

No. 616,798.

Patented Dec. 27, 1898.

A. MORRISON.
ROLLING TIE PLATES.

(Application filed Apr. 1, 1898.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

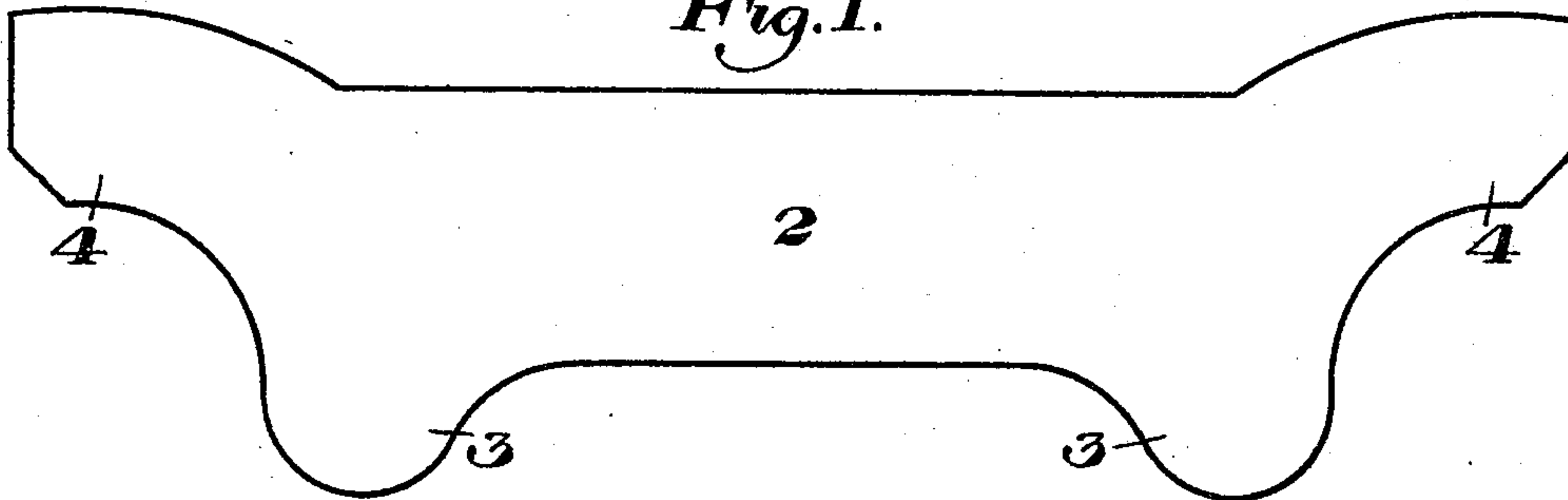


Fig. 2.

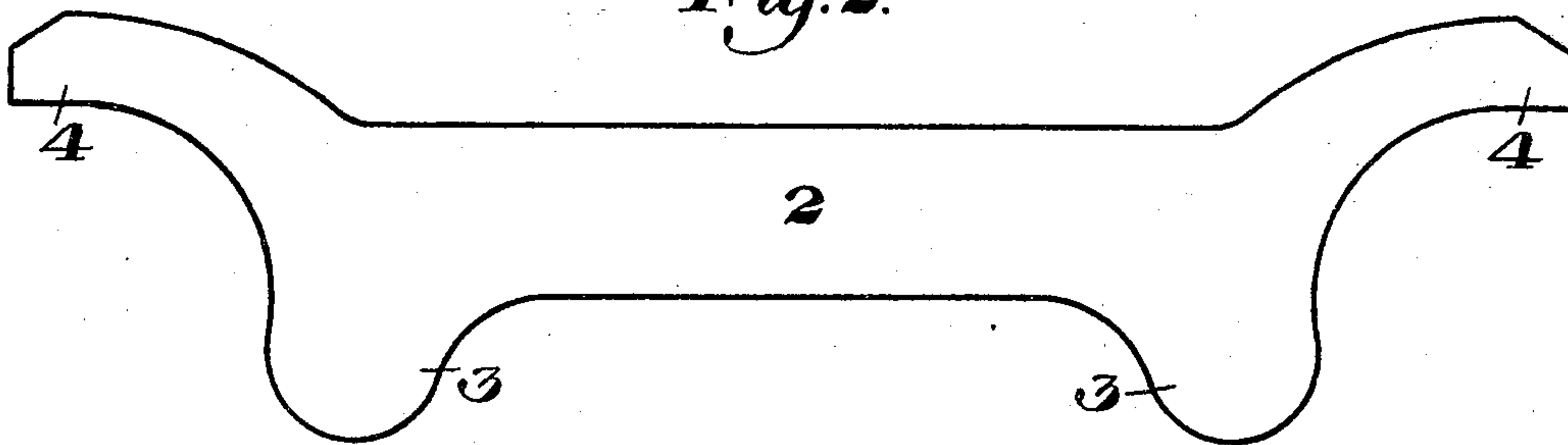


Fig. 3.

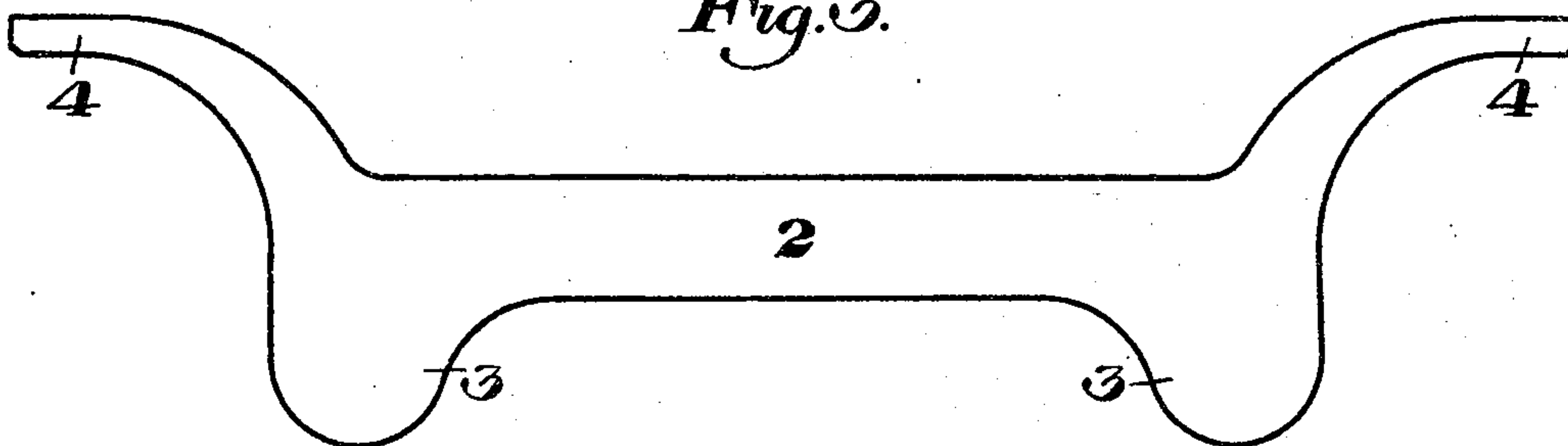
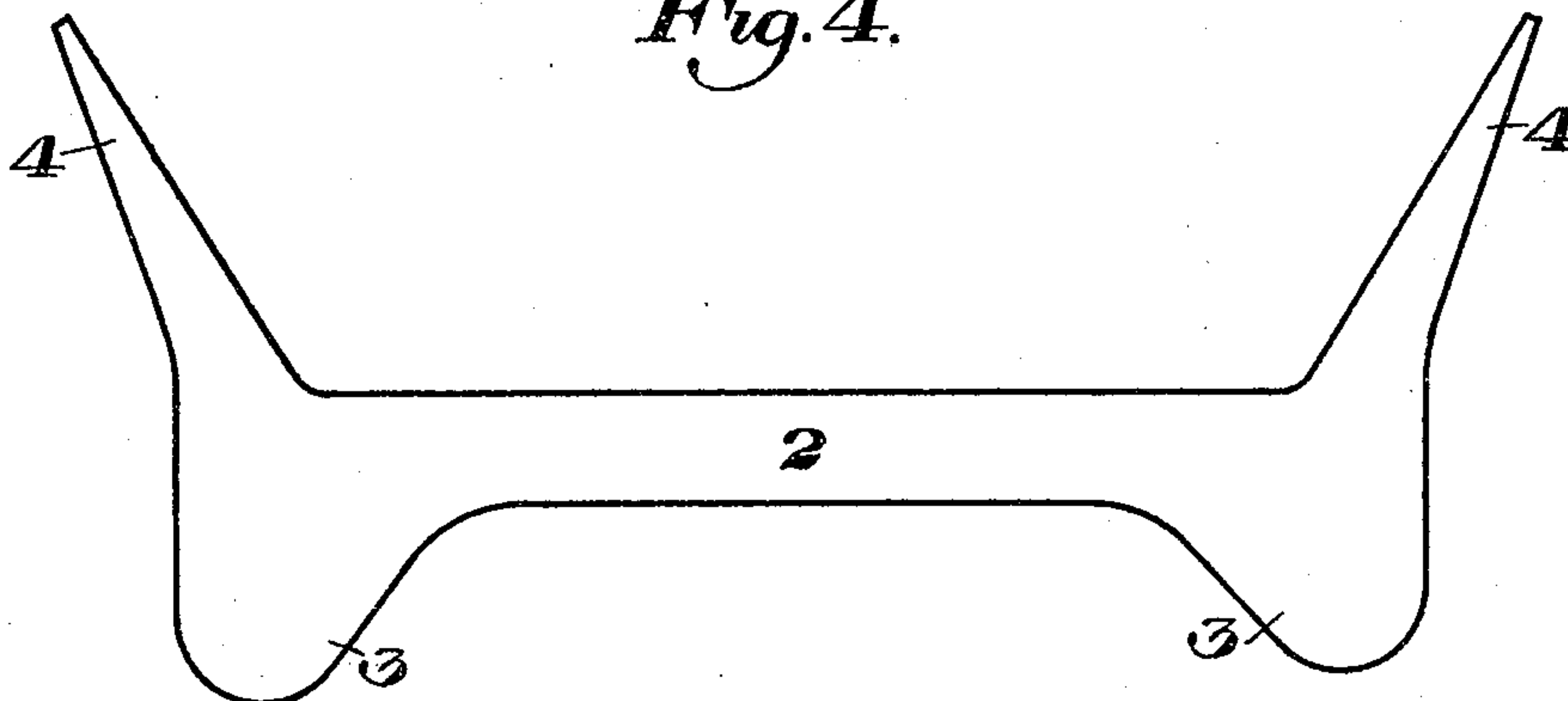


Fig. 4.



WITNESSES

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Fig. 5.

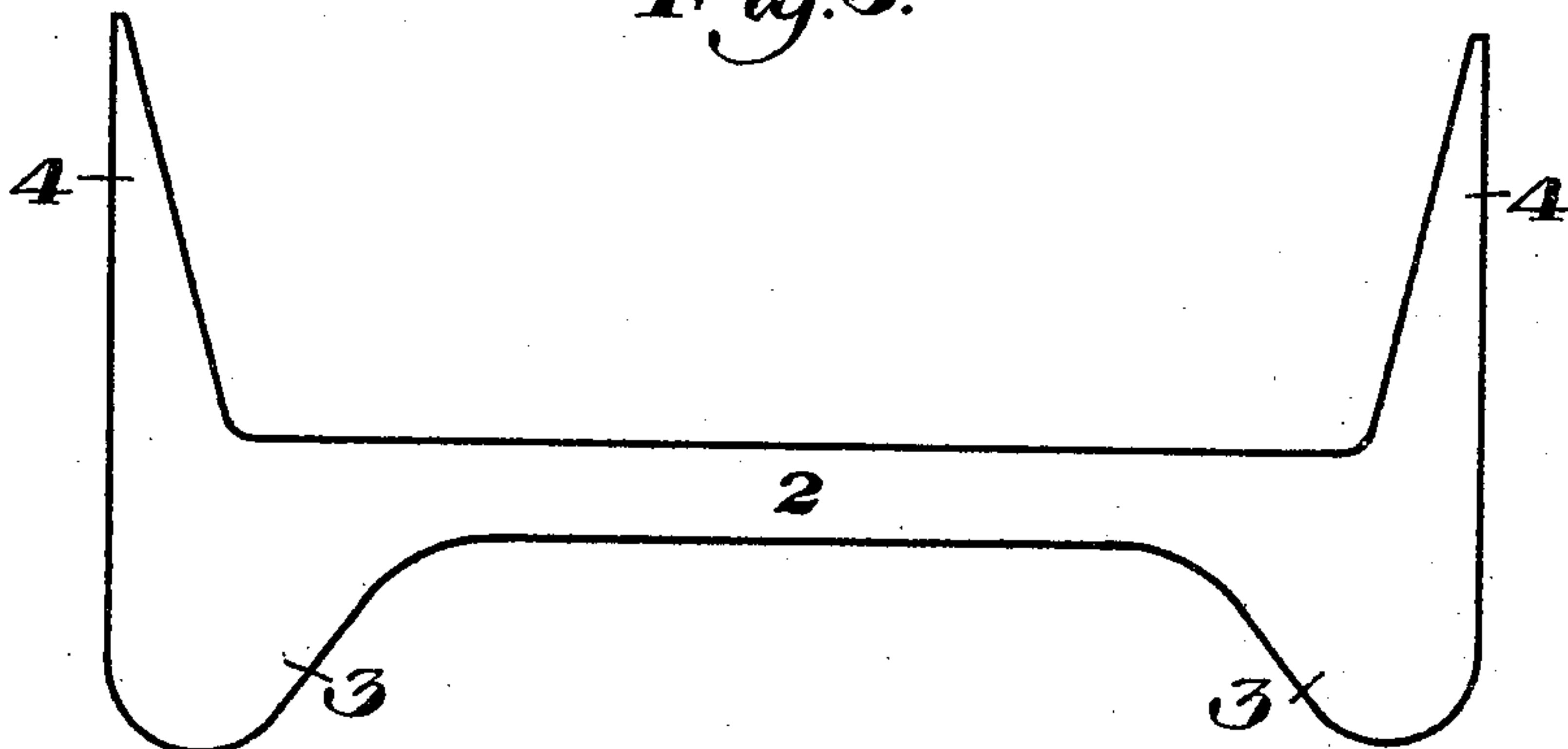


Fig. 6.

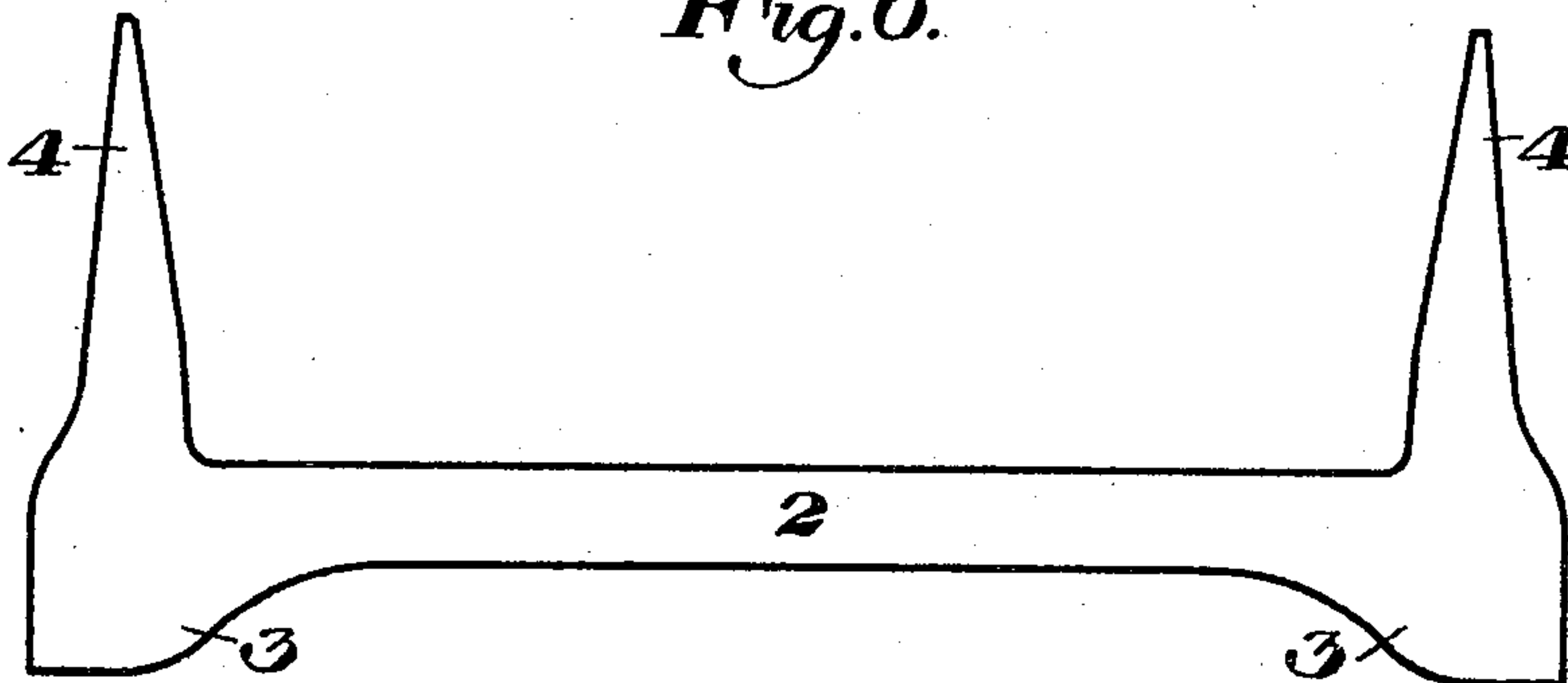


Fig. 7.

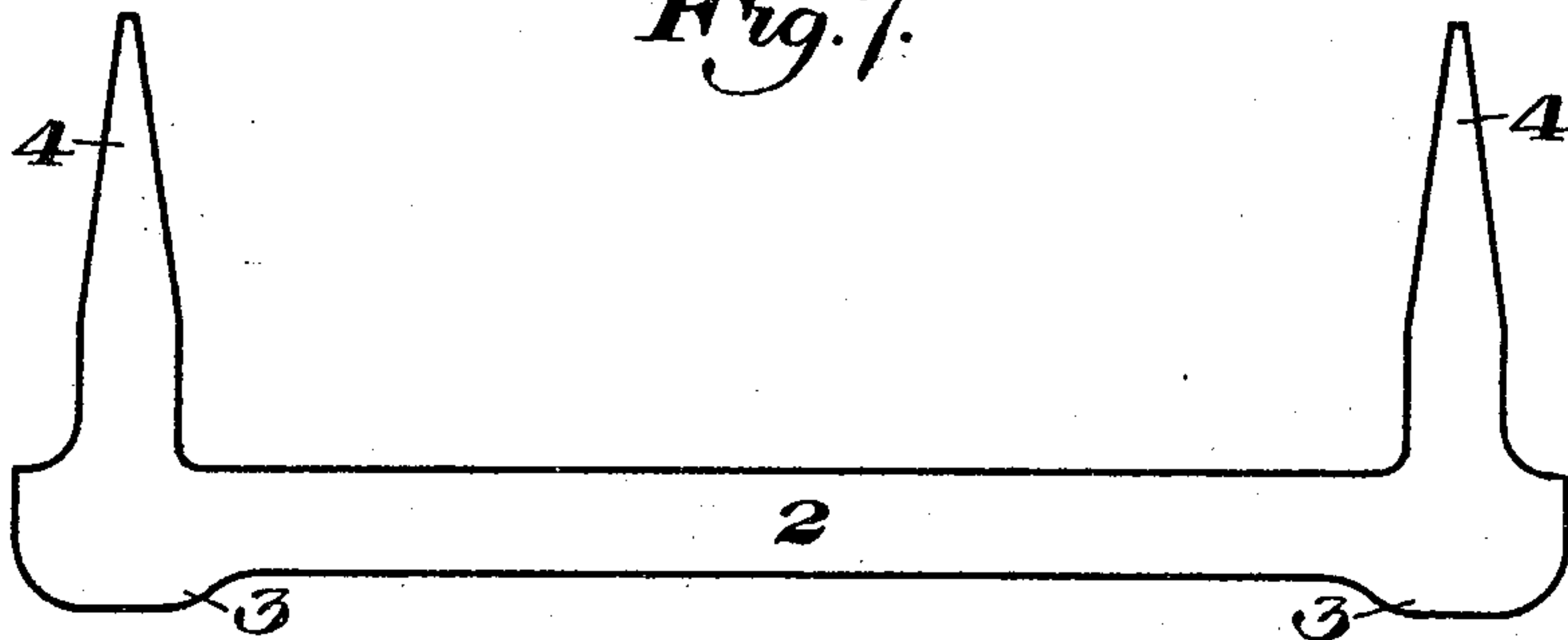
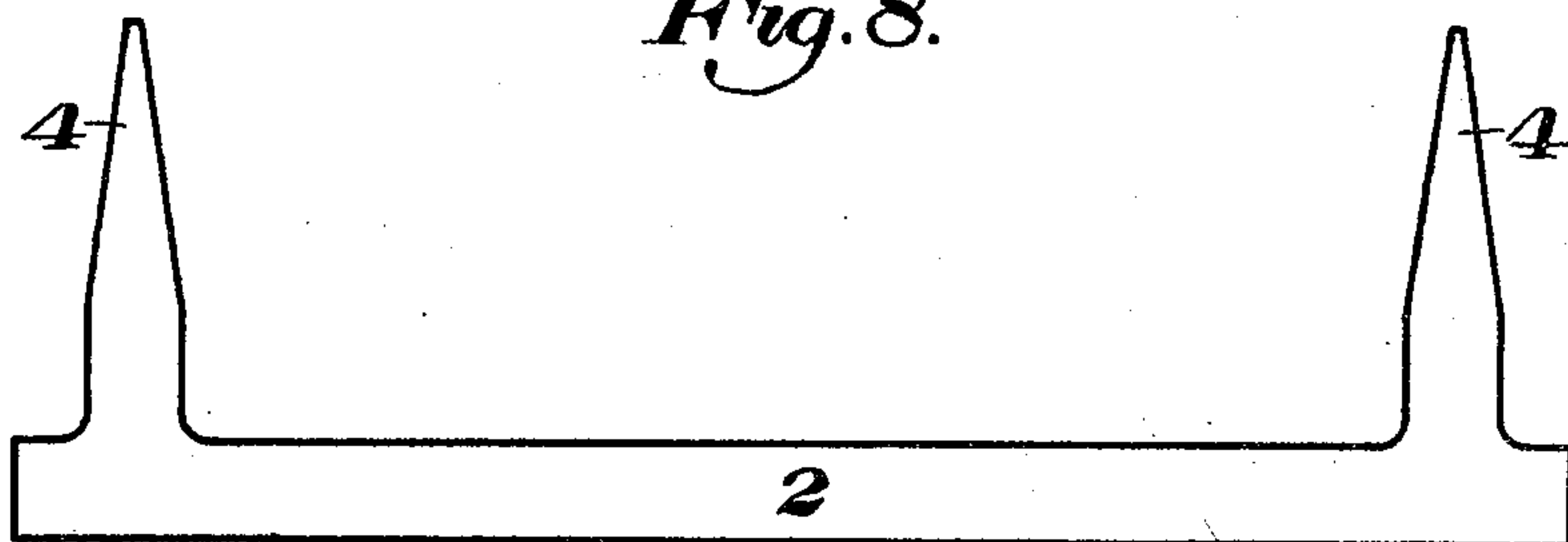


Fig. 8.



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Fig. 9.

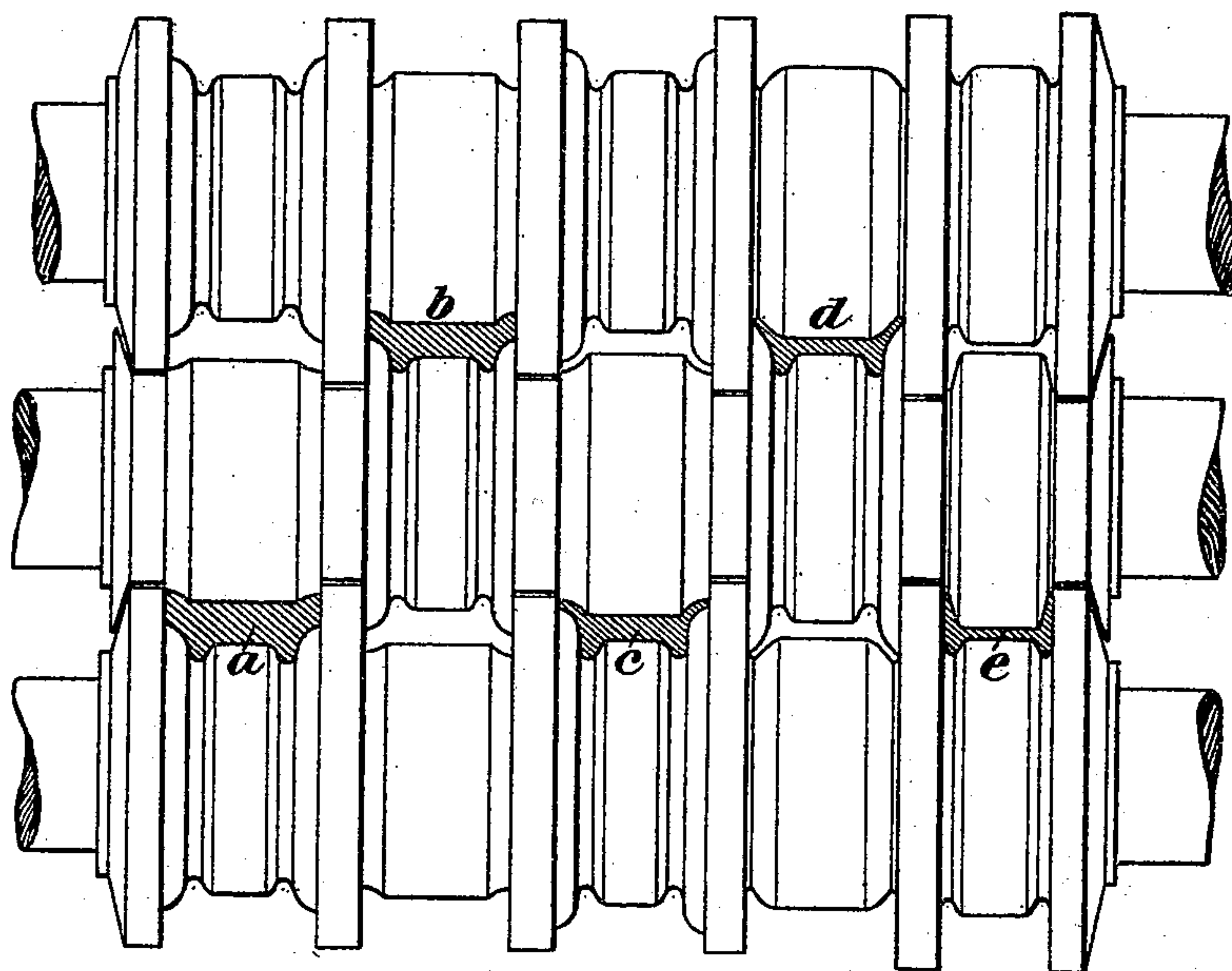
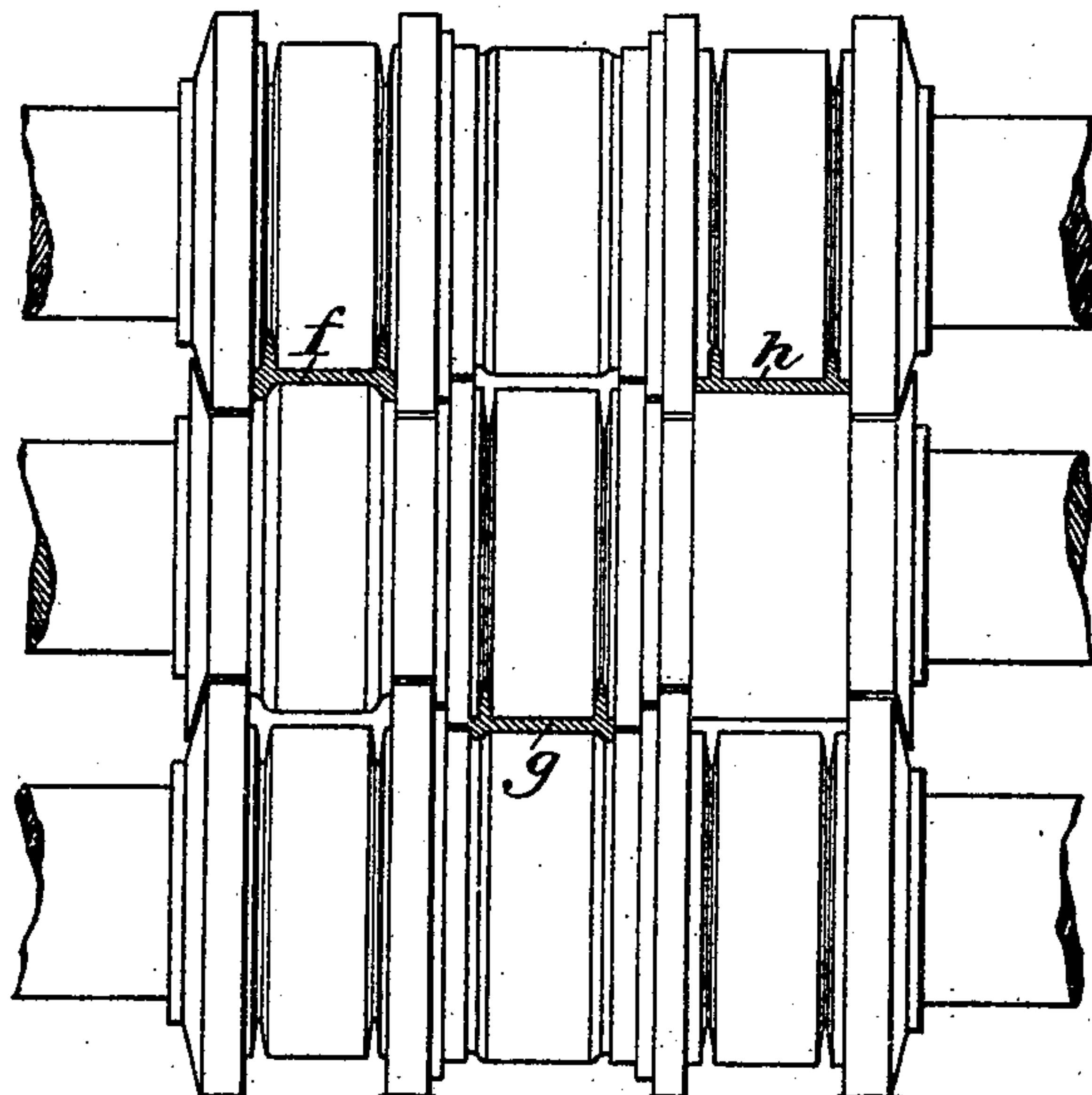


Fig. 10.



WITNESSES

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UNITED STATES PATENT OFFICE.

ANDREW MORRISON, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE
DILWORTH, PORTER & COMPANY, OF SAME PLACE.

ROLLING TIE-PLATES.

SPECIFICATION forming part of Letters Patent No. 616,798, dated December 27, 1898.

Application filed April 1, 1898. Serial No. 676,103. (No model.)

To all whom it may concern:

Be it known that I, ANDREW MORRISON, of
Pittsburg, in the county of Allegheny and
State of Pennsylvania, have invented a new
and useful Improvement in Rolling Tie-
Plates, of which the following is a full, clear,
and exact description, reference being had to
the accompanying drawings, forming part of
this specification, in which—

Figures 1 to 8, inclusive, are diagrammatic
views showing the shapes of the successive
passes through which the metal is moved in
the rolling of the tie-plate blank, and Figs.
9 and 10 are front elevations of the rolls which
I have preferably employed.

My invention relates to the making of tie-
plates by rolling a long bar of the proper cross-
section from which the tie-plates are cut; and
it consists in an improved set of passes, where-
by long flanges or claws may be rolled along
one face of the plate and set in a short dis-
tance from its side edges. Heretofore in the
rolling of these bars it has been found im-
possible to produce ribs or claws greater than
five-eighths of an inch in depth, while by my
improved system these flanges may be rolled
of almost any desired depth.

In the drawings, Fig. 1 shows the first pass,
wherein the plate 2 is formed with bumps or
ribs 3 3 and with outwardly-extending flanges
or lips 4 4. In the second and third passes
(shown in Figs. 2 and 3) the plate is elongated
and made thinner both in the body and the
lips. In the fourth pass (shown in Fig. 4) the
lips are bent more nearly to a right-angled
position with the body, while in the fifth pass
(shown in Fig. 5) they are brought to this
right-angled position. The body of the plate
having been brought to about the proper
thickness in the fifth pass, with the flanges or
claws extending from its side edges at right
angles, I then proceed to increase the width
of the plate, forcing the metal in the bumps
outwardly and upwardly by lateral pressure
thereon, so as to widen the plate and at the
same time prevent the shortening of the
flanges. This action is begun in the sixth
pass, (shown in Fig. 6,) carried on in the
seventh pass, wherein the base portions of
the flanges are brought into parallelism, and
completed in the eighth pass, (shown in Fig.
8,) wherein the bumps are entirely removed

by forcing them into the body of the plate
and into the flanges. I am thus enabled to
produce a tie-plate bar having the cross-sec-
tion shown in Fig. 8, with flanges of any de-
sirable depth and set inwardly from the side
edges of the plate.

It will be noted that the metal for widen-
ing the plate is obtained from the bumps and
that such metal is forced outwardly by lat-
eral pressure. A vertical or flattening pres-
sure may be brought upon the bumps simul-
taneously with the lateral pressure, if de-
sired; but this lateral pressure is essential
for obtaining the widening of the plate ac-
cording to my invention.

In Figs. 9 and 10 I show one method of ar-
ranging the collars of the rolls to give the de-
sired passes, these passes being shown at *a*,
b, *c*, *d*, *e*, *f*, *g*, and *h*.

The advantages of the invention will be ap-
parent to those skilled in the art, since by it
flanges of any desirable width or depth may be
formed, whereas these flanges were formerly
restricted to a depth of about five-eighths of
an inch or less on account of the inability to
form longer flanges during the rolling. The
size and contour of the passes, especially that
of the first four or five passes, may be varied
without departing from my invention, since I
consider myself the first to roll the tie-plate
bar of narrower width than the final bar,
with flanges projecting from its side edges
and opposite bumps or ribs, and then widen
the plate by forcing the metal of the bumps
outwardly by lateral pressure into the body
and flanges, so as to prevent substantial short-
ening of the flanges and to extend the plates
sidewise beyond the flanges.

I claim—

1. In the rolling of tie-plate bars, rolls hav-
ing preliminary passes arranged to form a
plate with projecting flanges, and bumps op-
posite the said flanges, and succeeding passes
arranged to press laterally against the bumps
and force them outwardly beyond said flanges
to widen the plate; substantially as described.

2. In the rolling of tie-plate bars, rolls hav-
ing preliminary passes arranged to form lat-
erally-projecting flanges upon the plate, and
bumps opposite to said flanges, intermedi-
ate passes arranged to force the flanges into
a substantially right-angled position at the

side edges of the plate, and final passes arranged to press laterally against the bumps and force them outwardly beyond said flanges to widen the plate; substantially as described.

- 5 3. In the rolling of tie-plate bars, rolls having a set of eight passes, the first four passes being arranged to reduce the thickness of the plate and form angular flanges at its edges, and oppositely-located bumps, a fifth pass ar-
10 ranged to straighten the flanges into a right-angled position, and the three final passes being arranged to force the metal of the bumps into the body of the plate so as to widen it beyond the flanges and prevent substantially
15 shortening of the flanges, substantially as described.

4. The method of rolling tie-plate bars consisting in gradually thinning the plate-body and forming laterally-projecting flanges along the side edges, with bumps located opposite thereto, forcing said flanges into a right-angled position at the edge of the plate and pressing laterally against the bumps so as to force them outwardly and widen the plates beyond the flanges; substantially as described. 2

In testimony whereof I have hereunto set my hand.

ANDREW MORRISON.

Witnesses:

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G. I. HOLDSHIP.