

May 27, 1969

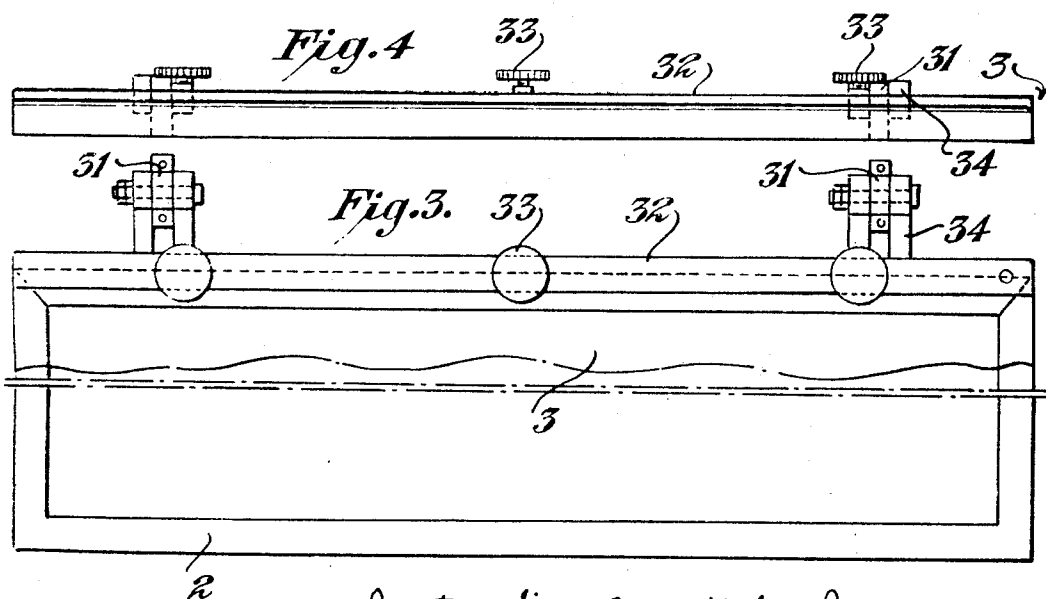
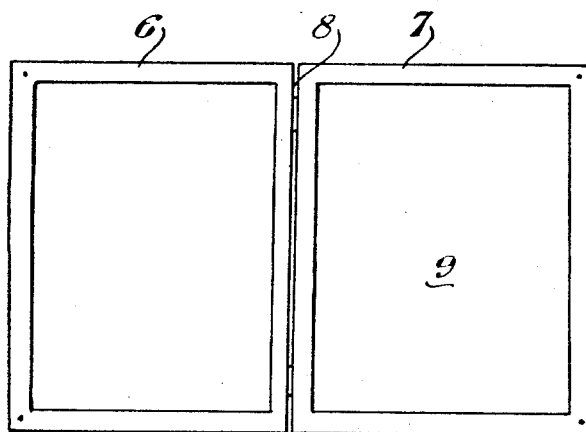
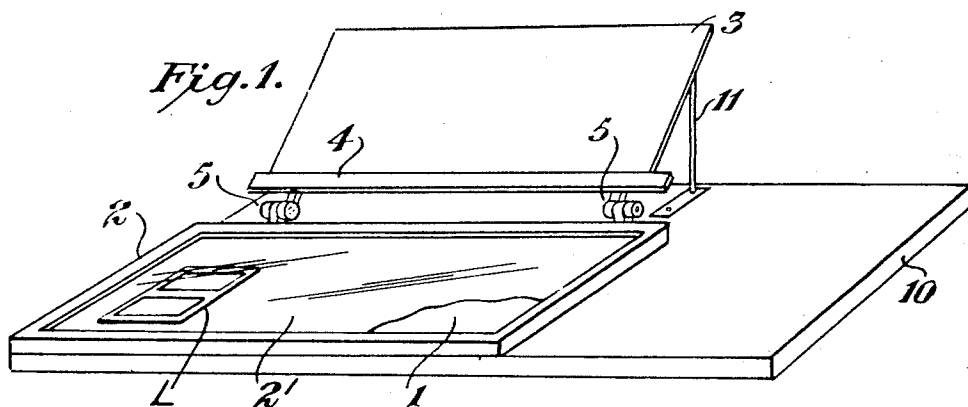
S. A. WEEKS ET AL

3,446,145

REGISTERING PRINTING PLATES

Filed Feb. 23, 1967

Sheet 1 of 3



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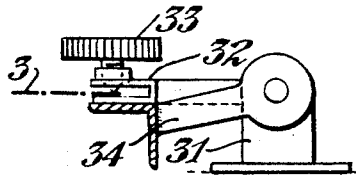


Fig. 5

Fig. 6.

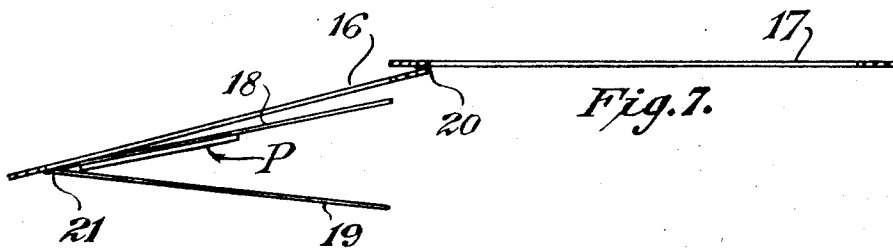
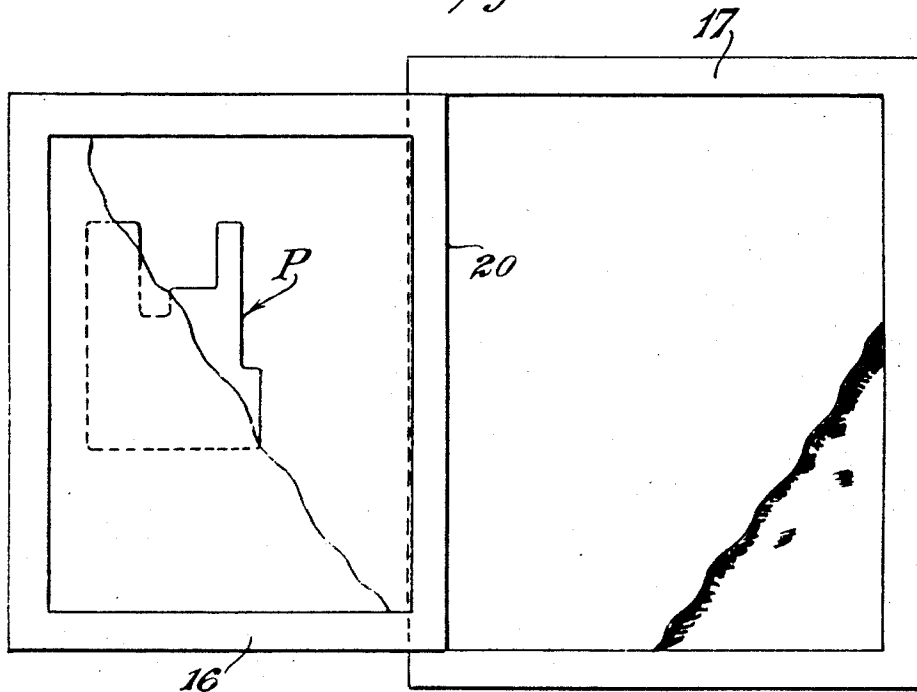


Fig. 7.

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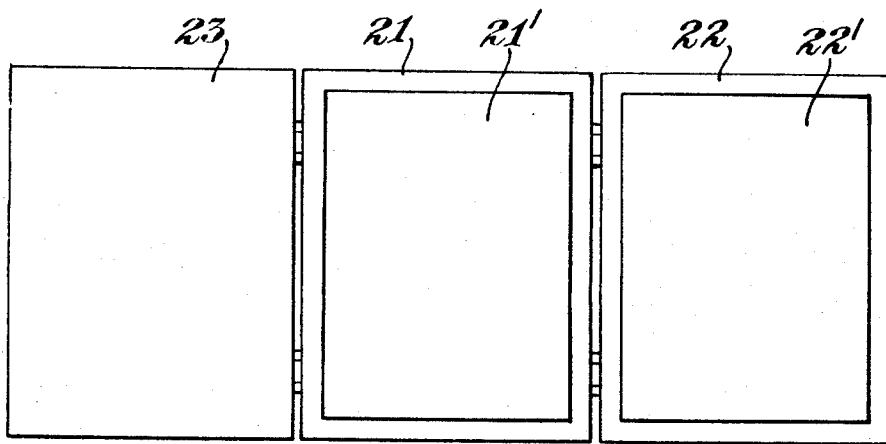


Fig. 8.

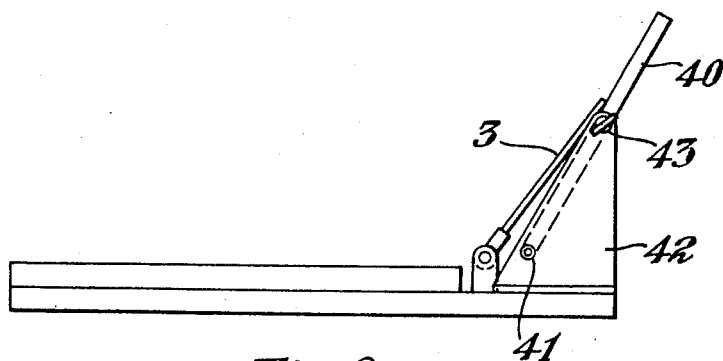


Fig. 9.

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3,446,145

REGISTERING PRINTING PLATES

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U.S. Cl. 101—426

12 Claims

ABSTRACT OF THE DISCLOSURE

A method and apparatus of laying printing plates or blocks on to a backing sheet or directly on to a forme by placing the layout or copy on a layout board using a transparent transfer sheet to obtain an image and aligning the image with the layout or copy so that on transferring the plate or block from a plate holding the positioning frame to the backing sheet or forme exact registration with the layout can be obtained.

This invention relates to a method of laying printing plates and blocks and an apparatus for use therewith.

One of the difficulties with which a printer is confronted is that of accurately positioning printing plates when mounting them onto the forme or onto a backing sheet, so that they are in exact registration with the copy or layout. This is usually done by measurement to obtain the approximate position and involves the pulling and ruling up of proofs until the exact position has been obtained: a time-wasting process during which the press is standing idle.

A method of laying printing plates or blocks on to a backing sheet or onto a forme according to the invention comprises,

- (I) placing the layout or copy on a layout board;
- (II) setting up a backing sheet or mount to receive the plates or blocks, said layout board and backing sheet or mount being arranged for relative movements into or out of an operative position;
- (III) releasably attaching a plate to a holding means;
- (IV) aligning a transparent image transfer sheet with the holding means;
- (V) obtaining an image of the plate attached to the holding means on the transparent image transfer sheet;
- (VI) superimposing the image so obtained on its counterpart in the layout;
- (VII) aligning the holding means with the image transfer sheet with the plate face downwards on its holding means and;
- (VIII) transferring the plate to the backing sheet or direct to the form and repeating the operation until all the plates are correctly laid.

It will be appreciated that by repeating this method of laydown, each of the plates or blocks can readily be located in its correct position on the backing sheet or mount, since by aligning the image of each plate with the layout it follows that the plate must be accurately positioned on the backing sheet or mount when transferred thereto.

Apparatus for carrying out the method of this invention makes use of two components, the one embodying a backing sheet and layout board and the second a holding means for the plates and transfer sheet by which an image of the plate being layed is obtained and used in transferring the plates individually to the backing sheet or direct to the forme.

The first component may comprise a layout board surrounded by a cover sheet frame bearing a transparent cover sheet for covering and protecting the layout during the mounting operation. Hingedly attached to one side of the said frame is means, such as a clamp, for holding the backing sheet on which the plates are to be laid, or the forme member when the plates are transferred directly thereto. The provision of the hinge also enables the cover sheet frame to be lifted up into contact with the backing sheet or with a mount placed behind or beside the apparatus.

The second component may be made up of two similar frames which are preferably hingedly inter-connected, one frame for use as the holding means being fitted with a holding sheet of carbonised plastic or other copying material on which the plate is adhered face down on the uncarbonised side, and the other frame with a sheet of transparent film or tracing material onto which an image of the plate is transferred.

Alternatively, the plate holding sheet need not be carbonised, in which case the plate may be attached to it face up and a separate carbon sheet or some other copying method used, e.g. the plate could be inked.

The invention is illustrated in the accompanying drawings in which:

FIGURE 1 is a diagrammatic perspective view showing the working surface and its associated backing sheet on which the plates to be laid are mounted;

FIGURE 2 is a plan view to a larger scale of the holding and transfer frames;

FIGURE 3 is a plan view, and

FIGURES 4 and 5, front elevation and section views of the register frame and clamp device shown in FIGURE 1;

FIGURES 6 and 7 are detail plan and elevation views showing an alternative form of holding and transfer frame unit;

FIGURE 8 is an elevation of a positioning frame device primarily for laying colour half-tone plates;

FIGURE 9 is a side elevation of a back-rest for the backing sheet.

Referring first to FIGURES 1 and 2, the apparatus for carrying out the method of laying printing plates or blocks in accordance with this invention comprises a layout board 1 on which a layout, indicated generally at L of the copy to be printed is placed, the board 1 being enclosed within a metal frame 2 for holding in position a transparent cover sheet 2' for protecting the layout during the plate mounting operation. For convenience the board 1 is mounted on a baseboard 10 as shown.

Associated with the layout board 1 is a sheet 3 termed a "backing sheet" on which the plates are to be mounted in positions which correspond precisely with the positions of their counterparts on the copy or layout attached to board 1. The layout board 1 is securely attached to the baseboard 10 and, in order that they may be raised and lowered in registration with one another, and with the layout-board, the cover frame 2 and backing sheet clamp 4 are attached through hinges 5 to the baseboard, a preferred form of hinge being hereinafter described with reference to FIGURES 3-5.

By using a hinge it is possible for the cover sheet frame to be lifted into and out of contact with the backing-sheet or with a mount placed behind or beside the apparatus. It is also possible to lower the backing sheet onto the working surface a number of times in exactly the same position.

For convenience in attaching and replacing the backing sheet, the hinge may incorporate a clamp. A preferred form of backing-sheet clamp and hinge is shown in FIGURES 3-5 described below.

An essential component of the apparatus of this inven-

tion consists of two frames 6 and 7 which, as shown in FIGURE 2 are interconnected by means of a hinge 8. Alternatively, the frames could be separate and made to fit together in register with a suitable locating device.

Frame 7 termed the "transfer" frame is provided with a sheet of transparent film 9 or tracing material onto which an image of the plate can be transferred, which plate is first adhered, face down, to the back of a sheet of copying material secured in the frame 6 termed the 'holding' frame. Alternatively, the plate holding sheet in the frame 6 need not be of copying material and may be of sufficient thickness to obviate the necessity of a frame to support it, in which case the plate may be attached to it face upwards and a separate carbon sheet inserted or some other copying method used, e.g., the plate could be inked.

In use, the backing sheet 3 is raised to its inoperative position shown in FIGURE 1, and the layout L, which is usually a paste-up from proofs of the plates or blocks to be laid, is placed in a first particular position on the board 1 and then held in position by adhesive tape and covered with a sheet of transparent film attached to the cover frame 2. In order to transfer plates to the backing-sheet 3, each plate is first backed with double-sided contact adhesive. The next step is to attach the plates to be laid, one at a time, face downwards to the back of the carbonised plastic holding sheet in the holding frame 6. Blobs, or strips of contact adhesive, or stick dots may be used for this purpose. The two frames 6, 7 are then closed or fitted together and turned over so that the plate in the process of being laid is face up underneath them, when an image of the plate carried by the sheet of the holding frame 6 can then be transferred to the transparent film or tracing sheet 9 of the second frame 7 by rubbing the film or sheet over the area under which the plate lies, with a spatula, roller or any hard object of suitable shape and size. The frames 6, 7 are then separated or opened, and the transfer frame 7 now carrying the image, is located with the image on the transfer sheet 9 exactly over the layout and held in position, e.g. with adhesive strips. The two frames 6, 7 are then closed or fitted together again so that the plate or block re-registers with the image on the transfer sheet 9, with the plate face-down in position over the layout.

Transfer to the backing sheet 3 in a second particular position corresponding to the aforesaid first particular position of the layout on the board 1 can now be achieved by removing the protective covering from the double-sided adhesive on the back of the plate and lowering the backing-sheet 3 to its operative position, that is in face-to-face proximity to the layout board 1, when the plate will adhere to the backing-sheet being located exactly in the required position by reason of the correct alignment of its image with that on the layout. Alternatively by lifting the cover frame 2 bodily with the holding frame 6 and plate attached to it, it may be raised into contact with the backing sheet or swung through 180° onto a mounting lying behind or beside the layout board.

As can be seen from FIGURES 3-5 the layout board cover frame 2 is fitted with two arms 34 pivotally attached to two lugs 31 which are fixed to the baseboard. The clamp bar 4 consists of a strip of channel section 32 fitted with set screws 33 and fitted with corresponding arms pivotally attached to the two lugs 31. The backing sheet 3 is held in the channel strip 32 by the set screws 33.

Referring now to FIGURES 6 and 7 there is shown a modified arrangement of the holding and transfer frames, the two frames being indicated respectively at 16 and 17, the holding frame 16 which is hingedly interconnected at 20 to the transfer frame 17 being of a size to fit within the confines of frame 17. The holding frame 16 comprises two sheets 18 and 19 each of a size less than the interior dimensions of the frame 16 so that they can be passed through it, being hingedly connected thereto at 21. Sheet 18 which is of siliconised released paper or siliconised plastic or metal provides the holding sheet

to which the plate is first attached, face up, by means of its adhesive backing. Sheet 19 is the second plate-holding sheet and it may be made of thin plastic or metal with contact adhesive blobs or strips on one side.

Having first attached the plate indicated at P to the siliconised sheet 18 as described, but face uppermost, the face of the plate is then inked or a piece of carbon or other copying material placed over it, and the frames are brought together so that the plate lies face up under the transparent sheet in frame 17. The image is then transferred by rubbing, as previously described, to the transfer sheet in frame 17. After this, frames 16 and 17 are parted so that the image may be located over the layout and the frame 17 fixed in position by adhesive strips. The frame 16, which still carries the plate P is once more located over frame 17, by moving it about its hinge line 20, but with the second holding sheet 19 under the front face on the plate and adhering to it. The plate is now face down in position over the layout and in correct registration therewith, being held by both holding sheets. Since the holding sheet 18 is hingedly attached to its frame 16, the sheet 18 can now be "peeled off," leaving the plate on the second holding sheet 19, where it appears back uppermost thus exposing the contact-adhesive. Transfer to the backing sheet may now be effected as previously described.

Referring now to FIGURE 8 the third form of plate positioning frame consists of a central transfer frame 21 carrying a transparent (tracing) sheet 21', to which frame 21 is connected by hinges on one side of holding frame 22 carrying a plastic copying sheet 22' with contact adhesive blobs or strips on the back, and on the other side of siliconised release-sheet 23. This positioning frame may either be used in the manner first described in relation to FIGURES 1-2 by attaching the plate face down to the back of the copying sheet 22' in the holding frame 22 and then obtaining an image on the transparent sheet 21 which is then used to register the plate carried by frame 22 with the copy, or when it is necessary to ink the plate in order to obtain a satisfactory image, it is attached face uppermost by means of its adhesive backing to the sheet 23, in which case frame 22 performs the function of the second holding sheet 19 described above, having first folded the sheet 23 and frame 22 with the release sheet 23 innermost so that an image can be traced on sheet 22'.

It will be understood that this form of positioning frame is particularly suitable for laying colour half-tones where the plate has to be inked to provide in addition to the outline a detailed image for registering purposes.

Colour half-tone plates may be laid by this method to transparent proofs of each colour plate pasted up in register, or to a proof of the black plate.

In some cases, e.g. where exact register is not necessary or where very large plates are to be laid, a mould of long, soft paper or board or other suitable material may be made from the plate and positioned over the layout so that the plate may be laid into it face down and then transferred to the backing sheet in the manner previously described. With this method the positioning frame is not used.

FIGURE 9 shows an arrangement incorporating a back rest 40, against which the backing sheet 3 can be supported as shown. Back rest 40 is pivotally mounted on trunnion mountings 41 in bracket 42, the latter being provided at their upper ends with butterfly headed studs 43 by means of which the back rest is supported when in its upright position. By removing the studs 43 the back rest can be swung backwardly to lay flat behind the layout board.

What is claimed is:

1. An improved method of laying printing plates or blocks on to a backing sheet or form to conform to a predetermined copy or layout when placed on a layout board, the improvement comprising the steps of:

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- (i) setting up a backing sheet to receive the plates or blocks, said backing sheet being capable of movement relative to the layout board;
 - (ii) attaching a plate to a plate holding means;
 - (iii) preparing an image transfer sheet to receive an image of said plate, which transfer sheet is adapted for registration with the plate holding means;
 - (iv) aligning said transfer sheet with the plate holding means and then making an image of the plate on the transfer sheet;
 - (v) superimposing said image on its counterpart in the layout board;
 - (vi) realigning the plate holding means with the image transfer sheet; the plate being positioned face downwards; and transferring the plate to the backing sheet or direct to the form and repeating the operation until all the plates are correctly laid.
2. The method claimed in claim 1 wherein the plate holding means comprises a frame having a sheet component, to which plates or blocks can be attached by adhesive.
3. The method claimed in claim 1 wherein the plate holding means comprises two sheets for use in conjunction with the image transfer sheet and to the second of which sheets the plate is transferred so that it is held face downward prior to transfer to the backing sheet or form.
4. In apparatus for laying printing plates or blocks on to a backing sheet or on to a mount, the combination of
- (i) a layout board, on to which the layout or copy is placed;
 - (ii) a backing sheet to receive plates or blocks from the layout board;
 - (iii) means interconnecting the backing sheet to the layout board to permit movement of said backing sheet relative to said layout board to an inoperative position to expose said layout board for placement of a plate or block thereon, and permitting movement of said backing sheet relative to said layout board to an operative position registered with and in face-to-face proximity to said layout board, whereby said backing sheet engages a plate or block laid in a first particular position on said layout board and said plate or block is attachable to said backing sheet in a second particular position corresponding to said first particular position;
 - (iv) a holding means adapted releasably to hold a plate or block to be laid;
 - (v) a transfer means associated with said holding means and capable of registration with said holding means, said transfer means including a transparent sheet on which an image of the plate or block can be obtained when said transfer means is in registration with said holding means, said transfer means

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being positionable in face-to-face proximity to said layout board with said image registering with said layout when said backing sheet is in said inoperative position, said holding means with said plate or block releasably held thereon being positionable in registration with said transfer means, said plate or block then registering with said layout, whereby said backing sheet may be moved to its operative position and said plate or block transferred to said backing sheet.

5. Apparatus as claimed in claim 4 in which the holding means comprises a frame having a sheet for attachment thereto of the plate or block.

6. Apparatus as claimed in claim 5 in which the transparent sheet is formed of carbonised plastic or other copying material.

7. Apparatus as claimed in claim 4 in which the transfer means comprises a frame mounting said transparent sheet.

8. Apparatus as claimed in claim 4 in which said transfer means comprises a pair of hingedly interconnected frames, the first frame thereof being provided with a holding sheet and the second frame thereof with said transparent transfer sheet.

9. A device as claimed in claim 8 in which the first frame is provided with two sheets, including a holding sheet and an intermediate transfer sheet.

10. A device as claimed in claim 9 in which the dimensions of the first frame are such that when folded against the second frame it fits within it.

11. Apparatus as claimed in claim 4 in which said transfer means comprises three frames, the two outer frames being hingedly connected to opposite sides of the intermediate frame and being provided respectively with a holding sheet and said transparent sheet.

12. Apparatus as claimed in claim 4 in which said layout board is provided with a clamping device for a backing sheet which device is hingedly attached to the layout board so that the backing sheet can be moved into and out of its operative position when effecting transfer of a plate or block thereto.

References Cited

UNITED STATES PATENTS

2,428,428	10/1947	McCarter	101—426
3,000,737	9/1961	Barnhart	101—426

FOREIGN PATENTS

1,132,154	6/1962	Germany.
562,505	7/1944	Great Britain.

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