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SHARE TIP AND TOOL COMBINATION HAVING A SHARE TIP

The invention relates to a share point for an agricultural soil working machine, comprising a base part which has a cutting edge on a cutting edge carrier, wherein the base part comprises a screw receptacle for attachment to a carrier, in particular to a tine of an agricultural soil working machine.

The invention also relates to a tool combination with a share point and a guide element connected thereto, wherein the share point and the guide element have screw receptacles for attachment to a tine.

DE 10 2011 102 053 A1 discloses a tool combination with a share point and a guide plate, which may be jointly fastened to a tine of a soil working machine. At a cutting end, the share point has a cutting edge carrier, which is equipped with a cutting element made of hard metal. Secondary cutting edges are soldered onto the cutting edge carrier at the side of the cutting element. The cutting tool carrier comprises a screw receptacle, which may be aligned with a screw receptacle of the guide plate. The guide plate is placed on the share point and covers the surface regions adjoining the cutting edge and the secondary cutting edges. To secure the combination, consisting of guide plate and share point, an attachment screw is inserted on the front side through the mutually aligned screw receptacles of the guide plate and the share point and screwed into a screw receptacle of the tine. Under harsh conditions of use and difficult ground conditions, the guide plate may bend and crack against the share point. As a result, the functionality of the tool combination is at least significantly reduced.

It is an object of the invention to provide a share point of the type mentioned above or a tool combination with a share point which permits secure fixing of the guide element and the share point to a tine or similar carrier of an agricultural soil working machine and wherein at least one securing element is protected against wear.

The object of the invention with respect to the share point is achieved by the base part having a receptacle which is covered by a cover section in the tool feed direction. Therefore, the guide element may be accommodated securely behind the cover section with its free end. Thus the guide element and the securing element (screw) are protected in this area before impingement of the soil material removed by the share point. In particular, the guide element at its free end can then no longer bend or twist against the share point, so that a lasting functionality is ensured.

According to a preferred design variant of the invention, it may be provided that the receptacle is open towards the rear side of the base part to form a plug-in receptacle at the side. Thus, the guide element is also laterally protected and may be guided out of the receiving area through the open side.

5 According to a particularly preferred design of the invention, a share point may be so designed that the receptacle has at least one blocking piece for the positive locking of a guide element transversely to the tool feed direction. With the blocking piece, the guide element and the share point may be held against one another transversely to the feed direction, so that a reduction in the required number of fastening means, in particular
10 fastening screws, is achieved.

Particularly preferably, two blocking pieces arranged at a distance from one another transversely to the tool feed direction are used in the region of the receptacle. The guide element may then be inserted between these two blocking pieces.

A stable tool construction results wherein two blocking pieces are formed on the
15 base part at the rear side in the area of the cover section, and wherein the blocking pieces form contact surfaces. The guide element may be precisely aligned with the contact surfaces. Due to the fact that the blocking pieces protrude rearwards from the base part, the receptacle may be produced simply. In particular, the share point may then also be produced as a forged part with little tooling effort.

20 A further stabilization of the blocking pieces may be achieved by the receptacle comprising a connecting section to connect the blocking pieces with one another as one piece. This allows transverse forces to be reliably eliminated.

In order to simplify the mounting, it may be provided that a plug-in form of receptacle is delimited laterally by means of two lead-in chamfers arranged at a distance
25 from one another. Then the share point may be simply attached to the guide element.

A share point according to the invention may be designed so that a projection protruding over a deflector surface of the share point, is associated with the screw receptacle in the tool feed direction. The projection serves as a deflector for the soil material and conducts it from a screw head mounted in the screw receptacle. Thus, the
30 screw head is positioned in a wear-resistant manner.

The object of the invention is also achieved with a tool combination in which the guide element has a screw receptacle, which is covered by means of a cover section of the

share point. In this case, the cover section is positioned in front of the guide element in the tool feed direction, so that this may be accommodated securely here. As already mentioned above, the guide element is thus protected against the impingement of the soil material flowing past.

5 A variant of the invention may be so designed that the share point and the guide element are blocked relative to one another transversely to the tool feed direction by means of one or more blocking pieces. Preferably, the share point is provided with only one screw receptacle. In conjunction with the positive blocking, fastening elements may thus be eliminated. The share point may then be simply attached to a mounted guide
10 element when the guide element is provided with a plug-in projection, which is laterally inserted into the receptacle in the region of its end facing the share point.

In this case, the mounting is achieved in a simple manner, in particular if the plug-in projection forms two lead-in chamfers which are arranged in a V-shaped manner relative to one another.

15 Further optimization of the service life may be achieved for the guide element in a simple manner, wherein a hard material element is applied to the guide element in the connection region with the share point. The hard material element may, for example, be an armor layer, in particular a deposition weld, or it is also conceivable that hard metal or hard material elements are applied to the guide element.

20 The invention is explained in more detail below with the aid of an exemplary embodiment illustrated in the drawings:

Fig. 1 shows a perspective view of a Fig. with a share point and a guide element,

Fig. 2 shows a side view of the representation according to Fig. 1,

25 Fig. 3 shows an enlarged detail of a detail marked in Fig. 4 by III-III,

Fig. 4 shows an enlarged detail of a detail marked IV-IV in Fig. 2,

Fig. 5 shows the share point of the cultivator share according to Fig. 1 in a single view and in a perspective view from the front and

Fig. 6 shows a perspective view of the share point of Fig. 5 from the
30 rear.

Fig. 1 shows a cultivator share for cultivation on a tool carrier, in particular a (tine)
10 or tine carrier or plow beam or the like of an agricultural soil working machine. The tine

10 has a fastening part 11, which is penetrated by screw receptacles 12. The tine 10 may be mounted on a device carrier by means of these screw receptacles 12. As may be further design in Fig. 2, the tine 10 has a carrier part 13 facing away from the fastening part 11. A share point 30, a guide element 50 and laterally two share wings 20 may be attached to this support part 13.

The share wings 20 have a transverse beam 21, wherein cutting elements 22 made of a hard material are fastened thereto. Preferably, the cutting elements 22 consist of a hard metal, which is bonded, in particular brazed, to the transverse beam 21. An angled portion 23, which is equipped with screw receptacles, is bent away from the transverse carrier 21. The share wings 20 may be fastened to the tine 10 by means of fastening screws 14, which are guided through the screw receptacles of the angled portion 23 as well as screw receptacles of the support part 13. The guide element 50 with the fastening part 11 is installed above the share wings 20. As may be seen in Fig. 1 and 2, the guide element 50 is formed by a flat-shaped or forged steel component. It is bent in order to form a helical deflector surface. In some cases, rectilinear deflector surfaces may also be used. Hard material elements 56 are applied in the form of deposition weld on this deflector surface. Furthermore, the guide element 50 has a screw receptacle 57 which is clearly visible in Fig. 1. A fastening screw may be inserted through this screw receptacle 57. This fastening screw is passed through a screw receptacle of the support part 13 and is tightened by means of a nut. Fig. 1 shows an arc-shaped hard material element 56, in particular a deposition weld or hard metal element, is arranged in front of the screw receptacle 57 in the tool feed direction V (tool feed direction V marked in Fig. 2). This hard material element 56 serves as a deflector for soil passing by. The screw head of the fastening screw 15 is thus held sunk in the screw receptacle 57, and is protected against the abrasive wear of the soil. As may be seen in Fig. 2 and 3, the guide element 15 is still attached to the tine 10 by means of a second fastening element, in particular a fastening screw 15. For this purpose, the guide element 50 has a further screw receptacle 16. This screw receptacle 16 is arranged in alignment with a screw receptacle 57 of the support part 13 of the tine 10. A fastening screw 15 may be inserted through the aligned screw receptacles 57 and 16 and may be tightened by means of a nut. The guide element 50 is thus securely fixed at two fixing points by means of the two fastening elements 15. As Fig. 3 shows, the fastening elements 15 designed as fastening screws are equipped with a

screw head 15.1. The geometrical design of the screw head 15.1 and the screw receptacle 57 is such that the screw head 15.1 is held or recessed in order to be substantially flush with the front side of the guide element 50. This is clearly shown in Fig. 3.

Fig. 4 further illustrates that the screw receptacle 57 is machined to form a plug-in projection 51 of the guide element 50. The plug-in projection 51 has two guide surfaces 54 which are set at an angle to one another in a V-shape. These pass into side parts 52. The side parts 52 are arranged in the region of an end 53 of the plug-in projection 51.

A share point 30 is attached to the tine 10 in order to complete the cultivator share. The configuration of the share point 30 may be seen in more detail in Fig. 5 and 6.

As these drawings show, the share point 30 has a base part 31 which is penetrated by a screw receptacle 33. A designation field 32 is arranged above the screw receptacle 33. A projection 34.1, which protrudes in the form of a deflector over the front side deflecting surface 34 of the base part 31, is provided below the screw receptacle 33. In this way, the projection 34.1 forms an apron which protects a screw head located in the screw receptacle 33 against the abrasive impingement of the soil. The base part 31 has projections 35 which protrude over the deflector surface 34 in the tool feed direction in front of the projection 34.1. In the present exemplary embodiment, the projections 35 are rib-shaped and oriented transversely with respect to the tool feed direction. Indentations 36 are formed between the individual projections 35. Upon using the tool, soil may be compressed and fixed in the region of the indentation 36. This forms a kind of natural wear protection on the deflector surface 34. The base part 31 has a cutting edge carrier 37 in the tool feed direction in front of the projections 3. Cutting elements 40 in the form of hard metal elements are fastened to this cutting edge carrier 37. The cutting elements 40 have a flat-shaped fastening section 40.1 and a shoulder 40.2, which is formed thereon and projects counter to the tool feed direction V. A cutting edge 40.3 is formed in the region of the shoulder 40.2. The cutting elements 40 are fastened to the cutting tool carrier 37 in such a way that the free end edge of the cutting tool carrier 37 is at least partially surrounded by the projections 40.2 of the cutting elements 40, as may be seen clearly in Fig. 2 as well as Fig. 6. In this way, the free end of the cutting carrier 37 is wear-resistant. Hard material elements 21 are applied to the particularly heavily wear-affected edge regions of the base part 31 behind the cutting elements 40 in the feed direction. In the

present case, hard metal plates are soldered to the base part 31 as hard material elements 41. However, it is also conceivable that an armor welding or the like may be used.

Fig. 6 shows the share point 30 in a rear view. As may be seen from the illustration, projections 39 are formed on the base part 31 in the region above the cutting edge support 37. The projections 39 are rib-like and are arranged in the region of the longitudinal edges of the base part 31. The projections 39 are arranged at a distance from each other so that an indentation 39.1 is formed between the projections 39. The share point 30 has a receptacle 38 at the end facing away from the cutter carrier 37. The receptacle 38 is in the form of a pocket at the rear side of the share point 38. It has a cover section 38.1. Lead-in chamfers 38.2 in the form of wall elements adjoin the cover section 38.1 at the side. In this case, the wall elements are arranged in a V-shape with respect to one another. Blocking pieces 38.3 are arranged in the region below the lead-in bevels 38.2. In this case, the blocking pieces 38.3 are arranged at a distance from each other and are also formed by wall elements which rise from the cover section 38.1. The two blocking pieces 38.3 are integrally connected to one another by means of a base 38.4 of the receptacle 38.

For mounting the share point 30, the latter is pushed with its receptacle 38 onto the plug-in projection 51 of the guide element 50. As may be seen in Fig. 4, during this movement, the plug-in projection 51 of the guide element 50 may be threaded onto the lead-in bevels 38.2, so that a purpose-oriented assembly is possible. After the plug-in projection 51 has passed the lead-in bevels 38.2, the end 53 of the plug-in projection 51 slides between the two blocking pieces 38.3. The dimensional arrangement is so selected that the blocking pieces 38.3 are arranged laterally to the side parts 52. Thus, the share point may be positively fixed on the blocking pieces 38.3 transversely to the tool feed direction, taking into account a minimum clearance required by design engineering. For a defined seat, the base 38.4 and the end 53 of the plug-in projection 51 are then arranged at a distance (see play S in Fig. 4). Furthermore, the lead-in bevels 38.2 are also arranged at a small distance from the guide bevels 54 (see play S in Fig. 4).

After the share point 30 has been fixed with its receptacle 38 on the plug-in projection 51 of the guide element 50, the screw receptacle 33 of the share point 30 is arranged in alignment with a screw receptacle of the tine 10. A fastening screw may then be guided through the mutually aligned screw receptacles and the share point 30 may be

fixed to the tine 10 with only one fastening screw. The non-rotatable arrangement of the share point 30 to the tine 10 is ensured by means of the positive locking between the plug-in projection 51 and the receptacle 38.

5 In the assembled state, the share point 30 is in the region of the receptacle 38 with its deflector surface 34 terminating there above the upper side of the guide element 50. As may be seen in Fig. 3, this results in a step with a protrusion T. This protrusion T again serves as a deflector, wherein the soil from the screw head which is held in the screw receptacle 57 (see Fig. 1) is deflected. In order to be able to perform this function reliably, the clearance T should be at least 8 mm. An optimum wear protection effect is achieved
10 with a protrusion of ≥ 12 mm.

SKÆRSPIDS OG REDSKABSKOMBINATION MED EN SKÆRSPIDS

PATENTKRAV

1. Skærspids (30) til en landsbrugsmæssig jordbearbejdningsmaskine, som omfatter en basisdel (31), der har et skær (40.3), hvor basisdelen (31) har en skrueoptagelse (33)
 5 på en skærholder (37), der skal fastgøres på en holder, navnlig tænder (10), på den landbrugsmæssige jordbehandlingsmaskine, **kendetegnet ved, at** basisdelen (31) omfatter en optagelse (38) til modtagelse af en fri ende af et føringselement (50), som overlapper i redskabsfremføringsretningen (V) ved hjælp af et afdækningsafsnit (38.1).
2. Skærspids ifølge krav 1, **kendetegnet ved, at** optagelsen (38) er åbnet mod
 10 bagsiden af basisdelen (31) og lateralt danner en stikoptagelse.
3. Skærspids ifølge krav 1 eller 2, **kendetegnet ved, at** optagelsen (38) har mindst ét blokeringsstykke (38.3) for effektiv fastlåsning af et føringselement (50) på tværs af redskabets fremføringsretning.
4. Skærspids ifølge krav 3, **kendetegnet ved, at** optagelsen (38) har to
 15 blokeringsstykker (38.3), der er anbragt med en indbyrdes afstand på tværs af redskabets fremføringsretning.
5. Skærspids ifølge krav 3, **kendetegnet ved, at** to blokeringsstykker (38.3) er dannet integreret på basisdelen (31) i området med afdækningsafsnittet (38.1), hvor blokeringsstykkerne (38.3) danner kontaktflader.
- 20 6. Skærspids ifølge krav 3 til 5, **kendetegnet ved, at** optagelsen (38) omfatter et forbindelsesafsnit (38.4) til at forbinde stykkerne (38.3) integreret med hinanden.
7. Skærspids ifølge et af kravene 1 til 6, **kendetegnet ved, at** en stikoptagelse af optagelsen er afgrænset lateralt ved hjælp af to indføringsfaser (38.2), som er anbragt med en indbyrdes afstand.
- 25 8. Skærspids ifølge krav 1 til 7, **kendetegnet ved, at** et fremspring (34.1), som rager ind over en afledningsflade (34), er forbundet med skrueoptagelsen (33) i redskabets fremføringsretning (V).
9. Redskabskombination med en skærspids (30) og et føringselement (50) forbundet dermed, hvor skærspidsen (30) og føringselementet (50) omfatter skrueoptagelser (33,
 30 57) for fastgørelse af en tand (10), **kendetegnet ved, at** føringselementet (50) har en skrueoptagelse (57), som er dækket i redskabets fremføringsretning (V) ved hjælp af et afdækningsafsnit (38.1) af skærspidsen (30).

10. Redskabskombination ifølge krav 9, **kendetegnet ved, at** skærspidsen (30) og føringselementet (50) er blokeret i forhold til hinanden på tværs af redskabets fremførsningsretning (V) ved hjælp af et eller flere blokeringsstykker (38.3).
11. Redskabskombination ifølge krav 9 eller 10, **kendetegnet ved, at** skærspidsen (30) 5 er tilvejebragt med en skrueoptagelse (33).
12. Redskabskombination ifølge krav et af kravene 9 til 11, **kendetegnet ved, at** føringselementet (50), i området med dets ende som vender ind mod skærspidsen (30), har en stikansats (51), som er lateralt indsat i optagelsen (38).
13. Redskabskombination ifølge krav 12, **kendetegnet ved, at** stikansatsen (51) 10 omfatter to indføringsfaser (54), der danner en V-form i forhold til hinanden.
14. Redskabskombination ifølge et af kravene 9 til 13, **kendetegnet ved, at** føringselementet (50) er tilvejebragt med et hårdstofelement (56), navnlig et armeringslag eller lignende, i skærspidsens (30) forbindelsesområde.
15. Redskabskombination ifølge et af kravene 9 til 14, **kendetegnet ved, at** der er 15 tilvejebragt en skærspids (30) ifølge et af kravene 1 til 8.

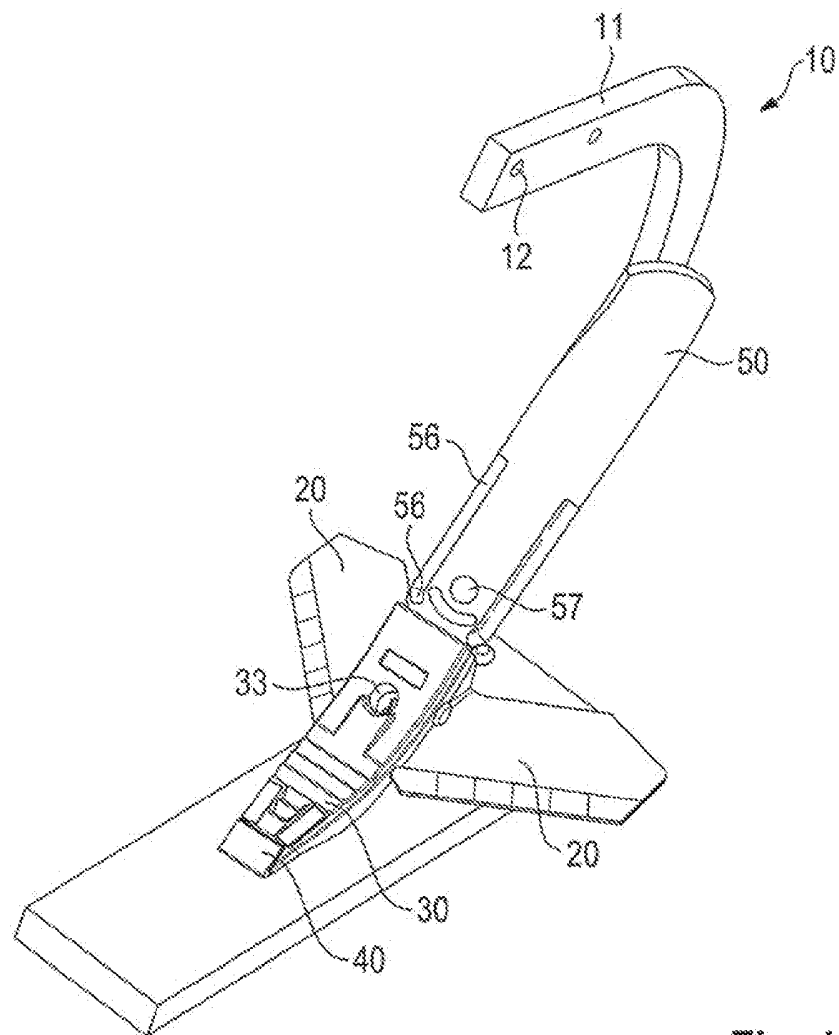
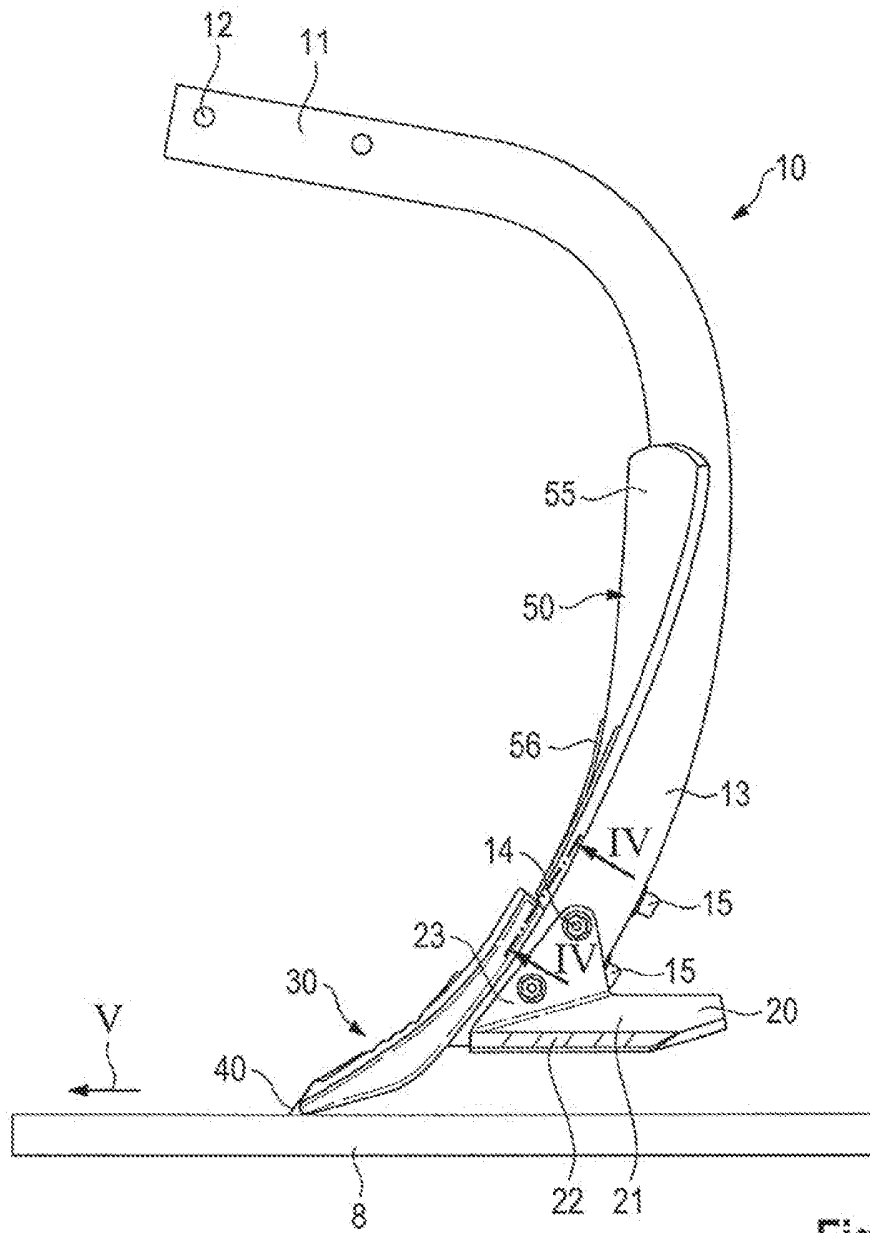


Fig. 1



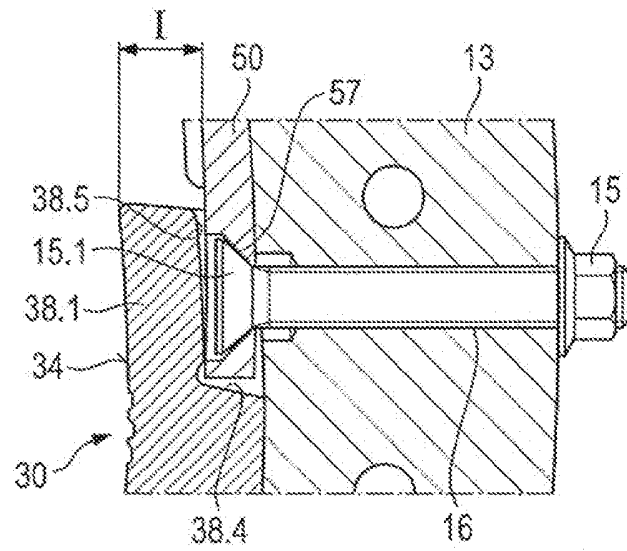


Fig. 3

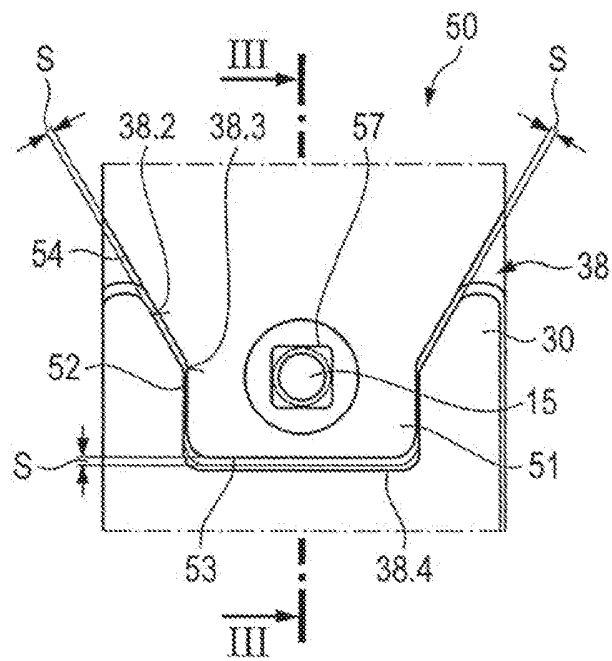


Fig. 4

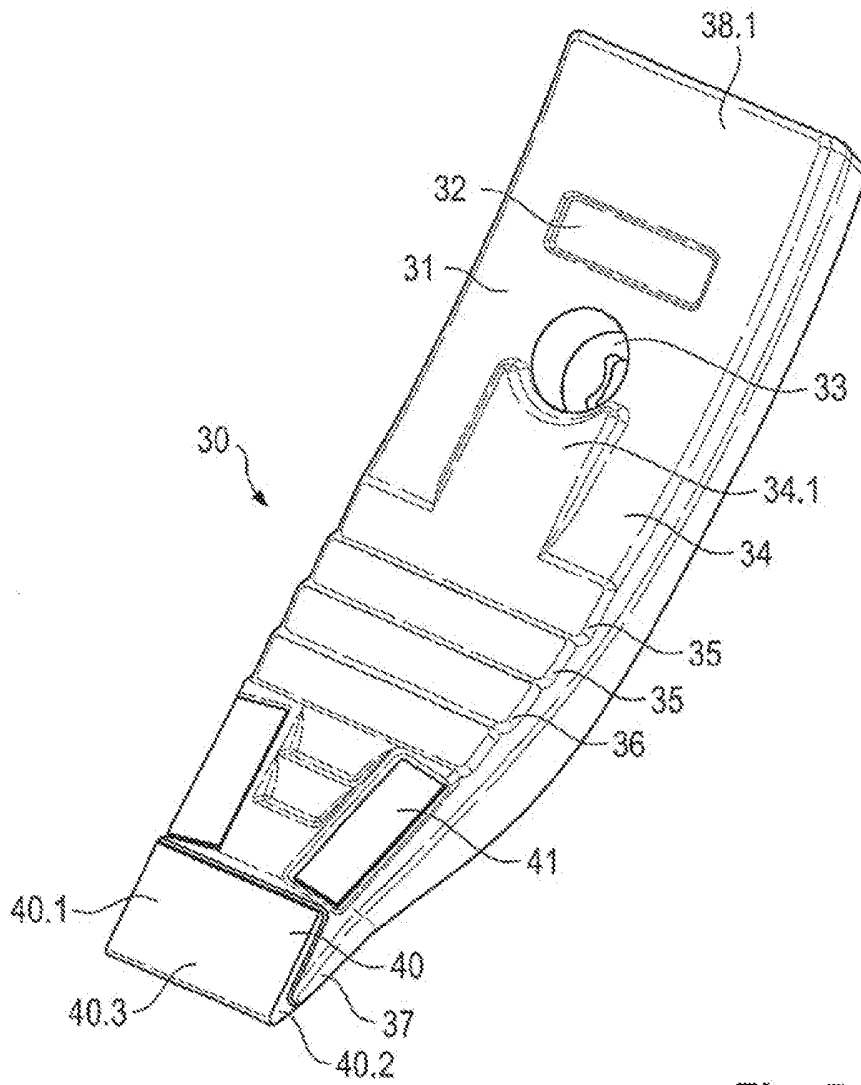


Fig. 5

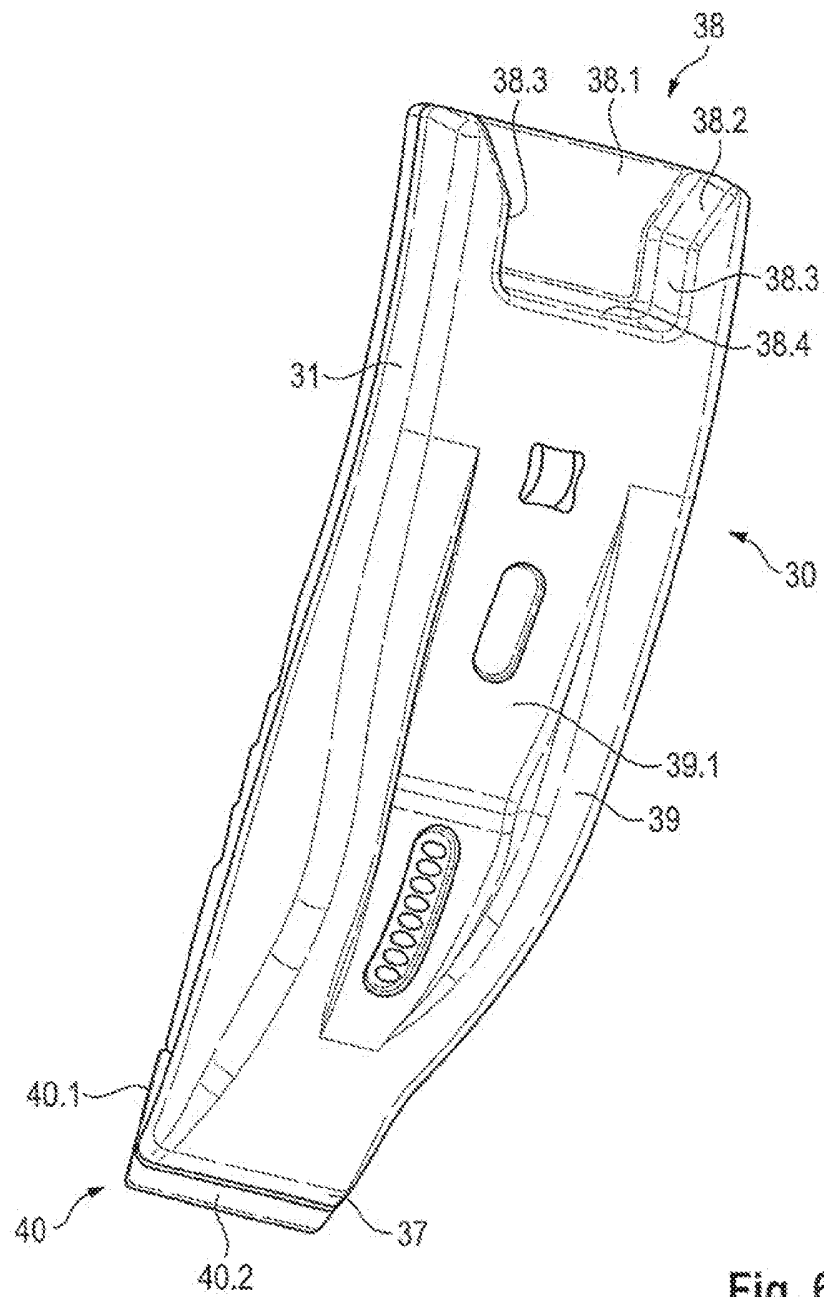


Fig. 6