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JUNEERO LTD.**(72) Inventor: **RAND WILLIAM JAMES ().**(54) **METAL SHEARING, BENDING AND PUNCHING TOOL**(54) **OUTIL A CISAILLER, A PLIER ET A POINCONNER LES
METAUX**(57) **Abstract:**

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This invention relates to hand-operated tools for shearing, bending, or punching metal and has for its object to provide an improved tool or appliance of compact construction by means of which the aforesaid operations may be carried out for example on metal rod or strip for producing the parts required for constructional toys of the type employing perforated metal strips adapted to be bolted or otherwise secured together.

More particularly the invention relates to a tool or appliance comprising an oscillatable plate adapted to co-operate with various parts of a frame in which it is mounted, to constitute shearing, bending and punching devices, and a hand-operated lever adapted to oscillate said plate through intermediary means such as a cam, eccentric boss or the like, to give a high mechanical advantage.

The invention also relates to a tool or appliance of this type provided with a clamping device for securing a metal rod while carrying out the operation of screw thread cutting.

According to one feature of the invention the frame of the tool or appliance is cast in one piece for strength and simplicity of construction.

Another feature of the invention is that the jaw or vice member of the clamping device, adapted to cooperate with part of the frame under the action of a clamping screw, and which is normally opposite the discharge aperture for the punching, is formed with extensions which, when the jaw or vice member is in position, close a slot or space in the frame in which the strip is inserted under the punch so that the punching operation cannot be carried out while the movable vice member is in position.

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In this way the accumulation of punchings in the clearance or discharge aperture is prevented, thus preventing injury to the tool which might be caused by such accumulation and tight packing of said stampings below the punch hole and against the said vice member.

Other features of the invention are hereinafter described and particularly pointed out in the claims.

In order that the invention may be more readily understood a constructional form of the improved tool or appliance will now be described with reference to the accompanying drawings, in which

Figure 1 is a side elevation of the tool mounted on a base,

Figure 2 is a plan view thereof,

Figure 3 is an end elevation,

Figure 4 is a section of part of the tool on the line IV - IV of Figure 3, showing the hand lever in one extreme position, and

Figure 5 is a similar section to Figure 4, showing the hand lever in the opposite extreme position.

As shown, the tool consists of a frame member 1 formed as a one piece casting and screwed to a base or support 2. This frame member is formed with strengthening webs 3, 4 and 5, and with two upstanding cheeks 6 and 7 between which a plate 8 is snugly disposed, and mounted to oscillate on a pivot bolt 9, screwed into the cheek 7 and locked by a nut 10. At one side of the pivot bolt 9 the plate 8 is formed with an extension 11 of V section at its lower part for cooperation with an oppositely shaped strip-bending anvil 12 formed on the frame member. On the opposite side of the pivot bolt the plate 8 is provided with a cylindrical punch projection 13 adapted to enter a vertical aperture 14 at the top of the portion of the frame member between the cheeks 6 and 7.

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The aperture 14 has a clearance or waste hole 15 for punchings Fig. 5, and the cheeks 6 and 7 are formed with slots 16 for receiving and locating a strip of metal to be punched. Above the guide slots 16 one of the cheeks 6 is formed with a recess for receiving a readily renewable hardened shear plate 17 held in position by screws. This plate 17 and the cheek 6 are slotted at 18 and cooperate with a slot 19 in the plate 8 to form shears for metal strip. Adjacent, but above the anvil, one cheek of the frame member is formed with a slot and the other with a tapped hole opposite the slot into which a hard tubular screw 20 is screwed and is locked by means of a nut 21. This tubular screw constitutes a guide and support for work of small circular cross section such as a rod or wire which is to be cut into desired lengths by the shears formed by the said tubular screw and the edges of a corresponding hole 22 in the plate 8.

The various operations of shearing, bending and punching are carried out by movement of the plate 8 under the action of an eccentric or cam 23 pivoted on a bolt 24 locked in the cheeks 6 and 7 by a nut 25. The eccentric 23 engages in a slot or opening 31 in the plate 8 and is operated by means of a hand lever 26, and a high mechanical advantage is thereby obtained as aforesaid in carrying out any of the desired operations.

On the side near the punching device is arranged a vise comprising a movable jaw member 27 which can be forced towards the frame for clamping a metal or wire rod whilst cutting a screw thread thereon, or removed from the device by manipulation of a screw 28. The jaw member is formed with extensions 29 which, when in position on the frame, cover the guide slots 16. It is thus necessary to remove the jaw member 27 before any work can be put in position for punching. This prevents the accumulation of punchings in the clearance or waste hole 15 and injury of the punching projection 13.

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The frame is also formed with a hole for receiving and supporting a stop or gauge rod 30 for use in gauging or determining the lengths of rod or strip to be sheared off. The gauge rod 30 is secured in any position of adjustment by the screw 28, the vise jaw 27 being then first removed.

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Having regard to the foregoing disclosure the patent of which this specification forms part confers subject to the conditions prescribed in the Patent Act 1935, the exclusive right, privilege and liberty of making, constructing, using and vending to others to be used, the invention as defined in claims submitted by the patentee as follows:-

1. A hand-operated tool or appliance for shearing or bending metal strips or rods comprising a frame having a stationary shear edge; an oscillatable plate pivoted on said frame, said plate carrying a shear edge adapted to co-operate with the stationary shear edge for shearing material when the plate is rocked in one direction of rotation; an anvil carried by said frame; a face on said plate adapted to co-operate with said anvil to bend material when the plate is rocked in the opposite direction of rotation; and means including a lever for actuating the plate.

2. A hand-operated tool or appliance for shearing or punching metal strips or rods comprising a frame having a stationary shear edge; an oscillatable plate pivoted on said frame; said plate carrying a shear edge adapted to co-operate with said stationary shear edge for shearing material by rocking the plate; a punch carried by said plate; an aperture in the frame for co-operating with the punch to form holes in a strip of metal when the plate is rocked; and means including a lever for rocking the plate.

3. A hand-operated tool or appliance for shearing metal strips or rods comprising a frame having a stationary shear edge; an oscillatable plate pivoted on said frame, said plate carrying a shear edge adapted to co-operate with

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said stationary shear edge for shearing material by rocking the plate, the frame having an opening to receive work of small circular cross-section, the plate having an opening to receive said work, the adjacent edges of said openings forming shear edges for cutting said work when the plate is rocked; and means including a lever for rocking said plate.

4. A tool constructed according to claim 1 in which the frame comprises upwardly extending cheeks, spaced apart to receive the plate between them and a base cast in one piece with said cheeks, and in which the stationary shear edge is removably secured to one of said cheeks, the other cheek being cut away to provide clearance for said shear edge.

Fig. 1.

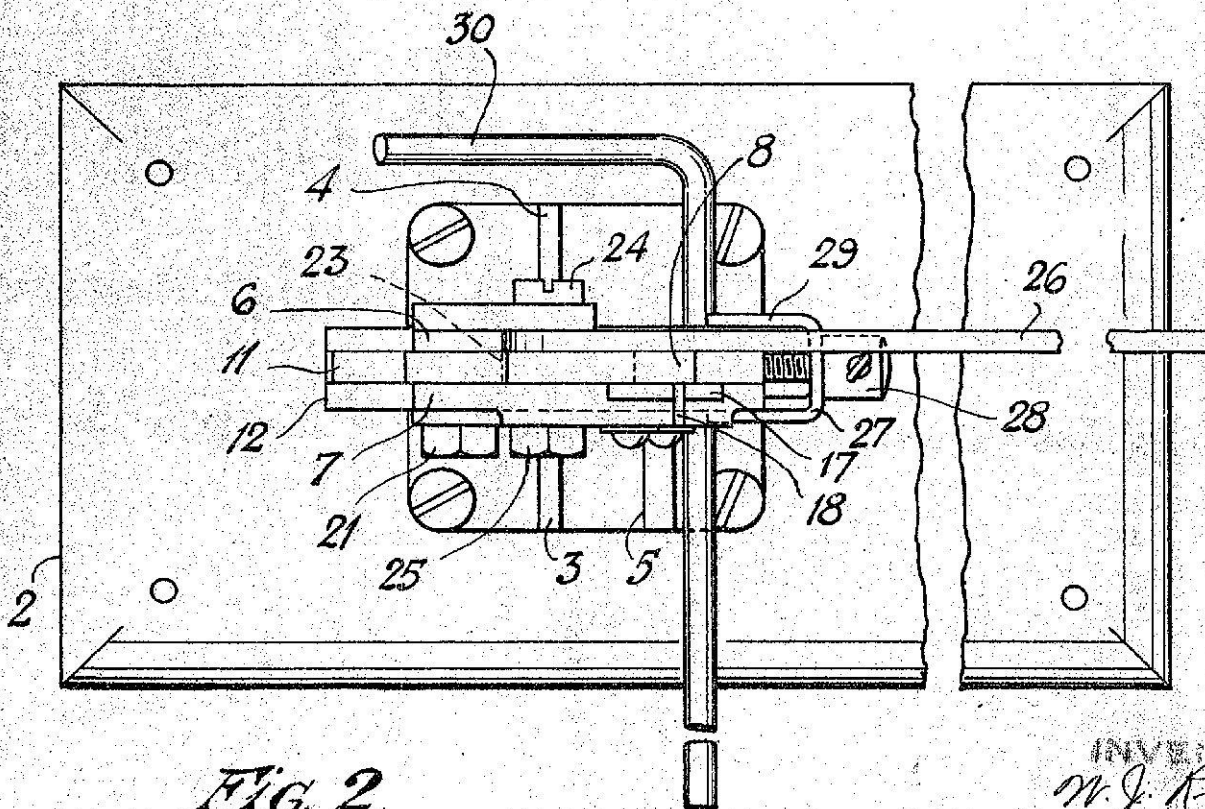
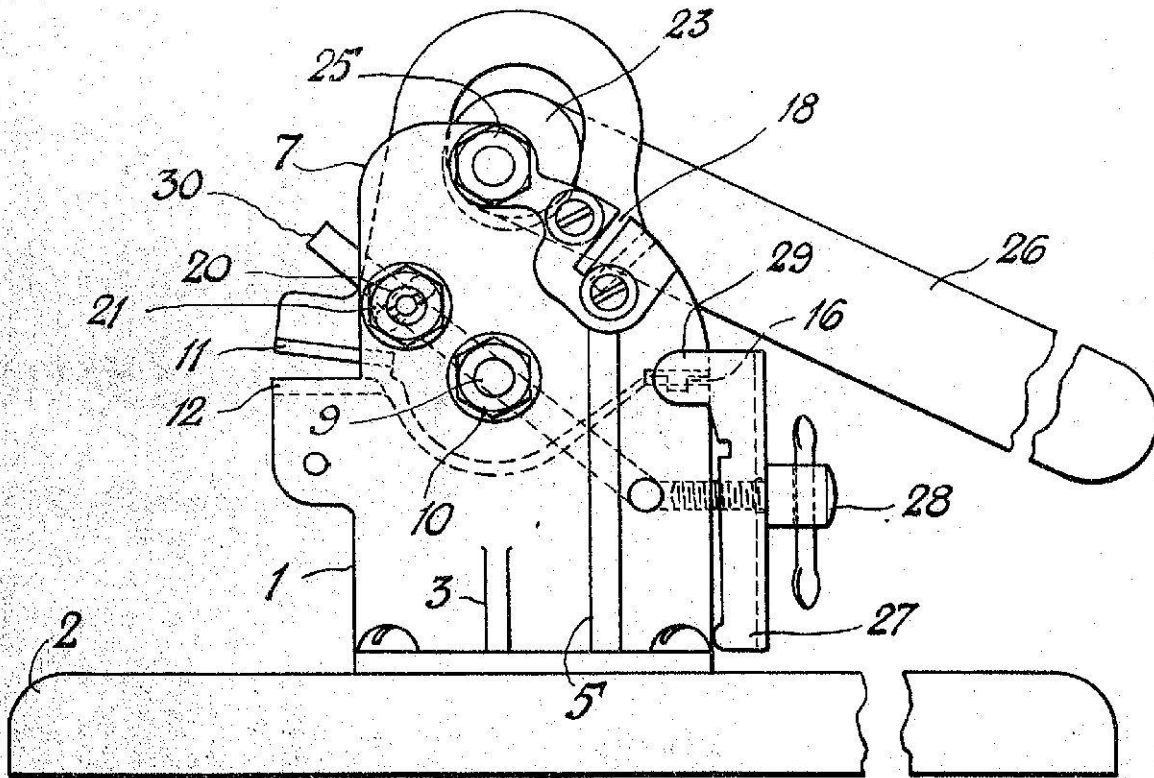
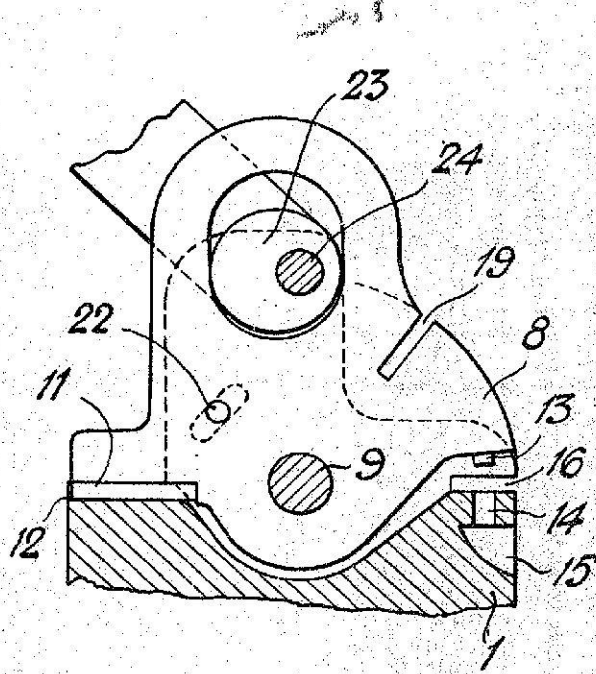
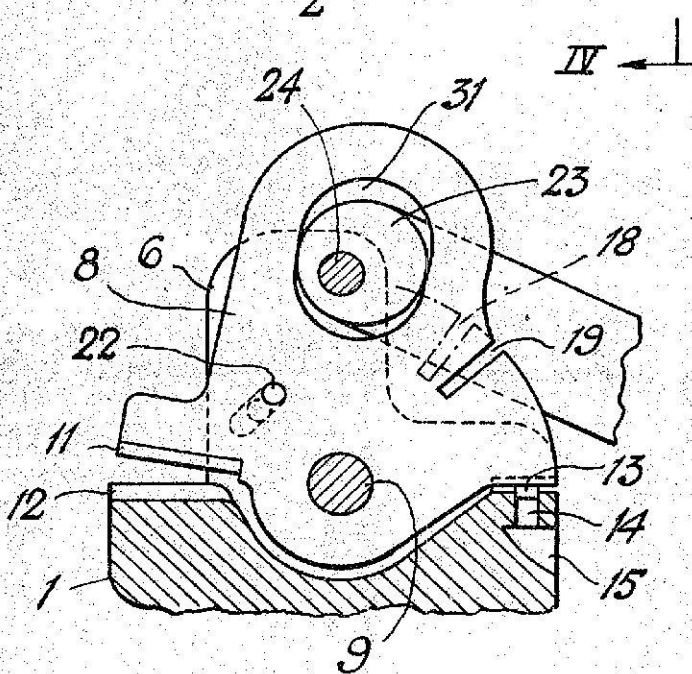
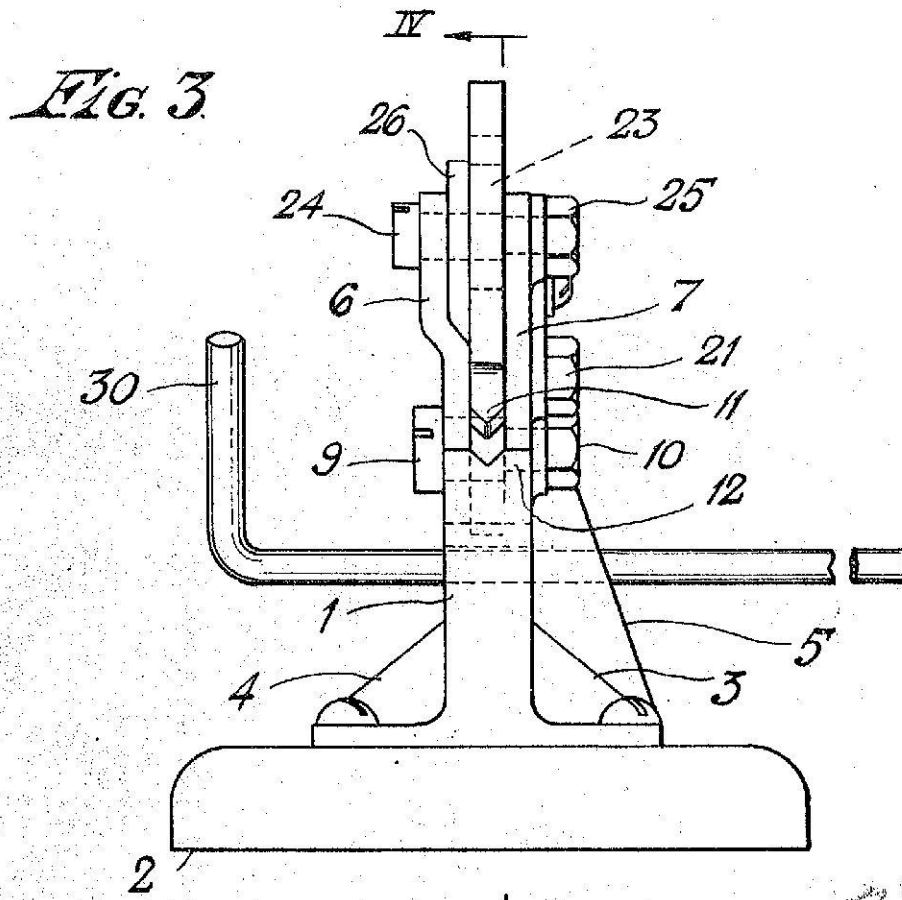


Fig. 2.

IN THE SPECIFICATION REFERRED TO
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TORONTO June 18th 1944

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