The present invention relates to a boundary mark for marking off boundary points, consisting of a marking part arranged above the ground and an anchoring part fastened in the ground itself.

Such boundary marks have been made up to now of granite or a concrete stone of a square shape. Such boundary stones have a long service life after they are introduced into the ground, but such stones very often break before, particularly during their transport. The setting of these boundary stones requires, furthermore, much work and time, because they are put into the ground after a hole has been dug and they are tampered in this hole for anchoring them. It is evident that unauthorized persons can easily shift this boundary stone after its setting with generally usual tools. Furthermore the stones weather and decay after some time and it is difficult to find them in the terrain. Finally it happens rather often that the part of the boundary stone protruding over the surface of the ground breaks e.g. if a tractor bumps against it. In such cases it is possible to find the part lying under the ground only by exact measurements.

The invention provides a boundary mark of the type cited above, which does away with the described drawbacks and which has a long service life. For this purpose the boundary mark according to the invention comprises a marking part of a material of low specific weight, high general resistance and resistance against weather influences, preferably made of plastic material, and an anchoring part which consists of a material of high dimensional stability and hardness, preferably of metal.

By this measure not only the weight of the boundary mark is very greatly diminished (about 2.2 lbs. as compared with about 44 lbs. of the granite stones used up to now), but it becomes possible, because of the dimensional stability and the hardness of the anchoring part, to drive the boundary mark into the ground e.g. mechanically without there being the necessity for digging work or later tamping. Besides the material of the marking part has a service durability which is at least not smaller than that of the granite stones used up to now. It must be considered, furthermore, as an advantage, that the anchoring part consisting of metal can be found easily in those cases in which the marking part was broken off by any outer influences. It is, indeed, possible to find the underground anchoring part made of metal easily by means of known electric iron detecting devices provided for this purpose.

It is preferable that the marking part consists of a shaft and of a marking head fastened in a seat on the upper shaft end. In this case the marking head can carry out the actual function of the marking, by painting the upper surface of the marking head, e.g. with a colour visible from far away. This surface may be provided also in its center with a concave point or a cross, which facilitates a very exact setting of the boundary mark and an exact survey.

A further feature of the invention is that the anchoring part may consist of a point having a boring thread. Such a measure has the consequence that the penetration of the boundary mark into the soil can be effected mechanically and that besides no deviation from the predetermined spot takes place when the boundary mark penetrates in the ground. It is also necessary to use special tools to remove such a boundary mark and these tools are not at the disposal of everybody, so that a later unauthorized removal is rendered considerably difficult.

It is favourable, in this connection, if the marking part has on its upper end a polygonal head, by means of which the rotational movement of same by means of a machine is facilitated. It is also preferred that the shaft of the marking part is tubular. It is known, indeed, that tubes are rather torsion-proof so that a tube of plastic material can transfer the rotational moments introduced by the machine to the metal point with boring thread, without there being any danger of breaking. In order to insure that there is no additional resistance against the threading-in of the marker, if not only the anchoring part but also the lower portion of the marking part is threaded in the ground, the shaft of the marking part is preferably of a circular section.

The invention is based on the idea to shaping the boundary mark, contrary to the earlier configuration of the boundary marks of solid stone without any difference between the marking part and the anchoring part in such a way that at least the marking part is of a relatively light weight. This may be obtained according to the invention also by the fact that the marking part may consist of a metal tube and of a marking head arranged on its upper end, while the anchoring part is made of metal.

Further features of the invention are described in the following description in connection with the accompanying drawings, in which two embodiments of the invention are shown.

FIGURE 1 shows a side view of the new boundary mark of the invention.

FIGURE 2 shows a top view of said boundary mark.

FIGURE 3 is a sectional view taken along the line III--III in FIGURE 2.

FIGURE 4 shows a fragment of a second embodiment of the new boundary mark in central cross section.

In the embodiment according to FIGURES 1 and 2 the boundary mark consists of a cubic head 2 of plastic material with a white upper surface and furthermore of a very solid, weather-resisting and acid-proof tube or rod 1 of plastic material. The upper end of the tube 1 is arranged to form a seat 1' for the cubic head 2. The fastening of the head 2 in the seat 1' can take place in any known manner, e.g. as by gluing or by screwing. At the lower end of the tube 1 of plastic material a metal point 3 is provided, preferably of cast iron or steel, which point 3 is provided with a boring thread 4 which serves not only for the easy threading of the mark into the ground but simultaneously for the fastening of the mark in the ground. The fastening of the anchoring part 3, 4 on the lower end of the tube 1 of plastic material can be made in any known manner, e.g. by screwing, riveting, pressing on or the like. In respect of the weight on the one hand and visibility and service durability on the other hand it has been found particularly advantageous, if the boundary mark has a length of 300 to 1200 mm. and if the tube serving as head has an edge length of 50 to 200 mm. In some cases it is necessary that besides the marking off above the ground by means of the visible rod 1 also an additional underground marking must be carried out. For this purpose a second mouth piece (not shown) of similar configuration can be mounted above, or on top of, the point 3, which is first driven respectively threaded into the ground by means of the boundary mark. Thereafter the boundary mark above the ground is released by a backward rotation from the additional mouth piece which may be similar to the cone 12 shown in FIGURE 4, and this latter remains in the ground. Thereafter, the boundary mark with the visible marking part above the ground can be threaded anew into the ground at the side...
of the mouth piece, so that a double marking-off is achieved. By a known electric iron detector the underground boundary mark can be found without any difficulty even if the boundary mark with the part 1 above the ground has been removed by someone. The said additional mouth piece consists of a metal which can be easily and surely indicated by an iron detector. The additional mouth piece is generally of a similar configuration as the point 3 of the boundary mark, i.e., the mouth piece may have likewise a boring thread, but is of a hollow configuration, so that after the threading-in of the mouth piece by means of the additional boundary mark the mouth piece is released from the boundary mark by a backward rotation of this latter and thus remains firmly in the ground because of its own thread.

In most cases the new boundary mark can be threaded into the ground without any difficulty. In case of stony ground a hole may be bored likewise mechanically by means of a boring chisel and into this hole the boundary mark can be threaded in.

It must be emphasized that the tube 1 need not consist in any case of plastic material. Because of the configuration of this part above the ground a low weight is obtained even if this tube consists e.g. of a stainless steel.

A particularly preferred embodiment of the new boundary mark which is easy to manufacture and particularly resistant, is shown in FIGURE 3. In this case the portion of the boundary mark above the ground consists of an inner steel tube 5, over which an outer plastic tube 6 is pulled. On the upper end of the tubes 5, 6 there is fastened again in known manner a cubic marking head 2. On the upper side of this head cams 8 are provided, which facilitate the threading-in of the boundary mark by means of a boring machine. There is, besides, a point 9 on the upper side of the head 2 and in its center, which point serves as an exact marking. This point 9 can be shaped also in such a way that it can be taken out and for this purpose it may be arranged in a hole in the head 2. Into this hole a ranging rod may be introduced when measuring or when boundary lines are drawn, so that the time consuming setting of the ranging rods becomes unnecessary.

The lower end of the steel tube 5 protrudes somewhat below the tube 6 of plastic material. In this manner the steel point 3 can be fastened on the lower end of the steel tube 5. For this purpose it is only necessary to arrange a weld seam in the hollow spaces 11 between the upper end of the steel point 3 and the lower end of the steel tube 5. The plastic tube 6 can be pulled over after the point 3 has been welded on, so that the weld seams 11 are covered by the lower extremity of the plastic tube.

6. The steel point 3 is of hollow configuration and carries a boring thread 4 made of steel sheet metal and welded to the point 3. A further very hard point 12, preferably of cast iron, is placed over the point 3. For this purpose the cast iron point 12 has helicoidal recesses into which the boring thread 4 engages.

The plastic cover on the metal tube 5 need not absolutely consist of a plastic tube. The plastic cover may also be applied in other ways e.g. by dipping the tube 5. It must be emphasized that the invention is not limited to the shown and described embodiments, but that the boundary mark may be manufactured also of one, two or several parts and furthermore fully or partially of plastic material, metal or wood. The head of the boundary mark may, furthermore, have any shape or colour.

I claim:

1. A readily visible device for marking the boundaries of land, said device being engageable by a torque applying tool, comprising:

- an elongated cylindrical and metallic tube of substantially uniform diameter having upper and lower ends;
- a cone-shaped point rigidly secured to the lower end of said tube and converging downwardly and coaxially therefrom;
- a helical boring thread fixed on said point, said thread being adapted to move said point into the ground in response to rotation of said tube;
- a substantially polygonal and plastic head rigidly secured on and around the upper end of said tube and extending radially of said tube beyond the side walls thereof for engagement by the torque applying tool, whereby said tube can be rotated around its lengthwise axis, said head having an easily visible and detectable appearance, said head having a substantially flat and perforate upper surface; and
- a weather resistant, plastic covering embracing said tube from said head to said point.

2. A device according to claim 1, in which the point has a similarly shaped hollow metal point sleeved thereon and detachably secured thereto.

References Cited by the Examiner

UNITED STATES PATENTS

207,518 8/78 Hayden --------------- 52—165 X
504,987 9/53 Marum --------------- 52—118
1,745,517 2/30 Tyson --------------- 52—157
1,965,619 7/34 Glass --------------- 52—204
2,965,383 12/60 Steiner et al. -------- 279—102

CHARLES E. O'CONNELL, Primary Examiner.

HARRISON R. MOSELEY, Examiner.