(No Model.)

G. W. A. ABELMANN.

ANCHOR OR DEVICE FOR SECURING COPPER PLATES TO WOOD BLOCKS.

No. 576,711. Patented Feb. 9, 1897.

FIG. 1.

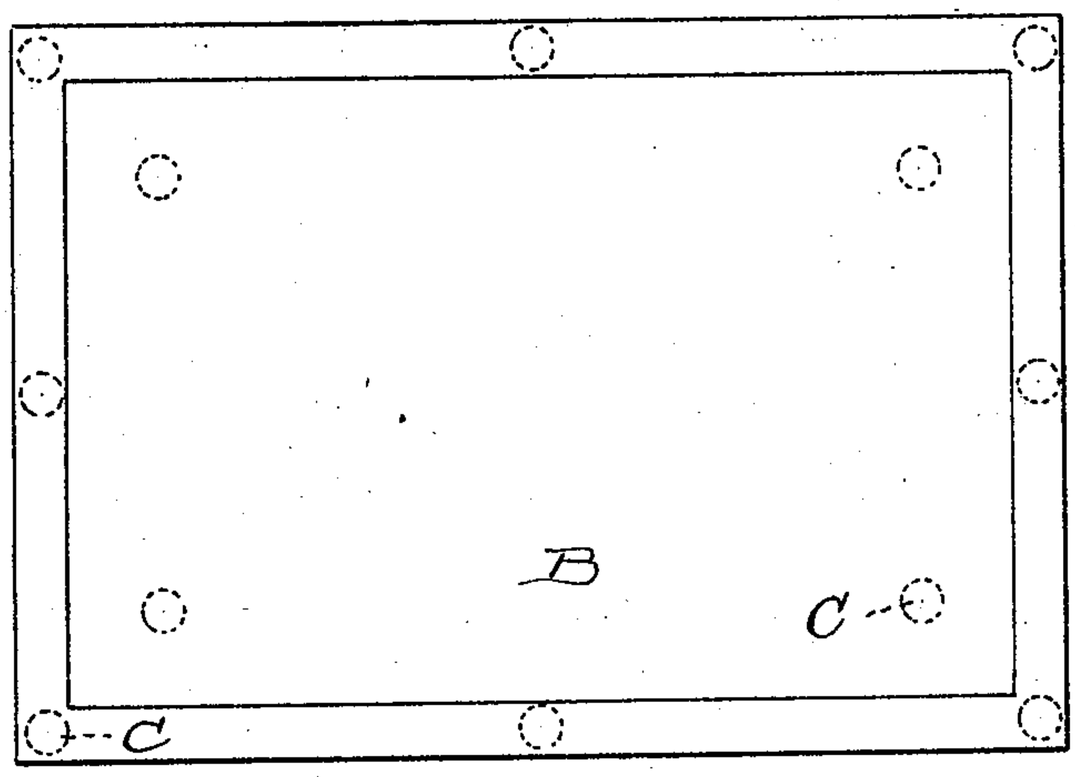


FIG. 2.

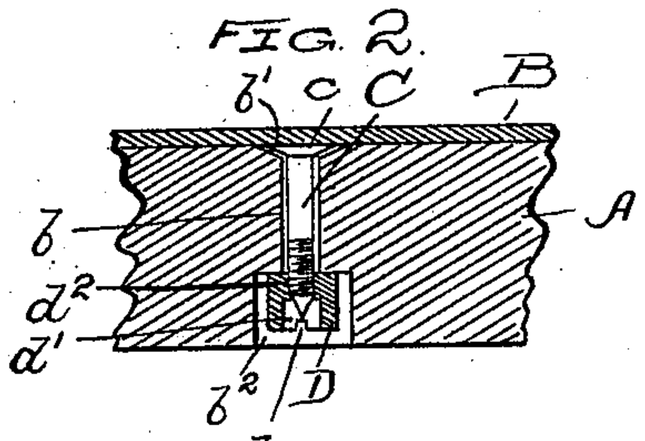


FIG. 3.

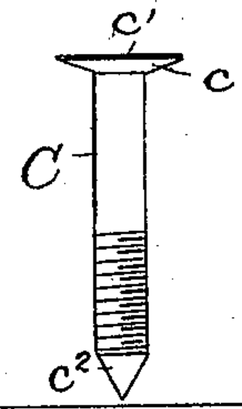
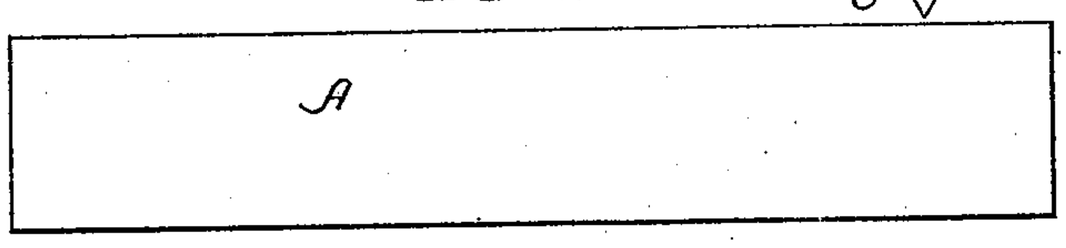


FIG. 4.



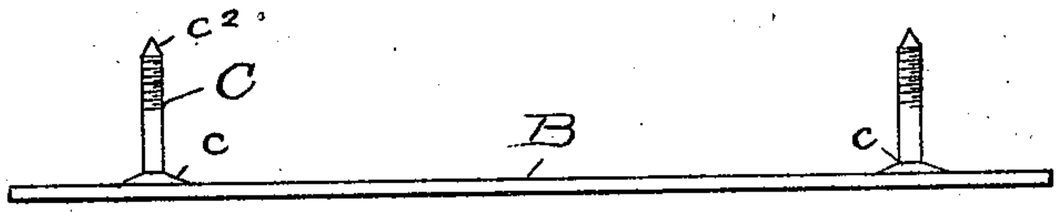
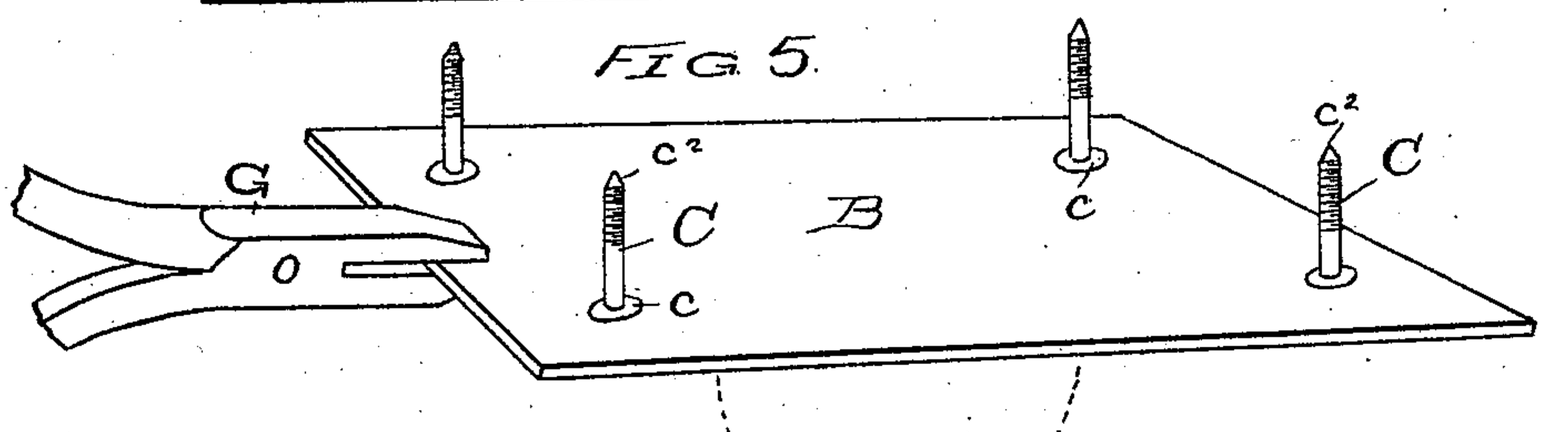


FIG. 5.



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UNITED STATES PATENT OFFICE.

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ANCHOR OR DEVICE FOR SECURING COPPER PLATES TO WOOD BLOCKS.

SPECIFICATION forming part of Letters Patent No. 576,711, dated February 9, 1897.

Application filed March 11, 1896. Serial No. 582,821. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. A. ABELMANN, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Anchors or Devices for Securing Copper Plates to Wood Blocks, of which the following is a specification.

My invention relates to improvements in means for anchoring half-tone or other copper plates to wood blocks.

Heretofore copper plates (which are comparatively thin sheets or plates of copper, ordinarily from one thirty-second to one-sixteenth of an inch in thickness) have been secured to the wood blocks for locking in the printing-form by metal anchors formed by pouring molten soft metal into tapering or countersunk holes or cavities formed in the wood block and extending through to the copper plate, so that the soft-metal anchor will unite with or solder to the copper plate. Often, however, the wood blocks are so small or narrow that it is not practicable to form a hole or cavity in it large enough to receive such a cast soft-metal anchor, and in such cases the copper plates have to be mounted on metal blocks, and frequently, too, the wood block will warp more or less out of shape after the copper plate is thus anchored upon it, either due to some lack of dryness or other imperfection in the wood block or owing to the effect upon the wood of the hot molten metal heating the block in parts adjacent to the holes or cavities therein into which the molten metal is poured to form the anchors, thus rendering it necessary to remove the copper plate from the block to which it is anchored; and it frequently happens also that the copper plate will be anchored or partially anchored to the block in a wrong position; and sometimes, too, where two or more plates are to be secured to the same block the upper surface of the plates will not be perfectly even or flush with each other; and with the old construction of cast soft-metal anchors whenever it becomes necessary from these or other causes to remove the copper plate from the block after it has been wholly or partially anchored thereto it can only be done with difficulty and at a considerable expenditure of time, labor, and material and with great danger of injury to the picture or matter upon the surface of the copper plate, especially if it is a fine and delicate half-tone, as the only practical method of removing the plate from the wood block is to saw and cross-saw the block repeatedly through the several cast soft-metal anchors uniting the plate and block, because if it is attempted to loosen the anchors from the plate by heating it the soft metal of the anchors as it melts will spread over the surface of the plate and solder itself thereto, so that it would be very difficult to again get the surface of the plate clean and smooth, so that it would properly fit the surface of the block. With the old soft-metal cast anchors heretofore in use a great deal of time, care, and labor is required to properly anchor the plates in position on the wood block, and where, as frequently happens, the same narrow border-plates are used to surround a number or variety of distinct insides or center plates, as, for example, of pictures, it has heretofore been necessary to duplicate the narrow border-plates for each separate inside or center plate or else to mount the narrow border-plates upon separate metal blocks, because if the border-plate and center plate were secured to the same wood block the center plate could not be removed without destroying the wood block.

The object of my invention is to provide a simple, cheap, and efficient means for securely anchoring copper plates to wood blocks, and by which the plates can be easily and quickly secured in position and by which, when necessary, the plates can be quickly and easily removed or adjusted in position on the block as required.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts throughout all the views, Figure 1 is a plan view of a device embodying my invention, showing the anchors in dotted lines. Fig. 2 is a vertical cross-section through one of the anchors. Fig. 3 is a detail view of the anchor-screw before it is applied to the copper plate; and Fig. 4 is an edge view of the plate, showing the anchor-screws attached thereto in position for marking the places on the wood

block for the holes. Fig. 5 is a perspective view illustrating the method of heating the plate to solder the anchors in place.

In the drawings, A represents the wood block, and B the copper half-tone or other plate.

C C are the anchor-screws, each being furnished with a flat head *c*, provided with a coating *c'*, of solder, to adapt the head of the anchor-screw to be readily soldered to the copper plate B by simply setting the screws on the plate and then heating it, or by first heating the plate and then planting or pressing the flat solder-coated heads of the screws against the hot copper plate, so that the heat of the plate will fuse the solder coating on the head of the screw. In this way the anchor-screws may be very rapidly, easily, and securely soldered or attached to the copper plate in whatever position desired, and as many as may be required, according to the shape and size of the plate. As the screws are of steel, brass, or other strong metal, the holes required for them in the wood block are comparatively small in diameter, so that very small or narrow plates may by this means be secured to wood blocks. After the requisite number of anchor-screws C have in this way been attached to the copper plate the position for the screw-holes *b* in the wood block B may be very quickly and easily determined by simply pressing the wood block against the projecting screws, each of which is provided with a sharp point c^2 at its end, so that it will make a slight puncture in the surface of the wood block when the latter is pressed or gently tapped against the anchor-screws.

The anchor-screw holes *b* in the wood are preferably bored slightly larger in diameter than the anchor-screws to allow for any inaccuracy in the boring of the holes and also to permit any slight adjustment in the position of the plate on the block that may be necessary. As illustrated in the drawings, the holes are preferably made about a half larger in diameter than the screws. The wood block is provided on its plate face with slight countersinks *b'* to receive the heads *c* of the anchor-screws, and thus permit the face of the plate to fit snugly and smoothly against the face of the block. The wood blocks B are also provided with deep countersinks b^2, preferably extending about half through the block to receive the nuts D, these countersinks being also preferably made somewhat larger in diameter than the nuts D for the same reasons above explained in relation to the holes *b* and screws *c*. The countersinks b^2 are made deep enough, so that the nuts D will fit sufficiently within the back face of the block to permit any trimming that may be required of the block and still not project.

The nuts D are preferably circular in form and provided with a slot *d* to receive a screw-driver. The nuts D are made comparatively thick and deep, so that the point of the screw will not interfere with the screw-driver or tool used for turning the nuts tight. The nuts, however, are preferably only threaded through one-half or less of their thickness, being provided with a larger bore *d'* at the slotted end than the threaded bore d^2. The nut, however, may be made of any suitable form or construction. By means of these anchor-screws having solder-coated heads I am enabled in practice to save a great deal of time, trouble, and labor in securing the copper plates to the wood blocks; also to secure very small or narrow plates to wood blocks; also to easily and quickly remove or adjust the position of the plate or plates on the block without destroying the wood block and without danger of injury to the picture-surface of the copper plate when required for any purpose, as, for example, on account of the warping of the block, getting the plate or plates in a wrong position laterally, or because the plate or plates are not precisely flush or on the right level as to their printing-surfaces, or when it is desired to change one plate for another on the block, as in using the same border-plates for different insides, and I also avoid all danger of warping or injuring the wood block by application of heat thereto, as is the case where cast-metal anchors are employed.

Another advantage with my improved anchors is that the tightening of the nut will always show whether the anchor is securely attached to the plate, whereas in the old it is very difficult to tell whether the cast soft-metal anchor has been flowed down properly against the plate and become firmly attached thereto or not, and when not so attached it was a slow and tedious process to bore the cast-metal anchor out and refill the cavity with molten metal again. When desired, also my anchor-screws may be easily and quickly removed from the plate by simply heating it until the solder again fuses, and as the amount of solder used for each screw is very slight it will not spread over the surface of the plate.

In Fig. 5, F indicates a gas-jet for heating the copper plate in soldering the screw-heads thereto, and G a pair of pincers for holding the plate. The heat of the gas-jet in no way tends to injure the prepared printing-surface of the plate, and after heating the discoloring of the copper can be removed with a weak solution of any suitable acid.

I claim—

1. The combination in a printing-form with a copper plate of an anchor-screw having a head soldered to the copper plate and a wood block having a hole to receive the screw, a countersink to receive the head of the screw and a deep countersink to receive the nut, and a nut fitting in said deep countersink, substantially as specified.

2. The combination with a copper plate of an anchor-screw having a pointed end and solder-coated flat head for soldering the same removably to the copper plate, and a wood block having a hole to receive the screw, a

countersink to receive the head of the screw and a deep countersink to receive the nut, and a nut fitting in said deep countersink, said hole and countersink being each larger than the corresponding parts of the screw and nut to enable the position of the plate to be adjusted on the block and said anchor-screw having a pointed end, substantially as specified.

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