July 10, 1928. 1,676,360

F. SCHWARTZ

AUXILIARY BEAM COMPASS KIT FOR DRAWING INSTRUMENTS

Filed Oct. 30, 1926

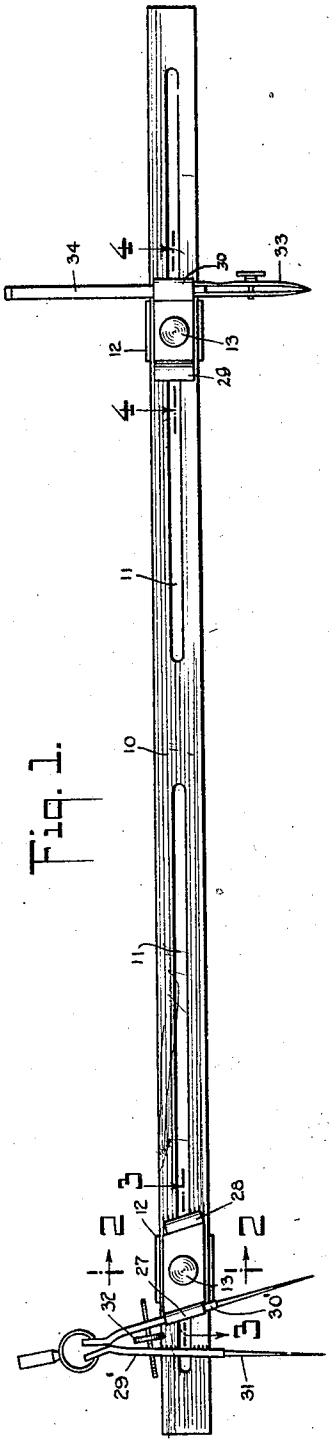


Fig. 1.

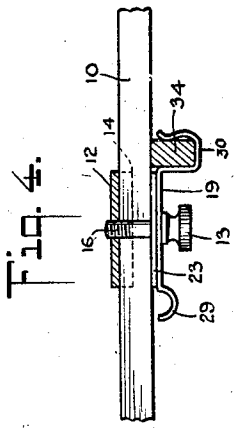


Fig. 4.

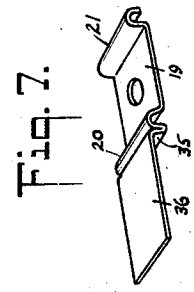


Fig. 7.

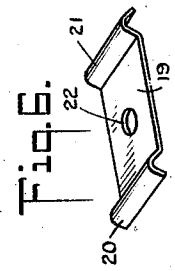


Fig. 6.

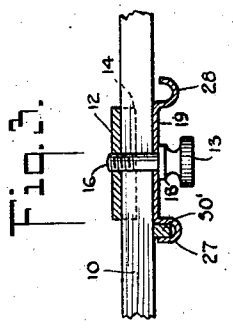


Fig. 3.

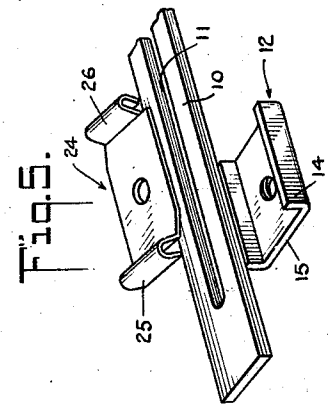


Fig. 5.

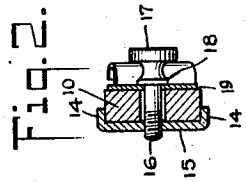


Fig. 2.

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UNITED STATES PATENT OFFICE.

FRANK SCHWARTZ, OF NEW YORK, N. Y.

AUXILIARY BEAM-COMPASS KIT FOR DRAWING INSTRUMENTS.

Application filed October 30, 1926. Serial No. 145,112.

My present invention relates generally to drawing instruments, and has particular reference to a beam compass device designed to be utilized as an auxiliary to an ordinary set of drawing instruments.

An object of the invention is to provide a beam compass device in the nature of an auxiliary kit whose function it is to make it possible for the user to employ the device in association with the ordinary instruments of his drawing set for the purpose of providing beam compasses of varying characteristics.

Another object of the invention is to provide a kit of the character described whose component parts are of an extremely simple structural nature wholly separable from each other and hence associable in a variety of ways to meet varying requirements.

Another object is to provide a device of the character referred to wherein portions thereof constitute a set of instrumentalities having certain generic similarities of construction and purpose and certain specific variations having predetermined purposes, whereby such a set may be sold independently and varied as to specific differences, number of component elements, etc. to suit the differing requirements of different users.

Briefly, my invention contemplates the provision of a beam, a set of instrument-engaging members of the character just referred to, and means for variably associating certain selected members with said beam.

In accordance with my invention, these component elements are wholly separable one from the other, and may therefore be of extremely simple construction, rendering their manufacture inexpensive. Furthermore, the separable nature of the component elements may permit replacement of one or the other thereof, or the sale thereof in varying combinations; and in general serve to render my invention extremely simple, useful, flexible, and efficient.

More particularly, this feature contemplates the provision of a beam which may comprise nothing more than a rectangular strip of material. In a preferred construction, the beam is made of suitably polished wood and is provided with at least one longitudinal slot which lightens its weight and which cooperates in a desirable manner with a preferred form of construction of the other elements of the device.

In accordance with the same feature, the engagement members comprise separate and independent blanks of material, preferably metal, such as nickel, each of the blanks being formed of nothing more than a single area of sheet material suitably configured. In this connection, it is a particular feature of my invention to form each of these members with a substantially flat medial or body portion, and crimped or configured end portions designed to accommodate the instruments.

In accordance with the same feature, the means for selectively securing the members to the beam is made to comprise clamping devices of extremely simple construction, each clamping device preferably comprising only two relatively adjustable elements. In this connection, another feature of the invention lies in providing each clamping device with means for adjustably securing a selected instrument thereto and to the beam, said means being so arranged and constructed as to simultaneously serve to secure the clamping device itself in adjusted position along the beam. A preferred form of clamping device comprises one element which is slidably adjustable along the beam and which engages, as by embracing, the beam; and another element which engages the first and is adapted to also engage the instrument-retaining member.

In a preferred form of the invention, the last mentioned element of the clamping device extends through the slot in the beam, and engages the medial portion of an engagement member; and the adjustment of the elements of the clamping device causes a binding action to take place which simultaneously secures a desired instrument in position and secures the clamping device itself to the beam.

With reference to the set of engagement members, it is a particular feature of my invention to provide opposite channelled ends upon each, these ends being designed to accommodate the instruments, and each end being different in structural nature from the opposite end of the same member and from all the other ends of the set. In accordance with this feature, the clamping devices may be utilized to interchangeably secure selected members to the beam, thereby rendering it possible by virtue of the differing end portions of the members to variably associate a large number of differing instruments to the beam.

For the attainment of the foregoing objects and such other objects as may hereinafter appear or be pointed out, I have illustrated one form of my invention in the accompanying drawings in which—

Fig. 1 is a front elevational view of a beam compass compositely formed in accordance with my invention and employing, for illustrative purposes, two particular elements of a drawing set, and certain selected elements of the present invention;

Fig. 2 is a cross-sectional view taken along the line 2—2 of Fig. 1;

Fig. 3 is a cross-sectional view taken at right angles to Fig. 2, and along the line 3—3 of Fig. 1;

Fig. 4 is a view similar to Fig. 3 taken along the line 4—4 of Fig. 1;

Fig. 5 is an exploded view of certain elements of the device;

Fig. 6 is a perspective view of a typical instrument-engaging member; and

Fig. 7 is a view similar to Fig. 6 showing a different type of instrument-engaging member.

Referring to the drawings and particularly to Fig. 1, it will be observed that I have shown an elongated beam 10 which is preferably of smooth polished wood having a rectangular cross-section. In the form shown, this beam is provided with two aligned longitudinal slots 11.

Slidably adjusted along the beam, I have shown two clamping devices, each of the devices being of a structure which renders it associable with one of the slotted portions of the beam. In the particular embodiment shown, each clamping device comprises two relatively adjustable elements 12 and 13, the former being in the form of a channel element whose sides 14 (Fig. 2) engage the top and bottom respectively of the beam 10, and whose body portion 15 is arranged flush against one side of the beam 10. It will be obvious that this element may, if desired, be of slightly differing construction, as for example in the form of a sleeve wholly embracing the beam 10. The other element 13 of each clamping device comprises a bolt-like element having an elongated bolt portion 16 and a head 17 constructed for manual adjustment thereof. In the embodiment shown, the slidable element 12 is apertured, having a centrally located threaded bore, and the end of the element 13 is threaded to engage within said aperture. Also, it will be observed that the elongated portion of the portion 13 extends through the slot so as to position its head 17 on the opposite side of the beam 10. Furthermore, the head 17 is so constructed as to provide a collar 18 whose function will be presently explained.

Referring for the moment to Fig. 6 which illustrates a typical engagement member, it will be observed that I have shown an integral blank having a medial or body portion 19 and crimped ends 20 and 21 shaped to provide channelled end portions for the accommodation thereunder of selected instruments of the drawing set. The nature of the clamping device illustrated may require that the body portion 19 be provided with a centrally located opening 22 through which the element 13 may pass.

Referring again to Fig. 2, it will be observed that the engagement member, of the type illustrated in Fig. 6, is placed against that side of the beam which is opposite the body portion 15 of the slidable element 12, the body portion of the beam 19 of the engagement member being arranged flush against said side. It will also be observed that the adjustable element 13 is so positioned as to extend through the aperture 22 in the engagement member, and it will be obvious that adjustment of the elements of the clamping device will firmly secure not only the engagement member to the beam, but will also secure the clamping device itself in desired position along the beam. More particularly, it will be observed that the shoulder 18 will bear against the body portion 19, while at the same time the threaded end will engage with the slidable element 12, thereby causing the latter and the engagement member to bind against opposite sides of the beam 10.

In Fig. 4 I have shown the employment with the elements just described of an auxiliary spacing plate 23 which may be interposed between the body portion 19 and the side of the beam 10, it being understood that the employment of such a plate is entirely optional and may be found desirable in certain cases.

Having thus described the general nature of the elements of my invention, I shall now point out the specific differences and generic similarities between the component elements of the instrument-engaging set.

I have already pointed out, and illustrated in Fig. 6, how the opposite ends of each engaging member are crimped or configured to form channel portions 20 and 21. The end portions 20 and 21 differ from each other in size and configuration, and differ also from the configurations and sizes of the analagous end portions of the other members of the set. For example, the engagement member 24 (Fig. 5) is shown as provided with end portions 25 and 26 differing from each other and from the end portions 20 and 21. Similarly, the differences between the end portions 27 and 28 of the engagement member shown in Fig. 3 are clearly discernible in this figure. In Fig. 4 I have shown another engagement member whose end portions 29 and 30 are again different from each other and from the other end portions of the set.

It will be noted, however, that each of the

engagement members is provided wih a medial or body portion of the type indicated by the reference numeral 19 in Fig. 6, and it will thus be observed that any selected engagement member may be associated with one of the clamping devices simply by causing engagement of the clamping device with the body portion of the engagement member.

A still further feature of my invention disposes the channels at the ends of certain of the engagement members along lines which form acute angles with the other edges of the member. One such engagement member is illustrated in Fig. 1, wherein it will be observed that the channelled end portions 27 and 28 are arranged at a slight inclination to the other edges of the member, this inclination being upwardly and to the left in Fig. 1. The purpose of this inclination will be presently described, but it may be explained at this point that certain others of the set are arranged with an opposite inclination. For example, the end portions 25 and 26 of Fig. 5 are of this character.

It will now be understood that in the utilization of my kit, two selected engagement members are associated with two clamping devices as shown in Fig. 1. The selection of the engagement members will depend upon the characteristics of the beam compass desired. Where two clamping devices are provided and utilized, one thereof will be employed to engage an instrument having a pointed element, so that this element may serve as the central pivot point of the composite beam compass. Thus, in Fig. 1, I have shown an ordinary bow-spring pair of dividers 29′ in proper engagement with the engagement member More particularly, one leg 30′ of the dividers is accommodated within and engaged by the channelled end portion 27, while the other end or leg 31 of the dividers is free and extends downwardly to the board or paper upon which its point will find support. It will now be obvious that by inclining the channelled end, the free leg of the instrument may be made to assume a position substantially perpendicular to the plane of the board, as shown in Fig. 1. Furthermore, it will be understood that the inclination shown in Fig. 1 will be suitable for a draftsman who is right-handed, whereas an opposite inclination would be suitable for use by a draftsman who is left-handed. In the latter case, the instrument constituting the pivot point would be desirably located at the opposite end of the beam 10.

It will also be observed that the engagement afforded by the engagement member is such as to permit extremely accurate micrometer adjustment of the overall length of the beam compass by a simple manipulation of the wheel 32 already associated with the instrument.

For illustrative purposes, I have shown the beam compass device of Fig. 1 as embodying at its opposite end a ruling pin 33 whose handle 34 is rectangular in cross-section. For the engagement of such an instrument, an engagement member has been selected whose channel portions are not inclined, and one of whose channel portions is suitably configured (as shown in Fig. 4) to engage the rectangular handle 34 of the instrument 33.

Obviously, more than two clamping devices may be employed, if desired, so that even concentric curves may be drawn by the composite beam compass which might be formed.

Where the instruments to be engaged have shanks which are circular in cross-section, it may be found desirable to increase the security with which these shanks are held by employing an engagement member of the character shown in Fig. 7. This member has a body 19 and channelled end portions 20 and 21 substantially similar to the corresponding elements of Fig. 6. The extreme end edge of the channel 20 is however continued on so as to provide a portion 35 which doubles back on the channel 20 and a portion 36 which then extends away from the channel 20 and is disposed in a plane substantially parallel to the body portion 19. The employment of an engagement member of this character is exactly the same as the employment of the other members except that the extended portion 36 extends across the gap between the two legs of, for example, a pair of dividers as shown in Fig. 1, and in this way the dividers are prevented from a possible rotating movement about the engaged shank or leg as an axis.

It will thus be observed that I have shown a device having a wide variety of uses and therefore extremely flexible from the standpoint of rendering possible the provision of a wide variety of beam compasses. It will also be observed that beam compasses having widely varying characteristics may be produced by the employment of my kit with an ordinary drawing set. This flexibility is rendered possible by the extreme simplicity of the component parts of my device, by the separability of its elements, thereby rendering interchangeability extremely expeditious, and by the nature of my engagement members. In connection with the latter feature, it will be obvious that the flexibility of my invention is in part due to the structural nature of my engagement members, whereby each thereof is provided with a body portion constituting a generic similarity therebetween, and whereby each thereof embodies more than one engagement portion. These engagement or end portions being different in each member, and being preferably different from other engagement portions,

each engagement member embodies by itself a possibility of two variations in the employment of the device, and the variations possible by the provision of a number of such engagement members are hence extremely great. It will be obvious that the number of such engagement members constituting a set may be varied in accordance with requirements.

It will be clear therefore that my invention does not reside in the specific variations of the engagement members, these differences being variable to suit differing requirements; but rather in the generic similarity between the engagement members, whereby selected ones may be interchangeably associated with the beam. It will also be obvious that the clamping devices illustrated and described may be modified in various ways without departing from the basic nature thereof whereby the construction is rendered extremely simple, and whereby a single adjustment will simultaneously secure an engagement member and the clamping device itself to the beam. Furthermore, it will be obvious that many changes in the details herein described and illustrated for the purpose of explaining the nature of my invention may be made by those skilled in the art without departing from the spirit and scope of the invention as expressed in the appended claims. It is therefore intended that these details be interpreted as illustrative, and not in a limiting sense.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is—

1. In a beam compass kit for use as an auxiliary to a set of drawing instruments, a beam, a pair of independent engagement members variably constructed and arranged to accommodate differing instruments, and a pair of clamping devices slidably adjustable along the beam, each of said devices being provided with means for interchangeably securing either of said members to the beam, whereby selected instruments may be variably associated with the beam to provide beam compasses of desired predetermined characteristics.

2. In a beam compass kit for use as an auxiliary to a set of drawing instruments, a beam, a pair of independent engagement members variably constructed and arranged to accommodate differing instruments, and a pair of clamping devices slidably adjustable along the beam, each of said devices being provided with means for interchangeably securing either of said members to the beam, whereby selected instruments may be variably associated with the beam to provide beam compasses of desired predetermined characteristics, said means comprising adjustable thumbscrews each of which engages both the clamping device and the member and is arranged so that adjustment thereof will simultaneously associate the beam, the device, and the member in mutual security.

3. In a beam compass kit for use as an auxiliary to a set of drawing instruments, a beam, a pair of independent engagement members variably constructed and arranged to accommodate differing instruments, and a pair of clamping devices slidably adjustable along the beam, each of said devices having a threaded bore and being provided with means for interchangeably securing either of said members to the beam, said means comprising an adjustable threaded element engaging within said bore and so constructed and arranged that adjustment of said threaded element will loosen or tighten the device with respect to the beam.

4. In a beam compass kit for use as an auxiliary to a set of drawing instruments, a beam, a pair of independent engagement members variably constructed and arranged to accommodate differing instruments, and means for adjustably securing said members in spaced positions along said beam, whereby selected instruments may be variably associated with the beam to provide beam compasses of desired predetermined characteristics, each of said engagement members comprising a body portion engageable by said means and end portions configured to accommodate said instruments.

5. In a beam compass kit for use as an auxiliary to a set of drawing instruments, a beam, a pair of independent engagement members variably constructed and arranged to accommodate differing instruments, and means for adjustably securing said members in spaced positions along said beam, whereby selected instruments may be variably associated with the beam to provide beam compasses of desired predetermined characteristics, each of said engagement members comprising a body portion engageable by said means and opposite end portions variably configured to provide accommodation for a different type of instrument in each thereof.

6. In a beam compass kit for use as an auxiliary to a set of drawing instruments, a beam, a pair of independent engagement members variably constructed and arranged to accommodate differing instruments, and means for adjustably securing said members in spaced positions along said beam, whereby selected instruments may be variably associated with the beam to provide beam compasses of desired predetermined characteristics, each of said engagement members comprising a single blank shaped to provide a body portion engageable by said means and crimped end portions adapted to engage said instruments.

7. In a beam compass kit for use as an auxiliary to a set of drawing instruments,

a beam, a pair of independent engagement members variably constructed and arranged to accommodate differing instruments, and means for adjustably securing members in spaced positions along said beam, whereby selected instruments may be variably associated with the beam to provide beam compasses of desired predetermined characteristics, each of said engagement members comprising an integral blank configured to provide a substantially flat medial portion engageable by said means and crimped end portions of differing configurations adapted to accommodate a different type of instrument in each thereof.

8. In a beam compass kit for use as an auxiliary to a set of drawing instruments, a beam, a pair of independent engagement members variably constructed and arranged to accommodate differing instruments, and means for adjustably securing members in spaced positions along said beam, whereby selected instruments may be variably associated with the beam to provide beam compasses of desired predetermined characteristics, said means comprising relatively adjustable elements whereof one is shaped to slidably engage the beam and the other is in engagement with the first and is adapted to engage one of said engagement members, whereby mutual adjustment of said elements will simultaneously secure the slidable element and the member to the beam.

9. In a beam compass kit for use as an auxiliary to a set of drawing instruments, a beam, a pair of independent engagement members variably constructed and arranged to accommodate differing instruments, and means for adjustably securing members in spaced positions along said beam, whereby selected instruments may be variably associated with the beam to provide beam compasses of desired predetermined characteristics, said means comprising relatively adjustably elements whereof one is shaped to slidably embrace the beam and the other is designed to engage one of said engagement members in a manner whereby mutual adjustment of said elements will cause the slidable element and the members simultaneously to bind against opposite sides of the beam.

10. In a beam compass kit for use as an auxiliary to a set of drawing instruments, a slotted beam, a pair of independent engagement members variably constructed and arranged to accommodate differing instruments, and means for adjustably securing said members in spaced positions along said beam, whereby selected instruments may be variably associated with the beam to provide beam compasses of desired predetermined characteristics, said means comprising relatively adjustable elements one of which slidably engages one side of the beam and the other of which extends through said slot to the other side of the beam, said last named element being designed to engage one of said engagement members and hold it against the last mentioned beam side.

11. In a beam compass, a beam having a longitudinal slot, an engagement member comprising an integral blank having a medial body portion and crimped ends for selective accommodation of instruments of a drawing set, and a clamping device for said member, said device comprising a channel element slidably engaging the beam and a tie element extending through the slot and engaging the channel element, said tie element being arranged to engage said engagement member on the other side of the beam.

12. In a beam compass, a beam, a clamping device slidably mounted thereon, an instrument-engaging member comprising an integral blank having a body portion and means for removably connecting said body portion and said clamping device, said engaging member having opposite end portions which are shaped to provide channels for the accommodation thereunder and against the beam of selected instruments of a drawing set.

13. In a beam compass, a beam, a clamping device slidably mounted thereon, an instrument-engaging member comprising an integral blank having a body portion, and means for removably connecting said body portion and said clamping device, said engaging member having opposite end portions which are shaped to provide channels for the accommodation thereunder and against the beam of selected instruments of a drawing set, said channels being arranged along axes forming acute angles with the other edges of the blank.

14. In a beam compass, a beam, a clamping device slidably mounted thereon, an instrument-engaging member comprising an integral blank having a body portion, and means for removably connecting said body portion and said clamping device, said engaging member having opposite end portions which are shaped to provide channels for the accommodation thereunder and against the beam of selected instruments of a drawing set, said channels being of different dimensions and configurations whereby one or the other may be selected for the accommodation of a desired instrument.

In witness whereof, I have signed this specification this 29 day of September, 1926.

FRANK SCHWARTZ.