

(No Model.)

3 Sheets—Sheet 1.

J. E. ERICKSON & J. LEONARTSON.
DOVETAILING MACHINE.

No. 535,492.

Patented Mar. 12, 1895.

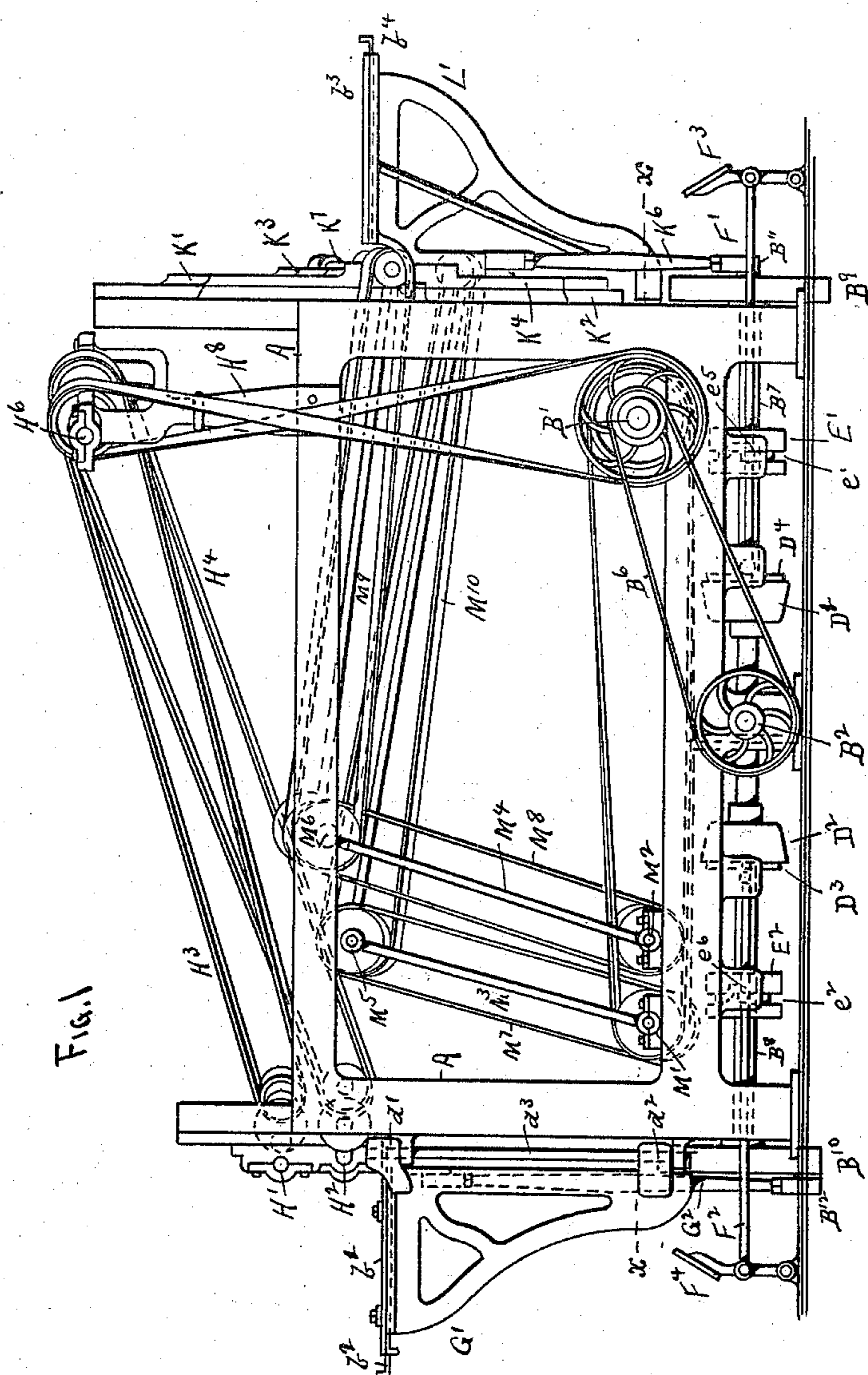


Fig. 1

WITNESSES.

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By Charles N. Woodward, Attys.

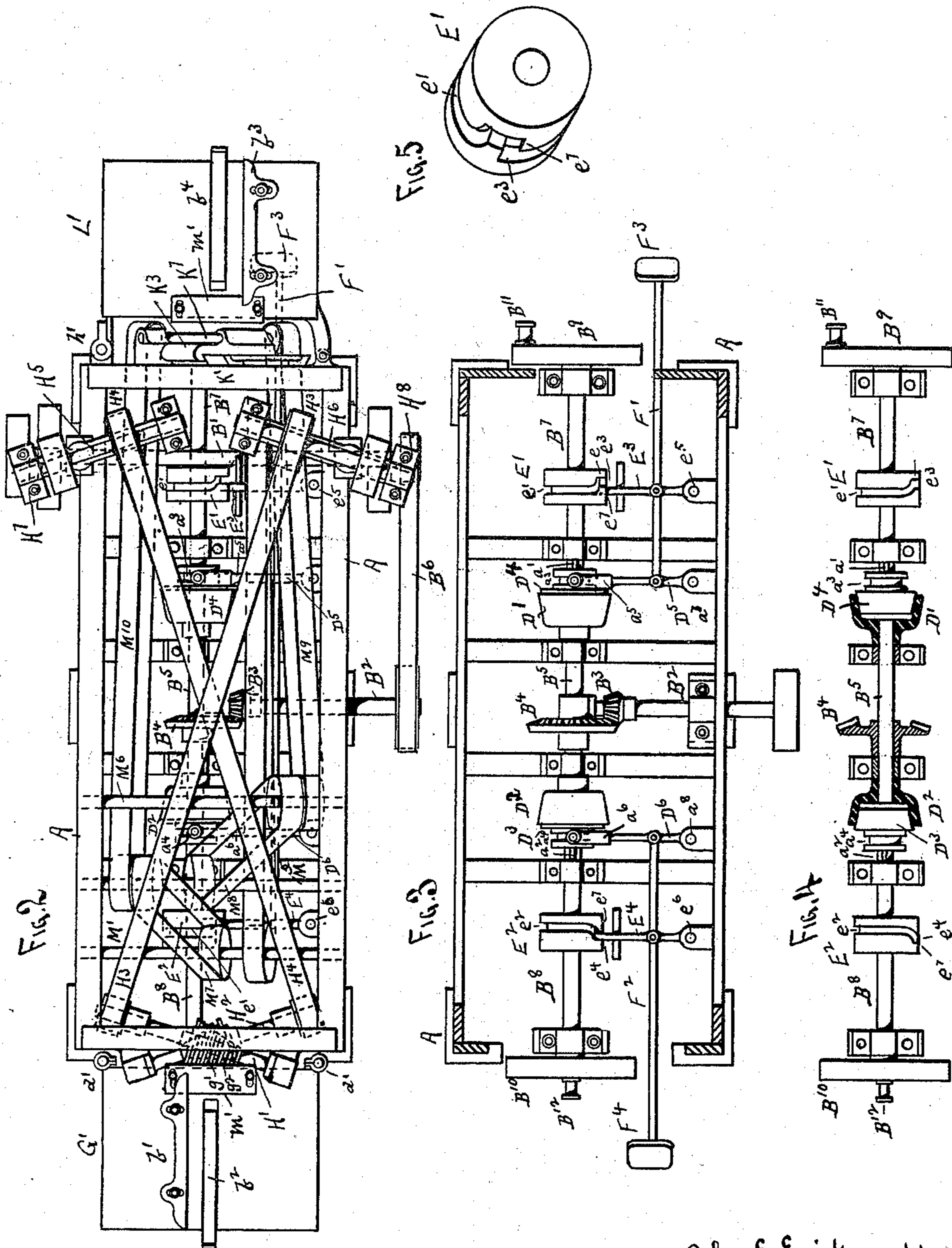
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3 Sheets—Sheet 2.

J. E. ERICKSON & J. LEONARTSON.
DOVETAILING MACHINE.

No. 535,492.

Patented Mar. 12, 1895.



WITNESSES.
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Wm. A. Peterson.

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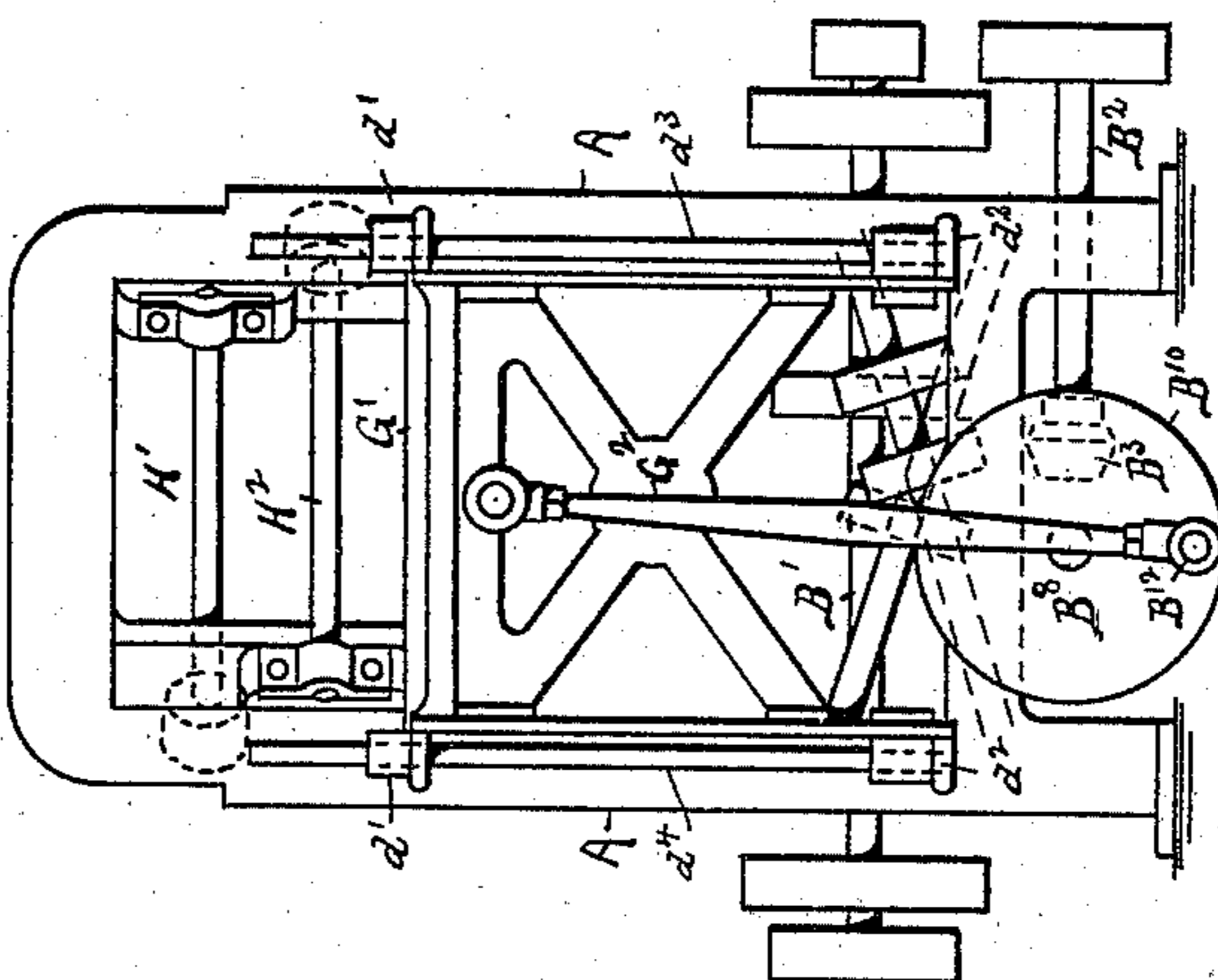
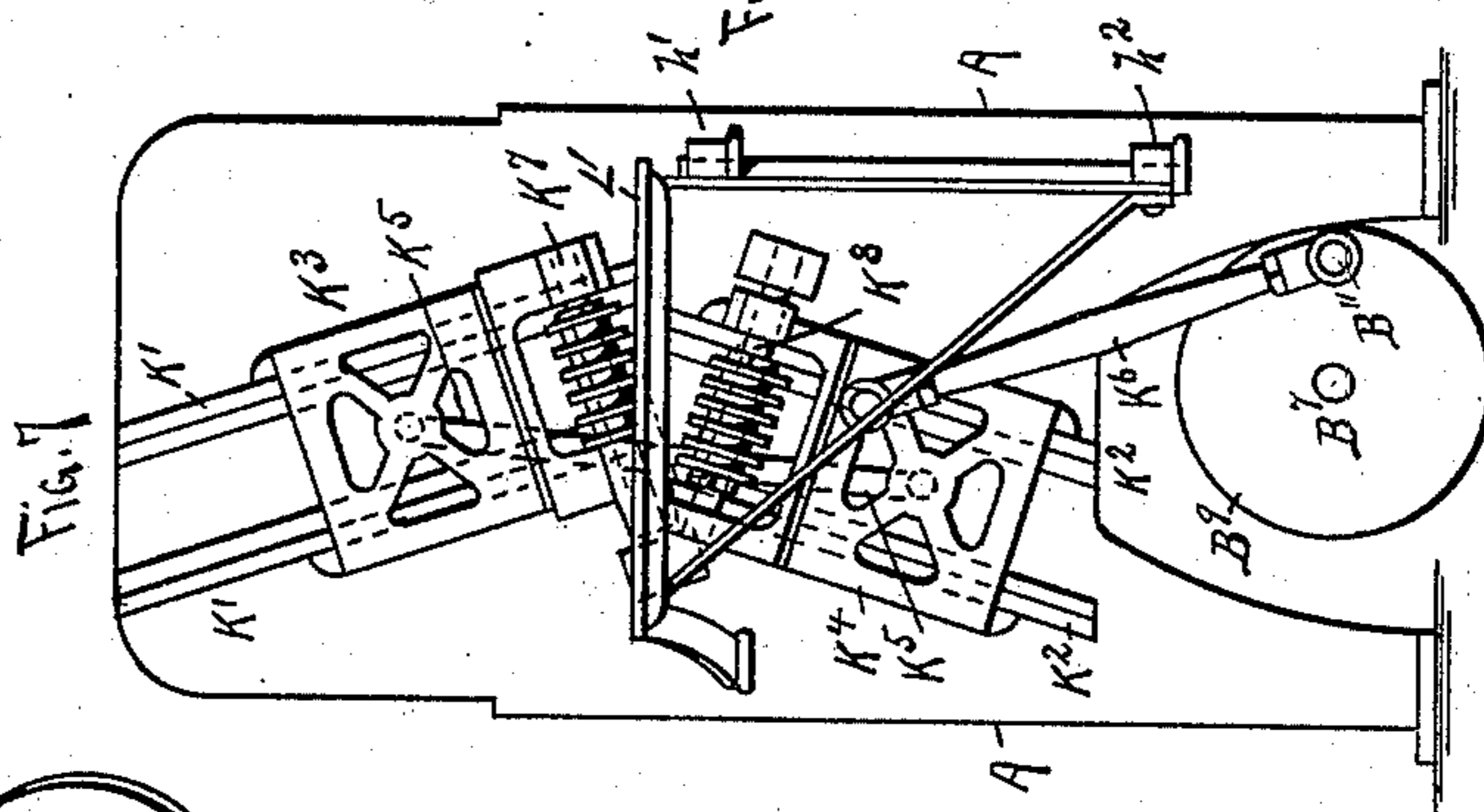
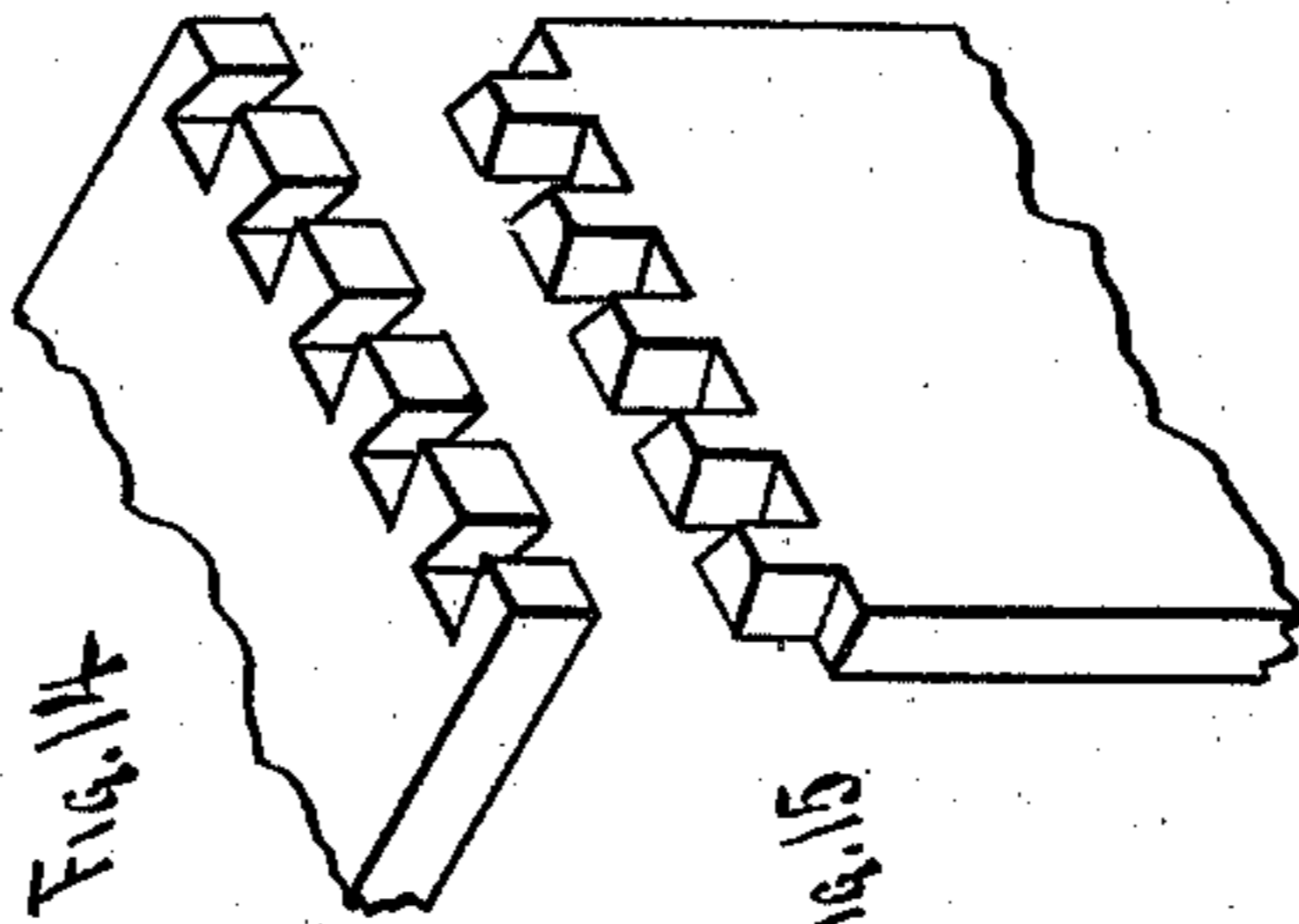
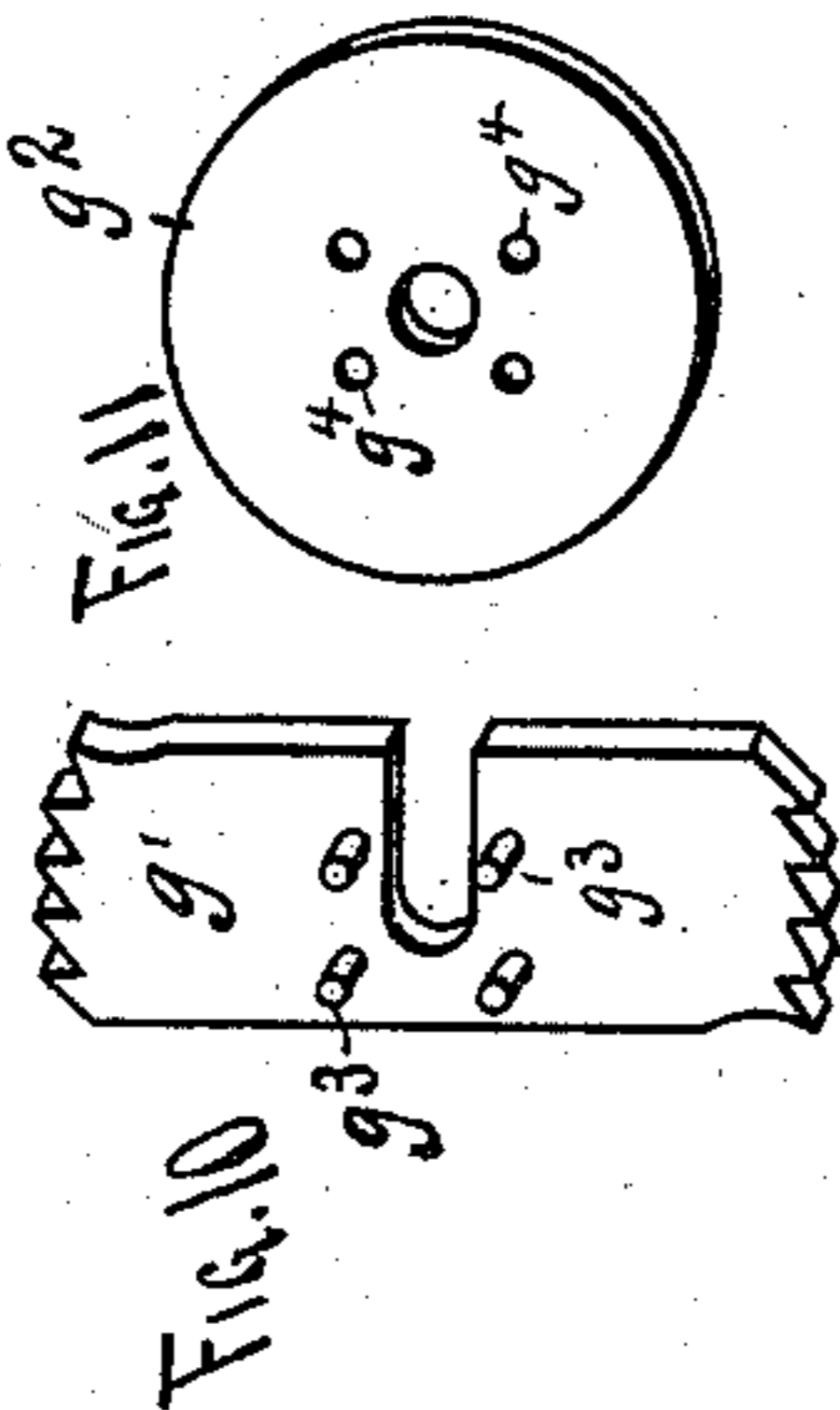
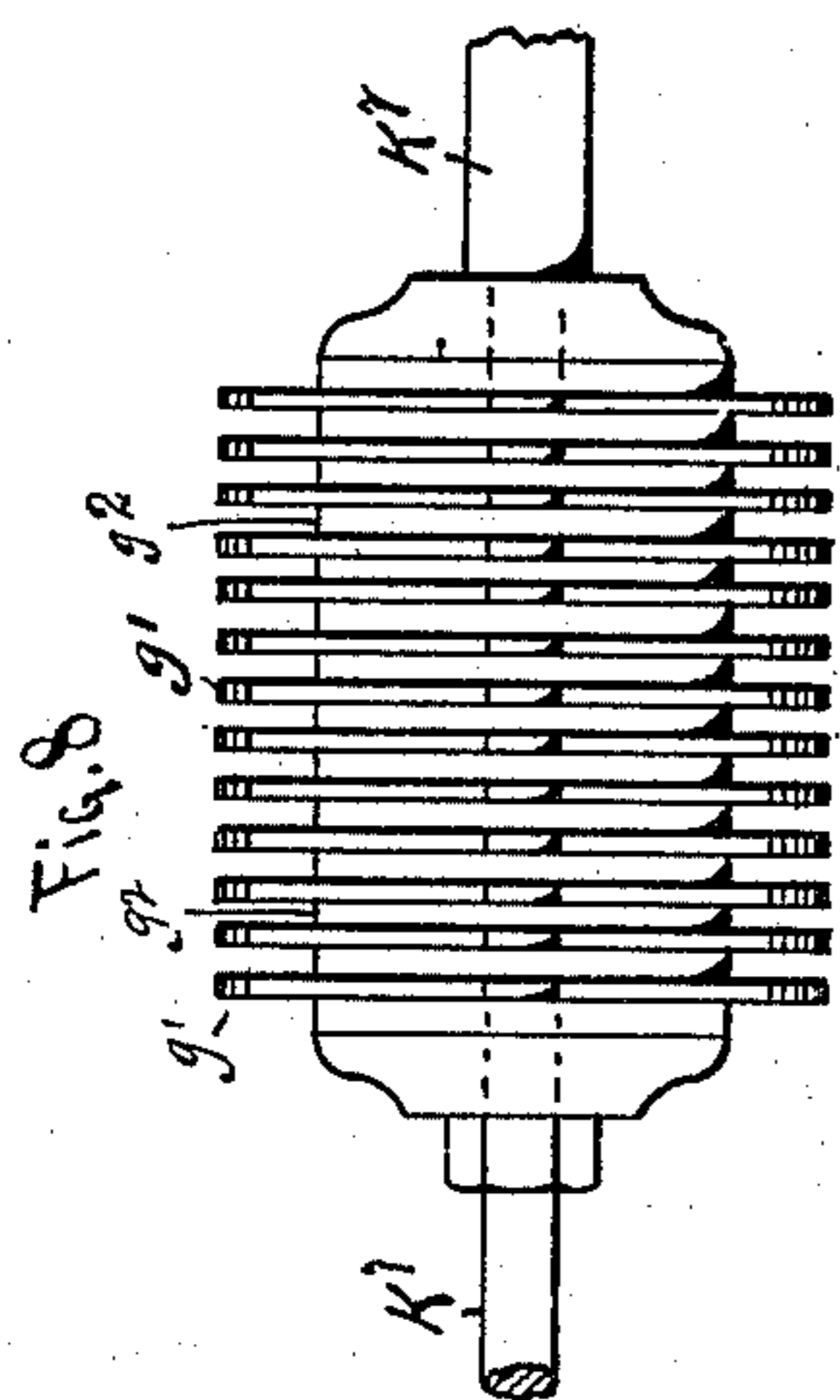
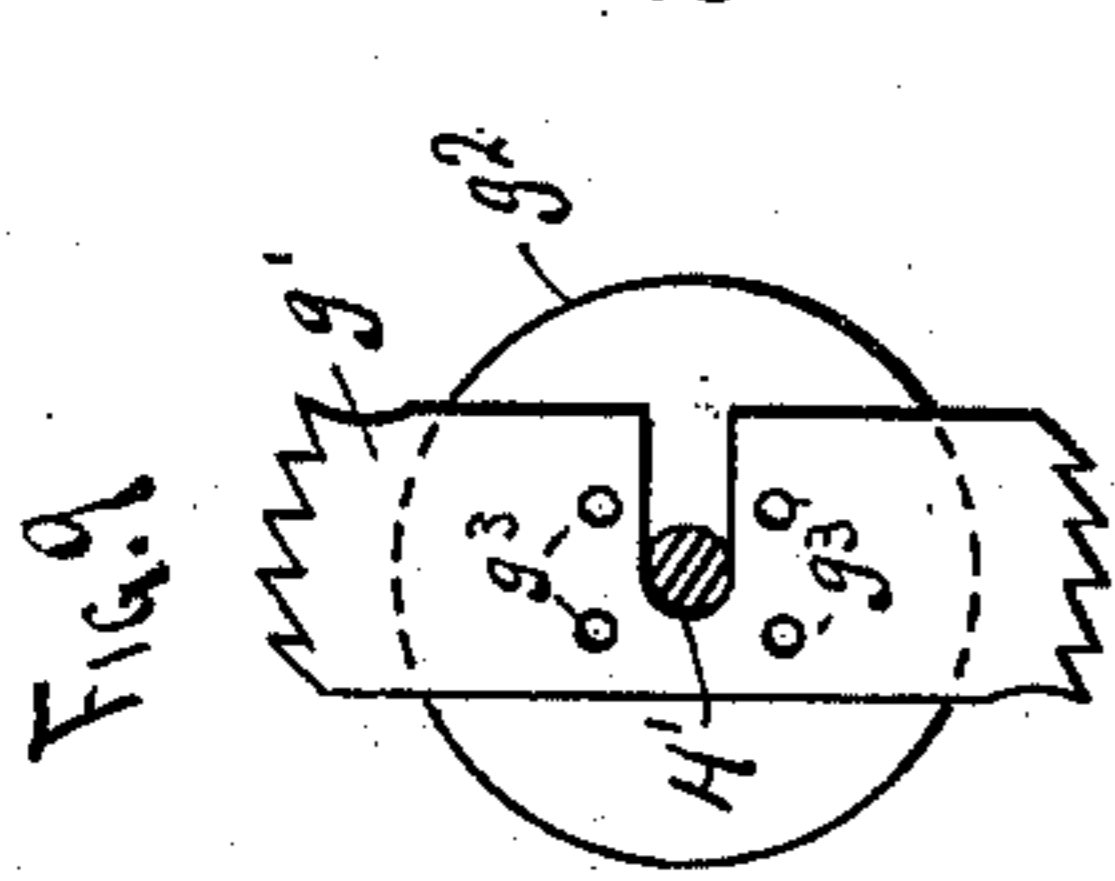
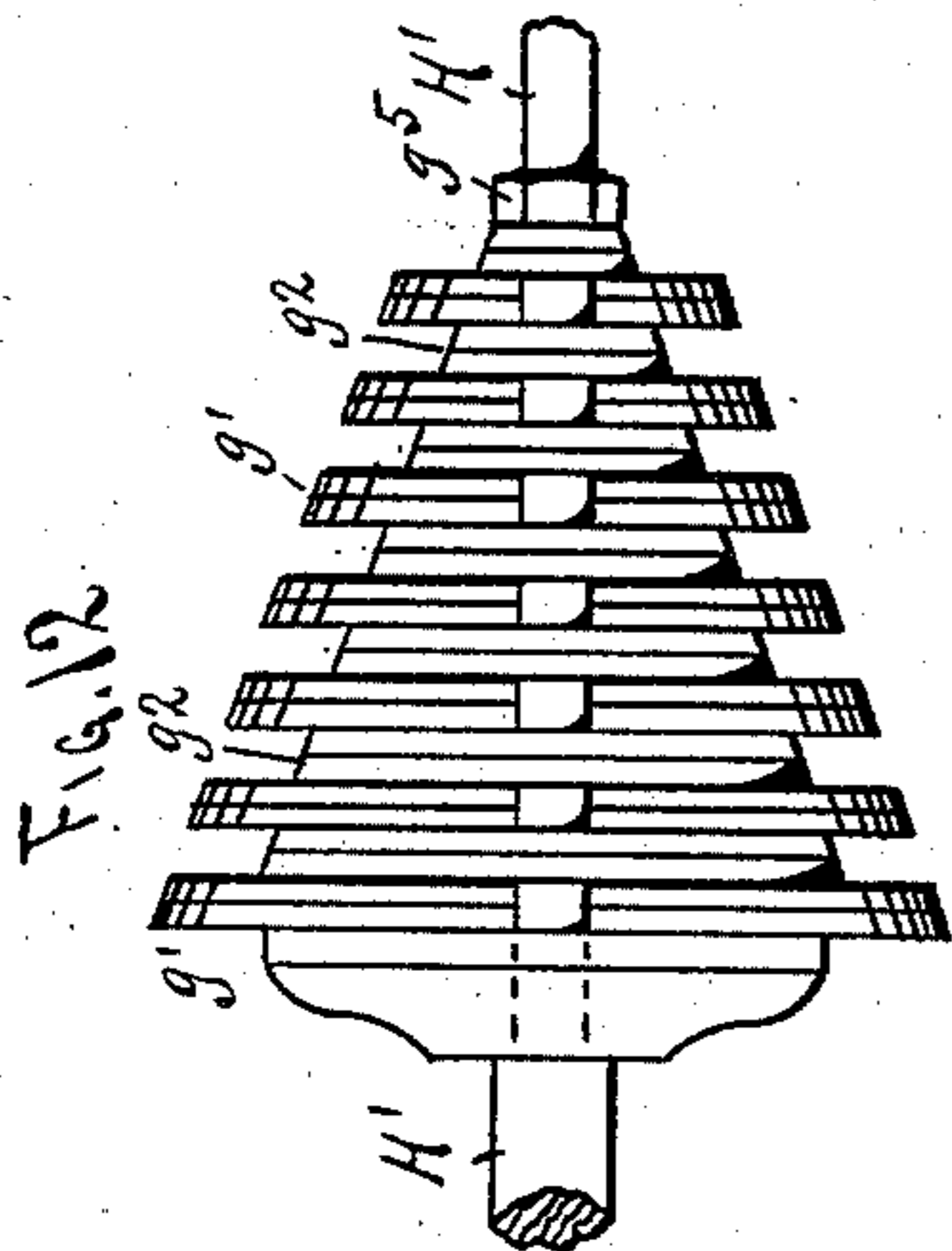
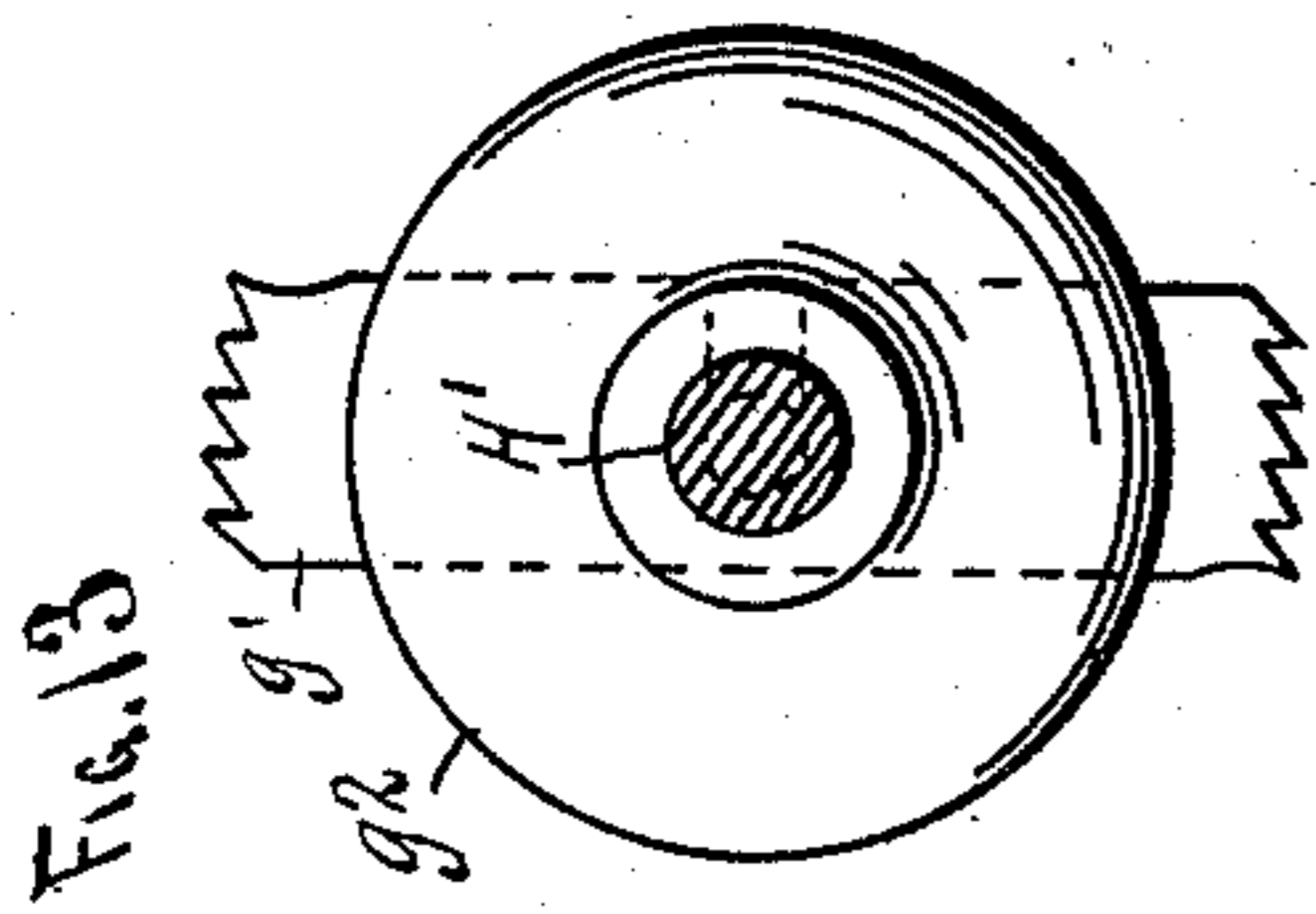
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3 Sheets—Sheet 3.

J. E. ERICKSON & J. LEONARTSON.
DOVETAILING MACHINE.

No. 535,492.

Patented Mar. 12, 1895.



WITNESSES.
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John E. Erickson
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By Charles N. Woodward, atty.

UNITED STATES PATENT OFFICE.

JOHN E. ERICKSON AND JOHN LEONARTSON, OF ST. PAUL, MINNESOTA.

DOVETAILING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 535,492, dated March 12, 1895.

Application filed August 27, 1894. Serial No. 521,400. (No model.)

To all whom it may concern:

Be it known that we, JOHN E. ERICKSON, a citizen of the United States, and JOHN LEONARTSON, a subject of the King of Sweden and Norway, (who has declared his intention of becoming a citizen of the United States,) residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented a new and useful Dovetailing-Machine, of which the following is a specification.

This invention relates to "dovetailing machines" and consists in the construction, combination, and arrangement of parts, as hereinafter set forth, and specifically pointed out in the claims.

In the drawings: Figure 1 is a side elevation. Fig. 2 is a plan view. Fig. 3 is a longitudinal, sectional elevation on the line xx of Fig. 1. Fig. 4 is a sectional detail of the system of clutches and shafting for actuating the feed mechanism. Fig. 5 is a perspective view of one of the cam collars detached. Fig. 6 is an end elevation of one end of the machine, and Fig. 7 is an end elevation of the opposite end of the machine. Fig. 8 is an enlarged side elevation of one of the sets of cutters detached, and Fig. 9 is an end view of the same. Fig. 10 is a perspective view of one of the cutters detached, and Fig. 11 is a perspective view of one of the dividing rings, detached. Fig. 12 is a side elevation of the other set of cutters detached, and Fig. 13 is an end view of the same. Figs. 14 and 15 are perspective views of portions of two pieces of boards with the dove-tail grooves cut therein.

A is the frame work having a horizontal shaft B' journaled crosswise near the lower part of the frame, as shown. B^2 is another cross shaft having a bevel pinion B^3 engaging with a bevel gear B^4 on a short shaft B^5 journaled lengthwise of the frame A, at, or near its center, as shown in Fig. 4, the shaft B^2 being driven constantly by a belt B^6 from the shaft B' , the latter being the main driving shaft. Journaled upon suitable supports upon the frame A are two other shafts B^7 B^8 their inner ends nearly meeting, and in line with the outer ends of the shaft B^5 , so that the three sections of shafts B^5 B^7 B^8 are in line horizontally, as shown. Upon the outer ends of the shafts B^7 B^8 are face plates B^9 B^{10} , hav-

ing crank pins B^{11} B^{12} adapted to actuate the feed mechanism, as hereinafter described.

On the outer ends of the central shaft section B^5 are the outer conical shells D' D^2 of clutch members, while the corresponding conical members D^3 D^4 are mounted upon the inner ends of the shaft sections B^7 B^8 by feather keys a' a^2 , so that while free to slide along the shaft sections on which they are mounted and be compressed into the conical shells D' D^2 , or withdrawn therefrom, they will revolve the shaft sections B^7 B^8 when compressed into the constantly revolving shells D' D^2 .

Grooves a^3 a^4 will be formed in the hubs of the cones D' D^2 for the reception of the yokes a^5 a^6 of levers D^5 D^6 , the latter pivoted by their outer ends at a^7 a^8 to the frame A, as shown in Figs. 2 and 3.

Keyed fast to each of the shaft sections, B^7 B^8 is a collar E' E^2 , each having a groove e' e^2 encircling it, and each groove having an off-set e^3 e^4 at one point of its circuit, as shown.

E^3 E^4 are levers, one for each of the collars E' , E^2 , and each pivoted by its outer end at e^5 e^6 to the frame A, as shown, and each lever with its inner end resting in one of the grooves e' e^2 as shown.

The levers D^5 and E^3 are connected by a rod F' , while the levers D^6 and E^4 are likewise connected by a rod F^2 , each of the rods extending beyond the frame of the machine, and each rod ending in a foot lever or treadle F^3 F^4 , as shown in Figs. 1 and 3.

The normal positions of the inner ends of the levers E^3 E^4 are in the off-sets e^3 e^4 which thus hold the cones D^3 D^4 out of contact with the shells D' D^2 . The ends of the levers E^3 E^4 when thus in the off sets rest upon the shoulders e^7 (see Fig. 5) and in a position to push over into the main portion of the groove e' or e^2 . When thus pushed over, which is done by pressing against the foot treadles F^3 or F^4 , the cones D^3 D^4 are moved into contact with the revolving shells D' D^2 , thereby causing the shaft sections B^7 or B^8 , with its collars E' E^2 , to be revolved with the shaft B^5 . This revolution continues until the off sets in the collars E' or E^2 reach the ends of the levers E^3 or E^4 , again, when the off sets throw the levers back again into

their normal position against the shoulders e^7 as before, thus disengaging the clutch cones and stopping any further motion of the shaft sections B^7 or B^8 . By this simple arrangement either one of the shaft sections B^7 or B^8 may be connected to and adapted to be revolved one complete revolution by the action of the operator pressing upon the foot treadle F^3 or F^4 , and likewise revolve the face plates B^9 B^{10} one complete revolution.

Upon one end of the frame A a table G' is mounted by clamps d' d^2 and guide rods d^3 d^4 , and connected by rod G^2 to crank pin B^{12} on the face plate B^{10} , so that the revolution of the face plate and its shaft section B^8 , as before described, will cause the table G' to be moved up and down once at each revolution of the shaft section.

Journaled across the upper part of the frame A at one end above the table G' are two shafts H' H^2 set in reversely angular positions, as shown, and adapted to be driven by belts H^3 H^4 from shafts H^5 H^6 in guide hangers or standards H^7 , H^8 , on the frame A, as shown, the shafts H^5 , H^6 being in turn driven by belts from the main shaft B' , as shown. Mounted upon these shafts H' , H^2 , are a series of cutting blades g' , being arranged alternately with dividing washers or rings g^2 , as shown in Figs. 12 and 13, which is an enlarged detached detail of one of the shafts H' with its cutters and dividing washers in position. In this illustration the cutters and dividing washers are arranged in pairs as shown, so as to increase the width of the cut made, but they may be arranged single or coupled in any described manner to increase or decrease the width of the cuts made.

Each of the cutters g' is provided with pins g^3 adapted to enter corresponding holes g^4 in the dividing rings g^2 , (see Figs. 9, 10 and 11) so that when the nuts g^5 on the shafts H' and H^2 are set up and the set of alternating cutters and dividing rings of each shaft compressed, the pins and holes will effectually prevent the cutters from turning upon the shafts.

Upon the opposite end of the machine from the frame G' are arranged two sets of reversely angular guides K' K^2 , in which frames K^3 , K^4 , are adapted to slide up and down, the two frames being connected by rod K^5 so that they move in unison, and the lower frame K^4 connected by a rod K^6 to the crank pin B^{11} on the face plate B^9 , so that when the shaft B^7 is revolved the two frames K^3 K^4 will be moved up and down in their angular guides K' K^2 .

Journaled across the lower portion of the frame K^3 is a shaft K^7 , and likewise journaled across the upper end of the frame K^4 is a shaft K^8 , as shown. These two shafts are provided with a set of the alternating cutters and washers g' g^2 of the same construction as these upon shaft H' H^2 , except that the cutters are all of the same length instead of being of different lengths, as in Fig. 12.

In Figs. 8, 9, 10 and 11 we have shown enlarged details of the shaft K^7 with its cutters and washers arranged in position thereon.

L' is a table hinged at one side to the frame A at h' h^2 , and suitably braced, so that it can be swung around out of the way when it is required to gain access to the machinery.

M' M^2 are two shafts journaled across the lower portion of the frame A near one end, and connected to these shafts by frames M^3 M^4 are two other idler shafts M^5 M^6 , these two sets of shafts being set at angles corresponding to the angles of the shafts K^7 , K^8 , so that belts M^7 M^8 may be run from the shafts M' M^2 to the idler shafts M^5 M^6 and the motion continued to the shafts K^7 K^8 by belts M^9 M^{10} as shown in Figs. 1 and 2. These shafts M' M^2 are driven from the main shaft B' by belts as shown.

The material to be acted on is laid upon the tables G' and L' and passed upward through the revolving cutters by moving the table G' up and down on one end of the machine, and the revolving cutters passed downward through the work held upon the stationary table L' on the other end of the machine. The lower diagonally arranged cutters form one half of the dovetail notch, and the other diagonal cutter forms the opposite half of the same notch, so that by passing the material through the cutters on both of the reversely angular shafts, the complete set of dovetail notches are cut upon the lumber by one motion. Upon top of the table G' adjustable guides b' b^2 are arranged to denote the proper position of the work, and upon the table L' similar guides b^3 b^4 are arranged for the same purpose. Upon the tables G' and L' are plates m' arranged to be adjusted close to the ends of the cutting blades g' to form supports to the work close up to the cutters to prevent the wood being slivered off when the cutters pass through it. By forming the plates m' adjustable, the wear of the blades g' can be compensated for.

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

1. In a dovetailing machine, two reversely arranged series of guides set at angles corresponding to the angles of the dovetails, and in which frames are adapted to be moved in unison, shafts journaled upon said diagonal frames and carrying cutters, and adapted to be revolved, and a stationary table adapted to support the material to be acted upon, as and for the purpose set forth.

2. In a dovetailing machine two reversely arranged series of guides set at angles corresponding to the angles of the dovetails, and in which frames are adapted to be moved in unison, shafts journaled upon said diagonal frames and carrying cutters and adapted to be revolved, a table for carrying that material to be acted upon, a constantly revolving shaft carrying one clutch member, a shaft co-

inciding with said constantly revolving shaft
and carrying the other clutch member and
connected to actuate said diagonally moving
frames, and with a collar fast thereon, and
5 having a groove with an off-set, and with a
system of levers connecting said clutch mem-
bers and the groove in said collar, whereby
by throwing said system of levers in or out of
gear with said groove and its off-set, said co-
10 inciding shaft and its connections may be
caused to revolve one revolution to actuate

said diagonally moving frames substantially
as set forth.

In testimony whereof we have hereunto set
our hands in the presence of two subscribing 15
witnesses.

JOHN E. ERICKSON.
JOHN LEONARTSON.

Witnesses:

ERIC H. ERICKSON,
C. N. WOODWARD.