

(No Model.)

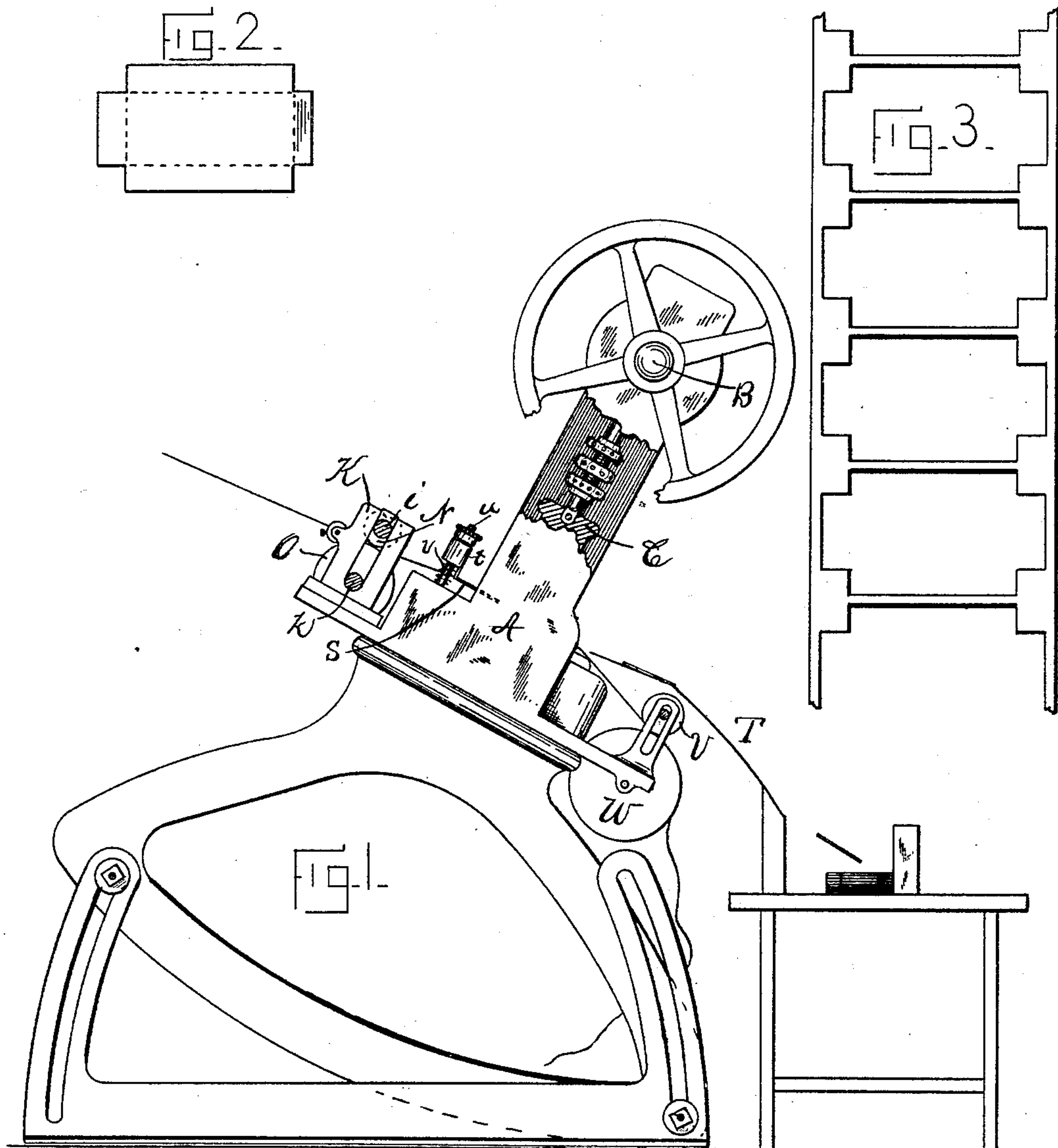
3 Sheets--Sheet 1.

A. KINGSBURY.

MACHINE FOR CUTTING PAPER BOX BLANKS.

No. 346,165.

Patented July 27, 1886.



Witnesses

Tyler & Howard,
John D. Hall

Inventor

Addison Kingsbury
By his Attorney
Frank H. Allen

(No Model.)

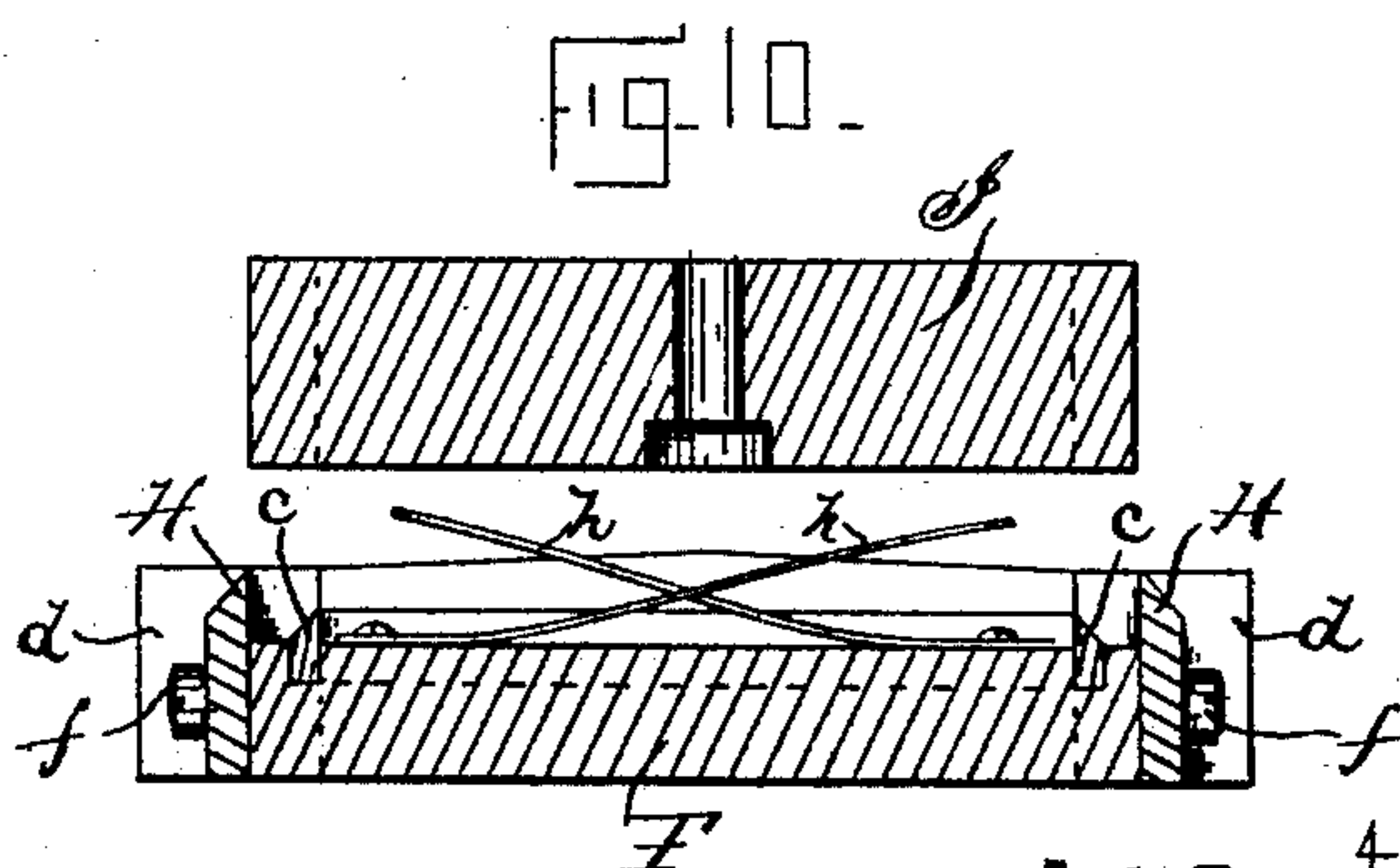
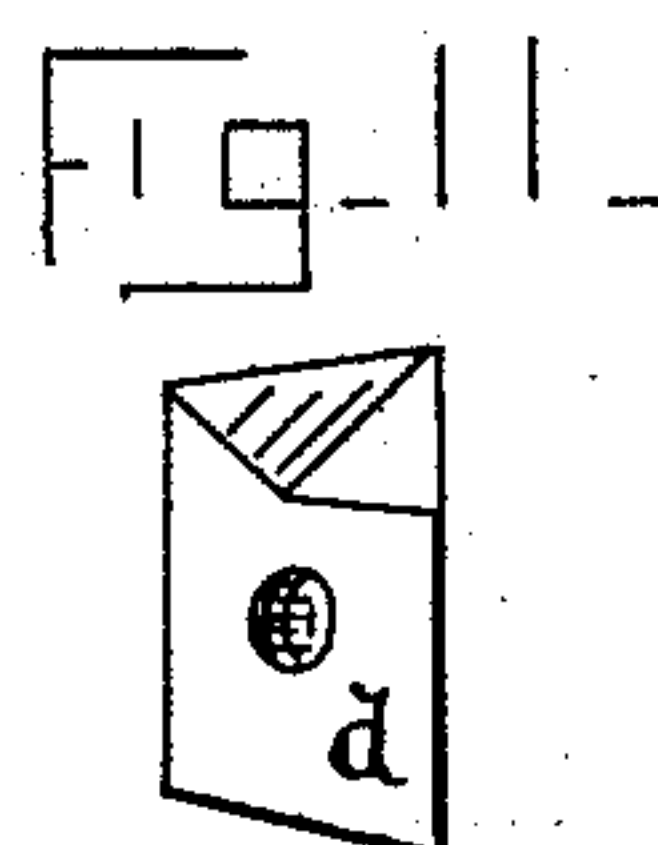
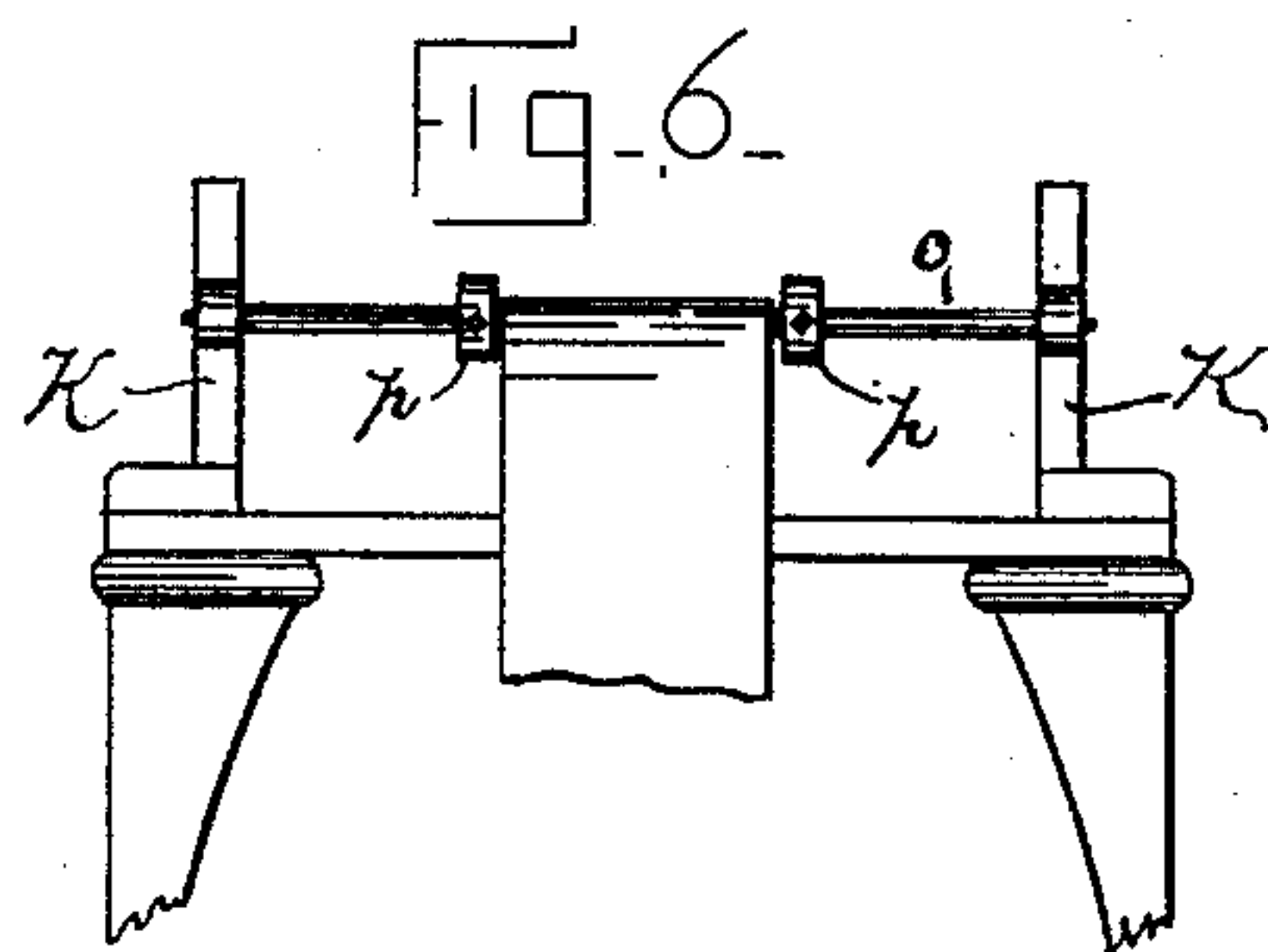
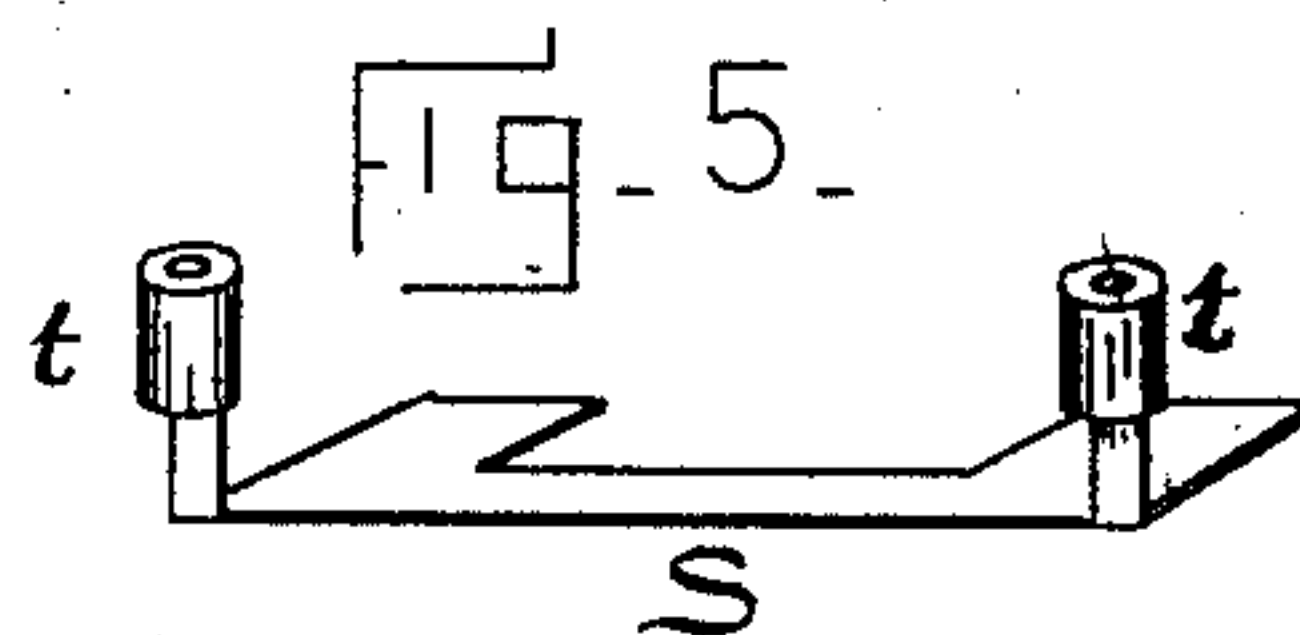
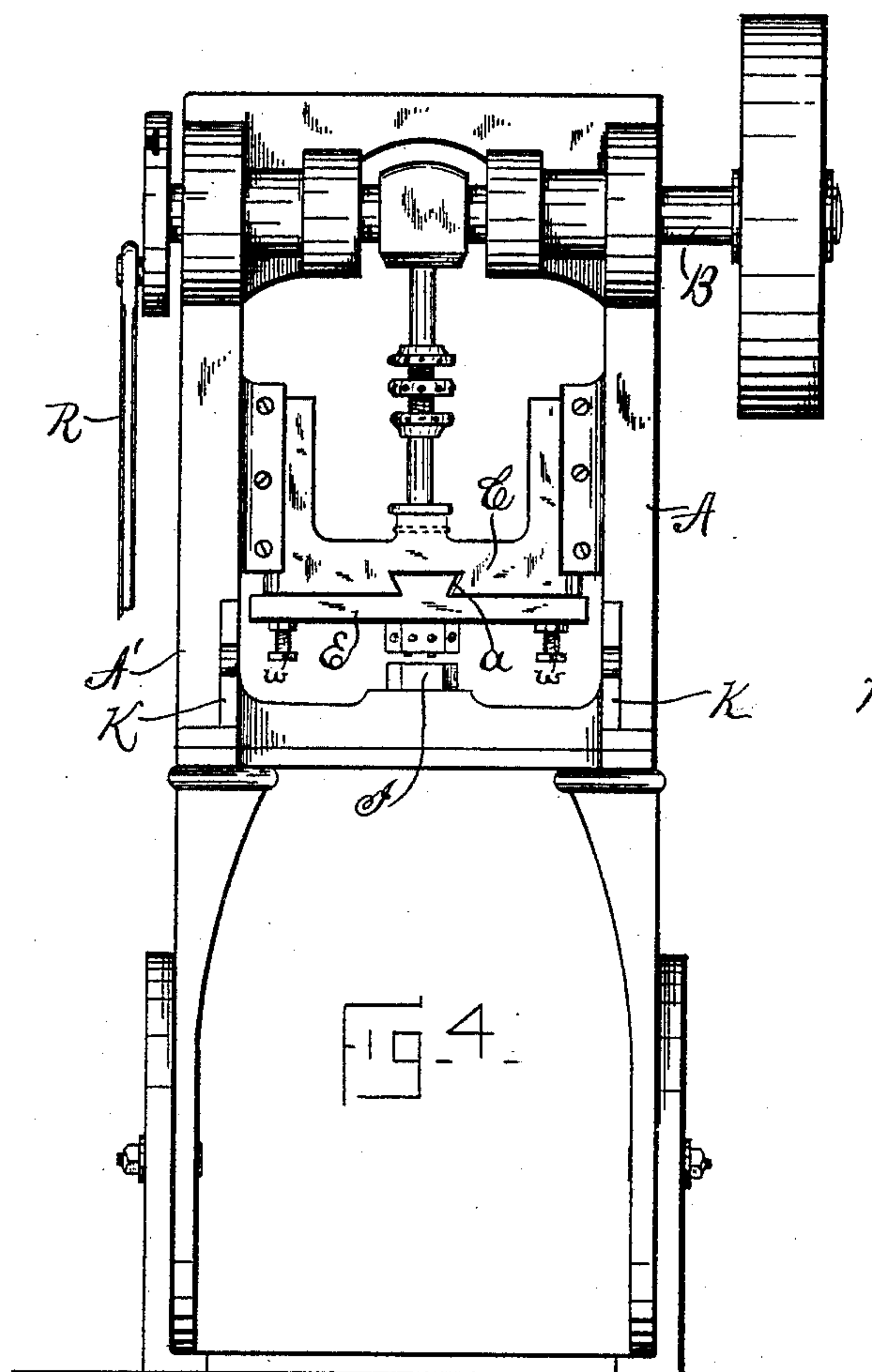
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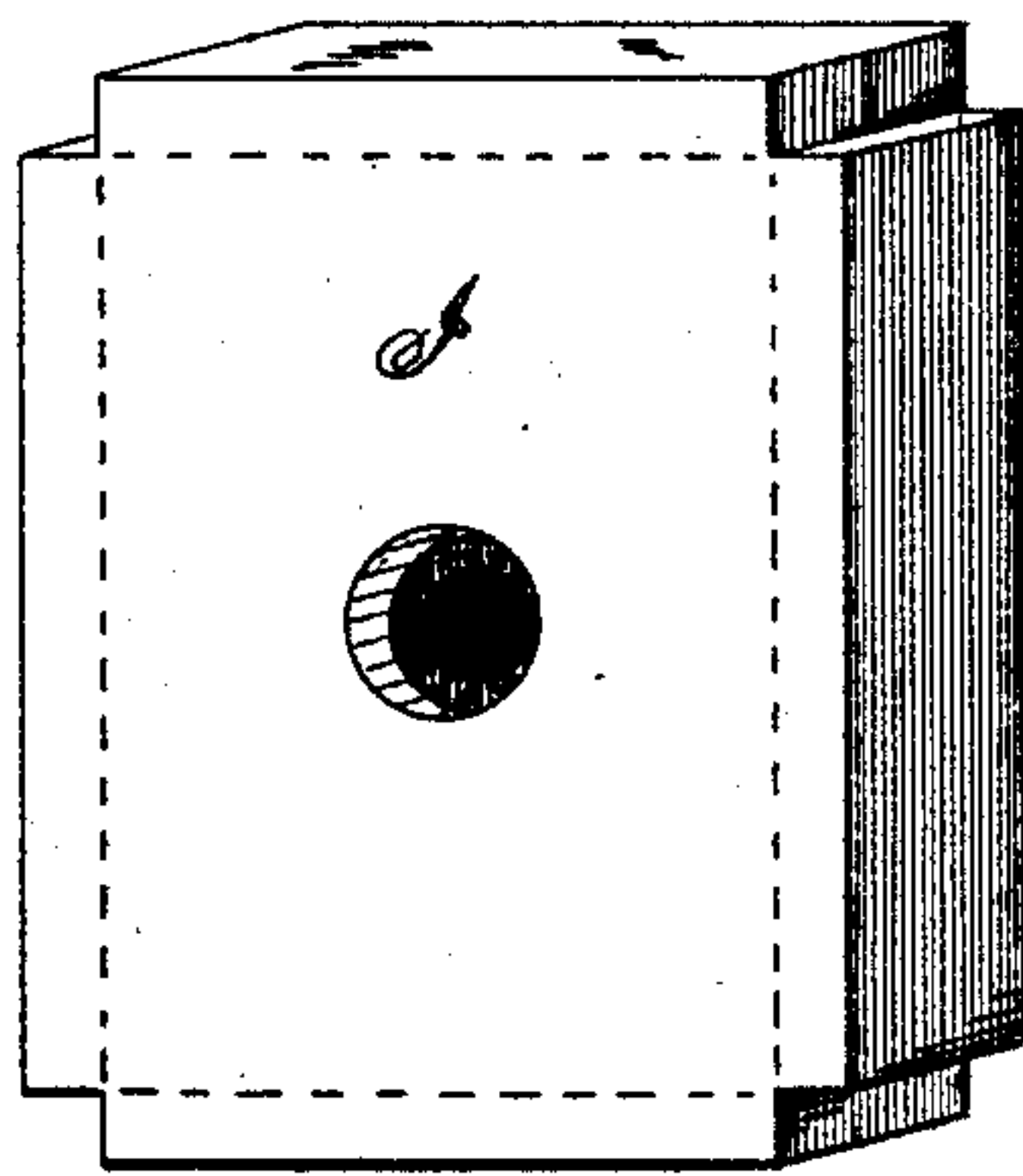
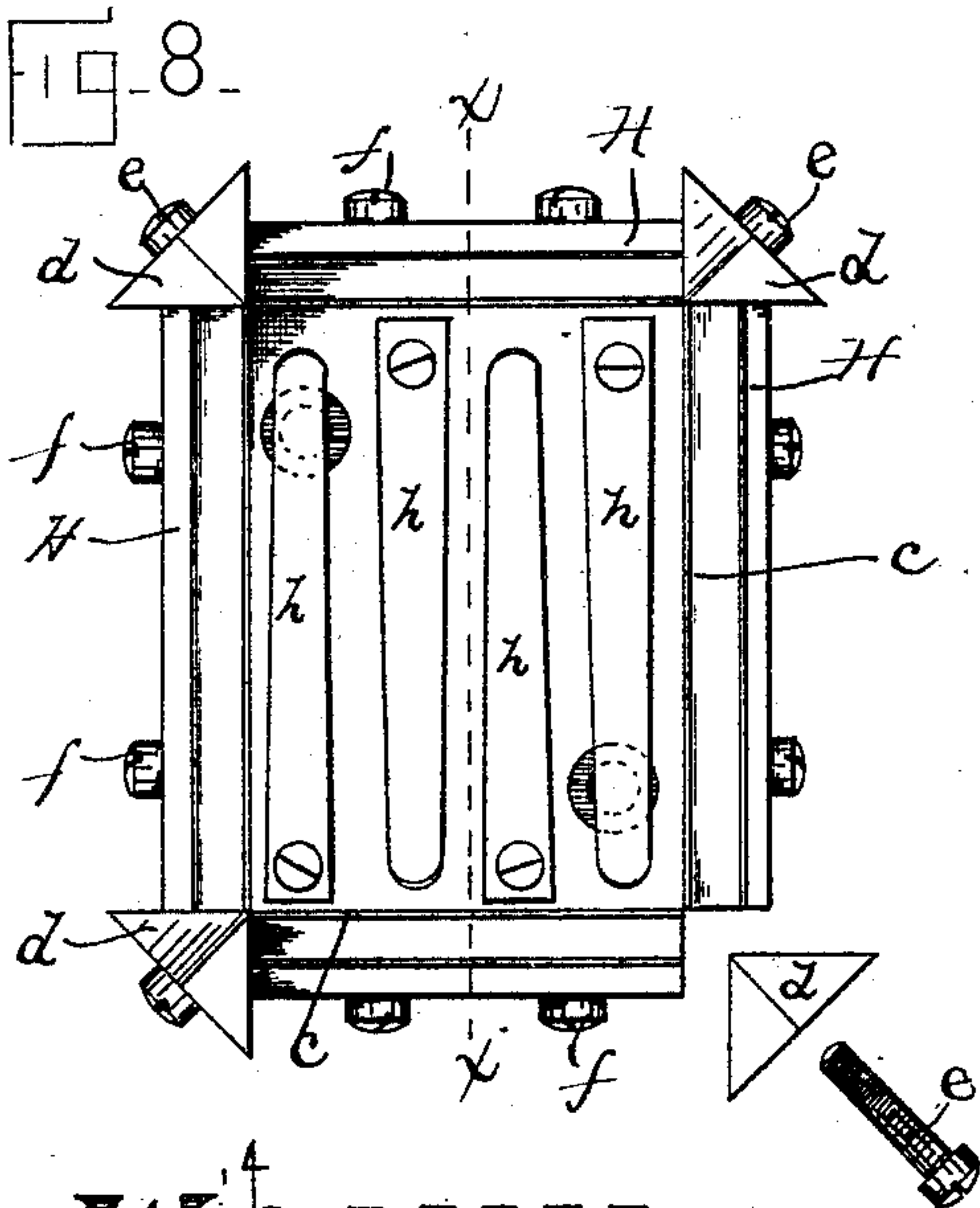
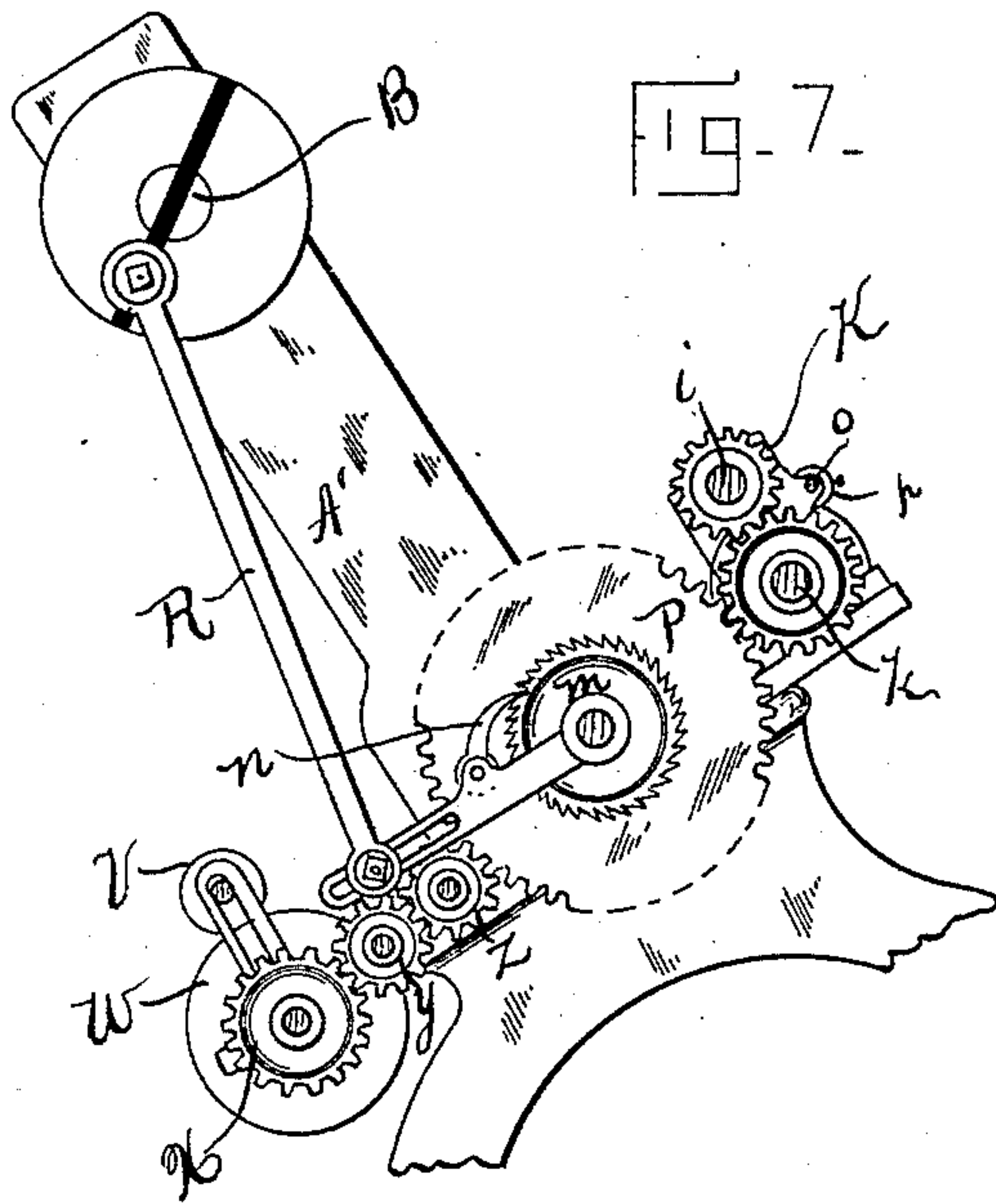
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UNITED STATES PATENT OFFICE.

ADDISON KINGSBURY, OF SOUTH COVENTRY, CONNECTICUT.

MACHINE FOR CUTTING PAPER-BOX BLANKS.

SPECIFICATION forming part of Letters Patent No. 346,165, dated July 27, 1886.

Application filed June 10, 1885. Serial No. 168,209. (No model.)

To all whom it may concern:

Be it known that I, ADDISON KINGSBURY, a citizen of the United States, residing at South Coventry, in the county of Tolland and State of Connecticut, have invented certain new and useful Improvements in Machines for Cutting Paper-Box Blanks, which improvements are fully set forth and described in the following specification, reference being had to the accompanying three sheets of drawings.

This invention relates to that class of machines which, taking the paper or card-board in continuous strips or rolls, feeds the same automatically to a suitable cutting device, and, after having completed a cut, separates the blank from the scrap; and it consists in the improved construction and combinations of parts hereinafter fully described and claimed.

In the drawings hereunto annexed, Figure 1 is a side elevation of my improved cutting-machine, a portion of the frame being cut away. Fig. 2 is a view of one of the box-blanks which said machine is designed to make, one end of said blank being slightly turned up. Fig. 3 shows the form in which the scrap is left after passing through the machine. Fig. 4 is a view of said machine from the rear side, the same being shown as raised to a level, and with the feed-rolls and scrap-picker removed to show more clearly the relative arrangement of the punch and cutting-die. Fig. 5 is a detached perspective view of the scrap-picker, and Fig. 6 a detached view of the guide provided near the point where the paper enters the feed-rolls. In Fig. 7 I have shown the side of the machine opposite that shown in Fig. 1, for the purpose of illustrating the mechanism by which the feed-rolls and scrap-roll are moved. Fig. 8 is an enlarged view of the under or cutting face of my new form of die, one of the corners and its screw being shown detached. Fig. 9 is a perspective view of the punch which I use with the cutting-die above referred to. Fig. 10 is a sectional view taken on line xx of Fig. 8 and through the center of the punch I. Fig. 11 is a detached perspective view of one of the corner cutters.

In the several drawings, the letters A A' represent the frame of the press, to which I have attached my improvements, said frame

carrying in proper bearings at its upper end a shaft, B, whose central portion is formed with an eccentric bearing, to move up and down the carriage C, the general arrangement thus far named being the same as in presses now in common use.

Dovetailed into the lower face of the vertically-moving carriage C is a plate, E, which is secured to said carriage by a wedge, a , and to the lower side of said plate is screwed or bolted the cutting and scoring die, which forms one of the essential features of my invention, and which I will proceed to describe in detail.

F represents a blank or core, made, preferably, of cast metal, of the same size and outline as the punch shown in Fig. 9. The outer face of said core is planed or otherwise grooved to receive the four scoring-knives c , (see Fig. 10,) the contiguous ends of said scoring-knives being brought together to form a rectangular outline, as seen in Fig. 8.

At each corner I have provided a knife, d , shaped as a right-angle triangle, whose apex abuts the corner formed by the adjacent ends of the scoring-knives before described. These corner knives, d , are backed off, as shown in Fig. 11, to form cutting-edges, and are secured rigidly to the core F by screws e .

Extending from corner to corner are knives H, whose cutting-edge at each end is of precisely the same height as the corner cutters, but is preferably raised at the center to give a shearing cut as the die passes downward over the punch. These knives H are also secured to the core by screws f , and may be readily removed for sharpening. The cutting-edge of the scoring-knives c is located a considerable distance below the edge of the corner and side cutters, so that the die passes down over the punch and completely cuts the outline of a blank before said blank reaches said scoring-knives. The continued movement of the die then forces the blank against the scoring-knives sufficiently hard to partly cut, or, rather, indent, said blank, as indicated by dotted lines in Figs. 2 and 9, so that the box-formers may easily bend up the blank to form the desired box.

In order to force the blank thus cut and scored out of the die, I have provided two or

more leaf-springs, *h*, whose free ends act to remove said blank as the die recedes, as will be understood by reference to Fig. 10.

When in use, punch I is secured to the bed of the press, and the cutting-die F to plate E, as in Fig. 1.

Referring again to Fig. 1, K represents a metallic frame bolted securely to the bed of the press and slotted to form bearings for shafts *i k*. Said shafts carry feed-rolls N O, and are geared together at one end, as shown in Fig. 7.

To move the feed-rollers intermittently I have provided a gear, P, having on its outer face a ratchet-wheel, *m*, which is engaged by a pawl, *n*, actuated by a connecting-rod, R, whose other end is fastened adjustably to a face-plate on the end of shaft B.

Hung in frame K and reaching from side to side is a rod, *o*, having secured movably thereon collars *p p*, between which the card-board passes as it enters the feed-rollers, said collars being held in a desired position by set-screws, and being capable of adjustment to receive and guide strips of a greater or less width, according to the size of the box to be made.

To raise the scrap from the punch after a blank has been cut out, I use a picker of the form shown at S in Figs. 1 and 5. Said picker is formed, preferably, with sheet-metal arms extending along each end of the punch, and has collars *t*, which slide on rods or bolts *u*, secured in the bed of the press, said picker being forced upward by spiral springs *v*.

The plate E has at each end bolts *w*, whose heads engage the scrap-picker just described, as the cutting-die descends, thus forcing said picker downward while in the act of completing a cut; but as soon as the die recedes the picker follows upward, carrying the scrap before it to a position slightly above the level of the punch.

Having described the feeding, guiding, and cutting mechanism, I will proceed to describe the devices by which I separate the blanks from the strip of scrap-board. Near the front or delivery end of the machine is a chute, T, for the cut blanks to pass off on, said chute being made, preferably, of sheet metal, and secured at its forward end to a removable table, as shown; or, if preferred, it may be attached to the frame of the press. The free end of said chute extends nearly to the punch I, and its upper face is at the same level as the upper face of said punch, so that as the scrap and cut blanks are fed outward together the blanks pass onto the free end of the chute, and slide forward into a suitable receptacle, or onto a table, as shown in Fig. 1. The strip of scrap meanwhile passes underneath the chute T, being drawn taut and kept from contact with said chute by friction-rolls V W, which travel slightly faster than the feed-rolls N O. The gear X, which drives friction-roll W, is connected through idle-gears *y z* with gear P,

above described, and roll V is preferably made of solid iron or other heavy material. After having passed rollers V W the scrap is deposited under the press-frame, and is removed as often as is necessary by the operator in charge. It will of course be understood that a cutting-die and punch must be provided for each different size of box, as well as for each cover.

Having thus described my invention, I claim—

1. A die for cutting paper-box blanks, comprising a core having a rectangular notch at each corner, cutters removably secured to the notched core, a series of outline-cutters extending from corner cutter to corner cutter and removably secured to the core, and a series of scoring-knives, *c*, located within and extending below the level of the outline cutters, substantially as set forth.

2. The combination, with a die comprising a core having cutters removably secured at its corners, a series of outline-cutters, H, removably secured to the core and arranged as described, and a series of scoring-knives, *c*, located within and below the level of said outline-cutters, of a punch whose outline corresponds to the outline-cutters of the die, and a series of springs, by means of which the cut blanks are automatically removed from the die, substantially as set forth.

3. In combination with a core, F, having a rectangular notch at each corner, a series of corner cutters removably secured to the notched core, a series of outline-cutters, H, extending from corner cutter to corner cutter and removably secured to said core, a series of scoring-knives, *c*, located within and below the level of said outline-cutters, a punch to engage the outline-cutters, mechanism, substantially as described, for moving the die into and out of engagement with the punch, and means, substantially as described, for intermittently feeding a continuous strip of card-board between the punch and die, substantially as described.

4. In combination with a punch and die capable of cutting and scoring a paper-box blank at a single operation, mechanism, substantially as described, for moving said punch and die in and out of engagement, mechanism, substantially as described, for intermittently feeding the card-board to said punch and die, and devices, substantially as described, for disposing of and separating the cut blanks and scrap, consisting of a suitably-supported chute, T, whose inner free end reaches nearly to the punch to receive and deliver the cut blank, and a pair of friction-rolls located under said chute and acting to draw the strip of scrap downward, as described, and for the object set forth.

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Witnesses:

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