Oct. 13, 1953 W. F. GOUDIE 2,654,932

SHEET CLAMPING DEVICE

Filed Oct. 5, 1948 2 Sheets-Sheet 1

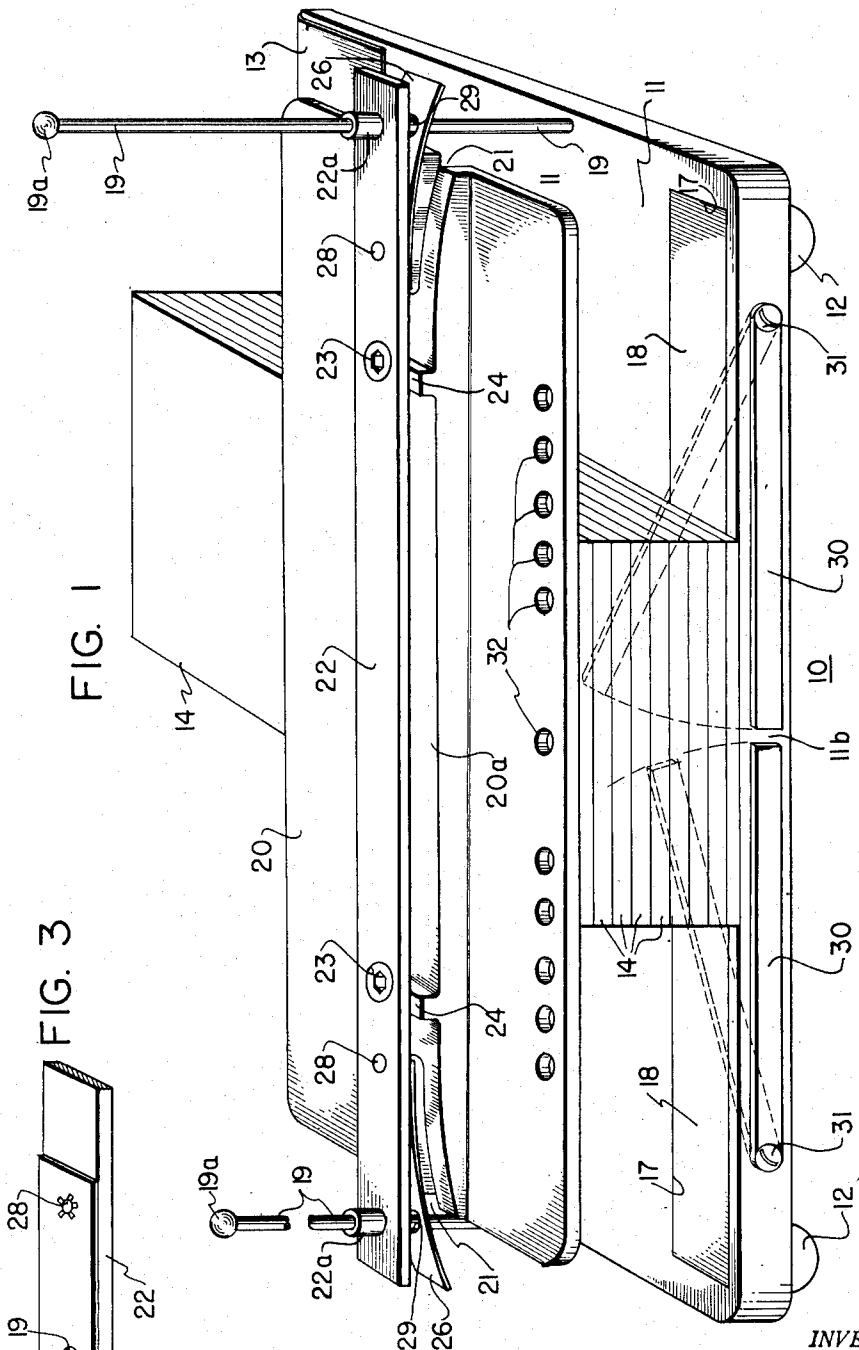


FIG. 1

FIG. 3

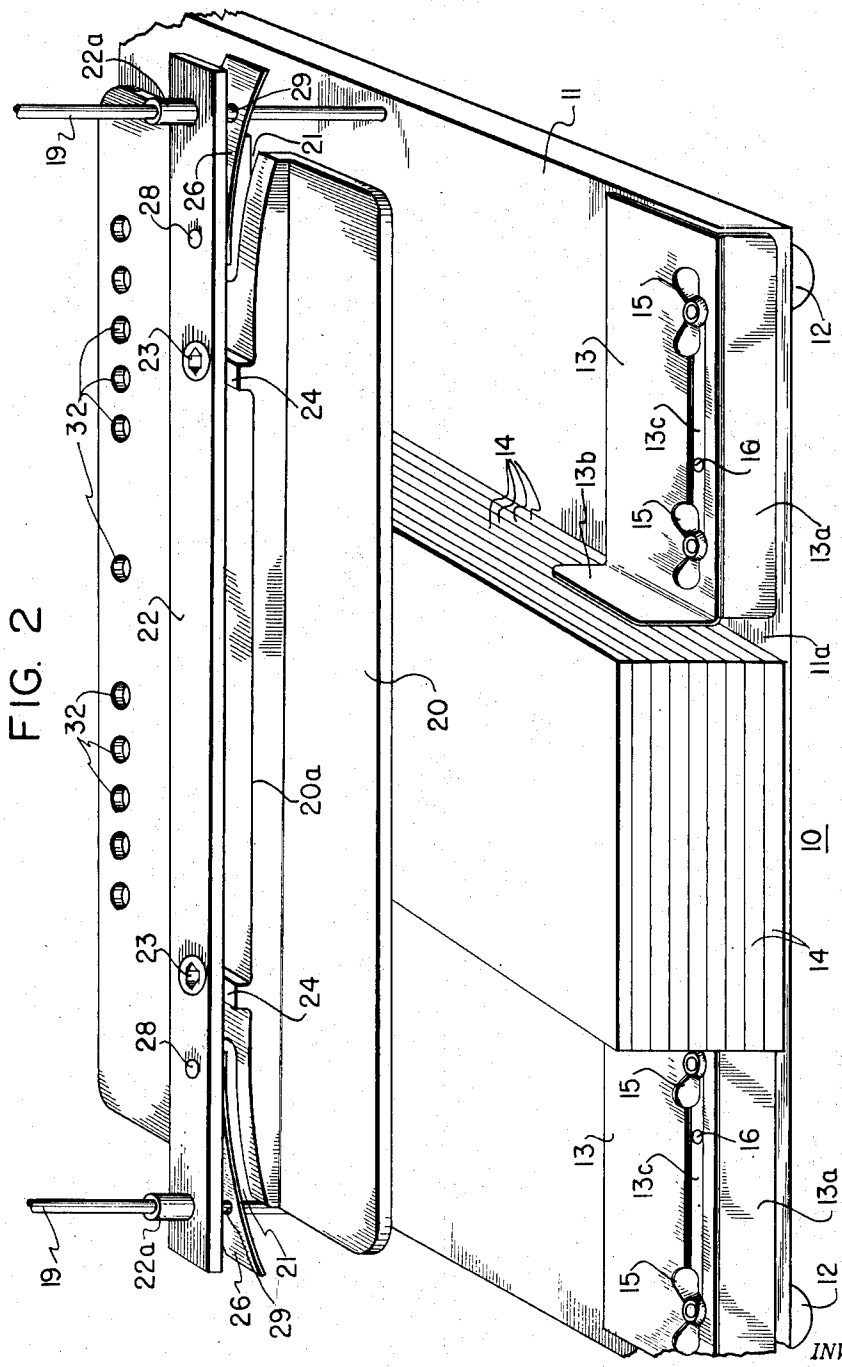
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FIG. 2



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SHEET CLAMPING DEVICE

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3 Claims. (Cl. 24—243)

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The present invention relates to a sheet clamping device, and more particularly to an improved arrangement for clamping a stack of sheets to hold them against relative movement while the edges are coated with an adhesive to form tablets, and/or while suitable holes are punched or drilled through the sheets for receiving fastening means or the like.

Various devices have been employed heretofore for aligning and holding stacks of paper preparatory to cutting or gumming the edges to form pads, the latter operation often being termed a padding or tabbing operation. Such devices have been complicated, fairly expensive and generally do not include all of the facilities required to perform a sheet tabbing operation or a sheet punching operation.

Accordingly it is an object of the present invention to provide an improved device which may be employed for sheet tabbing or punching or both.

It is another object of the present invention to provide a sheet padding or sheet tableting device including a novel arrangement for clamping the sheets together to facilitate the application of an adhesive, glue or cement at the desired time.

It is another object of the present invention to provide an improved device of the character described which includes readily releasable means for holding the clamping head in any desired position including the position in which a substantial clamping pressure is uniformly applied to the stacked sheets or the like.

Still another object of the present invention resides in the provision of a combined sheet tabbing and punching device having an improved arrangement of parts such that the same clamping device may be readily employed for a padding or tableting operation as well as for a punching or drilling operation.

Further objects and advantages of the present invention will become apparent as the following description proceeds, and the features of novelty which characterize the invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

For a better understanding of the present invention reference may be had to the accompanying drawings in which:

Fig. 1 is a perspective view of the present improved device showing the tableting or padding ends of sheets which are clamped by the device;

Fig. 2 is a perspective view of the device as viewed from the opposite side thereof; and

Fig. 3 is an enlarged perspective view of a portion of the clamping assembly embodied in the device showing the parts of the assembly in the non-clamping positions thereof.

Referring now to the drawings there is illustrated a combined sheet tabbing and punching device generally designated at 10 comprising a base 11 of generally rectangular configuration having attached to the underside thereof a plurality of feet 12, preferably formed of rubber or other resilient material whereby the device 10 may be placed upon the top surface of a desk or table without scarring or injuring the desk or table top.

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For the purpose of aligning a stack of sheets of paper or other sheet material in a desired position longitudinally of the base 11, a pair of flanged guide plates 13 (Fig. 2) are provided, each of which includes a depending flange 13*a* disposed parallel to the edge 11*a* of the base 11 and preferably in engagement with the edge 11*a*. The flanged plates 13 also respectively include upwardly extending end flanges 13*b* for engaging opposed edges of a stack of sheets disposed therebetween and generally designated at 14 in the drawings. In order that the flanged plates 13 may be adjustably positioned longitudinally of the base 11, each plate 13 is provided with an elongated slot 13*c* through which suitable clamping screws 15, preferably of the winged head type, are extended to engage with tapped openings 16 in the base 11. These tapped openings are disposed along a line parallel with the edge 11*a* and in alignment with the slots 13*c* when the flanges 13*a* are in engagement with the end 11*a* of the base 11. Certain of the openings 16 are visible in Fig. 2 of the drawings.

For the purpose of aligning the sheets in a stack for a tableting or punching operation, two arms 30 are provided which are pivotally mounted at spaced points 31 along the long edge 11*b* of the base 11 opposite the edge 11*a*. These arms 30 are adapted to be moved to the jogging positions shown in dotted lines in Fig. 1 of the drawings and effectively comprise jogging means or stops against which the sheets may be jogged to align the individual sheets in a uniform stack. When the sheets have been properly stacked as shown in Fig. 1 of the drawings, the jogging arms 30 may be pivoted to the solid line positions thereof where they are completely out of the way during the adhesive applying operation or any other operation which is to be performed on the stack of sheets. It will be understood that in the making of pads or tablets or in a bookbinding operation the stack of sheets are clamped, following which glue or adhesive is applied to the edges of the sheets adjacent the side 11*b* of the base 11. When the glue has dried, the sheets will be united along the glued edges to form a tablet.

In order to provide a suitable cutting surface above which a stack of sheets may be punched or drilled, a recess 17 is also provided along the

edge 11b of the base 11 opposite the edge 11a for receiving a strip of material 18 which may be formed of any of the types of hardboard available on the market. One suitable hardboard for this purpose is generally referred to as Masonite. The top of the hardboard insert or strip 18 is preferably flush with the top of the base 11, or is slightly raised above the base 11, and the purpose thereof will become more apparent as the following description proceeds.

To guide and support the clamping head assembly described in full below, vertical guide posts 19 are provided at opposite ends of the base 11. These guide posts are disposed closely adjacent the ends of the base 11 and more closely adjacent the edge 11b than the edge 11a. They may be fastened to the base in any suitable manner, as for example by threading the ends thereof into tapped openings formed in the base. Preferably, the guideposts are provided with ball-shaped tip portions 19a to prevent the clamping head assembly described below from sliding off the rods and also to provide a smooth upper surface so that an operator can not be injured by coming into contact with the ends of the guide rods 19.

In accordance with one feature of the present invention, a clamping head generally designated at 20 is provided which is in the form of a rigid plate casting or the like having a central rib 20a for providing longitudinal rigidity of the clamping head without unduly increasing the weight of the head. The clamping plate 20 includes end notches or recesses 21, the purpose of which will become apparent from the following description.

In order to support the clamping head 20 for vertical movement on the guide rods 19, there is provided a resilient cross bar 22 of sufficient length to extend beyond the space between the guide rods 19. This resilient bar 22 is provided with a pair of openings, spaced apart the same distance as the spacing between the guide rods 19, for receiving sleeves 22a therein, which sleeves in turn are adapted to receive therein the guide rods 19. Employment of the sleeves 22a tends to maintain the resilient cross bar 22 in a horizontal position relative to the guide rods 19 and renders effective at any instant a greater portion of the length of guide rods 19 in guiding the clamping head assembly during up and down movement thereof.

As illustrated, the resilient cross bar 22 is fastened to the clamping head 20 by suitable fastening means disignated at 23. Specifically the rib 20a of the clamping head 20 which extends longitudinally of the clamping head is provided with a pair of cross ribs 24 spaced a substantial distance apart, to which the resilient cross bar 22 is fastened. With this arrangement, the cross bar 22 only touches the clamping head 20 at two spaced points, namely the cross ribs 24, and consequently its resilience is not impaired by the rigid clamping head 20. It is furthermore possible with this arrangement to deflect the ends of the resilient cross bar 22 a substantial amount without the ends engaging the clamping head 20. The notches 21 provided in the ends of the clamping head 20 are of sufficient width to permit the resilient cross bar to be deflected therein although a deflection of this magnitude is not ordinarily anticipated.

For the purpose of locking the clamping head in any predetermined position with respect to the vertical guide rods 19, each end of the flexible cross bar has a curved locking leaf spring member 26 fastened thereto. One end of each leaf spring member 26 is rigidly fastened by suitable means such as a rivet 28 to the under side of the resilient cross bar 22, such that the free end of the curved leaf spring is normally disposed a substantial distance away from the associated end of the cross bar 22, in the manner clearly shown in Figs. 1 and 2 of the drawings. As best shown in Fig. 3 of the drawings, each leaf spring 26 is provided with an opening 29 which is aligned with the bore of the associated sleeve 22a when the leaf spring 26 is deflected against the cross bar 22. When the leaf springs 26 occupy their normal flexed positions, however, wherein the free ends thereof are spaced from the cross bar 22, the openings 29 defined therein are no longer aligned with the openings in the sleeves 22a, but are so positioned that the edges thereof bitingly engage the guide posts 19. In other words, the inherent resilience of the springs 26 will cause sufficient misalignment between the openings 29 in the springs 26 and the bores of the sleeves 22a, and consequent biting engagement of the edges of the openings 29 with the posts 19, to lock the clamping head assembly in any desired predetermined position along the vertical guide rods 19.

From the above explanation it will be understood that when a stack of sheets 14 is disposed between the base 11 and the clamping head 20, the operator may merely press downwardly on each end of the resilient cross bar 22 to produce a substantially uniform clamping force throughout the effective area of the clamping head 20 and the base 11. Upon release of the forces applied to the ends of the bar 22, the edges of the openings 29 in the locking spring 26 bitingly engage the posts 19 to lock the clamping head 20 in the clamped position wherein the stack of sheets 14 is firmly held for the performance of any desired operation thereon. When it is desired to remove the stack of sheets from the device, all that is necessary is for the operator to grasp the free ends of the springs 26 and the ends of the bar 22 and squeeze the ends of the springs upwardly toward the cross bar 22. This effects disengagement of the edges of the openings 29 from the posts 19 to free the clamping head assembly for elevation to any desired position. When the clamping head assembly is raised to the desired position, the locking springs 26 may be released to permit unflexing thereof, with the result that the edges of the openings 29 again bitingly engage the posts 19 to hold the assembly in the elevated position.

As will be understood from the above explanation, the greater the downward pressure applied to the ends of the cross bar 22, the greater the clamping pressure applied through the clamping head 20, and also the more firmly the clamping head is locked in the clamping position. Regardless of how great the pressure and how firmly the parts are locked in position, the pressure may be instantly released through the application of a small amount of squeezing force to the free ends of the springs 26 and the ends of the rod 22. Also by virtue of mounting the resilient cross bar 22 solely on the spaced cross ribs 24 to permit deflection of the bar about these ribs as pivot points, the applied pressure is more uniformly distributed across the stack of sheets to minimize the likelihood of tilting the clamping head assembly so as to clamp the stack of sheets 14 along one side without clamping them along the other side.

In using the device, it may be desired to punch a stack of sheets for ring binding in standard two

and three ring binders. For this purpose the clamping head **20** is provided with a plurality of openings designated at **32** which are preferably spaced so as to conform with the ring spacings of the rings in conventional two and three ring binders. A suitable hollow cutting punch, not shown, guided by one of the openings **32** may be used in punching a stack of sheets, with the hardboard insert **18** acting as a backing member for the cutting operation. If desired, the base **11** may be provided with openings aligned with the openings **32** instead of the hardboard insert **18**, although the latter has been found preferable since it avoids the requirement of careful alignment between the cooperating holes in the clamping head **20** and the base **11**.

In view of the detailed description included above, the mode of using and operation of the combined sheet tabbing and punching device will be understood by those skilled in the art and no further discussion thereof is included herein. It will, however, be readily understood that a very simple and sturdy device is provided in which the desired clamping pressure may be applied to a stack of sheets merely by pressing on the projecting ends of the resilient cross bar **22**. Moreover, the resilient cross bar **22** is automatically locked at the end of a clamping operation due to the action of the curved springs **26**. Further, release of the clamping head **20** may be accomplished with little or no effort by merely moving the free ends of the curved springs **26** toward the cross bar **22**. This is a natural operation on the part of the operator who merely engages the ends of the springs and the ends of the cross bar **22** with his thumb and index finger to force the curved springs **26** against the cross bar **22**. In addition to the ease of operation of the present improved combined sheet tabbing and punching device, a simple and sturdy construction is provided which will give many years of foolproof service.

While a specific embodiment of the present invention has been disclosed, it should be understood that the present invention is not limited to the specific details and construction thereof herein illustrated, and it is intended in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the present invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. A sheet clamping device, comprising a base, a rigid clamping head cooperable with said base to clamp sheet material therebetween and including a longitudinally extending top rib having a pair of spaced cross ribs thereon, a pair of resilient guide rods extending up from said base, a resilient cross bar having openings for receiving said guide rods and guided for vertical movement by said guide rods, means for securing said cross bar to said cross ribs, whereby said cross bar is deformed about said cross ribs in response to the application of clamping forces to the ends of said cross bar, means for maintaining the ends of said cross bar substantially perpendicular to the adjacent portions of said guide rods, and means for locking the ends of said cross bar to said guide rods when said cross bar is deformed, thereby to maintain said head in clamping position against a stack of sheets held by said base.

2. In combination, a base, a pair of spaced resilient guide rods extending up from said base, a resilient cross bar substantially greater in length than the space between said guide rods and having openings therein for receiving said guide rods and guided for vertical movement by said guide rods, means for maintaining the ends of said cross bar substantially perpendicular relative to the adjacent portions of said guide rods, a rigid clamping head including a longitudinally extending rib having a pair of spaced cross ribs formed thereon, means for fastening said cross bar to said clamping head by engaging only said spaced cross ribs, a pair of curved leaf spring members one associated with each end of said cross bar and each including an opening for receiving the associated guide rod, the inherent resilience of said spring members causing the free ends of said spring members and the ends of said cross bar normally to be spaced from each other, whereby said spring members serve as locking means for locking said clamping head in any position on said rods including the portions of said cross bar extending beyond said guide rods for applying a force to said clamping head to clamp a stack of sheets between said base and said head.

3. In combination, a base, a pair of spaced resilient guide rods extending up from said base, a resilient cross bar substantially greater in length than the space between said guide rods having openings therein for receiving said guide rods and guided for vertical movement by said guide rods, means for maintaining the ends of said cross bar substantially perpendicular to the adjacent portions of said guide rods, a rigid clamping head including a longitudinally extending rib having a pair of spaced cross ribs, of substantial height formed thereon, means for fastening said cross bar to said clamping head by engaging only said spaced cross ribs, whereby said cross bar is spaced a substantial distance from said longitudinally extending rib and said clamping head, a pair of curved leaf spring members one associated with each end of said cross bar and each including an opening for receiving the associated guide rod, the inherent resilience of said spring members causing the free ends of said spring members and the ends of said cross bar normally to be spaced from each other, whereby said spring members serve as locking means for locking said clamping head in any position on said rods including a clamping position, and means including the portions of said cross bar extending beyond said guide rods for applying a force to said clamping head to clamp a stack of sheets between said base and said head.

WAYNE F. GOUDIE.

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