

May 25, 1965

W. S. FREEBURG ETAL  
CLOCK HANDS

3,184,912

1987

Filed Oct. 30, 1963

3 Sheets-Sheet 1

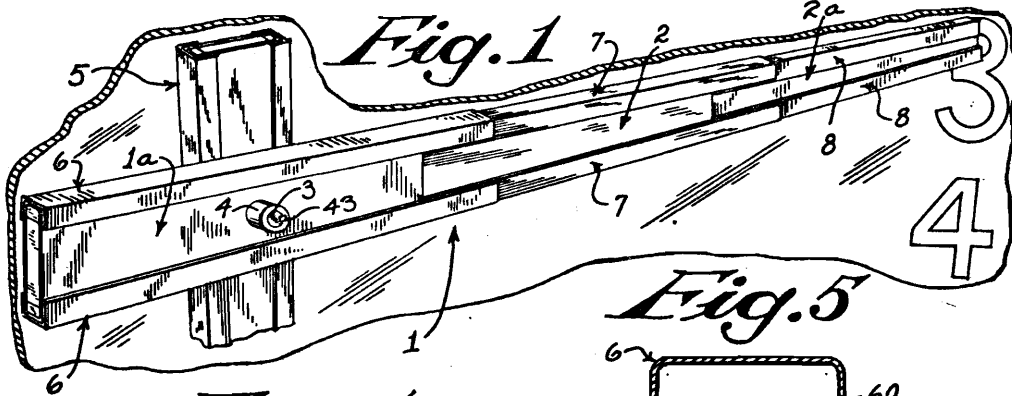


Fig. 1

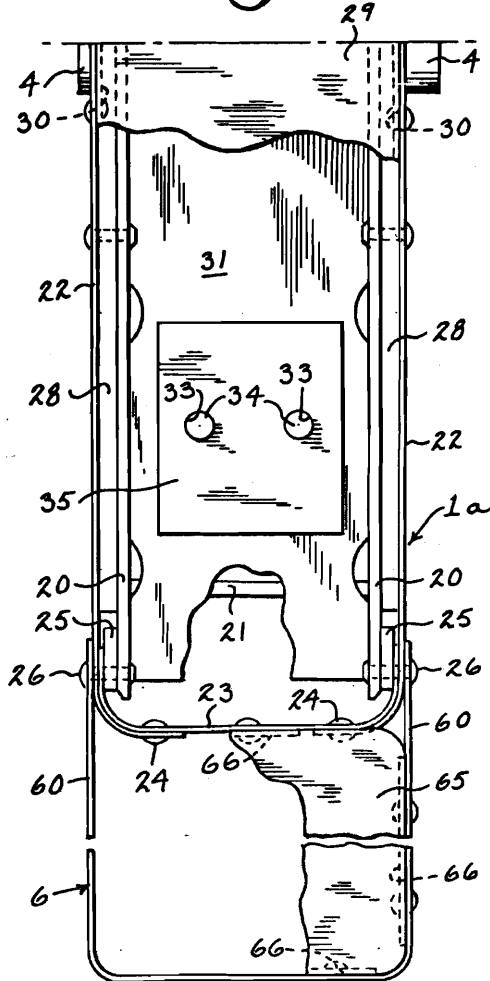
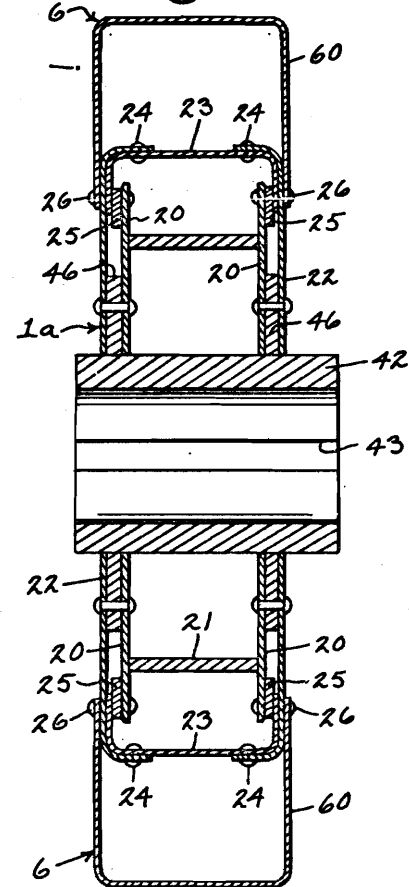


Fig. 5



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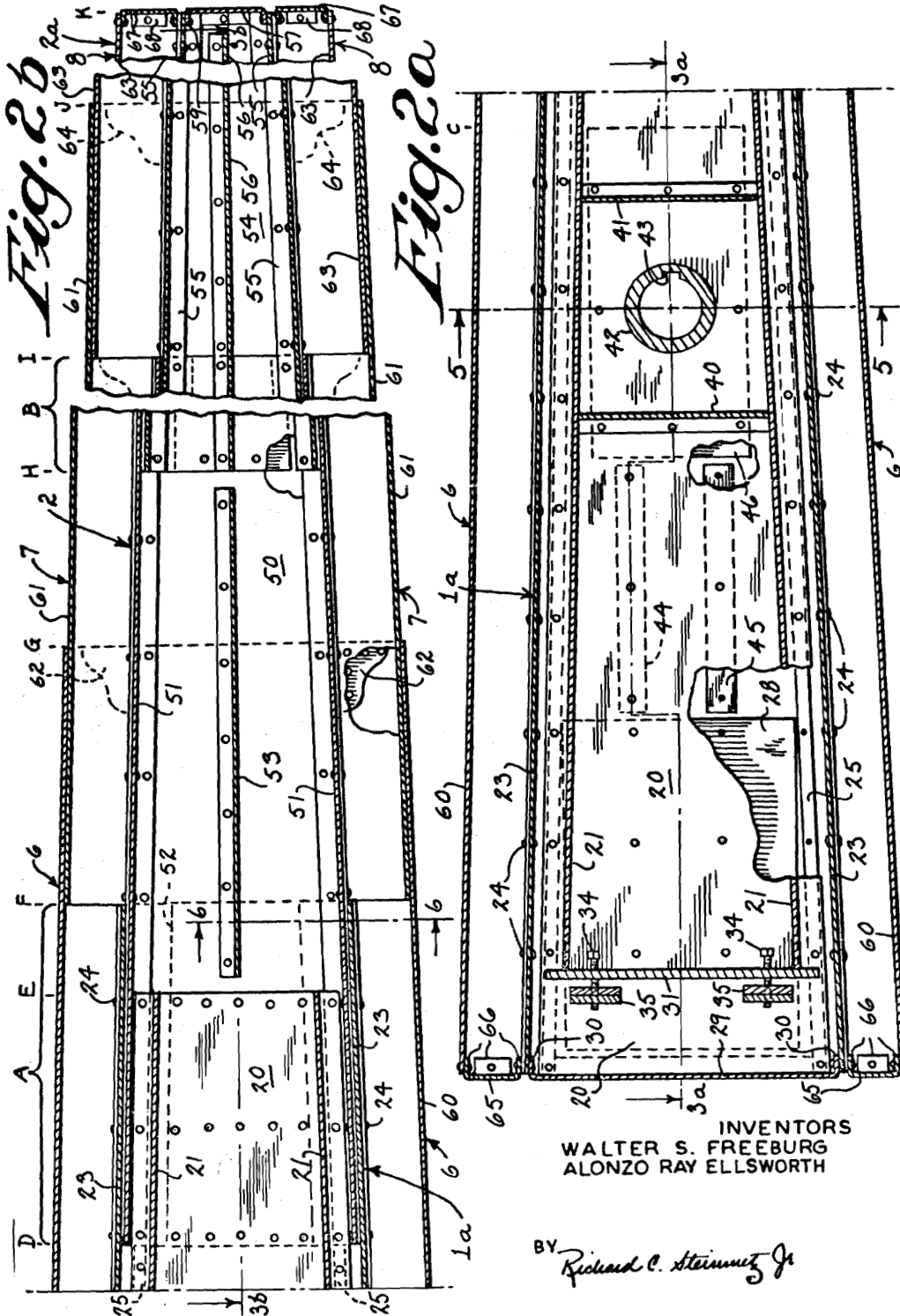
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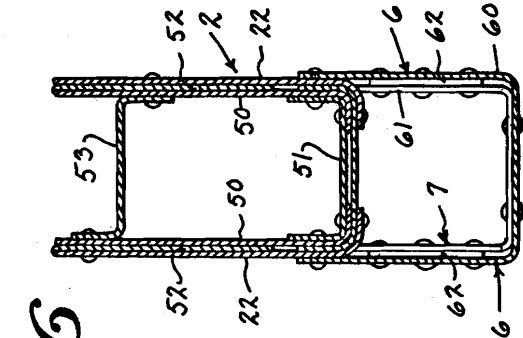
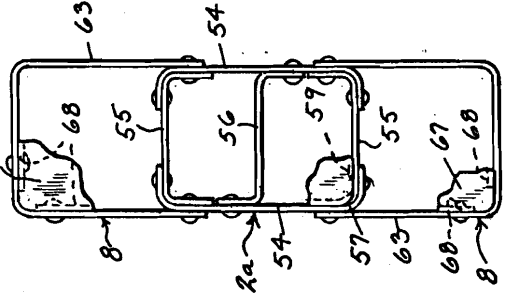
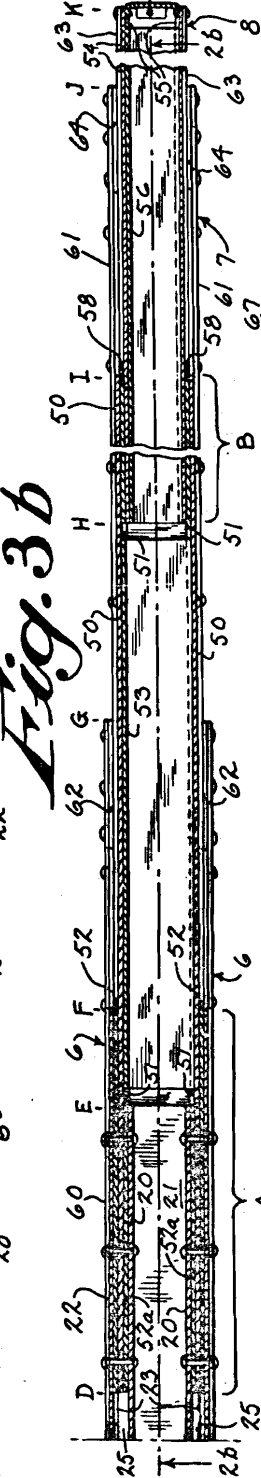
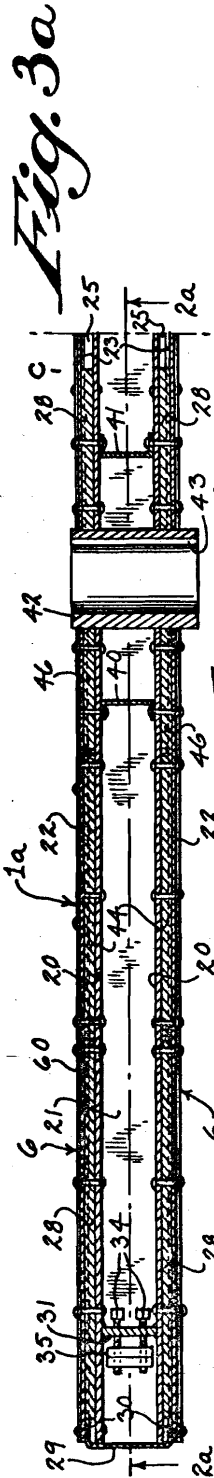
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CLOCK HANDS

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3 Sheets-Sheet 3



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3,184,912

CLOCK HANDS

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Filed Oct. 30, 1963, Ser. No. 320,107

5 Claims. (Cl. 58—126)

This invention is directed to the construction of clock hands which are used to indicate time on a large clock face, e.g. that of a tower-type clock. Due to the particular use and consequential size of the clock hands, the particular construction becomes critical. The fabricated hand structure of this invention overcomes the obvious problems which are associated with such a use. It should be noted that the construction of this invention has been used for the hands on what is presently the world's largest four-face tower clock, owned by the assignee. Interestingly enough, however, the particular hand construction is adaptable to clock faces of varying sizes.

It is, therefore, one object of this invention to provide clock hand structure for a relatively large clock face which structure provides sufficient strength but at the same time minimum weight.

Another object of this invention is to provide a balanced clock-hand structure with self balancing means.

A further object of this invention is to provide a clock-hand structure for a relatively large clock which can be easily seen at great distances.

Still another object of this invention is to provide a clock-hand structure which is of relatively simple design and construction.

A still further object of this invention is to provide a clock-hand structure which is adaptable for various clock face sizes.

Other objects of the invention are and will become apparent from the specification herein.

FIG. 1 is a three-dimensional, fragmentary view of a minute hand embodying the invention herein in combination with a portion of an hour hand embodying the invention herein and a portion of a clock face.

FIG. 2a is a cross-sectional, fragmentary, front view taken along line 2a—2a of FIG. 3a and showing one end of the clock hand.

FIG. 2b is a cross-sectional, fragmentary, front view taken along line 2b—2b of FIG. 3b and consists of a continuation from FIG. 2a of the clock hand structure.

FIG. 3a is a cross-sectional, top view taken along line 3a—3a of FIG. 2a and shows one end of the clock hand.

FIG. 3b is a cross-sectional, fragmentary, top view taken along line 3b—3b of FIG. 2b and consists of a continuation from FIG. 3a of the clock hand structure.

FIG. 4 is a fragmentary, end view with only one-half of the end shown. Note, however, that the clock hand is symmetrical at this end.

FIG. 5 is a cross-sectional view taken along line 5—5 of FIG. 2a and shows the clock hand structure at the hub.

FIG. 6 is a cross-sectional, fractional view taken along 6—6 of FIG. 2b and shows the hand construction at a point of overlapping or telescoping. Note that the hand is symmetrical at this point.

FIG. 7 is a fragmentary, end view of the clock hand's indicator end with portions being broken away to illustrate the interior supporting beam construction.

The specific construction of the clock hand, as shown in the drawings, is used for illustrative purposes only as it is not intended for the invention to be limited thereto.

Generally, the clock hand 1 is made up of a base section 1a and a telescoping extension 2 or extensions 2, 2a, etc., as the case may be. As is shown in FIG. 1, a

sectional shaft 3 imparts rotation to both the hand 1 through hub 4 of the base section 1a and the hour hand 5 through its hub (not shown). While it will become more evident in the description hereafter, the length of the hand 1 can be varied by the particular number of telescoping extensions, e.g. the hour hand 5 can be made only of base section 1a and telescoping extension 2. Such a modified hand construction is balanced primarily by changes in the weight of the base section 1a.

The construction of the clock hand 1 consists of a base section 1a comprising a box-type frame, preferably made from steel plates, which frame is covered by a skin, preferably of sheet aluminum. On the other hand, the telescoping extensions 2 and 2a utilize Z-beams for internal support to which the skin is attached so as to form a cross-section similar to that of the base section 1a. This construction provides the main support for the clock hand, although flange or shadow sections may be added to the base 1a as shown by flanges 6 in FIG. 1 and to the telescoping extensions 2 and 2a as shown by flanges 7 and 8 in FIG. 1. Since these flanges 6, 7 and 8 are optional and provide little structural support, the detailed description thereof will be reserved until after the main support structure has been described.

In order that this main support structure may be clearly understood, the detailed description which follows will begin at the base section 1a end of hand 1 and work toward the extension section 2a end of hand 1 so that attention will first be directed to FIGS. 2a, 3a, 4 and 5. Each of these figures shows a part or all of the box-like support structure for the base section 1a, i.e., the side plates 20 and transverse plates 21 (in particular, see FIG. 5). Attached to side plate 20 is the skin of base section 1a in the form of side sheets 22 which are separated by and attached to channels 23 at either end. Rivets 24 or other suitable means are used to connect the channels 23 and side sheets 22 while spacers 25 are inserted between plates 20 and channels 23 and secured thereto by rivets 26 or other suitable means (see FIG. 5). Additional spacers which will be described later are used between plates 20 and sheets 22 throughout the base section 1a so that the length of spacer 28 is limited as shown in FIG. 2a. FIG. 2a also shows end plate 29 with tabs 30 which is used to close the end of the base section 1a.

Upstanding, transverse plate 31 abuts the ends of transverse plates 21 and includes tapped holes 33 for bolts 34. To these bolts 34, the desired number of plates 35 needed for balance are attached so as to adjust the balance of clock hand 1. The remainder of base section 1a comprises intermediate support at hub 4 through channels 40 and 41, hub 4, itself, with key slot 43 and spacers 44, 45 and 46 located between plates 20 and side sheets 22 (as best shown in FIG. 2a).

The overlapping or telescoping connection between base section 1a and extension section 2 is located between points D and F which will hereafter be referred to as section A (see FIGS. 2b and 3b). At point D, it is necessary that spacers 25 end since side sheets 50 and channels 51 of extension section 2 continue on in the same relative location as the spacer 25. Since the cover construction of extension 2 is the same as that of base section 1a, channels 51 separate and connect the sheets 59 at the top and bottom thereof (see FIG. 6) so as to form a cross-section which is similar to that of base section 1a. Spacers 52 are located between sheets 50 and 22 and run the length of section A. As will be seen at point E, the plates 20 and 21 of the box-like structure supporting base section 1a come to an end, but support for extension section 2 continues by means of Z-beam 53 which begins between points E and F and ends just short of point H. Because of the void left between steel

plates 20 and side sheets 50, between points D and E, spacer 52a is inserted therein for structural support. Side sheets 22 and channels 23 of base section 1a end at point F thus terminating the overlap between sections 1a and 2. As will be understood, rivets, as shown, or other suitable means are used to secure the structure described above.

The overlapping or telescoping connection between extension section 2 and extension section 2a is to be found between points H and I, which will be designated hereafter as section B, with section A and section B preferably being about the same length. This means then that the cross-section of extension section 2 (as well as the corresponding cross-section of any other extension section) consists only of side sheets 50, channels 51 and Z-beam 53. As was the case in section A, the side sheets 54 of the added extension section 2a, which are separated and supported by channels 55, begin at point H of section B as does Z-beam 56. Spacers 58 fill the void between points D and E and side sheets 50 and 54 created by channels 51; spacers 58 terminating at point E along with channels 51 and side sheets 50. Again, rivets as shown, or other suitable means are used to secure the described structure.

The Z-beam 56 ends just short of point K, i.e. the free end or indicator of extension section 2a, while the end cap 57 with tabs 59 is secured at point K to the side sheets 54 and channels 55 by rivets or other suitable means.

While the main support structure, i.e. base section 1a and extension sections 2 and 2a, described above may be sufficiently large, this invention also contemplates the addition of a flange or shadow, i.e. flanges 6, 7 and 8, to the main support structure so as to supply a desired clock hand size with a minimum of additional weight. Such flange or shadow structure is provided herein by the use of U-shaped sheets, preferably aluminum sheets. For example, flanges 6 comprise sheets 60 which are secured to the top and bottom of the base section 1a by rivets 26 or other suitable means. End caps 65 with tabs 66 close off the open end created by sheets 60 along with base section 1a and are secured thereto. As is evident from FIG. 2b, sheets 60 are attached to side sheets 22 of base section 1a and overlap or telescope similar U-shape sheets 61 of flanges 7 between points F and G. Because minimum support is necessary for sheets 60 and 61, it is only necessary to insert limited spacers 62 therebetween which provides the sole point at which the telescoping sheets 60 and 61 are secured by rivets or other suitable means. Sheets 61 are attached to side sheets 50 along the length of extension section 21 and telescope U-shaped sheets 63 of flanges 8 between points I and J. Limited spacers 64 are inserted between sheets 61 and 63 to aid in the support thereof. End caps 67 with tabs 68 are secured to sheets 63 and extension section 2a as so to close the open ends.

Up to this point, no mention has been made of the shape of the hand; and in particular, tapered sides. The drawings illustrate one hand shape, viz. tapering of both the channels 23, 51 and 55 along with the outside end

portion of U-shaped flanges 6, 7 and 8; but it is not intended to limit taper to any one outside hand surface, any pair of outside hand surfaces or any combination thereof. Moreover, it is within the scope of this invention to taper any or all of side sheets 22, 50, 54, channels 23, 51, 55 and U-shaped sheets 60, 61, 63 with necessary internal changes.

While at first glance the clock hand structure of this invention may appear complex, it is apparent that the construction is, in fact, simple, unique and a significant contribution to the art.

We claim:

1. In combination with a tower type clock having a hand shaft, a balanced clock hand comprising:

(a) a base section having a hub means about which said hand is balanced located intermediate first and second ends thereof for attachment of said clock hand to said shaft with that portion of said base section between said hub and first end acting to balance the remainder of said hand.

(b) said base section comprising structural means which form a box-like support means,

(c) first sheet-like means surrounding said box support so as to cover said support means,

(d) second sheet-like means formed in substantially the same shape as said first sheet-like means,

(e) said first and second sheet-like means being telescopically attached at the second end of said base section,

(f) said second sheet-like means comprising internal support means, and

(g) said first and second sheet-like means comprising two parallel side sheet means connected at either end by channel means.

2. The combination of claim 1 in which said second sheet-like means is a plurality of substantially similar telescoping sections.

3. The combination of claim 1 in which said base section includes adjustable balancing means for said clock hand.

4. The combination of claim 2 in which said base section includes adjustable balancing means for said clock hand.

5. The combination of claim 1 in which telescoping flange means are attached to said base section and said second sheet-like means so as to enlarge said hand.

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