

Sept. 24, 1935.

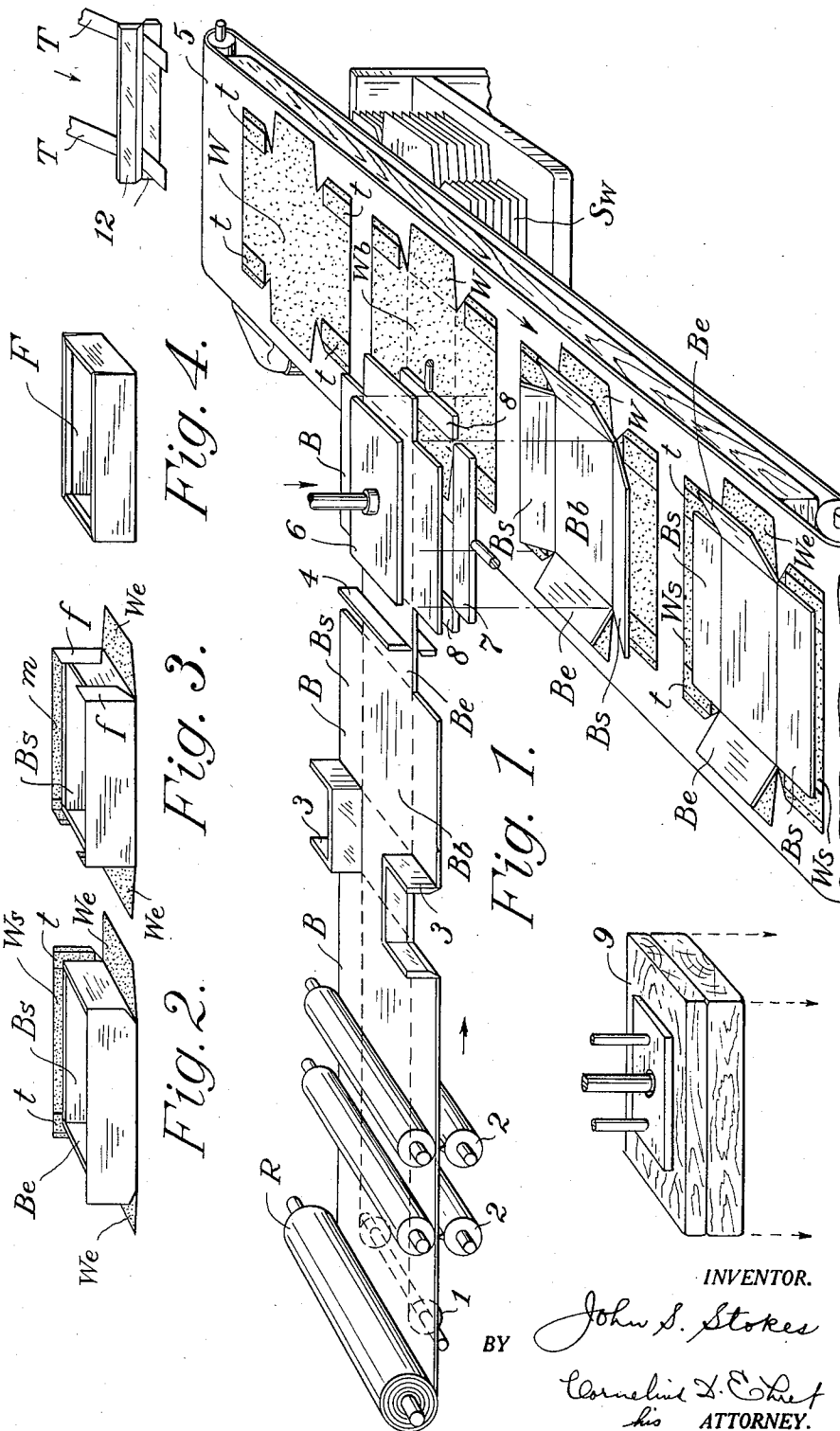
J. S. STOKES

2,015,202

METHOD OF FORMING BOXES

Filed Jan. 14, 1932

8 Sheets-Sheet 1



INVENTOR.

BY John S. Stokes

Cornelius L. Chert  
his ATTORNEY.

Sept. 24, 1935.

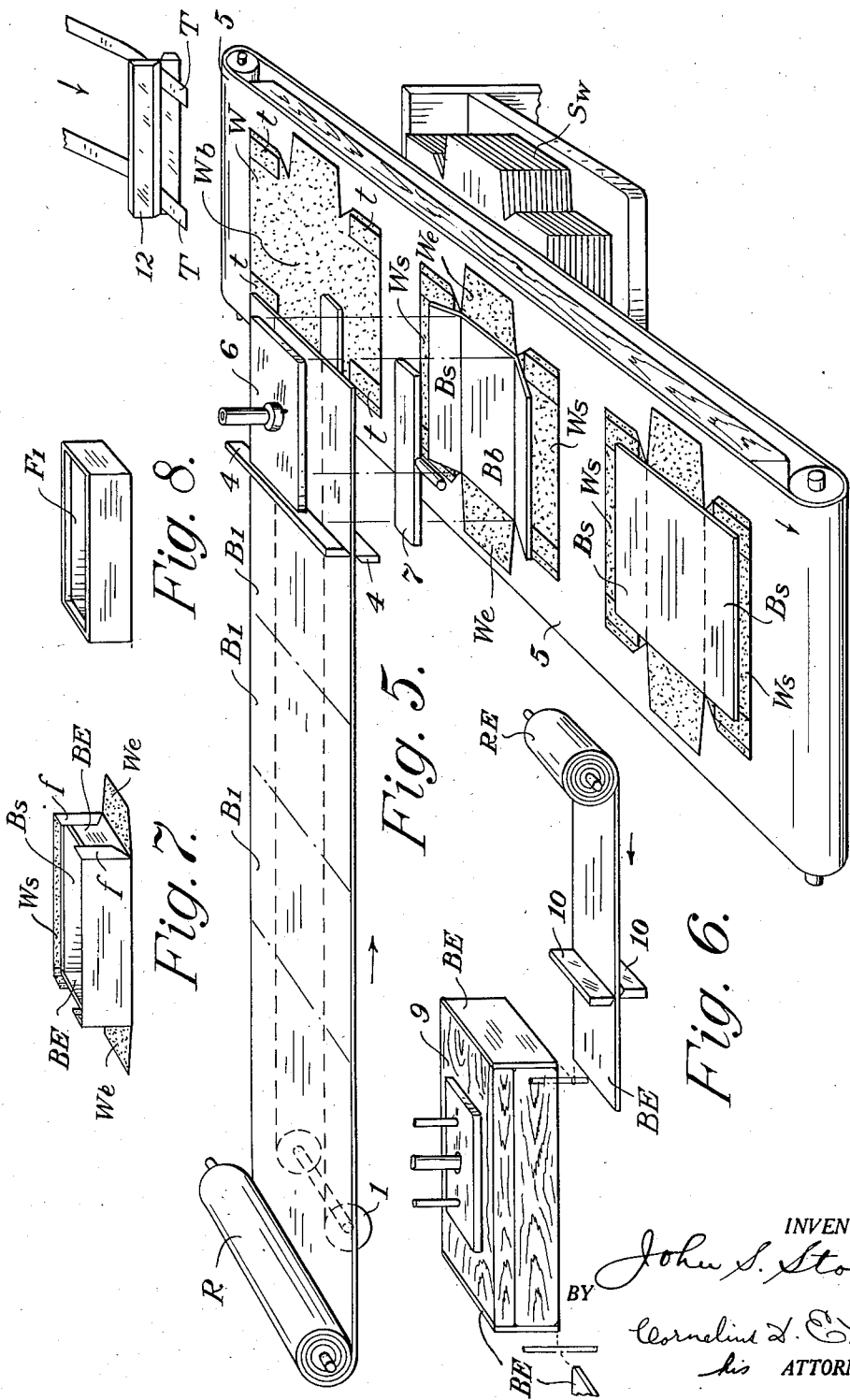
J. S. STOKES

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METHOD OF FORMING BOXES

Filed Jan. 14, 1932

8 Sheets-Sheet 2



INVENTOR.

John S. Stokes

BY

Cornelius L. Chet  
his ATTORNEY.

Sept. 24, 1935.

J. S. STOKES

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METHOD OF FORMING BOXES

Filed Jan. 14, 1932

8 Sheets-Sheet 3

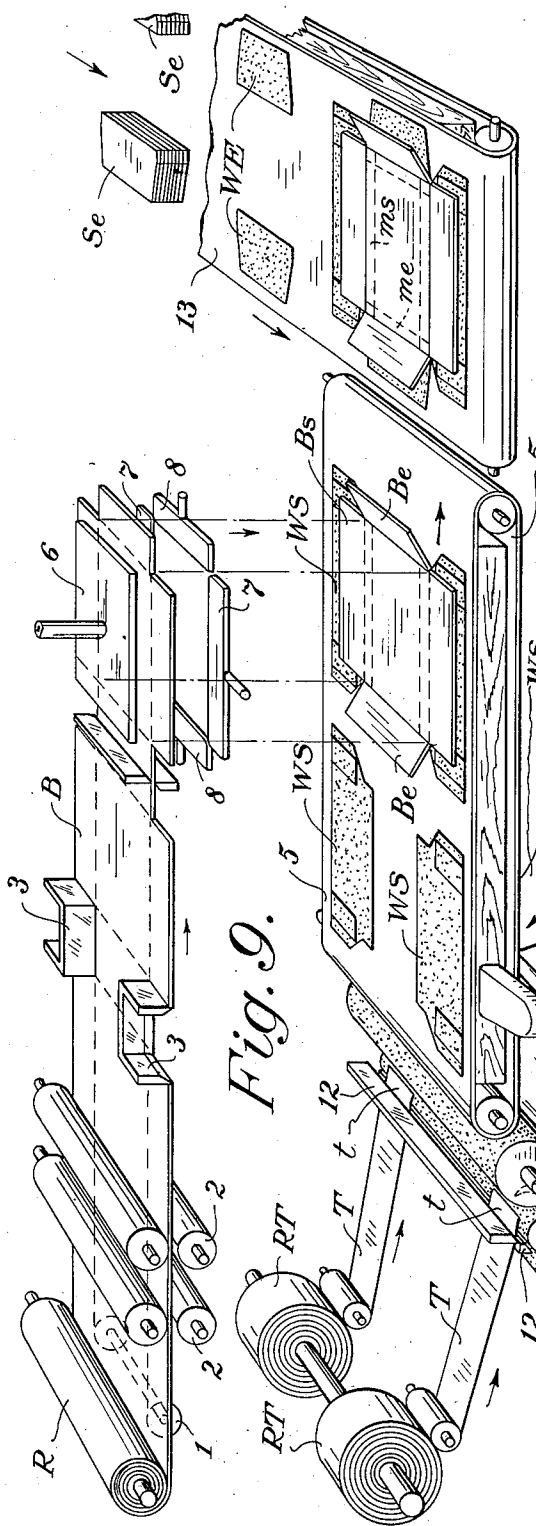


Fig. 9.

Fig. 10.

Fig. 11.

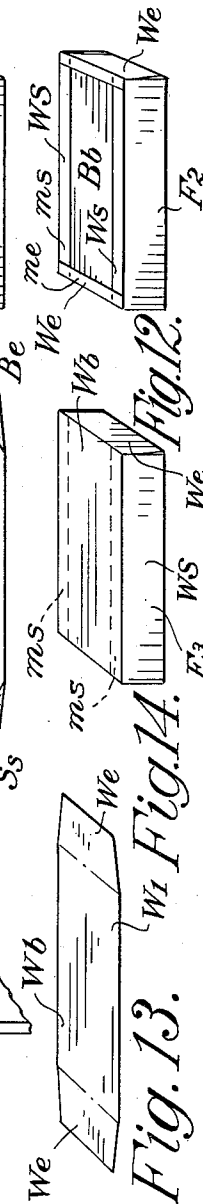
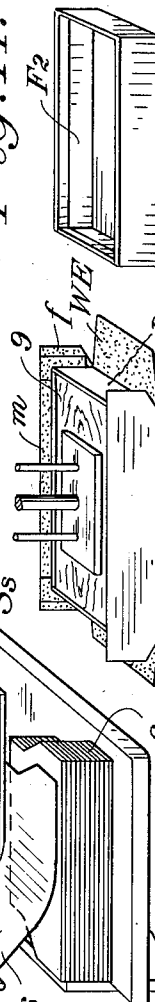


Fig. 12.

Fig. 13.

Fig. 14.

INVENTOR.  
 BY *John S. Stokes*  
*Cornelius D. Ebert*  
 his ATTORNEY.

**Sept. 24, 1935.**

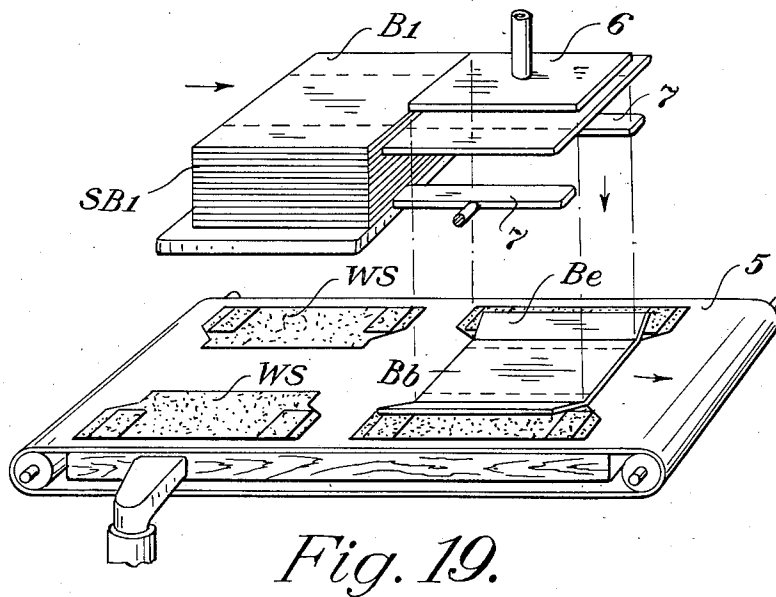
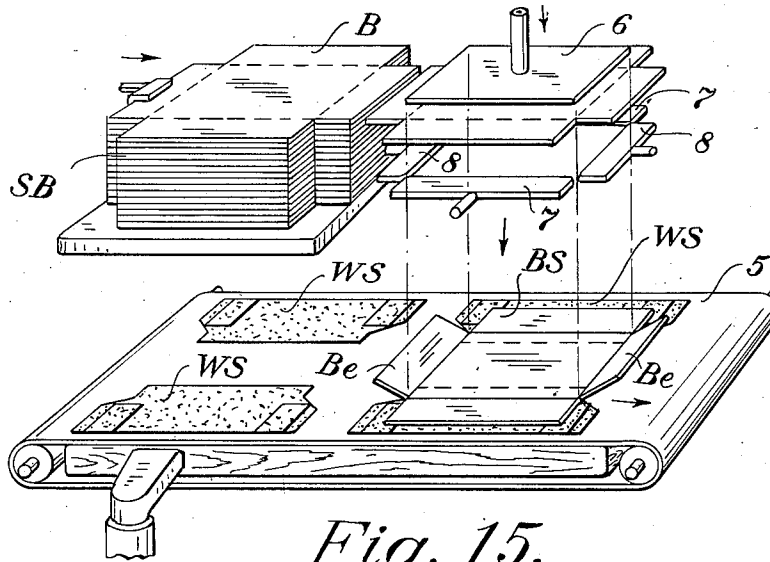
**J. S. STOKES**

**2,015,202**

## METHOD OF FORMING BOXES

Filed Jan. 14, 1932

8 Sheets-Sheet 4



**INVENTOR.**

BY *John S. Stokes*

Cornelius D. E. Pref  
his ATTORNEY.

**Sept. 24, 1935.**

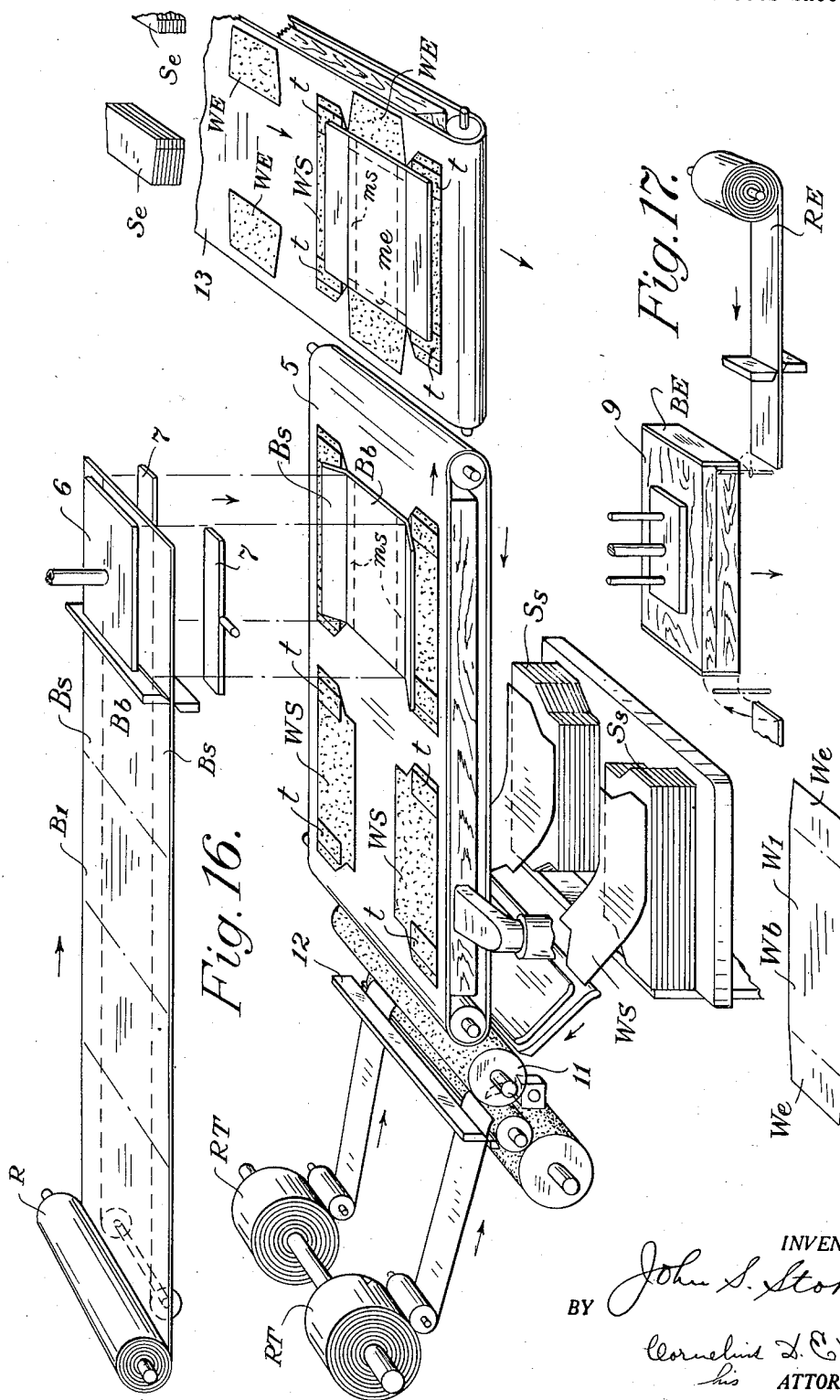
J. S. STOKES

**2,015,202**

## METHOD OF FORMING BOXES

Filed Jan. 14, 1932

8 Sheets-Sheet 5



Sept. 24, 1935.

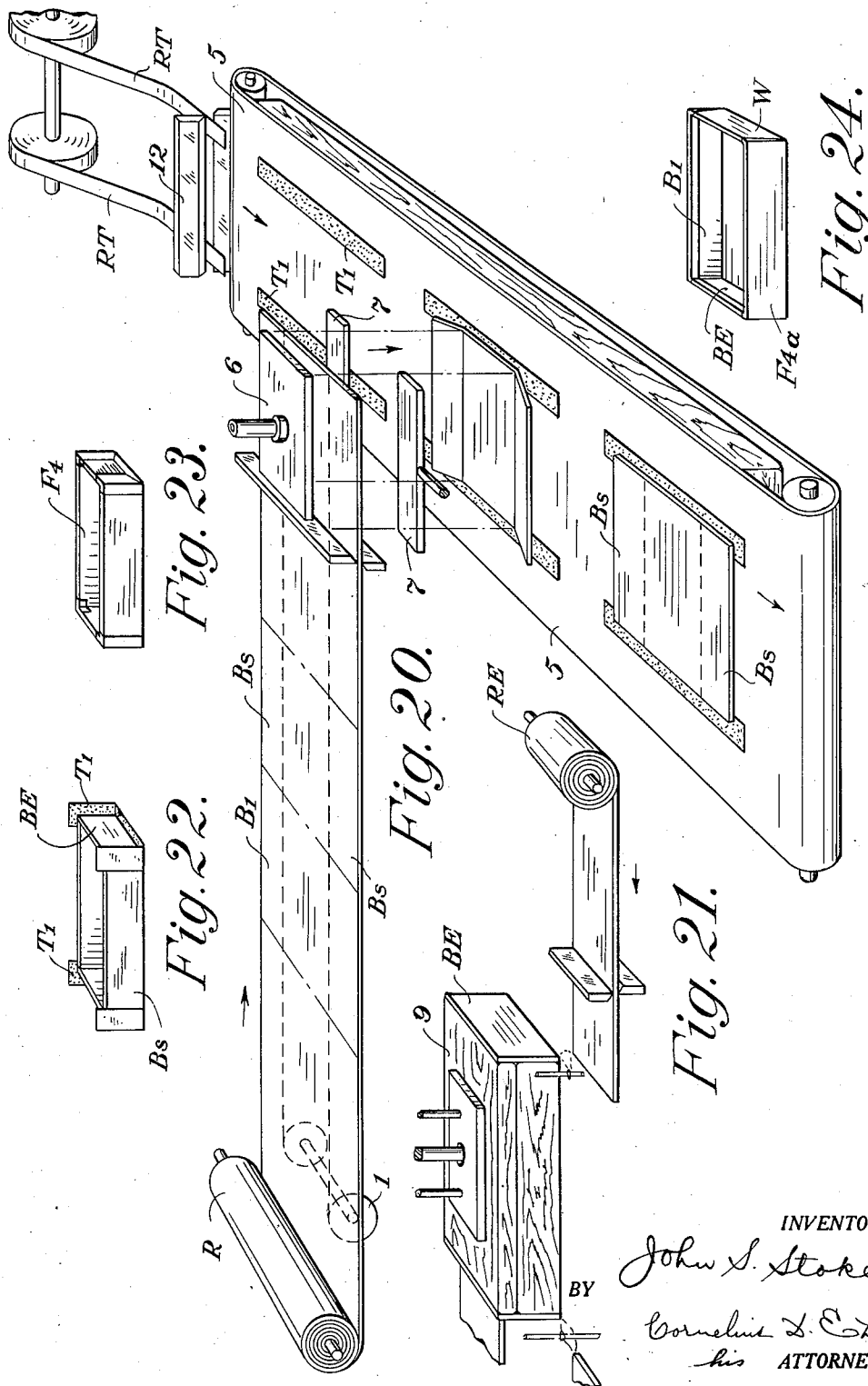
J. S. STOKES

2,015,202

METHOD OF FORMING BOXES

Filed Jan. 14, 1932

8 Sheets-Sheet 6



INVENTOR.

John S. Stokes

Cornelius L. E. Luet  
his ATTORNEY.

**Sept. 24, 1935.**

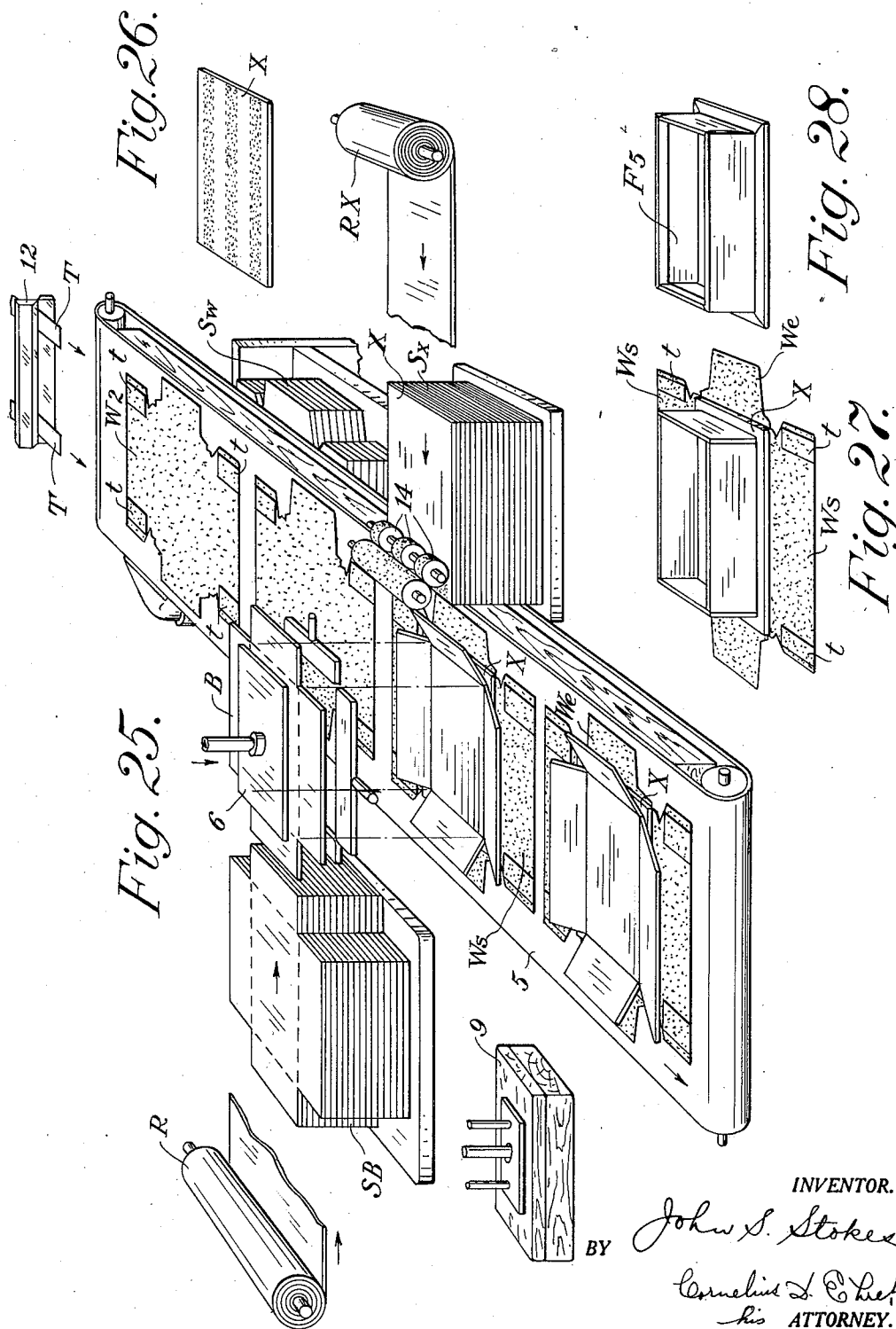
**J. S. STOKES**

**2,015,202**

## METHOD OF FORMING BOXES

Filed Jan. 14, 1932

8 Sheets-Sheet 7



Sept. 24, 1935.

J. S. STOKES

2,015,202

METHOD OF FORMING BOXES

Filed Jan. 14, 1932

8 Sheets-Sheet 8

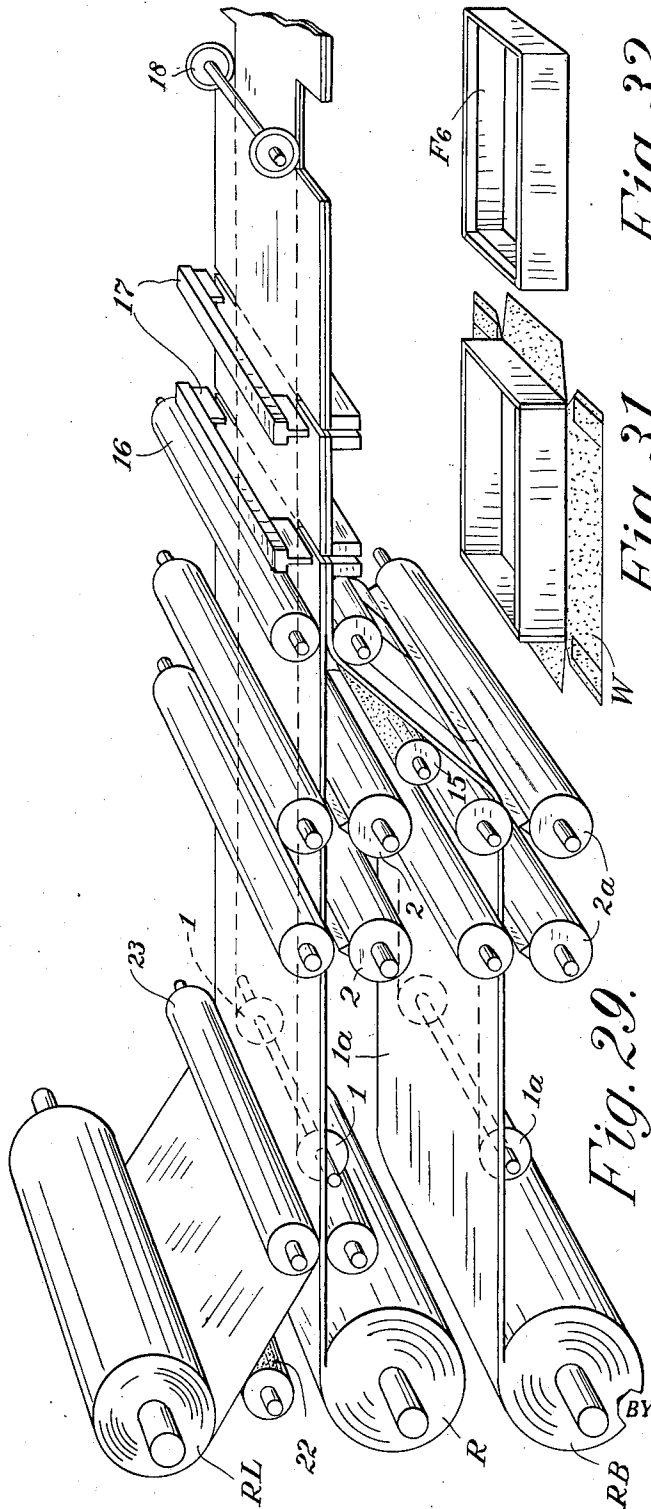


Fig. 29.

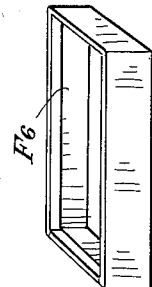


Fig. 31.

Fig. 32.

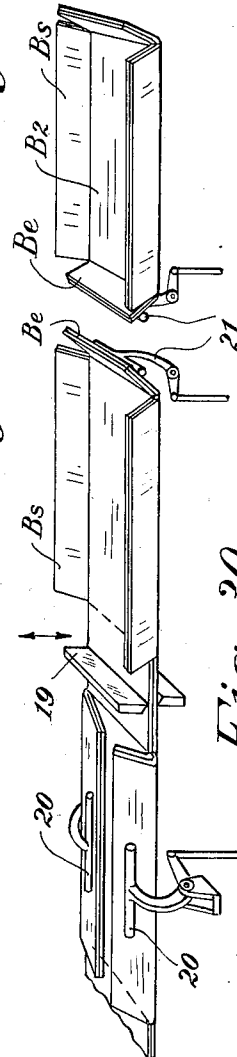


Fig. 30.

INVENTOR.

John S. Stokes  
Counselor L. E. Deet  
his ATTORNEY.



## UNITED STATES PATENT OFFICE

2,015,202

## METHOD OF FORMING BOXES

John S. Stokes, Huntingdon Valley, Pa., assignor  
to Stokes and Smith Company, Philadelphia,  
Pa., a corporation of Pennsylvania

Application January 14, 1932, Serial No. 586,530

38 Claims. (Cl. 93—43)

My invention relates to methods for forming boxes, containers, cartons, or the like, hereinafter generically termed "boxes".

In accordance with my invention, a box blank adapted to form, for example, the bottom and one or more vertical walls of a box, is bent, and then substantially immediately registered upon sheet material, such as a wrapper, wrapper element, or stay strips, preferably held flat by suction, on a conveyor; more specifically, the wrapper, or the like, is coated with unset, or freshly applied adhesive.

More particularly, one piece box blanks removed from a stack, or cut from strip box-material, are bent, and in succession brought into registering, adhesive engagement with a one-piece wrapper, panels of a three or four piece wrapper, or stay strips; preferably, and specifically, the box-bottom panel of the blank is brought first into engagement, and thereafter the side panels of the blank are folded against the flattened wrapper, wrapper panels, or stay strips.

Further in accordance with my invention, when the box blank engages the detached side panels of a three or four piece wrapper, one or more other wrapper elements are attached to the box blank before any box-forming operation, i. e., the several wrapper elements are assembled upon the box blank. Preferably, these additional elements are also held flat by suction against a supporting surface when the box blank is registered thereon, and the surface through which suction is exerted is preferably movable to transport the box and wrapper assembly toward the box-wrapping and forming station.

In accordance with another modification of my invention, the main component of a composite box, adapted to form, for example, the bottom and sides of a box is removed from a stack, or cut from a strip, bent, and registered upon a one-piece wrapper, elements of multi-piece wrappers, or stay strips, preferably held flat by suction on a conveying surface. The end elements of the box are joined to the main component at the wrapping or forming station.

In accordance with another modification of my invention, for forming a so-called "wide flange" box, an extension bottom removed from a stack, or cut from a strip of box material is positioned so that it is interposed between the box blank, or main component and the wrapper, or the like, as the former is moved toward the wrapper.

Further in accordance with my invention and more specifically, the one-piece blanks or main components may be cut from laminated strip

whose formation from strips of box-material may be part of the continuous box-making method and if desired, the lining of the strip, whether single or laminated may also be made a step of the continuous method.

My invention also resides in the methods hereinafter described and claimed.

For an understanding of my invention, reference is to be had to the accompanying drawings in which in perspective:

Fig. 1 diagrammatically illustrates the formation of box blank and wrapper assemblies.

Figs. 2 to 4 illustrate successive steps of forming a wrapped box from a blank and wrapper assembly.

Fig. 5 illustrates the formation of assemblies comprising wrappers and the main component of a multi-piece box.

Fig. 6 illustrates the formation of box ends for supply to a wrapping machine form block.

Figs. 7 and 8 illustrate respectively the partially completed and completed box.

Fig. 9 illustrates the formation of assemblies each comprising a box blank and several components of a four-piece wrapper.

Fig. 10 illustrates a partially completed box.

Figs. 11 and 12 show the completed box in upright and inverted positions respectively.

Fig. 13 shows the main component of a three-piece wrapper.

Fig. 14 shows a box made, using the wrapper component of Fig. 13.

Fig. 15 illustrates the use of a stack of box blanks instead of their formation from a strip.

Fig. 16 illustrates the formation of assemblies each comprising the main component of a three-piece box, and the components of a four-piece wrapper.

Fig. 17 discloses the formation and supply of box ends.

Fig. 18 shows the main component of a three-piece wrapper.

Fig. 19 illustrates the use of a stack of main components of a three-piece box.

Fig. 20 illustrates the formation of assemblies each comprising the main component of a three-piece box and stay strips.

Fig. 21 illustrates the supply of box ends to a form block.

Figs. 22 and 23 illustrate the partially completed and completed box, respectively.

Fig. 24 illustrates the box of Fig. 23 with a wrapper applied.

Fig. 25 illustrates the formation of assemblies for producing an extension bottom box.

Fig. 26 shows the extension bottom with adhesive applied thereto.

Figs. 27 and 28 illustrate the partially completed and completed extension bottom box, respectively.

Figs. 29 and 30 illustrate the formation of a lined, laminated box blank.

Figs. 31 and 32 show the partially completed and completed box.

Figs. 1 to 4 illustrate my method of forming boxes, each from a one-piece box blank, and a one-piece wrapper. The strip of box material removed from the roll R is scored lengthwise by knives 1 and crosswise by the pairs of scoring rolls 2, the distance between the two sets of scoring rolls 2 being substantially equal to twice the height of the box to be formed. The knives 3, 3 cut out the material at both edges of the strip between the side panels Bs of adjacent blanks B, and knives 4 sever the notched strip to complete the formation of the one-piece blanks B each having end panels Be and side panels Bs.

After the completion of one blank, it will be understood that the next blank completely formed, except for the final cutting operation, is brought into position for severance from the strip by knives 4, and at the same time the scoring of parts of the strip subsequently to be formed into blanks is taking place; i. e., one-piece box blanks are cut in succession from the strip, and at any given time there are several blanks at various stages of completion.

Concurrent with the formation of the box blanks, wrappers W are removed in succession from a stack Sw, coated with adhesive, and brought into engagement with the conveying surface 5, through which suction is applied to hold the wrapper perfectly flat upon the conveying surface. Preferably tabs t cut from the tab strips T as by knives 12, are applied to the wrapper as it passes from the stack to the conveyor.

The feeding, tabbing and conveying of the wrappers under suction may be performed by the mechanism shown in Rider Patent 1,806,181, for example.

While the wrappers are held flat by suction against the conveying surface, upon each in turn is deposited in registering engagement, a box blank B, the bottom panel Bb of each blank adhesively engaging the corresponding wrapper panel Wb to form an assembly. As the box blanks are transferred from position adjacent the knives 4 towards the conveyor they are bent along their scoring.

For example, as illustrated, the suction plate 6 engages the end blank of the strip removed from the roll R, and after the knives are operated to sever the blank from the strip, the suction plate moves downwardly passing through an opening formed by the side folding slides 7 and the end folding slides 8, which causes the side panels Bs and end panels Be to assume an upright position. Preferably to avoid all possibility of the sides of the box being bowed, the panels are bent through an arc substantially greater than 90°, and for that purpose the slides 7, 8 in succession, or in pairs, moving inwardly from the positions shown, to bend the panels nearly flat against the thin plate 6. For brevity, blanks so treated are hereinafter termed "bent".

The wrapper with the bent box blank adhering thereto moves beyond the position below the box bending station, the conveying surface 5 transporting the assembly towards a box forming or wrapping station, for example, a box machine

generally of the type shown in U. S. Letters Patent 1,541,255 to Federwitz et al.

Preferably, before the wrapper leaves the conveyor surface, and while it is still subject to suction, the side panels Bs of the box are pressed flat against the wrapper side panels Ws to effect part of the covering operation.

Preferably, the conveyor surface simultaneously carries more than one wrapper, and/or box blank and wrapper assembly. It is preferably intermittently moved in timed relation to the reciprocation of the suction plate 6 so that the box blank engages the wrapper while stationary.

Thereafter, as shown in Figs. 2 and 3, the walls of the box are brought into vertical position, the wrapper panels Ws adhering to the side panels Bs of the box. The corner flaps f of the wrapper are then turned in, Fig. 3, the wrapper end panels We, are then folded up, and as the last operation the wrapper margin m projecting above the top edges of the box is turned over and down into engagement with the inside of the completed box F, Fig. 4. The box and wrapper assemblies may be placed in turn in the path of movement of the wrapping machine form block 9 for completion of the forming and wrapping of the box in the usual manner.

Figs. 5 to 8 illustrate the same general method for making a three-piece box and using a one-piece wrapper. The strip removed from the roll R is scored lengthwise only. There is no cross scoring as the blanks B' cut from the strip are adapted to form only the box bottom and sides. The strip therefore is cut by the knives 4 into simple rectangular pieces or blanks.

Each main component or blank B' is transported towards the conveyor 5, the bottom Bb of the main component adhesively engaging the corresponding wrapper panel Wb. The side panels Bs of the main component are bent by the slides 7, during transport of the component toward the conveyor. As the wrapper is held flat by suction, there is no possibility of wrinkles being formed, or of improper register due to slipping of the wrapper.

After the box has been deposited on a wrapper, the conveyor again moves to bring another wrapper into a registering position beneath the bending station for registering adhesive attachment of the next box blank. As in the prior modification, before the box blank and wrapper assembly is delivered to a wrapping machine, or the like, the side panels Bs of the blank may be pressed downwardly into engagement with the wrapper panels Ws, which are held flat by suction.

At the wrapping station the box end components BE, preferably cut from rolls RE as by knives 10, are temporarily held in position, as against the ends of the wrapping machine form block 9. During the wrapping operation, the box end components are united to the main component by the wrapper and held permanently in box forming position. Specifically, the corner flaps f of the wrapper are wiped into adhesive engagement with the box end components BE, and thereafter the wrapper end panels We are folded upwardly to join the box end components to the box bottom, and finally the marginal portions m of the wrapper projecting above the top of the box, are turned inwardly which further strengthens and completes the union between the several box components. The finished box F', shown in Fig. 8, corresponds in external appearance to the box of Fig. 4, formed of one piece. A

box-forming machine for supplying box end components cut from strip to a form block for forming of a three-piece box is described and claimed in co-pending Rider et al. application Serial No. 490,400, filed October 22, 1930.

Figs. 9 to 12 illustrate my method of forming a box from a one-piece blank and a four-piece wrapper. The box blanks B are formed from a strip and transported to a bending station, in the same manner explained in connection with Fig. 1. Wrapper side panels WS are removed in pairs from the stacks Ss, coated with adhesive, as by their passage over the roll 11 and transferred to the conveyor 5 which transports them in aligned spaced relation adjacent to the bending station.

Preferably, as the side panels are being coated with adhesive, there is deposited thereon at the portions of the panel adapted to overlie the corners of the completed box, the tabs *t* which are cut from the rolls RT of tab material by the knives 12.

While the conveyor is stationary with the panels WS beneath the bending station, the suction plate 6 transports a blank towards the conveyor, bending it as it passes the slides 7, 8, and deposits it upon the wrapper side panels, which are, as indicated, so disposed that their adjacent portions *ms*, engage the bottom panel Bb of the box. Preferably, and as indicated, the side panels Bs of the box are in this modification, pressed flat against the wrapper side panel as part of the first covering step, instead of subsequently, as in Fig. 1, for example.

The wrapper end panels WE, removed from stacks Se thereof, are fed, as by a conveyor 13 towards the delivery end of conveyor 5 in proper spaced relation, so that the box and wrapper assembly can be removed from conveyor 5 and deposited upon the wrapper end panels WE to bring the four panels of the composite wrapper in their proper relative positions which completes assembly of the composite wrapper.

The portions *me* of the end panels WE engage only the ends of the bottom panel Bb of the blank B so that in effect, the box blank is in engagement with a wrapper having no panel Wb.

The assembly may be fed by the conveyor 13 toward a wrapping station, specifically to the form block 9 of a wrapping machine, Fig. 10. In its upright position, the completed box F2, Fig. 11, looks exactly the same as that of Fig. 4, but when the box is inverted, Fig. 12, it is seen that the bottom of the box is uncovered except along its edges which are covered by the narrow strips *ms* and *me*.

If, with this same general method and arrangement, the wrapper component W1, Fig. 13, is substituted for the separate wrapper end panels WE, the box blank as delivered to the wrapping machine has attached thereto a three-piece composite wrapper, which covers the bottom as well as the sides and ends. Fig. 14 shows the resulting box F3. An advantage of both methods is that a great saving of paper is effected; in the method using the four-piece wrapper, the wrapper for covering the box bottom is saved, while with both the three and four-piece wrapper, there is saved the paper otherwise wasted by corner notching.

As shown in Fig. 15, the box blanks B instead of being cut from strip, may be fed in succession from a stack SB to a transfer point from which the plunger 6 moves them to and through a bending station into registering engagement with wrapper panels WS. The stack of blanks B, can of course, be used in the arrangement of Fig. 1.

Great economy of both box material and paper can be effected by making the box of three pieces, as in Figs. 5 to 8, and the wrapper of three or four pieces.

The general method is clear from Figs. 16 to 18, particularly in view of the preceding description. Briefly, the main components B1 for the box are cut from strip. Preferably, the main component is formed at a point directly above the station to which the wrapper side panels WS are delivered. The plunger 6, or equivalent, carries the blank to and through the bending station at which the slides 7 fold the side panels Bs through a substantial angle. The long edges of the panels Bb of the blank engage a narrow strip *ms* along the adjacent edges of the panels WS. The side panels of the box blank BS are folded downwardly into engagement with the panels WS and the assembly transferred into registering engagement with the wrapper end panels WE held flat by suction on conveyor 13, which may transfer the assembly to a wrapping station.

Box ends BE cut from rolls of box material RE are held against the form block 9 and during the wrapping operation are attached to the main component by the wrapper components which have been previously assembled upon the main component B1. Insofar as external appearance is concerned, the completed box is the same as that of Figs. 11 and 12.

The wrapper component W1 of Fig. 18 may be substituted for the wrapper components WE, to form a three-piece wrapper upon the main component. The completed box is the same in appearance as that of Fig. 14.

As shown in Fig. 19, the main components B1 instead of being cut from strip, may be fed in succession from a stack SB1 to a transfer point from which the plunger 6 moves them to and through a bending station into registering engagement with the wrapper panels WS. The stack of blanks B1 can of course be used in the other three piece box arrangements disclosed herein.

A maximum of economy can be effected when the box is to serve only as a shipping container, for example, and in other cases where wrapping for improved appearance is unnecessary by the method exemplified by Figs. 20 to 23. The box is of the three-piece type, and is formed, as in the prior modifications, by a main component, simple rectangular pieces cut from a roll R and adapted to form the bottom and sides of the box, and two minor components adapted to form the box ends, and which are also preferably cut from rolls RE. As previously pointed out there is no cardboard loss by corner notching, and there is not even any overlapping of the cardboard. In other words, the amount of cardboard used is no greater than the actual areas of the box panels.

No wrapper is used. From the strip removed from the rolls RT of tab material, are cut long strips T1 somewhat greater in length than the width of the main component B1. The strips with their adhesive coated side upright, are transported in pairs by the suction conveyor 5. The main components are transferred by the plunger 6 to and through the bending stage exemplified by the slides 7 and deposited upon the strips T1, as indicated, leaving parts of the strips projecting beyond the sides and ends of the component. Preferably, at a point beyond the registering station, the side panel Bs of the main component are folded flat against the tabs while they are still un-

der the influence of suction. The strips project beyond the sides of the main component, so that at the wrapping station these projecting portions may be folded into engagement with the box end components BE, as shown in Fig. 22, and since the tabs are preferably longer than the width of the main component, B1, as previously stated, they have ends projecting above the top edges of the box at the corners, which may be turned inwardly and downwardly as shown in Fig. 23.

If desired, this unwrapped stayed box may be covered. For example, at any subsequent time the finished box F4 shown in Fig. 23 could be again passed through a wrapping machine and a wrapper applied thereto in the usual manner. The resulting box F4a shown in Fig. 24 is the same as that in Fig. 4 insofar as external appearance is concerned.

The same general method can be used in making wide flange or extension bottom boxes. The box blanks B, cut from a roll R or removed from a stack SB, are transferred, as by plunger 6, to and through a wrapping station toward registering engagement with a wrapper W2 held flat by suction against a conveying surface 5. However, in this modification, the box blank B does not itself come in contact with the wrapper. Extension bottoms X, cut from a roll RX are removed from a stack Sx and fed into the path of the descending box blank. Adhesive applied to the upper surface of the extension bottoms, as by the rolls 14, holds the box blank and extension bottom in position. The extension bottom may be deposited upon the wrapper and the box blank thereafter brought into engagement with it, but I prefer, as previously stated, to feed the extension bottoms into the path of the plunger 6, so that engagement is first effected between the bent blank and the extension bottom, and this assembly is thereafter deposited in registering engagement upon a wrapper W2 upon the conveyor.

The box and wrapper assembly, i. e., the box blank, extension bottom, and wrapper, all in registered attachment, is transported to a box-forming station where it may, for example, be placed upon the form block of a wrapping machine and the box completed in the usual manner. Fig. 27 shows the box stays bent to position with the wrapper in the flat, and Fig. 28 illustrates the completed box F5.

It is to be understood, of course, that this method of forming an extension bottom box may be used in conjunction with the three-piece box method, and that the wrapper W2 can be of the three or four-piece type.

The box strip supplied to the bending station may be laminated and/or lined, the formation of the laminated strip or lined strip taking place as the several strips are fed toward the bending station. Specifically, referring to Fig. 29, in addition to roll R of box material, there are also roll RB of box material, and RL of lining paper. The strip removed from the roll TB is scored as by knives 1a and rolls 2a, coated with adhesive as by roll 15, and pressed into contact with the strip removed from roll R as by the rolls 16. Thereafter the strip is notched, as by the reciprocating knives 17, and the material between the notches removed by the circular knives 18.

Preferably before the notched and scored laminated strip is cut by the reciprocating knives 19 to form a box blank B2, the side panels are bent

through a substantial angle, preferably in excess of 90°, as by the bending tools 20. The end panels of the blanks are bent, as by the tools 21, so that there will be no tendency for the walls of the box formed therefrom to bow.

To form a lined box blank, the paper strip removed from roll R is coated by adhesive as by roll 22, and thereafter pressed into engagement with the surface of the strip removed from roll R adapted to form the inside of the box, as 10 by the rolls 23. As previously described, the composite strip is then notched by knives 17 and 18, and cut by knives 19 to form box blanks.

The blank B2 may be utilized to form a box in any of the previously described methods, or any 15 known methods. It may, as shown in Fig. 31, be deposited upon a wrapper W, which is then applied in the usual manner to form the box, F6, shown in Fig. 32.

What I claim is:

1. The method of making a box which comprises flattening sheet material upon a conveyor surface, moving a scored blank adapted to form at least two box panels along a path into adhesive, registering engagement with the sheet material flattened upon said surface, at a point in said path bending the blank along its scoring, and conveying the blank and attached sheet material by said surface toward a box-forming station.

2. The method of making a box which comprises conveying sheet material by a moving surface, applying suction to hold the sheet material flat against said surface, moving a scored blank along a path into registering adhesive engagement with the flattened sheet material upon said surface, bending the blank along its scoring during its movement in said path, and transporting the bent blank and attached sheet material toward a box-forming station.

3. The method of making boxes which comprises supplying box blanks in succession to a bending station, bending the blanks in succession at said station, conveying sheets to a region adjacent said station by a moving surface, transporting the bent blanks in succession from said station into registering attachment with the sheets, and moving the blank and sheet assemblies by said moving surface toward a box-forming station.

4. The method of making boxes which comprises supplying box blanks in succession to a bending station, bending the blanks in succession at said station, conveying sheets to a region adjacent said station, applying suction to flatten the sheets, transporting the bent blanks from said station into registering adhesive attachment with the flattened sheets, and in succession moving the blank and sheet assemblies toward a box-forming station.

5. The method of making a box which comprises moving a scored blank adapted to form at least the box bottom and two box sides along a path toward sheet material, at a zone in said path, bending the blank along its scoring, effecting registering, adhesive attachment between the box bottom panel of the bent blank and the sheet material, thereafter effecting adhesive engagement between side panel structure of the blank and the sheet material, and moving the box and sheet assembly toward a box-forming station.

6. The method of making a box which comprises moving a scored blank adapted to form at least the box bottom and two box sides along 75

a path toward sheet material, at a region in said path, bending the blank along its scoring, applying suction to flatten the sheet material, effecting registering, adhesive attachment between the box-bottom panel of the bent blank and the flattened sheet material, thereafter effecting flattening the box-side panel structure of the blank onto the flattened sheet material, and transporting the box and sheet assembly toward a box-forming station.

7. The method of making boxes which comprises feeding a strip of box material toward a bending station, scoring the strip, cutting the scored strip to form box blanks, transporting the blanks in succession to the bending station, and at said bending station bending panels of the blank in excess of 90° to weaken the box material at the scoring.

8. The method of forming and wrapping boxes which comprises feeding a strip of box material toward a bending station, scoring the strip, cutting the scored strip to form box blanks, bending the blanks in succession, in succession effecting registering adhesive engagement between the bent blanks and wrappers to form assemblies, and transferring the assemblies in succession to a wrapping station for completion of the application of the wrappers, before setting of the registering adhesive, to form wrapped boxes.

9. The method of making boxes which comprises feeding a strip of box-material toward a bending station, scoring the strip, cutting the strip to form box blanks, feeding sheets adjacent to said bending station, bending the blanks in succession, effecting registering adhesive attachment of the blanks in succession to the sheets, and transporting the blank and sheet assemblies in succession toward a box-forming station.

10. The method of making boxes which comprises feeding box blanks to a bending station, transporting wrapper elements adjacent to said station, applying tabs to said elements as they are transported toward said station, bending the blanks in succession, in succession effecting registering, adhesive attachment of the bent blanks to the tabbed wrapper elements, to form assemblies, and transporting the assemblies in succession to a box-forming station.

11. The method of making boxes which comprises feeding box blanks to a bending station, transporting wrapper elements adjacent to said station, feeding tab strip toward the path of said wrapper elements, cutting tabs therefrom and applying them to said wrapper elements in succession, bending the box blanks in succession, effecting registering adhesive attachment of the blanks and the tabbed wrapper elements, to form assemblies, and transporting the assemblies in succession to a box-forming station.

12. The method of making boxes which comprises feeding a strip of box material toward a bending station, cutting the strip to form box blanks, moving wrapper elements adjacent to said bending station, applying tabs to said elements as they move toward said station, and transferring the bent blanks in succession from said station into registering adhesive attachment with the tabbed wrapper elements.

13. The method of making boxes which comprises feeding a strip of box material toward a bending station, cutting the strip to form box blanks, moving wrapper elements adjacent to said bending station, feeding tab strips toward the path of movement of said elements, cutting

tabs therefrom and applying them to said wrapper elements in succession, and transferring the bent blanks in succession from said bending station into registering adhesive engagement with the tabbed wrapper elements.

14. The method of making boxes which comprises feeding a strip of box material toward a bending station, cutting the strip to form box blanks, removing wrapper elements from a stack in succession and moving them adjacent to said bending station, and transferring the bent blanks in succession from said station into registering adhesive attachment with wrapper elements adjacent thereto.

15. The method of making a box which comprises conveying wrapper elements by a moving surface, moving a scored box blank to a registered position above the wrapper element on said surface, moving the blank from said position into registering attachment with said wrapper, at a region in said path of movement bending the blank along its scoring, and transferring the blank and wrapper to a box forming station by said surface.

16. The method of making a box which comprises concurrently bending a scored box blank along its scoring and transporting it into registered attachment with a wrapper element, and thereafter transporting the box and wrapper assembly to a box-forming station.

17. In the operation of a box-forming system including a box-machine having a form block and a conveyor, the method which comprises feeding wrappers toward the box machine by said conveyor, supplying box blanks to a bending station adjacent the conveyor, transferring the box blanks from the bending station into adhesive registered attachment with wrappers on said conveyor, and transferring the box blank and wrapper assemblies from said conveyor to the form block of said machine.

18. In the operation of a box-forming system including a box-machine having a form-block and a suction conveyor, the method which comprises flattening the wrappers and transporting them toward the box machine by said conveyor, supplying box blanks to a bending station adjacent the conveyor, transferring the box blanks from the bending station into registering adhesive engagement with wrappers flattened on said conveyor, and transporting the box-blank and wrapper assemblies to the form block of said machine.

19. The method of forming boxes which comprises feeding a strip or box material toward a bending station, scoring, notching and severing the strip to form one-piece box blanks, conveying wrappers to a position adjacent said station by a moving surface, bending the blanks at said station and transferring them in succession into registered adhesive attachment with wrappers upon said surface, and transporting the one-piece box-blank and wrapper assemblies from said conveyor surface to a box-forming station.

20. The method of forming boxes which comprises feeding a strip of box material toward a bending station, scoring, notching and severing the strip to form one-piece box blanks, conveying one-piece wrappers to a position adjacent said station by a moving surface, bending the blanks at said station and transferring them in succession into registered adhesive attachment with wrappers upon said surface, and transporting the one-piece box-blank and one-piece wrap-

per assemblies from said conveyor surface to a box-forming station.

21. The method of forming boxes which comprises conveying wrappers in the flat on a moving surface, moving box blanks in succession to effect registering adhesive engagement between the box-bottom panels of the blanks and corresponding panels of the flat wrappers to cover the box-bottoms, and transferring the partially covered blanks in succession to a box-wrapping and forming station.

22. The method of forming boxes which comprises conveying tabbed wrappers in the flat on a moving surface, moving box blanks in succession to effect registering adhesive engagement between the box-bottom panels of the blanks and corresponding panels of the flat tabbed wrappers to cover the box-bottoms, and transferring the partially covered blanks in succession to a box-wrapping staying and forming station.

23. The method of forming boxes which comprises conveying wrappers in the flat on a moving surface, moving box blanks in succession to effect registering, adhesive engagement between the box-bottom panels of the blanks and corresponding panels of the flat wrappers to cover the box-bottoms, effecting adhesive registering engagement between the box-side panels of the blanks and corresponding panels of the wrapper while flat and upon said surface, and transferring the blank and wrapper assemblies to a box-forming station for completion of the box-forming and wrapping.

24. The method of forming boxes which comprises feeding box blanks to a bending station, conveying wrappers adjacent to said station, moving blanks from said station in succession toward registering adhesive attachment with a wrapper, and during said movement effecting registered engagement with an extension box bottom for interposing the extension bottom between the wrapper and box blank.

25. The method of forming boxes which comprises feeding strips of box material toward a bending station, bending the box-material to weaken it along lines defining box panels, effecting adhesive engagement of the strip to form a laminated strip, and severing the strip to form laminated, bent box blanks.

26. The method of forming boxes which comprises feeding strips of box and lining material, toward a bending station, bending the box-material to weaken it along lines defining box panels, effecting adhesive engagement of the strips, and severing the strip to form lined, bent box-blanks.

27. The method of making boxes which comprises feeding individual wrappers step by step along a path to a box-wrapping station, intermittently feeding a strip of box material toward a bending station adjacent said path in advance of said box-wrapping station, severing said strip to form blanks, bending the blanks in succession at said bending station, and effecting adhesive registering engagement of the successive bent blanks with successive wrappers adjacent said bending station for movement therewith to said box-wrapping station.

28. The method of making boxes which comprises feeding individual wrappers step by step along a path to a box-wrapping station, intermittently feeding box blanks to a bending station adjacent said path in advance of the box-wrapping station, bending the blanks in succession at said bending station, and effecting adhesive registering engagement of the successive bent

blanks with successive wrappers adjacent said bending station for movement therewith to said box-wrapping station.

29. The method of making boxes which comprises feeding wrappers from a stack intermittently along a path to a box-wrapping station, applying tabs to the wrappers at a region in said path, intermittently feeding a strip of box material toward a bending station adjacent said path between said box-wrapping station and the region of tab application, severing said strip to form blanks, bending the blanks in succession at said bending station, and effecting adhesive registering engagement of the successive bent blanks with successive tabbed wrappers adjacent said bending station for movement therewith to said box-wrapping station.

30. The method of making boxes which comprises feeding wrappers from a stack intermittently along a path to a box-wrapping station, applying tabs to the wrappers at a region in said path, intermittently feeding box blanks from a stack to a bending station adjacent said path between said box-wrapping station and the region of tab application, bending the blanks in succession at said bending station, and effecting adhesive registering engagement of the successive bent blanks with successive tabbed wrappers adjacent said bending station for movement therewith to said box-wrapping station.

31. The method of making boxes which comprises feeding wrappers along a path toward a box-wrapping station, applying tabs to the wrappers at a region in said path, feeding box blanks to a bending station adjacent said path between the box-wrapping station and the region of tab application, bending the blanks in succession at said bending station, and effecting adhesive registering engagement of the successive bent blanks with successive tabbed wrappers adjacent said bending station for movement therewith toward said box-wrapping station.

32. The method of making boxes which comprises feeding wrappers along a path toward a wrapping station, applying tabs to the wrappers at a region in said path, feeding the blanks to a bending station adjacent said path between the box-wrapping station and the region of tab application, bending the blanks at said bending station, and effecting adhesive registering engagement of the bent blanks with tabbed wrappers adjacent said bending station for movement therewith toward said box-wrapping station.

33. The method of making boxes which comprises feeding individual elements of sheet material along a path to an assembly station, effecting adhesive registering engagement of bent blanks with said elements at said assembly station, and transporting the assemblies in succession to a box-forming station.

34. The method of making boxes which comprises feeding a tabbed wrapper along a path toward an assembly station, effecting adhesive registering engagement of a bent blank with the tabbed wrapper at said assembly station, and transporting the assembly to a box-wrapping station.

35. The method of making boxes which comprises feeding tabs along a path to an assembly station, effecting adhesive registering engagement of bent blanks with said tabs at said assembly station, and transporting the assemblies in succession to a box-forming station.

36. The method of making boxes which comprises transporting wrappers along a path toward

an assembly station, feeding tab strips toward the path of the wrappers, cutting tabs therefrom and applying them to the wrappers in said path, effecting adhesive registering engagement of bent blanks with the tabbed wrappers at said assembly station, and transporting the assemblies to a box-wrapping station.

37. The method of making boxes which comprises feeding and applying adhesive to wrappers in succession, feeding tab strips toward the path of the wrappers, cutting tabs therefrom and applying them to the wrappers during application of adhesive thereto, transporting the tabbed wrappers in succession to an assembly station, effecting adhesive registering engagement of bent

blanks with the tabbed wrappers in succession at said assembly station, and transporting the assemblies in succession to a box-wrapping station.

38. The method of making a box which comprises moving a scored, bent blank adapted to form at least the box bottom and two box sides to effect registering engagement of the box-bottom panel of the blank with the corresponding panel of a wrapper, thereafter flattening side panel structure of the blank into adhesive engagement with corresponding panel structure of the wrapper, and moving the box blank and wrapper assembly toward a box-forming station.

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