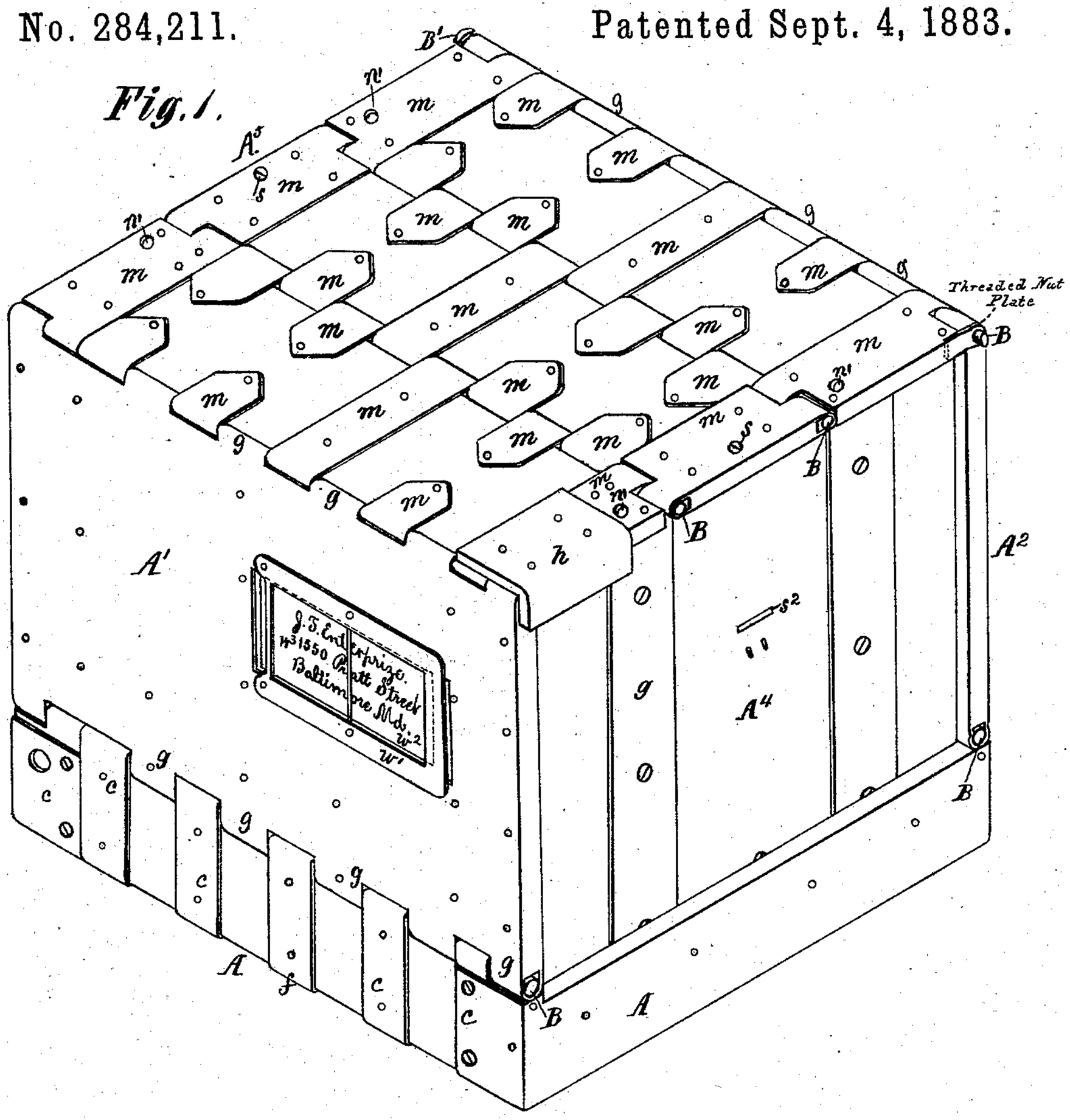
(Model.) 3 Sheets—Sheet 1.

H. JOHNSON.

FOLDING COMMERCIAL PACKING BOX.

No. 284,211. Patented Sept. 4, 1883.

Fig. 1.



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(Model.) 3 Sheets—Sheet 2.

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Fig. 2.

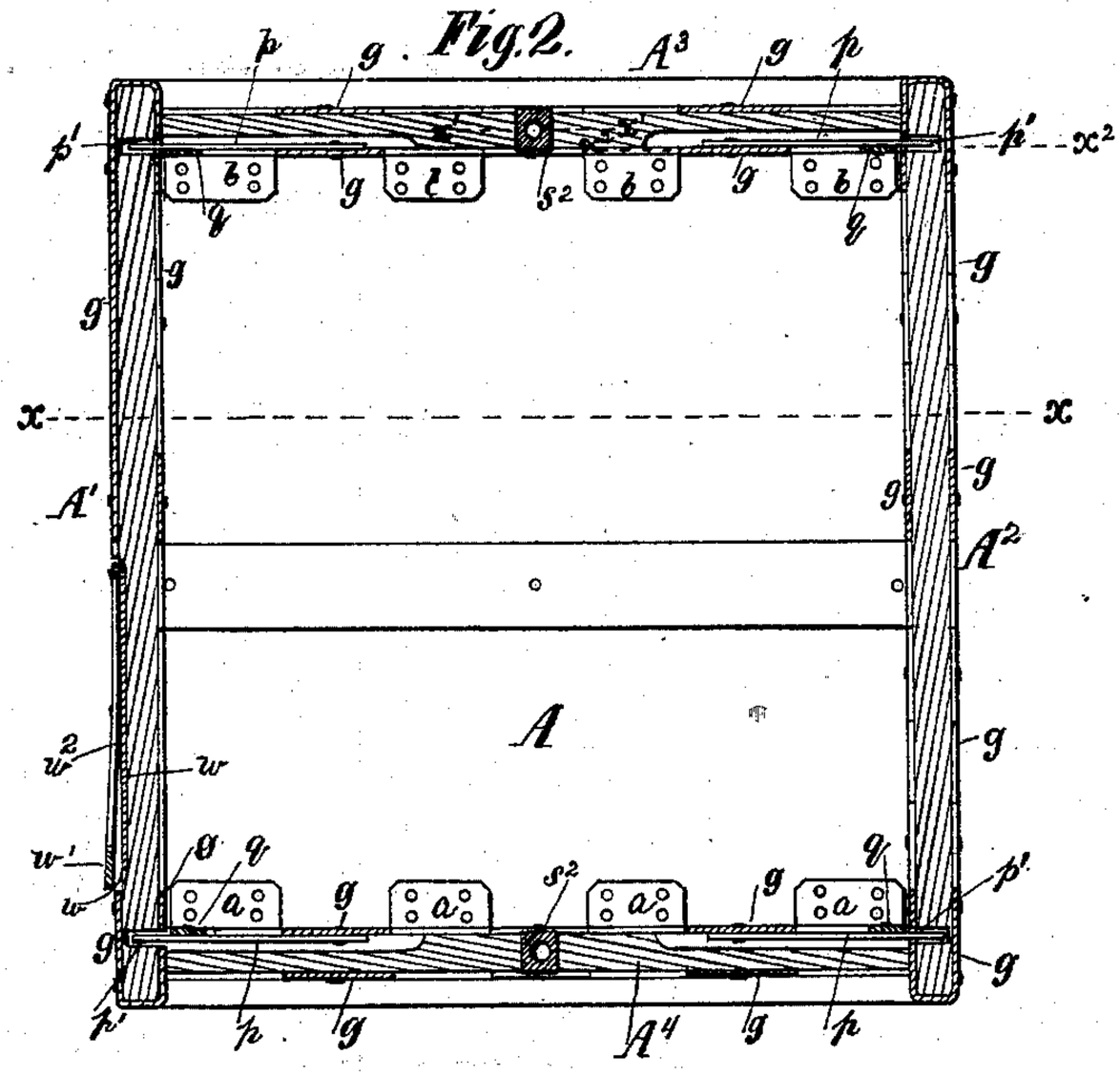


Fig. 3.

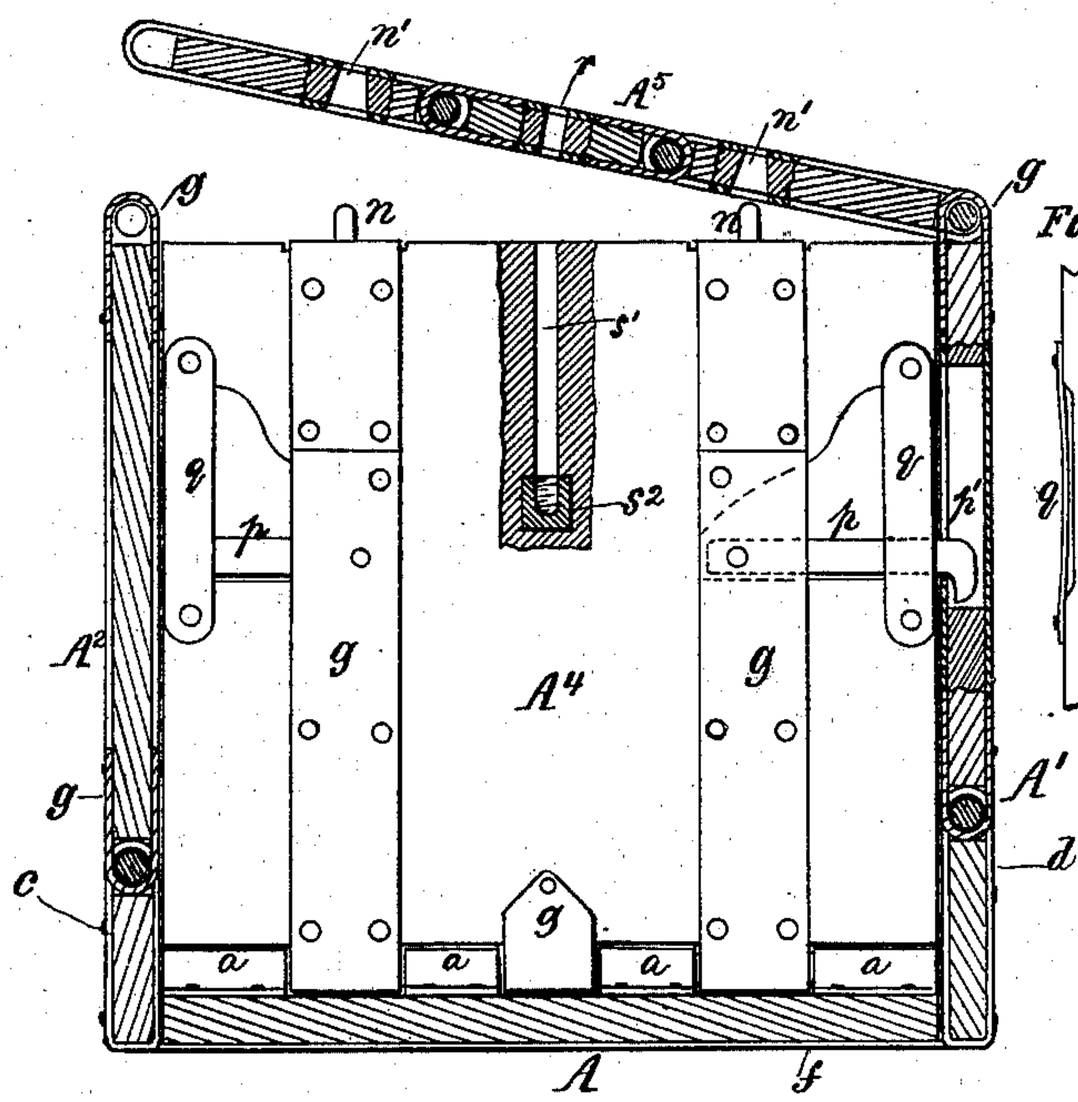


Fig. 4.

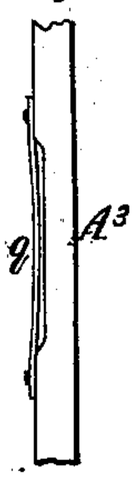
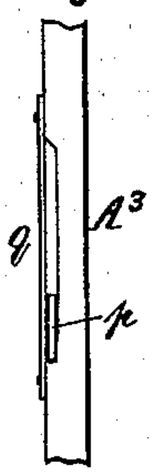


Fig. 5.



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(Model.) 3 Sheets—Sheet 3.

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Fig. 6.

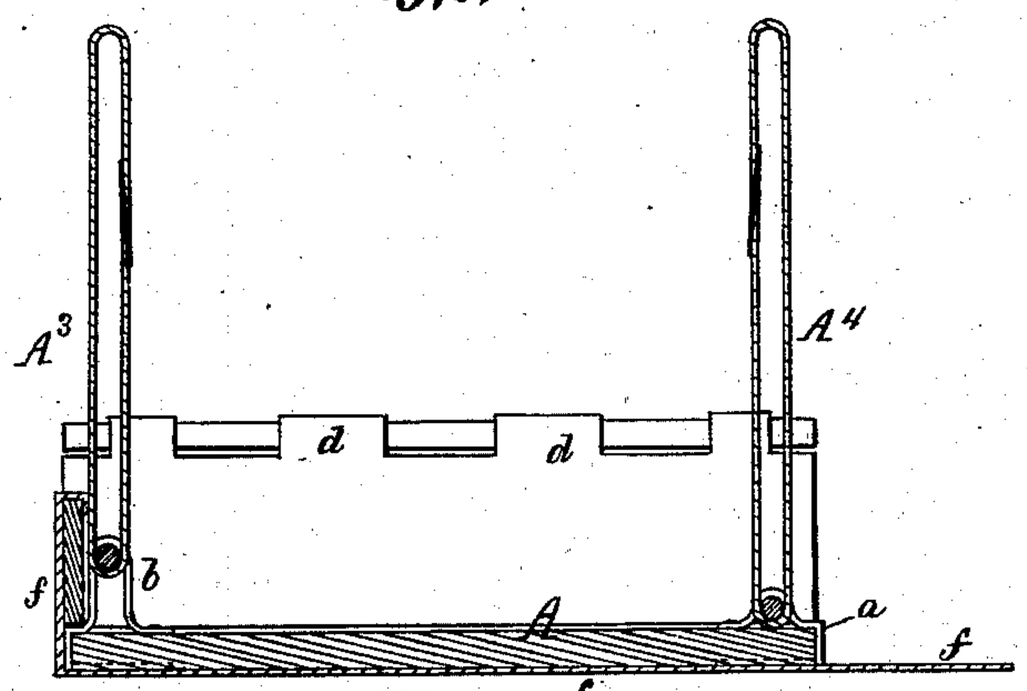


Fig. 7.

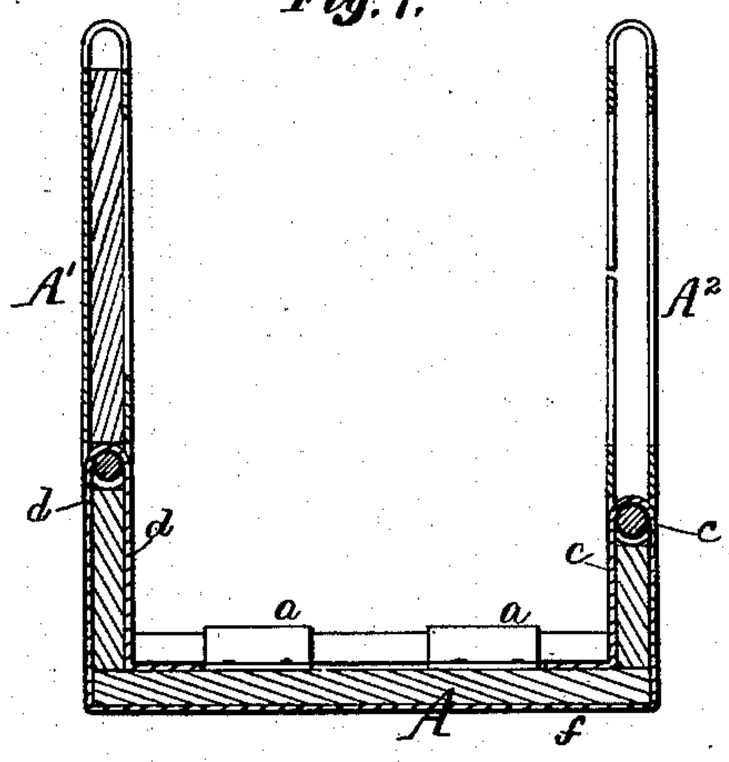


Fig. 8.

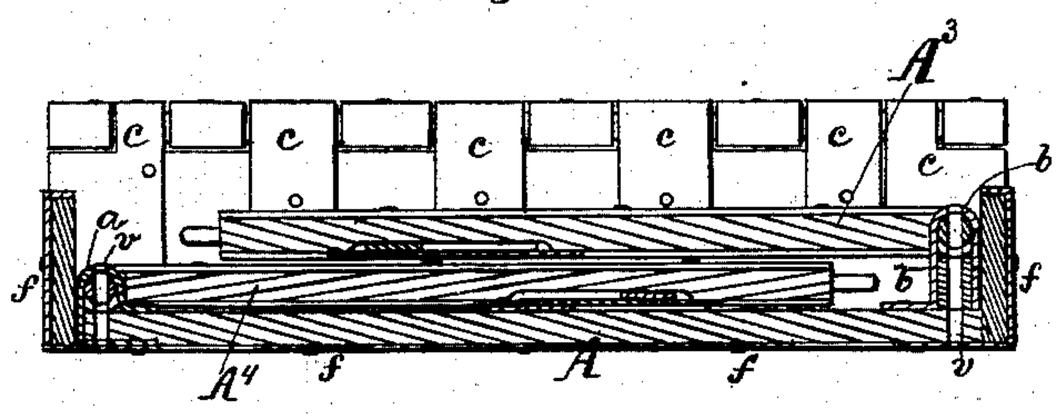
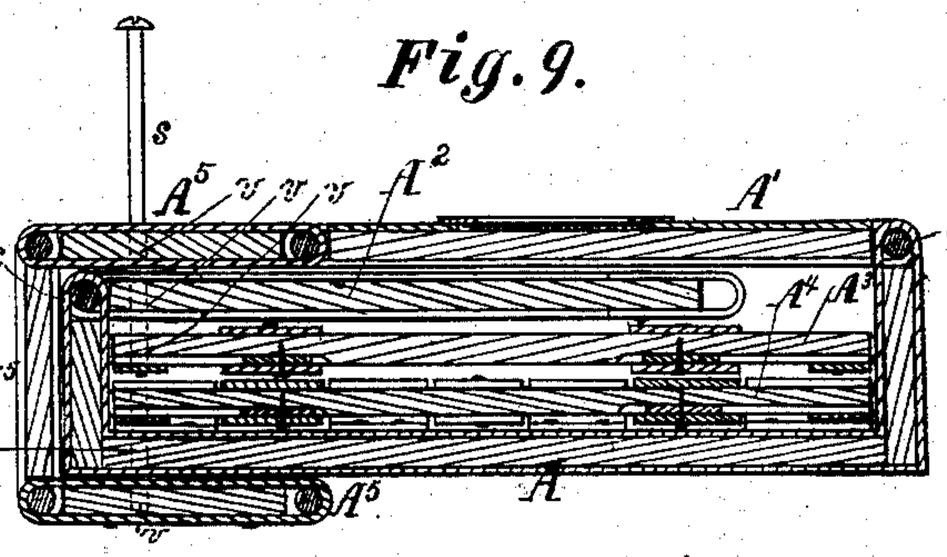


Fig. 9.



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UNITED STATES PATENT OFFICE.

HENRY JOHNSON, OF WASHINGTON, DISTRICT OF COLUMBIA.

FOLDING COMMERCIAL PACKING-BOX.

SPECIFICATION forming part of Letters Patent No. 284,211, dated September 4, 1883.

Application filed April 11, 1883. (Model.)

To all whom it may concern:

Be it known that I, HENRY JOHNSON, a citizen of the United States, residing in the city of Washington, District of Columbia, have invented a new and Improved Folding Commercial or Packing Box, of which the following is a specification.

My invention relates to a folding commercial or packing box which is formed of boards bound, stayed, and strengthened by metal strips, sheets, angle-irons, or analogous forms, such strips, sheets, or angle-irons being applied on both surfaces of the boards, and shaped and applied so as to serve as interlocking jointing devices, whose loop-form eyes are adapted to stay one another laterally, and through which joint-rods are passed, all as will be hereinafter described.

It also relates to certain combinations and constructions hereinafter described and specifically claimed.

My invention may be adopted in the construction of either commercial or packing boxes, packing-trunks, packing-chests, miniature and ornamental packing-boxes, or postal-route boxes, and the same may be transported under a lock and key or be secured simply by screw rods and nuts. Boxes made in accordance with my invention will prove in the long run to be more economical, safe, and desirable than ordinary packing-boxes, and in case of fire, train-robbing, accidents, and the like, they will prove very enduring.

In the accompanying drawings, Figure 1 represents a perspective view of my improved commercial or packing box packed and as ready for shipment. This view illustrates different forms of jointing eye straps or plates. Fig. 2 is a horizontal section of the same. Fig. 3 is a vertical section of the same, showing portions beyond the main section-line *x x* broken away and section-lined in a reverse manner, in order to show parts which are in the lines *x' x'* and x^2 x^2 of Fig. 2. Figs. 4 and 5 are detail views, showing the friction-spring and corner-hooks applied to a portion of a box. Fig. 6 is a vertical longitudinal section of portions of my improved box, showing one form of the jointing eye-straps; and Fig. 7 is a vertical cross-section of portions of the box, showing another form of jointing eye straps or plates. Fig. 8 is a vertical section of the foundation of the box with two sides folded upon it, the other portions being turned down to a horizontal position; and Fig. 9 is a vertical section of the complete box shown in Fig. 1 as folded and its parts about being clamped with the screw-bolts, ready for reshipment in a compact condition to the merchant who sent it filled with goods.

In the views of the drawings, A A' A^2 A^3 A^4 A^5 designate the bottom or foundation, sides, ends, and top of the box. The foundation A has jointing-straps *a b c d*, with eyes applied to it. These straps or plates may be of any of the forms represented in the views of the drawings, and they are fastened to the horizontal and vertical wood portions of the foundation by nails, screws, or in any other substantial manner. It will be seen that the jointing-eyes of the straps *a b c d* successively stand on higher planes relatively, they being thus elevated to different planes by the vertical wood portions formed on three sides of the foundation, and by the jointing-straps themselves on the other side of the foundation, as shown. At those sides where the jointing-eyes of the straps *a* and *b* are formed, the vertical wood portions of the foundation A extend up above the joints and serve as stays to the joints when the box is set up, as in Fig. 1. The under surface of the foundation is strengthened by metal straps or plates *f*, which extend up and upon the vertical wood portions and form eyes, as shown in the drawings, said straps or plates being fastened by nails or other suitable means. On the surfaces and upper and lower edges of the sides A' A^2 and on the surfaces and lower edges of the ends A^3 A^4 of the box jointing eye straps or plates *g* are applied, and these straps are fastened upon the wood of the box by nails or suitable means. The straps on the lower edges of the sides of the box are shaped to form eyes which will enter between the eyes of the straps or plates of the foundation A, while those at the upper edges thereof are shaped to enter between the eyes formed by similar straps or plates, *h*, which are fastened to the top A^5 of the box, as shown. The eyes on the lower edges of the straps on the ends of the box fit between the eyes of the straps of the foundation. When the eyes of the jointing straps or plates are interlocked, they practically touch each other, and thereby can sustain one an-

other laterally under strain. Round pivot-rods B, extending from end to end and from side to side of the box, are passed through the two sets of eyes, and the several parts of the box thereby jointed loosely but strongly together. The rods B may have a screw-thread on one end and a head on the other, and fixed nuts may be provided on the parts of the box in any suitable manner to receive and hold the screw-threaded ends of the rods. I prefer usually to depend upon the frictional bind of the rods, as corner protection-irons *h* are generally to be placed on the box, and when these irons are applied they will cover and confine the ends of the rods, as illustrated in Fig. 1 of the drawings.

By referring to Figs. 1, 3, and 9 of the drawings, it will be seen that the top A^5 of the box is formed of several pieces united together by jointing eye straps or plates *m* and rods B. This construction enables the top of the box to fold upon the other parts, as shown in Fig. 9, when the box is put into its most compact condition for being reshipped to its owner. The rod B′, which finishes the closing of the box after being packed, may have a screw-thread on one of its ends and a head on the other, and the screw-threaded end may enter a fixed nut provided on the box; or this rod may have a lock applied to it in any suitable manner.

In order to hold the sides and ends of the box in the condition shown in Figs. 1, 2, and 3, dowel-pins *n* are provided on the upper edges of the ends A^3 and A^4 of the box, and apertures *n′* for these dowel-pins to enter are made in the metal straps and wood of the top A^5 of the box, and in connection with these dowel-pins or screws pivoted angular hooks *p* are provided upon the said ends of the box, and apertures *p′* are cut into the metal and wood of the sides A′ A^2 of the box in a manner to form retaining shoulders or keepers for the hooks, as shown in Fig. 3 of the drawings.

In forming the apertures *n′* and recesses *p′* it is important to cut away the wood sufficiently, as shown, to prevent the same by change of position, caused by warping, shrinkage, or expansion, to close or partly close the recesses formed in the metal, and by thus operating prevent a perfect entrance of the dowel-pins and hooks into the places prepared for them. The hooks *p* are placed between the wood of the ends and flat spring-plates *q*, as shown in Figs. 3, 4, and 5, which plates are confined at their ends by fastening-screws in such a manner that they tend to bow or press toward the hooks, as illustrated in Fig. 4, and owing to this the hooks, when in place, as in Figs. 3 and 5, will be held by spring frictional pressure and kept from casually getting out of the recesses *p′* or from behind their keepers. The dowel-pins serve for holding the ends of the box, while the hooks keep the sides thereof against said ends. At the points *r* holes are made through the top of the box, and through these holes strong screw-bolts *s* (see Fig. 1) are inserted and passed down into passages *s′* in the ends of the box and made to enter nuts s^2, embedded into the wood, as illustrated in Fig. 3 of the drawings. These screws *s* serve to prevent the top from springing up when tightly packed. On one side of the box a recess, *w*, is formed, and over this recess a spring clasping-frame, *w′*, provided with mica w^2, is applied. One end of this frame is left to be sprung up by pressure applied against its back surface, while the other portion is securely fastened to the box. By means of this device a direction-card, w^3, with address of person to whom sent on one side and instructions for its return on the other, can be confined securely upon the box before it is shipped, and by having each box and card numbered, the cards being filed away, the merchant is enabled to keep a correct account of the work performed by the box.

By referring to Fig. 3 it will be seen that the top of the box can be lifted on its joint for purpose of packing or unpacking the box, and by referring to Figs. 8 and 9 it will be seen that the box can be folded so that one part touches close upon another. To fold the box, take out rod B′, turn up top, raise hooks out of recesses *p′*, turn outward and down sides A′ A^2, turn inward and down end A^4, then turn inward and down side A^3, now turn upward, inward, and downward side A^2, and then turn upward, inward, and downward side A′, carrying with it the jointed top A^5, and next bend said top A^5 upon, around, and under the foundation portion A, as shown. The screw-bolts *s*, which were removed in order to fold the box, are now passed through coinciding holes *v*, formed in the different parts of the box, as illustrated in Figs. 1, 8, and 9. The folded box is now ready for reshipment or transportation to its owner.

One great advantage of my folding commercial or packing box over other folding boxes results from the employment of metallic jointing eye bands or plates in the manner shown, which, while they are not weak like ordinary hinges, give great binding strength, with lightness, to the box; and these bands, by enabling the manufacturer to use light, cheap lumber, lessen the cost in the long run for packing-boxes; and by rendering the box less cumbersome and heavy for transportation, expense for freight is saved. I contemplate providing packing-boxes which are formed with the herein-described jointing eye-straps with battens such as are shown in a former patent for commercial or packing boxes granted to me.

In manufacturing the boxes sheet or strap metal can be used for all parts except the rods, screws, and hooks. The rods may be made solid, or of pipe metal or strong hard wood. The corner irons or bumpers may be of malleable iron, while the hooks, springs, and keepers and the "direction" receptacle will preferably be made of steel; and so far as lumber is concerned, the boards will not require to be more than one-quarter or one-half

inch thick for all ordinary boxes, inasmuch as the metal portions applied as herein described and shown will give all the additional strength required.

I have represented in Fig. 1 and other figures a box with portions of its boarding covered on the outside entirely with fire-proof sheet-metal jointing eye-plates, and on its inside partly covered and strengthened by jointing eye-straps, while other portions are shown strengthened on outside and inside by jointing eye-straps formed with one or two joint-eyes on each; but it should be understood that each box will have its metal portions throughout either in form of straps, angle-plates, or continuous covering-plates with jointing-eyes. The different forms are merely shown to illustrate various modes of applying my invention.

The top of the box may be made without joints between its edges; but in such case it will be disjointed from the other parts by withdrawing rod B′ when the box is to be folded. All of the parts A A′ A^2 A^3 A^4 may be disjointed and then folded.

In place of the dowel-pins, I may use screws as an equivalent.

In the drawings I have represented a depression below the surface of the banding of box for the reception of a double direction-card, and over this depression a transparent clasping direction-holder is applied. This direction-holder being regarded by the Patent Office as a separate invention is therefore not claimed under this patent, but will be secured by another application.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a commercial packing-box formed of boards stayed and strengthened by iron bands, and which has its folding joints placed at different heights, the clasping jointing-straps *a b c d*, forming loop-like eyes for the reception of joint-rods B, and fastened to the horizontal and vertical wood portions of the foundation A of the box, substantially as and for the purpose described.

2. The combination, with the boarding of the foundation of the box, of the metal clasping and jointing straps *a b c d*, which form loop-like eyes for the reception of joint-rods B, and are fastened to the horizontal and vertical wood portions, and the clasping strengthening-straps *f*, which form interlocking loop-like eyes for the reception of the joint-rods, and are fastened to inner and outer surfaces of the wood portions of the foundation of the box, substantially as and for the purpose described.

3. The combination, with the boarding of the sides A′ A^2 of the box, of the clasping devices *g*, which form loop-like eyes, and interlocking clasping metal devices *m*, also forming eyes, applied to the boarding of the top A^5 of the box, and the joint-rods removably inserted in said eyes, substantially as and for the purpose described.

4. The commercial packing-box having the ends and parts of the bottom and the corners of the wood foundation portion A bound by metal jointing devices, as *f*, which form loop-like eyes for the reception of joint-rods B, substantially as and for the purpose described.

5. The combination, in a folding commercial or packing box, of pivoted fastening-hooks *p*, fitting in recesses behind keepers, dowel-pins or screws *n*, fitting in holes *n′*, screw-bolts *s*, nuts s^2, and final fastening screw-rod B′, substantially as and for the purpose described.

6. The pivoted hooks *p*, for holding the sides of the box to the ends thereof, applied between the boarding of the box and spring-straps *q*, substantially as and for the purpose described.

7. A folding commercial packing-box having its joints flush with its inner and outer surfaces, and formed by interlocked loop-like eyes on metal devices which clasp upon the boarding of the box, and are fastened to both surfaces of the boarding, and rods B, which pass through all the interlocked eyes, and can be inserted and removed from the outside of the box, substantially as and for the purpose described.

8. The combination of angular corner bumper-plates *h* with the jointed parts of the box and the joint-rods, substantially as and for the purpose described.

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