

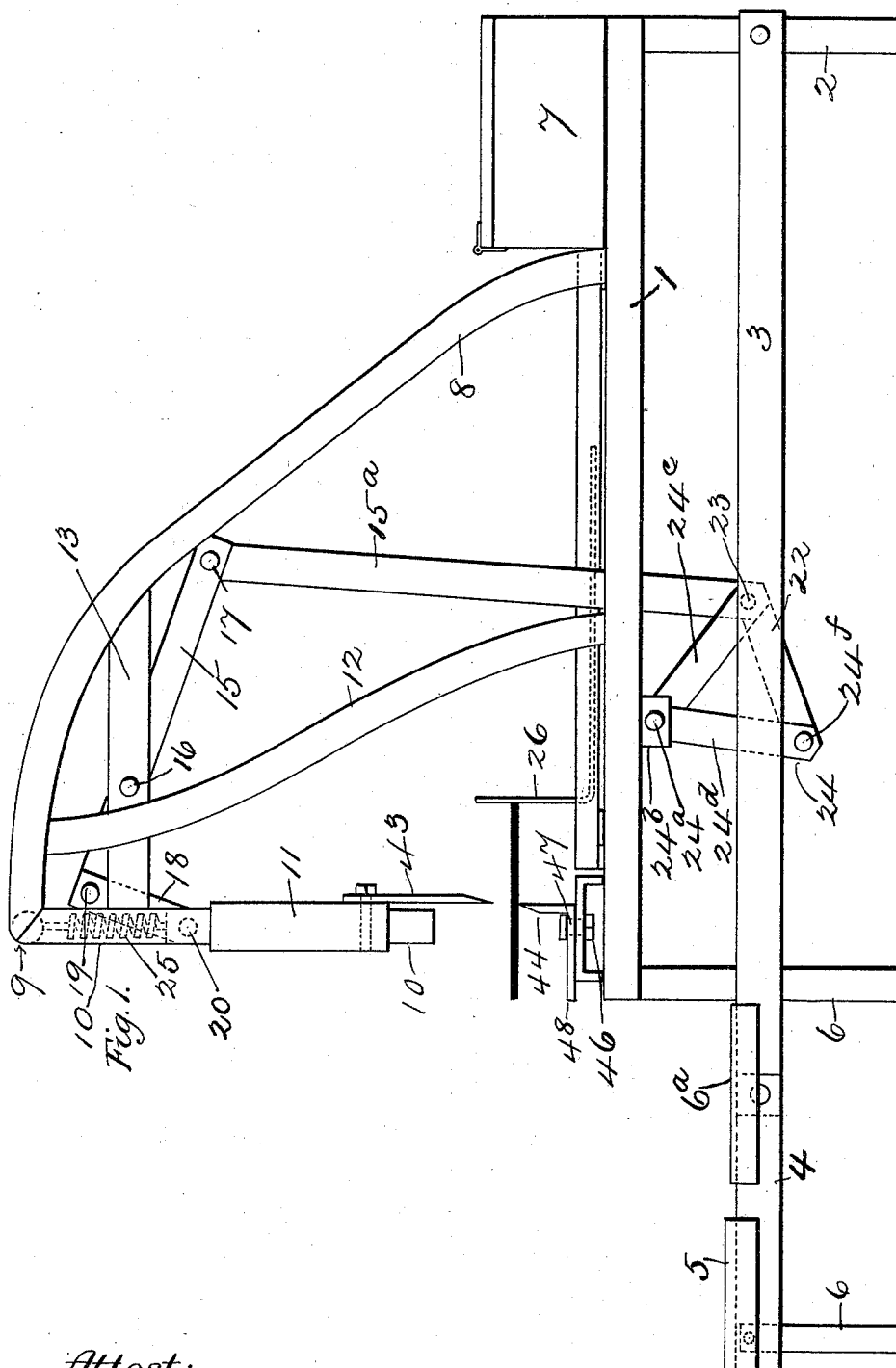
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3 Sheets—Sheet 1.

W. S. BAIR & S. M. THOMPSON.
SLATE PUNCHING AND DRESSING MACHINE.

No. 541,823.

Patented July 2, 1895.



Attest:

Edw. H. Hough.
C. L. Gooch.

Inventors
Winfield S. Bair
Samuel M. Thompson
By *Chas. J. Gooch*
attorney.

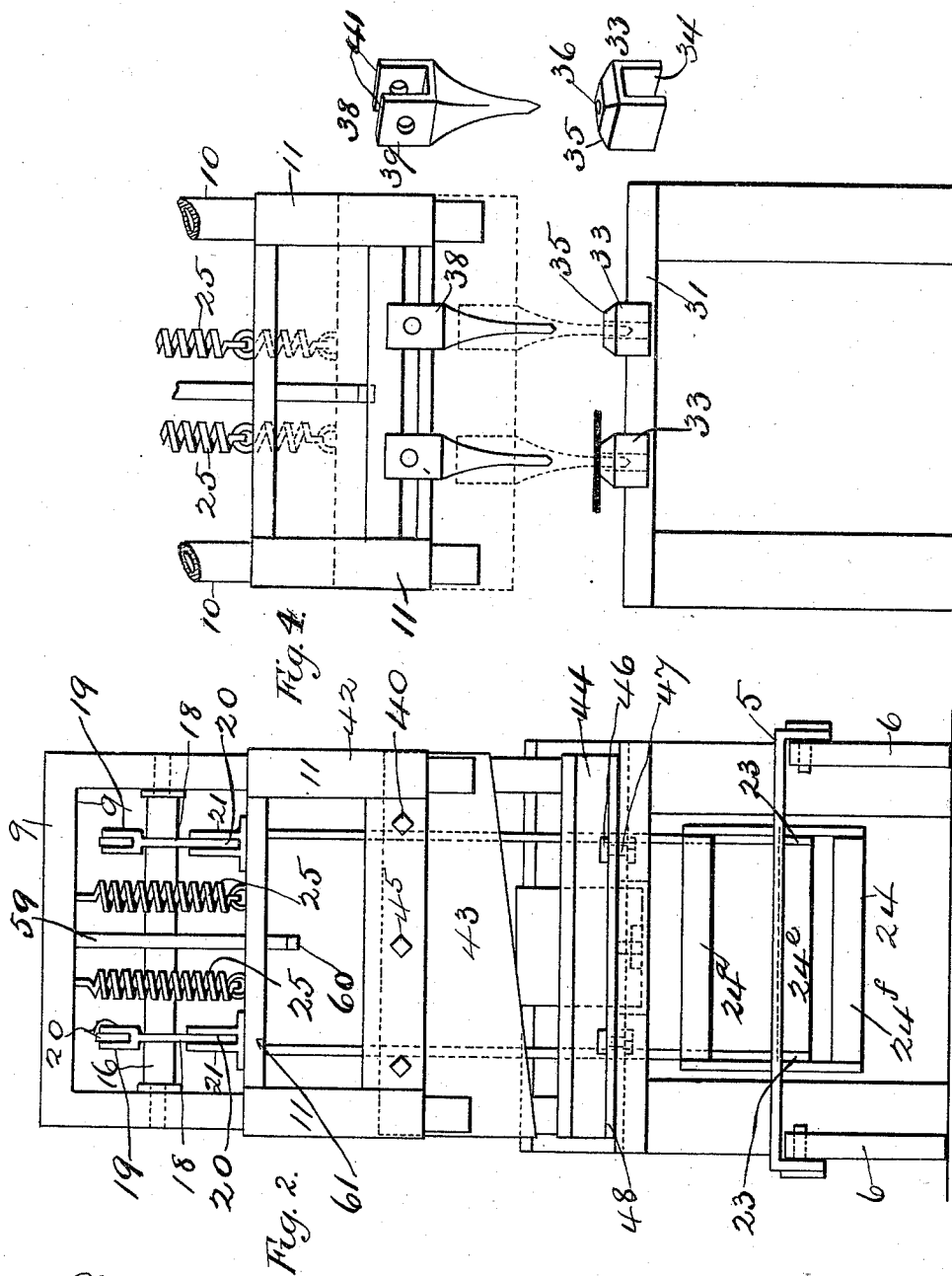
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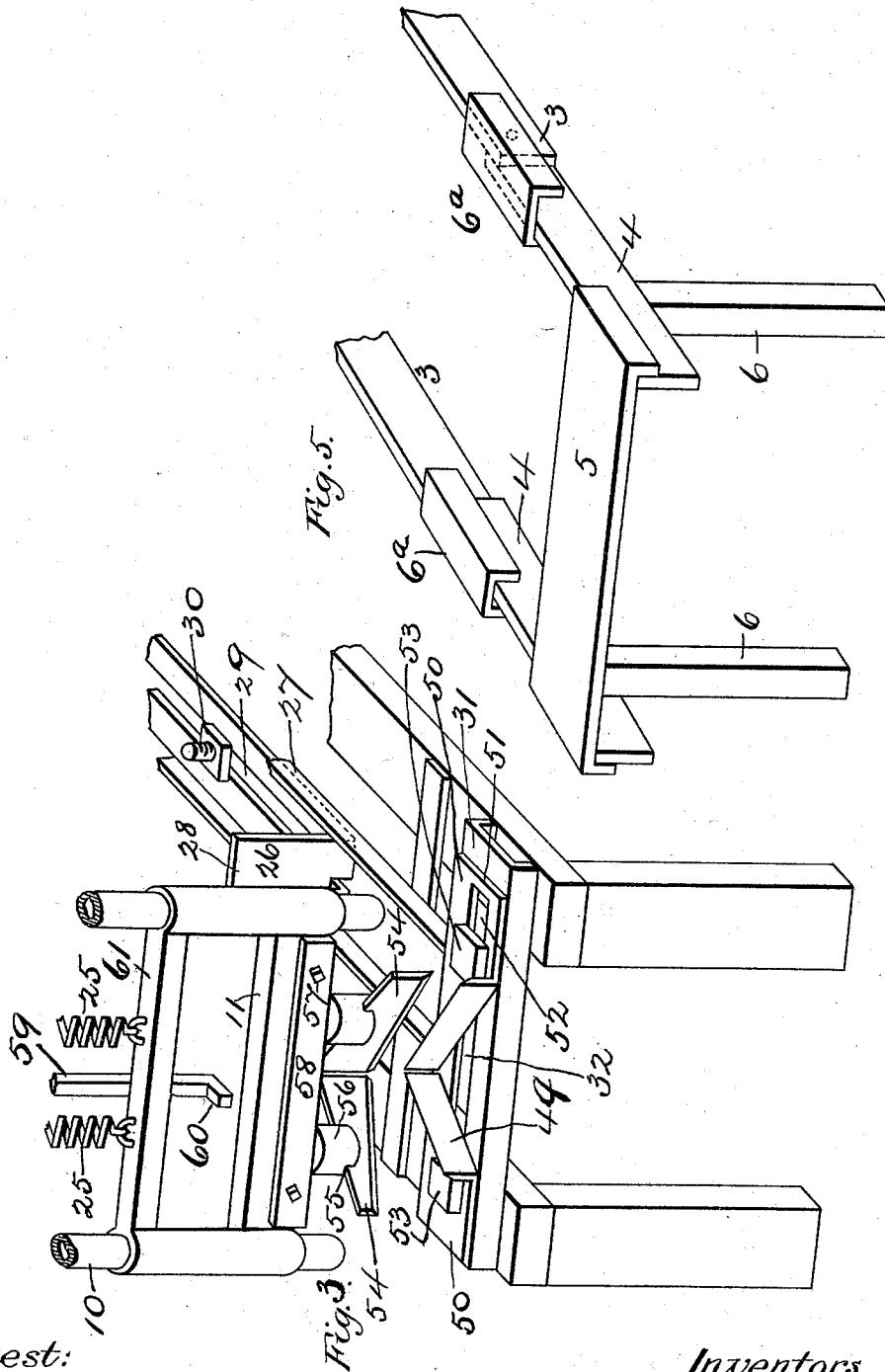
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S. M. Thompson
Chas. J. Gooch

Inventors
Winfield S. Bair
Samuel M. Thompson
By Chas. J. Gooch
Attorney

UNITED STATES PATENT OFFICE.

WINFIELD S. BAIR AND SAMUEL M. THOMPSON, OF HUNTINGDON,
PENNSYLVANIA.

SLATE PUNCHING AND DRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 541,823, dated July 2, 1895.

Application filed March 7, 1894. Serial No. 502,682. (No model.)

To all whom it may concern:

Be it known that we, WINFIELD S. BAIR and SAMUEL M. THOMPSON, citizens of the United States, residing at Huntingdon, in the county of Huntingdon and State of Pennsylvania, have invented certain new and useful Improvements in Slate Punching and Dressing Machines; and we do hereby 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.

This invention relates to improvements in machinery for cutting, trimming and punching slate.

The object of our invention is to produce a single machine whereby slates of different sizes and shapes may readily be trimmed, cut to the required size and shape and punched with holes as required.

The details of the construction of the machine, and the points of novelty present therein are fully set forth in the following specification and claims.

In the accompanying drawings, Figure 1 represents a side elevation of our improved machine. Fig. 2 represents a front elevation thereof. Fig. 3 represents a detail view of a portion of the machine adapted for cutting the slates in other than square forms. Fig. 4 represents a detail view of a portion of the machine adapted for punching holes in slates. Fig. 5 represents a detail view of part of the machine.

1 represents the frame or table upon or within which the operating mechanism is supported. To the rear legs, 2, of the table are hinged arms, 3, to whose front ends are also hinged shorter arms, 4, to which a seat, 5, for the operator is attached. This seat is supported when in use by legs, 6, hinged to the front of the short arms, 4. When the machine is out of use the seat and its connections can be turned back and folded upon the top of the machine so as to be out of the way, lessen the space occupied by the machine when not in use, and render it compact for transportation.

7 represents a tool-box on the rear of the table within which the several cutters, punches, and other removable parts of the appara-

tus may be contained when not in use. Extending upwardly from the table is a frame within which the reciprocating devices for actuating the cutters and punches are contained. This frame consists of upwardly and forwardly-curved arms or uprights, 8, extending from the rear to a position above the front of the table, by which construction ample space is provided at the front of the machine for the manipulation of the slates. These arms or uprights, 8, are connected at their front ends by a cross-bar or rod, 9, and from them depend tubular rods, 10, which serve as guides for the reciprocating plunger, 11, to which the cutters and punches are removably attached.

12 represents bracing uprights or arms attached, respectively, to the table and the forwardly-curved portions of the uprights, 8. Said uprights, 8, and guide rods, 10, are additionally braced by longitudinal strips, 13, which additionally serve as a bearing for the rod 16, presently referred to, and constituting the shaft of the walking-beam which consists of longitudinal arms 15, vertical rods, 15^a, the latter being connected at their rear and center, respectively, by transverse tubular rods, 16, 17, links, 18, pivotally connecting, at 19, 20, the front ends of said arms, 15, and the plunger, 11, by ears, 21, extending up from said plunger to receive the lower ends of said links, as shown.

The treadle, 24, consists of three triangularly arranged lever arms, 22, 24^c, and 24^d, the rear ends of the arms, 22, and the lower ends of the arms, 24^c, being connected by a rod, 24^e, to which the lower ends of the vertical arms, 15^a, of the walking-beam are pivotally connected at 23, the front ends of said arms, 22, and the lower ends of the arms, 24^d, of the treadle being connected by a rod, 24^f, while the upper ends of the arms, 24^c and 24^d, of the treadle are pivotally connected to a rod, 24^a, having end bearing in ears, 24^b, depending from the sides of the framing as shown in Fig. 1. It will thus be seen that the treadle is pivotally hung at its top on the framing and that the walking-beam is at its lower ends pivotally connected with and supported on the rear bottom portion of the treadle.

25 represents springs of suitable form connecting the plunger and the cross-bar, 9, for the purpose of securing the upward return of the plunger on the pressure of the operator's foot upon the treadle being released. It will thus be seen, referring to the drawings, that the forward pressure of the operator's foot upon the treadle will force the same rearwardly and force the lever arms, 22, upwardly which, in their turn, will raise the rear end of the walking-beam and cause it to rock on its pivot and force the plunger down toward the work to be operated upon. Upon the pressure upon the treadle being released the springs, 25, will draw up the plunger, 11, and the thereto-connected links, 18, and front end of the walking-beam in readiness for another stroke.

26 is a gage longitudinally adjustable in a guide, 27, on the top of the table. This gage is for the purpose of regulating the position of the slates to be operated upon so that, when said gage is adjusted, the position of the slates while being operated upon will always be similar. Said gage consists of a front lip or flange, 28, against which the ends or edges of the slates have bearing and a horizontal slotted portion, 29, a screw and nut, 30, serving to secure said gage in its adjusted position with its guide as desired.

31 represents an anvil or base extending transversely of the front of the table and having a longitudinal slot, 32, therein within which the lower cutters and other tools are removably secured, and interchangeable, by bolts and nuts or other suitable means.

33 represents anvils upon which the slate to be punched rests while being punched with holes. These anvils have depending flanges, 34, which extend over and grip the sides of the base anvil, 31, and a substantially-conical shaped top, 35, having at its center or apex a hole, 36, through which the punch and the pieces of slate punched out pass, said hole, 36, being directly above the slot, 32, in the base, 31. If desired, one of said anvils, 33, may be provided with an ordinary upwardly-extending lip or flange at the outer side, similar to the depending flange, 34, to serve as a gage against which the sides or other edges adjacent to which the holes are to be formed rest for the purpose of uniformly regulating the position at which said holes shall be made. These anvils, 33, are free to slide along the base, 31 to accommodate slates of different superficial area, and may either be temporarily secured to said base, 31, by screws or similar means, or their depending flanges, 34, may be adapted to grip said base with sufficient tenacity to render the employment of other attaching means unnecessary.

38 represents the punches. These may either have a single attaching lip, 39, extending upwardly therefrom so as to be removably secured by nut, 40, or otherwise to the

plunger, or they may have a U-shaped clip, 41, at their upper ends which may embrace the lower portion of the plunger. Said U-shaped portion may either be of sufficient springiness, or have sufficient gripping power to grip the plunger independently of other attaching means, or they may be secured to said plunger by nuts and bolts or other suitable means. The plunger, it will be observed, is of cross-head shape with tubular ends, 42, through which the depending guide rods or tubes, 10, pass. By such construction a perfectly steady and straight vertical movement is always assured to the plunger.

43, 44, represent the knives employed for trimming the edges of the slates or cutting them to the desired size. The upper of these knives, 43, is removably attached to the plunger by nuts and bolts 45, while the lower knife, 44, is removably secured in position upon the base anvil, 31, by nuts, 46, engaging with screws, 47, passed through holes in the horizontally-flanged portion, 48, of said knife and through the slot, 32, in the base anvil, 31. The adjusted position of the gage, 26, against which the edge of the slate to be cut or trimmed rests regulates the position of the cut on the slate.

When it is desired to cut slates into diamond, octagonal, or other ornamental shapes, we construct the lower knives, 49, Fig. 3, with a horizontal flange, 50, having an angularly-shaped end, 51 and a bolt-hole, 52, adjacent thereto through which a bolt, or other securing means, 53, is passed to and through the slot, 32, in the base anvil, 31. These knives are, it will readily be understood, adjustable in said slot, 32, so as to operate upon slates of varying size, and on different portions of a slate as may be required. The upper knives, 54, are grippingly secured in a slot, 55, in a ring or ferrule, 56, which is adjustably secured, in any suitable manner, in a slotted U-shaped carrier, 58, which embraces the lower edge of the plunger or cross-head, 11, and is held thereto either by friction or by other retaining means as screws, 57, or the like. The upper edges of the knives, 54, and the slots in the rings or ferrules are or corresponding shape and size so that the connection between said knives and slots in the rings or ferrules will be perfectly secure and will not necessitate any other retaining means. The knife-carrying ferrules, 56, are adjustable lengthwise of the slot in the carrier, 58, to admit of the knives operating upon slates of varying size. Said rings or ferrules, 56, may be turned in said carrier so as to present said knives at varying angles whereby they are rendered capable of cutting either diamond shaped or octagonal slates without rendering it necessary to employ different knives for such different shapes. Knives for cutting other forms can be readily and similarly applied and used according to requirement. Similarly, the lower knives, 49,

can be readily turned upon their connecting screws to correspond with the position of the upper knives.

57 are screws connecting the carrier, 58, to the plunger.

59 represents a vertical rod or arm depending from the cross-bar, 9, and having a hooked lower end, 60, against which latter the top bar, 61, of the plunger, 11, impinges on its downward movement, said rod serving as a stop to regulate the downward movement of said plunger and the upper knife carried thereby.

It will readily be observed by one skilled in the art to which this invention appertains, that a machine of the character described can readily be constructed at slight expense; that it is simple in construction and has no complicated parts to get out of order in ordinary use.

The attachments whereby the machine can be adapted to either cut or trim, punch, or shape slates into ornamental designs are simple in construction, can readily be placed in and removed from position and adjusted as required, and that the machine can be operated by even an unskilled person.

Having thus described our invention, what we claim is—

1. A machine for cutting, dressing and punching slate, consisting of a table or support, a skeleton frame consisting of forwardly-curved arms extending from the rear to the front of the table, a cross-bar connecting the front ends of said arms, vertical uprights connected at their lower ends to said table and at their upper ends to the top portions of said curved arms, tubular rods depending from the front ends of said curved arms and longitudinal bracing strips connecting and bracing said curved arms and depending tubular rods, a transverse shaft having bearing in said bracing strips, a walking-beam consisting of longitudinal arms having rocking bearing on said shaft and vertical arms connected at their upper ends to said longitudinal arms, a treadle rockingly suspended from the table and having rear connection with the lower ends of the vertical arms of the walking-beam, a plunger provided with tubular ends and having vertical reciprocation thereby on the tubular rods depending from the cross-bar, links pivotally connecting the plunger and the front ends of the longitudinal members of the walking-beam, cutting tools removably secured to said plunger and to a suitable support on the table, respectively, substantially as and for the purpose set forth.

2. A machine for cutting, dressing and punching slate, consisting of a table, a skeleton frame consisting of forwardly-curved, or arched, arms extending from the rear to the front of the table, a cross-bar connecting the front ends of said arms, tubular rods depending from the front ends of said arms, vertical bars connected at their lower ends to said table and at their upper ends to said curved bars, longitudinal brace-bars connecting and

bracing said curved arms and the depending tubular rods, a transverse shaft having bearing in said brace-bars, a walking-beam consisting of longitudinal arms having rocking bearing on said shaft and vertical arms connected at their upper ends to said longitudinal arms, a treadle rockingly suspended from the table and having rear connection with the lower ends of the vertical arms of the walking-beam, a plunger having top and bottom cross pieces and an open space medially thereof, a stop rod depending from the frame cross-bar and having a hooked lower end, said plunger being provided with tubular ends and having vertical reciprocation thereby on the tubular rods depending from the frame cross-bar, links pivotally connecting the plunger and the front ends of the longitudinal members of the walking-beam, springs connecting the plunger and the frame cross-bar, and cutting or dressing tools removably secured to said plunger and to a suitable support on the table, respectively, substantially as and for the purpose set forth.

3. A machine for cutting, dressing and punching slate, consisting of a table, an anvil transversely mounted thereon and consisting of an angle plate of substantially reversed U-shape in cross section and having a central longitudinal slot in its top face, cutters having at their front upwardly-extending knife edges and rearwardly-extending, slotted, horizontal flanges, bolts and nuts adapted to adjustably secure said knives on said anvils, a longitudinally-slotted gage guide mounted on said table and having upwardly-extending side flanges, a gage having a rearwardly-extending slotted flange and an upwardly-extending front lip, a frame consisting of upwardly and forwardly-arched bars extending from the rear to the front of the table, vertical and horizontal brace bars, a cross bar connecting the front ends of said arched bars and tubular rods depending from the front ends of said arched bars a plunger having eyed ends engaging said tubular rods and top and bottom cross bars, cutters having U-shaped upper portions to engage the lower cross bar of the plunger, vertical retracting-springs connecting the upper cross bar of the plunger and the cross bar of the frame, a treadle rockingly hung on the table, a walking-beam consisting of vertical rods connected at their lower ends with said treadle, horizontal rods centrally pivoted in the frame and having rear connection with said vertical rods, and links pivotally connecting the front ends of said horizontal rods and the plunger, substantially as and for the purpose set forth.

4. The combination with a table, of an anvil mounted transversely thereon and of reverse U-shape in cross-section, punch anvils having beveled and centrally-perforated top portions and depending vertical legs or flanges, a plunger having eyed ends and a lower cross-bar, punches having upwardly-

extending lips or flanges adapted to straddle
and grip the lower cross-bar of the plunger, a
skeleton frame consisting of forwardly-arched
rear bars, vertical and horizontal brace-bars
5 and depending tubes forming vertical recip-
rocal bearing for the eyed ends of the plunger,
a walking-beam having rocking bearing in
said frame, pivot links connecting said walk-
ing-beam and plunger, and a treadle sus-
10 pended from the table and connected with the
lower portion of said walking-beam, substan-
tially as and for the purpose set forth.

In testimony whereof we affix our signatures
in presence of two witnesses.

WINFIELD S. BAIR.
SAMUEL M. THOMPSON.

Witnesses to the signature of W. S. Bair:

CHAS. J. GOOCH,
FRANK G. GRIMES.

Witnesses to the signature of Samuel M.
Thompson:

JOHN W. SNYDER,
WM. P. ORBISON.