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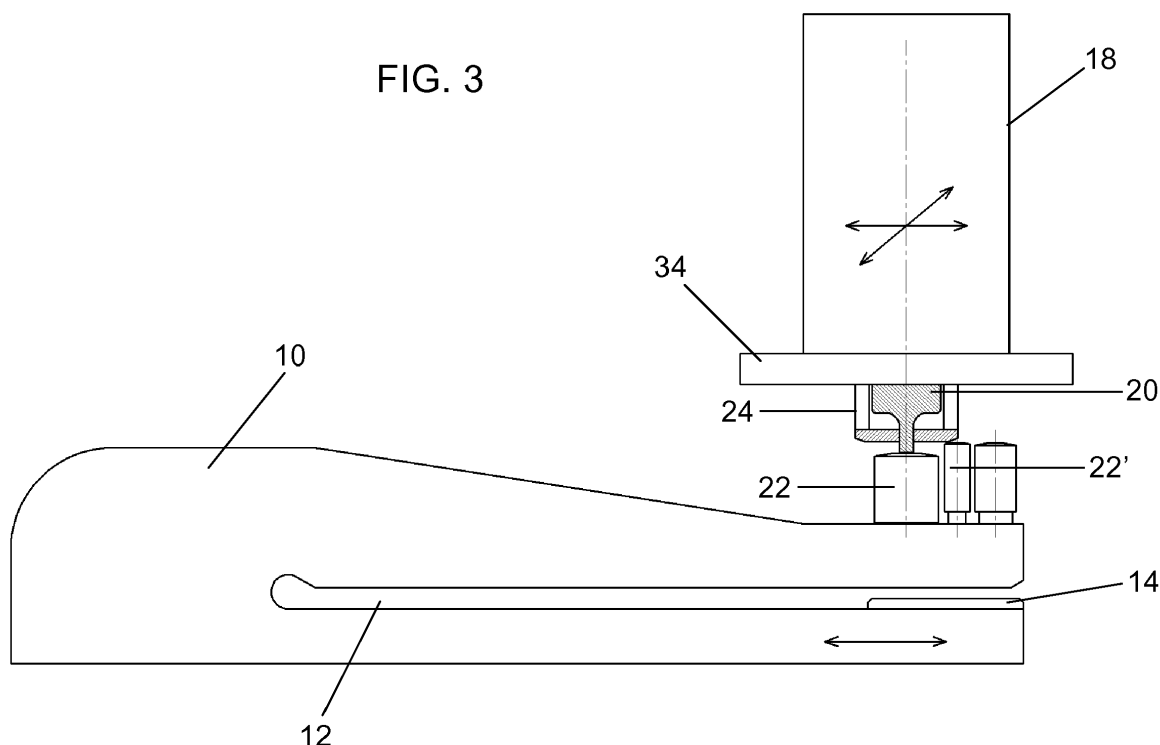
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(54) **Punch head for punching machines**

(57) A punch head comprising:
- a frame (2) on which a C-shaped carriage (10) is slid-
able, through the opening (12) of which the sheet metal
strip (8) to be punched is passed, said carriage being
provided in its upper portion with a plurality of punches
(22, 22') which are faced lowerly by corresponding dies
provided on a die carrier (14),
- a cylinder movable parallel to and transversely to the

axis of advancement of the sheet metal strip and acting
selectively together with a striker (20) on one of said
punches,
characterised in that the head (30) of the striker (20) is
housed within a cage (24) and emerges through the base
surface (26) of cage, said base surface interacting with
the top of at least one punch (22, 22') adjacent to that on
which the descending striker acts.

FIG. 3



Description

[0001] The present invention relates to a punch head for punching machines.

[0002] Punching machines are known, inserted into metal strip processing lines. They generally comprise punch heads, the tools and punches of which are controlled, in accordance with predetermined operative cycles, by hydraulic cylinders applied to the head itself, and which act on a metal strip to be processed, advancing between said punches and the respective dies.

[0003] The strip is advanced by a feed device which, in the same manner as the punch operating cylinders, is controlled by a central control unit.

[0004] Other punch heads are known comprising a vertical C-shaped plate with its opening in the form of a slot traversable by the strip to be worked, a horizontal base plate to which the vertical plate is fixed, one or more punching units applied to the base plate to the side of said C-shaped plate, an actuator for each punch of each punching unit, and means for moving the base plate relative to the base with a component at a right angle to the strip advancement direction.

[0005] Punching machines are known in which the punch carrier plate also incorporates a hydraulic piston and a rotary selector which positions the striker part above the punch to be activated.

[0006] However these known machines present the drawback that, as a result of the interaction between the striker and one of the punches, the punches adjacent to it tend to rise from their seats.

[0007] All these drawbacks are eliminated according to the invention by a punch head as described in claim 1.

[0008] The present invention is further clarified hereinafter with reference to the accompanying drawing, in which:

Figure 1 is a schematic lateral view of a punch head according to the invention,

Figure 2 is a lateral view of the C-shaped carriage, and

Figure 3 shows it with the striker lowered.

[0009] As can be seen from the figures, the punch head according to the invention comprises substantially a frame 2 on which two respective beams 4, 6, are mounted transversely to the advancement direction of the sheet metal strip 8 to be punched.

[0010] Along the beam 4 a carriage 10 is slidable, consisting of a C-shaped beam with its opening in the form of a slot 12 through which the sheet metal strip 8 passes.

[0011] A die carrier 14 for a plurality of dies is provided on the lower part of the carriage slot 12.

[0012] Finally along the beam 6 a carriage 16 is slidable, driven by known means.

[0013] A carriage 18, housing a hydraulic or electrical cylinder (not shown in the drawings) and provided with a striker 20, is movable along the carriage 16 parallel to

the axis of advancement of the sheet metal.

[0014] A plurality of punches 22, 22' are mounted on the upper surface of the carriage 10 and axially face the dies of the die carrier 14.

[0015] Upstream and downstream of the punch head, strip advancement devices can be provided, consisting of rollers or grippers, which devices enable the metal strip to be advanced, halted or reversed during its processing.

[0016] The end of the striker 20 is housed in a cage 24, the base plate of which is provided with a hole 28 for passage of the striker head 30, and has its outer circumferential edge 32 bevelled. The distance of the base plate 26 of the cage 24 from the lower plate 34 of the carriage 18 is such that the outer surface of the cage plate 26 can slide along the upper surface of the punches 22, 22' without however interfering with them.

[0017] The head of the invention operates in traditional manner, in that the C-shaped beam is moved along a resting surface (not shown in the drawings), and after inserting the strip 8 into the beam slot, the carriage 18 is driven by known means such that the striker 20 faces the chosen punch.

[0018] It is apparent that by virtue of the presence of the cage 24, which in this stage is positioned with its base plate 26 above the adjacent punch 22', the descent of the head 30 of the striker 20 and its subsequent striking on the punch 22 does not cause the adjacent punch 22' to rise.

Claims

1. A punch head comprising:

- a frame (2) on which a C-shaped carriage (10) is slidable, through the opening (12) of which the sheet metal strip (8) to be punched is passed, said carriage being provided in its upper portion with a plurality of punches (22, 22') which are faced lowerly by corresponding dies provided on a die carrier (14),
- a cylinder movable parallel to and transversely to the axis of advancement of the sheet metal strip and acting selectively together with a striker (20) on one of said punches,

characterised in that the head (30) of the striker (20) is housed within a cage (24) and emerges through the base surface (26) of cage, said base surface interacting with the top of at least one punch (22, 22') adjacent to that on which the descending striker acts.

2. A head as claimed in claim 1, **characterised in that** the outer circumferential edge of the base plate (26) of the cage (24) is bevelled.

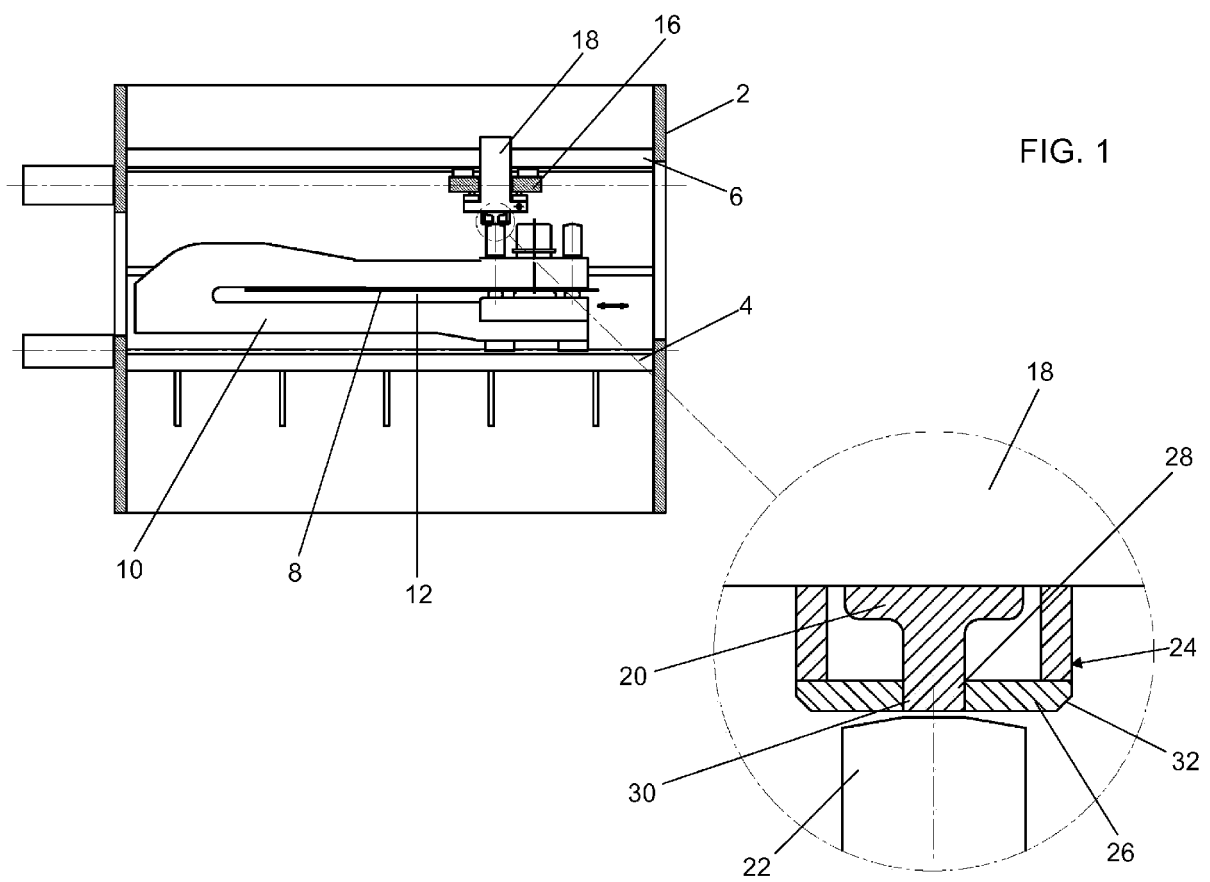


FIG. 2

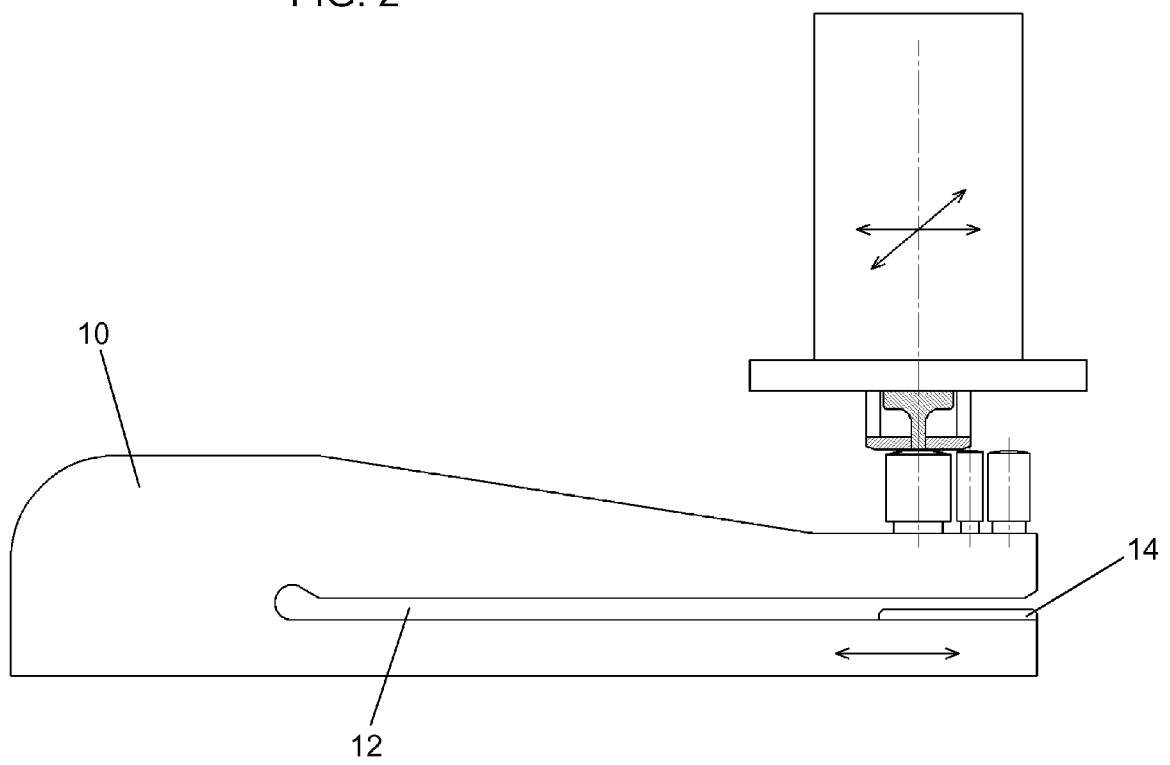
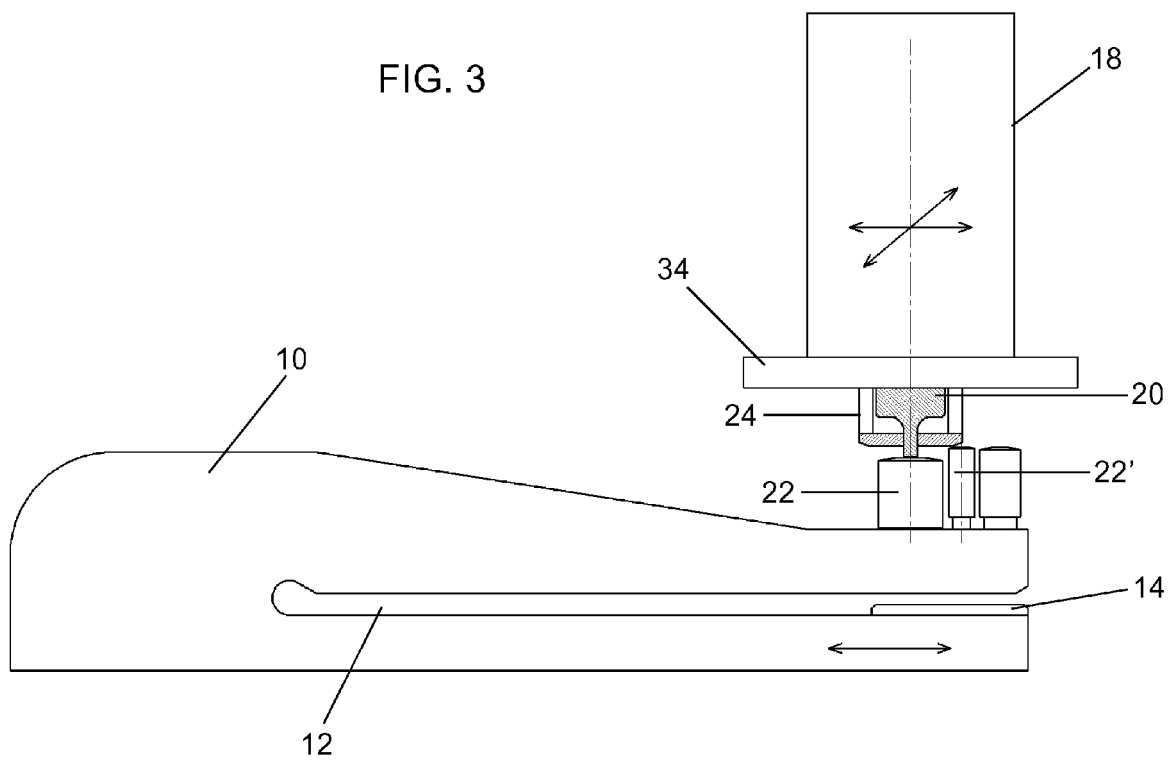


FIG. 3





EUROPEAN SEARCH REPORT

Application Number
EP 14 17 8391

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DOCUMENTS CONSIDERED TO BE RELEVANT			
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 12 February 2015	Examiner Pieracci, Andrea
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 14 17 8391

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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