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PRESS FOR THE PACKAGING OF BUNDLES
OF CURRENCY

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2 Claims. (Cl. 100—9)

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In the handling and storage of currency involving a large number of bills, i. e., a number running into the thousands, it is the practice of banks for their own use and the use of depositors to form bound packages of a large number of bills, usually a thousand, of a particular denomination, each package usually comprising twenty bundles, each of fifty bills held together by a centrally located paper strap. The bills are held together as a package by binding cords or wires looped about the bundles adjacent the ends of the package and having their meeting ends secured by a tying operation. The preparation of such packages involves arduous hand work, the skin of the clerk's hands after several hours of such work being scored and torn with resultant physical discomfort and, in the absence of sterilization of the bills, with liability of the communication of disease from germs carried by the bills. The cords or wires also cause damage to the edges and ends of the bills and, if drawn too tightly, cause buckling of the package.

Such packages and the method of forming them do not permit the provision of any means of identification with the clerk by whom they were prepared or of identification otherwise. It is the practice of banks to deposit the packages of currency in a storage vault and, as a package of particular denomination may be required, to remove it from the vault. Anyone who has access to the vault may readily effect the substitution in a package of a bundle of bills of a small denomination for a bundle of larger denomination. For example, if the package be composed of twenty bundles, each of 100 dollar denomination bills, one or more such bundles, without serious difficulty and because of the stretching capacity of the binding cords or wires, may be abstracted from the package and a bundle or bundles of bills of smaller e. g., one dollar, denomination, substituted. Such substitution has been encountered on many occasions; it may remain undetected for months; and, in the absence of any identification of the package, it is exceedingly difficult, and frequently impossible, to trace it to its source.

The invention proposes a press for forming bundles of currency into packages which has special features enabling the operation to be accomplished much more easily and rapidly than heretofore, providing for a more compact package, and enabling the bundles quickly and readily to be secured together as a package by non-stretchable binding straps of such character and dimensions that appropriate identifying data may be stamped or imprinted on them, i. e., the name

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or initials of the clerk by whom the packages were prepared, the date of preparation of the packages, and other appropriate information.

In the accompanying drawing:

5 Figure 1 is a top plan view of a press in accordance with the invention, the plunger being shown in retracted relation to enable the positioning of the bundles of bills in preparation for the operation of the press and the actuating handle of the toggle mechanism being shown as partly broken away.

10 Figure 2 is a side elevation with parts in section, the plunger being shown in full lines in projected or operative position and in dot and dash lines in retracted position, the plunger operating parts being correspondingly shown.

15 Figure 3 is an enlarged transverse sectional view on the line 3—3 of Figure 1.

20 Figure 4 is a perspective view of one of the bundles of currency.

25 Figure 5 is a perspective view showing the bundles of currency associated as a package with one end of each of the binding straps inserted between adjacent bundles, the bundles being ready for pressing and binding into a package.

30 Figure 6 is a perspective view of a completely bound and marked package of currency.

35 Figure 7 is a detailed plan view showing an optional modification of the transverse stops by which the package is held during the operation of the press.

40 The press includes a base 10 which may comprise a central bar 11 and side bars 15, one at each side of the bar 11 and secured in parallel spaced relation to it by a transverse strap 14 located near the front end of the base and a transverse block 34 located near the rear end of the base.

45 The bars 11 and 15 are preferably of T-shape section and Z-shape section, respectively. The bar 11 has a head flange 12 and a central web or flange 13 and the bars 15 have a horizontal web 16 and oppositely extending vertical flanges 17 and 18 respectively.

50 The spacing of the bars 15 from the bar 11 provides parallel slots 19 and the co-planar flange 12 and webs 16 together with the spaced vertical flanges of bars 15 provide a shallow upwardly opening way 20 to receive the bundles of currency. The vertical flanges 17 have a mutual spacing slightly greater than the length of the bundles of currency. The flanges 17 therefore confine the bundles of currency against lateral displacement and cooperate as guides with the lower portions of the end edges of the bundles.

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The transversely aligned forward or left ends of the bars 11 and 15 (Figures 1 and 2) have secured thereto by rivets 23 angle brackets 21, the upright arms 22 of which serve as transversely aligned stops against which the forward bundle is pressed in forming a package. The spacing of the arms 22 provides vertical slots 22a in alinement or registry with the slots 19 and through which the package binding straps may freely pass.

The forward portions of the downwardly extending flanges 18 of the bars 15 in the area in which the package is pressed are removed (Figures 1 and 2) to further facilitate application of the binding tapes to the package. Rearwardly of this area flanges 18 and 13 are formed with transversely aligned rectangular slots or openings 24 to accommodate the strap 14 which is secured to the lower surfaces of flange 12 and webs 16 by rivets 25. The flat heads of the rivets 23 and 25 are flush with the upper surfaces of the flange 12 and webs 16 of the way 20 whereby the lower edges of the bundles of currency are not damaged in their movement along the way during the formation of the package. The flanges 13 and 18 are vertically co-extensive and provide stable support for the press upon any appropriate surface, e. g., the surface of a desk or table.

A block 26 for applying pressure to the rear face of the rearmost bundle of currency, when the bundles are placed in the way 20 for packaging, is transversely mounted in the way for free sliding fore and aft movement. The forward face of block 26 is provided with a plurality of vertical end ribs 27 and intermediate ribs 28, the latter being so spaced as to provide vertical slots 28a as continuations of the slots 19 and serving for the passage of the binding straps. The vertical ribs (27, 28) and the stops 22 are companion co-operating elements for the application of pressure to the bundles of currency which constitute the completed package.

The block 26 may be projected or retracted by any suitable mechanism, preferably a toggle mechanism as shown. This mechanism, designated generally as 29, includes a front bar 30 which at its front end is pivotally connected, as at 26a, to the rear side of the block 26. The toggle mechanism also includes a rear bar 31, the forward end of which is pivotally connected to the rear end of the bar 30 as at 32; and the rear end of which is pivotally connected as at 33 to the cross block 34 secured upon the flange 12 and webs 16 by rivets 35. When the toggle member 30 is in its fully projected or extended pressure applying position as shown in Figure 2, the pivotal connection 32 between the bars 30 and 31 lies slightly below a plane intersecting the pivotal connections 26a and 33, i. e., in a zone of dead center, thereby to lock the toggle mechanism against accidental release during application of the binding tape to the package.

The toggle mechanism is actuated, and thereby the block 26 is projected or retracted as the case may be, by a handle 36 arranged above the toggle bars and rigidly secured to the rear toggle bar 31 beyond which, with the parts in the positions shown in full lines in Figure 2, it projects forwardly and rests upon the toggle bars. In this relation of the parts the lifting or raising of the handle 36 effects the upward movement of the rear bar 31 about its pivot 33 and thereby effects the retraction of the block 26 in the obvious manner, the fully retracted position of the block, and the corresponding positions of the parts of the

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toggle mechanism, being shown in dot and dash lines of Figure 2.

With the parts in the relationship shown in dot and dash lines in Figure 2 the press is ready for the initiation of the packaging operation.

The first step in the packaging operation is to place the bundles C of currency (bills) in the way 20 with the front or foremost bundle abutting the upright arms 22 and the bundles arranged generally in close or adjoining relation with their end edges in alinement. The handle 36 is then swung forwardly from the dot and dash lines position of Figure 2 to bring the block 26 into engagement with the rearmost bundle. At this stage the movement of the handle is not continued to a point at which compression pressure is placed upon the bundles, the pressure of the block 26 upon the rearmost bundle being merely that which is effected by the weight of the bars 30 and 31 and handle 36 and merely sufficient to maintain the associated relation of the bundles as above described. Since the bundles are not at this time under strong compression the end portions A of the binding straps S may be readily inserted between any adjoining pairs of bundles as shown in Figures 2 and 5.

When the end portions A of the binding straps have been inserted between adjoining pairs of bundles the group of bundles is placed under strong compression by pushing the handle 36 to the limit of its downward movement as shown in full lines in Figure 2. In the embodiment disclosed such limit is provided by the abutting relation of the adjacent end faces of the bars 30 and 31. Thereby the block 26 through the ribs 27 and 28 applies effective compression pressure (of the order of one hundred pounds) to the group of associated bundles, the degree of compression being uniform for all similar packages and being greater than the compression obtained in the hand packaging operations heretofore practiced. The compression operation is accomplished in a substantial fraction of the time required by the prior hand packaging operations.

The degree of the compression pressure is such that the bundles between which the strap end portions A are inserted bear with frictional contact upon said inserted portions sufficiently strong to hold them securely while the straps S are looped, under tension, about the bundles. In effecting the looping of the straps S the opposite end portions B of the straps are inserted in a downward direction through the slots 28a provided by the ribs 28 and are then grasped from below and pulled forward to apply suitable tension to the straps and to cause portions E of the straps to occupy the slots 19. At this stage the straps will have uniform smooth contact with the upper edges of the bundles in the rear of the portions A, with the rearmost face of the rear bundle C and with the lower edges of all of the bundles. The uniform contact of the portions E of the straps with the lower edges of the bundles may be facilitated by smoothing them with the fingers, access to the straps for this purpose being provided by the cutaway portions of the flanges 18. As shown in Figure 5 the straps may be partially looped about the bundles before the final compression movement of the block 26 or, as assumed in the preceding description, the looping of the straps about the bundles may be deferred until the completion of the package.

The straps, when suitably tensioned and brought into contacting relation with the bundles

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as above described, are bent about the front face of the foremost bundle C; and the portions B are bent over the upper edges of the bundles C which are in advance of the portions A and overlaid upon, and secured to, the strap parts which extend rearward from the portions A. The end portions B, for the purpose of their securement are preferably formed with gummed inner faces by means of which they are caused to adhere to the underlying strap portions. With the portions B thus secured the straps provide complete loops, appropriately tensioned and snugly fitting, for the purpose of holding the package within the overall dimensions and under the strong compression pressure which are effected by the operation of the press. The complete loops provided by the straps S are shown in Figures 2 and 6.

The notes comprising each bundle C are confined in closely associated relation by a central strap T which, as a loop, is normal to the upper and lower edges of the notes as shown in Figure 4. Thus in each bundle C there will be sections of the strap T overlying the adjacent faces of the foremost and rearmost notes. These strap sections will increase the thickness of the bundle in its central part. In a group of twenty associated bundles there will be forty overlying sections of the strap T which will increase the overall thickness of the central portion of the group by an increment corresponding substantially to the width of a single bundle of fifty bills. It follows that the completed package will have a greater dimension in a central transverse zone than elsewhere. The construction provides compensation for this increase of thickness. The pair of centrally located ribs 28 provide a vertical slot or recess 28b, the function of which is to accommodate the above explained increment of thickness in the central transverse zone while enabling the compression pressure effected by the ribs 28 to be uniformly applied. The same result may be accomplished by making the central transverse stop of channel cross section as shown at 22b in Figure 7. If desired the recess 28 and the channeled stop 22b may both be employed. In the completed package the central "bulge" is at both sides of the package and is of such small relative degree that it does not appreciably interfere with the stacking of the packages.

In the completed package (Figure 6) the closely packed or compressed relation of the associated bundles of currency, as effected by the press, is maintained by the straps S which are of paper or any other suitable flexible non-stretchable material, e. g., cellophane. The straps S are relatively wide, for example, one and one-fourth inches, and effectively maintain the bundles C under compression without liability of mutilating or tearing the upper and lower edges of the notes. The width of the straps enables them to bear appropriate identification data which is indicated at D in Figure 6. Such data may comprise the name or initials of the clerk who prepared the package, the date of its preparation and the value of the package according to the denomination of the bills comprising the several bundles. The data D may be printed or stamped upon the straps or partly printed and partly stamped. The supply of straps will be assigned to the particular clerk whose name or initials is included in the data D; or a stamp bearing his name or initials may be assigned to the clerk, the stamp being used to impress the name or initials upon the straps. The clerks, of course, are personally responsible for the straps or stamps bearing their

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several names or initials. In this way the package carries a complete and permanent statement of its identity in respect to the clerk who prepared it, the date of its preparation, and its value.

5 The data D is not removable and thereby the straps S, in effect, provide seals. Any attempt to remove or alter the data D will mutilate the seal, and such mutilation will be indicative of an attempt to tamper with the package.

10 It will be obvious that the functional portions of the parallel bars 11 and 15, in respect to the formation of the package, are those which subtend the area occupied by a group of bundles as initially positioned against the abutments 22; and that rearwardly beyond this area the base may comprise a solid plate, the illustration of which is, of course, unnecessary. It will, of course, be obvious that in its support upon a horizontal surface the press may be either loosely mounted (portable) or fixed; also that the bars 11 and 15 and slots 19, functionally considered, may project beyond the horizontal supporting surface. It will also be obvious that the press may be arranged vertically as well as horizontally, that is to say, by fixed attachment to a vertical support and that the functional portions of the bars 11 and 15 in slots 19 may extend beyond the support.

I claim:

30 1. For the formation of a group of bundles of currency, the notes of each bundle being confined by a central strap, into a package in which the bundles and their components are in a close association effected by applied pressure and are so permanently maintained by relatively wide straps of flexible, non-stretchable, material looped under tension about the package near its ends and having overlying portions secured together, a press comprising a base having upwardly extending longitudinal marginal flanges and thereby formed as a way in which bundles of currency may be transversely arranged and guided for sliding movement longitudinally of the way, the base being formed with longitudinal slots extending through the area in which compression of the bundles is effected, a plurality of transversely spaced stops normal to and secured at the forward end of said way for limiting the forward movement of the bundles, the spacing of the stops providing vertical slots in alinement with and constituting angular continuations of the slots of the base, a block slidably mounted in the way and operative in its forward movement to compress bundles of currency against said stops, the block having upon its front face transversely spaced vertical ribs for direct engagement with the adjacent bundle, certain pairs of said ribs providing vertical recesses or slots in alinement with and constituting continuations of the slots in the base, the slots in the base and the slots provided by the spacing of the stops and the ribs enabling the application of the straps to the package while it is held under compression, the straps being looped under tension about the package to maintain it under compression, the stops and the ribs severally constituting opposed series of companion elements for the application of compression pressure to the bundles, the centrally located elements of at least one of the opposed series providing a vertical slot for the accommodation of the increment of thickness of the package due to the central straps about the several bundles, and means for effecting a slidable movement of the block in either longitudinal direction of the way, the base being provided adjacent its

sides with longitudinal supporting flanges of uniform depth and the flanges being cut away throughout an extent commensurate with the slotted area of the base in which compression of the bundles is effected.

2. For the formation of a group of bundles of currency, the notes of each bundle being confined by a central strap, into a package in which the bundles and their components are in a close association effected by applied pressure and are so permanently maintained by relatively wide straps of flexible, non-stretchable, material looped under tension about the package near its ends and having overlying portions secured together, a press comprising a base having upwardly extending longitudinal marginal flanges and thereby formed as a way in which bundles of currency may be transversely arranged and guided for sliding movement longitudinally of the way, the base being formed with longitudinal slots extending through the area in which compression of the bundles is effected, a plurality of transversely spaced stops normal to and secured at the forward end of said way for limiting the forward movement of the bundles, the spacing of the stops providing vertical slots in alinement with and constituting angular continuations of the slots of the base, a block slidably mounted in the way and operative in its forward movement to compress bundles of currency against said stops, the block having upon its front face transversely spaced vertical ribs for direct engagement with the adjacent bundle, certain pairs of said ribs providing vertical recesses or slots in alinement with and constituting continuations of the slots in the base, the slots in the base and the slots provided by the spacing of the stops and the ribs

enabling the application of the straps to the package while it is held under compression, the straps being looped under tension about the package to maintain it under compression, the stops and the ribs severally constituting opposed series of companion elements for the application of compression pressure to the bundles, the centrally located elements of at least one of the opposed series providing a vertical slot for the accommodation of the increment of thickness of the package due to the central straps about the several bundles, and means for effecting a slidable movement of the block in either longitudinal direction of the way, the base at its upper side and adjacent its rear end being provided with a fixed cross bar and the means for effecting the slidable movement of the block comprising a toggle mechanism which consists of a rear arm pivotally connected at its rear end adjacent its under side to the cross bar, a front arm pivotally connected at its front end and adjacent its upper side to the block, a pivotal connection between said arms adjacent their under faces, and an operating handle rigidly secured to and upon the rear arm and in the advanced position of the block projecting from the rear arm in a forward direction.

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