

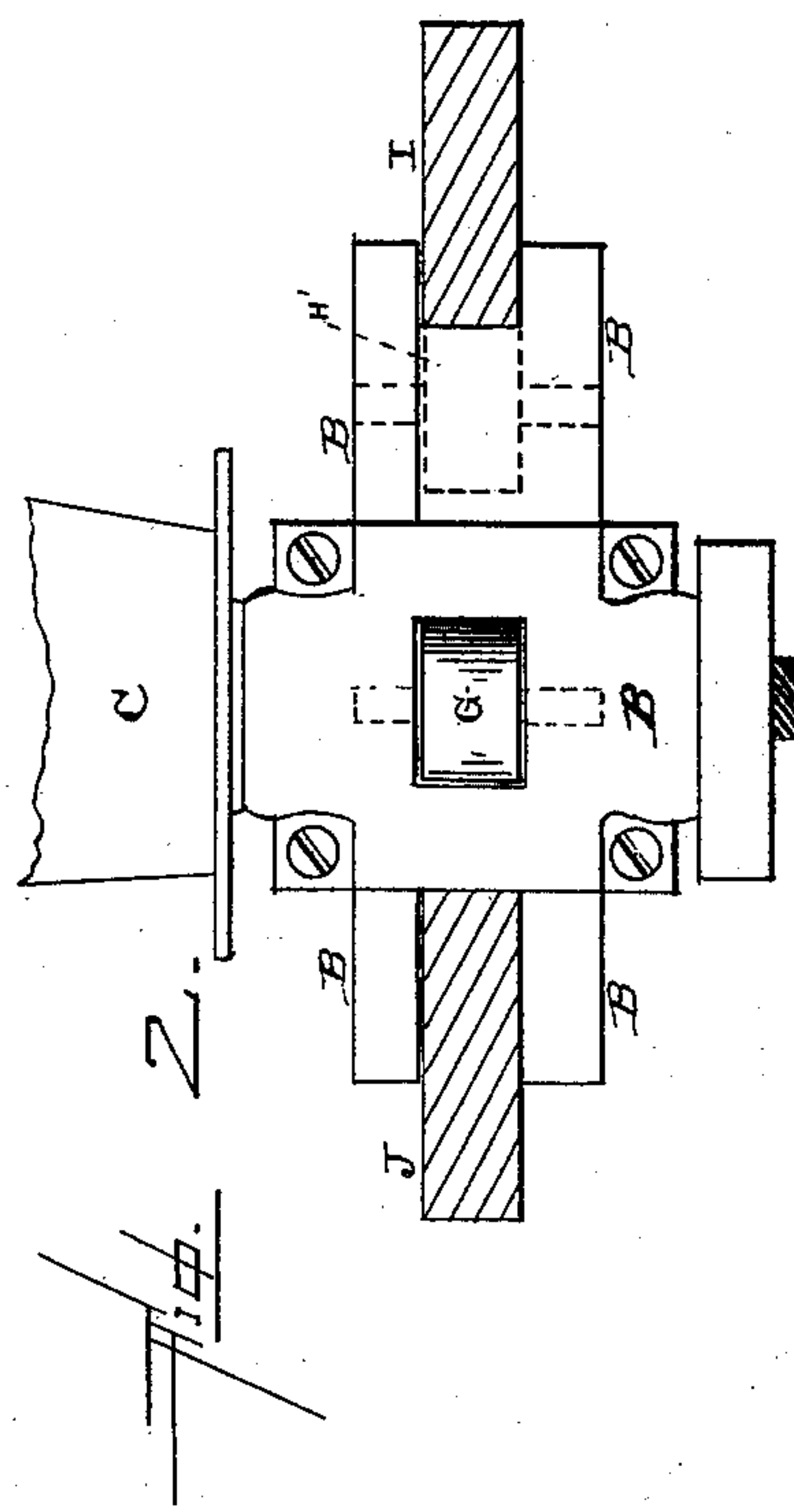
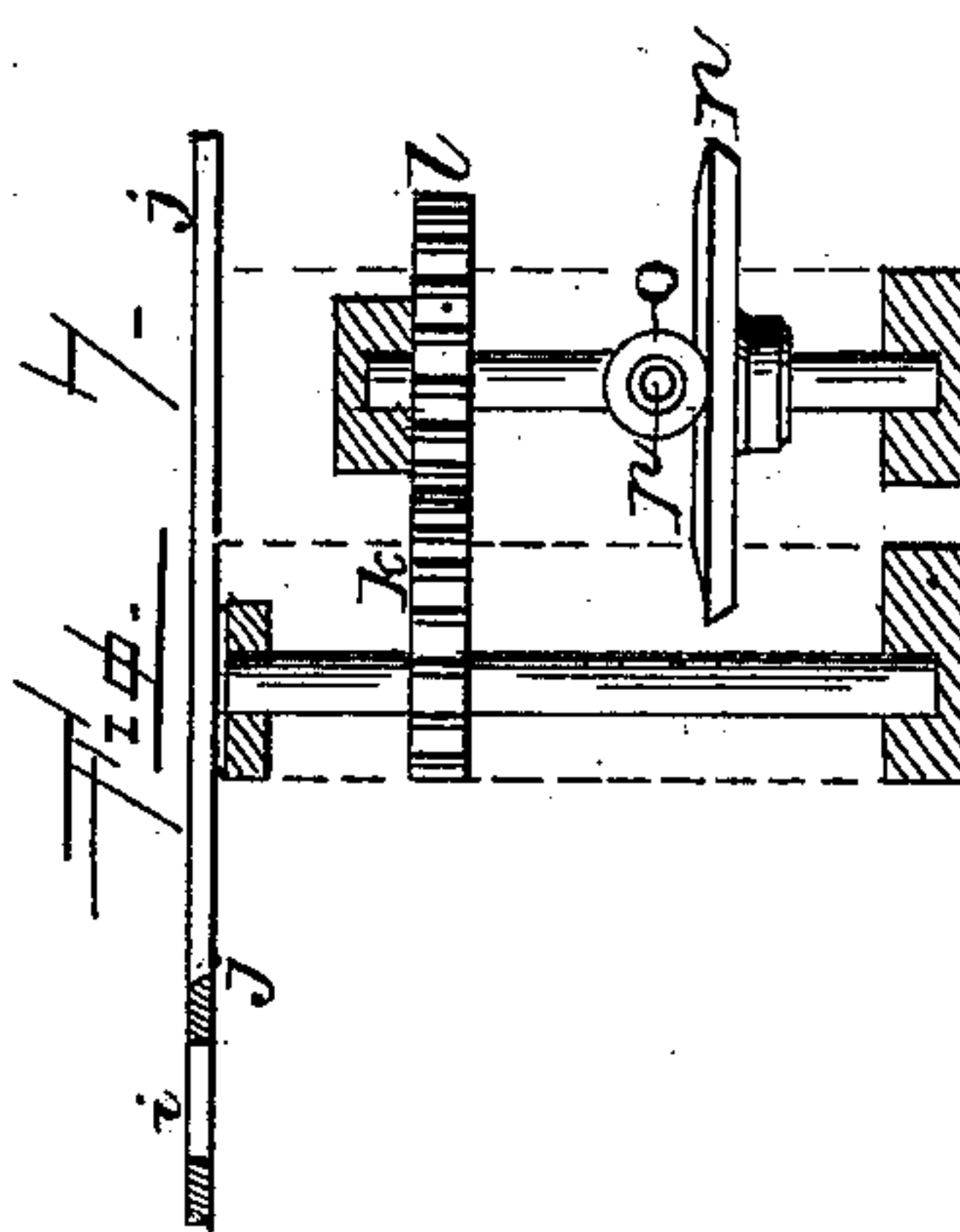
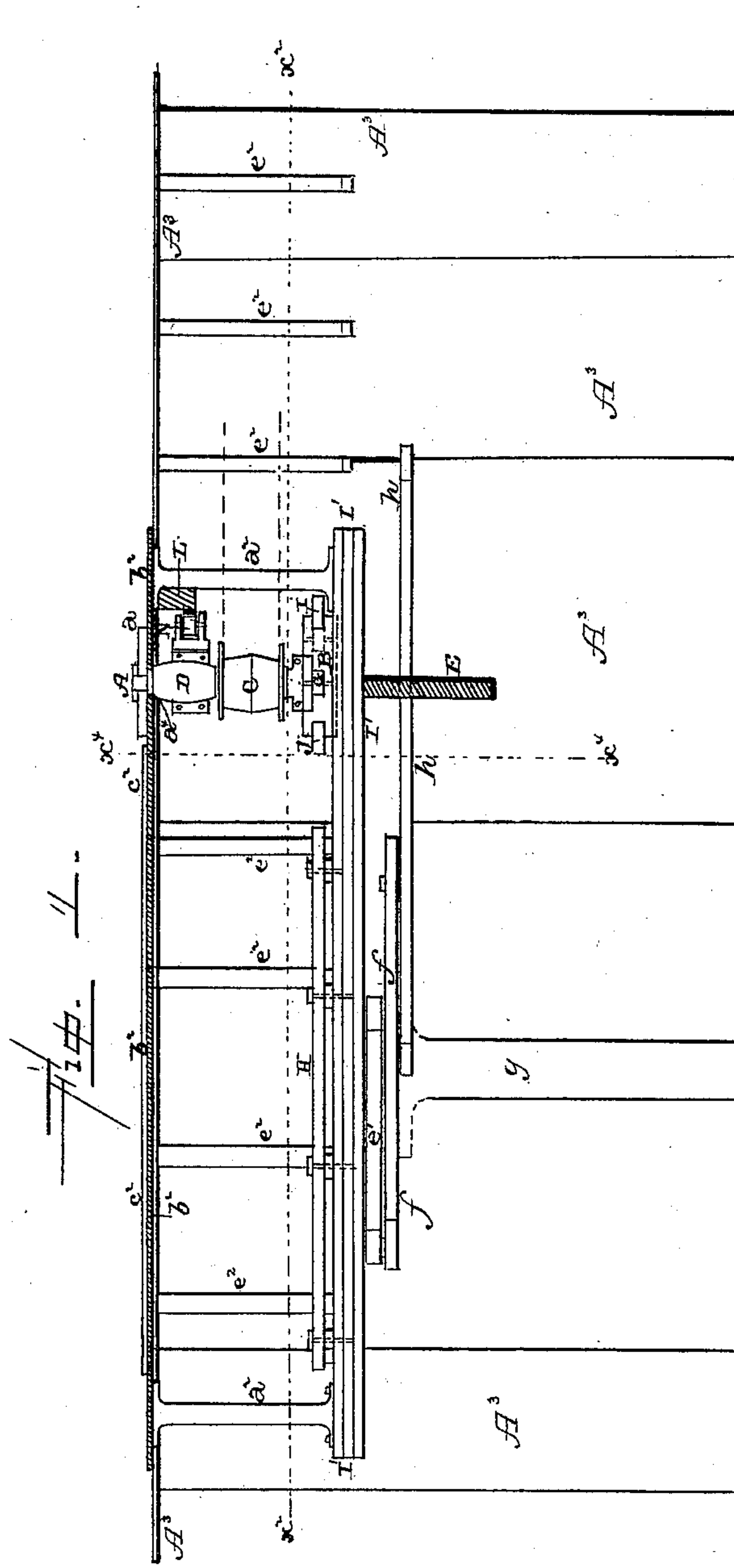
(No Model.)

3 Sheets—Sheet 1.

C. L. GOEHRING.
STAVE SHAPING MACHINE.

No. 358,260.

Patented Feb. 22, 1887.



WITNESSES.
X. F. Gardner
A. J. Patterson

INVENTOR.
C. L. Goehring,
per J. A. Lehmann, atty

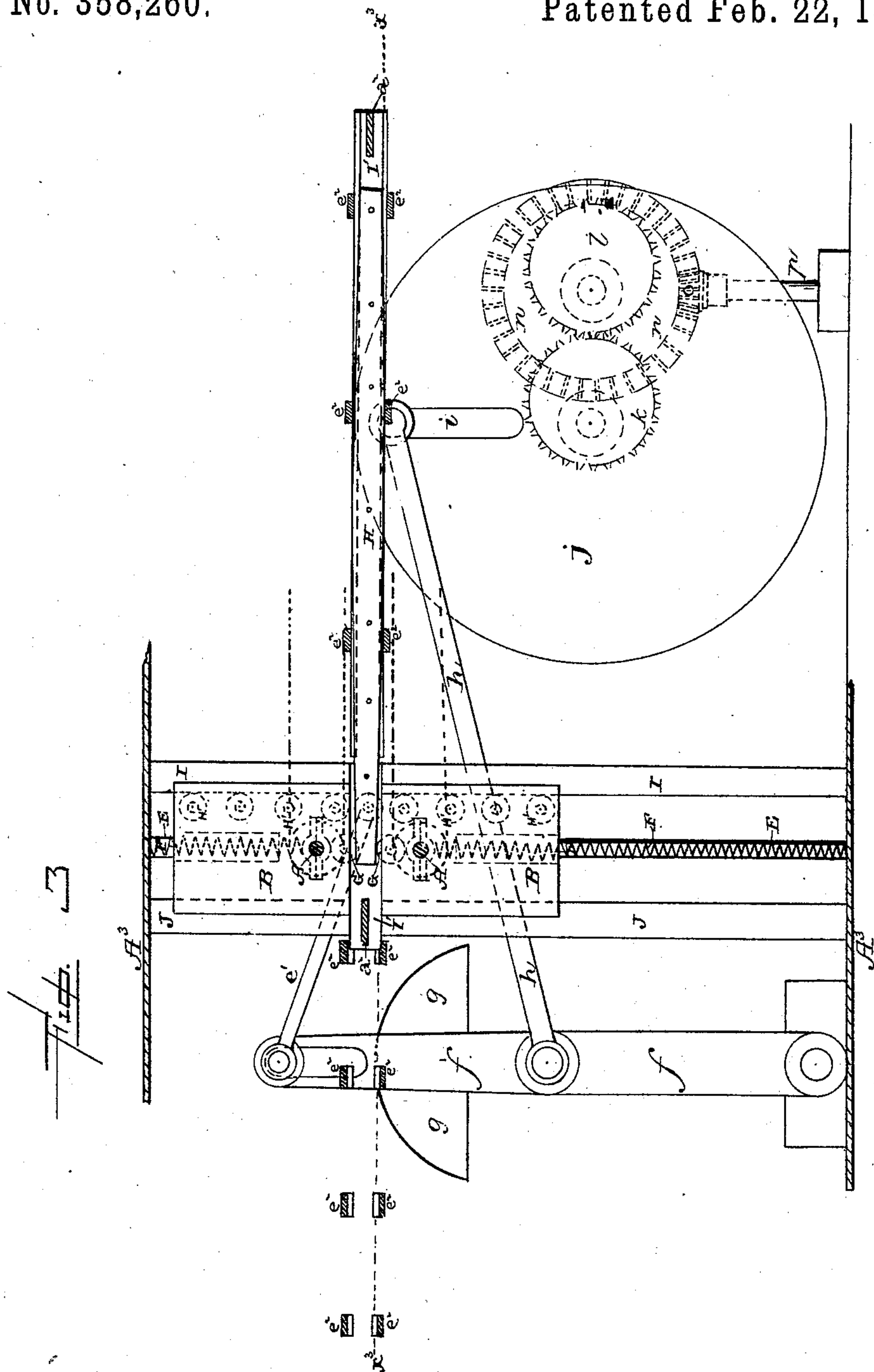
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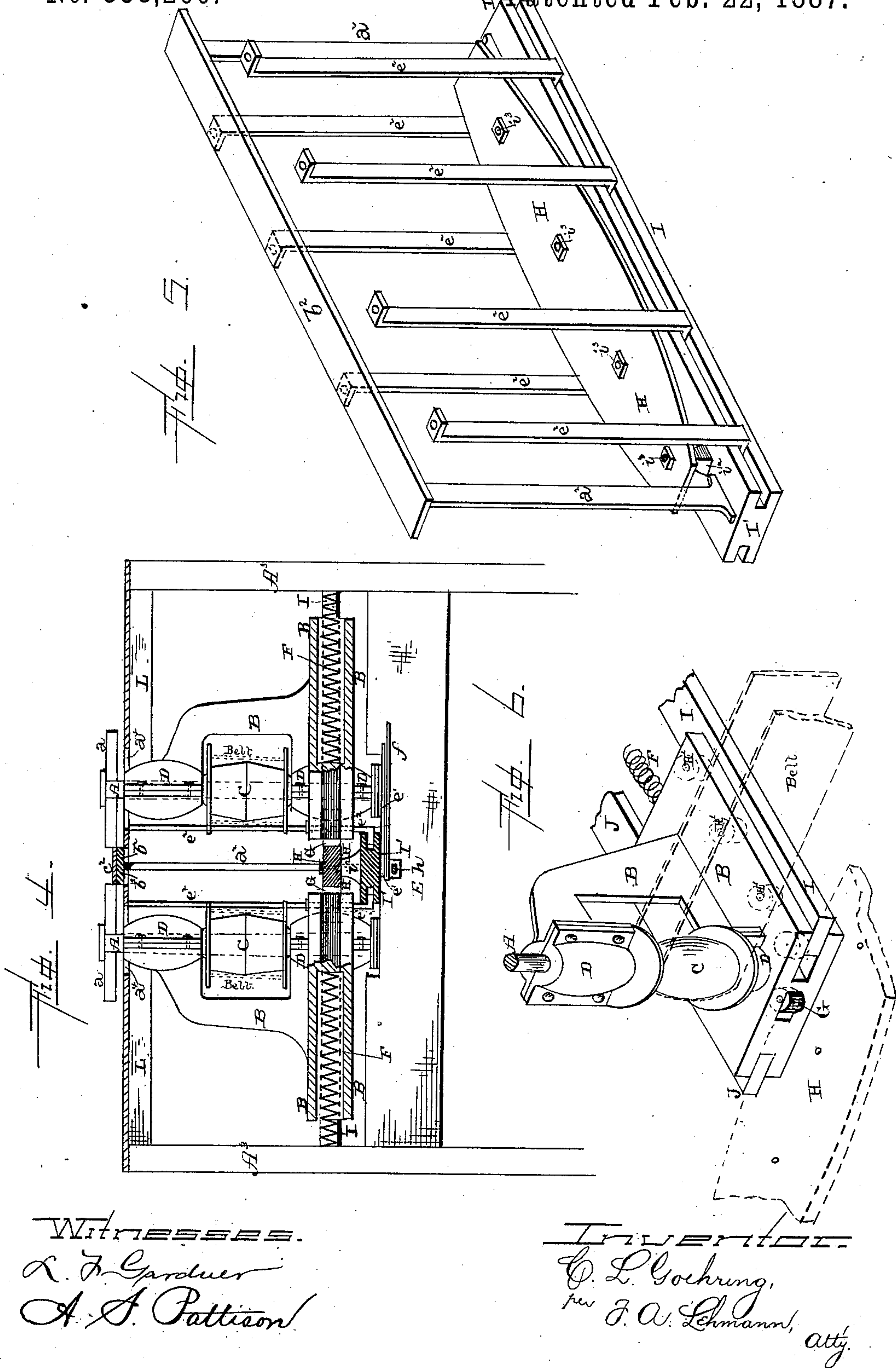
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UNITED STATES PATENT OFFICE.

CHARLES L. GOEHRING, OF ALLEGHENY CITY, PENNSYLVANIA.

STAVE-SHAPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 358,260, dated February 22, 1887.

Application filed August 3, 1886. Serial No. 209,850. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. GOEHRING, of Allegheny City, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Stave-Shaping Machines; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in stave-shaping machines; and it consists in, first, the combination of the table provided with suitable slots, the spindles carrying the cutters at their upper ends and journaled in suitable frames, the springs which are made to exert their pressure against the lower ends of the frames for the purpose of moving the cutters laterally in relation to each other, the friction-rollers which are journaled in the frames in a line with the springs, the pattern which is placed between the friction-rollers, the slide upon which the pattern is placed, and the mechanism by means of which the pattern is moved back and forth between the spindles; second, the combination of the grooved sliding frames in which the spindles are journaled and provided with frictional rollers in one edge, the supports which have their inner edges to catch in the grooves in opposite sides of the sliding frame, the spindles, the rollers applied to the sliding frames, the flanges *L* upon the under side of the table for the rollers to bear against, and the belts by means of which the spindles are made to revolve, the pressure of the belts being applied in the direction of the friction-rollers, as will be more fully described hereinafter.

The objects of this invention are to place the spindles, which carry the cutters, the springs, which move the spindles laterally, and the friction-rollers, which bear against opposite sides of the pattern in a direct line with each other, so as to prevent all tendency of the spindles to tilt, bind, or get out of line, to obviate all tendency of the different parts to bind, and to have all the lateral strain exerted in a straight line, so that the pattern which is passing between the friction-rollers will serve to

support the spindles on a straight line with the springs.

Figure 1 is a longitudinal vertical section of a machine to which my invention is applied, taken on the dotted line $x^3 x^3$ of Fig. 3. Fig. 2 is an enlarged detail view of a portion of Fig. 1. Fig. 3 is a horizontal longitudinal section of my machine, taken on the dotted line $x^2 x^2$ of Fig. 1. Fig. 4 is a vertical cross-section taken on the line $x^4 x^4$ of Fig. 1, the rails *J* not being shown, and the spindle-frames being broken away to show the springs. Figs. 5 and 6 are detail perspective views of a cutter-frame and its attachments and the pattern and slide and their attachments, respectively. Fig. 7 is a side elevation of the mechanism for moving the slide and the pattern back and forth, the bearings of the shaft being shown in section.

*A*³ represents the table or frame-work, of any suitable description, and which has a longitudinal opening through its top to receive the endwise-moving table *b*², upon which the piece of lumber *c*² is placed to be operated upon by the cutters *a*. Through the top of the frame *A*³ are made two slots, *a*⁴, which extend at right angles to the longitudinal one, and in which the upper ends of the spindles move back and forth in relation to each other as they are operated upon by the pattern.

The endwise-moving table *b*² and the parts connected to it are moved back and forth by the connecting-rod *e*¹, which is pivoted at one end to the slide *I*¹ and at the other in a slot in one end of the horizontal lever *f*, which is pivoted at the other end at one side of the frame and supported in position by the stand or support *g*, upon which it slides. To the lever *f*, near its center, is pivoted the connecting-rod *h*, which has its other end fastened in a slot, *i*, in the wheel *j*. The free end of the lever *f* is slotted, so that the end of the connecting-rod *e*¹ can move freely therein without binding, and the wheel *j* is slotted, so that the end of the connecting-rod *h* can be adjusted back and forth in the slot, so as to regulate the length of the stroke which the slide *I*¹ shall have.

To the shaft of the wheel *j* is secured the spur-wheel *k*, which is placed eccentrically upon the shaft, and which meshes with a sec-

ond eccentric, l , on the same shaft as the large horizontal wheel n , which is driven by the pinion o on the driving-shaft p . This driving mechanism is arranged in a horizontal position, as shown, so that the machine can be made more compact, lower, and can be constructed more cheaply than where these parts are arranged vertically.

All the above-described parts are old, and hence need not be more fully described here.

The spindles A , to which the cutters a are secured, are journaled in suitable frames, B , either of the shape here shown or any other that may be preferred, and are provided with the pulleys c around which the driving-belts are passed. The belts are passed around the driving-pulleys c and exert a pressure upon the spindles and frames in which they are mounted at right angles to the direction in which the spindles move in relation to each other. The frames B , in which the spindles are mounted, are grooved upon opposite sides, and are supported in position upon opposite sides by the two supports I J , as shown in Figs. 2, 3, and 6, upon which the frames move back and forth as the spindles are moved in relation to each other by the pattern. In order to prevent the frames B from binding against the supports I from the pressure of the belts, and thus interfering with their free movements, they are provided with friction-rollers H' , which bear against the inner edges of the supports I , as shown. These belts extend at an angle to the transverse slots a' , in which the spindles are adjusted laterally in relation to each other. In the lower and upper portions of the frames B are formed suitable boxes, D , for the spindles. These frames B are supported upon the cross-piece or partition e of the frame, a suitable recess being cut in the top edge of the partition to allow the operating parts to be placed therein. This partition extends horizontally across the frame-work A^3 and forms a support for the frames B , which are placed directly above and in a line therewith. The springs F , by means of which the two spindles carrying their cutters a at their upper ends are adjusted in relation to each other, are applied to the lower end of the frames B in a direct line with the frictional rollers G , which are journaled in the frames, and which bear against opposite sides of the pattern H . These parts are placed in a direct line with each other, as shown in Figs. 3 and 4, for the purpose of overcoming all tendency of the different parts to bind, and so that the springs will exert a pressure upon the parts in a direct line with the pattern, and so as to always keep them even and true in their movements. By means of this construction all necessity of suitable devices for keeping the carriages separated, as shown in my application filed June 18, 1886, and bearing Serial No. 205,571, is entirely done away with. The pressure of the spindles through the frictional rollers against opposite sides of the pattern

enables fewer parts to be used than are shown in my said application, and therefore a simpler and cheaper machine can be constructed.

The length of the pattern H and the slide I' , upon which it is placed, is such that when they have been moved to one end of the machine, as shown in Fig. 3, the end of the pattern will be just between the frictional rollers connected to the spindles, while the end of the slide will just reach the supports upon the other side of the spindles.

The slide I' is supported by the hangers e^2 , which have their upper ends secured to the under side of the table, and which have their lower ends bent so as to catch in the grooves made in opposite sides of the slide, as shown in Fig. 4. Mounted upon the top of this slide I' are the two standards a^2 , which have their endwise-moving table b^2 secured upon their upper ends. The lumber c^2 which is being dressed is placed upon this table b^2 , so that when the slide I' is moved back and forth by the operating mechanism this table b^2 is carried back and forth with it, carrying the lumber c^2 upon its top. The pattern is raised above the slide I' by means of suitable supports or blocks, i^2 , because the pattern is narrower than the slide I' , and it is necessary to lower the slide I' below the level of the cutter-frames B . The pattern H , the blocks i^2 , and the slide I' are secured together by suitable bolts, i^3 . The rollers H' lessen the friction and enable the frames B to be moved much more easily and readily than would otherwise be the case. In the groove in the opposite side of the sliding frames catch the supports J , which extend parallel nearly across the frame with the ones I . There are two each of the supports I J , as shown in Fig. 3, and which are separated at their inner ends far enough to allow the slide to move back and forth between them. The pair of these supports upon one side is longer than that upon the other, because the driving mechanism, as here shown, is so located as to make this construction necessary. If so desired, however, the driving mechanism may be so proportioned as to make the supports the same length on both sides. No rollers are needed upon the side of the support J , because no pressure is brought to bear in this direction. Formed on the under side of the top of the table, on each side of the longitudinal slot, is a flange or bearing, L , against which the frictional rollers N on the upper part of the frames B are made to bear, for the purpose of keeping the spindles in an upright position, and to cause them to move freely back and forth in the slots in the top of the table.

This machine is especially intended for the manufacture of staves for barrels, trunk-tops, kegs, and to shapes which have parallel sides, grooved edges, or rectangular forms of any kind. The shape given to the articles being manufactured depends entirely upon the shape of the pattern which is used. By means of the construction here shown, the pattern is forced

through the machine and then returned to position again, and thus made to automatically operate the cutters.

Having thus described my invention, I claim—

1. The combination of the table provided with suitable slots, the spindles carrying cutters at their upper ends and journaled in suitable frames, the springs which are made to exert their pressure against the lower ends of the frames for the purpose of moving the cutters laterally in relation to each other, the frictional rollers which are journaled in the frames in a line with the springs, the pattern which is placed between the frictional rollers, the slide upon which the pattern is placed, and the mechanism by means of which the pattern is moved back and forth between the spindles, substantially as shown and described.

2. The combination of grooved sliding frames in which the spindles are journaled, the frames being provided with frictional rollers H' on one edge, the supports I J, which have their inner edges to catch in the grooves in opposite sides of the sliding frames, the spindles, the rollers N, applied to the sliding frames, the flanges L upon the under side of the table for the rollers N to bear against, and the belts by means of which the spindles are made to revolve, the pressure of the belts being applied in the direction of the frictional rollers, substantially as specified.

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

CHAS. L. GOEHRING.

Witnesses:

A. S. PATTISON,
F. A. LEHMANN.