April 16, 1929. T. K. DAHL 1,709,310

COMBINATION TOOL

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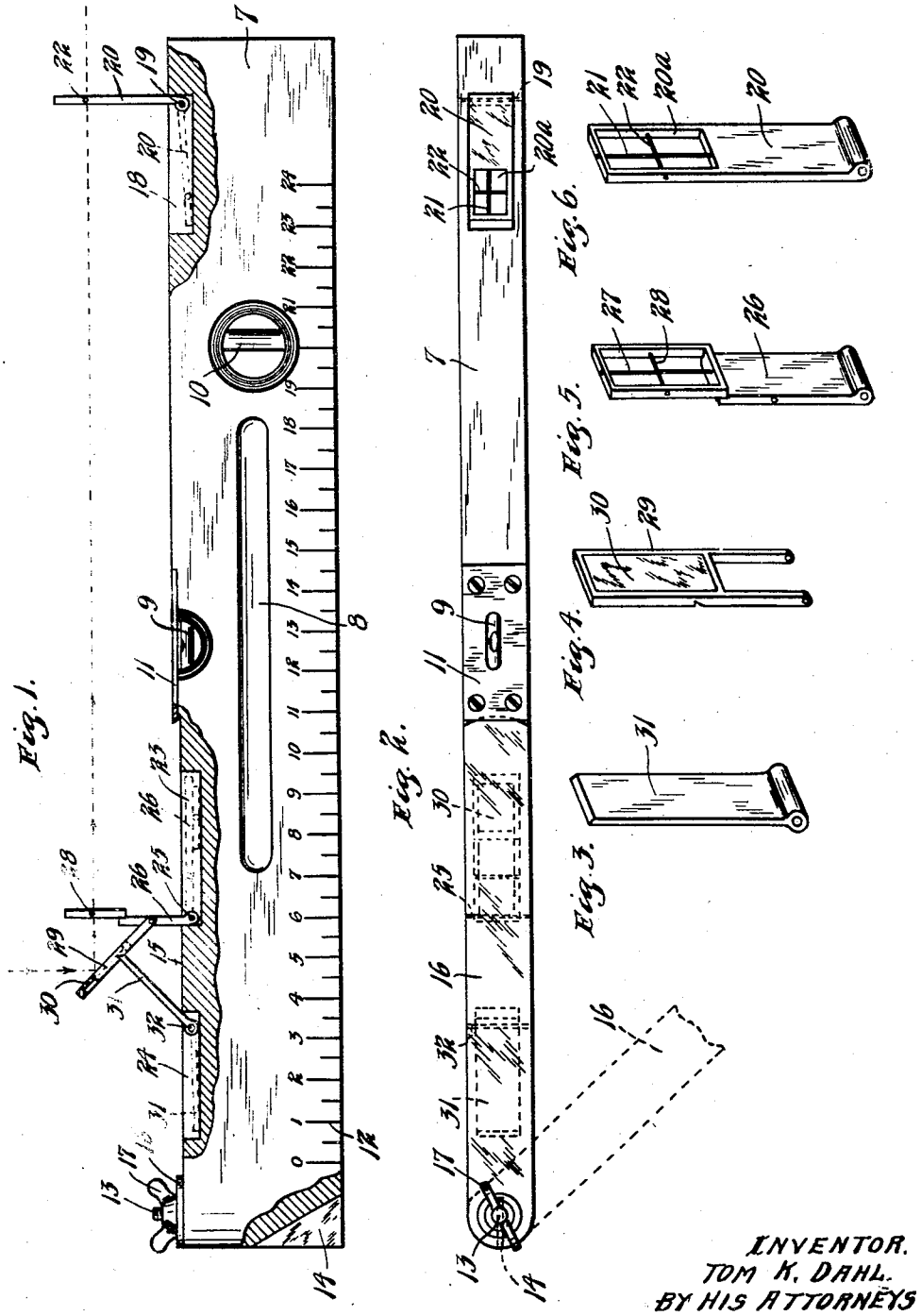


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

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COMBINATION TOOL.

Application filed September 2, 1927. Serial No. 217,056.

This invention relates to a combined tool for use particularly in building construction.

During building operations it often becomes necessary to find a third point at the same level as a known first point and at a certain angle to a line between the first known point and a second known point. It is an object of this invention to provide a combined tool capable of use for this work.

It is a more specific object to provide a combined tool including a level, sights mounted on the level and an arm mounted on the level and adapted to be swung to form a desired angle with the side of the level whereby when the arm is set the level may be placed so that the arm extends in the line of direction between two known points and the level extends at a desired angle thereto, whereupon by horizontally alining the level and situating the same at the proper height a sight line may be taken through the sights to find a third desired point.

It is a further object to provide a combined tool including a level, front and rear sights mounted on the level and a mirror behind the rear sight and capable of being placed at an angle of inclination therewith so that a user of the device can by looking in the mirror take a sight line through said sights while standing above or at one side of the same.

These and other objects and advantages of the present invention will more fully appear from the following description made in connection with the accompanying drawings, wherein like reference characters refer to the same or similar parts throughout the various views and in which,

Fig. 1 is a view in side elevation of the tool showing the various parts in operative position in full lines and in non-operative position in dotted lines, certain of the parts being broken away to more clearly show the construction thereof.

Fig. 2 is a plan view of the tool showing one of the parts in one position in full lines and in another position in dotted lines;

Fig. 3 is a perspective view of a type of mirror support that may be used;

Fig. 4 is a perspective view of a mirror that may be used and,

Figs. 5 and 6 are perspective views of rear and front sights respectively that may be used, Figs. 3, 4, 5 and 6 being shown on an enlarged scale.

Referring to the drawings, a level stock 7 is provided having a conventional handling groove 8 therein and the conventional level glass 9 extending longitudinally of the stock at the upper edge thereof and the level glass 10 extending transversely on the side of the stock adjacent one end thereof. An apertured plate 11 carries the level glass 9 and is sunk in the upper edge of the stock so that the upper surface of the plate is flush with the upper edge of the stock. The plate 11 is preferably provided with an inwardly and downwardly inclined rear end surface for a purpose to be later described. The lower edge of the level is preferably provided with a series of graduations 12 which form a scale. The rear end of the stock 7 is rounded and a threaded stud 13 projects upwardly from the center of the rounded portion. A triangular plate 14 preferably of metal is provided at the lower rear corner of the stock 7 and the said plate is equally spaced from the sides of the stock to be disposed in a plane extending parallel with the sides. The plate 14 is embedded in the stock so that one edge of the plate extends flush with the bottom edge of the stock and another edge of the plate extends flush with the central portion of one end of the stock. The upper edge of the stock 7 is rabbeted rearwardly from the rear end of plate 11 to form a depressed portion 15 over which an arm 16 pivotally mounted at its inner end on the stud 13 may swing. The arm 16 is of such thickness and length that when the outer end thereof is swung forwardly over the depressed portion 15, the arm will fill the depression on the upper edge of the stock and the upper surface of the arm will lie flush with the upper edge of the stock. The outer end of the arm 16 is rounded and is beveled so that the same will fit beneath the beveled portion at the rear end of plate 11 to assist in holding the arm from swinging movement when the arm is forwardly swung. A wing nut 17 is threaded on the stud 13 above the arm 16 and is adapted to clamp the arm after the same has been swung to one side of the stock to form a desired angle with the stock.

The forward upper edge of the stock 7 is provided with a rectangular recess 18 and a pintle 19 extends transversely across said recess adjacent the forward end of the same and has journaled thereon a frame 20 having

a rectangular sight aperture 20ª formed therein with wires 21 and 22 of hair thickness extending transversely and vertically across the aperture and crossing each other in the middle thereof. Frame 20 and the wires 21 and 22 will form a front sight adapted to be retained within the recess 18 in an idle position, as is indicated in dotted lines, Fig. 1, or to be swung vertically upwardly from the recess for use, as is indicated in full lines, Fig. 1. When the front sight has been raised to vertical position, the front edge of the sight will contact the shoulder formed at the forward end of the recess 18 to limit further forward swinging movement of the sight. Rectangular recesses 23 and 24 are provided in the upper edge of the depressed portion 15 of the stock. Recess 23 has a pintle 25 extending transversely thereacross adjacent its rear end while recess 24 has a pintle 32 extending transversely thereacross adjacent its forward end. Mounted on the pintle 25 is a support 26 which has a forwardly offset portion adjacent its upper end with a rectangular aperture therethrough to form a frame carrying vertical and transverse wires of hair thickness extending across the aperture and crossing each other at the medial point of the aperture. The frame portion of the support is of greater width than the lower portion thereof so that shoulders are provided at the offset between the frame portion and the lower portion. The said support 26 and the wires 27 and 28 will form a rear sight which may be held in idle position within the recess 23 as indicated in dotted lines, Fig. 1, but which will be extensible to vertical position as indicated in full lines, Fig. 1, rearward swinging movement of the support being limited by the rear shoulder of recess 23 so that the sight cannot be swung rearwardly beyond vertical position. A mirror frame 29, carrying the mirror 30 has downwardly extending arms which straddle the lower portion of the support 26 and are pivoted to the support. An arm 31 is journaled on the pintle 32 and is adapted to be either held within the recess 24 as indicated in dotted lines, Fig. 1, or to be swung upwardly and forwardly as indicated in full lines, Fig. 1, to engage with a notch on the rear side of the mirror frame 29 to retain the mirror behind the rear sight and at substantially a 45° angle thereto. The mirror frame 29 may be swung forwardly against the sight frame of the support 26 whereupon the mirror frame will lie in substantially the same plane as the lower portion of the sight frame. The mirror, accordingly, will be swung with the rear sight either to idle position within the recess 23 or to operative position.

When the device is not being used, the front and rear sights and the supports 21 will be swung into their respective recesses on the upper edge of the stock 7, whereupon the arm 16 may be swung forwardly to fit over the two rear recesses 23 and 24.

When it is desired to sight along a certain horizontal level at a certain angle to a wall or other surface, the arm 16 is swung to one side of the stock 7 until the desired angle is made between the arm and the side of the stock. The arm is then placed against the wall and the level placed at the desired height and positioned so that the level glass 9 indicates that the upper edge of the level is horizontally disposed. The sights and mirror having been raised to operative position, the user of the device can stand above the level and look down into the mirror and by placing his eye at such a point that the reflection of the junctures of the respective wires 21 and 22 and 27 and 28 coincide on the mirror, a true sight line will be obtained along a line at the desired angle and level to the wall. The plate 14 will be alined in the same vertical plane as the line of sight when the level is horizontally disposed and marks can, accordingly, be made at the lower corner of the plate, on beams etc. to indicate the point from which the line of sight is taken.

The mirror will also be found very useful in connection with the ordinary sighting of objects with the level. The level can be horizontally alined whereupon the user, instead of getting in such a position behind the level that he can look directly through the sights, may stand above the level and may sight perfectly with the device.

It will be seen that a very handy and useful tool has been provided.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of the present invention, which, generally stated, consists in the matter shown and described and set forth in the appended claims.

What is claimed is:

1. A combination tool comprising a spirit level for alining one edge of the level in a horizontal plane, a front sight on said edge, a rear sight on said edge and a mirror mounted on said level behind said rear sight and capable of being angularly positioned in respect to said rear sight, and means for moving said sights and said mirror within the outline of said level when not in use.

2. A combined tool comprising a rectangular stock, a level glass mounted on one edge of said stock for horizontally alining said edge, a front sight mounted on said edge, a rear sight also mounted on said edge, said rear sight having an offset upper portion, a mirror pivotally mounted on said rear sight and adapted to fold against the back of the offset portion of said rear sight or to be

extended rearwardly therefrom at an angle thereto, and a support adapted to hold said mirror in extended position, said sights, mirror and support being capable of being swung into the outline of said level in idle position.

3. A combined tool comprising a rectangular stock, a level glass mounted in said stock for alining one edge of the same in a horizontal plane, an arm pivoted to one end of said edge for swinging movement in a horizontal plane, means for securing said arm at a desired angle with the side of said stock, front and rear sights mounted on said edge of said stock and a mirror mounted behind said rear sight and inclined upwardly and rearwardly from said rear sight.

4. A combined tool comprising a spirit level for alining one edge of the level in a horizontal plane, an arm pivoted to one end of said edge for swinging movement in a horizontal plane, means for holding said arm at a desired angle with the side of said level, front and rear sights mounted on said edge, a mirror mounted behind said rear sight and adapted to be held at an inclined angle to said rear sight and means for situating said sights and said mirror within the outline of said level in idle position.

5. A combined tool comprising a spirit level for alining one edge of the level in a horizontal plane, an arm pivoted to one end of said edge for swinging movement in a horizontal plane, means for holding said arm at a desired angle with the side of said level, front and rear sights mounted on said edge, a mirror mounted behind said rear sight and adapted to be held at an inclined angle to said rear sight, means for swinging said rear sight and said mirror into the outline of said level in idle position, said arm being capable of being swung over the level to retain said rear sight and mirror in idle position.

In testimony whereof I affix my signature.

TOM K. DAHL.