

(No Model.)

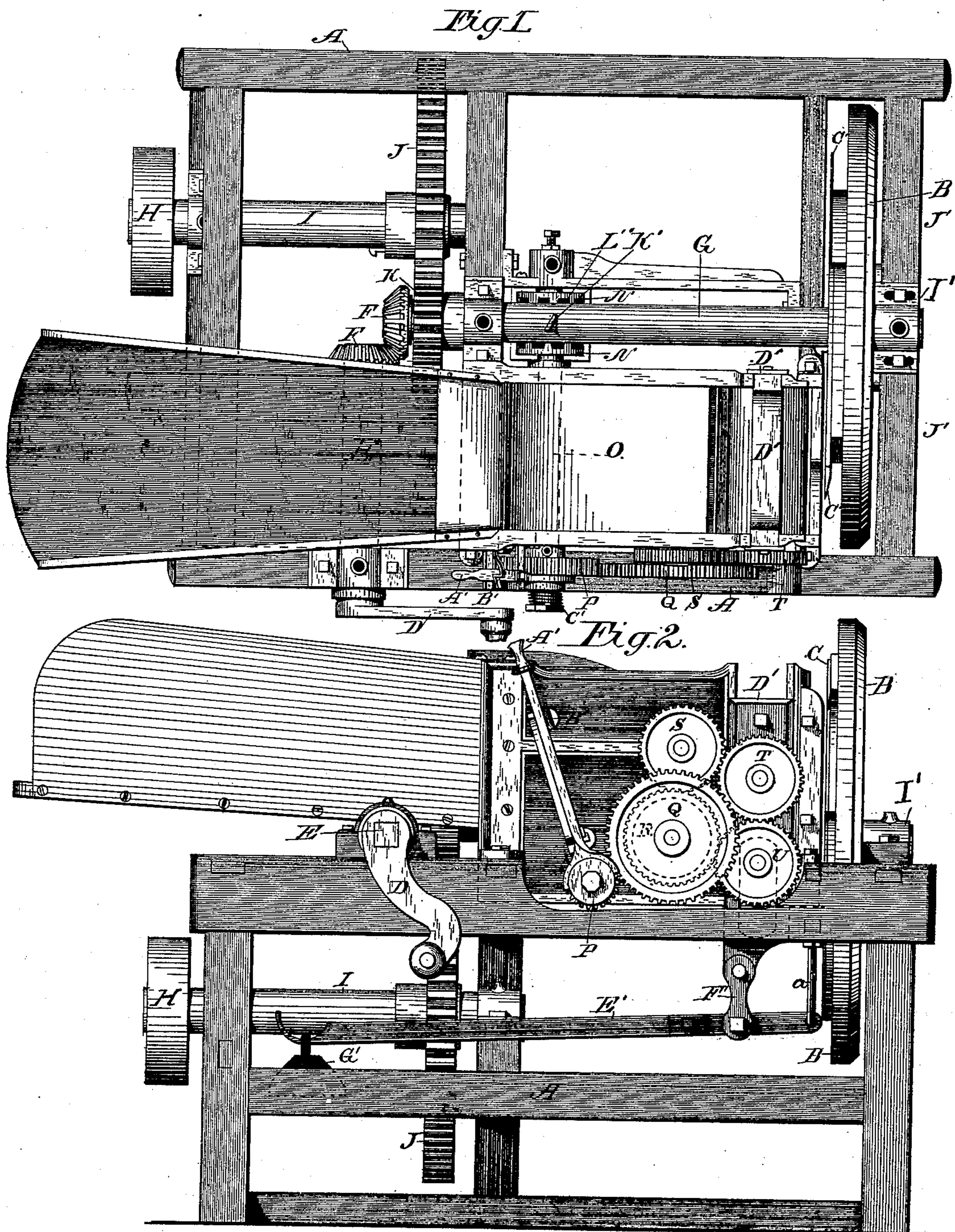
4 Sheets—Sheet 1.

F. HAMACHEK.

FEED CUTTER.

No. 308,609.

Patented Dec. 2, 1884.



Witnesses:
C. B. Story.
W. Sinnott

Inventor:
Frank Hamachek
By Jas. B. Ennis
Attorney:

(No Model.)

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Fig. 3.

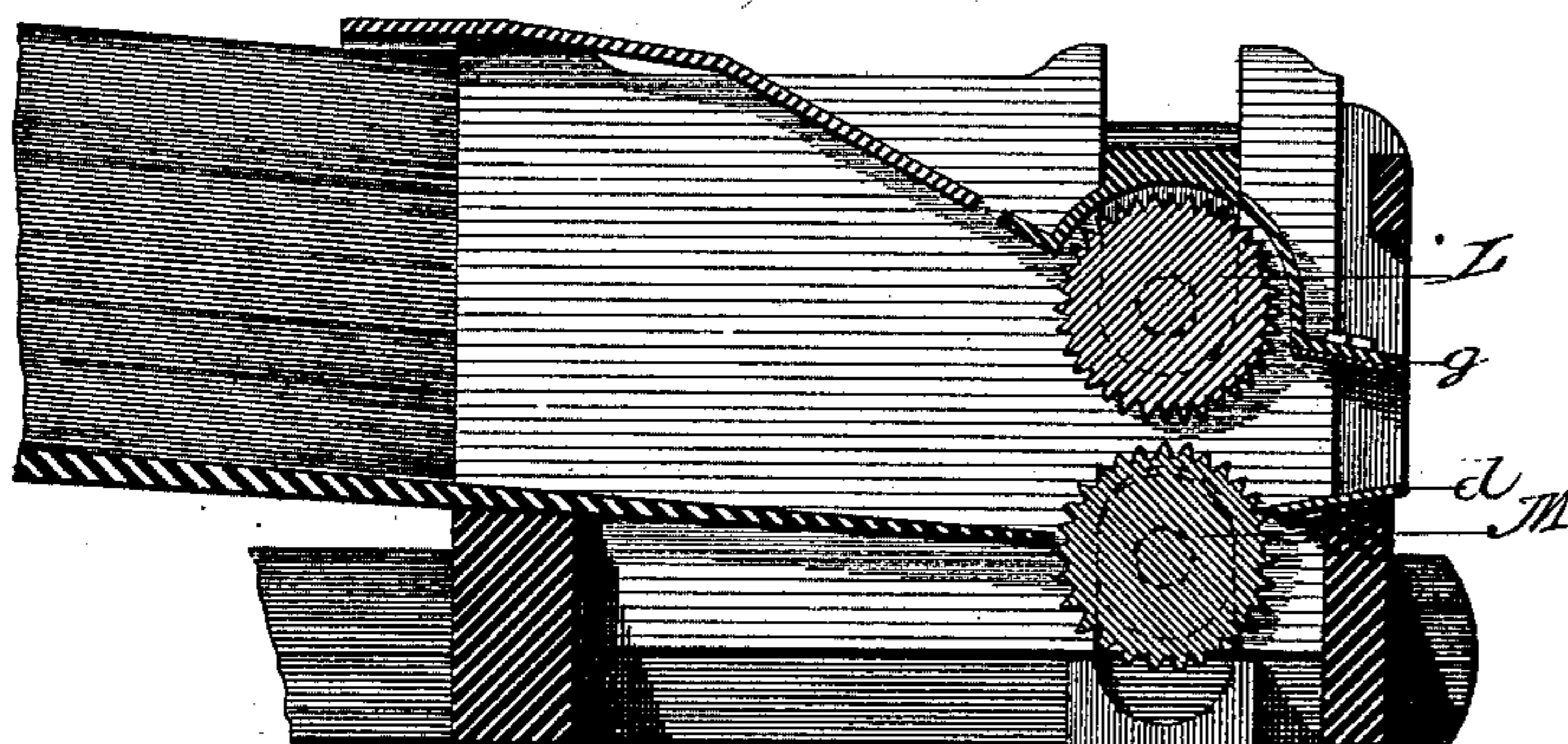


Fig. 4.

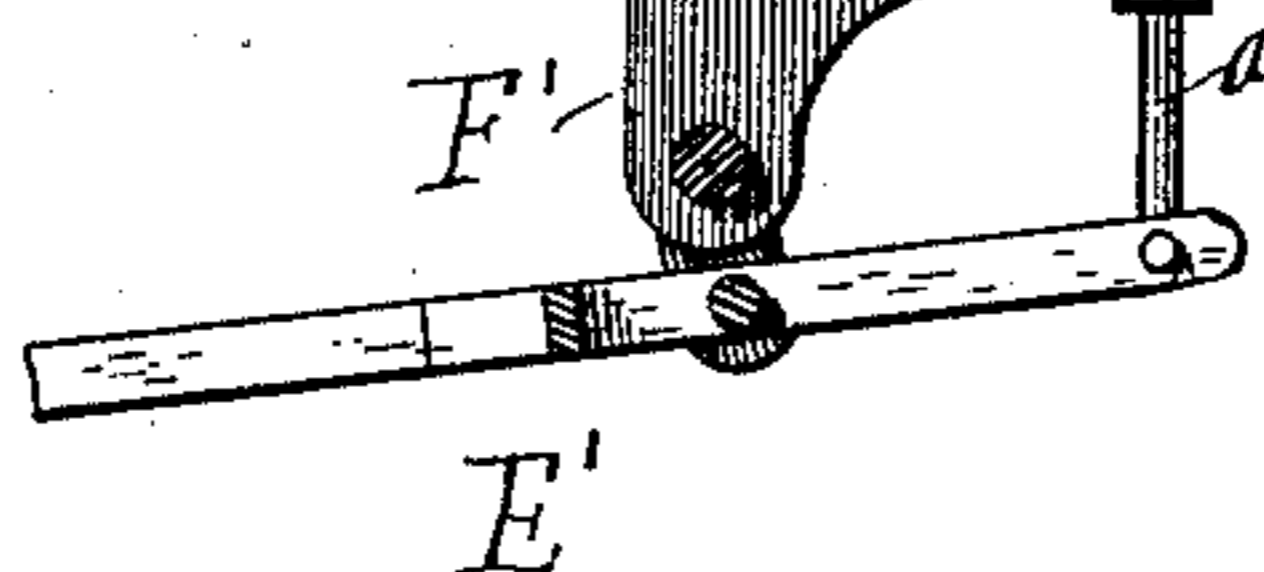
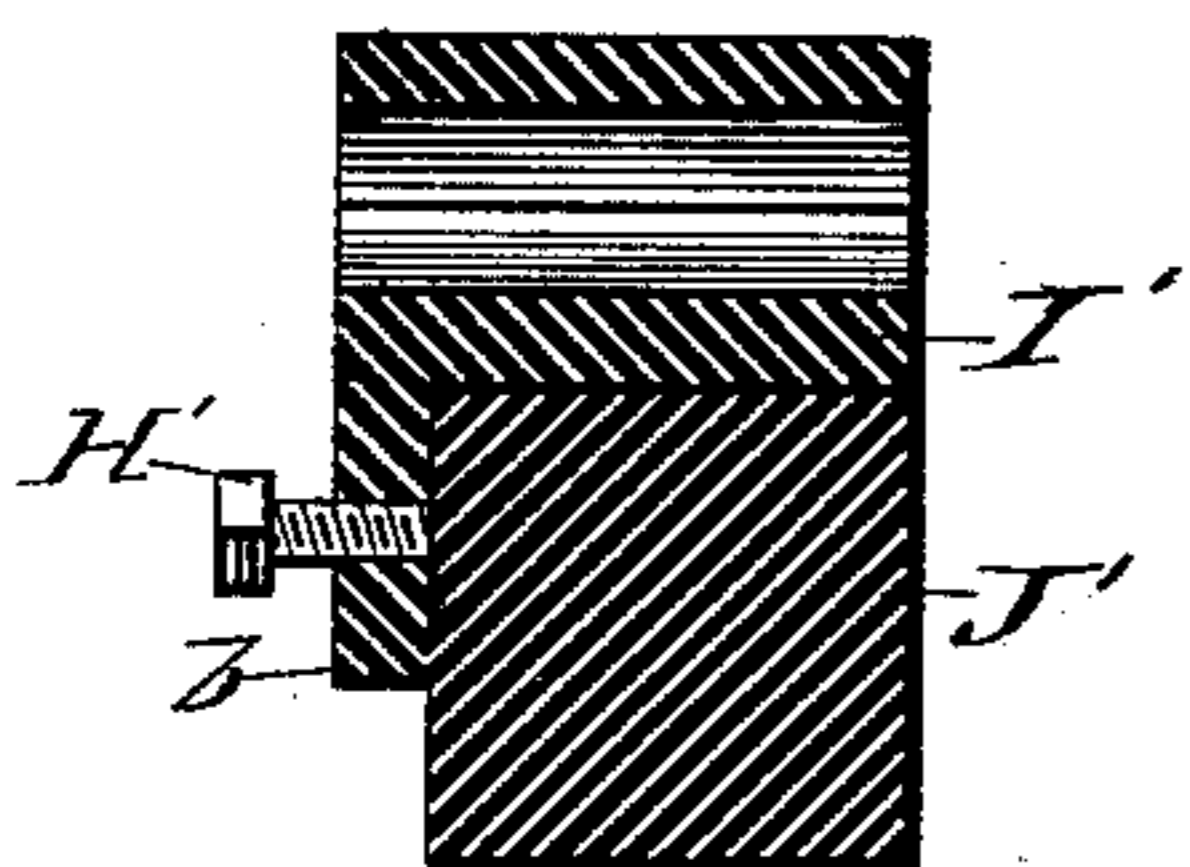


Fig. 6.

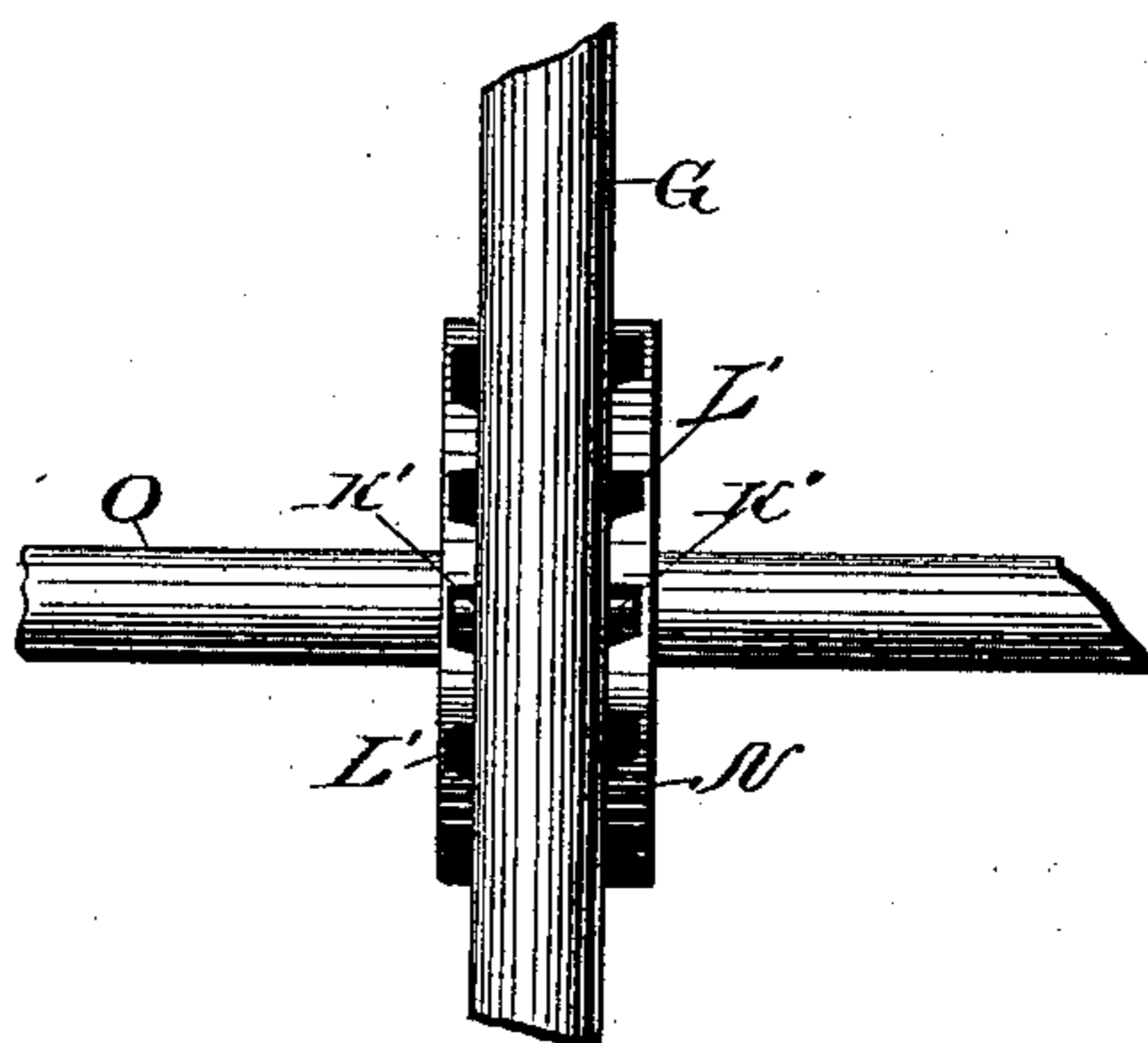


Fig. 5.

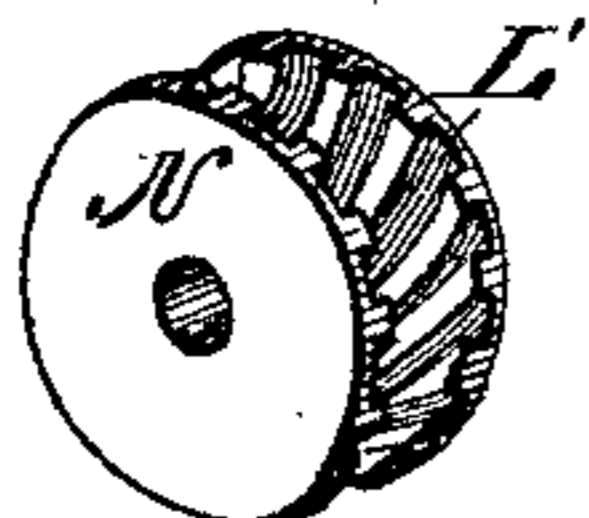


Fig. 7.

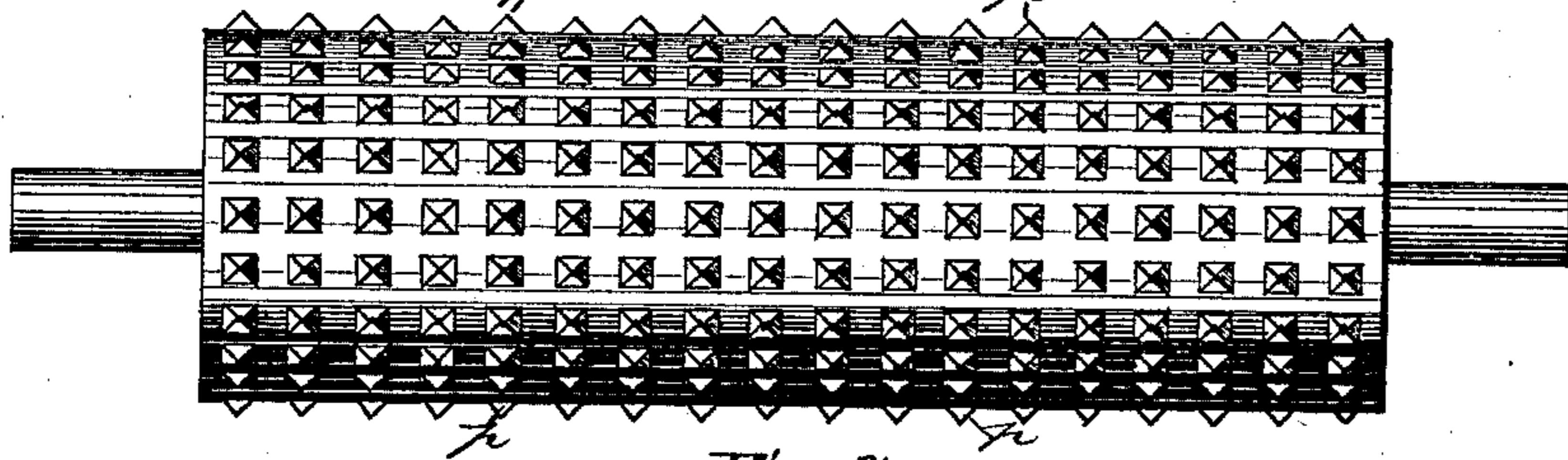
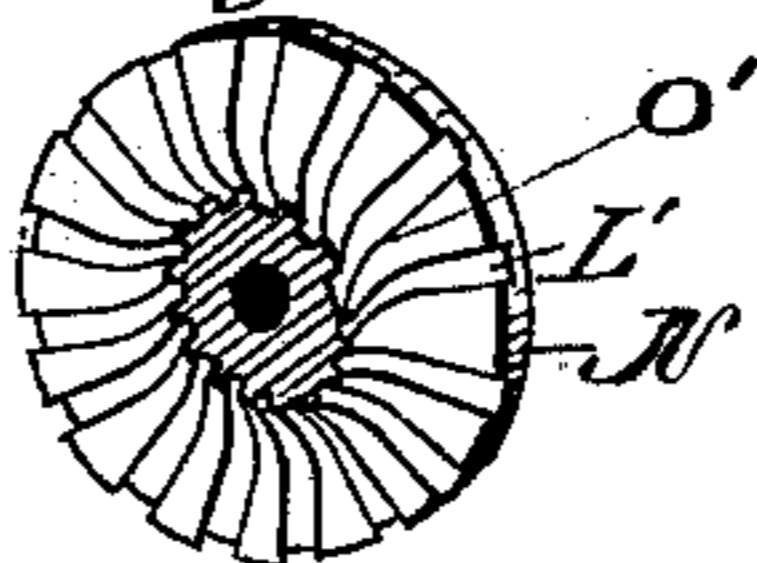


Fig. 8.



Witnesses:

C. B. Story.

W. Linnell

Inventor:

Franz Hamacher

By Jas. B Enwin

Attorney.

(No Model.)

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F. HAMACHEK.

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Patented Dec. 2, 1884.

Fig. 9.

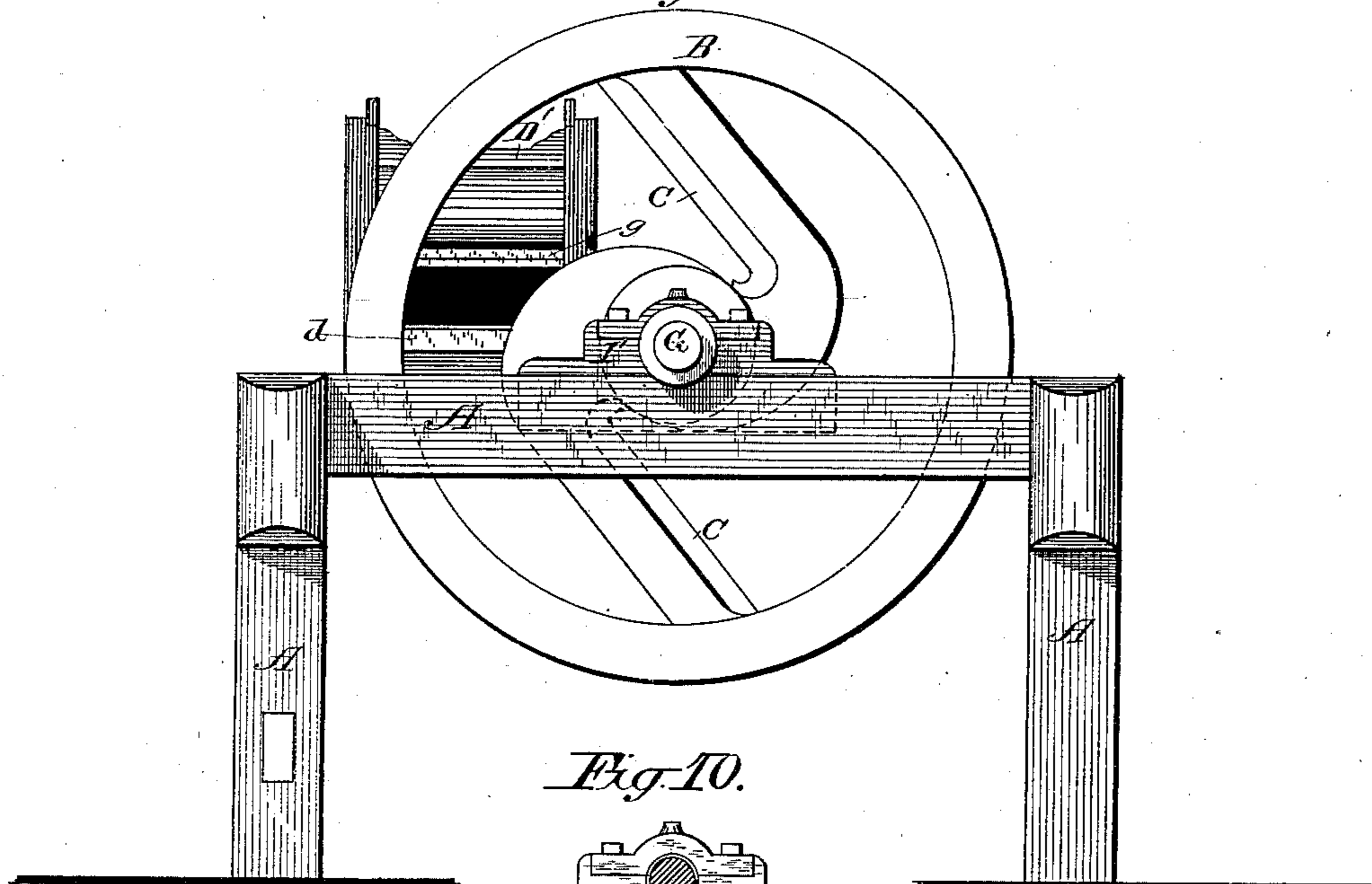


Fig. 10.

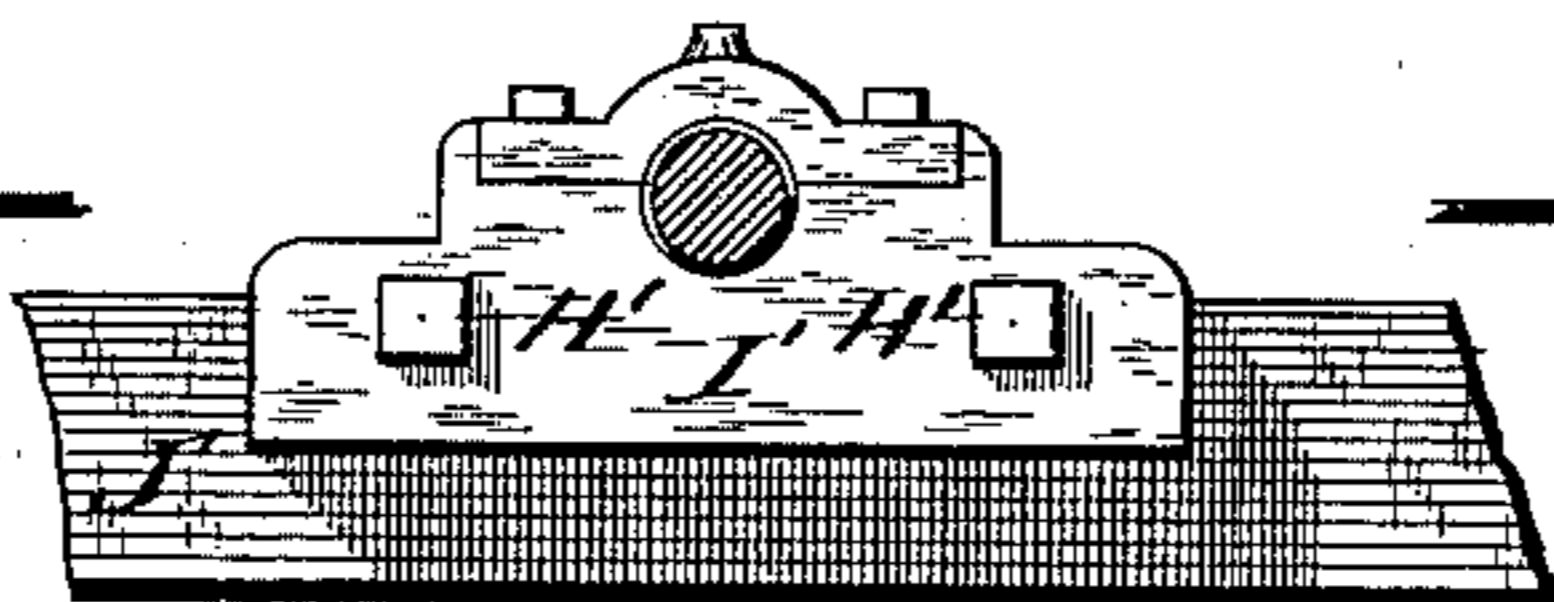


Fig. 11.

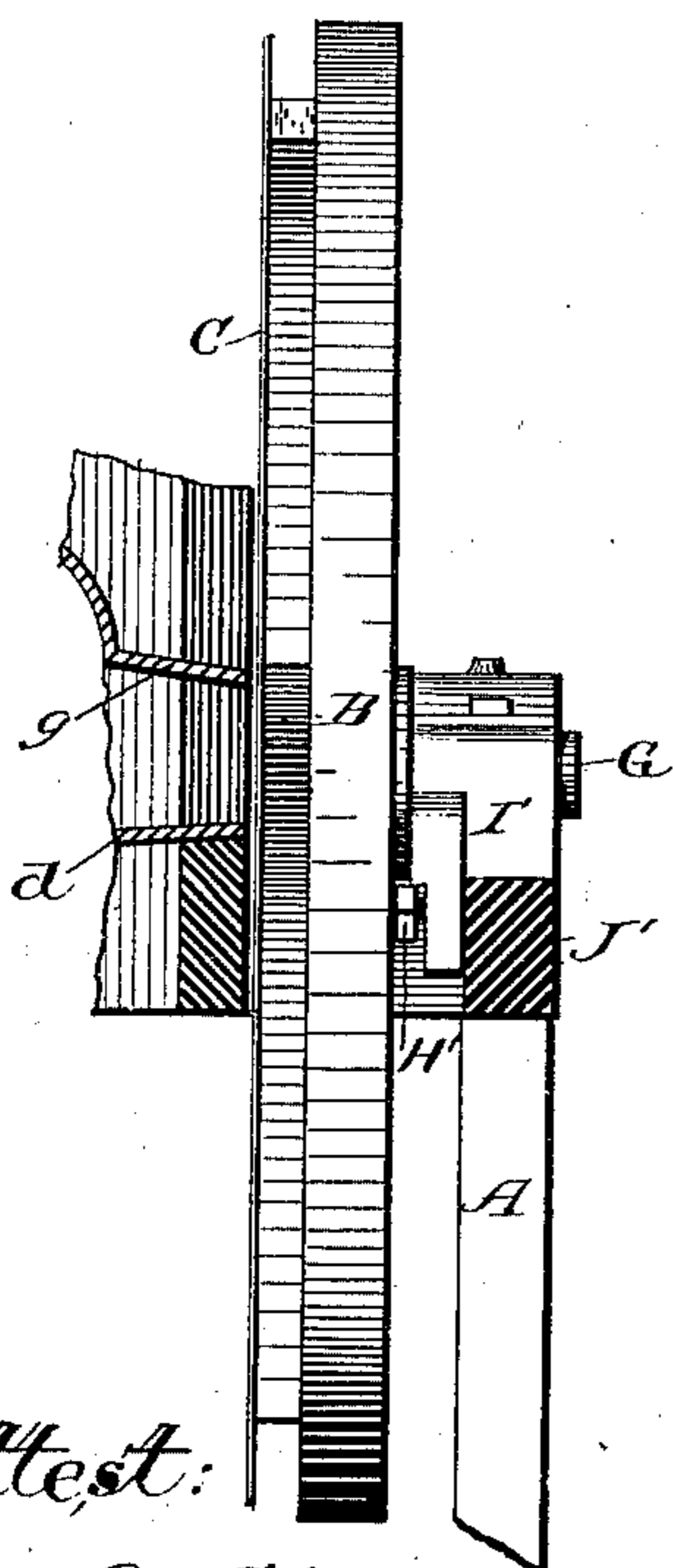
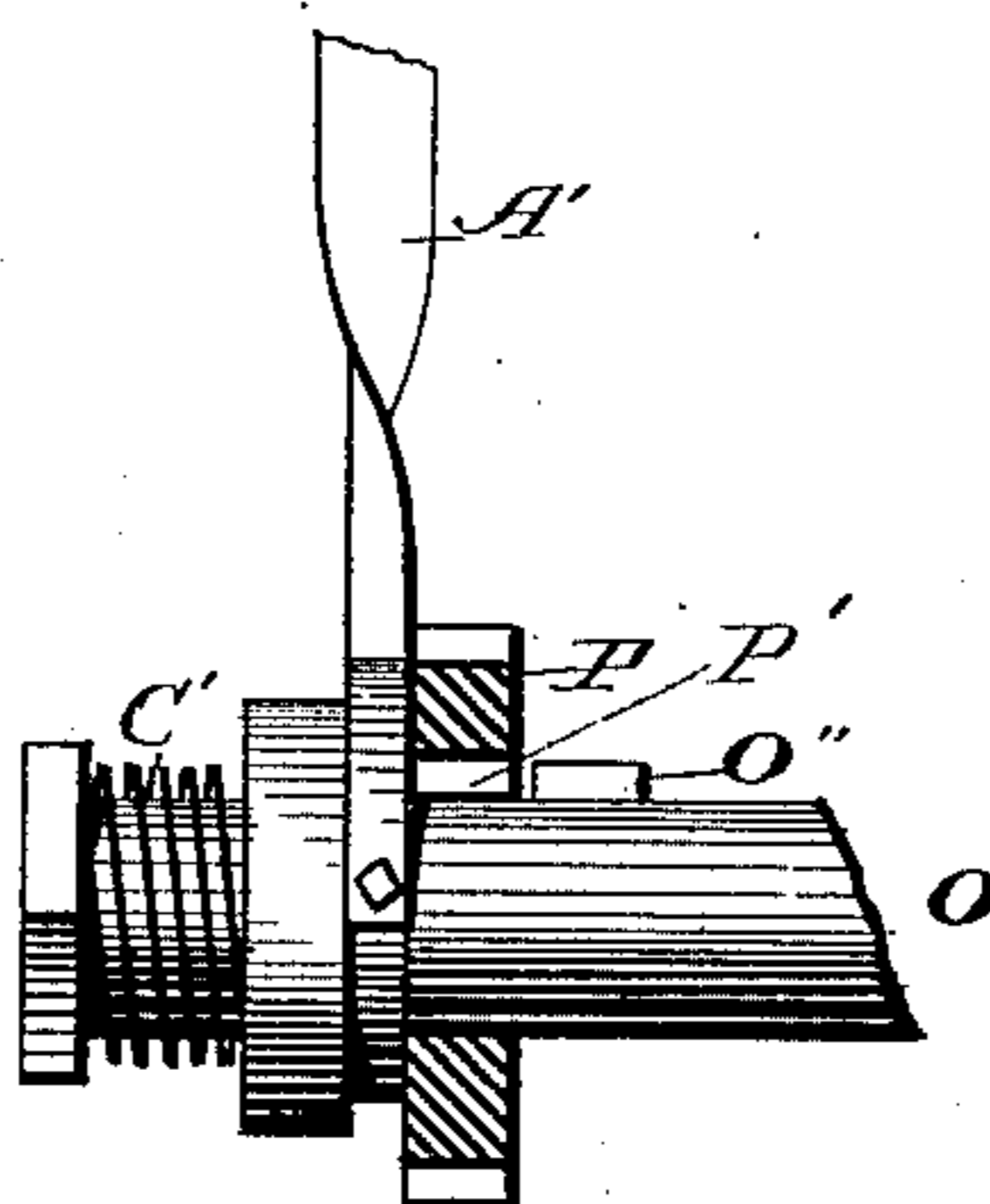


Fig. 12.



Attest:

C. B. Story.
Clinton Goodwin

Inventor:
Frank Hamachek
By
Just B. Enrie
Attorney.

(No Model.)

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F. HAMACHEK.

FEED CUTTER.

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Patented Dec. 2, 1884.

Fig. 13.

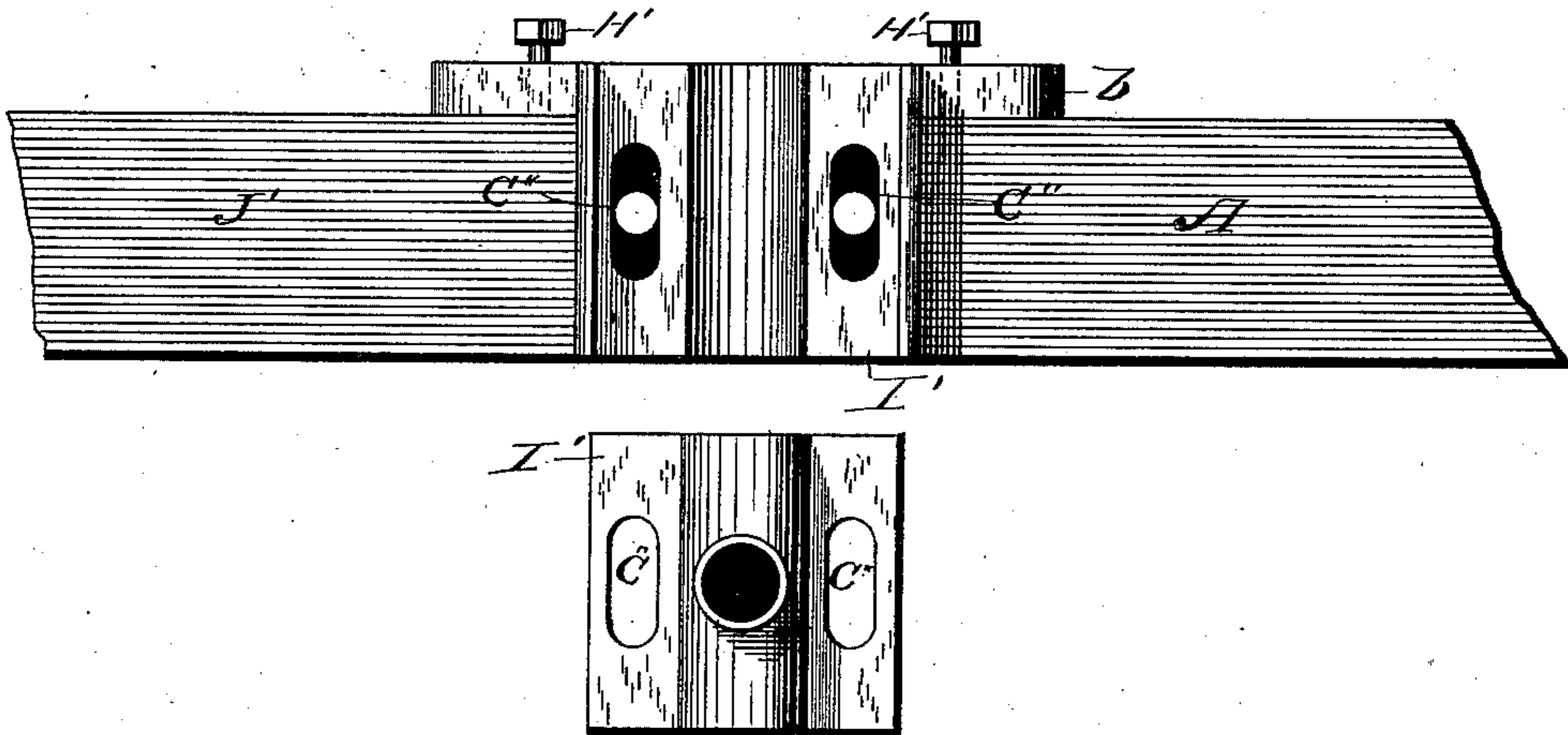


Fig. 14.

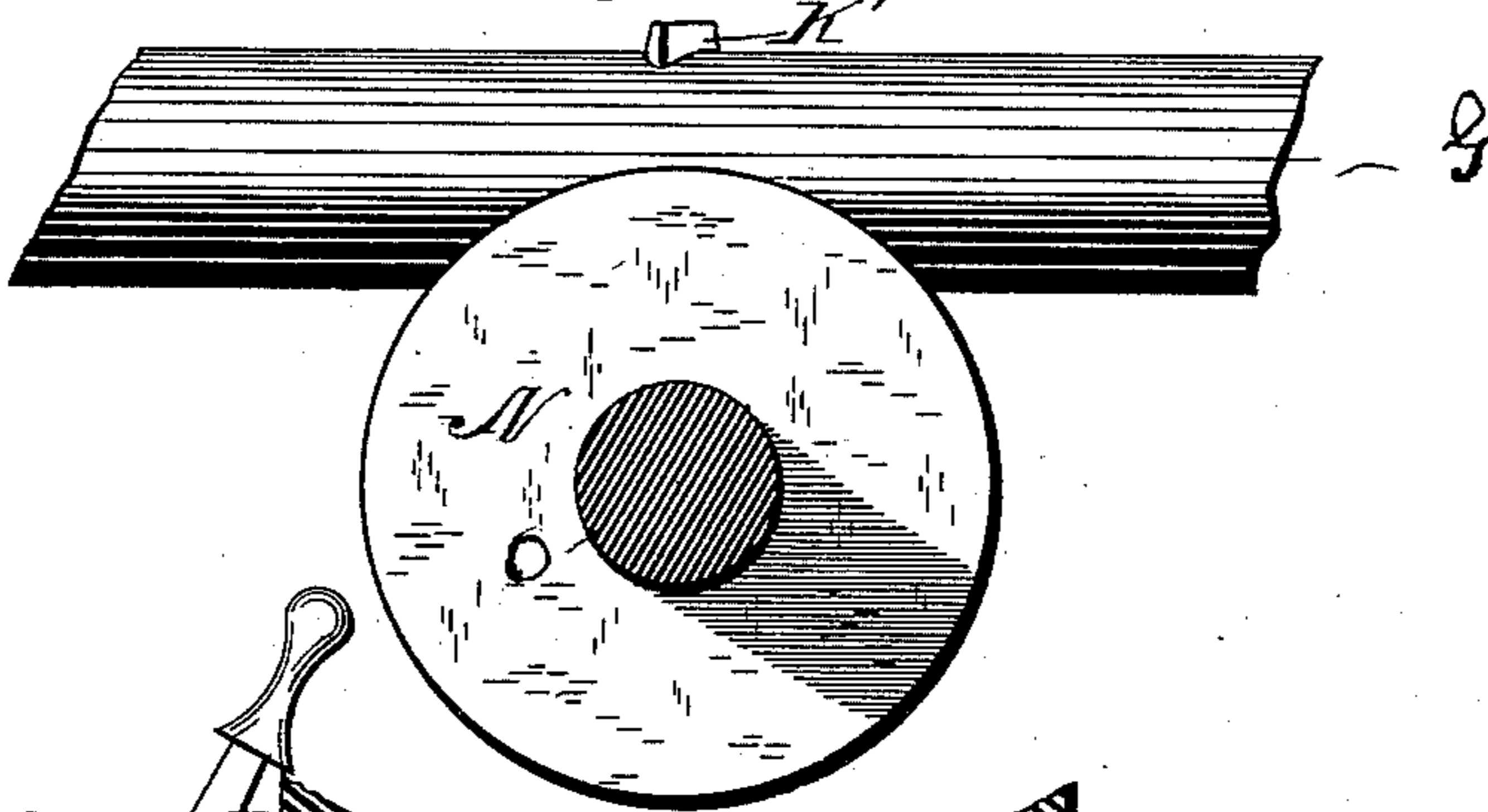
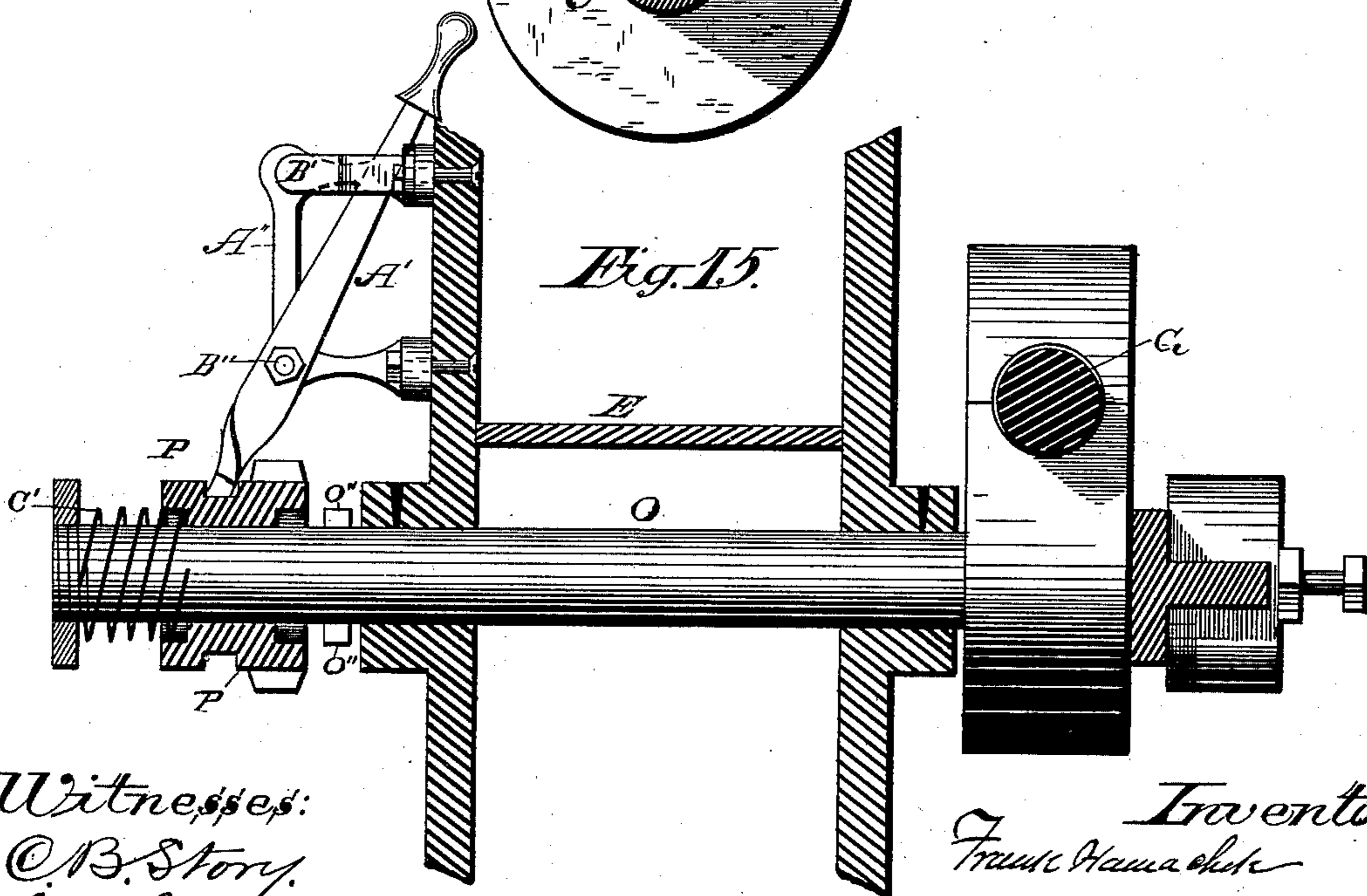


Fig. 15.



Witnesses:
C. B. Story
Wm. Linnott

Inventor:
Frank Hamachek
By
Jas. B. Ennis
Attorney.

UNITED STATES PATENT OFFICE.

FRANK HAMACHEK, OF KEWAUNEE, WISCONSIN.

FEED-CUTTER.

SPECIFICATION forming part of Letters Patent No. 308,609, dated December 2, 1884.

Application filed March 13, 1883. (No model.)

To all whom it may concern:

Be it known that I, FRANK HAMACHEK, a citizen of the United States, residing at Kewaunee, in the county of Kewaunee and State of Wisconsin, have invented certain new and useful Improvements in Feed-Cutters; 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in feed-cutters, and pertains, first, to the device for communicating an intermittent movement to the feed-rolls, whereby the feed is moved forward at intervals only, and remains at rest as the cutting-knives are passing through it; second, to the construction of the journal-box in front of the fly-wheel as adapted to facilitate in the adjustment of the knives on the fly-wheels to the cutting-surface of the feed-throat, whereby the injurious effects of wear may be corrected.

My invention is further explained by reference to the accompanying drawings, in which Figure 1 represents a top view. Fig. 2 represents a side view. Fig. 3 represents a vertical section through the throat of the feed-box. Figs. 4, 5, 6, 7, and 8 are details. Fig. 9 is a front end view of my improved machine. Fig. 10 is a rear view, and Fig. 11 a side view, of the adjustable journal-box. Fig. 12 is a side view, part in section, of the device for throwing the feed-rolls out of and in gear with their drive-shaft. Fig. 13 is a top view of an adjustable journal-box, showing the manner of attaching it to the frame, the upper half or cap being removed to one side. Fig. 14 is an elevation of the device by which the rotary motion of the fly-wheel shaft is converted into an intermittent motion; and Fig. 15 is a detail, part in section, of the device for throwing the feed-rolls in and out of gear with the parts which communicate motion thereto.

Like parts are represented by the same reference-letters throughout the several views.

A is a substantial frame.

B is a fly-wheel, to which wheel the cutting-knives C C are attached. Motion is communicated to the fly-wheel either by crank D or pulley H.

When the machine is operated by hand-power, the motion is communicated from crank D, through shaft E, bevel-pinions F F, and shaft G, to said fly-wheel. If, however, it is desired to operate the machine by horse or other ordinary motive power, motion is communicated therefrom to the pulley H, and from thence, through shaft I, wheel J, pinion K, and shaft G, to said fly-wheel B. The relative sizes of the wheel J and pinion K are such that the motion of the fly-wheel is very much increased.

L and M are the feed-rolls, to which feed-rolls an intermittent motion is communicated through shaft G, angular grooved wheel N, shaft O, pinion P, wheel Q, pinion R, and wheels S, T, and U. The pinion P is adapted to turn both with and independent of shaft O, said pinion being coupled with and uncoupled from said shaft O by the lever A'. When the lever A' is drawn toward the machine, the pinion P is uncoupled from said shaft O, whereby said shaft and the cutting-knives of the machine are permitted to move without transmitting motion to the feed-rolls. The lever A' is pivoted to the bracket A'' upon pivotal bolt B''. (Shown in Fig. 15.) Its lower end engages loosely in a groove formed in the periphery of the coupling-pinion P, and is adapted to move said pulley laterally on its supporting-shaft as it (said lever) is swung on said bolt B, whereby said pinion may be coupled or uncoupled both when revolving or at rest on its supporting-shaft O, whereby it is coupled to and uncoupled from said shaft, as desired. The lever A' is retained in position for uncoupling the pinion P by the spring-catch B', which catch B' is attached to the upper arm of the bracket A'' and engages against the upper end of the lever A' when thrown toward the feed-box, and holds the same, as mentioned. When the catch B' is disengaged from lever A', said lever is thrown outward from the machine by the spiral spring C', which spring acts against said coupling-pinion P, throwing it to the right, or toward the machine, thus carrying the lower end of the lever A' with

it, whereby the shaft O and pinion P are coupled together and motion transmitted from the shaft O to the feed-rolls. The coupling device by which the shaft O and pinion P are thus interlocked together consists of a lug, O', which projects from the surface of the shaft O into a recess, P', corresponding therewith in pinion P, which lug is adapted to enter said recess when said lever A' is thrown out from the machine, and thrown out of said recess when said lever A' is drawn toward the machine. The respective ends of the feed-roll L are journaled in sliding boxes D', which boxes are connected with the lever E' by a link, F', so that the upper roller is drawn downward by the gravity of the weight G', which weight is suspended from the end of said lever E', whereby the feed is pressed together with greater or less force, according to the gravity of the weight G', or its position nearer to or farther from the end of said lever E'. The front end of said lever E' is pivoted at a fixed point to rod a. The fly-wheel B is adjusted nearer to the throat of the feed-box by two adjusting-screws, H', as shown in Figs. 4, 10, 11, and 13, operating in flange b, formed on the lower half of journal-box I', and adapted to be turned forward against the bar J', whereby the journal-box is moved backward against the fly-wheel, thus crowding the fly-wheel nearer to the throat of the cutting-box, whereby the knives C' on the fly-wheel may be nicely adjusted to the throat from time to time as they become worn away, or as the bearing-surface of the fly-wheel or journal-box I' becomes worn. The journal-box I', when adjusted to position by the screws H', is rigidly secured by ordinary bolts or screws, as shown in Figs. 1, 9, 10, and 13, the lower ends of said bolts or screws being held rigidly in closely-fitting holes in the frame J', while elongated holes or slots C'' C'' are provided for the reception of their upper ends in said box I'. Thus it is obvious that by loosening the screws or bolts that hold box I' it can be moved horizontally, as mentioned, until the required adjustment is made, when it is again made rigid by said bolts or screws.

Motion is communicated from the shaft G to the spirally-grooved wheel N by lugs K' K', which lugs are adapted to operate in the spiral grooves L' as the shaft G revolves. The intermittent movement of the shaft O is attained by the peculiar shape of said grooves. The grooves L' diverge as they approach the periphery of the wheel N, and are cut in a direct line from the periphery of the wheel N toward its center to the point O', whereby the lugs K' K' are permitted to both enter and escape from said grooves L' without moving said wheel N; but the converging ends of said grooves L' are so curved forward from the point O' as they approach the center that said lugs K' K' are brought in contact for an instant only with the sides of said grooves as they

pass the lowest point therein. As each pin K' passes the center of the groove it communicates a slight forward movement to the grooved wheel N, which movement is communicated, as described, to the feed-rolls. Thus it is obvious that with each revolution of the shaft G and the fly-wheel thereon the feed is twice fed forward preparatory to being cut by each of the two cutting-knives C C, and is allowed to remain at rest as each of said knives passes through it, the forward movements caused by the two pins K' K' corresponding to the cuts of the two knives C C with each revolution of the shaft G. The bottom and top d and g of the feed-throat converge outwardly from a point on line with the respective axes of the feed-rolls at an angle of about forty-five degrees, whereby the projecting ends of the feed, as it is being crowded forward by said feed-rolls L and M, is compressed together in passing through said throat preparatory to being cut.

For the ordinary grooves and corrugations formed on feed-rolls I substitute a large number of small angularly-shaped projections, p, which are arranged in series extending from end to end and around said feed-rolls, as shown in Fig. 7.

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

1. The device herein described for communicating an intermittent rotary motion to the feed-rolls, consisting in the combination of shaft G, radial lugs K' K', and wheel N, provided with radial curved grooves L', said lugs being adapted to act upon said wheel as they pass the lowest point in said grooves, and permit said wheel to remain at rest as said lugs enter and escape therefrom, whereby an intermittent rotary motion is communicated from said shaft G to said wheel, substantially as and for the purpose specified.

2. The combination of shaft G, provided with lugs K', grooved wheel N, provided with angular grooves L', and shaft O, said shaft O being connected with a train of gears, by which motion is communicated therefrom to the feed-rolls, substantially as and for the purposes specified.

3. The combination, with the shaft G and bar J', of the adjustable journal-box I' and adjusting-bolts H', said journal-box being adapted to be moved backward with and against the fly-wheel, whereby the knives may be adjusted to the cutter on the feed-throat and the injurious effects of wear corrected, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK HAMACHEK.

Witnesses:

JAS. B. ERWIN,
W. J. SINNOTT.