Oct. 9, 1934. E. L. MINER ET AL 1,976,264

SECTIONAL RANGE POLE

Filed Nov. 13, 1929

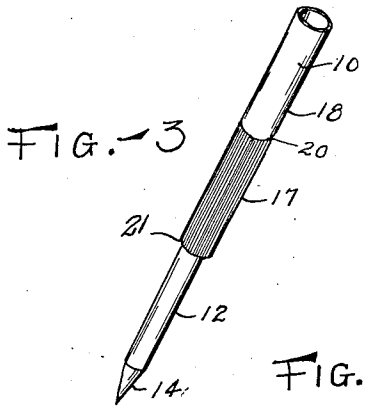


FIG. 3

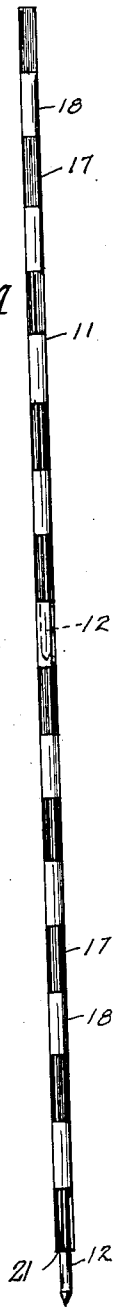


FIG. 1

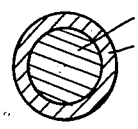


FIG. 4

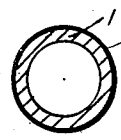


FIG. 5

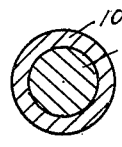


FIG. 6

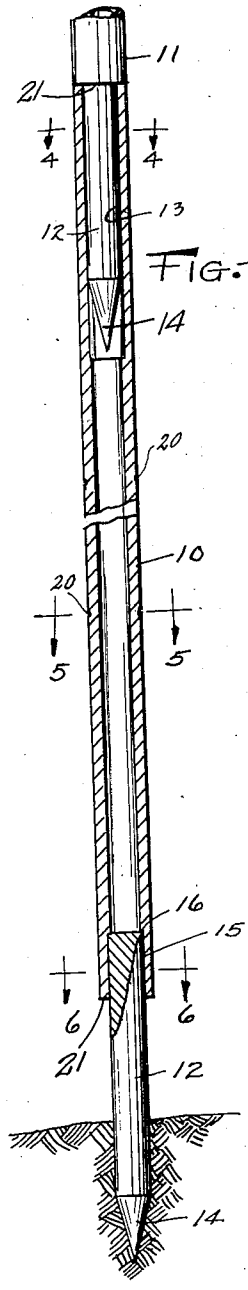


FIG. 2

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SECTIONAL RANGE POLE

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4 Claims. (Cl. 189—26)

The present invention relates to improvements in range poles and has for an object to provide an improved range pole for use of surveyors and others which will be light, durable and inexpensive in construction.

Another object of the invention is to provide an improved tubular range pole constructed with a view to its strength against buckling and to a solidity which will enable it to be readily set in roots, logs, stumps, hard soil and also in solid ice.

A further object of the invention resides in providing an improved range pole of a sectional character, any number of sections being used, whereby the pole may be built up to an appropriate length or height, for emergency lengthening of pole, as in chaining over hills.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawing, wherein like symbols refer to like or corresponding parts throughout the several views.

Figure 1 is a side elevation of an improved sectional tubular range pole constructed in accordance with the present invention.

Figure 2 is a fragmentary longitudinal section taken through portions of the improved range pole, the intermediate portion of the pole being broken away as indicated.

Figure 3 is a perspective view of an end portion of one of the sections.

Figure 4 is a cross-section taken on the line 4—4 in Figure 2.

Figure 5 is also a cross-section taken on the line 5—5 in Figure 2, and

Figure 6 is a further cross-section taken on the line 6—6 also in Figure 2.

Referring more particularly to the drawing, in Figure 1 there is shown for illustration a range pole composed of two sections 10 and 11. Each pole section is made up of an appropriate length of seamless steel tubing of any desired thickness of wall or size of tubing. Each section is reamed out to form a socket at each end, so that it may carry at one end a stake or pin 12 of solid drill steel or other appropriate material. At its opposite end each tubular section is provided with a relatively longer socket 13 adapted to receive the pin of an adjacent section whereby the several tubular sections are detachably connected together to form the range pole.

Whereas the tubing sections are hollow, the stake pins 12 thereof are preferably solid and pointed at one end as indicated at 14 for facility in driving the pole into the ground or into roots, logs, stumps, hard soil or solid ice. The pins 12 are preferably tempered, and the butt ends thereof, which are sawed off at right angles to the axes of the pins are inserted in the lower ends of the tubing sections, such sections being reamed out, to form a relatively shorter socket as indicated at 15 to a slightly larger diameter than the internal diameter of the tubing, with the result that shoulders 16 are provided against which the butt ends of the pins 12 engage. These butt ends of the pins 12 are preferably forced into the reamed socket ends 15 of the tubing with arbor presses, to firmly secure the pins in the reamed out socket 15, and resulting in an external shoulder 21 to limit the entrance of the pin in the socket 13 of the next pole section. The sockets 13 in the upper ends of the tubing sections are also preferably reamed out and advantageously these sockets may extend to a depth of approximately 4 inches. A very slight annular depression 20 will be provided between zones later to be described.

Such sockets 13 are of a diameter preferably slightly larger than the steel points or pins 12 whereby to form slip joints for the pins 12 of the section next above, and provide a smooth external surface at such joint at the said shoulder 21. The tubing sections are painted or otherwise colored in zones 17 and 18 which alternate throughout the entire pole, such zones being of contrasting colors, for instance, the zones 17 are indicated as red while the zones 18 are white. Such zones may extend for a distance of 6 inches, more or less.

In the use of the device, the pole sections may be of any appropriate length, for instance, four or five feet or the sections may be made of varying lengths, each pole section having a length which is a multiple of the length of said zones thereof, the surveyor keeping a quantity of such sections on hand to build up the range pole as required. The lowermost section 10 is first erected by driving its pin 12 into the ground or into some other appropriate substance as shown in Figure 2. Thereafter the next section 11 is assembled by inserting the pin 12 whose butt end is carried in the socket 15, into the socket 13 of the lower section 10, until the shoulder 21 contacts the upper end of the hollow tubing sections, as also appears in Figure 2. The sharpened end 14 of the pin will facilitate the assembling. As the tubes or sections are of uniform internal diameter between the sockets, the upper section will rest upon the lower section and be supported thereby, and

each pin 12 will be secured by its butt end in the socket 15 of one section, while the pointed end is detachable from the other section socket 13. Further sections may be added in the same way to give a pole of the required length. The construction makes an individual rod of each section, while also supplying the surveyor with an extension rod of any length sufficient to extend above obstructions.

The rods are durable, will not buckle, are tubular and thereby light enough for all practical purposes, and yet heavy enough to be readily set in roots, logs, stumps, hard soil and even in solid ice. The rods are exceedingly convenient for plumbing, in chaining up and down hills, through tall grass and low underbrush. The devices are accurate and dependable for measuring off set lines, etc.; and they also serve as stadia rods for reading approximate distances. It will be noted in Figure 2 that the intermediate portion of the lower section 10 is broken away. This Figure 2 is taken on an enlarged scale in order to show the construction of the pins and the method of mounting such pins in the sockets of the tubes and the method of assembling and it was therefore necessary to omit a large intermediate portion of the section 10. It is to be understood that the section may be of any length desired.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims.

What is claimed is:

1. An improved range pole, comprising detachable sections of tubing each having a reamed-out cylindrical socket in each end thereof but of different lengths, and a pin having a sharpened point for insertion in the longer socket of an adjacent section and a cylindrical butt end secured firmly but detachably in the shorter socket of another section, such point projecting from said shorter socket and thereby forming an external shoulder to limit the insertion of such point in said longer socket.

2. An improved range pole section comprising a length of metallic tubing having a reamed-out cylindrical socket in each end thereof and of different lengths, the shorter socket of said section ending at an inner shoulder therein, and a sharpened pin having a cylindrical end firmly secured in such shorter socket and resting against said shoulder, and the longer socket of the section having suitable dimensions to detachably receive therein the sharpened end of a similar pin carried by another section.

3. An improved range pole section comprising a length of metallic tubing having both ends open and reamed out to provide a cylindrical socket in each and of different depths, the shorter socket having a slightly larger diameter than the internal diameter of the tubing and so having an inner shoulder in the section, a sharpened pin having a cylindrical end forcibly inserted in said shorter socket and against said shoulder, the pointed end of said pin projecting from the tube end thereby forming an external shoulder at the end of the tubing about said pin, the latter having suitable dimensions to detachably fit the deeper socket of a similar section and permit contact of said external shoulder with the end of the adjacent section, to provide a smooth external surface at the point of fitting and positively determine the combined length of a plurality of similar sections.

4. An improved extension range pole comprising detachable sections of tubing of equal length, each section being provided with a cylindrical socket in each end thereof, and a solid cylindrical stake pin having one end sharpened and conical, and the other end firmly but detachably secured in one of the sockets of a tubing section, the said conical end extending beyond the tubing and insertable in the open socket of another section, thereby providing a detachable sectional pole adapted to be supported upon a single stake pin.

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