Nov. 14, 1933. H. R. SHOEMAKER 1,934,952

DRAWING TABLE ATTACHMENT

Filed April 18, 1932

Fig. 1.

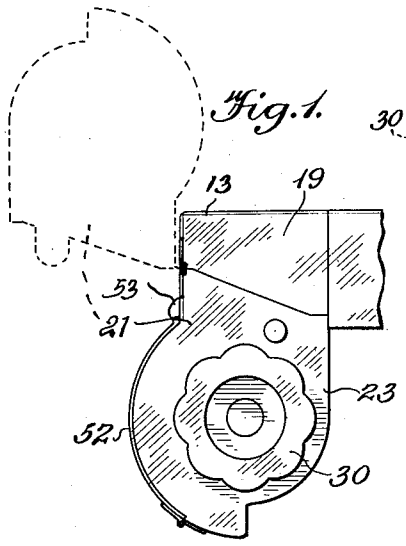


Fig. 2.

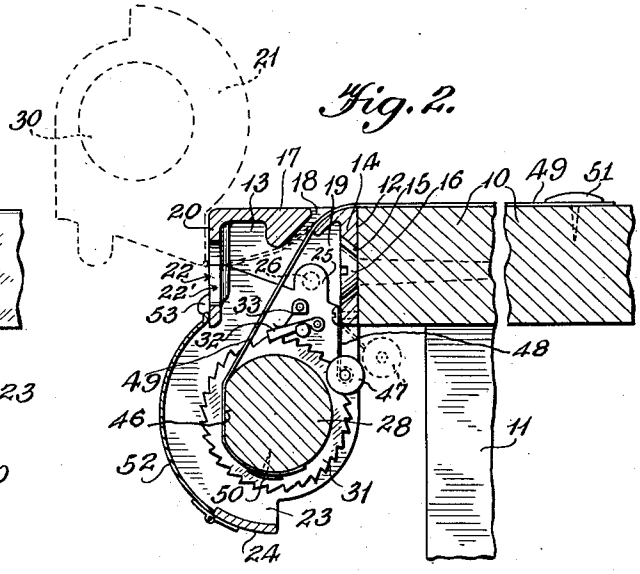


Fig. 3.

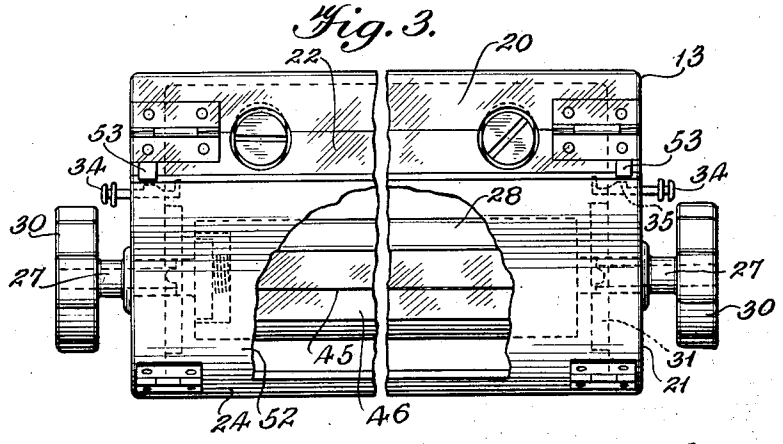
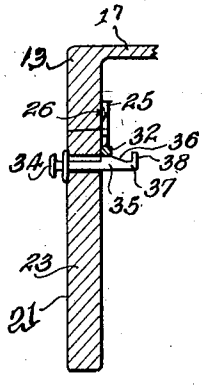


Fig. 5.



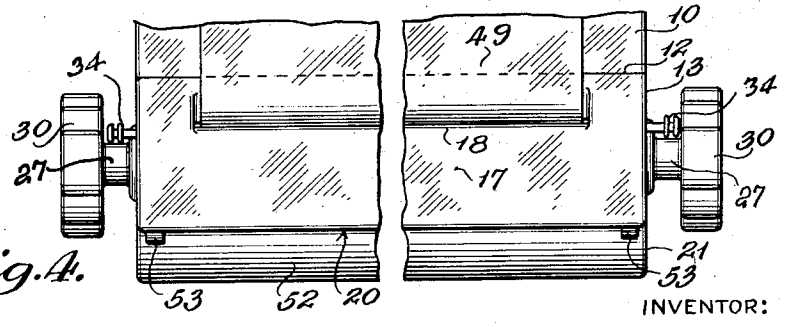


Fig. 4.

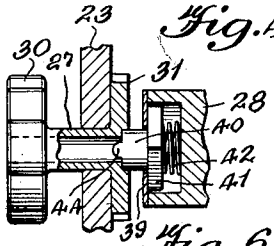


Fig. 6.

INVENTOR:

Harold R. Shoemaker,

BY H. S. Woodward,

ATTORNEY

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DRAWING TABLE ATTACHMENT

Harold R. Shoemaker, Washington, D. C.

Application April 18, 1932. Serial No. 606,023

10 Claims. (Cl. 45—131)

The invention relates to means to hold paper or cloth in position upon drawing boards and tables, and particularly to means of that type in which a roller is employed to hold a part of the paper while the remainder is extended upon the board or table.

It is an important aim to present such an appliance which may be effectively mounted by attachment to the edge only of a board or table by simple means, while affording all the advantages of an efficient take-up and stretching device, at the same time that the paper is effectively protected from soiling, as well as having other advantages, some of which will be enumerated.

Another important aim is to present a novel construction and arrangement whereby the adjustment of the paper accurately on a board may be assured readily. In many instances where large drawing or tracing is involved, it is desirable to make the same by perfecting a portion thereof at the lower portion of the board or table, then adjusting the paper so that an adjacent portion may be perfected in the same location on the board or table, so that the draftsman is not required to work on an extremely distant part of the table or board by leaning over the front or bottom portion, or sitting or resting thereon while making lines upon the more distant parts of the paper.

An especially important aim of the invention is to provide such an article which may be purchased at a low cost by draftsmen to be applied to boards and tables already in use which may be put in place properly by inexperienced persons with assurance of accuracy. Another important purpose is to construct the device so that it will provide a good straight-edge at the bottom of the board or table to which it is applied, which will not be liable to damage or deviation by wear, and in fact one which may be applied to a board or table having a damaged edge to replace such edge with one that is true and durable.

It is also an object to offer a paper reeling and tightening device in which a removable roll is incorporated, to the end that the drawing in course of preparation, or those which are to be added to, revised, or corrected from time to time, may be preserved upon the roll and when additional work is to be done on such drawing the roll may be returned to my mounting and again adjusted over the board in strict and true relation to the straight-edges of the board, the same as when originally placed thereon. It is also the purpose to provide a multiplicity of rolls, so that drawings may be permanently retained thereon, and held in racks or otherwise, as desired, for preservation, yet always be ready for quick readjustment upon the drawing board whenever required.

Another object is to provide means to prevent the paper from becoming loose upon the roll when the ratchet of the roll is released, or when the paper is detached from the drawing board. Still another object is to present a novel casing and door construction facilitating emplacement and removal of paper or rolls.

It is also an important purpose to provide a novel means to permit removal of a drawing sheet from the device, and its return at any time thereafter and resecurement in exact rectitude with the board.

It is also an aim to provide a novel form of ratchet device for holding the paper roll in positions with the paper under proper tension.

Additional objects, advantages and features of invention reside in the construction, arrangement and combination of parts involved in the embodiment of the invention, as will be more readily understood from the following description and accompanying drawing, in which

Figure 1 is an end elevation of the invention.

Figure 2 is a vertical cross section.

Figure 3 is a front elevation with parts broken away.

Figure 4 is a top view of the device applied to a board.

Figure 5 is a detail of the pawl.

Figure 6 is a fragmentary vertical section of the roll and trunnion mounting.

There is illustrated a board or table 10, which may have an apron board or drawer as indicated at 11, and it is an advantage of my device that it is constructed so that it will not interfere with the use of drawers of tables to which it is attached.

To the bottom edge 12 of the board there is attached my invention. This includes a case which consists of a base section 13 cast of aluminum or other metal including a back wall or plate 14 set snugly against the face of the edge 12 and secured thereto. The wall 14 is formed with a plurality of vertical slots 15 spaced longitudinally of the wall 14, with bevelled sides divergent inward or away from the board 10 adapted to receive wood screws 16 which when screwed home in the board 10 bear upon the sides of the slots and clamp the wall 14 against the board. The section 13 is also formed with a top plate 17 which meets the wall 14 at right angles, and is formed with a slot 18 extending for nearly the full length of the device, stopping short of the ends a proper distance. This

slot is extended diagonally downwardly and away from the board 10 into the case, and the side of the slot next the board is curved convexly so that paper drawn taut thereover will not be creased or damaged. End walls 19 are formed integrally with the back wall and top plate, and a front wall 20 is also formed integral with the top plate and end walls, but of less vertical dimension than the back wall 14.

A lower case section 21 is hingedly connected to the section 13 at the lower edge of the front wall 20 in such manner that the lower section may swing forwardly and upwardly as indicated in dotted lines in Figures 1 and 2, so that the hinge elements lie clear of the plane of the front or outer face of the wall 20. This will permit the head of standard T-squares to be moved slidably against the outer face of the wall 20 with the stem of the instrument laid flat across the section 13 and paper on the board 10.

The section 21 comprises a front rail 22 arranged to abut the lower edge of the front wall 20 of the section 13, end walls 23, alined with the end walls 19, and a bottom rail 24, all integral as shown.

Spring clasp arms 25 are fixed on the end walls 23 of the section 21, arranged to overlie the end walls 19 of section 13 and are cupped or otherwise shaped at their outer parts to snap over nodules or knobs 26 on the last mentioned walls so as to hold the two sections yieldingly in coengaged relation. The lower parts of the walls 23 are partly circular in form and on the center of the circle involved, there are mounted revolubly tubular trunnion knob shafts 27. In the present instance a roller 28 is shown, which may be formed of wood, although other materials may be used. Each knob shaft is releasably engaged with the roll, as will be described, and has a knob 30 at the outer end for manipulation to rotate the roll. Each shaft 27 is provided with a ratchet wheel 31, and on the inner face of the adjacent wall 23 there is pivoted a pawl 32 arranged to engage the ratchet, being pressed by a leaf spring 33 fixed at one end on the inner face of the wall. A lifter and support for the pawl is provided, in the form of a plunger 34 slidably inserted through the wall, having an operating head at the outer end by which it may be manipulated. With the plunger at the inner limit of its movement a thickened part is engaged beneath the pawl, holding the latter clear of the ratchet; from this thickened part a downwardly inclined face 36 extends inwardly to a thin part 37, at the extremity of which an upturned stop 38 is formed which will strike against the pawl when the lifter is drawn to the outer limit of its movement. This stop extends upwardly more than the vertical movement of the adjacent part of the pawl by the ratchet teeth, so that liability of the pawl becoming engaged over the stop is minimized, and withdrawal of the pawl through the wall 23 prevented. When the plunger is at its outer limit of movement the thin part is beneath the pawl, permitting the latter to engage the ratchet.

The left end of the roll is recessed and covered with a centrally apertured plate 39 through which projects a depressible trunnion 40, having a square head 41 within and fitting the recess inwardly of which there is confined a compression helical spring 42 by which the trunnion 40 is normally held projected from the end of the roller yieldingly. At the right end of the roll a stub trunnion 40' is mounted thereon. The shafts 27 stop short within the ratchets, and are formed to receive the keys 44 on the ends of the respective trunnions 40 and 40' as in Fig. 6.

The roll is formed with a saliently marked or otherwise indicated line 45 in one radial plane of the roll, and this line may be formed on a flattened face 46, if desired, or the flattened part may be omitted, and the line formed upon the cylindrical part of the roll. The line may extend throughout the length of the roll. If the flat face is provided, it may be used to receive thumb tacks to secure the paper on the roll, although the tacks may be placed elsewhere on the roll if desired.

A presser roll 47 is mounted on the back wall 14 by means of leaf springs 48 attached to the wall 14 by screws and pendant to a location close to the periphery of the roll 28 when the device is in closed position. The presser roll is of quite small diameter, and is adapted to bear upon several thicknesses of paper when engaged upon the roll 28 so as to hold such paper against becoming loose upon the roll if the pawl 32 is released, as would occur when the plungers 34 are pressed inward. The roll 47 clears the roll and superposed paper when the section 21 of the device is swung upward.

The rear side of the case may be open between the two end plates 23, so that any trash falling through the slot 18 will always clear itself from the case. But the front side of the case is preferably provided with a closure which may be moved to permit free access to the roll 28 and paper thereon for fastening or removal, and for emplacement and removal of the roll. This closure consists in the present instance of a door 52 of thin resilient metal hinged to the front edge of the bottom rail 24 of the lower section 21 of the case. This door is curved to lie concentric with the roll 28 and has a rolled rim at the upper edge set yieldingly in the grooved lower sides of lugs 53 formed on the front wall 22 of the bottom section near each end. To open this door 52 it is pressed manually downward at the upper edge portion, while the upper edge is drawn outwardly to clear the lugs 53. The front plates 20 and 22 of the sections 13 and 21 have large openings 54 formed therethrough in alinement with each of the slots 15 through the back wall 14, so that the screws 16 may be put in place by being inserted through the front of the case and driven by a screw driver also inserted through the case. Withdrawal of the screws may be correspondingly effected.

To apply my attachment to a drawing board or table, the outer or rear face of the wall 14 of the top section of the case is presented against the bottom edge of the board, and while adjusted as near as desired to one end or the other of the board, marks are made through the middle of the slots 15. These slots preferably stop at a predetermined distance from the top of the plate 17 which will permit engagement of screws through the slots in the thinnest boards of dependable makes, to hold the top of the plate 17 flush with the top of the board. After marking the locations of the slots 15, suitable holes are drilled in the edgeface 12 of the board on the marks made and at the proper distance from the top face of the board and the screws entered therein and through the slots 15. It is possible that these will not be uniformly spaced from the top or working face of the board, but by screwing only partly against the plate 14, the latter may be adjusted upwardly or downwardly at either or both ends and when good alinement is assured the screws are driven home.

In placing paper upon a board equipped with my invention, the paper 49 is first adjusted with its lateral edges in the desired relation to the lateral edges of the board. A T-square is then adjusted to the left edge of the board with its stem close to the bottom of the sheet and a line drawn therealong upon the extreme lower edge portion of the sheet. The door 52 is then dropped and the marked edge portion of the sheet 49 is then inserted downwardly through the slot 18 the line drawn upon the paper being adjusted in alinement with the line 45 on the roll while thumb tacks 50 (or other means) are used to secure the sheet to the roll. The plungers 34 being drawn outward, the paper is then wound as desired and while moderately stretched its upper edge portion is secured to the top of the board, or to some intermediate portion of the board at the desired distance from the edge 12 by means of additional thumb tacks 51 or other means. The knobs are then grasped and manually turned to draw the sheet taut, the resilience of the material permitting the ratchet to be moved so that the pawl engages with the sheet properly stretched.

To remove the paper, leaving the roll in place, the upper tacks are removed, the plungers 34 pressed inward, and the paper then drawn out through the slot 18 until the thumb tacks 50 holding the paper to the roll may be drawn, the door 52 being lowered.

To remove the paper on the roll, the upper tacks 51 are removed, and the knobs 30 rotated until all the paper is drawn inward through the slot 18, after which the door 52 is opened and the roll grasped in one hand and the left end drawn outward while a suitable instrument is inserted through the left tubular knob shaft to release the inner or depressible trunnion 40.

It should be noted that the paper passes across the junction between the upper and lower sections of the case in such manner that the tension on the paper holds the lower section in closed position. In case the element 11 shown under the board should be a drawer, as will be the case on some tables, the lower section of the case may be swung upwardly to clear the drawer and permit it to be opened. If paper is held under tension by the device, it is only necessary to press the plungers 34 inward to permit movement of the lower section of the case to clear the drawer, and by drawing the plungers outward again the paper may be immediately and certainly returned to its original taut condition and exact location on the board by rotation of the knobs 30. It will be noted that—excepting the roll 47—there is no projection whatever below the board 10 when the section 21 is raised, where the board is of standard thickness for medium sized boards.

It is an advantage also that when the lower section is raised, the paper is lifted against the lower edge of the front wall of the top section which is much above the lower face of the board 10 and consequently liability of soiling or damage to the paper in opening the drawer at 11 is much minimized.

It will be noted that the top plate 17 is thickened adjacent the slot 18, and that the slot extends at an incline downwardly and away from the board 10. The top surface of the plate 17 is planiform and at right angles to the planes of the back plate 14 and front plate 20, so that an angular straight edge is formed outwardly of the slot adapted to effectively guide the head of a T-square or other drawing implement just as it might have been used against the edge 12 of the board before the attachment of my device.

In the specification the term "board" will be understood to apply to table tops and other surface or platen members. The roller 28 may be termed a "reel", and such term will be understood to include such an element employed as a tensioning means also.

I claim:—

1. In a paper stretching device for drawing boards, a case having a back wall constructed for attachment to the edge of a board, said case having a top face adapted to aline with the face of an attached board, and an outer front straight-edge face parallel to the back face joining the top face at an angle to guide T-squares and the like laid across the device, a paper holding and tensioning means and a paper receiving slot opening therefrom through the top of the device parallel to the back face.

2. The structure of claim 1 in which the case comprises an upper section including said back face and a front face portion, and a lower section hingedly connected to the upper at said outer face, said paper holding and tensioning means mounted in said lower section.

3. The structure of claim 1 in which the paper holding and tensioning means is arranged in view and includes a roll having an index line formed saliently thereon extending longitudinally of the roll parallel to said slot and said angle.

4. The structure of claim 1 including a reel and a releasable detent engaged with the reel to hold the reel releasably against rotation in one direction.

5. The structure of claim 1 in which said back wall is formed with a series of vertical slots spaced longitudinally thereof for reception of board fastening screws and adjustment and permanent fixtures of the device.

6. The structure of claim 1 in which the case comprises an upper section including said back face and a front portion, and a lower section hingedly connected to the upper section at the front, said paper holding and tensioning means being a reel revolubly mounted in said lower section, and a presser roll parallel to the reel mounted yieldingly on the upper section at the rear part to engage paper on the reel.

7. The structure of claim 1 in which the case comprises an upper section including said back face and a front portion, and a lower section hingedly connected to the front portion of the upper section, said holding and tensioning means being mounted in said lower section, and a paper sheet engaged therewith extending across the junction between the upper and lower sections rearwardly of the hinge, then through said slot and attached to the board, whereby the tension on the paper will tend to hold the sections in closed relation.

8. The structure of claim 1 in which the said back wall is formed with a longitudinally spaced series of fastener-receiving slots, and the front wall thereof has formed therein openings alined with those of the back wall, said paper holding and tensioning means being below all of said openings whereby fastening members may be inserted and driven through the front wall and secured upon the back wall.

9. The structure of claim 1 in which the paper tensioning and holding means consists of a reel, a detent to hold the reel against rotation in one direction, said reel having stub trunnions at the

ends, and rotating knobs releasably engaged with the trunnions, said knobs being revolubly mounted on the case.

10. The structure of claim 1 in which the case includes a front closure consisting of a resilient plate hinged on an axis extending longitudinally of the device and of a length equal to the width of the paper, and a vertical height greater than the diameter of the body of paper held in the device, said closure being transversely curved and said case having a fixed element thereon grooves at the side next the closure and spaced from the hinge of the closure less than the normal radius of the closure, whereby the closure may be strained to move into alinement with the groove and will expand its inherent elasticity to engage in the groove.

HAROLD R. SHOEMAKER.