March 6, 1945. L. KETTING 2,370,971

DRAFTING MACHINE

Filed June 3, 1942 3 Sheets-Sheet 1

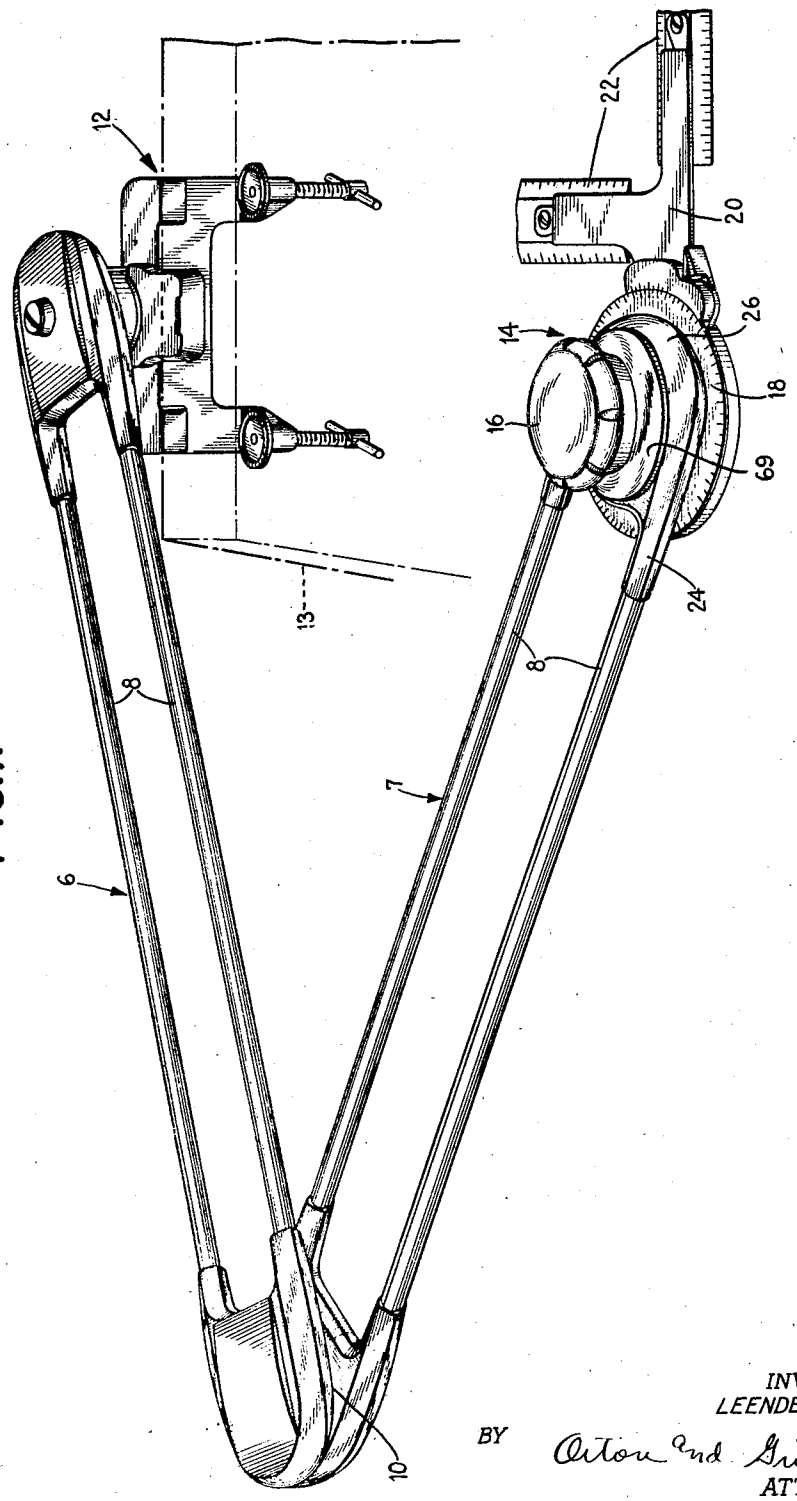


FIG.1.

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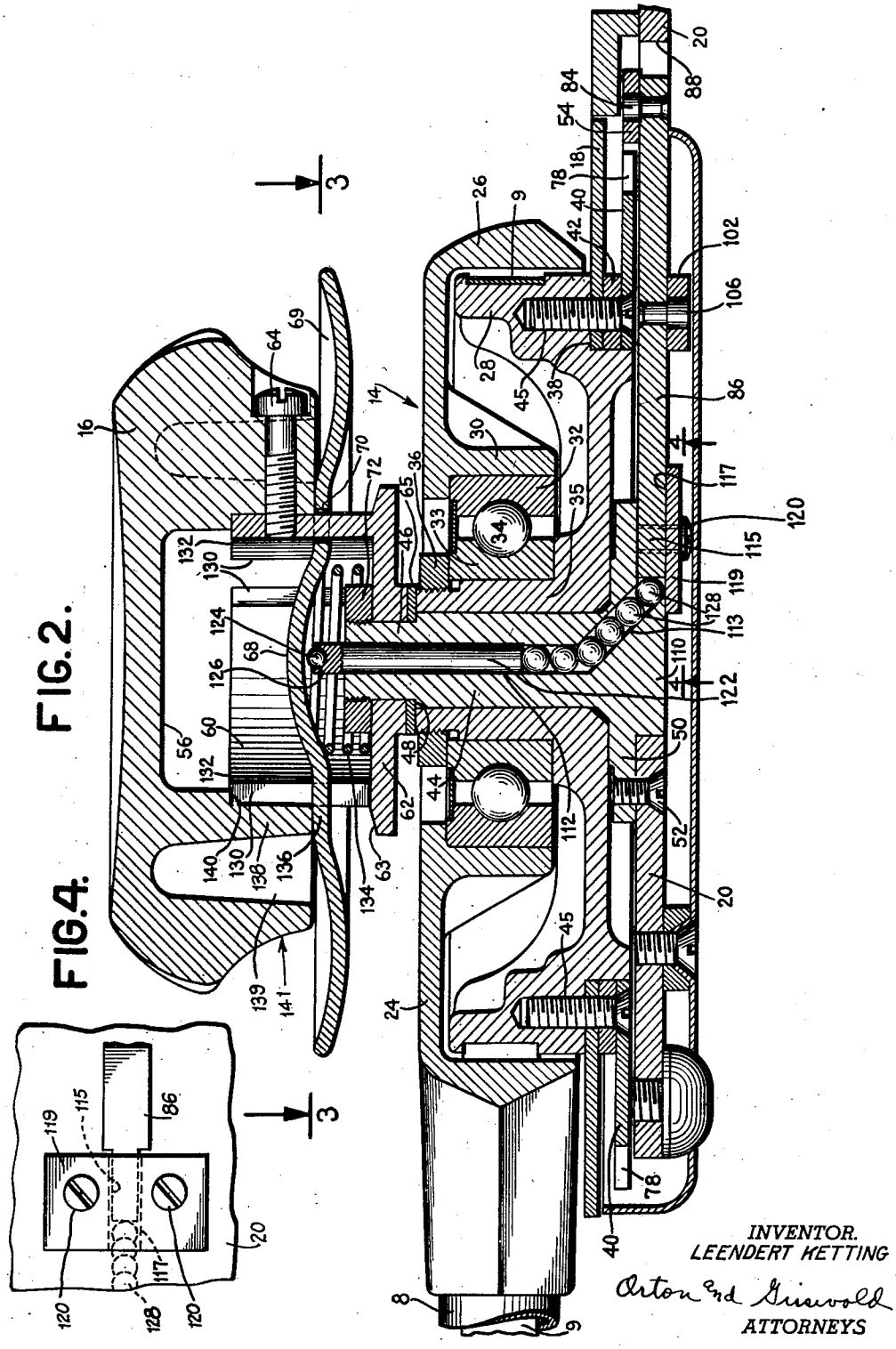


FIG. 2.

FIG. 4.

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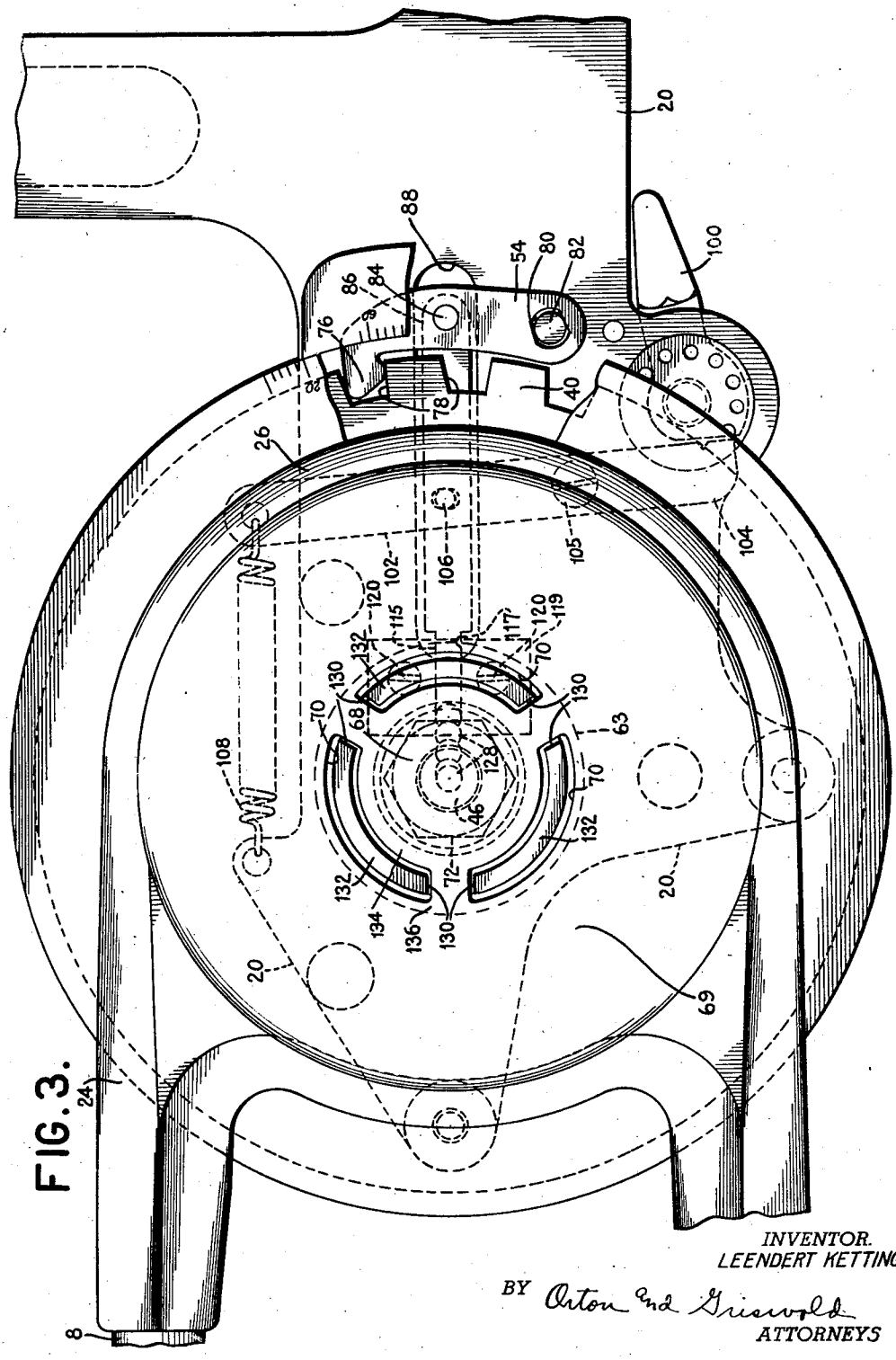


FIG. 3.

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UNITED STATES PATENT OFFICE

2,370,971

DRAFTING MACHINE

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Application June 3, 1942, Serial No. 445,540

19 Claims. (Cl. 33—79)

This invention relates generally to parallel motion drafting devices of the kind in which the several tools which the draftsman handles most frequently are embodied, in principle, in one unit to obviate the necessity of a draftsman reaching about for a required tool and thereby enabling the draftsman to keep his attention concentrated directly upon the drawing.

Drafting devices of this character are common in which adjacent ends of two arms are pivoted together, the free end of one arm being anchored to the remote side of a drafting board while the free end of the other arm is provided with a head comprising a protractor and straight-edges which are in fixed angular relation and move about the center of the protractor as an axis. Such straight-edges have heretofore been so associated with the protractor as to be set and locked at any angle of the protractor or to be automatically locked at predetermined intervals. However, the instrumentalities effecting the setting of the straight-edges with respect to readings on the protractor have been characterized by difficulty in the manual actuation of the locking device because of its inaccessibility.

One object of the present invention is a drafting device of the character described, wherein actuating means of the locking devices for the straight-edges are readily accessible for manipulation by the thumb or a finger without moving the hand from the actuating knob on the protractor head.

It is also an object of the invention to effect the releasing of latching means for the straight-edges by a movement of the hand of the operator which is, in effect, an exaggerated movement of the hand in grasping the knob.

The invention also has for one of its objects locking and releasing mechanism for the protractor which may conveniently be actuated by either the thumb or a finger, as found most convenient, of the hand manipulating the knob by which the scale frame is moved to the desired relative position. In carrying this aspect of the invention into effect, a disc or plate is preferably provided on the knob, which is movable downwardly at any point about its periphery to unlatch the straight-edges and permit them to be moved freely to any angular position but which, on release, will effect locking of the protractor at the nearest even predetermined position.

Another object of the invention is to return the disc on the knob to initial position whenever it is released by the operator. Accordingly, power is stored in power storing devices when the disc is moved from initial position and which is utilized to return the disc.

The invention further seeks an instrumentality transferring the substantially vertical movement of the thumb or finger actuated device to the latching devices for the straight edges to simplify assembly and to avoid the necessity for interlocking lever arms and other movement transferring devices.

The invention also resides in the details of construction by which the drafting device is made practical from the standpoint of ease, simplicity and convenience in manufacture and assembly as well as durability and facility in use.

These and other objects of the invention and the means for their attainment will be more apparent from the following detailed description, taken in connection with the accompanying drawings illustrating one embodiment by which the invention may be realized, and in which:

Figure 1 is a diagrammatic view showing the drafting machine mounted on a drawing table;

Figure 2 is a view showing the head of the drafting device of this invention in vertical section;

Figure 3 is a transverse view taken in the plane indicated by the line 3—3 of Figure 2, looking in the direction of the arrows; and

Figure 4 is a fragmentary plan view taken in the plane 4—4 of Figure 2.

Referring first to Figure 1, there is illustrated a typical "endless band and pulley" type of drafting machine which comprises a pair of arms 6, 7 each comprised of tubes 8 within which an endless band 9 in each arm travels. The adjacent ends of the arms are pivoted together, as at 10. The free end of one arm is anchored, as at 12, to the side of a drafting board 13 while the free end of the other arm is provided with a supporting head 14 comprising the knob or handle 16, a protractor 18 and frame means 20 supporting the straight-edges 22. Obviously the arms may assume any convenient structural shape and the invention is applicable to types of parallel motion mechanisms other than the wheel and band type illustrated.

As shown, the tubes 8 extend into a frame member 24 comprising an outer flange 26 within which the pulley 28 (Figure 2) turns. Inwardly of flange 26 is a cylindrical flange 30 concentric with the axis of the head 14. Rotatably mounted within the cylindrical flange 30, as by the ball races 32, 33 and ball bearings 34, is a cylindrical hub portion 35 which is integral with the pulley 28 and retains the bearing member 33 by means

of a retaining ring 36 threaded to the upper end of the hub 35. Thus the pulley 28 is free to rotate within the frame portion 24 of the head without friction.

The pulley member 28 is rabbeted as at 38 to receive the protractor plate 18 and a latching plate 40 spaced from the protractor plate by a spacing ring 42. The locking plate 40 and the protractor 18 are fixed to the pulley by means of the screw or other securing means 45. Within the cylindrical hub 35 of the pulley is disposed a sleeve 44 functioning as a pivot pin and having its upper end of reduced diameter, as indicated at 46, so that a shoulder 48 is provided substantially flush with the upper surface of the pulley hub 35. The sleeve 44 is secured to, as by being made integral with, a plate-like bottom portion 50 to which the straight-edge supporting frame 20 is secured as by the screws 52.

The knob 16 is secured to the pivot pin 44 so that rotation of the knob 16 will rotate the straight-edge supporting frame 20 whenever that frame is released from the pulley by disengaging a common type of latch member 54 from the toothed latching plate 40, as will be understood. The knob 16 is operatively connected with the pivot pin in the following manner:

The knob 16 is recessed, as at 56, and receives a generally cylindrical or cup-shaped knob-supporting frame member 60—62 comprised of the cylindrical or annular wall 60 and a bottom wall 62 which is illustrated as extending beyond the circumferential margin of the wall 60 as a bevelled flange 63 to serve as a stop for a manually actuatable device 68—70 controlling the pawl 54 as hereinafter described. The upper end 46 of the tubular pivot pin 44 is held in position by a nut 72 threaded on the upper end of the pivot member and seating on the bottom wall 62 of the cup-shaped member to retain it against the spacing ring 65 on shoulder 48. Thus the pulley 28 and knob frame 60—62 are held in assembly on the pivot member 44 by means of the disc-like portion 50 at its lower end and the nut-like member 72 at its upper end. The knob 16 is secured to the wall 60 as by a screw 64 whereby rotary movement of the knob and with it, the frame member 60, 62 will turn the pivot pin 44 and thereby the straight-edge supporting frame 20. A bottom surface of the bottom wall 62 rests on a spacing ring 65 supported on shoulder 48 of pivot pin 44. The cup-shaped member 60—62 and pivot pin 44 are thus rotatable as a unit with respect to pulley 28.

The manually actuatable devices controlling the latch are carried above the level of the arm and in a position to be operated by a digit of the same hand of an operator as is used to grasp the knob. As shown, the manually actuatable device takes the form of a disc which, as illustrated, is comprised of an upwardly convex central portion 68 and a finger engageable annular concave rim portion 69. Between the convex and concave portions the disc is formed with an annular row of slots 70.

The cooperating latching member is shown in greater detail in Figure 3 as an angular shaped lever 54 formed with a detent 76 at its one end, which is so shaped as to enter into and position itself in one of the recesses 78 of the latch plate 40. The other extremity of the pawl 54 is formed with an aperture 80 for reception on a pin 82 mounted on the straight-edge supporting means 20. The lever 54 is urged toward the latching plate 40 by the engagement of a pin 84 therewith, which pin 84 is carried by the end of the slide 86 slidable in a slot or the equivalent 88 formed in the frame 20 and terminating proximate the lower end of the pivot pin 44. In order to hold the straight-edge at points intermediate the registering position of the notches, a lock member 100 is provided which, since it is rarely used, is carried, in the illustrated embodiment, at a low point as on the frame 20. Any convenient clamping lever or locking means may be provided within the purview of this invention and no further discussion thereof is necessary.

Beneath the slide 86 is a lever 102, 104 pivoted to the frame 20, as at 105, and connected to the slide 86 with provision for lost motion by a pin 106 in a slot in slide 86. The free end 104 of the lever 102, 104 is positioned proximate the manually actuatable device 100, which is used to hold the latching plate 18 at intermediate points. By this relation of parts, actuation of the device 100 will shift the lever and effect release of the pawl, as will be understandable. The other end 102 of lever 102, 104 is urged toward the axis of the pulley 28 by power storing means shown as the coil spring 108 connected at the one end to the lever 102—104 and at the other end to the frame 20.

The pivot pin 44 is shown as formed, below the plate-like bottom portion 50, with a disc-like enlargement 110. It is also formed with an axial bore 112 extending from the upper end to a point, conveniently, in substantially the plane of the disc portion of the pulley 28. From that point, the bore is inclined downwardly and outwardly, as at 113, to the periphery or side portion of the enlargement 110 in register with the inner end of the slide 86 which conveniently may be constricted to substantially the diameter of the bore 112, 113, as shown at 115. The constricted portion 115 enters a groove or passage 117 formed in a block 119 secured as by the screws 120 to the frame member 20. The passage 117 is in register with the bore 113 and forms a continuation thereof. Within the axial portion 112 of the bore, a rod-like plunger 122 is disposed which is conveniently provided with a curved upper end, in this instance represented by a ball bearing 124 seated in a hemispherical recess 126 in the end of the plunger 122. The plunger 122 terminates short of the lower end of the axial bore 112 and the remainder of the axial bore and the inclined bore 113 is filled with balls 128, say of steel, which are prevented from escaping by the end 115 of the reciprocable member 86.

It will be readily appreciated, therefore, that whenever the plunger 122 is depressed, the series of balls 128 will be forced downwardly in the passage 112, 113 pressing against the end 115 of the reciprocable member 86 and displacing it to the right, as viewed in Figure 2, to actuate the latch 54 against the reaction of the spring 108. Obviously, while elements such as steel balls 128 are shown between the plunger 122 and the reciprocable member 86, any elements transmitting the vertical movement of the plate 68, 70 to the horizontally movable member 86 in order to actuate the latch 54 are within the purview of the invention.

The knob frame portion 60 is conveniently provided with an annular series of slots 130 extending conveniently, as shown in Figure 2, the full depth of the wall 60, that is, to the plane of the upper surface of the bottom member 62. These slots 130 are preferably three in number and in the modification shown define three equal

wall segments 132 preferably equally spaced from one another. The slots 70 in the manually actuatable device 68, 70 are so shaped as to loosely receive or fit over the segmental wall portions 132. Disc 68, 70 is illustrated as supported with the convex portion 68 thereof normally in spaced relation to the upper end of the plunger 122 or to the ball 124 seated in the end thereof by a helical spring 134 seated on the bottom 62 of the frame 60—62 and engaging the bottom of the convex portion 68 of the disc. The helical spring 134 is conveniently of slightly greater diameter than the nut 72 but is retained against substantial displacement by the nut.

The disc 68, 69 is retained in operative position on the frame 60, 62 by a depending annular inner flange 138 illustrated as formed by an annular recess 139 in the knob. This flange 138 is concentric with the wall segments 132 and conveniently is that portion of the knob which is formed with the recess 56. The cylindrical wall of the recess 56 is shown as rabbeted, as at 140, to receive the wall segments. The annular depending flange 138 or its equivalent serves not only to position the disc 68—69 in a transverse plane when acted upon by the spring 134 but also serves as a fulcrum about which the disc 68—69 may rock when any point on its periphery on an opposite side of the convex portion is depressed. Obviously, the spring 134 can be dispensed with, the disc 68, 69 then resting on the bearing 124.

By means of the disc 68—69, a draftsman may release the straight-edges by a finger or the thumb of the hand which grasps the knob 16 and without displacing the hand in any respect on the knob from whatever relative position on the knob he normally grasps the same and may do this with whatever finger or thumb he so desires. He merely presses downwardly with the end of the selected finger or the thumb at any point on the periphery or within the depressed annular rim portion 69 to force downwardly that portion of the disc to cause the diametrically opposite portion of the disc 68, 69 to pivot or rock about the depending flange 138 as a fulcrum. By this manipulation of the disc the central portion 68 of the disc is caused to move downwardly into engagement with and depresses the plunger 122 to advance the link 86 and release the latch 54. Obviously, when pressure on the disc 68, 69 is relieved, the spring 134 returns the disc to initial or normal position and the spring 108 tends to return the latch to latching position and the elements 122, 128 to initial position. Release of the pawl is effected in this manner by downward movement of any portion of the periphery of the disc caused by downward pressure at any one point or at all points on its peripheral portion.

The knob 16 may be undercut as at 141 about its lowermost outer periphery which not only affords a convenient hand grasp in lifting the head but permits the insertion of one or more digits between the knob and the disc as by merely extending the digits further downwardly or under the knob, for instance, as by an exaggeration of the movement of the hand in grasping the knob and inserting or wedging one or more digits between the undercut portion 141 of the knob and the disc 68, 69 and, therefore, when there is insufficient room for the digits in this space the insertion of the digit or digits will displace the disc downwardly, say, on a portion of or on its entire periphery, and thus cause the plunger 122 to be depressed.

Various modifications will occur to those skilled in the art in the composition, configuration and disposition of the component elements going to make up the invention as a whole as well as in the selection and combination of features to accomplish the results sought, and no limitation is intended by the phraseology of the foregoing description or illustrations in the accompanying drawings, except as indicated in the appended claims.

What is claimed is:

1. In a drafting machine, in combination, means fixed in orientation, a straight-edge supporting frame, means to latch said frame to said means fixed in orientation, means mounting said straight-edge supporting frame for rotary movement, a cup-shaped frame carried by the last named means, a handle carried by the cup-shaped frame in spaced relation to the bottom thereof, reciprocable means to actuate the latch means, said mounting means being formed with a passage whereof one end is in register with the reciprocable means, a plurality of elements disposed therein and protruding from an end of the passage, a disc means carried by the frame below the handle and engageable with one of the elements and means between the disc and the bottom of the frame normally urging the disc away from an element of the mounting means.

2. In a drafting machine, in combination, means fixed in orientation, a straight-edge supporting frame, means to latch said frame to said means fixed in orientation, means mounting said straight-edge supporting frame for rotary movement, a cup-shaped frame carried by the last named means, a handle carried by the cup-shaped frame in spaced relation to the bottom thereof, reciprocable means to actuate the latch means, said mounting means being formed with a passage extending from its upper end downwardly and then outwardly to a lower side portion thereof in register with the reciprocable means, a series of elements disposed in said passage with provision for reciprocation and an element protruding from at least the upper end of the passage, a disc carried by the frame below the handle mounted for tilting movement between the frame and the handle, said disc engaging a reciprocating element protruding from the upper end of the passage whereby tilting of the disc causes the series of elements to protrude from the passage and actuate the reciprocable latch-actuating means.

3. In a drafting machine, in combination, means fixed in orientation, a straight-edge supporting frame, means to latch said frame to said means fixed in orientation, means mounting said straight-edge supporting frame for rotary movement, a cup-shaped frame carried by the last named means, a handle carried by the cup-shaped frame in spaced relation to the bottom thereof, reciprocable means to actuate the latch means, said mounting means being formed with a passage extending axially from its upper end and then inclined to its lowermost periphery to register with the reciprocable means, a plurality of elements disposed therein and protruding from an end of the passage, a disc carried by the frame below the handle and engageable with an element protruding from the axially extending passage.

4. In a drafting machine, in combination, means fixed in orientation, a straight-edge sup-

porting frame, means to latch said frame to said means fixed in orientation, means mounting said straight-edge supporting frame for rotary movement, a cup-shaped frame carried by the last named means, a handle carried by the cup-shaped frame in spaced relation to the bottom thereof, reciprocable means to actuate the latch means, said mounting means being formed with a passage extending axially from its upper end and then inclined to a lower periphery in register with the reciprocable means, a plunger in the axial portion of the passage, a plurality of elements disposed in the passage below the plunger, said plunger protruding from the end of the passage, and a disc carried by the frame below the handle and engageable with the plunger.

5. In a drafting machine, in combination, means fixed in orientation, a straight-edge supporting frame, means to latch said frame to said means fixed in orientation, means mounting said straight-edge supporting frame for rotary movement, a frame carried by the last named means and formed with spaced peripheral wall portions, a handle carried by the last named frame, reciprocable means to actuate the latch means, said mounting means being formed with a passage extending from its upper end to its lowermost periphery in register with the reciprocable means, means disposed therein and protruding from an end of the passage, and a disc formed with slots receiving the frame wall portions and carried by the frame below the handle to engage a protruding means.

6. In a drafting machine, in combination, means fixed in orientation, a straight-edge supporting frame, means to latch said frame to said means fixed in orientation, means mounting said straight-edge supporting frame for rotary movement, a frame carried by the last named means and formed with spaced peripheral wall portions, a handle carried by the last named frame, reciprocable means to actuate the latch means, said mounting means being formed with a passage extending from its upper end to its lowermost periphery in register with the reciprocable means, means disposed therein and protruding from an end of the passage, and a manually engageable disc formed with slots receiving the frame wall portions and carried by the frame below the handle and engageable with one of the said means.

7. In a drafting machine, in combination, means fixed in orientation, a straight-edge supporting frame, means to latch said frame to said means fixed in orientation, means mounting said straight-edge supporting frame for rotary movement, a cup-shaped frame carried by the last named means and whereof the wall is formed with a plurality of slots defining an annular row of spaced wall portions, a handle carried by the cup-shaped frame in spaced relation to the bottom of the slots, reciprocable means to actuate the latch means, said mounting means being formed with a passage extending from its upper end to its lowermost periphery in register with the reciprocable means, a plurality of elements disposed therein and protruding from an end of the passage, a disc formed with an annular row of slots receiving said wall portions and disposed below the handle for engagement with a protruding element for actuating of the latch means.

8. In a drafting machine, in combination, means fixed in orientation, a straight-edge supporting frame, means to latch said frame to said means fixed in orientation, means mounting said straight-edge supporting frame for rotary movement, a frame carried by the last named means having a wall formed with an annular row of spaced wall portions, a handle carried by the last named frame above the bottom thereof, reciprocable means to actuate the latch means, said mounting means being formed with a passage extending from its upper end to its lowermost periphery in register with the reciprocable means, a plurality of elements disposed therein and protruding from an end of the passage, and a disc formed with an annular row of slots receiving the wall portions and disposed below the handle.

9. In a drafting machine, in combination, means fixed in orientation, a straight-edge supporting frame, means to latch said frame to said means fixed in orientation, means mounting said straight-edge supporting frame for rotary movement, a cup-shaped frame carried by the last named means, a handle carried by the cup-shaped frame in spaced relation to the bottom thereof, reciprocable means to actuate the latch means, said mounting means being formed with a passage extending from its upper end to its lowermost periphery in register with the reciprocable means, a plurality of elements disposed therein and protruding from an end of the passage, and a disc carried by the cup-shaped frame, means loosely mounting said disc on said frame whereby said disc may be wobbled below the handle whereby an edge of the disc may be depressed and a disc portion depressed to displace the elements in the passage and actuate the reciprocable means.

10. In a drafting machine, in combination, means fixed in orientation, a straight-edge supporting frame, means to latch said frame to said means fixed in orientation, means mounting said straight-edge supporting frame for rotary movement, a frame carried by the last named means, a handle carried by the last named frame, reciprocable means to actuate the latch means, said mounting means being formed with a passage extending from its upper end to its lowermost periphery in register with the reciprocable means, a plurality of elements disposed therein and protruding from at least one end of the passage, a disc carried by the frame below the handle and formed with a convex central portion adapted to engage and depress an element, and a concave peripheral portion adapted to be depressed by a digit of the hand grasping the handle.

11. In a drafting machine, in combination, means fixed in orientation, a straight-edge supporting frame, means to latch said frame to said means fixed in orientation, a pivot pin mounting said straight-edge supporting frame for rotary movement, a cup-shaped frame carried by the pivot pin and having a stop flange, a handle carried by the cup-shaped frame in spaced relation to the stop flange, a reciprocable link to actuate the latch means, said pivot pin being formed with a passage extending from its upper end to its lowermost periphery in register with the reciprocable means, a plurality of elements disposed therein and protruding from an end of the passage, a disc carried by the cup-shaped frame between the handle and the stop flange and spring means between the disc and the bottom of the cup-shaped frame.

12. In a drafting machine, in combination, means fixed in orientation, a straight-edge supporting frame, means to latch said frame to said

means fixed in orientation, a pivot pin mounting said straight-edge supporting frame for rotary movement, a cup-shaped frame carried by the pivot pin and having a stop flange formed with a downwardly and outwardly inclined upper surface, a handle carried by the cup-shaped frame in spaced relation to the stop flange, a reciprocable link to actuate the latch means, said pivot pin being formed with a passage extending from its upper end to its lowermost periphery in register with the reciprocable means, a plurality of elements disposed therein and protruding from at least one end of the passage, a disc carried by the cup-shaped frame between the handle and the stop flange, and spring means between the disc and the bottom of the cup-shaped frame.

13. In a drafting machine, in combination, means fixed in orientation, a straight-edge supporting frame, means to latch said frame to said means fixed in orientation, a pivot pin mounting said straight-edge supporting frame for rotary movement, a cup-shaped frame carried by the pivot pin, a handle carried by the cup-shaped frame and having a depending flange surrounding the frame, a reciprocable link to actuate the latch means, spring means urging the link to latch engaged position, said pivot pin being formed with a passage extending from its upper end to its lowermost periphery in register with the reciprocable means, a plurality of elements disposed therein and protruding from an end of the passage, a disc means to loosely carry said disc on the cup-shaped frame below the depending flange of the handle whereby said disc is tiltable about said flange as a fulcrum to engage and depress an element to actuate the latch.

14. In a drafting machine, in combination, means fixed in orientation, a straight-edge supporting frame, means to latch said frame to said means fixed in orientation, a pivot pin mounting said straight-edge supporting frame for rotary movement, a cup-shaped frame carried by the pivot pin, a handle carried by the cup-shaped frame, a reciprocable link to actuate the latch means, said pivot pin being formed with a passage extending axially from its upper end to an intermediate point and from thence at an angle to its lowermost periphery to register with the reciprocable means, a plurality of elements disposed in the passage and protruding from an end of the passage, a disc, the cup-shaped frame comprising means below the handle to loosely support said disc whereby said disc is depressible to displace the elements and thereby actuate the reciprocable link.

15. In a drafting machine, in combination, means fixed in orientation, a straight-edge supporting frame, means to latch said frame to said means fixed in orientation, a pivot pin mounting said straight-edge supporting frame for rotary movement, a frame carried by the pivot pin, a handle carried by the last named frame, reciprocable means to actuate the latch means, said pivot pin being formed with a passage extending axially from its upper end to an intermediate point and from thence at an angle to its lowermost periphery in register with the reciprocable means, a plunger element in the axial portion of the bore, a plurality of ball elements disposed in the passage below the plunger element, at least one of said elements normally protruding from the ends of the passage, respectively, and a disc carried by the frame below the handle and engageable with the plunger to actuate the reciprocable means.

16. In a drafting machine, in combination, means fixed in orientation, a straight-edge supporting frame, means to latch said frame to said means fixed in orientation, a pivot pin mounting said straight-edge supporting frame for rotary movement, a frame carried by the pivot pin, a handle carried by the last named frame on the pivot pin, reciprocable means to actuate the latch means, said pivot pin being formed with a passage extending axially from its upper end to an intermediate point and from thence at an angle to its lowermost periphery in register with the reciprocable means, a plunger element in the axial portion of the bore, a plurality of ball elements disposed in the passage below the plunger element, a ball seated in the end of the plunger, the plunger protruding from the end of the passage, and a disc carried by the frame below the handle to engage the ball on the end of the plunger and depress the same to actuate the latch means when the disc is manipulated.

17. In a drafting machine, means fixed in orientation, a straight-edge supporting frame, latching means to latch said frame to said means fixed in orientation, a handle fixed to said straight-edge supporting frame for rotating said straight-edge supporting frame about a vertical axis when the latching means is released, said handle comprising downwardly facing circumferentially disposed fulcrum points, a disc-like member below the top of said handle, operative connections between said disc-like member and said latching means, and means mounting said disc-like member for pivotal movement about said fulcrum points respectively to actuate said latching means through said operative connections.

18. In a drafting machine, means fixed in orientation, a straight-edge supporting frame, latching means to latch said frame to said means fixed in orientation, a pivot pin mounting said straight-edge supporting frame for rotary movement about a vertical axis, a cylindrical member formed with vertical slots and mounted on said pivot pin, a relatively flat member carried at an intermediate horizontal plane of said cylindrical member having spokes extending outwardly through said slots, a knob mounted on said cylindrical member closing the upper ends of said slots and about which the flat member may pivot and means actuated by said flat member in its pivotal movement to actuate said latching means.

19. In a drafting machine, means fixed in orientation, a straight-edge supporting frame, latching means to latch said frame to said means fixed in orientation, means fixed to said straight-edge supporting frame for rotating said straight-edge supporting frame about a vertical axis when the latching means is released, said means for rotating comprising a pivot pin, a member operatively connected with said means for rotating, means pivotally mounting said member for movement selectively about a plurality of different horizontal axes lying in the same transverse plane, and means responsive to pivotal movement of said pivotally mounted member about any of said axes to actuate said latching means and release the frame for rotation.

LEENDERT KETTING.