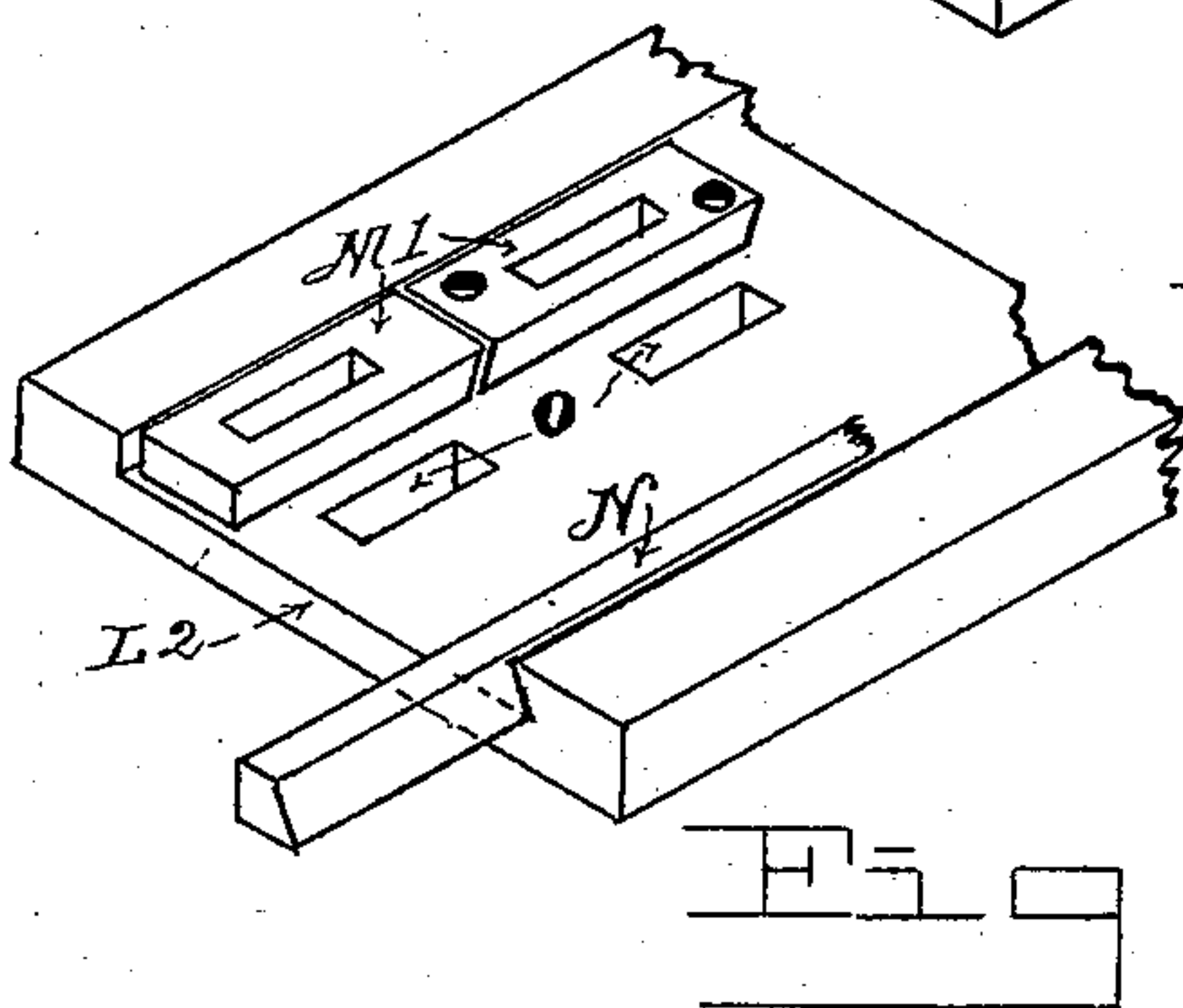
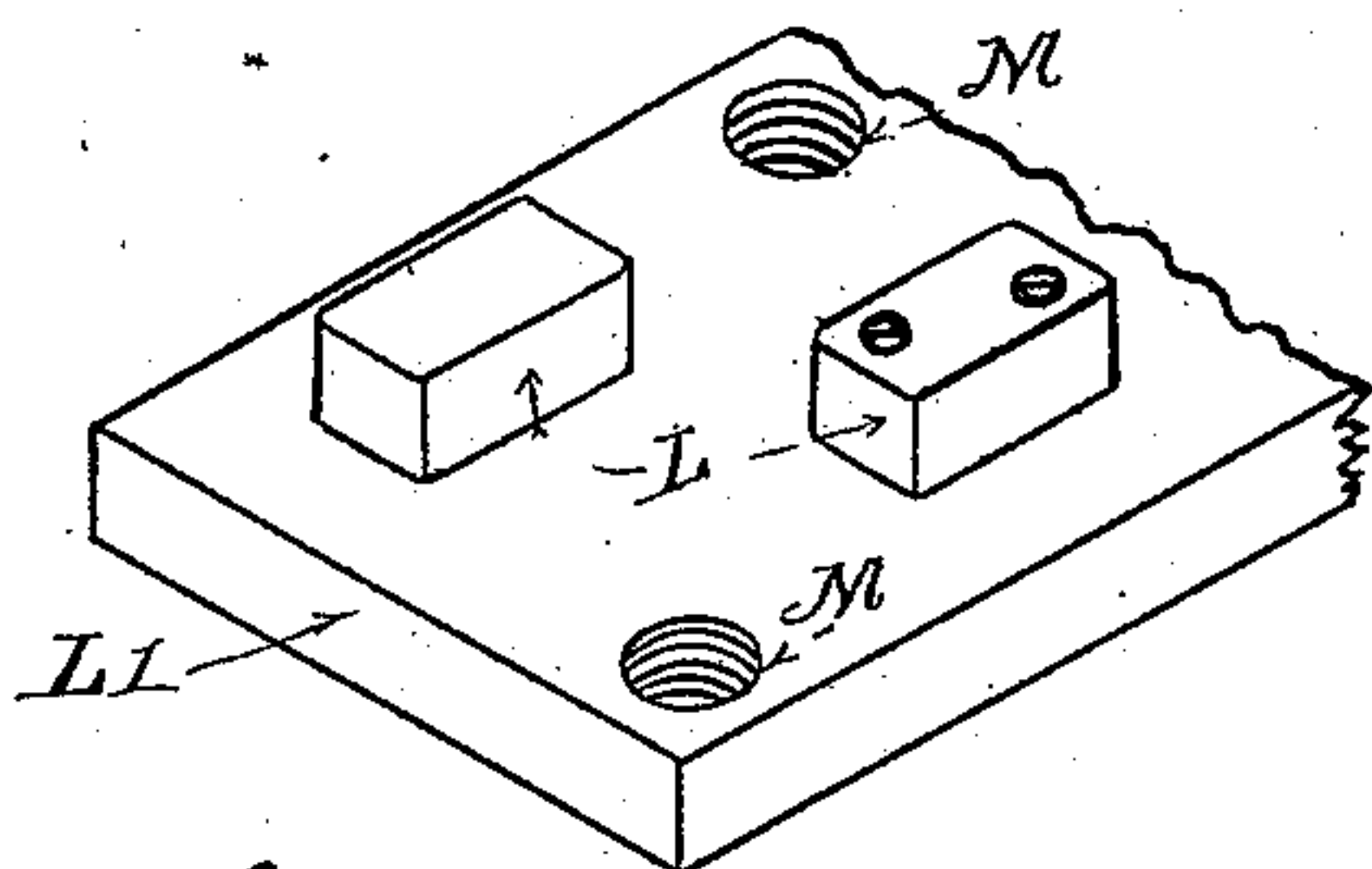
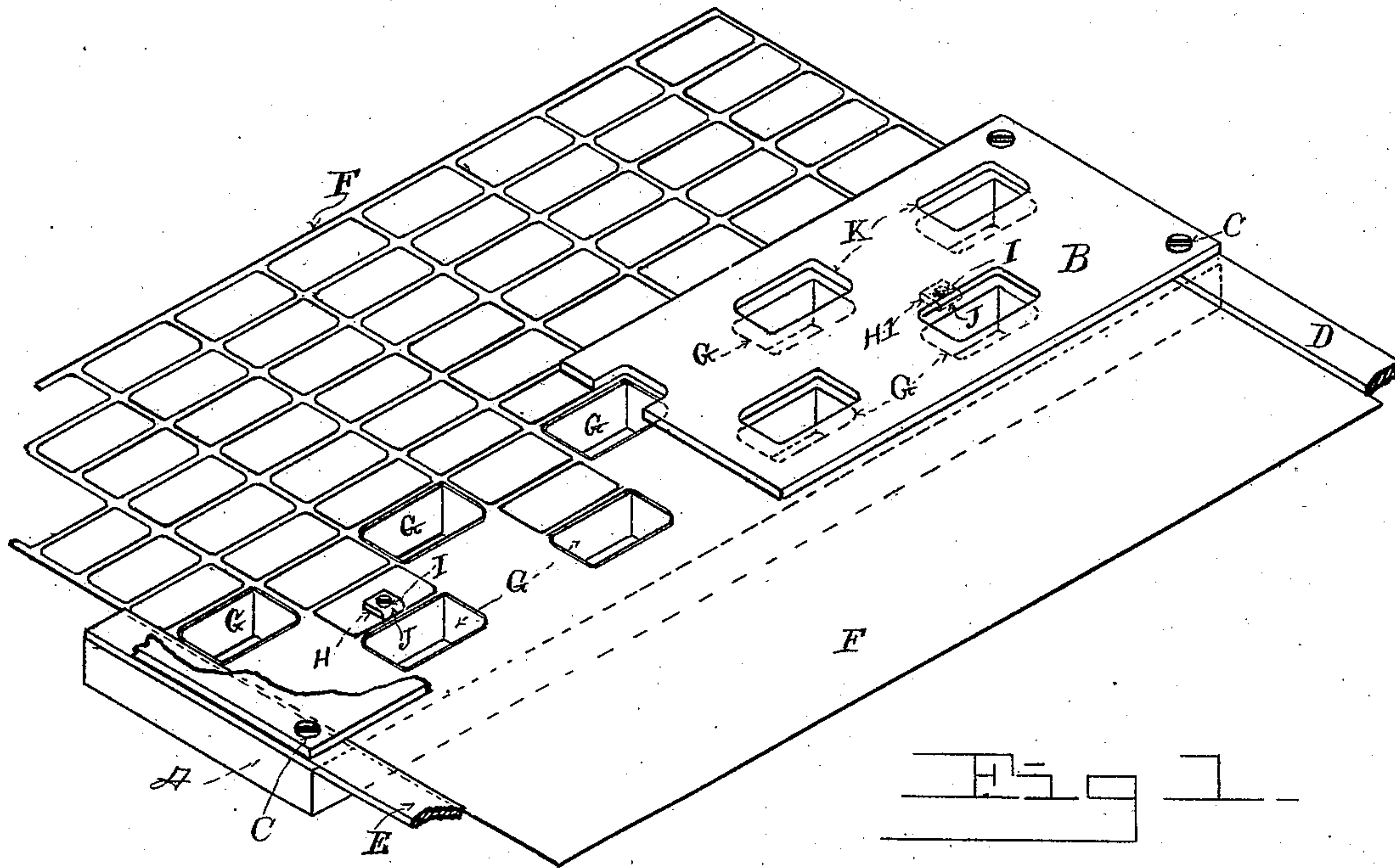


(No Model.)

H. W. LAWRENCE.
MULTIPLE CARD CUTTING DIE.

No. 577,043.

Patented Feb. 16, 1897.



Witnesses

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HARRY WALLACE LAWRENCE, OF DENVER, COLORADO, ASSIGNOR TO
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MULTIPLE CARD-CUTTING DIE.

SPECIFICATION forming part of Letters Patent No. 577,043, dated February 16, 1897.

Application filed April 24, 1896. Serial No 588,935. (No model.)

To all whom it may concern:

Be it known that I, HARRY WALLACE LAWRENCE, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Multiple Card-Cutting Dies; and I do 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 the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in dies for cutting cards from paper, cardboard, and other material; and the objects of my invention are, first, to provide a multiple card-cutting die and punch; second, to provide a multiple card-cutting die and punch in which the dies and punches are so arranged that all of the sheet of cardboard or other material passed between the dies and punches will be converted into cards with the exception of the merest filaments between the punched spaces, which are necessary to assist in feeding or drawing the sheet between the dies or punches; third, to provide means for guiding the material between the dies and punches; fourth, to provide an automatic stripper for freeing such cards as stick to the punches from them; fifth, to provide means whereby a multiple group of dies and cutters may be made independent of one another and be removably secured to a common base-plate or frame. I attain these objects by the mechanism illustrated and described in the following specification and drawings, in which—

Figure 1 represents a perspective view of my multiple die, showing a sheet of cardboard lying over it. Fig. 2 represents a fragmentary view in perspective of the punches. Fig. 3 represents a perspective view of a group of independent dies and a fragment of a base-plate to which they are secured.

Similar letters of reference refer to similar parts throughout the several views.

Referring to Fig. 1, A designates a die-plate. B is a thin plate of metal which lies over the face of the die and is secured to it at its end edges by screws C. The plate is raised above

the surface of the die by the strips D and E, which are placed between it and the die, a distance sufficient to enable a sheet of cardboard F or other desired material to be passed freely under it. I illustrate this plate, which I call a "stripper," with about one-half of it broken away in order to show a clear view of the cardboard and the dies of the plate. The strips D and E constitute guide-strips. They extend beyond the die parallel to one another on the side of the die the paper is fed in on, and operate to guide the sheets of cardboard straight across the die. The sheets are always of some standard width, and if they vary slightly in width the strips can be adjusted by lateral movement on the screws C or by other suitable means. Dies can be made, however, for each standard width of cardboard, the general width being about twenty-two by twenty-eight inches.

The great value and utility of my invention lies in the fact that I am enabled, by a peculiar arrangement of a plurality of dies and with a corresponding number and arrangement of punches, to completely cut the entire surface of a sheet of cardboard, with the exception of a skeleton of very narrow partitions between the spaces from which the cards are cut, into cards by feeding the cardboard sheets intermittently between the dies and punches when they are arranged in operative relation.

I am aware that the present state of the art reveals dies and punches used singly and in groups for punching cards from paper and cardboard, but the particular arrangement of the dies and their relation to one another which I employ and the results I attain have never before been made or accomplished. I can form my dies with one or two or more matrices, but preferably use nine, as shown, as this number covers the surface of the standard-sized sheets of cardboard, which I prefer to use, which are about twenty-two by twenty-eight inches, and produce nine cards at each impression of the punch of average commercial size. Upon the side of the die the cardboard is fed in on I preferably arrange four matrices G in line with one another and located a distance apart equal to their length plus approximately a thirty-second of an inch at each edge of each matrix. I form a second

row of five matrices in a line parallel to the first row and space them from the first row a distance equal to the breadth of one of the matrices plus approximately a thirty-second of an inch at the side of each row, or the width of a matrix plus a sixteenth of an inch altogether between the two rows. I also place the individual matrices of this second row the same distances apart as those of the first row, but I locate this second row in the center of the spaces between those of the first row and in the spaces at the end of those at the end of the first row, but at a space to one side of them, as above described. As the matrices of this second row are of the same length as those of the first row and as the spaces between them are wider than the length of the matrices the ends of the matrices of the second row do not extend to a line drawn parallel with and from their ends transversely across the die, there being left a space of about a thirty-second of an inch between them at each end of each matrix of the second row or between two parallel lines drawn transversely across the die parallel with and touching the adjacent ends of the matrices of each row. The object of this arrangement of the matrices relative to one another is to leave a narrow partition of cardboard between spaces made in the sheet by cutting out the cards. A partition a thirty-second of an inch wide all around is sufficient, and after a sheet has passed through the die its surface has been completely cut into cards with the exception of a square of fine lattice-work, as shown in Fig. 1.

H and H' designate stops. They consist of a piece of metal secured to the surface of the die by a screw I. They are positioned with one edge J, which is curved, about a thirty-second of an inch from the edge of the two outside matrices of the first row and on the farthest side of these matrices from the feeding-in edge of the die and centrally of their length. Through the stripper-plate and in direct line with the matrices I also form openings K, through which the punches L must pass before they move into the matrices. These, however, are made a trifle larger than the punches.

In Fig. 2 I illustrate a fragment of a multiple-punch plate L', which of course would contain a punch for each matrix, but two punches L are shown on this fragment. They may be an integral part of the punch-plate or may be removably secured to it, as shown. The plate is adapted to be secured, on the opposite side from the punches, by means of the threaded holes M and suitable screws, to a reciprocating plunger of a suitable press.

In Fig. 3 I illustrate an independent die-plate L².

M' designates the dies, each of which is made independent of the others. Each die may be secured to the die-plate by screws, or they may be keyed in place by the key N. In the bottom of the die-plate I form aper-

tures O to allow the cards to drop freely from the dies and plate. The cardboard is manually fed between the stripper and the die. The edge of the sheet is inserted between them and placed squarely against both gage-stops, when the punches are allowed to descend, which cut out four cards on their descent. As they move up, the cardboard sometimes clings to one or more punches and is lifted up with them against the stripper, through which the punches pass on their upward stroke, which disengages the cardboard from them, and it falls back to its normal position on the die. A slight forward feed movement causes the edge of the cardboard to move up over the stops, and it is fed into the die until the edge of the spaces from which cards have been cut which is nearest to the operator contacts with the stops, when the punches are again allowed to descend and four more cards are cut. The edge of the cardboard has now reached the edge of the second row of dies, and with the next feed movement of the cardboard and operative stroke of the punches nine cards are cut out, and cards are also cut out between the spaces made by cutting out the first four and beyond the ends of the first four, leaving a row of spaces along the edge of the cardboard with but about a thirty-second of an inch of cardboard between them and along the front edge. The intermittent feeding of the cardboard takes place between each stroke of the punches until the sheet has been fed through the die. The minute the edge of the sheet appears on the opposite side of the die the operator takes hold of it and draws as well as pushes the sheet intermittently along from space to space against the stops. By this arrangement of the dies I am enabled to utilize the entire available surface of a sheet of cardboard with but a minimum amount of waste and also to reduce the cost of cutting them to less than one-half of their present price.

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

1. A compound card-cutting die consisting of a plurality of dies and punches operatively adapted to one another and arranged in two or more rows, said rows being spaced a little farther apart than the width of the individual dies and arranged in alternate order and having a space between the dies of each row a trifle wider than the length of each individual die and having each alternate die of each row arranged in the center of the intermediate spaces of the opposite row, but laterally from them in the opposite row, substantially as described.

2. The combination in a compound card-cutting die of a die-plate having a plurality of matrices arranged in two rows of four and five matrices, each positioned relatively to one another as herein shown and described, guide-strips secured to the ends of said die-

plate and extending beyond it on its feeding-
in side parallel to one another and to the di-
rection of the feed, a stripper-plate secured
over the surface of the die-plate and gage-
stops secured to the surface of said plate in
position to gage the manual intermittent-feed
movement of the cardboard sheets over said
die-plate.

3. In a multiple card-cutting device for cut-
ting cards from standard-sized sheets of card-
board, a combination of dies and punches ar-
ranged in successive but alternate order in
two parallel independent rows as herein speci-
fied, a stripper secured over the surface of said
die having openings in which said punches re-
ciprocate in passing to and from said dies
and adapted to fit them freely, guides for
guiding the sheets of cardboard centrally to
the dies, gages for determining the intermit-
tent feed of the cardboard over said dies
whereby each sheet of cardboard is cut into
cards, with the exception of a narrow fila-
ment of paper all around the edge of each
die, substantially as described.

4. In a rectangular card-cutting die the
combination of a compound die comprising a
die-plate containing two or more axially-
aligned rows of dies of equal size and having
the dies of each individual row spaced a trifle
farther apart from one another than the length
of the individual dies, and having the dies of
two or more rows arranged centrally of the
spaces between the dies of the adjacent row
or rows but laterally to one side of them a
distance a trifle greater than twice the breadth
of the individual dies from the center of one
row of dies to the center of its adjacent row
or rows and with a parallel intervening space
between the opposing edges of the dies of
each row a trifle greater than their individual
breadth, with a like number of similarly-ar-
ranged coacting punches, substantially as de-
scribed.

5. The combination of a card-cutting die,
comprising a compound die consisting of co-
acting dies and punches adapted to receive
and span standard sheets of cardboard, and
having two parallel rows of op-
positely-disposed dies and punches of equal
sizes, spaces between each separate die of

each row greater than the length of the indi-
vidual dies, and having each row of dies ar-
ranged laterally to one side of the outer edge
of its adjacent row of dies a distance a trifle
greater than the breadth of the individual
dies, whereby a clear space intervenes be-
tween each two rows parallel with their length
and wider than the breadth of the dies, and
having the dies of each row positioned cen-
trally in line with the blank space between
the dies of the adjacent row and with a cen-
tral point between them, with a stripper ar-
ranged over the surface of said dies having
guide-apertures through which the punches
reciprocate to and from said dies, means for
reciprocating said punches through said strip-
per to and from said dies, and guide-strips
for feeding said cardboards in alinement with
the die, substantially as described.

6. A compound die for cutting standard-
sized sheets of cardboard into rectangular-
shaped cards, comprising a plurality of equal-
ly-sized dies and coöperating punches ar-
ranged in two parallel, differential rows, hav-
ing the dies of one row extend across the
width of standard-sized sheets of cardboard
to within a narrow margin of its outside edges
and spaced at equal distances apart and at a
distance from one another a trifle greater than
the length of the card and dies, having the
other row of dies shorter than the first-named
row and also spaced at like distances apart
and positioned centrally between each two
dies of the above-named row, but laterally to
one side of them and to the dies' exterior edges
a distance a trifle greater than the breadth of
the cards to be cut and of the breadth of the
dies, and means for arranging the dies and
punches in operative relation and for recipro-
cating said punches to and from said dies
whereby standard sheets of cardboard are fed
to the die and their entire available surface
is cut into cards, substantially as described.

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

HARRY WALLACE LAWRENCE.

Witnesses:

CHARLES P. LACOMBE,
CLEMENT J. EDWARDS.