

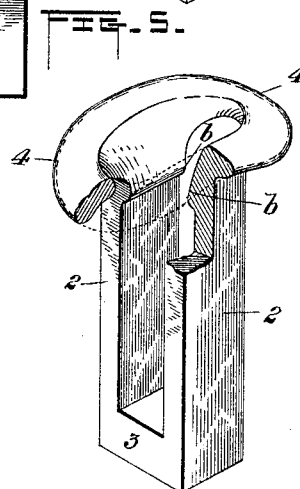
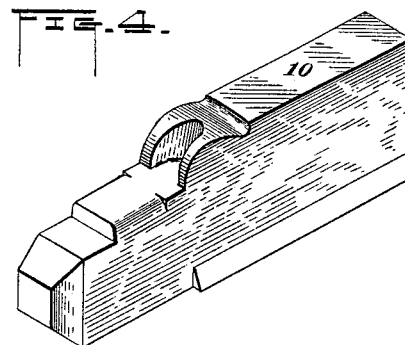
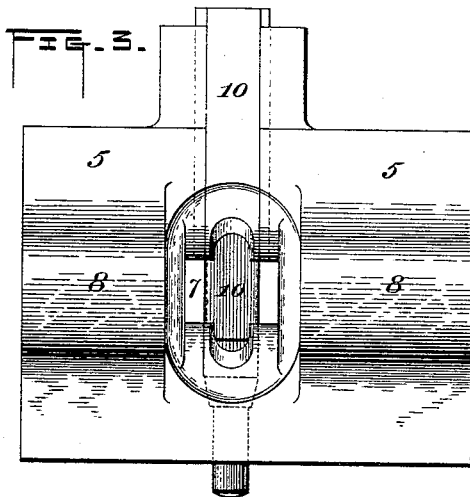
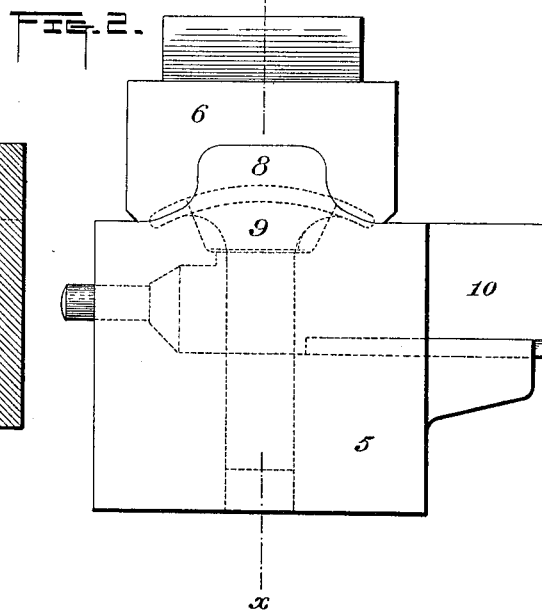
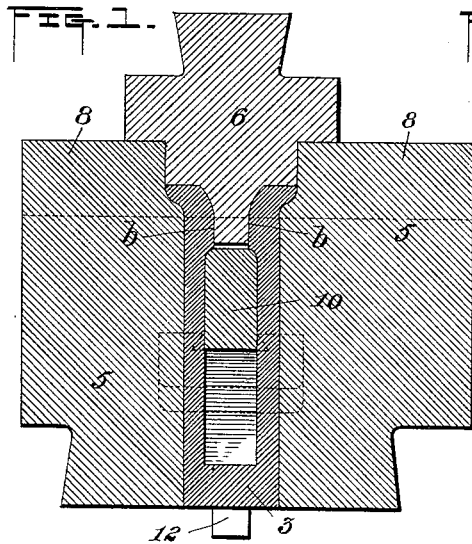
(No Model.)

J. H. SIMPSON.

DIE FOR THE MANUFACTURE OF DRAW BARS.

No. 386,726.

Patented July 24, 1888.



Witnesses
L. G. Comer, Jr.
E. H. Comer.

Inventor,
James H. Simpson
by W. B. Russell & Sons,
Attorneys.

UNITED STATES PATENT OFFICE.

JAMES H. SIMPSON, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO CARNEGIE,
PHIPPS & CO., (LIMITED,) OF SAME PLACE.

DIE FOR THE MANUFACTURE OF DRAW-BARS.

SPECIFICATION forming part of Letters Patent No. 386,726, dated July 24, 1888.

Application filed May 19, 1888. Serial No. 274,421. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. SIMPSON, of
Pittsburg, in the county of Allegheny and
State of Pennsylvania, have invented a new
and useful Improvement in Dies for the Manu-
5 manufacture of Draw-Bars; and I do hereby declare
the following to be a full, clear, and exact de-
scription thereof, reference being had to the
accompanying drawings, forming part of this
10 specification, in which—

Figure 1 is a vertical cross sectional view of
my improved dies on the line $x x$ of Fig. 2.
Fig. 2 is a side view. Fig. 3 is a plan view of
the bed-die and mandrel. Fig. 4 is a perspec-
15 tive view of the mandrel. Fig. 5 is a perspec-
tive view of one of the finished draw-bars.

Like symbols of reference indicate like parts
in each.

The draw-bar which it is the object of my
20 invention to make is one of the form shown in
Fig. 5, in which 2 represents the side bars or
straps; 3, the connecting end piece, and 4 the
head or ring. The side bars have shoulders
or enlargements b on their opposing faces; and
25 it is the object of my invention to provide for
the proper support of these shoulders or en-
largements during the operation of welding
the head to the side bars.

Referring to the figures on Sheet 1 of the
30 drawings, 5 is the bed-die and 6 is the moving
die which is fixed to the end of the reciprocating
plunger, drop, or hydraulic press. The
surface of the bed-die is shaped to correspond
with the under side of the finished draw-bar
35 head, and in the center is a vertical hole, 7, in
which the shank of the draw-bar fits.

8 8 are the lugs or stops on the top of the
die-block at the side, arranged to limit the
motion of the moving die. The moving die or
40 plunger 6 has a central tongue, 9, which is
adapted to enter through the ring 4 into the
space between the side bars, 2, as shown in
Fig. 1. The face of the moving die is made to
conform to the shape of the head of the draw-
45 bar.

There is a cavity made in the die-block ex-
tending from the side through the block to the
central hole, 7, and in this cavity is adapted
to be placed a removable piece or mandrel, 10,
50 which is made of proper size and shape to fill

up the cavity of the die-block and to afford a
support on the upper side for the projecting
flange of the draw-bar head. At the forward
end of the mandrel 10 it fits between the straps
of the draw-bar, and has its bearings and sup- 55
port in a cavity on the other side of the hole
7. This last-named cavity also extends en-
tirely through the die-block to the outside, so
as to afford room through which a pin, 11, can
be inserted for the purpose of ejecting the 60
mandrel. As shown in Fig. 1, this mandrel,
in fitting between the straps of the draw-bar,
supports the inwardly-projecting shoulders b
at the upper ends of the latter, and thus pre-
vents distortion or displacement of these 65
shoulders and insures perfect uniformity in
their positions on the different draw-bars pro-
duced by the dies. To hold the mandrel
firmly in position, it is dovetailed at the bot-
tom and fits within a correspondingly-mor- 70
tised slideway in the bottom of its cavity in the
die-block.

The operation of the dies is as follows: The
shank and head of the draw-bar, which have
been first preferably united as a preliminary 75
step in the manner described in my Patent No.
369,264, dated August 30, 1887, are heated to
a welding heat and are placed in the bed-die,
the shank of the draw-bar fitting in the verti-
cal cavity 7 of the bed-die, as shown in Figs. 80
1 and 2. The mandrel 10 is then inserted
through the bed die, as shown in Figs. 2 and
3, so that its tongue shall fit between the straps
of the draw-bar shank, being supported in the
cavity on the other side of the shank, and that 85
the upper part of the mandrel shall fit under
that part of the head of the draw-bar which is
left unsupported by the cavity in the die-block.
The moving die 6 is then caused to reciprocate
and to strike upon the head of the draw- 90
bar, thus welding it firmly to the straps and
giving the proper curvature and shape to the
head. The mandrel during this operation
fits under and supports the shoulders on the
opposing faces of the straps of the draw-bar 95
shank, thus preventing them from being dis-
torted or displaced. All this is clearly shown
in Figs. 1 and 2 of the drawings. When the
welding operation is completed, the moving
die 6 is retracted, a wedge is inserted through 100

a hole, 12, under the bottom of the draw-bar shank, and by driving in this wedge the shank is raised within the die-block, so as to lift the head of the draw-bar above the top of the mandrel and to clear the mandrel so that the mandrel may be drawn out to release the draw-bar. The pin 11 is then inserted into the end of the mandrel-cavity and is driven in by a hammer, so that it shall strike the end of the mandrel and shall drive the latter back out of the die-block. The mandrel having been removed from between the straps of the draw-bar shank, the draw-bar can easily be removed from the die.

From this description it will be seen that the whole operation of the dies is such that the draw-bars are made rapidly and with a minimum of manual labor and with great uniformity in the product of the dies.

I do not claim herein, broadly, the use of a mandrel for supporting shoulders on the inner faces of the draw-bar shanks, since I have made that the subject-matter of a prior application, filed by me on March 12, 1888, Serial No. 266,935. In the present application I claim, specifically, the construction of the

mandrel which I have described, and also claim the die having part of its working-face removable.

I claim—

1. An improvement in dies for forging draw-bars, which consists in a bed-die of proper surface form to shape the face-plate of the bar, having a cavity for reception of the draw-bar shank, said die having a removable section comprising a part of the face-plate shaping-surface, substantially as and for the purposes described.

2. An improvement in dies for forging draw-bars, which consists in a bed-die of proper surface form, a cavity for reception of the draw-bar shank, and a lateral cavity, and a removable mandrel which is inserted in said lateral cavity, a part of the surface of the die being made integral with the mandrel, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 17th day of May, A. D. 1888.

JAMES H. SIMPSON.

Witnesses:

W. B. CORWIN,

T. W. BAKEWELL.