July 28, 1959 S. F. VAN DERDYS 2,896,366

DRAFTING DEVICE

Filed Aug. 2, 1957

Fig-1

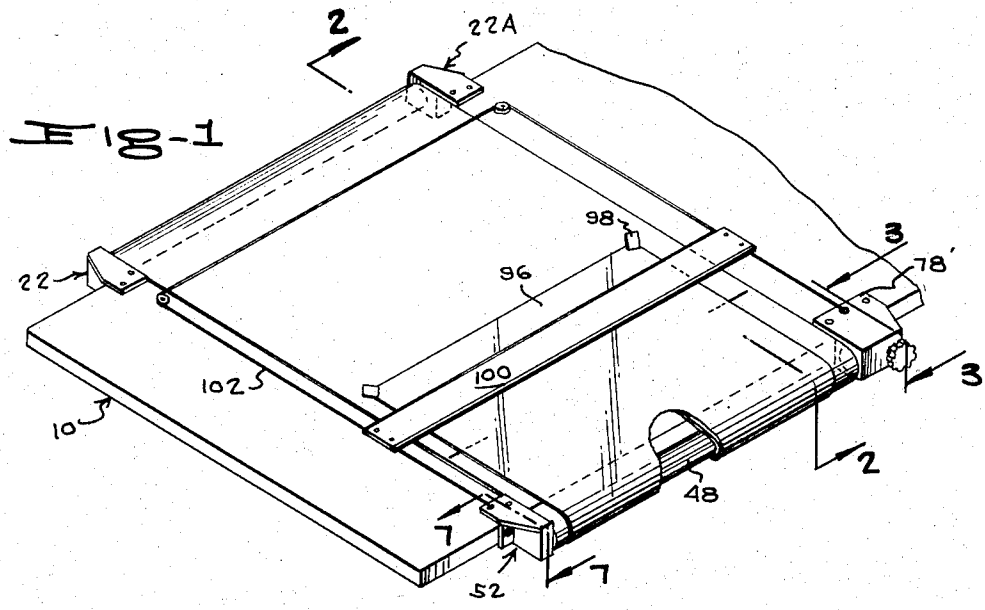


Fig-2

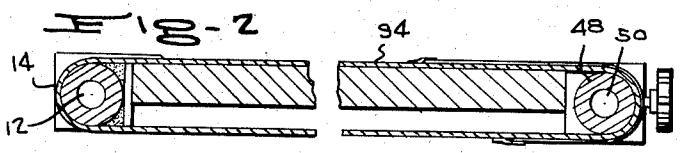


Fig-3

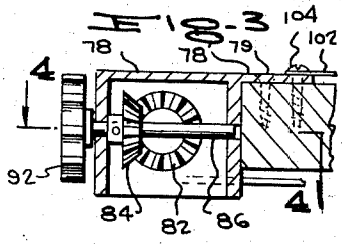


Fig-7

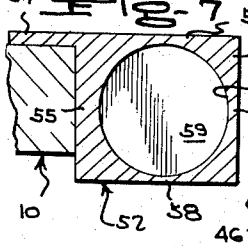


Fig-5

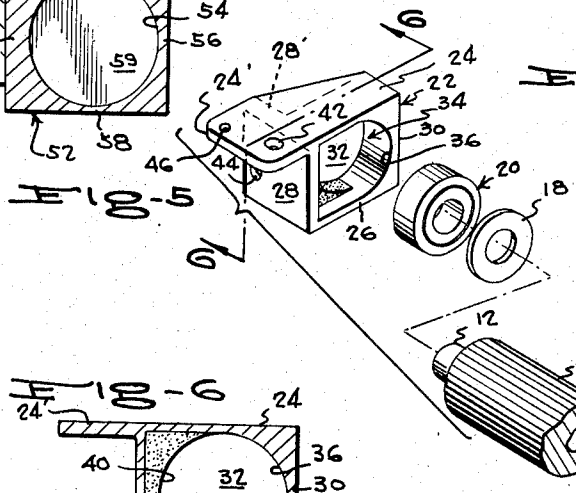


Fig-4

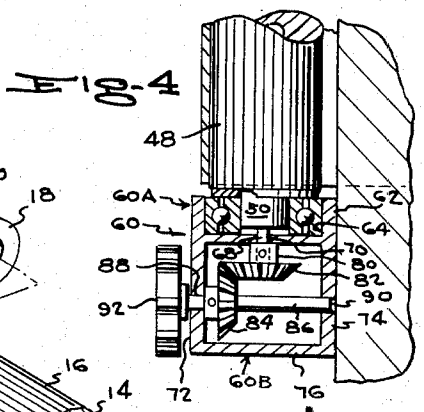


Fig-6

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DRAFTING DEVICE

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3 Claims. (Cl. 45—131)

This invention relates to a drafting device or apparatus, and more specifically the invention pertains to apparatus adapted for connection with the conventional drafting board to facilitate the task of the draftsman, architect or engineer.

It is well known, in this art, that draftsmen engaged in drawing on large sheets find it comparatively easy to make drawings adjacent the bottom of the drafting board, but it is virtually impossible to make drawings at the center or the top portions of the sheet with the same accuracy and facility with which the drawings are made at the lower or bottom end of the board. As a general rule, the only practical solution to this problem is to remove the drawing from the board and to then reposition it adjacent the lower end of the board which entails loss of time in the removal, realigning, and resecuring the sheet on the board. Consequently, one of the primary objects of this invention is to provide means for connection with a conventional drafting board which obviates the necessity of removing, realigning and refixing a large sheet of drawings on a drafting board when making drawings at the central and upper portions thereof with the resulting saving in time.

Another object of this invention is to provide an attachment for a drafting board for shifting a sheet of drawings vertically thereon without the necessity of removing the same therefrom and refixing and realigning the sheet.

A further object of this invention is to provide an attachment for a drawing board of the type referred to above, the attachment effecting the shifting of a sheet of drawings vertically so that that portion of the sheet presently being worked upon is located adjacent the bottom end of the drafting board, giving rise to cleaner drawings and clothing due to less rubbing of the arms and elbows against the drawing surface.

A still further object of this invention is to provide an attachment of the type referred to supra, which does not demand the construction of a special drafting board or table.

It is still another object of this invention to provide an attachment for a drafting board for vertically shifting a sheet of drawings thereon, the apparatus being adapted for installation on any existing conventional drafting board or table of standard size and without restriction as to the length, width, or thickness thereof.

This invention contemplates, as a still further object thereof, an attachment for a drafting board for vertically shifting a sheet of drawings relative thereto, wherein the operating means is conveniently located and within easy reach of the operator.

Still another object of this invention is to provide means of the type described supra, the means being made available in kit form.

This invention has, as a still further object thereof, the provision of means of the type referred to above, which is non-complex in construction and assembly, inexpensive to manufacture, and durable in use.

Other and further objects and advantages of the present

invention will become more evident from a consideration of the following specification when read in conjunction with the annexed drawing, in which:

Figure 1 is a perspective view of a conventional drawing board, having means thereon constructed in accordance with the teachings of the present invention for vertically shifting a sheet of drawings relative thereto;

Figure 2 is a detailed, cross-sectional view of the drawing board and means illustrated in Figure 1, Figure 2 being taken substantially on the vertical plane of line 2—2 of Figure 1, looking in the direction of the arrows;

Figure 3 is an enlarged detailed, cross-sectional view taken substantially on the vertical plane of line 3—3 of Figure 1, looking in the direction of the arrows;

Figure 4 is a detailed, cross-sectional view taken substantially on the horizontal plane of line 4—4 of Figure 3, looking in the direction of the arrows;

Figure 5 is an exploded perspective view of the roller disposed at the upper edge or that edge of the drawing board, remotely disposed with respect to the draftsman, together with the journal box and the various assembly elements for the roller shaft;

Figure 6 is a detailed, cross-sectional view, taken substantially on the vertical plane of line 6—6 of Figure 5, looking in the direction of the arrows; and

Figure 7 is a detailed, cross-sectional view of the journal box at the lower left hand side of the drafting board, this view being taken substantially on the vertical plane of line 7—7 of Figure 1, looking in the direction of the arrows.

Referring now more specifically to the drawings, reference numeral **10** designates, in general, a conventional drawing board which may have any desired length, width and thickness. The sheet shifting attachment to which this invention is addressed comprises an elongated shaft **12** on which is secured a cylindrical roller **14** having striations **16** extending longitudinally thereof substantially parallel to its longitudinal axis. The roller **14** is positioned adjacent the upper edge of the drafting board **10**, or that edge thereof which is remote from the draftsman. One end of the shaft **12** has mounted thereon a washer **18**, and the outer end thereof is rotatably journaled in a ball bearing **20** disposed within a substantially hollow rectangular journal box **22**.

The journal box **22** (see Figures 5 and 6) includes integrally connected top and bottom walls **24, 26**, side walls **28, 30**, and an end wall **32**. The top wall **24** has integrally formed flange **24'** which projects laterally outwardly beyond the side wall **28**, and the side wall **28** is provided with a flange **28'** which projects laterally away from the end wall **32**. An elongated ogive cavity **34** extends inwardly from the open side of the journal box **22**, the arcuate end thereof **36** having a substantially semi-circular configuration.

A packing member **38** formed of rubber or other similar material is disposed within the journal box **22**, the packing member **38** having a semi-circular cut out **40** formed therein positioned in confronting relation relative to the semi-circular end **36** of the cavity **34**. The semi-circular end **36** of the cavity **34** taken together with the semi-circular cut out **40** formed in the packing member **38** form a substantially hollow cylindrical socket which receives the ball bearing member **20** therein.

The above described journal box **22** is disposed at the upper left hand side of the drawing board **10**, and the other end of the shaft **12** is provided with an identical bearing assembly and journal box **22A** except that the journal box **22A** is of opposite face. A countersunk opening **42** extends transversely through the flange **24'** and a similar countersunk opening **44** extends transversely through the flange **28'**. The openings **42, 44** receive wood screws therethrough whereby the journal boxes **22, 22A**

may be fixedly secured to the drawing board **10**. The flange **24'** is also provided with an opening **46** which serves a purpose to be described.

Reference numerals **48** and **50** denote a roller and a shaft, respectively, identically constructed with respect to the shaft **12** and roller **14** referred to above. The roller **48** is positioned at the lower left hand side of the drawing board **10** proximate the draftsman and both ends of the shaft **50** are provided with the same washer and roller bearing assembly previously described. However, the journal boxes for the opposed ends of the shaft **50** differ from each other and from the previously described journal boxes **22**, **22A**.

The journal box at the lower left hand side of the drawing board **10** is seen in Figure 7. This journal box, denoted in general by the reference numeral **52**, differs from the construction of the journal boxes **22**, **22A** in but one respect. As is illustrated in Figure 7 of the drawings, it is seen that the journal box **52** is formed of a substantially solid rectangular metallic block **53** having a cylindrical opening **54** extending inwardly from a side thereof to receive the bearing **20** at the left hand end of the shaft **50**. The opening **54** is encompassed by opposed side walls **55**, **56**, top and bottom walls **57**, **58**, and the end wall **59**. The top wall **57** is extended into a flange **57'** which is fixedly secured by screws (not shown) to the upper side of the board **10** in the manner described above.

The journal box at the right hand side of the drawing board **10** adjacent the lower end thereof is illustrated in detail in Figures 3 and 4. This journal box bears the general reference numeral **60** and is seen to include two well defined sections, namely, the journal box proper denoted at **60A** and a gear housing **60B**. The journal box proper **60A** is identical with respect to the journal box **52** and comprises a substantially solid member **62** having a circular opening **64** extending inwardly from one side thereof to receive the ball-bearing **20** mounted on the other or right hand end of the shaft **50**. The end wall **66** corresponding to the end wall **59**, is provided with a central aperture **68** through which extends an end portion **70** of the shaft **50**, the end portion **70** having a reduced diameter and projecting into the gear housing **60B**.

The gear housing **60B** comprises laterally spaced and substantially rectangular parallel extensions **72**, **74** of the side walls of the journal box proper **60A** (corresponding to the side walls **55**, **56**), and an end wall **76**. A top wall **78**, corresponding to the top wall **57** extends across the journal box proper **60A** and the gear housing **60B** and is provided with a flange **78'** superposed on the board **10** and secured thereto by screws **79**.

The end portion **70** of the shaft **50** is fixedly secured in the hub **80** of the bevel gear **82** disposed in the housing **60B**. A second bevel gear **84** meshes with the first and is mounted on for rotation with a cross-shaft **86**, the opposed ends of the latter being journaled for rotation in suitable apertures **88**, **90** formed in the side walls **72**, **74**, respectively. The cross-shaft **86** has a portion thereof projecting laterally and exteriorly beyond the side wall **72** for connection with the manually operable knob **92**.

An endless flexible belt **94** formed of a strong paper with its top surface lacquered or treated with a plastic coating is trained around the rollers **16**, **48** and extends around the board **10** with the belt engaging the upper side thereof. This material is preferred, inasmuch as its lightness reduces the bottom sag or catenary to a minimum. The belt is adapted to receive a sheet of drawings **96** releasably secured thereto by conventional adhesive tape **98**. As is seen in Figure 1, the sheet is normally positioned below the straight edge **100**, the ends of which are connected to a conventional guide wire **102** intermediate its respective ends. The wire **102** is trained around the guides **103** and its ends are fixedly secured to the board **10** by means of the wood screws **104** which extend through the openings **46**.

As a consequence of the above described structure, it now becomes manifest that the vertical position of the sheet **96** may be varied relative to the board **10** through the simple expedient of rotating the knob **92** which activates the gear train **82**, **84** to effect rotation of the driving roller **48**. The striations on the rollers **16**, **48** increases the coefficient of friction between them and the belt **94** to effect a more positive driving relation therebetween.

From the foregoing description, and as illustrated in the drawings, it is now clear that the draftsman can work on the central or upper portions of the sheet **94** with the same facility as he executes his work on the bottom portion.

Of further import, it is pointed out that the drafting board attachment is constructed in such a manner that the rollers **14** and **48** are always tangent to the extended plane of the upper surface of the board **10**, regardless of the thickness thereof.

A further dominating feature of this invention resides in the provision of the resilient packing members **38**. The resiliency thereof insures automatic parallelism of the rollers regardless of lack of parallelism of the drawing board edges. In this regard, the inherent cellular rigidity of the paper belt **94** is most important for it is this factor that forces the automatic adjustment of the rollers.

The relative simplicity of the above described attachment makes it possible to package the same in kit form when presented to the market.

It should be understood that, if desired, a journal box such as the journal box indicated at **22** in Figures 5 and 6 could be substituted for the journal box **62** shown in Figure 7.

Having described and illustrated in detail one embodiment of this invention, it will be understood that the same is offered merely by way of example, and that the invention is to be limited only by the scope of the appended claims.

What is claimed is:

1. In combination with a drafting board having a polygonal configuration including a pair of oppositely disposed parallel edges, a first pair of journal boxes secured to said board and projecting beyond one of said parallel edges, a roller bearing disposed within each of said first pair of journal boxes, an elongated shaft having a pair of opposed ends and a roller fixedly secured thereon for rotation therewith, said opposed ends of said shaft being journalled, respectively, within said bearing; that improvement which comprises a second pair of journal boxes fixedly secured to said board, said second pair of journal boxes projecting beyond the other of said parallel edges and having a pair of confronting cavities formed therein, each of said cavities having an ogive configuration including a semi-circular end wall and an oppositely disposed end wall extending perpendicular to the radius which bisects said semi-circular wall, a resilient element disposed in the cavity of each of said second journal boxes, each of said resilient elements having a semi-circular recess formed therein disposed in confronting relation relative to said semi-circular wall to complement the same and to form a substantially hollow cylindrical recess in conjunction therewith, said resilient elements each having an end thereof abutting against said oppositely disposed walls, a ball bearing positioned within each of said cylindrical recesses, a shaft having a pair of opposed ends, a roller fixedly secured on said shaft for rotation therewith, an endless belt trained around said rollers and slidably engaging a side of said board, and said resilient elements being under compression to constantly bias said last named ball bearings for movement towards said semi-circular walls of said second pair of journals to maintain constant tension on said endless belt.

2. In the combination defined in claim 1, a gear train

and operating means therefor, said train being connected with one of said shafts whereby actuation of said last named means effects rotation of said shafts and their respective rollers and imparts constant movement to said belt relative to said board.

3. In combination with a drafting board having a polygonal configuration including a pair of oppositely disposed parallel edges, a pair of journal boxes secured to said board and projecting beyond one of said parallel edges, a roller bearing disposed within each of said first pair of journal boxes, an elongated shaft having a pair of opposed ends and a roller fixedly secured thereon for rotation therewith, said opposed ends of said shaft being journalled, respectively, within said bearing; that improvement which comprises a second pair of journal boxes fixedly secured to said board and projecting beyond the other of said parallel edges, said second pair of journal boxes having a pair of confronting cavities formed therein having an ogive configuration and each of said second journal boxes including a semi-circular wall and an oppositely disposed end wall positioned perpendicular to the radius bisecting said semi-circular wall, a resilient element disposed in the cavity of each of said second journal boxes, a ball bearing disposed within each of said

second journal boxes and being partially received, respectively, within each of said semi-circular walls, said resilient element engaging against said wall positioned perpendicular to the radius bisecting said semi-circular wall and abutting against said ball bearings to constantly urge said ball bearings for movement towards said semi-circular wall, and an endless belt trained around said rollers.

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