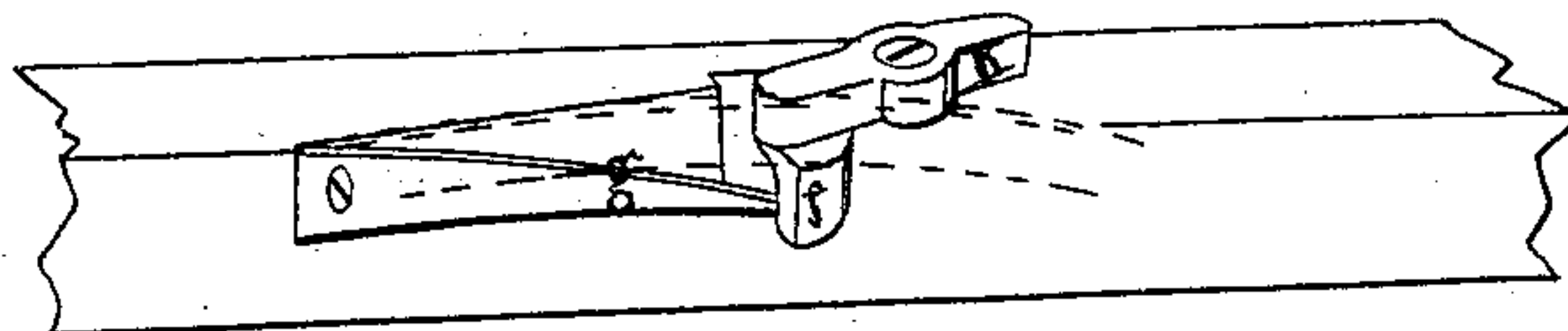
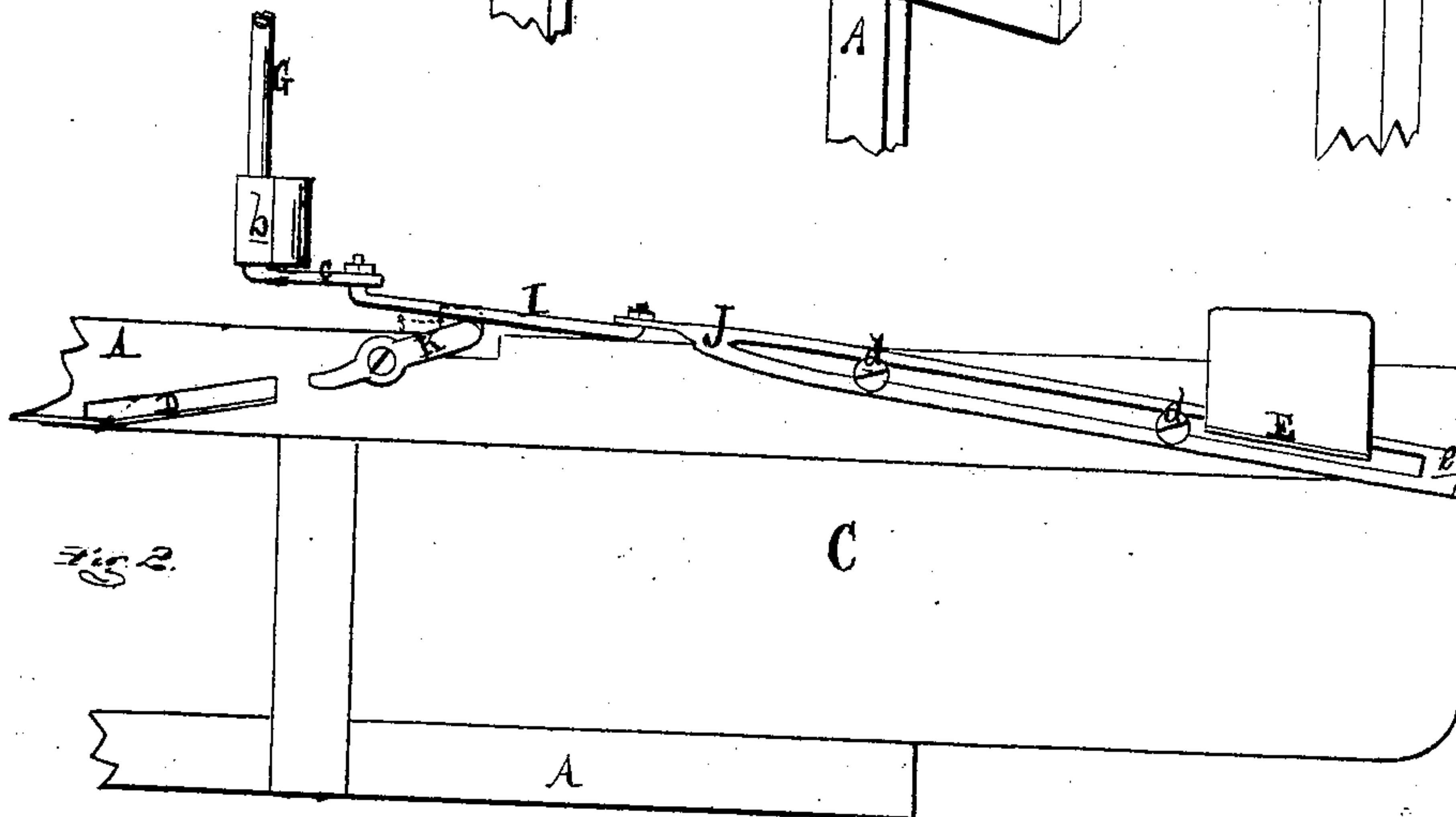
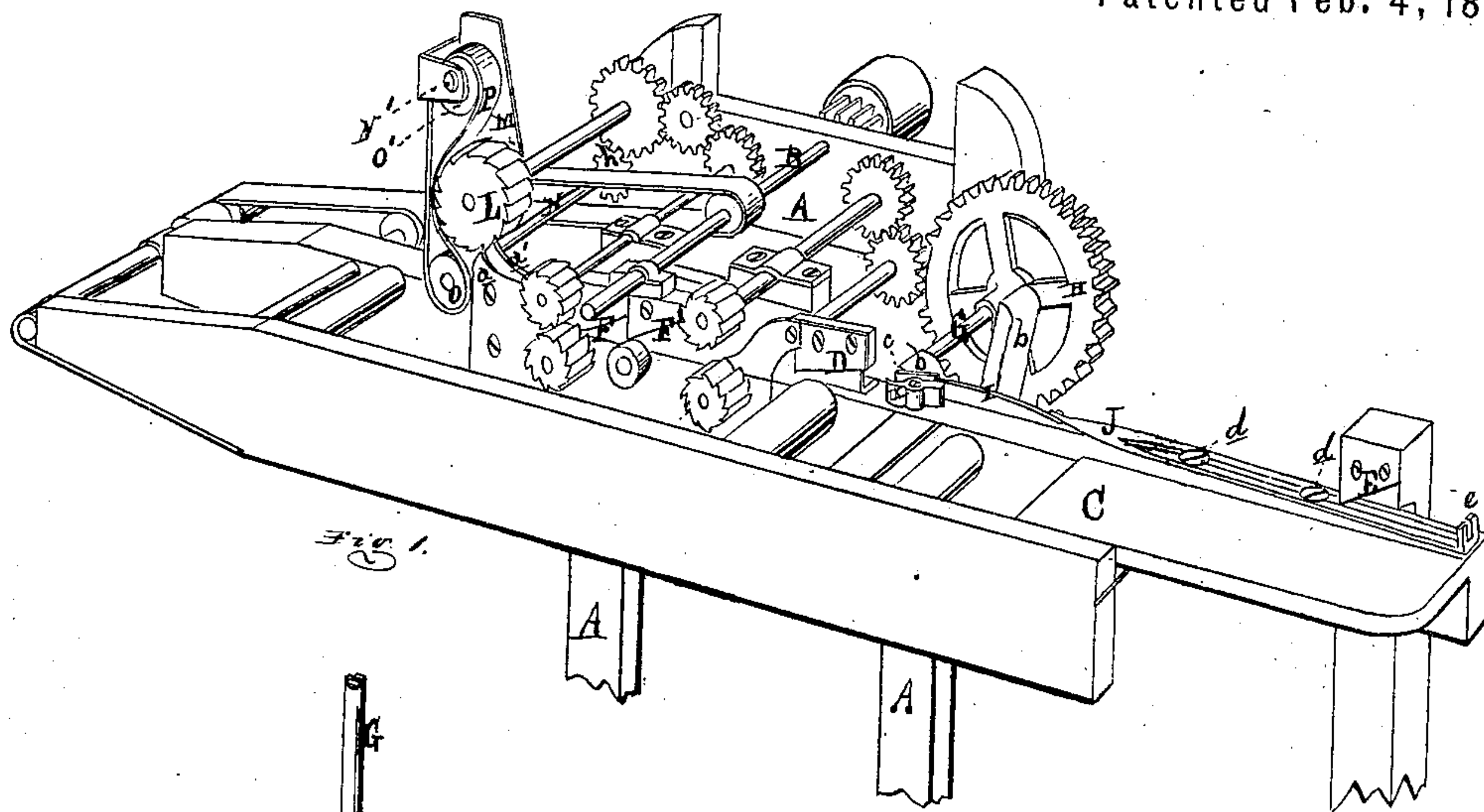


J. DOBBINS.
Machines for Cutting and Bending Hoops.
 No. 135,413. Patented Feb. 4, 1873.



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UNITED STATES PATENT OFFICE.

JACOB DOBBINS, OF LITCHFIELD, MICHIGAN.

IMPROVEMENT IN MACHINES FOR CUTTING AND BENDING HOOPS.

Specification forming part of Letters Patent No. 135,413, dated February 4, 1873.

To all whom it may concern:

Be it known that I, JACOB DOBBINS, of Litchfield, in the county of Hillsdale and State of Michigan, have invented a new and useful Improvement in Machines for Cutting and Bending Hoops; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon and being a part of this specification, in which—

Figure 1 is a perspective view of my improved machine. Fig. 2 is an enlarged plan view of one end of the table and of the mechanism employed for tapering the inner corners of the plank, and thus forming the "lap" on the two hoops, which are subsequently to be cut from its edge; and Fig. 3 is an enlarged perspective view of the automatic latch which supports the feed-pitman when at rest.

Like letters refer to like parts in each figure.

This invention relates to certain improvements in the construction of the machines for cutting and bending hoops for which Letters Patent of the United States were issued to me November 6, 1866, and July 21, 1868; and has for its object to improve and simplify the mechanism employed for cutting the taper or bevel at the corners of the board from which the hoops are to be cut, thereby giving each hoop the proper lap; also to so operate the bending device as to lessen the tendency of the hoops to check or rack while being bent. The invention consists in the peculiar construction and arrangement of the mechanism which carries the board to the knives, which cut off a beveled piece at each end, and afterward delivers it to the feed-rolls, which carry it past the knives, which split off a pair of hoops at each passage; also in the peculiar device for bending the hoops as fast as they are cut, as more fully hereinafter set forth.

In the drawing, A represents the frame of the machine, which supports the working parts. B is the driving-shaft, driven by a belt around its pulley, and is journaled in boxes in the upper part of the frame-work, one end projecting over the table C, on which the plank from which the hoops are cut slides, the end of said shaft being serrated to return

the board overhead for cutting the following series of hoops. D and E are two cutters secured to the frame and inclined in opposite directions. One of them, D, is located near the center of the frame, and the other on the face of the projecting top, which forms the support of the right-hand end of the frame. Both of these cutters are located at or along the back edge of the table C. The office of these two stationary knives is to cut the lap upon each end of the hoop, or rather to bevel each inner corner of the board, from which two hoops are simultaneously cut, and thus lap their ends, as described in the Letters Patent of July 28, 1868. F F' are two stationary knives on the frame for cutting two hoops from the edge of the plank which is forced along the bed or table C by the feed-rolls, as described in said Letters Patent.

The gearing for driving the feed-rolls and the return-rolls is substantially the same in construction, arrangement, and operation as those described in the said Letters Patent, with two additions which I shall presently explain. The operation of cutting the hoops and turning them into and through the spiral or curved ways *a a'* is also the same as therein described; and I hereby disclaim the intention of embracing any of the foregoing parts in this application, as it is based upon certain improvements which I use in connection therewith, and which replace other devices less effectual in operation.

The first of these improvements is the mechanism which carries the board past the lap-knives and delivers it to the feed-rolls, which I shall now proceed to describe: G is a shaft journaled in brackets *b b* across the right-hand end of the main frame, carrying at the front end a crank, *c*, and at the other a gear-wheel, H, toothed at the periphery, except in a blank space seen in Fig. 1. The teeth of this gear-wheel mesh with the pinion on the adjacent lower feed-roll shaft, the teeth of said wheel being so proportioned in number to those of the pinion as that the pinion will cause the gear-wheel to make nearly a complete revolution before the latter will go out of gear, when its shaft will remain stationary while the gearing is continuously revolved. The crank *c* has strapped to its wrist a pitman,

I, the other end of which is pivoted to one end of a bar, J, sliding diagonally on the table C, being guided in its reciprocation by guide-studs *d d* rising from the table into guide-slots cut in the bar, whose outer end has a hook, *e*, turned up at each corner. The heel of the knife E projects into the outer guide-slot of the bar. K is a button, pivoted on the back edge of the table, with a pendent hook, *f*, at the end of its longer arm, projecting out from the back edge to catch and sustain the pitman when the latter drops as the gear H is released from its pinion. A spring, *g*, behind the hook of the button throws the latter out; but it may be compelled to enter a recess in the edge of the table, if sufficient pressure be applied inwardly at that end of the button, or outwardly at the other, releasing the pitman and crank, which will then drop of their own weight, bringing the teeth of the wheel H again in gear with the pinion which drives it until it has nearly completed the revolution, when it again is out of gear, the pitman dropping on the hook as before. In this latter position a board, whose thickness equals the width of the hoops, is placed on the table and pushed back against the knife F at one end and the button K at the other, pressing the short arm of the latter, which releases the pitman, which in turn drops and the wheel H is thereby thrown into gear with its pinion. In the rotation of the wheel the hooks *e e* engage with the end of the board, and as the bar J is drawn along the right corner of the board is clipped off on a long bevel by the knife E, and the left corner by the knife D in like manner. The board is then kept in motion until its left end enters between the nearest pair of feed-rolls, which carry it past the cutters F F', each cutting a hoop from its edge, as described in said Letters Patent. After the bar has delivered the board to the feed-rolls, the remaining half revolution of the wheel H returns it to place ready to receive the board again, or another to follow it. The two hoops cut from the board pass through the spiral guides, referred to in said Letters Patent, and

thence to the bending device, which constitutes the second part of the present invention.

It will be seen, on reference to the said Letters Patent, that the bending of the hoops is effected by a serrated drum and a concave metallic segment, between which and the drum they are drawn by the action of the latter as they issue from the spiral guides, which turn them over flatwise before presenting them to the drum. This serrated drum, L, I retain in the present and improved machine, but dispense with the concave segment, which I replace with an endless belt, operating in the following manner: The front end of the shaft which carries the drum L is journaled through the standard M, which projects above it. This drum-shaft is driven by a pinion on its rear end meshing with the train of gears which operate the feed-rolls. This pinion drives a shaft, N, through a pinion, *h*, at its back end, with which it meshes. The front end of the shaft N projects through the standard M and carries a drum, O, a little below the periphery of the larger drum L. A short shaft, N', is journaled between a bracket and the top of the standard, and carries a pulley, O'. An endless belt, P, is carried around these pulleys, O O', behind the drum L, around a portion of whose periphery one leg of the belt laps. As the ends of the hoops issue from the spiral guides this belt carries them up around said drum, hugging them close to it, and giving them the required curvature as they are discharged at the top. The yielding nature of the belt is such that there is less liability of the hoops to break than if they were forced around a rigid segment.

What I claim as my invention, and desire to secure by Letters Patent, is—

The shaft G, gear H, crank *c*, pitman I, bar J, latch-button K, and spring *g*, constructed, arranged, and operating with relation to the knives D E substantially in the manner described, for the purpose specified.

Witnesses. JACOB DOBBINS.

CHAS. A. PARDEE,
J. C. EASTMAN.