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- (54) Benævnelse: **Svejsehoved til en maskine til dannelse af et metalnet, tilhørende svejsefremgangsmåde og maskine til dannelse af et metalnet ved anvendelse af svejsehovedet**
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DESCRIPTION

FIELD OF THE INVENTION

[0001] The present invention concerns a welding head used in a machine for the production of a metal mesh, the relative production method and the machine provided with the welding head. The invention is applied preferentially, but not exclusively, to create electro-welded metal meshes used as reinforcement for structures of reinforced concrete. For this reason, in the following description, specific reference will be made to this application, although the invention can also be used for the formation of meshes of other types.

BACKGROUND OF THE INVENTION

[0002] Different machines are known for the production of electro-welded metal meshes made up of a plurality of longitudinal metal wires, or round pieces, separated from each other (see BE-A-830 194). Corresponding transverse metal wires or round pieces are welded perpendicularly on the longitudinal wires, according to pre-defined interaxis.

[0003] These machines generally comprise a plurality of welding heads, at least one for every longitudinal wire, and a feed unit to feed the transverse wires.

[0004] Each welding head comprises at least a feed unit to feed the longitudinal wires and a welding unit, and is selectively movable parallel to the direction of the feed of the transverse wires, in order to regulate the positioning distance of the longitudinal wires.

[0005] In particular, the welding unit comprises two electrodes, able to be selectively moved closer to each other so as to be moved between a first feed position, in which at least one electrode is distanced from the two wires in order to allow the free positioning thereof, and a second welding position in which both the electrodes contact and grip the two wires in correspondence with one of their join segments. In the second position the two electrodes apply different tensions determining the welding of the two wires.

[0006] The functioning of the machines provides that a transverse wire, in some cases several transverse wires simultaneously, is fed and disposed in an attachment position in which it is joined to the longitudinal wires by means of the welding unit.

[0007] Subsequently the longitudinal wires are simultaneously fed forward by a pitch equivalent to the interaxis between the transverse wires, so that a new transverse wire can be fed and disposed in the attachment position.

[0008] One of the main limits of such machines is the speed of movement of the electrodes

between the first and the second position.

[0009] This speed is normally kept substantially constant and suitably high, both to limit costs and bulk, and also to reduce to a minimum the downtimes of the machine due to the welding steps.

[0010] In this way, the action of the electrodes on the metal wires also determines a beating effect on the wires.

[0011] This beating effect causes, on the one hand, a rapid wear of the electrodes which are normally made of ductile material, such as copper or similar, and, on the other hand, a high mechanical stress on the frame of the machine, considering that the machine can comprise tens of different welding heads acting simultaneously.

[0012] Another limit of known machines is the difficulty of guaranteeing a correct and uniform positioning of the longitudinal wires, both between each other and also with respect to the transverse wires.

[0013] To overcome this limit, it is known to provide complex and voluminous alignment members to align the wires and to coordinate the welding heads.

[0014] Furthermore, there is a growing need to create electro-welded metal meshes in which the interaxes between the longitudinal wires and the transverse wires are reduced to a minimum.

[0015] Purpose of the present invention is to achieve a welding head, and to perfect a welding method, for a machine for the formation of electro-welded metal meshes, which solves the disadvantages of the wear of the electrodes, the mechanical stress of the frame, the alignment of the wires and the bulk, without compromising the normal productivity and the quality of work of known machines.

[0016] The Applicant has devised, tested and embodied the present invention to overcome the shortcomings of the state of the art and to obtain these and other purposes and advantages.

SUMMARY OF THE INVENTION

[0017] The present invention is set forth and characterized in the independent claims 1 and 17, while the dependent claims describe other characteristics of the invention or variants to the main inventive idea.

[0018] In accordance with the above purpose, a welding head according to the present invention is used in a machine for the formation of metal mesh, and comprises at least a first

feed unit able to feed step-wise a plurality of longitudinal wires of the metal mesh, and a welding unit by means of which the longitudinal wires are attached by welding, with a pre-defined or pre-definable pitch, to corresponding transverse wires of the metal mesh.

[0019] The welding unit comprises two electrodes, selectively movable between a first feed position, in which at least a first electrode is distant from the two wires to be welded, and a second welding position in which both the electrodes contact and grip the two wires to be welded and apply different tensions determining the welding of the two wires.

[0020] According to a characteristic feature of the present invention, the welding head comprises at least a movement member, which is of the fluid-dynamic type, operatively associated at least with the first electrode in order to move it between the first and the second position, first sensor means associated with the movement member and configured to detect the position of the first electrode with respect to the two wires, and/or second sensor means associated with the movement member and configured to detect the working pressure of the first electrode.

[0021] In this way, by commanding the movement member in a coordinated way according to the data detected by the first and/or by the second sensor means, it is possible to set a first speed, relatively high, of the electrode when it approaches the wires, and subsequently, according to the position detected of the electrode and to the sizes of the wires, to set a second relatively slower approach speed, until it contacts the wires. The contact of the electrode with the wires is detected by the second sensor means which detects an increase in pressure, stopping the movement member when a pre-determined threshold is reached, and then applying the welding tension.

[0022] Therefore, in substantially the same operating time as known welding heads, the electrode is first moved closer at high speed and then slowed down until it contacts and rests on the wires, thus avoiding the disadvantage deriving from the beating of the electrodes against the wires.

[0023] With the present invention the wear on the electrodes, and therefore their frequency of maintenance, is considerably reduced; the mechanical stress on the frame of the machine is also reduced, thus allowing to provide simpler and less costly machines.

[0024] In a variant, the first and second sensor means are integrated in a single body in the movement member, so that the bulk relating to the welding head are reduced with respect to the state of the art.

[0025] According to a variant, the first sensor means comprise at least a linear transducer device of the electro-magnetic type, which comprises at least a mobile magnetic element together with the electrode and able to emit a relative magnetic field, and an electronic measuring element, fixed with respect to the electrode, and able to detect the intensity of the magnetic field emitted by the magnetic element in order to identify the position thereof,

according to the value detected.

[0026] According to another variant, the second sensor means comprises at least a first pressure switch able to detect the pressure of the actuating or delivery fluid of the movement member, and a second pressure switch able to detect the pressure of the fluid returning from the movement member.

[0027] In this way, by measuring the difference in potential between the pressure of the fluid delivered and the pressure of the fluid returning, and by comparing it with a limit variation, it is possible to detect the possible stopping of the electrode.

[0028] According to another variant, the first sensor means and the second sensor means are configured and disposed in the movement member in such a way as to reduce to a minimum the bulk of the movement member, at least in width.

[0029] In this way it is possible to reduce to a minimum the distance between two welding heads of the same machine, and to reduce to a minimum the distance between two adjacent longitudinal wires of the same electro-welded mesh as well.

[0030] According to another variant, the welding head comprises a positioning unit, in which at least two positioning guides are provided, disposed substantially aligned and staggered with each other with respect to an axis of feed of the longitudinal wire.

[0031] The two positioning guides are disposed, respectively, one above and one below the longitudinal wire and have a "V" shaped guide seating open toward the axis of feed, in such a way that the reciprocal action of the two guides determines a substantial centering of the longitudinal wire toward the axis of feed.

[0032] Advantageously, an elastic member is associated with at least one positioning guide, which allows to auto-center the relative guide seating with respect to the longitudinal wire being fed, and to push it toward the axis of feed.

[0033] This variant allows to center the relative longitudinal wire with respect to the axis of feed, in a simple and effective way and with the minimum possible bulk in width, thus facilitating welding operations.

[0034] According to another variant, the first feed unit comprises at least a pair of feed rollers able to cooperate from opposite sides on the longitudinal wire in order to feed it toward the welding unit, and a header member able to selectively cooperate, at least in an initial step of the cycle to form the mesh, with a leading end of the longitudinal wire. In this way, all the longitudinal wires provided on each welding head are headed simultaneously, avoiding a staggered positioning between the various longitudinal wires, with respect to the transverse wires.

[0035] According to a further variant, at least one roller of the pair of feed rollers is selectively mobile toward the longitudinal wire to be fed, in such a way as to allow to regulate the distance between the two rollers, depending on the diameter of the wire. Advantageously, the movement of this mobile roller is carried out using a cylinder with an oval chamber, in order to reduce to a minimum the lateral bulk of the feed unit.

[0036] According to another variant, in which the machine for the formation of metal mesh comprises a frame on which a plurality of welding heads are mounted, each welding head also comprises sliding means, translation means and stopping means, which allow to translate the welding head laterally and independently with respect to the frame of the machine, to then to clamp it in a desired position in relation to the pitch of the longitudinal wires.

[0037] In this way, it is possible to vary as desired, and in a guided and controlled manner, the reciprocal distance between the adjacent welding heads, and therefore of the longitudinal wires of the metal mesh.

BRIEF DESCRIPTION OF THE DRAWINGS

[0038] These and other characteristics of the present invention will become apparent from the following description of a preferential form of embodiment, given as a non-restrictive example with reference to the attached drawings wherein:

- fig. 1
is a three-dimensional view of the machine to make a metal mesh provided with two welding heads according to the present invention;
- fig. 2
is a three-dimensional sectioned view of the machine in fig . 1;
- fig. 3
is a three-dimensional view of a welding head according to the present invention;
- fig. 4
shows an enlarged and sectioned detail of the welding head in fig. 3;
- fig. 5
shows an enlarged section of the welding head in fig. 3.

DETAILED DESCRIPTION OF A PREFERENTIAL FORM OF EMBODIMENT

[0039] With reference to the attached drawings, the number 10 denotes in its entirety a machine for the formation of electro-welded mesh according to the present invention.

[0040] In this case, the electro-welded meshes formed with the machine 10 comprise a

plurality of longitudinal metal wires 12 distanced from each other and welded to corresponding transverse metal wires 13, also distanced by a predefined interaxis.

[0041] The machine 10 substantially comprises a frame 11, a plurality of welding heads 15, in the simplified case shown here as an example only, two, mounted sliding on the frame 11, and a transverse feed unit, not shown, able to feed the transverse wires 13, in order to dispose them in cooperation with the welding heads 15.

[0042] Each welding head 15 comprises at least a feed unit 16 to feed the longitudinal wires 12, a positioning unit 18, able to maintain the longitudinal wires 12 substantially aligned with an axis of feed X, and a welding unit 17.

[0043] Each welding head 15 is selectively movable with respect to the frame 11, in an independent way, in a direction substantially parallel to the direction of feed of the transverse wires 13, so as to regulate the positioning distance of the longitudinal wires 12.

[0044] The welding unit 17 is disposed in correspondence with the join zone between the longitudinal wires 12 and the relative transverse wire 13.

[0045] The welding unit 17 comprises a first upper electrode 19 and a second lower electrode 20 which, fed by a tension generator unit 21, apply different tensions on the wires 12 and 13, determining the welding thereof.

[0046] In particular the upper electrode 19 is selectively movable by means of a movement member 22, while the second electrode 20 is fixed and on this the transverse wire 13 and the longitudinal wire 12 are able to be positioned in their join position.

[0047] The movement member 22 is actuated fluid-dynamically and comprises at least a shaft 23, disposed substantially vertically, and to which the first electrode 19 is fixed.

[0048] In this way the first electrode 19 is selectively movable between a first feed position, in which it is raised and distanced from the second electrode 20 and allows the free feed of both the transverse wire 13 and the longitudinal wire 12, and a second welding position, in which it is near to the second electrode 20 and with this contacts the two wires 12 and 13. In this condition, the tension generator unit 21 feeds to the electrodes 19 and 20 the tensions that determine the welding of the two wires 12 and 13.

[0049] The movement member 22 also comprises, and integrated with it, a transducer device 25 to measure the position of the first electrode 19, and a pair of pressure switches, respectively first 30 and second 31, to measure the working pressure of the first electrode 19.

[0050] The transducer device 25 is of the linear type with electro-magnetic function and comprises at least a magnet 26 of an annular shape fixed axially to the shaft 23 by means of a jacket 27, and an electronic measuring element 29 mounted fixed inside the movement

member 22, and having at least an oblong part 29a inserted axially through the magnet 26.

[0051] Both the magnet 26 and the electronic measuring element 29 have a reduced lateral bulk compared with the maximum lateral bulk of the movement member.

[0052] In this way, the magnet 26 emits a determinate magnetic field and moves with the shaft 23 when the first electrode 19 is moved between one and the other of its positions, while the electronic measuring element 29 detects at intervals the intensity of the magnetic field emitted by the magnet 26.

[0053] Depending on the intensity of the magnetic field detected, the electronic measuring element 29 recognizes the distance between it and the magnet 26, and therefore obtains the position of the first electrode 19 with respect to, for example, the second electrode 20.

[0054] The first pressure switch 30 and the second pressure switch 31 are mounted outside the movement member 22, respectively on a front edge and a rear edge, and both have a smaller lateral bulk than the maximum lateral bulk of the movement member 22.

[0055] The first pressure switch 30 is hydraulically connected to a delivery pipe 32 through which a fluid to move the shaft 23 flows. In particular, the fluid flows under pressure through the delivery pipe 32 when the first electrode 19 is commanded to be lowered to its second position.

[0056] The second pressure switch 31 is hydraulically connected to a return pipe 33 through which the fluid to move the shaft 23 flows. In particular, the fluid flows under pressure through the return pipe 33 when the first electrode 19 is commanded to be raised to its first position.

[0057] The feed of the movement fluid from and toward the shaft 23 is managed by an electro valve 35, electronically connected both to the transducer device 25 and also to the two pressure switches 30 and 31.

[0058] In this way, also depending on the diameters of the two wires 12 and 13, when the first electrode 19 is moved from the first to the second position, the movement occurs for at least a first segment with a first high speed.

[0059] The first high speed is maintained until the transducer device 25 detects that the position of the first electrode 19 is near to the two wires 12 and 13.

[0060] At this point the electro valve 35 determines a reduction in the flow rate of the fluid through the delivery pipe 32, causing a reduction in the speed of movement of the first electrode 19. The greater the reduction in the flow rate, the greater the reduction in speed.

[0061] At the moment when the first electrode 19 rests on the two wires 12 and 13, the two pressure switches 30 and 31 detect different pressures in the respective delivery pipe 32 and

return pipe 33.

[0062] This difference in pressure, at the moment it exceeds a pre-defined limit, determines the stoppage, by the electro valve 35, of the feed of the movement fluid, and the activation of the tension generator unit 21, to carry out the welding.

[0063] In proximity to the different electric, mechanic and fluid-dynamic members of the welding unit 17 as described heretofore, a plurality of cooling pipes 36 are provided, able to limit the overheating of the parts.

[0064] The positioning unit 18 is disposed upstream of the welding unit 17 with respect to the direction of feed of the longitudinal wires 12.

[0065] The positioning unit 18 comprises a first positioning guide 37 and a second positioning guide 39 disposed substantially aligned and staggered with each other with respect to the axis of feed X of the longitudinal wire 12.

[0066] In particular, the first positioning guide 37 is disposed above the longitudinal wire 12, while the second positioning guide 39 is disposed below the longitudinal wire 12.

[0067] Each of the positioning guides 37 and 39 comprises a guide seating 40 conformed as a "V" and open toward the axis of feed X, so as to cooperate from opposite sides with the longitudinal wire 12 and to maintain it substantially centered toward the axis of feed X.

[0068] The first positioning guide 37 is selectively movable toward the second positioning guide 39, by means of a linear actuator 41, so that it can be selectively regulated depending on the diameter of the longitudinal wire 12.

[0069] The second positioning guide 39 is associated with a plurality of elastic springs 42 which carry out a normal thrust toward the first positioning guide 37, allowing to auto-center the relative guide seating 40 with respect to the longitudinal wire 12 fed, and to maintain the latter toward the axis of feed X.

[0070] The two positioning guides 37 and 39, the linear actuator 41 and the elastic springs 42 all have a smaller lateral bulk than the maximum lateral bulk of the movement member 22 of the welding unit 17.

[0071] The feed unit 16 is disposed upstream of the positioning unit 18, with respect to the direction of feed of the longitudinal wires 12.

[0072] The feed unit 16 substantially comprises: a pair of feed rollers 43 and 45, a compression mechanism 46 and a header device 47.

[0073] In particular, a first roller 43 of the pair is motorized by means of a grooved profile 49,

common for all the feed units 16 of the welding heads 15, while a second roller 45 of the pair is mobile with respect to the first roller 43 and is mechanically connected to the compression mechanism 46, provided with a cylinder having an oval chamber 46a.

[0074] The grooved profile 49 is selectively made to rotate by means of a motor reducer 50.

[0075] The header device 47 substantially comprises a block 51 shaped in such a way as to substantially define an upside down T profile, able to be moved by actuation means of a known type from a first position in which it allows the passage of the relative longitudinal wire 12, to a second position in which it clamps the leading end of the relative longitudinal wire 12 in order to head it. In this way all the longitudinal wires 12 provided on each welding head 15 are simultaneously headed.

[0076] Each welding head 15 is also provided with sliding members 52, translation members 53 and a stopping element 54, which allow to translate laterally each welding head in an independent manner and then to clamp it in the desired position.

[0077] The sliding members 52 are associated respectively with the upper and lower parts of the welding head 15, and are able to cooperate in a known manner with corresponding sliding guides 53 associated with the frame 11, in such a way as to always maintain each welding head in position.

[0078] The translation members 53 in this case substantially comprise a rack type mechanism and allow the lateral sliding of each welding head 15 in order to be able to position each welding head 15 in the desired position.

[0079] The stopping element 54 is disposed substantially in correspondence with and under the positioning unit 18. The stopping element 54 comprises a block 56, having a substantially trapezoidal shape, able to be moved substantially in the direction of the axis X, in order to cooperate with a corresponding clamping bar 57, in such a way as to clamp the welding head 15 in the desired position.

[0080] It is clear, however, that modifications and/or additions of parts may be made to the machine 10 as described heretofore, without departing from the field and scope of the present invention.

[0081] It is also clear that, although the present invention has been described with reference to specific examples, a person of skill in the art shall certainly be able to achieve many other equivalent forms of machine 10, having the characteristics as set forth in the claims and hence all coming within the field of protection defined thereby.

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- BE830194A [0002]

P A T E N T K R A V

1. Svejsehoved til dannelse af et metalnet, omfattende langsgående tråde (12) og tværgående tråde (13), omfattende mindst en fødeenhed (16), der trinvist kan føde en flerhed af de langsgående tråde (12), og en svejseenhed (17) ved hjælp af hvilken de langsgående tråde (12) svejses på tilsvarende tværgående tråde (13), idet svejseenheden (17) omfatter mindst to elektroder (19, 20), der er selektivt bevægelige mellem en første fødeposition, hvori mindst en første elektrode (19) ligger fjernt fra de tværgående (13) og langsgående (12) tråde, og en anden svejseposition, hvori begge elektroderne (19, 20) er i kontakt med og griber trådene (12, 13) og påfører forskellige spændinger for at svejse trådene (12, 13) sammen, hvor svejsehovedet omfatter mindst et bevægeorgan (22), der driftsmæssigt er tilknyttet mindst den første elektrode (19) for at bevæge den mellem den første og den anden position, og hvor bevægeorganet (22) er af den fluiddynamiske type, **kendetegnet ved, at** svejsehovedet endvidere omfatter en første positionsføler (25) tilknyttet bevægeorganet (22) og udformet til at detektere positionen af den første elektrode (19) med hensyn til de to tråde (12, 13) og til at frembringe en nedsættelse af den første elektrodens (19) bevægelseshastighed ved hjælp af en nedsættelse af fluidens strømningshastighed gennem en tilgangsledning (32) styret af en elektroventil (35), når den første elektrode (19) er i en position nær trådene (12, 13), og en anden og tredje trykføler (30, 31) tilknyttet bevægeorganet (22) og udformet til at detektere den første elektrodens (19) arbejdsstryk, når den første elektrode (19) kommer i kontakt med trådene (12, 13), og til at frembringe standsning af bevægeorganet (22) af elektroventilen (35), der er elektronisk forbundet med både den første positionsføler (25) og også med den anden og tredje trykføler (30, 31), når en forudbestemt tryktærskel nås, og til at frembringe aktiveringen af en spændingsgeneratorenhed (21) til udførelse af svejsningen.

2. Svejsehoved ifølge krav 1, **kendetegnet ved, at** det første følerorgan omfatter mindst lineære omdannelsesorganer (25) af den elektromagnetiske type med mindst et magnetisk element (26), der er bevægeligt med den første elektrode, og som kan udsende et tilhørende magnetfelt.

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3. Svejsehoved ifølge krav 2, **kendetegnet ved, at** omdannelsesorganerne (25) omfatter elektroniske måleorganer (29), der er fast forbundne med den første elektrode (19), og som kan detektere intensiteten af det magnetiske elements (26) magnetfelt.

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4. Svejsehoved ifølge krav 1, **kendetegnet ved, at** den anden trykføler omfatter mindst en første trykafbryder (30), der kan detektere trykket ved levering af en fluid, der aktiverer bevægeorganet (22), og det tredje trykfølerorgan omfatter mindst en anden trykafbryder (31), der kan detektere trykket af fluiden, der kommer tilbage fra bevægeorganet (22).

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5. Svejsehoved ifølge krav 1, **kendetegnet ved, at** den første positionsføler (25) og den anden og tredje trykføler (30, 31) er integreret i et enkelt legeme med bevægeorganet (22).

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6. Svejsehoved ifølge krav 1, **kendetegnet ved, at** det omfatter en positionerings- og centreringsenhed (18) af den langsgående tråd (12) i forhold til den langsgående tråds (12) fødeakse (X).

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7. Svejsehoved ifølge krav 6, **kendetegnet ved, at** positioneringsenheden (18) omfatter mindst to positioneringsstyr (37, 39), der er i det væsentlige på linje og forskudt i forhold til hinanden i forhold til den langsgående tråds (12) fødeakse.

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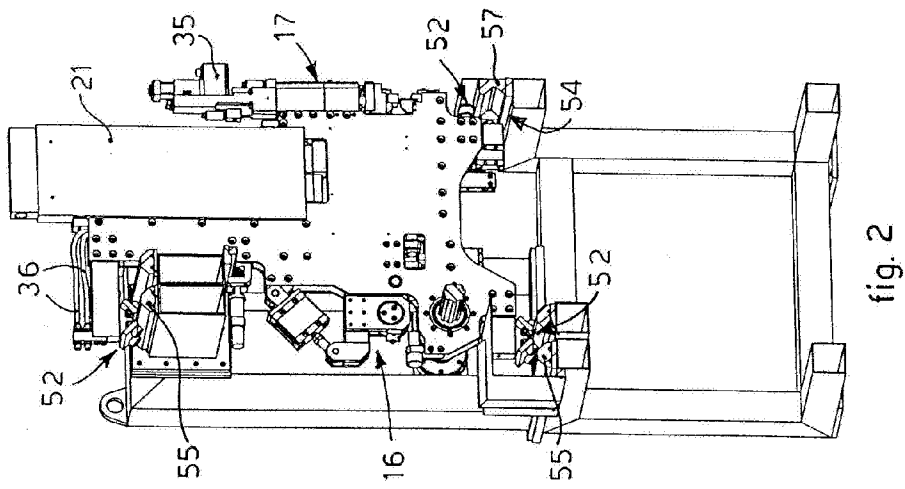
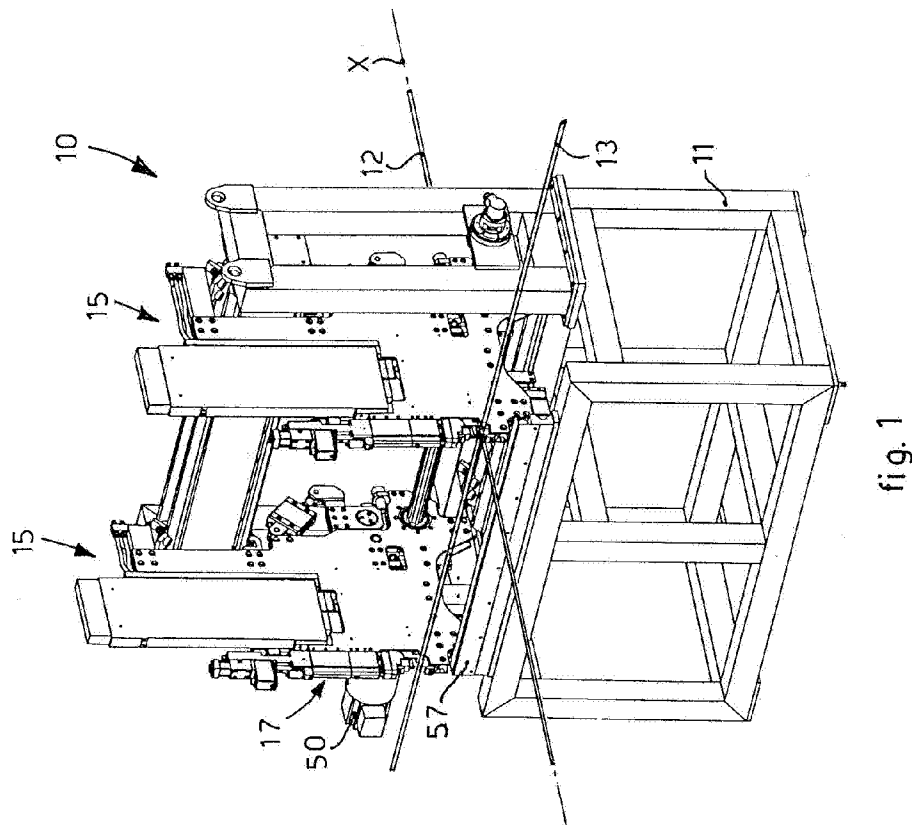
8. Svejsehoved ifølge krav 7, **kendetegnet ved, at** de mindst to positioneringsstyr (37, 39) i brug er anbragt med et over og et under den langsgående tråd (12).

9. Svejsehoved ifølge krav 7, **kendetegnet ved, at** de mindst to positioneringsstyr (37, 39) har et styrsæde (40) udformet som et 'V', der er åbent mod fødeaksen (X).
- 5 10. Svejsehoved ifølge krav 7, **kendetegnet ved, at** det omfatter elastiske organer (42) tilknyttet mindst et af positioneringsstyrene (39), der kan centrere positioneringsstyrets (39) tilhørende styrsæde (40) i forhold til den tilfødte langsgående tråd (12).
- 10 11. Svejsehoved ifølge krav 1, **kendetegnet ved, at** fødeenheden (16) omfatter mindst et par føderuller (43, 45), der kan samarbejde fra modsatte sider på den langsgående tråd (12) for at føde den mod svejseenheden (17).
- 15 12. Svejsehoved ifølge krav 1, **kendetegnet ved, at** den omfatter føreorganer (47), der kan samarbejde selektivt med en forreste ende af den pågældende langsgående tråd (12) for at føre den.
- 20 13. Svejsehoved ifølge krav 11, **kendetegnet ved, at** mindst en rulle (45) af parret af føderuller (43, 45) er selektivt bevægelig mod den langsgående tråd (12), der skal fødes, for at muliggøre justering af afstanden mellem de to ruller (43, 45) i henhold til diameteren af den langsgående tråd (12).
- 25 14. Svejsehoved ifølge krav 13, **kendetegnet ved, at** bevægelsen af den mobile rulle (45) udføres ved anvendelse af en cylinder med et ovalt kammer (46a).
- 30 15. Svejsehoved ifølge krav 1, **kendetegnet ved, at** det omfatter forskydningsorganer (52) og translationsorganer (53), der kan translaterer svejsehovedet sideværts og på en uafhængig måde i forhold til et støttestativ til svejsehovedet.
16. Svejsehoved ifølge krav 15, **kendetegnet ved, at** det omfatter stoporganer (54), der samarbejder med forskydningsorganerne (52) og translationsorganerne (53) for at fastspænde svejsehovedet i den ønskede position.

17. Fremgangsmåde til dannelse af et metalnet bestående af langsgående tråde (12) og tværgående tråde (13) ved hjælp af et svejsehoved (15), omfattende mindst en fødeenhed (16), der trinvist kan føde en flerhed af de langsgående tråde (12), og en svejseenhed (17) ved hjælp af hvilken de langsgående tråde (12) fastgøres ved svejsning på tilsvarende tværgående tråde (13), idet svejseenheden (17) omfatter to elektroder (19, 20), der er selektivt bevægelige mellem en første fødeposition, hvori mindst en første elektrode (19) ligger fjernt fra de tværgående (13) og langsgående (12) tråde, og en anden svejseposition, hvori begge elektroderne (19, 20) er i kontakt med og griber trådene (12, 13) og påfører forskellige spændinger for at svejse trådene (12, 13) sammen, **kendetegnet ved, at** den omfatter mindst et første trin, hvori et bevægeorgan (22) af den fluiddynamiske type, der driftsmæssigt er tilknyttet mindst den første elektrode (19), bevæges mellem den første position til en anden position nær men ikke i kontakt med trådene (12, 13) i henhold til information detekteret af en første positionsføler (25) tilknyttet bevægeorganet (22) og udformet til at detektere den første elektrodens (19) position i forhold til de to tråde (12, 13), et andet trin, hvori en nedsættelse af bevægeorganets (22) hastighed bestemmes ved hjælp af nedsættelse af fluidens strømningshastighed gennem en tilgangsledning (32) styret af en elektroventil (35) efter at have nået positionen nær trådene (12, 13), og et tredje trin, hvori den første elektrode (19) bringes i kontakt med trådene (12, 13) med et tryk detekteret af en anden trykføler (30) tilknyttet bevægeorganet (22) og udformet til at detektere den første elektrodens (19) arbejdstryk, indtil en forudbestemt tærskel nås, og til at frembringe standsning af bevægeorganet (22) af elektroventilen (35), der er elektronisk forbundet med både den første positionsføler (25) og også med den anden og tredje positionsføler (30, 31), og til at frembringe aktiveringen af en spændingsgeneratorenhed (21) for at udføre svejsningen.

18. Maskine til dannelse af et metalnet omfattende et svejsehoved ifølge krav 1.

DRAWINGS



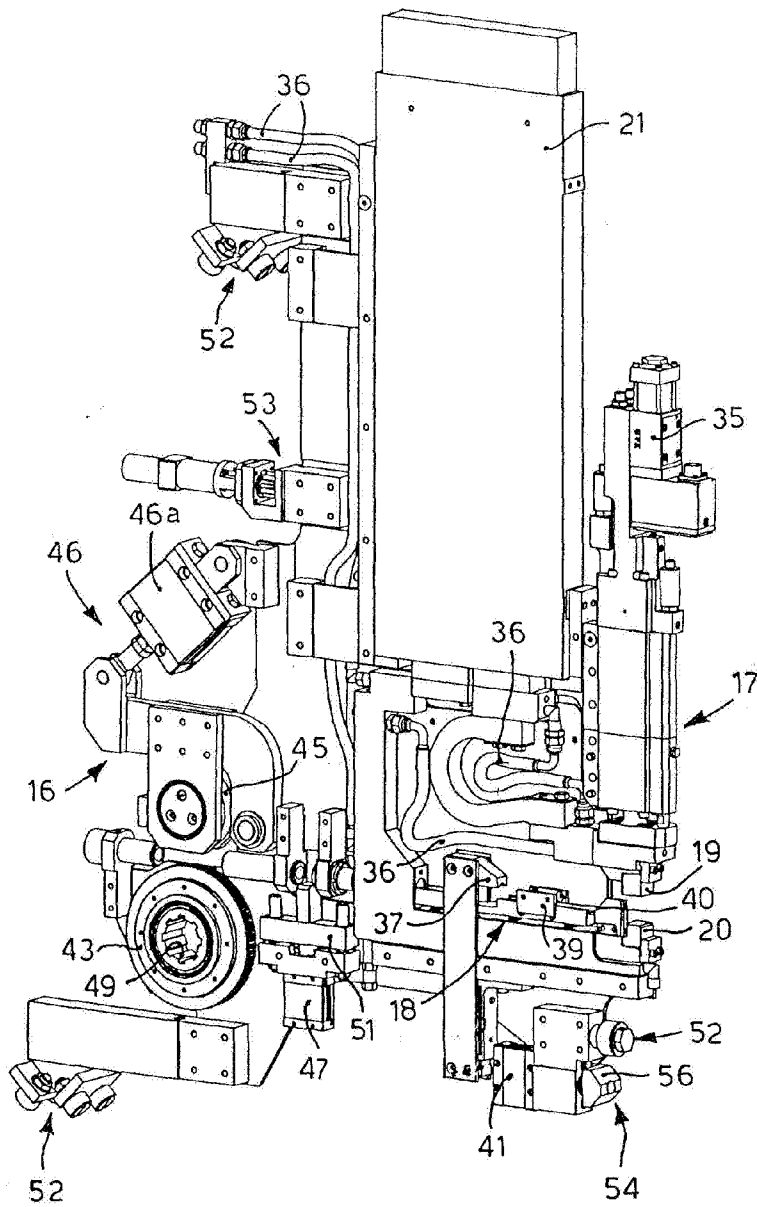


fig. 3

