H. E. P. TAYLOR.

BEAM COMPASS.

APPLICATION FILED FEB. 18, 1909.

928,712.

Patented July 20, 1909.

Fig. 1.

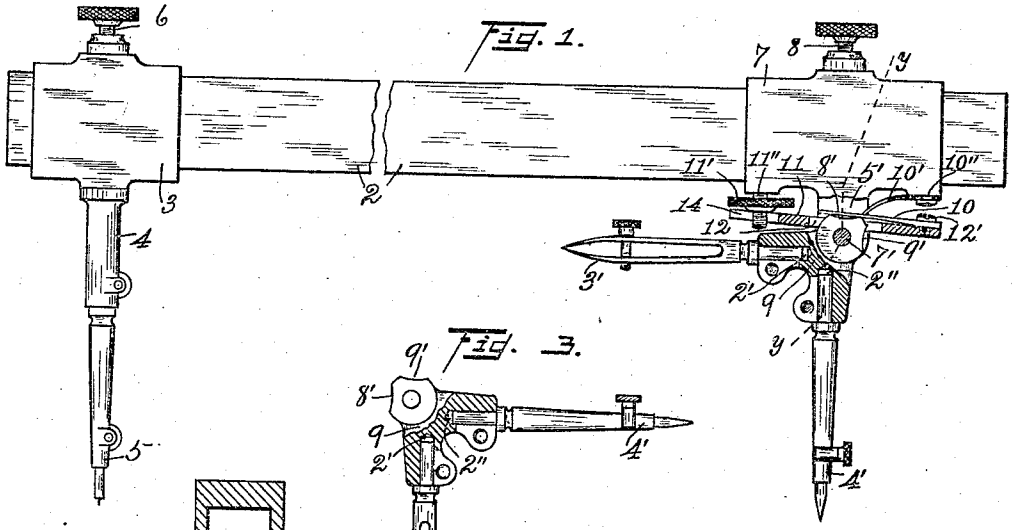


Fig. 3.

Fig. 2.

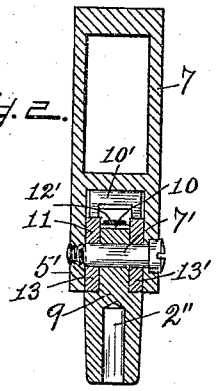


Fig. 5.

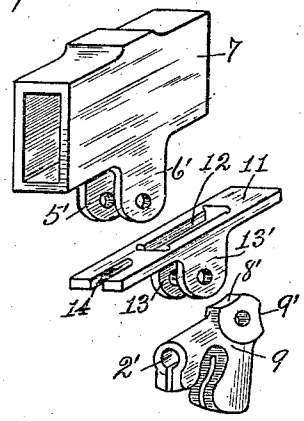


Fig. 4.

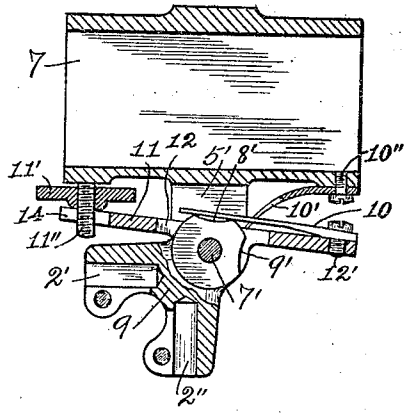
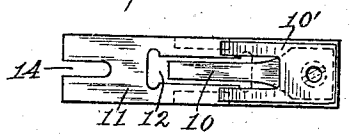


Fig. 6.



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UNITED STATES PATENT OFFICE.

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BEAM-COMPASS.

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To all whom it may concern:

Be it known that I, HENRY E. P. TAYLOR, a citizen of the United States, and a resident of Seymour, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Beam-Compasses, which improvements are fully set forth in the following specification.

This invention relates to improvements in devices of that class commonly known as beam compasses, the same being availed of for forming or describing circular or segmental lines on a flat surface, such as presented by a sheet of paper; and its object is to provide a beam compass which shall be simple and comparatively inexpensive as regards construction; durable, efficient and reliable in practical service; which shall embody novel features whereby the facility and convenience with which the device may be applied to practical purposes are materially enhanced; and which shall possess certain well-defined advantages over prior analogous constructions.

The invention consists in the novel combinations, parts and details whereby, together with the novel disposition and relative arrangement of said parts, the attainment of the foregoing object is rendered practicable, all of which will be more specifically referred to hereinafter and set forth in the appended claims.

The invention is clearly illustrated in the accompanying drawings, wherein similar reference-numerals denote like parts throughout the several views, as to which:

Figure 1 is a side elevation, partly in section, of a beam compass embodying my said improvements. Fig. 2 is a vertical, transverse section of same, as along the line *y*—*y* of Fig. 1 Fig. 3 is a detail side elevation of the multiple socket-head which I make use of, certain adjacent parts being shown in conjunction therewith, and the socket-head being shifted out of the position it occupies in Fig. 1. Fig. 4 is a detail central, longitudinal section of the secondary slide which I make use of, certain minor parts being shown in conjunction therewith, and the scale being enlarged. Fig. 5 is a detail view, showing in perspective the secondary slide aforenamed, and certain minor parts in readiness for assemblage therewith. Fig. 6 is a detail plan view of the rocking-arm and adjacent coöperating parts, detached from the secondary slide.

In a general sense my present invention comprises a beam, a secondary slide thereon, a multiple, tool-carrying socket-head, pendulously attached to said slide, whereby the tools carried thereby may be brought, one at a time into position for service, and means for automatically and yieldingly controlling said socket-head.

In carrying out my invention, reference being had to the accompanying drawings, I make use of a beam 2, of any appropriate material, as wood or metal, and a primary slide 3 thereon, the latter being provided with a depending socket 4, for receiving a pointed tool 5, and with a set-screw 6, whereby it may be firmly attached to said beam at any desired point within its range of adjustment therealong, all as in common practice. 7 denotes a secondary slide, arranged also on the beam 2 for adjustment to and fro therealong, and provided with a fastening device 8, usually in the form of a set-screw, and whereby said slide may be firmly attached to said beam at any desired point within its range of adjustment therealong, as will be readily understood. I further make use of a multiple socket-head 9, which is primarily attached pendulously to the slide 7, and hence has an arc of swinging movement beneath, and preferably in the plane of, the beam 2. Specifically, this socket-head 9 is provided with a plurality of sockets, as 2′, 2″, which radiate, approximately, away therefrom and preferably at an angle of ninety degrees with respect thereto, each being adapted to receive and hold a tool, as a drawing-pen 3′, or pencil 4′.

The socket-head 9 is disposed between the opposite ears 5′, 6′, which depend from the slide 7, and works on an arbor 7′, which projects through both of said ears and the socket-head therebetween. This arbor 7′ may be of any appropriate form, as that of a headed bolt having a threaded engagement with one of the ears aforenamed, as indicated in Fig. 2 of the drawings. Accordingly, the socket-head 9 becomes pendulously movable beneath and in the plane of the beam 2, and by reason of this movement thereof, either of the sockets 2′, 2″, each with the tool adjusted therein, may be brought into its normal position of service, preferably at a point beneath and perpendicular to the beam 2, while the other socket, with the tool adjusted therein, remains well out of such normal position of service, but

in readiness to be brought thereinto as occasion may require, and hence avoiding the necessity of replacing one tool with another, as in prior analogous devices.

It is essential that automatic means be provided for yieldingly locking or checking the socket-head 9 against movement in either direction, as on the arbor 7′; and to this end, I purpose to give a manysided form to that portion of the socket-head 9 most distant from the sockets 2′, 2″, and further provide a leaf-spring 10, suitably disposed and bearing with a somewhat yielding pressure against this portion of the socket-head, which comprises a flat, or preferably somewhat concaved, working surface 8′, arranged transversely to the socket 2″, and an additional like surface 9′, arranged transversely to the socket 2′. Hence, when either of the sockets 2′, 2″, with the tool held therein, is brought into its normal position of service, the spring 10 traverses and bears yieldingly against the working surface aforenamed arranged transversely with respect thereto, and thus automatically tends quite strongly to yieldingly hold the socket-head 9 against movement in either direction on the arbor 7′, and accordingly said tool is held in such socket, against displacement from its said normal position of service. However, by applying an adequate force or pressure, say, to the socket-head 9, and in the proper direction, the force or pressure exerted by the spring 10 may be overcome, and the socket-head 9 shifted or moved on the arbor 7′, sufficiently to displace one tool from its normal position of service, and bring another tool into said position of service, or vice versa, the spring 10 always bearing on the working surface 8′ or 9′ arranged transversely to the socket within which is adjusted the tool which occupies the normal position of service, as hereinbefore defined, all as will be clearly understood from Fig. 2 of the drawings. Again, it is at times desirable that a so-called micrometer adjustment be provided, and whereby each tool occupying its normal position of service may be measurably shifted therefrom and held under such adjustment for practical service, and without the effect of bringing another tool into said normal position of service. With a view to the attainment of the foregoing end I provide a rocking-arm 11, which has a central, elongated opening 12, lugs 13, 13′, depending therefrom at the opposite sides thereof, respectively, and midway the length thereof, and an open ended slot 14, at one end thereof, the function of which slot will be explained hereinafter.

When the parts are duly assembled, the manysided portion of the socket-head 9, ordinarily reduced in thickness as compared with the remaining portion thereof, and from which radiate the sockets 2′, 2″, projects upwardly through and somewhat beyond the rocking-arm 11, by way of the opening 12 formed therein, with the lugs 13, 13′, projecting downwardly at the opposite sides thereof; and under this condition of the parts, the arbor 7′ projects through the ears 5′, 6′, the lugs 13, 13′, and the socket-head 9, thereby duly supporting said rocking-arm and said socket-head relatively in position, and permitting a limited movement of either thereon, independently of the other, under certain conditions.

10′ denotes a leaf-spring, secured to the under side of the slide 7, as by means of a screw 10″, and whose free end yieldingly presses against the rocking-arm 11 thereunder, at one side of the arbor 7′; while at the opposite side of said arbor, and intermediate of the slide 7 and the slotted end of the rocking-arm 11, there is disposed an adjusting nut 11′, which works on a threaded stem 11″, fixed in the slide 7 and projecting downwardly therefrom, through and somewhat beyond the rocking-arm 11, by way of the slot 14, the latter, accordingly, permitting the use of a stem of greater length than would be practicable in the absence of such slot or similar opening, and hence a greater range of adjustment for the nut 11′, along said stem.

The free end of the spring 10′ is forked to straddle the manysided portion of the socket-head 9, and likewise straddle the free end of the spring 10, which is here shown as being attached, as through the medium of a screw 12′, to the rocking-arm 11.

Taking the parts under the adjustment thereof shown in Fig. 1, and it being desired to move, or nicely adjust, the point of the pencil 4′ away from the pointed tool 5, and without disturbing the relative positions of the slides 3 and 7, on the beam 2, the user turns the nut 11′ in the direction to move it downwardly along the stem 11″, thereby depressing the adjacent end of the rocking-arm 11, the latter and the socket-head 9, at all times yieldingly connected together by means of the spring 10, move in unison rotatively with respect to the arbor 7′, against the constant tendency of spring 10 to effect a return movement of these parts, and thereby causing a relative deflection of the point of the pencil 4′ away from the pointed tool 5. The foregoing operation is also resorted to when it is desired to accordingly deflect the pen 3′, under the adjustment of the parts as indicated in Fig. 3, the spring 10, however, in this instance, bearing on the working surface 9′; and under either adjustment of the socket-head 9, to bring either the pen or the pencil into the normal position of service therefor, any reverse turning of the nut 11′, will result in said nut being followed upwardly by the adjacent, slotted end of the rocking-arm 11, a corresponding movement in unison on the part of said rocking-arm and the socket-head

9, and a corresponding return of the deflected tool in the direction of its normal position of service, all under the action of spring 10′. However, under all adjustments of the rocking-arm 11, the socket-head 9 is capable of being moved pendulously with respect to the arbor 7′, against the action of the spring 10, and independently of said rocking-arm, to bring the tools carried by the socket-head, each into its normal position of service, as hereinbefore defined, and as occasion may make desirable on the part of the user.

It will be seen that my improved beam compass is well adapted for the purposes for which it is intended, and further that the same may be modified to a considerable extent, particularly as regards the means availed of for checking or holding the socket-head, when duly adjusted to bring a tool into its normal position of service, the number of sockets said socket-head shall contain, and various minor details of the general construction, without departing from the spirit and principle of my invention.

I claim:

1. A beam compass comprising a beam; a slide thereon; a multiple, tool-carrying socket-head, attached to said slide for pendulous movement with respect thereto; and automatic means for yieldingly checking said socket-head at variable points throughout its arc of movement.

2. A beam compass comprising a beam; a slide thereon; a multiple, tool-carrying socket-head, attached to said slide for pendulous movement with respect thereto, and having a manysided portion; and a leaf-spring, the latter bearing on said manysided portion, and thereby serving automatically to yieldingly check said socket-head at variable points throughout its arc of movement.

3. A beam compass comprising a beam; a slide thereon; a socket-head, attached to said slide for pendulous movement with respect thereto; a spring-controlled rocking-arm, having an axis of movement in common with said socket-head; a yielding connection between said rocking-arm and said socket-head, whereby movement of these parts in unison is insured, and either may be moved independently of the other; and means for adjusting said rocking-arm, to cause the same and said socket-head to move in unison.

4. A beam compass comprising a beam; a slide thereon; a socket-head attached to said slide, for pendulous movement with respect thereto; a spring-controlled rocking-arm, having a central opening and an axis of movement in common with said socket-head, the latter having a manysided portion projecting through said opening; a yielding connection between said rocking-arm and said socket-head, and bearing on the manysided portion of the latter, whereby movement of said rocking-arm and said socket-head in unison is insured, while either may be moved independently of the other, and said socket-head is yieldingly checked at suitable points in its arc of movement independently of the rocking-arm; and means for adjusting the latter, to cause the same and said socket-head to move in unison.

5. A beam compass comprising a beam; a slide thereon; a socket-head attached to said slide for pendulous movement with respect thereto; a rocking-arm having an axis of movement in common with said socket-head; a yielding connection between said rocking-arm and said socket-head, for causing these parts to yieldingly act in unison, while permitting movement of either independently of the other, and whereby said socket-head is yieldingly controlled, when moved independently of the rocking-arm; a forked, leaf-spring, straddling said yielding connection, and bearing on said rocking-arm at opposite sides thereof, and at one side of said axis of movement; and means, at the opposite side of said axis of movement, whereby the adjacent end of said rocking-arm may be depressed against the action of the forked spring aforenamed, to cause a corresponding movement in unison on the part of said rocking-arm and said socket-head.

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