June 30, 1942. W. S. COCHRAN ET AL 2,288,267

STRIP HOLDING DEVICE FOR DUPLICATING APPARATUS

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Fig. 1.

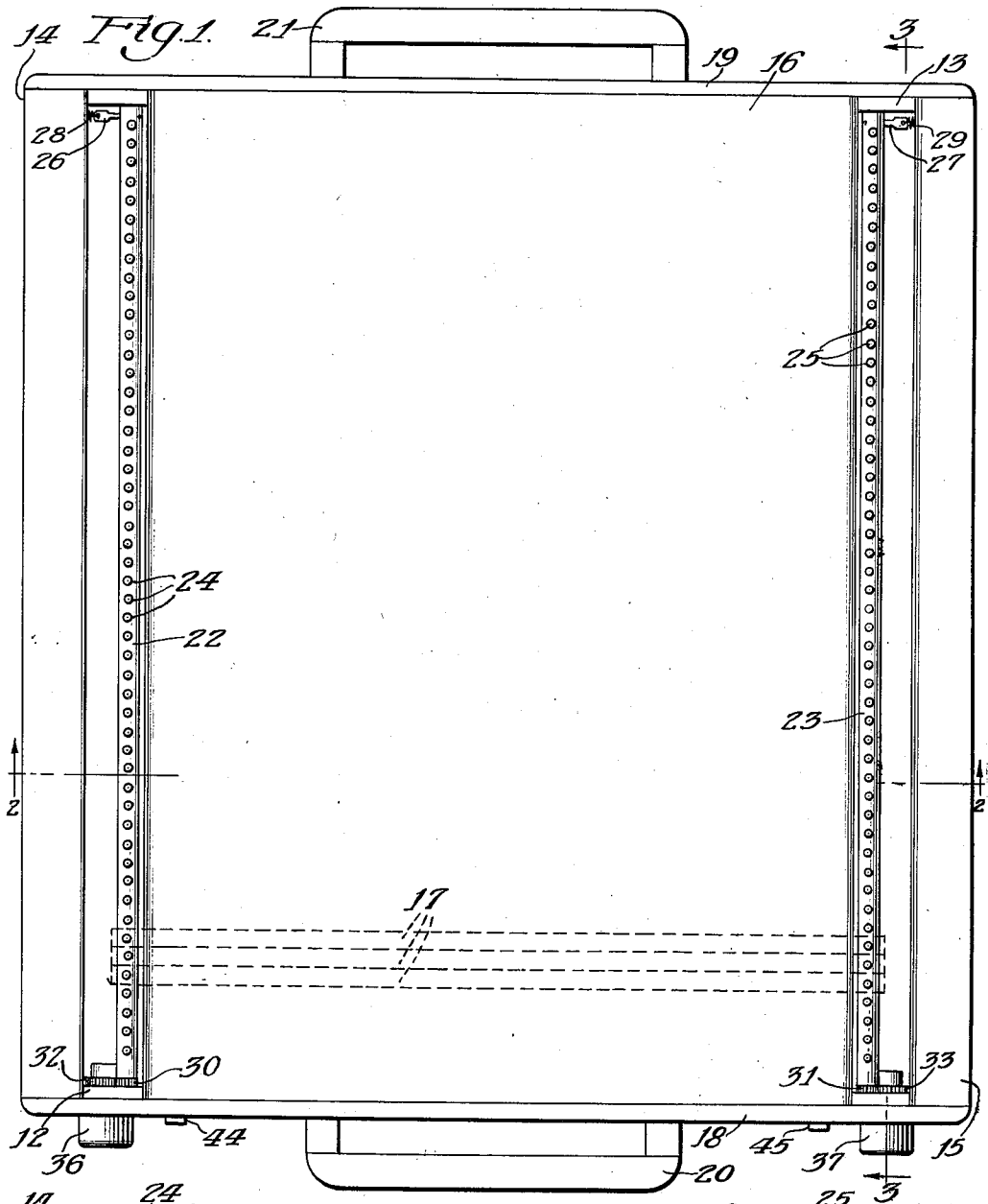


Fig. 2.

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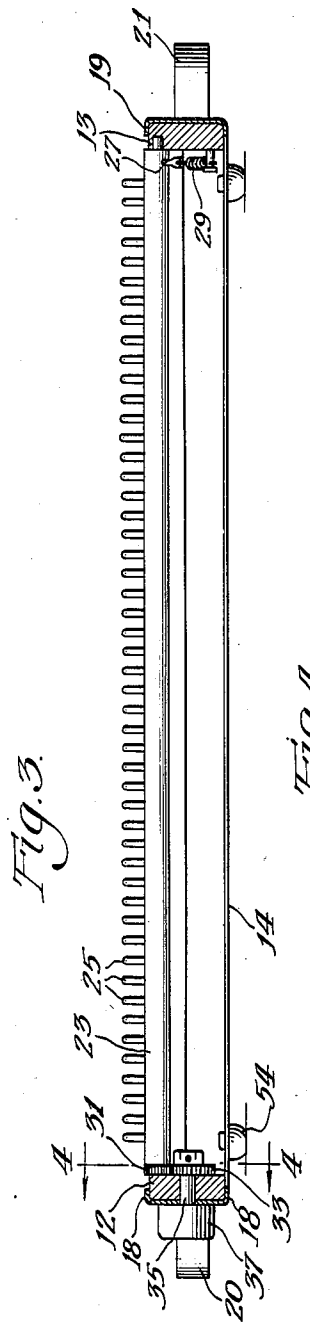


Fig. 3.

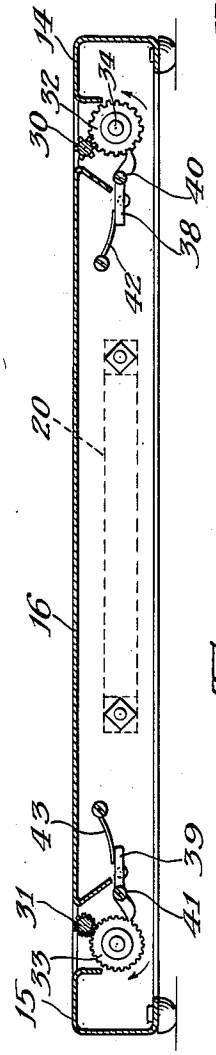


Fig. 4.

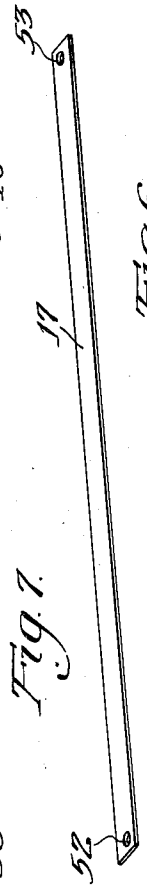


Fig. 7.

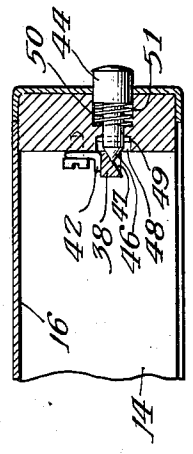


Fig. 6.

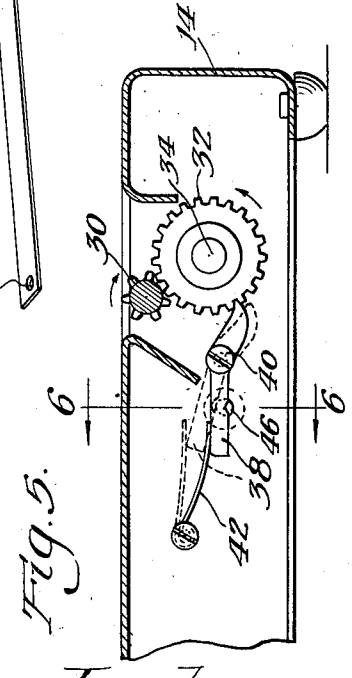


Fig. 5.

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Fig. 8.

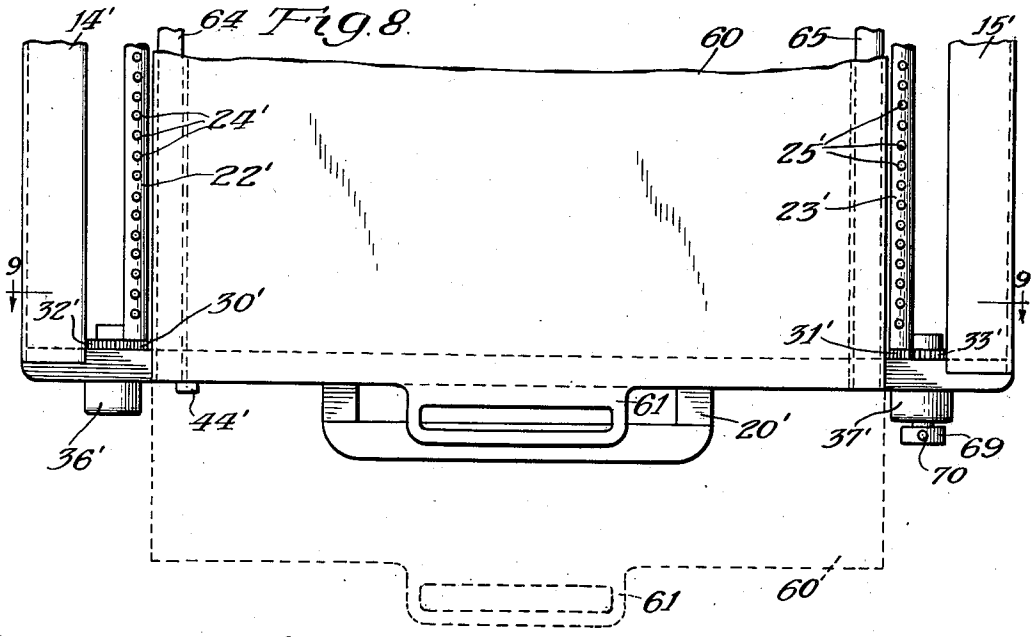


Fig. 9.

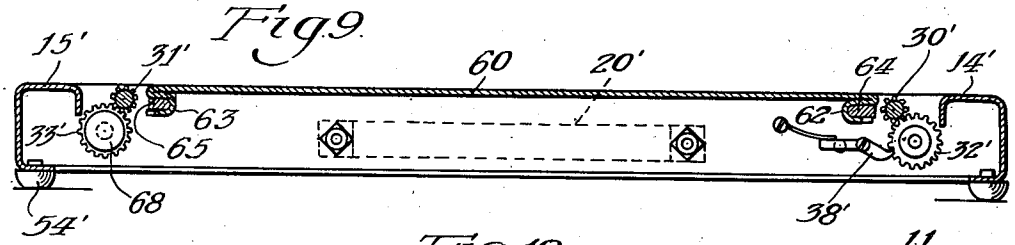


Fig. 10.

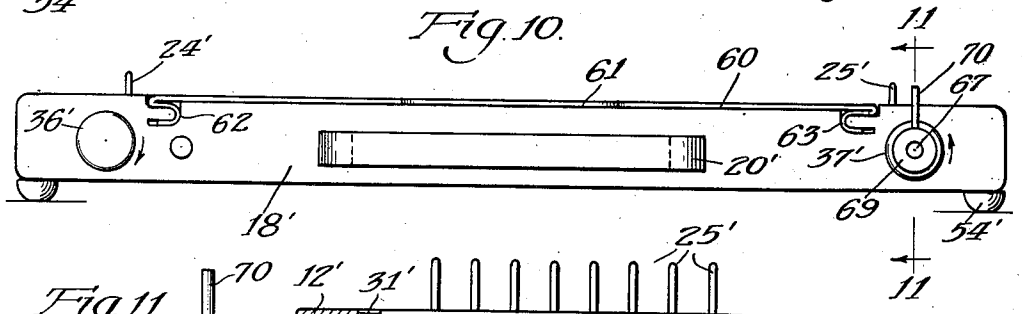
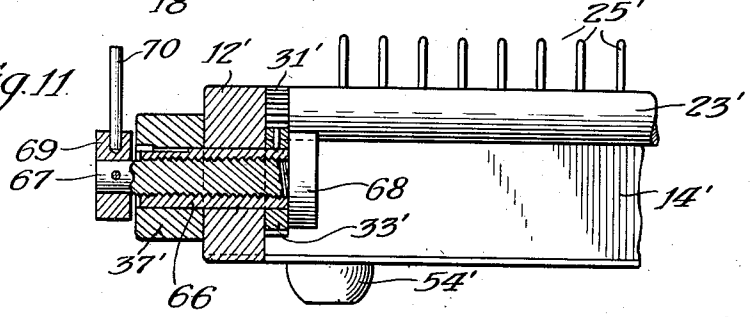


Fig. 11.



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UNITED STATES PATENT OFFICE

2,288,267

STRIP HOLDING DEVICE FOR DUPLICATING APPARATUS

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Application February 3, 1941, Serial No. 377,144

17 Claims. (Cl. 101—415.1)

This invention relates in general to improvements in duplicating apparatus and in particular to a holding device, such as a peg board, by means of which matter to be duplicated may be held in a manner which facilitates its application to the other elements of the duplicating apparatus, as well as in such a manner that certain preliminary operations may be performed thereon.

This invention is of especial utility in holding against a backing a plurality of apertured strips in laterally spaced relationship to each other so that the matter written or printed on the strips may be compared and additional entries made thereon. The need for arranging a plurality of strips in a predetermined order, of operating thereon, and then of duplicating therefrom arises in certain types of control, accounting and bookkeeping systems.

The preferred embodiments of this invention herein shown and described are particularly adapted to be used in connection with duplicating apparatus of the gelatin or hectograph type although it is understood that it may be equally well modified for use with other types of duplicating apparatus such as photographic duplicators.

The holding device is provided with adjustable pegs for mounting apertured strips. Adjustment is provided by mounting the pegs on a rotatable shaft and means are provided to hold the pegs in adjusted position. Irrespective of its duplicating function, the apparatus may be used for holding a plurality of strips in such a manner that they may be written on. In this connection it is provided with a backing surface to facilitate such writing operations. The backing surface, however, is useful not only for writing but it also aids in the duplicating operations inasmuch as it provides a means by which the strips may be pressed against a gelatin pad with the uniform pressure.

It is an object of this invention to provide an improved holding device for master copies for use in connection with duplicating apparatus.

It is a further object to provide improved means for holding strips of paper and for maintaining them under a regulated degree of tension.

Another object is to provide an improved peg board device which is adaptable for both making written entries on the strips mounted on said board and for applying said strips to the gelatin surface of the duplicating apparatus.

A still further object is to provide for a strip holding device, peg board, or the like, improved means for adjusting the position of the strip holding pegs and for maintaining said pegs in adjusted position as well as to provide means for quickly releasing said pegs from their adjusted position so that the strips may be readily removed therefrom.

Other objects, features and advantages of this invention will become apparent as the description proceeds.

Reference is hereby made to the accompanying drawings which are a part of this application, and in which like reference numerals denote like parts.

Fig. 1 is a plan view of a preferred embodiment of the invention;

Fig. 2 is a section along line 2—2 of Fig. 1;

Fig. 3 is a section along line 3—3 of Fig. 1;

Fig. 4 is a section along line 4—4 of Fig. 3;

Fig. 5 is an enlarged section of detail shown in Fig. 4, in which section certain parts are shown in a changed position in dotted lines;

Fig. 6 is a section along line 6—6 of Fig. 5;

Fig. 7 is a perspective view of one of the strips which the device is adapted to hold;

Fig. 8 is a broken plan view of a modified form of the invention, certain parts thereof being shown in changed position by means of dotted lines;

Fig. 9 is a section along line 9—9 of Fig. 8;

Fig. 10 is an elevation of Fig. 8; and,

Fig. 11 is an enlarged section along line 11—11 of Fig. 10.

Referring now to Figs. 1–6, inclusive, reference numerals 12 and 13 designate the front and rear frame members of a peg board, which frame members are suitably associated with the left and right side frame members, 14 and 15, respectively. These side frame members are in the form of a sheet metal channel. Rubber feet 54 are secured to the underside of the channeled side frame members 14 and 15. The central portion 16 of the peg board comprises a member which is suitably secured at its front and rear edges to the front and rear frame members 12 and 13. This central portion provides a smooth writing surface, and it may be of sheet metal or a suitable plastic material as will be pointed out hereinafter.

Shown in dotted lines in Fig. 1 are a plurality of strips 17, one of which is shown in perspective in Fig. 7. The strips 17 are provided with apertures 52 and 53 at either end thereof.

The front and rear frame members 12 and 13 are in the form of bars of rectangular cross section and decorative sheet metal sheathings 18

and 19 are provided for both, the sheathing extending up over the upper surface of its respective frame member and forming a butt joint with the central portion 16. Handles 20 and 21 are provided at the front and rear of the device, these handles being suitably secured to the front and rear frame members. The handles permit the peg board as a whole to be easily moved from place to place.

Journalled in the front and rear frame members are two shafts 22 and 23. These shafts are provided with series of pegs 24 and 25, respectively. Arms 26 and 27 extend radially from the shafts at the rear portions thereof as shown in Fig. 2, and springs 28 and 29 are associated with the respective arms so as to bias the shafts to a position in which the pegs are in a vertical position. The remote end of the springs may be suitably affixed to the front and rear frame members. The shafts 22 and 23 have secured to them at their forward ends small pinions, 30 and 31, which pinions mesh with the large pinions 32 and 33. The large pinions are rotatably mounted on shafts 34 and 35 which extend through the front frame member 12 near either end thereof. Knobs 36 and 37 are secured to the shafts 34 and 35, and are positioned exteriorly of the frame member 12, as shown in Fig. 3. Individual holding clicks 38 and 39 are provided for the large pinions 32 and 33, which clicks, as shown in Fig. 4, are pivotally mounted on studs 40 and 41, the studs being threaded into the frame member 12 as shown in Fig. 6. Springs 42 and 43 are provided to urge the clicks into engagement with their respective pinions. Buttons 44 and 45 extend through the front frame member 12 and are associated with the respective clicks so as to cause the pinions 32 and 33 to be released.

As shown in Fig. 6 each button 44 and 45 is provided with a portion of reduced diameter which terminates in a pointed end 46, which pointed end cooperates with a cammed surface 47 provided on each click. The frame member 12 is recessed on its interior surface as shown at 48 to accommodate a stop pin 49 for each button which extends through the reduced portion of the button and limits its outward movement. A spring 50 is located in a recessed portion 51 formed on the exterior surface of the frame member 12, and biases the button outwardly. It will be seen that depression of the button 44 by the operator will disengage the click from the pinion 32 against the bias of the spring 42, and cause the shaft 22 to be rotated by the spring 28 so that the pegs will be returned to their normal upright position. The button 45 is used to release the shaft 23 in a similar manner.

In operation, the pegs are in their normal position as shown in full lines in Fig. 2. The strips are laid on the central portion 16, in such a manner that the pegs 24 and 25 extend through the apertures 52 and 53 in the strips. Inasmuch as the apertures are made somewhat larger than the diameter of the pegs to facilitate arrangement of the strips on the pegs, the position of the pegs must be changed in order to prevent the strips from falling off the pegs when the peg board is moved. This adjustment of the pegs is provided by rotating the knob 36 in a clockwise direction and the knob 37 in a counterclockwise direction. This not only rotates the pegs outwardly so as to prevent the strips from falling off but it also tensions the strips and causes them all to lie closely against the central portion or smooth writing surface 16. The clicks hold the pegs in their adjusted position. In this connection it may be said that it is preferable to provide different size teeth on the large pinions 32 and 33 in order to get a differential effect in the engagement of the clicks with each pinion. In other words, if the teeth are of the same size, the pegs may be locked only in certain positions which differ from each other by an equal increment and in one position the strips may not be sufficiently tensioned whereas in the next position they will be tensioned too much and torn. By providing this differential effect, the knobs may be so adjusted as to take advantage of the difference of tooth size so as to permit the pegs to be locked in a much finer adjustment.

After the strips are secured upon the peg board it may be desired to operate on the strips by adding the items on the several strips or groups thereof, and entering the totals or sub-totals on other strips. For this purpose the central portion 16 acts as a backing for the strips so as to provide a writing surface that is solid enough to write upon. Without such surface such operations or entries could not be made.

After the making of such entries the board is turned upside down and pressed against the gelatin pad of a duplicator so that the matter written or printed on the strips may be transferred to the duplicating machine. Pressure on the handles will be transmitted to the central portion 16 and be applied uniformly to the strips and to the gelatin surface.

It is preferable to have the central portion manufactured either of a comparatively rigid material such as Bakelite, or in the alternative to have it of a somewhat flexible material so that the usual roller may be pressed against the back side of the central portion to force the strips on the front side against the gelatin pad and thus cause the transference of the written or printed matter to the gelatin pad. If the latter expedient is adopted it may be preferable to place the peg board as a whole on a suitable wooden block when making entries on the strips. Sheet metal of a reasonably heavy gauge is to be avoided in constructing the central portion inasmuch as it may be inadvertently dented. In such a case the pressure would not be uniformly applied to the gelatin pad, and the sheet metal, being of a heavy gauge, would not be affected by the use of the usual hand roller on the reverse side thereof.

A modified form of this invention is shown in Figs. 8 to 11, inclusive, wherein the central panel 60 is removable. As shown in Fig. 8 the separate panel is provided with a handle 61 by means of which it may be withdrawn from the frame. The panel is provided with channeled side portions 62 and 63 which cooperate with bars 64 and 65 extending between the front and rear frame members. The front frame member 12' is cut away as shown in Fig. 10 so that the central panel may be slidably removed from the bars 64 and 65.

By providing a removable central panel, assembly of the strips on the pegs is somewhat facilitated inasmuch as the strips may be permitted to hang down between the two pegs thereby taking up any excess length of the strips. There will then be no buckling of the strips which often causes some of the strips to be dislodged while the other strips are being fitted over the pegs. After all the strips have been fitted over the pegs, the strips are tensioned in the usual manner, which elevates the central portions of the strips sufficiently so that the central panel 60 may be slid into place, thereby providing a

backing surface so that written entries can be made on such strips.

A different means of tensioning the strips is also shown in Figs. 8 to 11, inclusive. This means provides a frictional lock for the shaft 23'. The frictional lock permits the tension to be adjusted at any desired point, independently of the number of teeth on the large pinion 33'.

A hollow interiorly threaded shaft 66 is provided to which the pinion 33' is securely pinned against both rotational and axial displacement, the shaft and pinion being mounted for slight axial movement in the front frame member 12'. A knob 37' is suitably keyed to the shaft 66 to permit axial displacement of the knob with respect to the hollow shaft, the knob being apertured all the way through as shown in Fig. 11. A central threaded shaft 67 extends through the shaft 66 and may be provided at its inner end with a suitable head 68 to prevent complete withdrawal of the central shaft from the hollow shaft. A frictional member in the form of a collar 69 is secured to the central shaft 67 at its outer end, the collar being provided with a suitable lever 70 by means of which the collar may be quickly rotated into or out of frictional engagement with the knob 37'.

The operation of the device with the frictional lock is substantially the same as the operation of the device above described in connection with Figs. 1 to 6, with the exception that the knob 36' is first rotated to a position in which the strips are only partially tensioned. The click 38' locks the shaft 22' and the pegs 24' in this position. The operator then rotates the knob 37' in the counterclockwise direction in Fig. 8 until the strips are sufficiently tensioned. At this point the lever 70 is turned. thereby drawing up the hollow shaft 66 and pinion 33' and urging the collar 69 against the knob 37' so as to lock the pinion 33' in its adjusted position. In this position the knob and the frame member are clamped together between the collar and the pinion so that there can be no relative rotation between the parts. The strips are thus locked in precisely the desired tightened condition since there is no necessity for any slight retraction of the pinion and shaft for engagement with a pawl as may result in the arrangement of Fig. 4. Release of the shafts 22' and 23' is effected by pushing the button 44' for shaft 22', and by raising the lever 70 for the shaft 23'. It will be noted that the central shaft 67 may preferably be provided with a left handed thread so that whatever rotation is transmitted to the knob 37' during its frictional engagement by the collar 69 will be in such direction as to tension the strips, and not to loosen the same.

It will be understood that numerous modifications and changes may be made in the preferred embodiments of the invention herein shown without departing from the spirit of this invention. The drawings and illustrations are intended to be descriptive only, and the invention is to be limited only by the following claims.

We claim:

1. A strip holding device comprising a central portion providing a smooth writing surface, two shafts disposed at the sides of said central portion, said shafts being provided with pegs extending outwardly therefrom at opposite sides of said central writing surface, and means to rotate said shafts in the direction for carrying said pegs outwardly so as to tension strips of paper placed on said central portion and engaging said pegs.

2. A sheet holding device comprising a central portion providing a smooth writing surface for a sheet of paper overlying the same, a series of pegs disposed at either side of said central portion and adapted to extend through said sheet of paper to hold said sheet with respect to said central portion, and means to move one series of pegs away from the other so as to tension said sheet.

3. A strip holding device comprising a frame, a member mounted on said frame providing a smooth writing surface, two shafts journalled in said frame and disposed at the sides of said member, said shafts being provided with radially positioned pegs opposite to said writing surface, and means to rotate said shafts in the direction for moving said pegs outwardly so as to tension strips of paper placed on said member and engaging said pegs.

4. In a strip holding device for duplicating apparatus, a rotatable shaft provided with a plurality of pegs, means normally holding said shaft in position in which said pegs are vertical, means to rotate said shaft away from normal position and means to hold the shaft in displaced position.

5. In a strip holding device, a rotatable shaft provided with pegs for engaging one or more apertured strips of paper, a pinion associated with said shaft, a click mounted to engage said pinion whereby said shaft may be held against rotation in one direction, and means for releasing said click.

6. In a peg board device, a frame member, a rotatable shaft provided with pegs for engaging a plurality of apertured strips of paper, a pinion associated with said shaft, a click mounted to engage said pinion whereby said shaft may be held against rotation in one direction, and a manually actuated plunger extending through said frame member and engaging the click to cause disengagement of said click from said pinion.

7. In a peg board device, a frame member, a rotatable shaft provided with pegs for engaging a plurality of apertured strips of paper, a pinion associated with said shaft and mounted adjacent said frame member, a click pivotally mounted adjacent said frame member so as to engage said pinion whereby said shaft may be locked against rotation in one direction, said click also being provided with a cammed surface, a plunger extending through said frame member and adapted to engage said click at said cammed surface when said plunger is manually depressed so as to disengage said click from said pinion, and spring means to rotate said shaft when said pinion is disengaged.

8. A peg board device comprising a frame, a shaft mounted along either side of said frame, means holding each of said shafts normally in position wherein said pegs are disposed vertically, means for rotating each of said shafts in a direction wherein the pegs are rotated outwardly, and means for locking each of said shafts in displaced position, said locking means comprising a ratchet wheel associated with each of said shafts, said ratchet wheels being provided with teeth of different size, and a pawl engaging each of said ratchet wheels.

9. A peg board device comprising a frame, a shafted mounted along either side of said frame, means holding each of said shafts normally in position wherein said pegs are disposed vertically, a strip of paper engaged at either end by said pegs, means for rotating each of said shafts in

a direction so as to draw said strip taut, and means for locking each of said shafts in displaced position, said locking means comprising a ratchet wheel associated with each of said shafts, the teeth of one of said ratchet wheels having a different angular spacing than the teeth of the other of said ratchet wheels, and a pawl engaging each of said ratchet wheels, whereby a differential effect may be obtained in locking said ratchets.

10. A peg board device comprising a frame, a shaft mounted along either side of said frame, means for holding each of said shafts normally in position wherein said pegs are disposed vertically, means for rotating each of said shafts in a direction wherein the pegs are rotated outwardly, and means to maintain each of said shafts in displaced position, comprising a pawl and ratchet device for one of said shafts, and a frictional locking device for the other of said shafts.

11. In a peg board device, a frame, a member rotatably mounted in said frame, a series of pegs mounted on said member, a pinion secured to said member at one end thereof, a second pinion engaging said first pinion, and mounted adjacent said frame on an axially displaceable shaft, said shaft being hollow and interiorly threaded, a knob for said shaft, a second exteriorly threaded shaft extending through and cooperating with said last named shaft, and a frictional member secured to said second threaded shaft adjacent to said knob whereby rotation of said second shaft will cause said frictional member to engage said knob and urge the same against said frame to maintain the parts in locked position.

12. In a strip holding device for duplicating apparatus, a rotatable shaft provided with a plurality of pegs, means normally holding said shaft in position in which said pegs are vertical, means for rotating said shaft away from normal position, and means for holding the shaft by a frictional gripping effect in the desired displaced position.

13. A strip holding device comprising a frame, a member mounted on said frame providing a smooth writing surface, two shafts journalled in said frame and disposed at the side of said member, said shafts being provided with radially positioned pegs opposite to said writing surface, means for rotating said shafts in the direction for moving said pegs outwardly for tightening strips positioned between the pegs of said two shafts, and means for holding at least one of said shafts by a frictional effect in the desired displaced position.

14. A strip holding device comprising a frame, two parallel shafts journalled in said frame, said shafts being provided with pegs, means to rotate said shafts so as to tension apertured strips of paper fitted over said pegs in engaging relationship therewith, guides mounted on said frame interiorly of and parallel to said shafts, and a backing member providing a writing surface slidably mounted on said guides.

15. In a strip holding device, a frame comprising front and rear transverse members and two longitudinally disposed connecting members, a panel provided with longitudinal channels for sliding engagement with said longitudinal members, said front frame member being cut away to accommodate said channels so that said panel may be removed from said frame, a series of pegs movably mounted along at least one side of said frame, exteriorly of said longitudinal members, and means for moving said pegs outwardly for tensioning a strip on said device.

16. In a strip holding device, a frame comprising front and rear transverse members and two longitudinally disposed connecting members, a removable panel slidably mounted on said longitudinal members, said front and rear transverse members extending beyond said longitudinal members, a shaft journalled in said extended front and rear members at each side of said frame, and means carried by said shafts for holding a strip tightly across said device.

17. A process of preparing a gelatin pad for duplicating matter written on a plurality of paper strips comprising the steps of arranging the strips in a predetermined order, tensioning the strips, placing a writing surface beneath the strips, making entries on the strips in addition to those thereon prior to the arrangement of the strips in order, applying the strips face down on a gelatin pad while maintaining them in said predetermined order and under tension, and applying pressure to said strips on said writing surface.

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