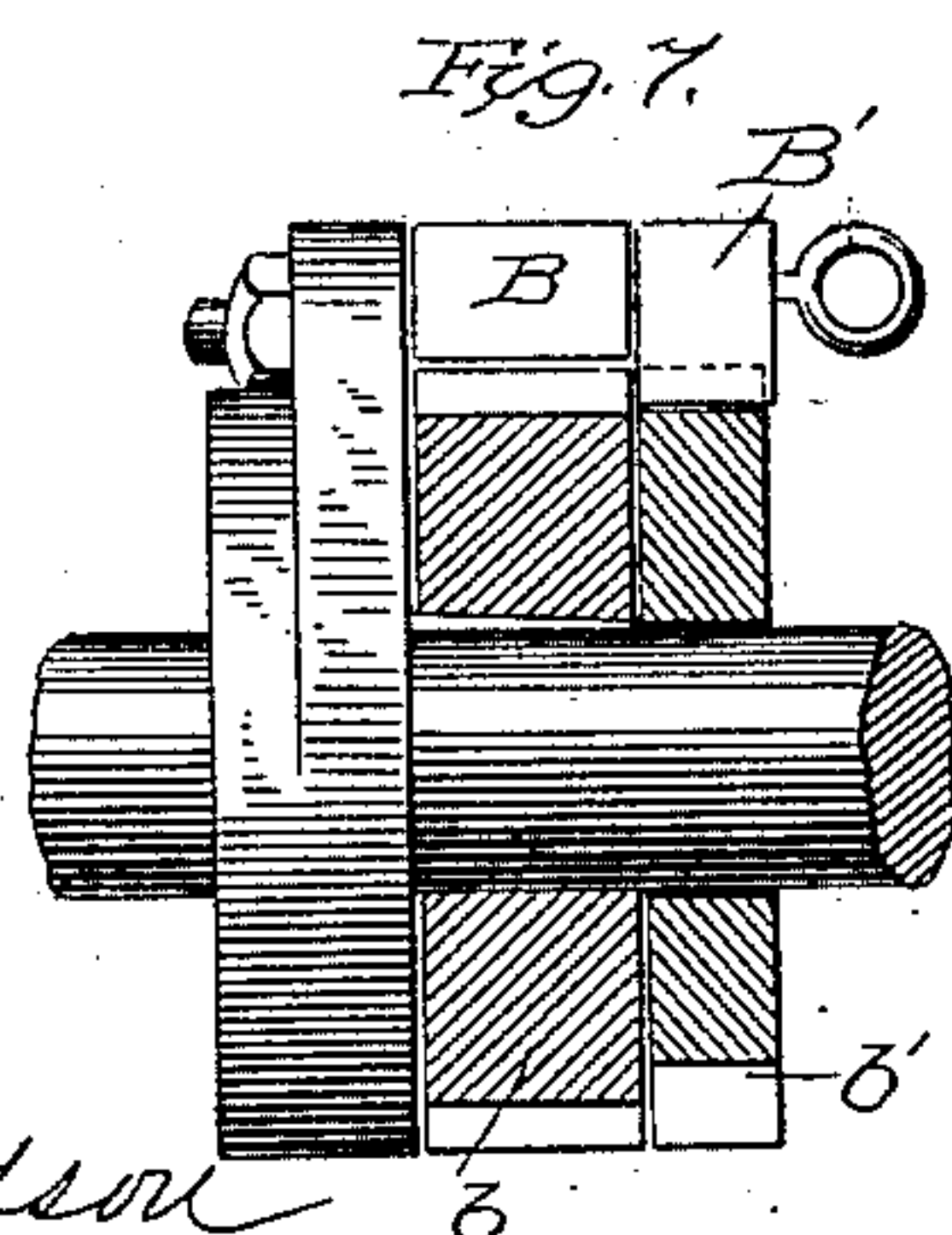
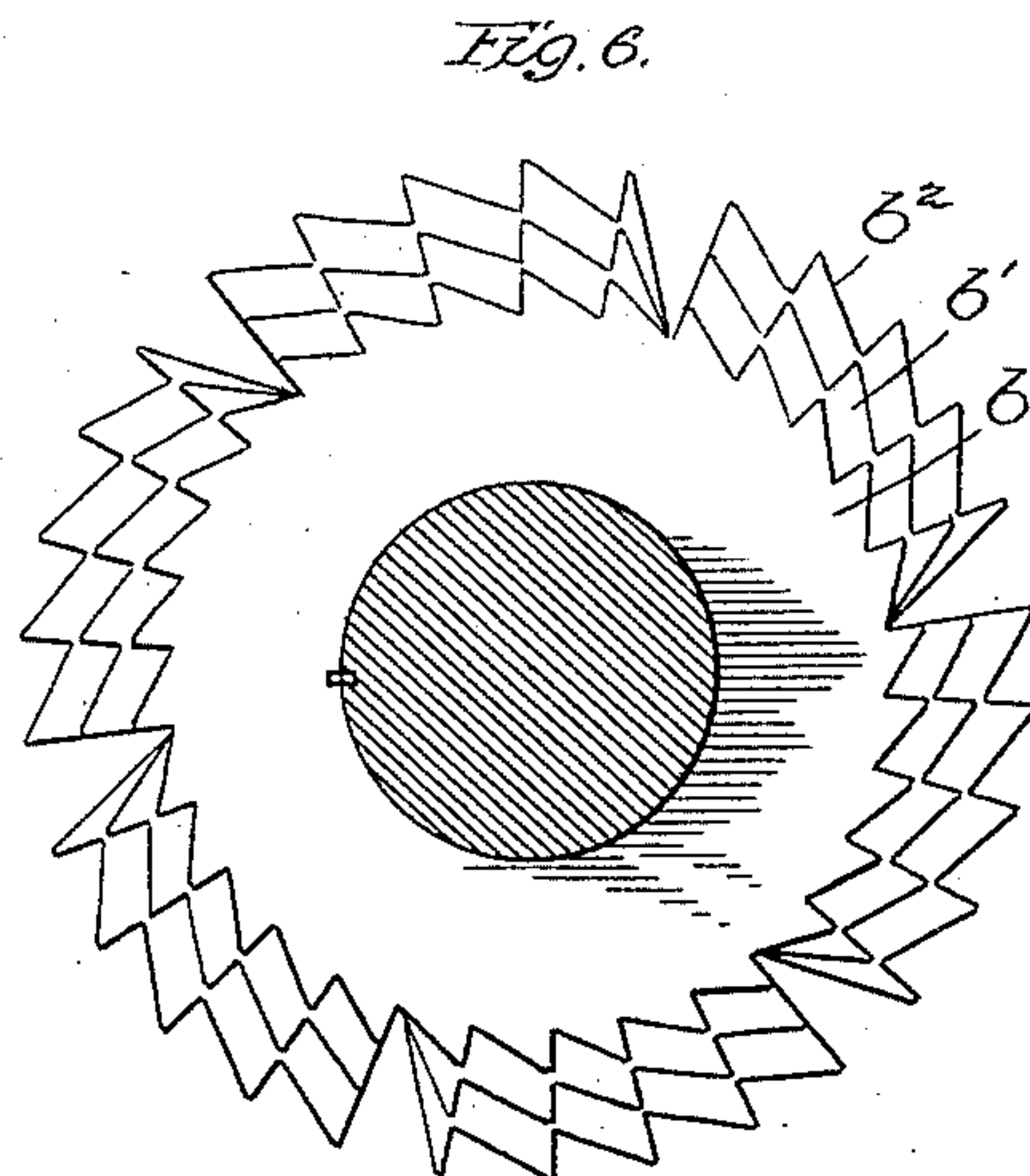
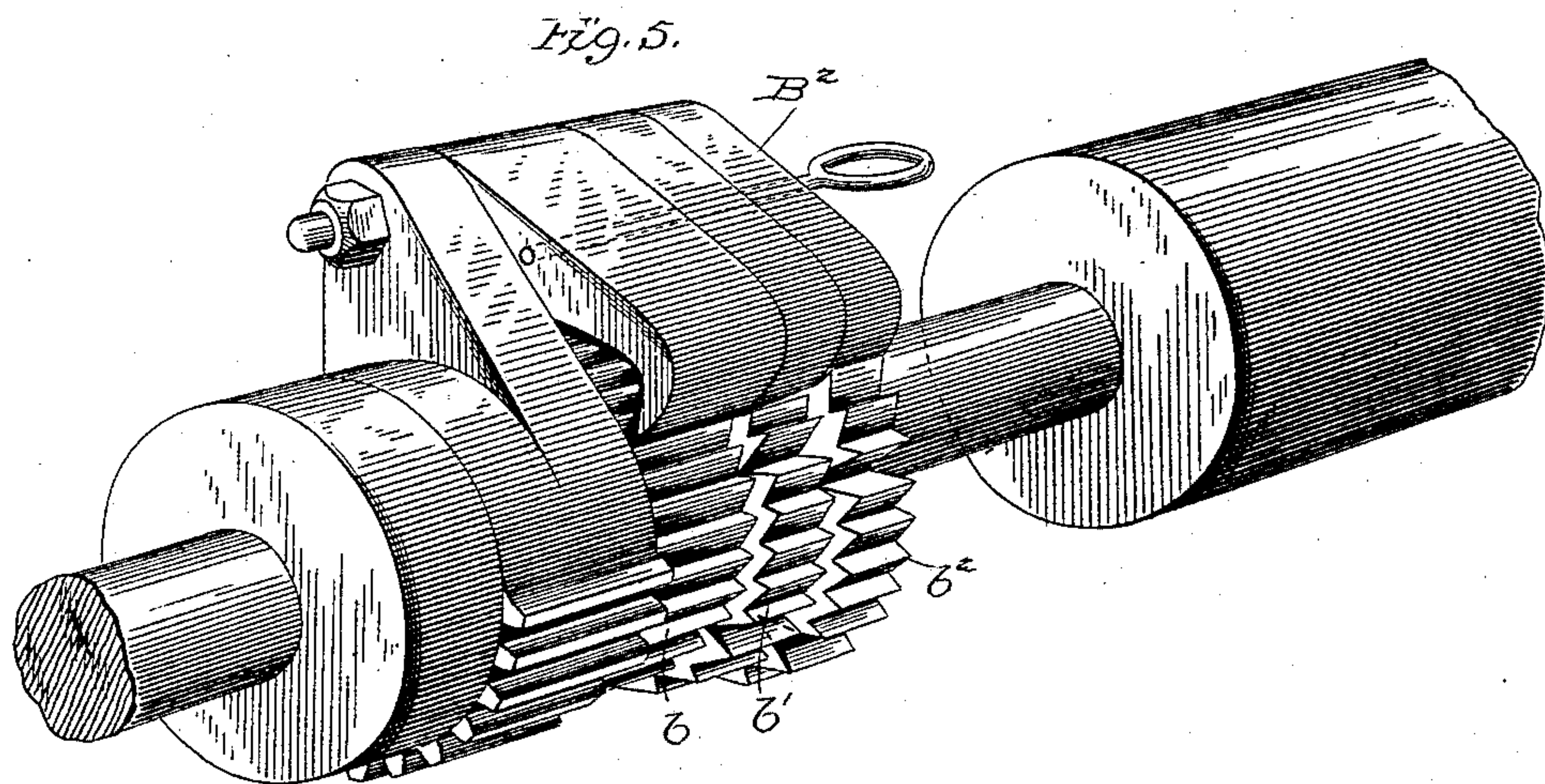
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UNITED STATES PATENT OFFICE.

THOMAS H. FITNAM, OF WASHINGTON, DISTRICT OF COLUMBIA.

INKING APPARATUS FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 327,248, dated September 29, 1885.

Application filed November 7, 1884. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. FITNAM, of Washington, in the District of Columbia, have invented a new and useful Improvement in Inking Apparatus for Printing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same.

The object of my invention is the regulation of the movement of the inking apparatus of a printing-press.

In printing-presses as now constructed, so far as I am aware, the amount of movement which is automatically imparted to the roller in the ink-fountain cannot be reduced sufficiently for all the kinds of work which may be performed upon the press. These presses are so constructed that a single reciprocating movement of the bed may operate the pawl-and-ratchet mechanism which turns the fountain-roller the space of one tooth or of several, but cannot operate it less than the space of one tooth; but the amount of movement imparted to the roller by one reciprocation of the bed moving the roller the space of one tooth of the ratchet-wheel gives an amount of movement to the ink-fountain roller which supplies an amount of ink in excess of that required for many kinds of work which the press is capable of doing. For this reason a smaller press must be used for printing smaller papers, which could as well be printed upon the larger but for this excessive supply of ink. In some cases the pressman attempts to modify this excessive supply by allowing the ink-fountain roller to feed for a certain length of time and then cutting off the supply by disconnecting the roller from its operating mechanism, the form being supplied with ink during this interval from the quantity left upon the distributing and form rollers. As soon as the work begins to get light from an insufficient supply of ink, the fountain roller is again connected until the rollers are again supplied, and so on. This course is very objectionable, as the operator is compelled to keep a constant watch upon the work being done, and in spite of all his care the work will assume different shades of color.

The object of my invention is to overcome these difficulties and to reduce the supply of

ink to any desired degree by reducing the movement of the ink-fountain roller.

The primary movement from which the varied feed of the ink-fountain roller is to be derived is always the same; and my invention consists in interposing between the incline of the reciprocating bed and the ink-fountain roller a mechanism capable of moving continuously or intermittently, at the will of the operator, with the reciprocating bed. This I have accomplished by mechanism whereby the pawl of the ordinary mechanism is held up out of connection with its ratchet during any desired number of reciprocations of the bed, and is allowed to connect with its ratchet-wheel intermittently with said reciprocations.

The means which I have devised for carrying out my invention I have shown in the accompanying drawings, in which—

Figure 1 shows in perspective a part of the ink-fountain with its roller, the incline upon the reciprocating bed, and the intermediate mechanism for communicating motion to the roller. Fig. 2 shows a side elevation of the intermediate mechanism with the incline, the inking-rollers being shown in cross-section. Fig. 3 shows a side elevation of a part of the ink-fountain roller and its shaft with the ratchet-wheels in section and the pawls in front elevation. Fig. 4 shows the ratchet-wheels in side elevation on the shaft. Figs. 5, 6, and 7 represent modifications.

The main parts shown in the figures are of well-known construction, and represent part of a Hoe press in which the ink-fountain roller A is moved by means of a pawl, B, which engages with a ratchet-wheel, *b*, keyed upon the shaft *a* of the roller. The pawl is carried upon an arm, *d*, of a sleeve, D, loose upon the shaft *a*, and having teeth in mesh with a segment, E, pivoted upon a shaft, *e*, and operated by the reciprocating bar F, having a roller, *f*, which is moved by the incline G on the side of the reciprocating bed.

As heretofore constructed, the only reduction of movement of which the machine was capable was effected by limiting the action of the pawl on the teeth of the ratchet-wheel fixed to the ink-fountain roller. This was ordinarily effected by the set-screw *g*, by means

of which the backward movement of the segment E was limited. This reduction was limited to the movement of a single tooth at each reciprocation of the bed. Any further reduction of the movement of the segment would stop the working of the inking apparatus.

By the side of the ordinary pawl B, and upon the same pin *h*, I have pivoted a second pawl, B', similar to the pawl B, and upon the shaft *a* I have placed a ratchet-wheel, *b'*, which is fitted closely to the shaft, so as to turn in slight frictional contact therewith, the contact, however, not being sufficient to turn the roller. This loose wheel is larger than the ratchet-wheel *b*, as shown in Fig. 4, the notches in the teeth of the ratchet-wheel *b'* being a trifle higher than the crest of the teeth of the ratchet-wheel *b*. Holes are made in the two pawls for the insertion of a pin, *k*, by means of which the pawls are connected to each other in the same horizontal plane, and when the pawls are so connected the pawl B', resting in the ordinary notches of the ratchet-wheel *b*, holds the pawl B out of connection with its ratchet-wheel, and when the pawls are so held the operation of the machine simply turns the ratchet-wheel *b* on its shaft without turning the roller; but the ratchet-wheel *b'* is provided at any suitable intervals with deeper notches *l*, the bottom of these notches being on a line with the bottom of the notches or teeth of the ratchet-wheel *b*. As shown in the drawings, every fifth notch of the wheel *b'* is thus extended. It will be apparent, therefore, that four movements of the apparatus will be ineffective to turn the ink-roller; but the fifth movement will allow the pawls to drop and will permit them to turn the fixed ratchet-wheel *b* one notch if the screw *g* is set for that purpose. This will give one-fifth of the amount of ink-feed which would be given by the lowest gage of the machine, as heretofore constructed. Manifestly by properly operating the set-screw *g* this may be doubled or trebled, if desired. It is plain, also, that by varying the number of deep notches in the ratchet-wheel *b* the amount of feed may be correspondingly varied, the relative number of deep notches being increased or diminished, as may be desired.

Whenever it is desired to discontinue the operation of the feed-reducing wheel *b'*, the pin *k* may be withdrawn, permitting the pawl B to operate in the ordinary manner. To prevent the loose wheel from slipping, I may use a light spring, *n*, as shown.

The only addition made to the machine consists of the feed-reducing wheel, its pawl and the pin, and no other change is required, because there is sufficient space for these parts in the machine as now made.

It will be apparent that the office of the wheel *b'* is to support the pawl B above the line of its ratchet-teeth. This might be accomplished if the periphery of the wheel were smooth between the notches *l*, other

means, such as connections with the shaft *e*, being provided for turning this wheel. In this case the pawl B' would be exchanged for one of suitable form to fit the recess upon the periphery of the wheel. The construction shown, however, is simple and effective.

I have shown the mechanism in connection with one form of press. It may, without material alteration, be adapted to other forms. The effect would be the same if the feed mechanism were driven from some other part of the machine, which might be used as an equivalent for the reciprocating bed.

In Figs. 5 and 6 I have shown a modification of the invention, these figures being the same as Figs. 1 and 4, with the addition of a third ratchet-wheel, *b''*, and a pawl, B'', adapted thereto. This ratchet-wheel is, like the wheel *b'*, loose upon the shaft, and holds the same relation to the wheel *b'* as this wheel *b'* does to the fixed wheel *b*—that is, the third wheel is of such a circumference that the bottom of the teeth made therein is just above the crest of the teeth of the wheel *b'*, while, like the latter wheel, it has deep notches at suitable intervals extending to the bottom of the teeth of the wheel *b*. It will be obvious that the operation is precisely similar, the effect being different to the extent that the pawls, all being connected in a line, as shown, and as before described, the pawls B and B' are held up out of engagement with their respective ratchets, while the third pawl is engaged with the ordinary teeth of the third wheel. By the addition of this third wheel the revolution of the ink-roller is of course still further diminished, as the third pawl will turn its wheel the distance of five teeth before a deep notch is reached, which will then allow the pawls B'' and B' to drop, and in the next movement of the pawls forward the wheel *b'* will be moved a single notch. A short notch will next occur on the wheel *b''*, and the pawls will be again lifted until the distance of five more teeth have been traversed, when they will again fall into a deep notch and again move the second wheel. When the wheel *b'* has in this way been moved four times, the third pawl, moving over four teeth of the third wheel, will bring the deep notch alongside of the deep notch of the second wheel, and the next movement of the pawls will move the fixed wheel one tooth. After it has moved, the pawls are again lifted to the circumference of the large or third wheel, and the operation is repeated.

It will be understood that the foregoing description refers to the wheels shown, which are of a certain size and have a certain number of notches, and the movements will slightly vary with differently-notched wheels.

In Fig. 7 I have represented another modification. In this construction the gear-wheels are made of the same size, but the pawl B is held up above the crest of the teeth of its ratchet, while the pawl B' is engaged with the

ordinary teeth of its ratchet. The pawl engages with the teeth of the wheel *b* when a deep notch is reached in the wheel *b'*.

5 It will be understood that I do not limit myself to the number of wheels and pawls, as the number may be varied according to the requirements of the work to be done.

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

1. In combination with the ink-fountain roller of a printing-press, and with its pawl and ratchet-wheel, a loosely-pivoted wheel adapted to hold the pawl out of engagement
15 and to permit it to operate at intervals, substantially as described.

2. In combination with the ink-fountain roller of a printing-press and its ratchet-wheel and pawl, a loose wheel having teeth
20 of greater and less depth and arranged to hold up the pawl during part of its reciprocation and to drop it at intervals, substantially as described.

3. In combination with a ratchet-wheel fixed to the shaft of the ink-fountain roller
25 and its pawl carried upon an oscillating arm, a loose wheel having its periphery in part higher than the ratchet-wheel and in part on a line with the notches in said ratchet, and a device resting on the periphery of the wheel
30 adapted to be connected with or disconnected from the pawl, substantially as described.

4. In combination with the shaft of an ink-fountain roller of a printing-press, the ratchet-wheel *b*, fixed to the shaft, the pawl *B*, carried
35 upon the oscillating arm, the pawl *B'*, and a loose ratchet-wheel, *b'*, provided with the notches *l* and means for connecting the pawl *B'* to the pawl *B*, substantially as described.

In testimony whereof I have signed my name
40 to this specification in the presence of two subscribing witnesses.

THOMAS H. FITNAM.

Witnesses:

F. L. MIDDLETON,

WALTER DONALDSON.