April 29, 1969 F. LESCHINGER 3,441,322

CARRIAGE-TYPE DRAWING APPARATUS

Filed Jan. 3, 1967 Sheet 1 of 2

Fig. 1.

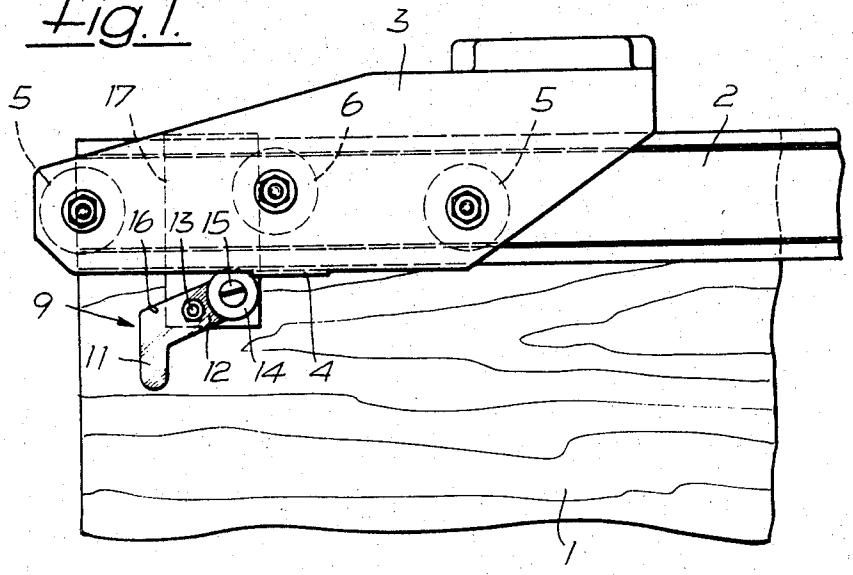
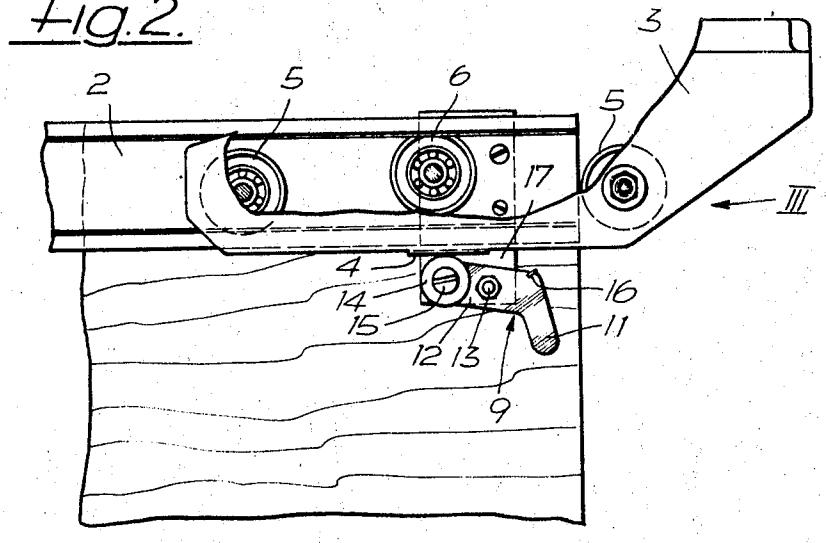


Fig. 2.



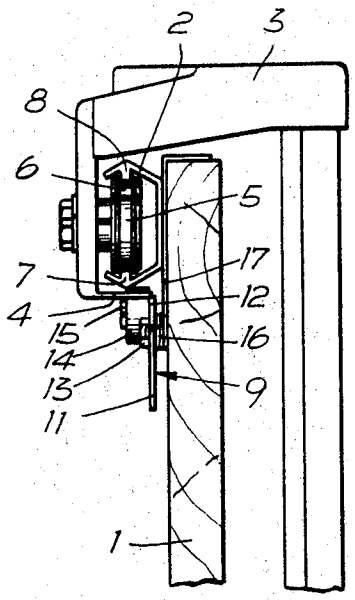
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CARRIAGE-TYPE DRAWING APPARATUS

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Fig. 3.



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CARRIAGE-TYPE DRAWING APPARATUS

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U.S. Cl. 308—3.8 3 Claims

ABSTRACT OF THE DISCLOSURE

A releasable stop member for limiting the extent of travel of a carriage along a guide rail of a drawing apparatus and for permitting the carriage to be removed from the rail.

The present invention relates to an improvement in a carriage-type drawing apparatus which comprises a guide rail which is adapted to be secured to a drawing board so as to extend along the upper horizontal edge thereof and along which a carriage is movable between stop members on the ends of the guide rail.

The carriage-type drawing apparatus of the above-mentioned kind which were known prior to this invention were provided with stop members which were secured to the back of the drawing board at the opposite end of the guide rail and adapted to engage with a projection on the carriage so as to limit the extent of travel of the carriage and prevent it from being moved out of the ends of the guide rail. These stop members which were rigidly secured to the drawing board have, however, the disadvantage that at least one of them cannot be connected to the drawing board until the carriage has been inserted into this end of the guide rail and been moved along the latter, and that whenever the carriage is to be removed from the guide rail, it is first necessary to remove one of these stop members. These operations of securing and removing at least one of the stop members not only require considerable time but usually they also cannot be carried out without the use of a suitable tool which may not always be readily available.

It is an object of the present invention to eliminate this disadvantage by designing a drawing apparatus of the above-mentioned kind so as to permit the carriage to be easily inserted into or removed from the horizontal guide rail, but to prevent the carriage from being accidentally moved so far that it will run out of the guide rail.

For attaining this object, the invention provides the drawing apparatus with at least one stop member which is designed so as to be movable to two different positions in one of which, in which it is normally located when the carriage is inserted into the guide rail, it extends into the path of travel of the carriage near one end of the guide rail to prevent the accidental removal of the carriage from the guide rail, while in the other position to which this stop member may be easily moved by hand without tools, it is withdrawn from the path of travel of the carriage and then permits the carriage to be withdrawn from the end of the guide rail or to be reinserted into the guide rail.

The stop member according to the invention may be of a very simple construction and consist, for example, of a boltlike slide member or the like which may be moved from one position to the other in which it may be arrested by suitable means. In place of these means, it is possible according to one preferred feature of the invention to provide a suitable spring which tends to maintain the stop member in its normal position in which it is always ready to engage with a stop projection of the carriage and from which it may be easily moved by hand against the action of the spring to the other position in which the stop member no longer engages with the stop projection on the carriage and therefore permits the carriage to be withdrawn from the guide rail.

Another feature of the invention consists in combining the stop member or members with the guide rail so as to form a unit which may be easily mounted on or removed from the drawing board whenever required.

According to one preferred embodiment of the invention, the stop member may be provided in the form of a lever which is pivotable about a pivot pin. Such a stop lever may be very easily constructed and installed since it only requires its pivot pin to be connected to the drawing board so as to extend at right angles thereto so that the lever will be pivotable parallel to the plane of the drawing board. One end of the stop lever is preferably further provided with a roller which projects into the path of travel of the carriage and is rotatably mounted on a pin which likewise extends at right angles to the plane of the drawing board and in its operative position engages, under the action of the spring, upon the guide rail.

According to another feature of the invention, the pivot pin of the stop lever is preferably mounted at such a distance from the guide rail that a plane which passes through the axis of the pivot pin of the lever and the axis of the roller on this lever extends at a relatively large acute angle to the longitudinal axis of the guide rail in the direction toward the middle of the rail. This construction has the advantage that, when the carriage is first inserted or reinserted into one end of the guide rail, the roller on the end of the stop lever will be pivoted automatically away from the guide rail against the action of the return spring by engaging with a stop projection on the carriage and that, therefore, for this purpose the stop lever does not need to be operated manually. If, however, the carriage after being inserted into the guide rail past the stop lever and it is then moved toward one end of the guide rail, its stop projection will hit against the roller on the stop lever, this roller will act as a stop member and prevent the carriage from being moved further toward and beyond the end of the guide rail. The carriage may therefore be removed from the guide rail only when the stop lever is pivoted by hand to its releasing position away from the guide rail. The stop lever is for this purpose preferably provided in the form of a two-armed lever, one arm of which carries the mentioned roller, while its other arm forms a handle.

The features and advantages of the present invention will become more clearly apparent from the following detailed description thereof which is to be read with reference to the accompanying drawings, in which—

FIGURE 1 shows a rear view of one end portion of the upper edge of a drawing board and of a drawing apparatus according to the invention, in which the horizontal carriage is prevented from being removed from the guide rail by the inventive stop member;

FIGURE 2 shows, partly broken away, a rear view similar to FIG. 1, but of the other end portion of the upper edge of the drawing board, and illustrates the process of inserting the carriage into the horizontal guide rail; while

FIG. 3 shows a side view of the part of the drawing board and drawing apparatus as illustrated in FIGS. 1 and 2 and as seen in the direction of the arrow III in FIG. 2.

As illustrated in the drawings, a horizontal guide rail 2 of a substantially U-shaped cross section along which a carriage 3 is movable is secured to the upper edge of the back of a drawing board 1. This carriage 3 is provided with a stop projection 4 which extends toward the drawing board 1 at the lower side of guide rail 2. For guiding the carriage 3 along the guide rail 2, three guide rollers 5 and 6 are rotatably mounted on carriage 3 in such positions that two of these rollers 5 engage upon

the lower web 7 of guide rail 2, while the third roller 6 engages upon the upper web 8 of the rail.

For limiting the length of travel of carriage 3 at the opposite ends of guide rail 2, two stop members 9 are mounted on the drawing board 1 near the opposite ends thereof and one or the other of these stop members is adapted to engage with the projection 4 of carriage 3. Each of these stop members 9 comprises a two-armed lever 11, 12 which is pivotably mounted on a screw 13 and held thereon by a nut. One arm 11 of this lever forms a handle, while on the other arm 12 a roller 14 is rotatably mounted on a pin or screw 15 which extends parallel to the axis of screw 13. Lever 11, 12 is further acted upon by a torsion spring 16 which tends to pivot the lever in the required direction so as to press the roller 14 against the lower web 7 of guide rail 2.

Screw 13 on which lever 11, 12 is pivotable is spaced at a relatively large distance from rail 2 so that the plane which passes through the axis of screw 13 and the axis of screw 15, on which roller 14 is rotatable, extends at such a large acute angle to the longitudinal axis of rail 2 in the direction toward a middle part of the rail that, when carriage 3 is shifted toward the end of rail 2 and the stop projection 4 engages upon the roller 14, the pressure of the projection 4 against the roller 14 will produce a torque which pivots the arm 12 of lever 11, 12 in the direction toward rail 2 and thereby wedges the roller 14 tightly against the web 7 and the projection 4 so that the carriage 3 is absolutely prevented from being further shifted toward the adjacent outer end of rail 2. However, when carriage 3 is first to be mounted on guide rail 2 or to be remounted thereon by being slipped over one of the outer ends of guide rail 2, and its first two rollers 5 and 6 are then inserted between the webs 7 and 8 of rail 2, the edge of its stop projection 4 will press against the roller 14 and thereby pivot the arm 12 of lever 11, 12 against the action of spring 16 away from guide rail 2 without requiring any manipulation of this lever. If carriage 3 is to be removed from one or the other end of guide rail 2, it is only necessary to pivot the respective lever 11, 12 manually in the direction against the action of spring 16 so that the stop projection 4 will pass over the roller 14 and carriage 3 may then be withdrawn from the end of rail 2.

Guide rail 2 as well as the stop members 9 are mounted on a pair of brackets 17 and are secured by the latter to the drawing board 1.

Having thus fully disclosed my invention, what I claim is:

1. In a drawing apparatus having a guide rail adapted to be secured to a drawing board, an improved carriage arrangement, comprising in combination:

a carriage movable along and guided by said guide rail;

at least one stop member operatively mounted on said drawing board adjacent to one of the lateral ends thereof for limiting the extent of travel of said carriage;

said stop member includes a lever which is pivotable about an axis on said drawing board;

a roller rotatably mounted on one end of said lever; and

a spring operatively connected to said lever and urging the latter into a position in which said roller extends into the path of travel of said carriage along said rail; said lever being movable against the action of said spring to a position in which said roller does no longer extend into said path of travel, so as to permit said carriage to be removed from said guide rail at said one lateral end of said drawing board.

2. In a drawing apparatus having a guide rail adapted to be secured to a drawing board, the improved carriage arrangement as set forth in claim 1,

wherein said carriage has a stop projection extending therefrom;

said axis on said drawing board about which said lever is pivotally mounted extending perpendicularly therefrom;

said roller, due to the action of said spring, abutting against said guide rail;

a plane passing through said axis and through the axis of said roller defining a preselected acute angle with respect to a plane extending along said path of travel, which is instrumental, when said carriage is moved along said guide rail towards said roller and said stop projection hits said roller in preventing the pivoting of said lever, and said carriage will thus be stopped by said roller, while when said carriage is inserted from the outside into one end of said guide rail at said one lateral end of said drawing board and said stop projection engages said roller, said lever will be automatically pivoted so that said roller can ride freely over said stop projection.

3. In a drawing apparatus having a guide rail adapted to be secured to a drawing board, the improved carriage arrangement as set forth in claim 2,

wherein said lever has two arms, a first one of said two arms carrying said roller and a second one of said two arms forming a handle for manually pivoting said first arm away from said guide rail when said carriage is to be removed from said guide rail at said one lateral end of said drawing board.

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U.S. Cl. X.R.

33—76; 308—6