June 25, 1940. R. L. JOHNSON ET AL 2,205,692

DEMONSTRATION DEVICE

Filed Sept. 15, 1938 2 Sheets-Sheet 1

Fig. 1.

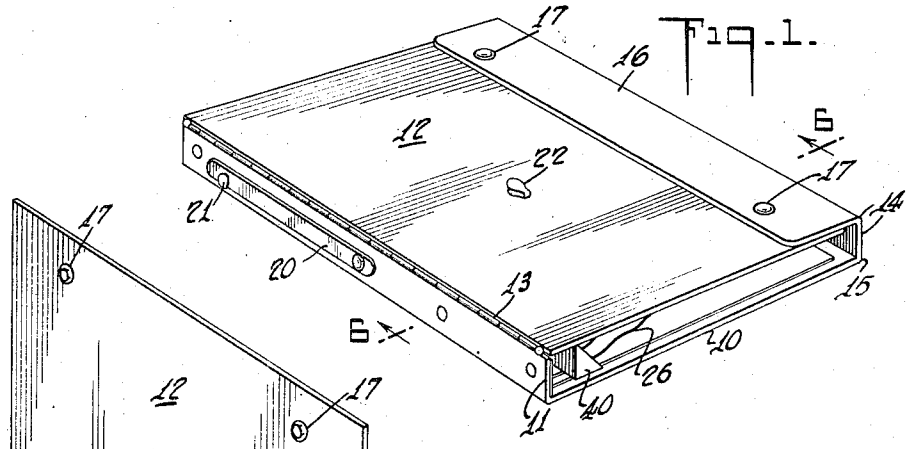


Fig. 2.

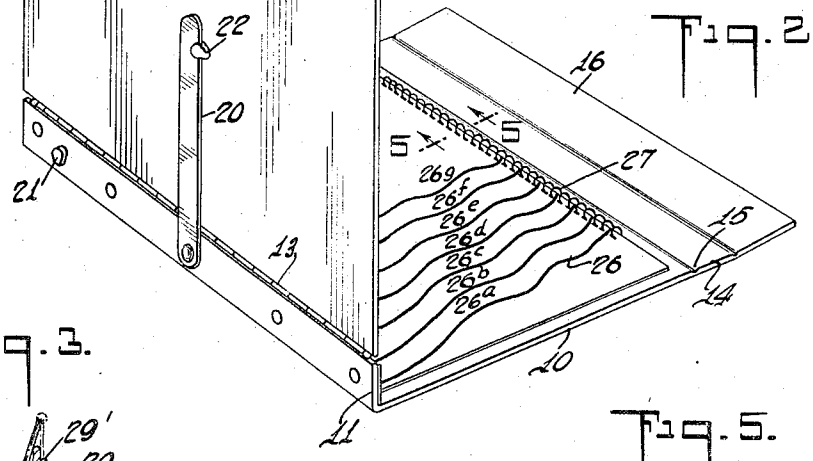


Fig. 3.

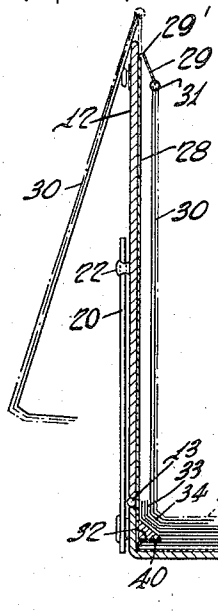


Fig. 5.

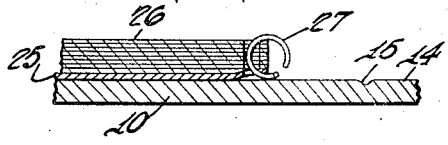
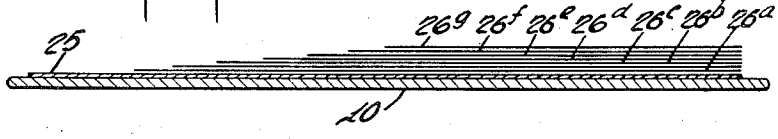
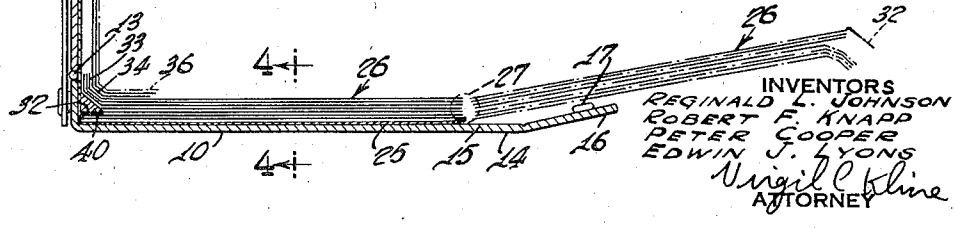


Fig. 4.





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DEMONSTRATION DEVICE

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Fig. 7.

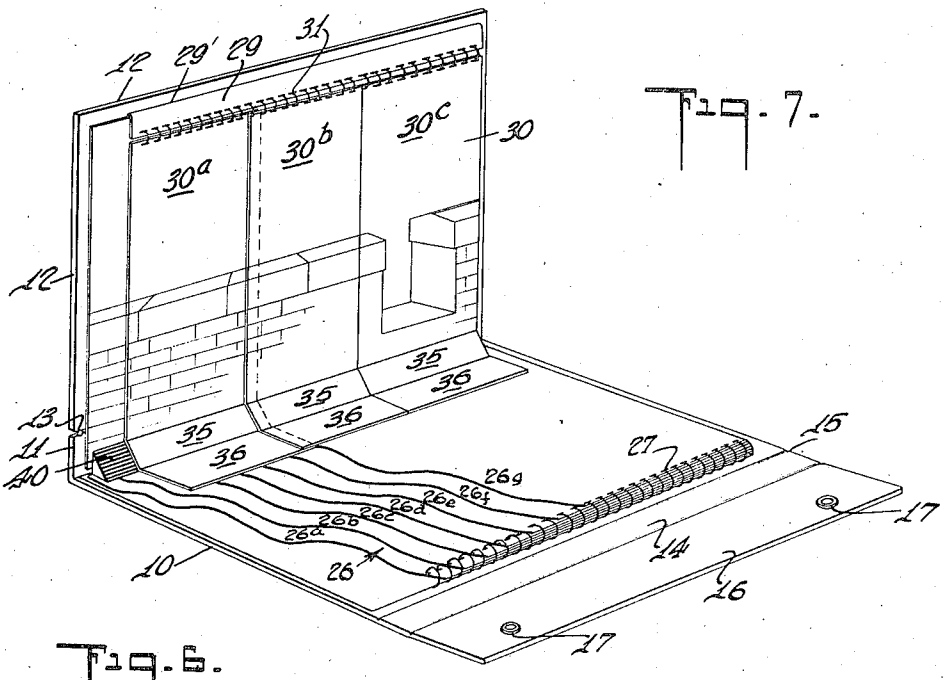


Fig. 6.

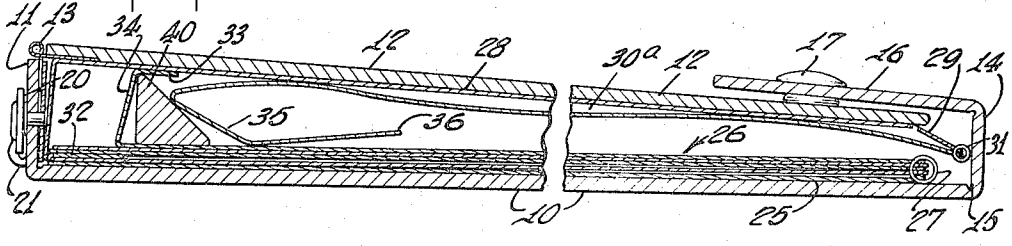
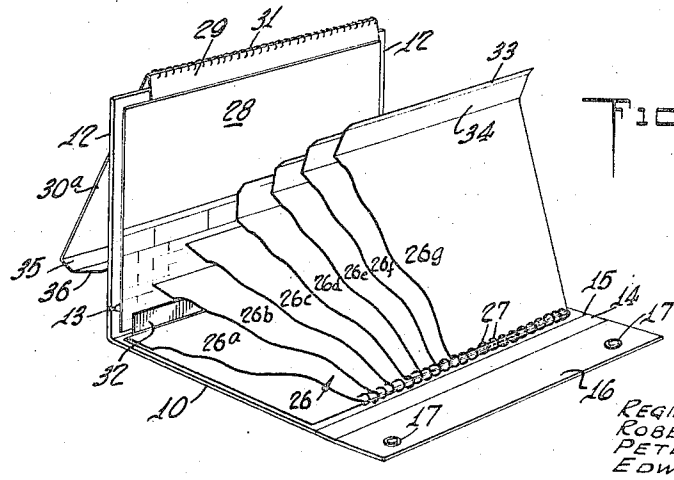


Fig. 8.



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UNITED STATES PATENT OFFICE

2,205,692

DEMONSTRATION DEVICE

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Application September 15, 1938, Serial No. 229,998

15 Claims. (Cl. 35—51)

The present invention relates to a display and demonstration device, and more particularly, to a portable device for demonstrating the construction of laminated structures and the like.

The invention is concerned with, and has as its principal object, the provision of a demonstration device, as referred to above, arranged to portray in an interestng and accurate manner the several steps employed in the construction of a laminated covering, particularly a built-up roof structure.

Another object of the invention is the provision of a device of this type arranged for ready operation to simulate the application of each of several laminations of materials employed in such structures.

A further object of the invention is the provision of a demonstration device of the type described, in which each of several laminations of the simulated structure are portrayed individually, whereby the appearance of the structure in any of several stages of its construction may be simulated.

A still further object of the invention is the provision of a unitary device of the above type constructed and arranged for collapse into compact folder form.

The above noted objects are attained by our invention, which, briefly stated, resides in a folder including a base or backing member and a cover member arranged to be supported at substantially right angles to the base member. A plurality of leaves or flaps, preferably carrying suitable building material simulations, are hinged adjacent the outer edge of one or both of the cover and backing members and are arranged to be interfolded over the backing member or cover member, respectively, to a position to represent the several laid plies and associated elements of a covering structure, particularly a built-up roof structure.

Our invention will be more fully understood and further objects and advantages thereof will become apparent when reference is made to the more detailed description thereof which is to follow and to the accompanying drawings in which

Fig. 1 is a perspective view of a preferred embodiment of the demonstration device of the present invention in closed condition;

Fig. 2 is a perspective view of the device of Fig. 1, with the cover member thereof supported in vertical position and the flaps thereof in one position of demonstration;

Fig. 3 is a sectional view taken through the device in the open position of Fig. 2;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3;

Fig. 5 is a detail sectional view taken on the line 5—5 of Fig. 2;

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 1;

Fig. 7 is a perspective view looking toward the interior of the device in one position of demonstration, and

Fig. 8 is a perspective view illustrating the operation of the device.

Referring now particularly to Fig. 1, a preferred embodiment of a device in accordance with the present invention comprises a backing member 10 including a flange 11 rigidly secured at right angles to the backing member in any suitable manner. Hingedly secured at 13 to the flange 11 is a cover member 12 arranged to be swung between the substantially horizontal position shown in Fig. 1 to the substantially vertical position shown in Figs. 2, 3, 7, and 8. A second flange 14 is secured by a hinge connection 15 to the longitudinal edge of the backing member 10 remote from the flange 11, flange 14 hingedly carrying a suitable closure flap 16 adapted to overlie a portion of the cover member 12 in the closed position of the device. As illustrated in Figs. 1, 2, and 7, the cover member 12 and flap 16 may suitably include cooperating snap members 17 for maintaining the device in its closed position.

A cover supporting member 20 has one end secured to the flange 11 by a rivet or the like in a manner to permit the member to be swung in a single plane from the substantially horizontal position of Fig. 1 to the substantially vertical position of Fig. 2. A keeper 21 is preferably provided to support member 20 in its inoperative position (see Fig. 1), and a similar keeper 22 is carried by cover member 12. Insertion of the upper end of member 20 within the keeper 22 supports the cover in its substantially vertical position to prevent movement thereof in any direction relatively to the backing member 10.

The backing member, cover member, flanges and flap 16 may be formed of any suitable or conventional material, such as heavy cardboard, or the like, preferably faced with an attractive and wear-resistant binding, such as leather, imitation leather, or the like. The corner between flange 11 and backing member 12 is preferably reenforced by any suitable means, such as a right angle metal strip (not shown). Hinge 13

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is suitably a butt hinge of any conventional type and the hinge connections between the backing member 10 and flange 14 and between the flange 14 and flap 16 may be of similar type, or preferably, may comprise scorings or the like on a continuous sheet of material comprising the backing member, flange and flap.

The inner surface of backing member 10 may be suitably covered by an adhesively secured facing liner 25 carrying suitable markings, as will be hereinafter more fully described. Adjacent the hinge connection 15 (see particularly Fig. 5) a plurality of leaves or flaps, indicated collectively by reference character 26, are swingably supported by a hinge 27 of a suitable type to permit the flaps 26 to be swung through an arc of 180° from substantially the dotted line position indicated in Fig. 3 to the full line position indicated in said figure.

The interior of cover member 12 also carries a lining member 28 demarked as will be hereinafter described, the lining member preferably extending over flange 11 to meet the lining member 25. Adjacent the upper edge of the cover member an extending flap 29 is connected by a suitable hinge, as indicated at 29'. The outer edge of extending flap 29 has hingedly secured thereto a plurality of flaps, indicated collectively by reference character 30. The hinge connections between the member 29 and cover 12, and the member 29 and flaps 30 is such that the flaps 30 may be swung between any of the positions indicated in Fig. 3.

The flaps 26 and 30 are suitably demarked to simulate the appearance of the several treatments employed in the structure to be demonstrated. As previously stated, this invention is particularly concerned with a device for demonstrating the construction of a built-up roof and a design and arrangement of the flaps will be described for this particular use. It will be understood, however, that the invention is not to be so limited and that the invention may be incorporated in demonstration devices for other purposes by suitable demarkation and arrangement of the flaps and other elements.

For the particular purpose referred to above, lining member 25 of backing 10 is suitably marked to indicate a conventional concrete or like roof deck, and liner 28 of cover member 12 is marked to indicate a conventional parapet wall. The lowest of flap members 26, when the flaps are overlying the backing member, suitably includes a hingedly connected flange 32, and the uppermost of flaps 26 similarly include preferably integral hinged flanges 33 and 34 (see Figs. 3 and 8). The several flaps 26 are of successively decreasing length, as illustrated particularly in Figs. 2, 4, and 7 and each of said flaps is marked to simulate the appearance of material employed in the built-up roof construction.

Flaps 30 include hingedly and preferably integrally connected flanges 35 and 36. The lower portion of each of the flaps is suitably demarked to simulate the appearance of a parapet wall and a treatment to be applied thereto and to the adjacent edge of the roof. Flaps 30*a* and 30*b* preferably overlap to a slight extent, as indicated in Fig. 7 and flaps 30*b* and 30*c* are arranged to lie in substantially edge abutting relationship.

Flap 26*a* may be suitably demarked to simulate the initial felt layer laid over the roof deck in a mopping of asphalt, flaps 26*b* and 26*c* layers of insulating material similarly laid in a mopping of asphalt, and flaps 26*d*, *e*, *f*, and *g*, covering felt layers laid in moppings of asphalt in overlapping relationship. Flap 30*a*, carried by the cover member, preferably is demarked to simulate a portion of the parapet wall and a flashing member covering the joint between the roof deck and parapet wall and sealing means therefor, and flap 30*b* is demarked to simulate a further sealing treatment for the flashing. The flaps 26*a*—*g* and 30*a* and *b* thus represent the several elements employed in the construction of a normal built-up roof, particularly over old roof decks. Flap 30*c* may be employed to designate a flashing construction preferably used when a roof is laid down on new construction and is adapted to be employed alternatively to flaps 30*a* and 30*b*. Each of the several flaps preferably carries suitable printed matter setting forth the purpose of the particular layer of material simulated and such additional matter as may be desired. A strip 40, of triangular cross section, (see Figs. 1, 6, and 7) and having the appearance of the usual cant strip employed in built-up roofs, is provided for use in the demonstration, as will hereinafter be described.

To prepare the device in the condition illustrated in Fig. 1 for a demonstration, it is placed on any suitable surface with the cover uppermost. The closure flap 16 is then released and the cover 12 swung into a vertical position and secured in place by interengagement of support member 20 in keeper 22. Flaps 26*a*—26*g* are swung outwardly to substantially the position indicated by the dotted lines in Fig. 3, and similarly the flaps 30 are swung outwardly and downwardly to substantially the dotted line positions indicated for these flaps. At this point the device is ready for operation, the conventional roof deck and parapet wall, simulated on the interior of the backing member 10 and cover member 12, respectively, being exposed.

In conducting a demonstration of the construction of a built-up roof, flap 26*a* is first swung inwardly to overlie the backing member to represent the application of the initial sheathing layer, the flange 32 resting against the simulated parapet wall. Flaps 26*b* and 26*c* are then successively swung into position to overlie flap 26*a* to represent the application of layers of insulating material. The member 40, representing the conventional cant strip, is then positioned in the corner between the simulated parapet and roof deck to overlie the edges of the flaps 26*a*—26*c* and flange 32 which is bent into overlapping relationship to said flaps. Flaps 26*d*—26*g* are then successively moved into place to overlie the previously positioned flaps with their flanges 33 and 34 resting, respectively, on the slanting edge of the cant strip and on the simulated parapet wall. At this point in the operation, the application of the several layers of the roof covering proper has been demonstrated.

The application of the flashing to secure a tight joint between the parapet wall and the roof is then demonstrated by swinging member 29 inwardly from the position indicated in Fig. 8 to the full line position indicated in Figs. 3 and 7, and flaps 30*a* and 30*b* are successively swung into position to overlie the inner surface of the cover member and to have their flanges 35 and 36 pressed against the flanges 33 and the adjacent portions of the flaps 26*d*—*g*, respectively. In the event that the alternative flashing construction particularly designed for a new building is to be demonstrated, flap members 30*a* and 30*b* are allowed to remain in their upper

position and flap 30*c* is swung to overlie the cover member and to have its flanges 35 and 36 overlie, respectively, the flanges 33 and the adjacent portions of flaps 26*d*—*g*.

As will be readily observed from the above description of the structure and operation of the device, the same permits a clear and accurate demonstration of the steps required in the construction of a built-up roof including the flashing of the roof. Thus, the hinging of the flaps 26 and 30 in a manner to permit the same to be swung completely away from the backing member 10 and cover 12, respectively, and to be brought into overlying position on the backing member and cover, respectively, in succession, enables the simulation of each of the several individual operations. The hinge arrangement between the cover member and member 29 and between the member 29 and flaps 30 permits the complete removal of flaps 30 from the demonstrating zone, and also enables the same to be held in operative position by a stretch fit, i. e., by pulling said flaps downwardly into position against the slight resistance of the hinging means 30, 31, whereby smoothness and accuracy of appearance is obtained in the simulated structure.

The provision of the hinge construction 30, 31 has the further advantage of preventing undue bowing or bending of flaps 30 when the demonstration device is closed in folder form, and at the same time, forces the flaps 30 against the strip 40, inserted to overlie the flanges of the flaps 26, to hold the strip in position within the folder as illustrated in Fig. 6. The device, in its folder form, is compact, lightweight, of neat appearance, and maintains all the several elements thereof in proper position for prompt and ready manipulation when a demonstration is desired.

Having thus described our invention in rather complete detail, it will be understood that these details need not be strictly adhered to, but that various changes and modifications will suggest themselves to one skilled in the art, all falling within the scope of the invention as defined by the subjoined claims.

What we claim is:

1. A demonstration device comprising a backing member including an inner face simulating a roof deck, a cover member arranged to be supported at substantially right angles to the backing member and having an inner face marked to simulate a parapet wall, and a plurality of flaps hingedly secured to said backing member adjacent the outer edge thereof and arranged to be swung successively to overlie the backing member, certain of said flaps including portions cooperating with said parapet wall simulations, each of said flaps being marked and arranged to simulate the appearance of a roof covering treatment.

2. A demonstration device comprising a backing member including an inner face simulating a roof deck, a cover member arranged to be supported at substantially right angles to the backing member, a plurality of flaps carried by said backing member and arranged to be moved successively to overlie the face of the backing member, each of said flaps being marked and arranged to simulate the appearance of a roof covering treatment, and a plurality of flaps carried by said cover member and arranged to be moved to overlie the inner face of the cover member, each of said last-named flaps being marked and arranged to simulate the appearance of a flashing treatment.

3. A demonstration device comprising a backing member including an inner face simulating a roof deck, a cover member arranged to be supported at substantially right angles to the backing member and having an inner face marked to simulate a parapet wall, a plurality of flaps hingedly secured to said backing member adjacent the outer edge thereof and arranged to be swung successively to overlie the backing member, each of said flaps being marked and arranged to simulate the appearance of a roof covering treatment, and a plurality of flaps hingedly secured to said cover member adjacent the outer edge thereof and arranged to be swung to overlie the inner face of the cover member, each of said flaps being marked and arranged to simulate a flashing treatment.

4. A demonstration device comprising a backing member including an inner face simulating a roof deck, a cover member arranged to be supported at substantially right angles to the backing member and having an inner face arranged to simulate a parapet wall, and a plurality of flaps of successively decreasing length hingedly secured to said backing member adjacent the outer edge thereof and arranged to be swung successively to overlie the inner face of the backing member with the flap of greatest length adjoining said inner face and exposing a portion thereof and with succeeding flaps each exposing a portion of the preceding flap, certain of said flaps cooperating with said parapet wall simulations, each of said flaps being marked and arranged to simulate the appearance of a roof covering treatment.

5. A demonstration device comprising a backing member including an inner face simulating a roof deck, a cover member arranged to be supported at substantially right angles to the backing member and having an inner face arranged to simulate a parapet wall, a plurality of flaps of successively decreasing length hingedly secured to said backing member adjacent an outer edge thereof and arranged to be swung successively to overlie the inner face of the backing member with the flap of greatest length adjoining said inner face and exposing a portion thereof and with succeeding flaps each exposing a portion of the preceding flap, each of said flaps being marked and arranged to simulate the appearance of a roof covering treatment, and a plurality of flaps hingedly secured to said cover member and arranged to be swung to overlie the face of the cover member, each of said last-named flaps being marked and arranged to simulate a flashing treatment.

6. A demonstration device comprising a backing member including an inner face simulating a roof deck, a cover member arranged to be supported at substantially right angles to the backing member, a plurality of flaps simulating roof coverings carried by said backing member and arranged to be moved successively to overlie the face of the backing member, a cant strip simulating element arranged for placement adjacent the intersection of said backing and cover members to overlie the edges of certain of said flaps, and a flap simulating a flashing treatment carried by the cover member and arranged to be moved to overlie the inner face of the cover member and said cant strip simulating element.

7. A demonstration device comprising a backing member including an inner face simulating a

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roof deck, a cover member arranged to be supported at substantially right angles to the backing member and having an inner face marked to simulate a parapet wall, a plurality of flaps simulating roof coverings hingedly secured to said backing member adjacent an outer edge thereof and arranged to be swung successively to overlie the inner face of the backing member, a cant strip simulating element arranged for placement adjacent the intersection of said backing and cover members to overlie the edges of certain of said flaps, and a flap simulating a flashing treatment hingedly secured to said cover member and arranged to be swung to overlie the inner face of the cover member and said cant strip simulating element.

8. A demonstration device comprising a backing member including an inner face simulating a roof deck, a cover member arranged to be supported at substantially right angles to the backing member, a plurality of flaps carried by said backing member and arranged to be moved successively to overlie the face of the backing member, each of said flaps being marked to simulate the appearance of a roof covering treatment and certain of said flaps including flanges designed to rest against said cover member when the latter is supported at right angles to the backing member, said flanges simulating extensions of the covering treatments, and a plurality of flaps carried by said cover member and arranged to be moved to overlie the inner face of the cover member, said last-named flaps being marked to simulate the appearance of a flashing treatment and including flanges designed to overlap said first-mentioned flaps.

9. A demonstration device comprising a backing member including an inner face simulating a roof deck, a cover member arranged to be supported at substantially right angles to the backing member, a plurality of flaps carried by said backing member and arranged to be moved successively to overlie the face of the backing member, each of said flaps being marked to simulate the appearance of a roof covering treatment, a cant strip simulating element for placement adjacent the intersection of said backing and cover members to overlie the edges of certain of said flaps, certain others of said flaps including flanges to rest against said element and said cover member, and a plurality of flaps carried by said cover member and arranged to be moved to overlie the cover member, said last-named flaps being marked to simulate the appearance of a flashing treatment, and each including flanges constructed to overlap said flanges of the first-mentioned flaps.

10. A demonstration folder comprising hingedly connected backing and cover members adapted to be opened to a position to simulate cooperating portions of a building structure which stand at an angle to each other and to be closed when the folder is not in use, means for securing the backing and cover members in closed condition, flaps carried by said backing and cover members and arranged when the folder in open to simulate treatments applied to the building structure and when the folder is closed to nest within said folder, with free edges of the flaps adjacent the intersection of the backing and cover members, a free elongated member simulating a building element for coaction with the treatments simulated by the flaps carried within the folder adjacent the free edges of said flaps, said flaps being constructed and arranged to maintain said free member within the folder when the latter is closed.

11. A demonstration device comprising a backing member, a cover member hinged to the backing member and arranged to be supported at substantially right angles thereto, said backing and cover members, when said cover member is so supported, simulating cooperating portions of a building structure which stand at an angle to each other, a plurality of flaps carried by and hingedly secured to said backing member and cover member, respectively, adjacent the edges of said members remote from the hinge therebetween, said flaps simulating treatments applied to said cooperating portions.

12. A demonstration device comprising a backing member having a substantially right angle flange adjacent one edge thereof, a cover hingedly secured to said flange and arranged for movement between a position overlying the backing member and a position in alignment with said flange, means for securing the cover in said last-named position, said backing and cover members, when said cover member is secured in said last-named position, simulating cooperating portions of a building structure which stand at an angle to each other, a plurality of flaps carried by and hingedly secured to said cover member and backing member, respectively, adjacent the edges of said members remote from the hinge therebetween, said flaps simulating treatments applied to said cooperating portions.

13. A demonstration device comprising a backing member including an inner face simulating a roof deck, a cover member arranged to be supported at substantially right angles to the backing member and including an inner face simulating a portion of a building structure standing at an angle to said roof deck, and a plurality of flaps carried by said backing member and arranged to be moved successively to overlie the inner face of the backing member, certain of said flaps including portions arranged to overlie said inner face of the cover member, each of said flaps being marked and arranged to simulate the appearance of a roof covering treatment.

14. A demonstration device comprising a backing member, a cover member arranged to be supported at substantially right angles to the backing member, said backing and cover members, when said cover member is so supported, simulating cooperating portions of a building structure which stand at an angle to each other, a plurality of flaps carried by said backing member and arranged to be moved successively to overlie the backing member, certain of said flaps including flanges to rest against said cover member when the latter is supported at right angles to the backing member, and a plurality of flaps carried by said cover member and arranged to be positioned to overlie the cover member, said last-named flaps including flanges to overlap said first-mentioned flaps, said flaps simulating treatments applied to said cooperating portions.

15. A demonstration device comprising a backing member, a cover member arranged to be supported at substantially right angles to the backing member, said backing and cover members, when said cover member is so supported, simulating cooperating portions of a building structure which stand at an angle to each other, a plurality of flaps carried by said backing member and arranged to be moved successively from a position remote therefrom to overlie said backing member,

and a plurality of flaps arranged to overlie said cover member, means securing said last-named flaps to said cover member, said means comprising an element hingedly secured adjacent a free edge of said cover member and a hinge connection between said element and said last-named flaps, said flaps simulating treatments applied to said cooperating portions.

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