This application constitutes an improvement on my application, Serial No. 125,435, filed July 28, 1926, and the invention relates to replaceable point excavator teeth of the kind in which a pair of vertically divergent jaws on the tooth point, having rearwardly extending anchoring tongs, are received upon a wedging nose formed on the tooth base while the rearwardly extending tongs are anchored to the base through means of sockets which they enter and a bolt passing through them and through the portion of the base which lies between them.

It has long been the practice, in replaceable point teeth of this kind, to resist spreading of the divergent jaws of the point by means of an integral web located in a medial vertical longitudinally plane of the jaws, the nose of the base being slotted conformably to said web; and it has also been the practice to resist spreading of the slotted nose of the base through means of lugs formed integrally with and projecting from the confronting outside edges of the jaws and entering upper and lower recesses formed in the outer sides of the nose.

In replaceable point excavator teeth of the kind above identified, the opening through the anchoring tongs and intervening base portion has usually been designed to cause the anchoring bolt, especially when given a wedging form, to bear rearwardly against the anchoring tongs and forwardly against the intervening portion of the base, with the result that the bolt on being driven home, draws the point to a firm seating upon the base. But the faces through which the point and base have been made to seat in previous constructions were those more or less abrupt faces which came into abutment in the direction of assembly, and unless the parts were designed with much greater accuracy than can readily be resorted to economically in production of articles by casting and finishing them by grinding, some abutting faces are brought into bearing in advance of others, with the result that seating abutment at longitudinally remote points, which is particularly important to resist weaving of the point upon the base under impact with obstructions encountered in use, was not attained, undue stresses were imposed upon the anchoring bolt and upon the anti-spreading members, and an undesirable condition of assembly resulted.

The object of the present invention is to provide a construction of replaceable point excavator tooth having all the advantageous attributes of the tooth already described, but so designed that firm seating will be insured on a much larger percentage of surfaces which are opposed to each other in the articulation, and therefore one in which assembly is very much more rigid and consequently more durable.

The invention proceeds upon the principle of having the important meeting surfaces of the tooth and base, and particularly those pairs of meeting surfaces which are remote one pair from another in the longitudinal direction of the tooth, and therefore the better adapted, collectively, to resist weaving of the point upon the base, formed at relatively small angles to the longitudinal direction of assembly so that each surface has a sliding movement upon the surface with which it cooperates in the seating of the point, so that with the abrupt surfaces kept out of abutment, one pair of seating surfaces will not arrest the assembly movement before another pair come into bearing; this beneficial condition being enhanced by the circumstance that the seating surfaces are largely on parts which are so designed as to permit some resiliency of the material of the tooth to enter into play; the underlying condition of seating by sliding movement being embodied with peculiar advantage in a tooth construction involving the slotted nose receiving the tying web and the anti-spreading lugs for sustaining the members of the slotted nose, for the reason that the walls of the slot and the faces of the tying web are at the aforesaid angles of inclination to the direction of assembly and develop a wedging effect at that location, while the overlapping lugs at the sides of the point and the faces of the recesses in the nose which receive them are similarly inclined to insure wedging fit at that location; each member of the slotted...
or bifurcated nose constitutes a wedge entering between an inclined surface of the tying web on the one hand and the inclined surfaces of two anti-spreading lugs on the other hand; and, finally, the surfaces of the anchoring tangs and those of the sockets which receive them are inclined at least to the extent of insuring vertical wedging fit, and if desired horizontal wedging fit as well, so that with a substantial correspondence between the angles of inclination of the several seating surfaces, bearing is established on all of them and all contribute simultaneously to resistance of movement of the point on the base, instead of having some of the surfaces in bearing and others out of bearing so that the latter begin to resist movement only after the former have yielded.

In the accompanying drawings, in which a preferred embodiment of the invention is shown by way of illustration,

Figure 1 is a side elevation of a base and its point, the extreme inner end of the base being omitted.

Figure 2 is a side elevation of the point detached.

Figure 3 is a section in a medial vertical longitudinal plane of that portion of the base with which the invention is immediately concerned.

Figures 4 and 5 are plan views of the point and base, respectively, and Figures 6 and 7 are vertical transverse sections taken, respectively, on the lines 6'-6' and 7'-7' of Figure 1.

1 represents a base and 2 the point, both of which are preferably designed with known features of construction. That is to say, the point 2 comprises the diverging jaws 3 connected by tying web 4 in a vertical medial plane of the point; also anti-spreading lugs 5 on opposing outer marginal portions of the said jaws, and anchoring tangs 6 projecting rearwardly from the jaws and provided with openings 7 to receive an anchoring bolt; and the base comprises a tapered nose 8 having a slot 9 in a vertical medial plane thereof designed to receive the tying web of the point and dividing the nose into two members 8a on either side of said slot; also recesses 10 on the outer faces of the nose member 8 designed to receive the anti-spreading lugs 5; sockets 11 having overhanging hold-down ledges 11a designed to receive the anchoring tangs 6; and bolt hole 12 that receives the bolt 13 passing through the anchoring tangs 6 and the intermediate portion 14 of the base.

The present invention modifies the construction of the parts above enumerated by having the vertical faces of the tying web 4, as well as the corresponding vertical faces of the slot 9, inclined, as shown by dotted lines in Figure 4 and full lines in Figure 5, to the vertical longitudinal plane of the tooth so that these parts assemble with a wedging fit; also having the inner faces 5a of lugs 5 as shown in dotted lines in Figure 4, and the outer faces 10a of recesses 10 as shown in full lines in Figure 5, correspondingly inclined but in a direction relatively to the vertical longitudinal plane of the tooth which is opposite to the inclination of the faces 4a and 9a, with the result that in the assembly of the point with the body by longitudinal movement, the faces 4a and 9a on the one hand, and the faces 5a and 10a on the other hand, seat in pairs with a sliding movement so that all of said faces can come into bearing, and a very tight and substantial fit will be insured laterally; and each nose member 8a will have its surfaces 9a and 10a wedged in between the surfaces 4a and 5a on the point. Again, the surfaces 6a of the tangs 6, as well as the surfaces 14a of the intermediate portion 14 of the base 1, and especially those portions of the surfaces 14a which constitute vertically presented external surfaces of the nose members 8a and which lie between said tangs when the parts are in assembly, are made to diverge rearwardly or incline respectively upward and downward at a slight angle to the horizontal longitudinal plane of the tooth, with the result that these parts assemble with a sliding bearing one against the other and insure a tight fit against vertical weaving of the point upon the base. Abrupt faces of the point and the base, or those which are at relatively large angles to longitudinal planes of the tooth, do not come into bearing in the assembly of the point with the base, at least until after the point has ridden up upon the seating surfaces of low inclination, so that there can be no arrest of movement of the point until all those surfaces which are important in resisting relative movement have come into firm bearing. Preferably initially at least, and until the parts become very firmly seated, the abrupt surfaces will be entirely out of contact. Bolt 13 for anchoring the tangs to the body portion will bear on its forward face against the intermediate portion 14 of the base, and with its rear face against the tangs 6, thereby drawing the seating surfaces or those of low inclination to a firm seating. Preferably the inclination of the seating surfaces, including those which impinge to resist lateral weaving, as well as those which impinge to resist vertical weaving, will be at the same angle of inclination to the axis of assembly movement, thereby realizing to the fullest degree a feature of insuring seating of all surfaces or preventing defeat of seating on one pair of surfaces by premature seating of other surfaces.

I claim:
1. An excavator tooth, comprising a point constructed with jaws, a tying web uniting said jaws, and anti-spreading lugs spaced laterally from the tying web; and a base con-
structured with a nose having upper and lower faces to receive said jaws, with a slot to receive said web and with faces against which the anti-spreading lugs bear when the point is assembled with the base; the defining faces of the slot of the nose and the faces of the tying web on the one hand, and on the other hand the faces of the anti-spreading lugs and those faces on the nose which receive said lugs being approximately vertical faces and, being inclined at low angles to the axis of assembly movement and permitting all of said faces to seat in the assembly, thereby producing in the nose the effect of two independent wedges, each of which is confined in both lateral directions between converging faces.

2. An excavator tooth as described in claim 1, in which the jaws of the point are constructed with rearwardly extending anchoring tangs, and the base is provided with faces upon which said tangs bear vertically, and which, together with the bearing faces of the tangs, are inclined to the longitudinal axis of point assembly proportionately to the inclination of the vertical faces through which the nose receives the point.

Signed at Chicago Heights, Illinois, this 8th day of July, 1927.

W. T. McNINCH.