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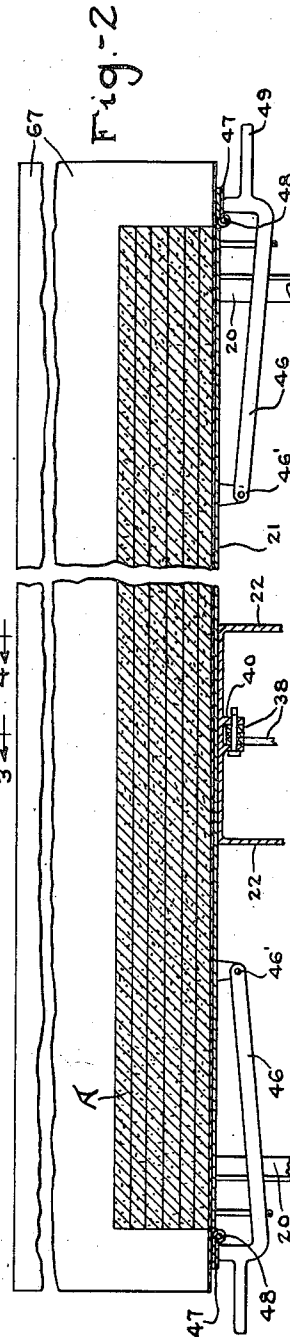
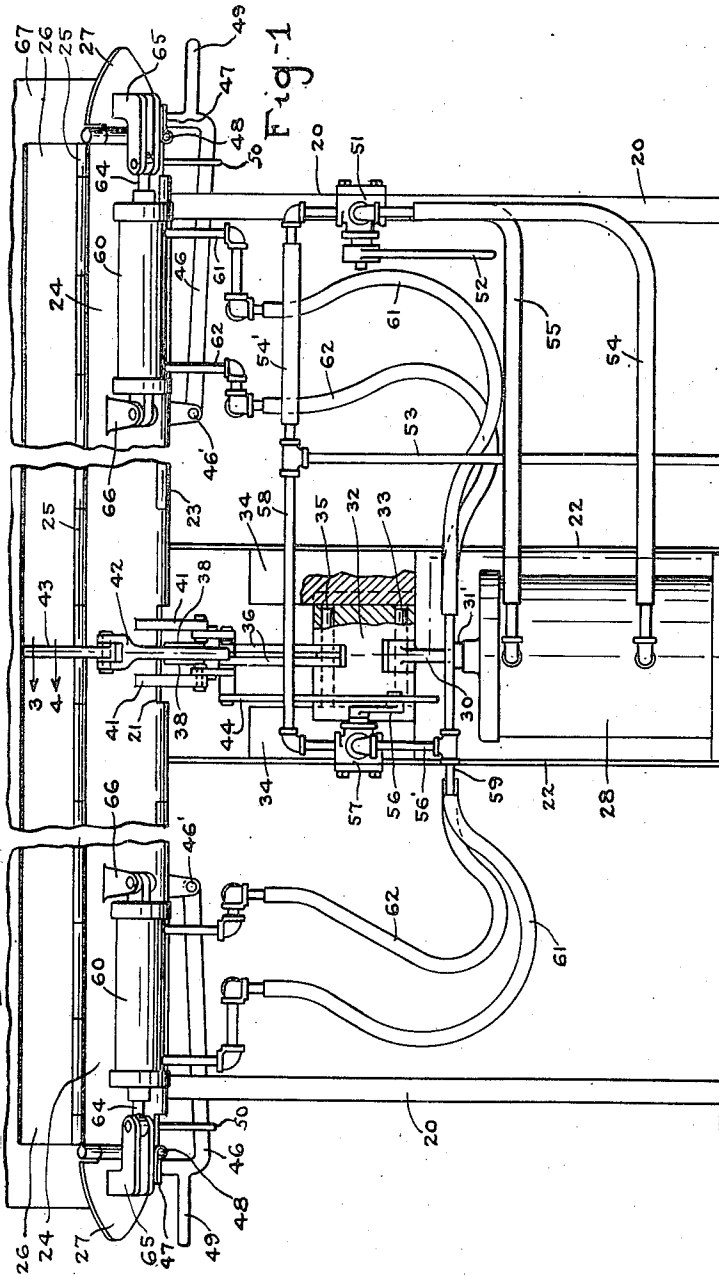
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2,066,449

BUNDLING APPARATUS

Filed Aug. 20, 1934

4 Sheets-Sheet 1



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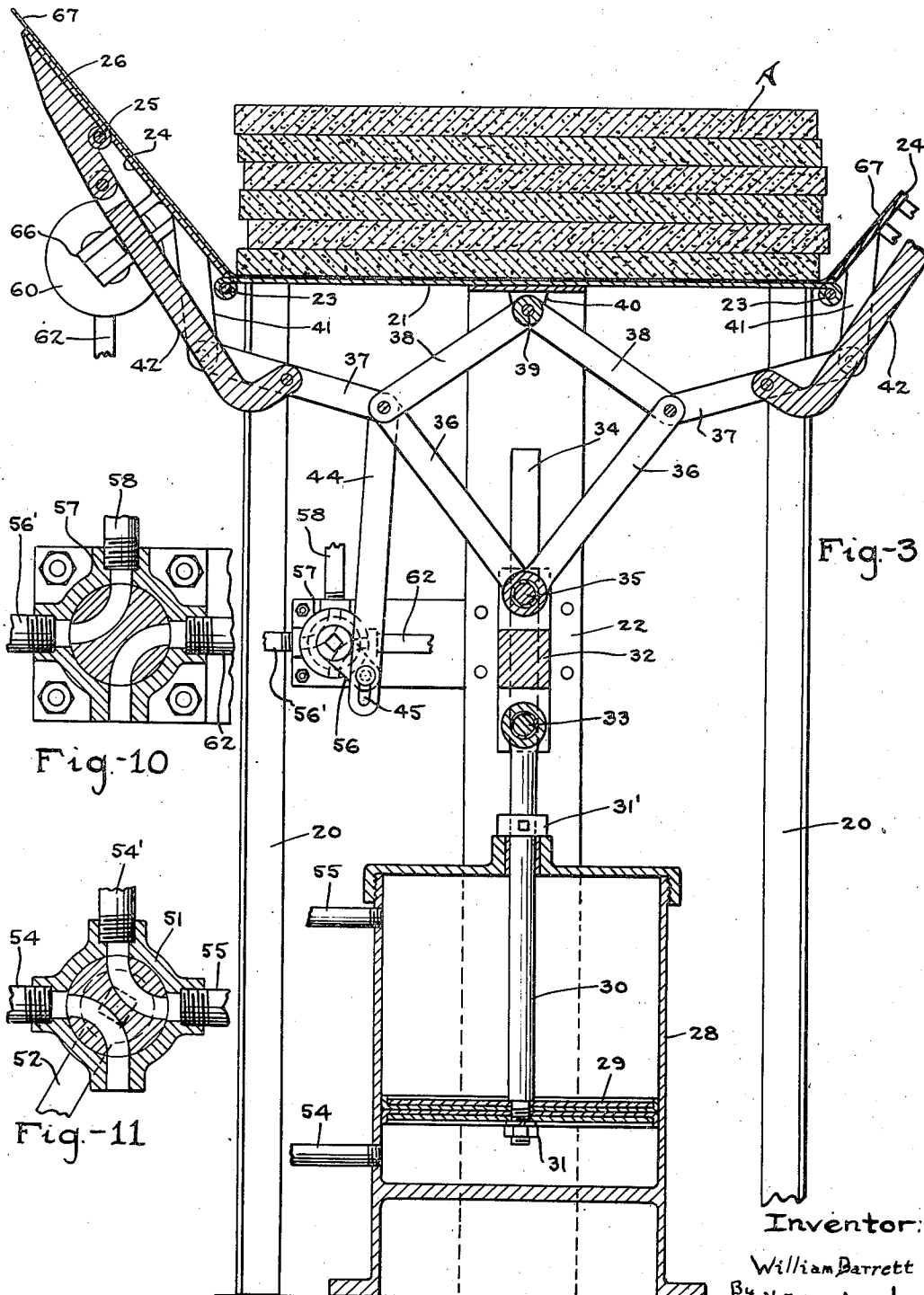
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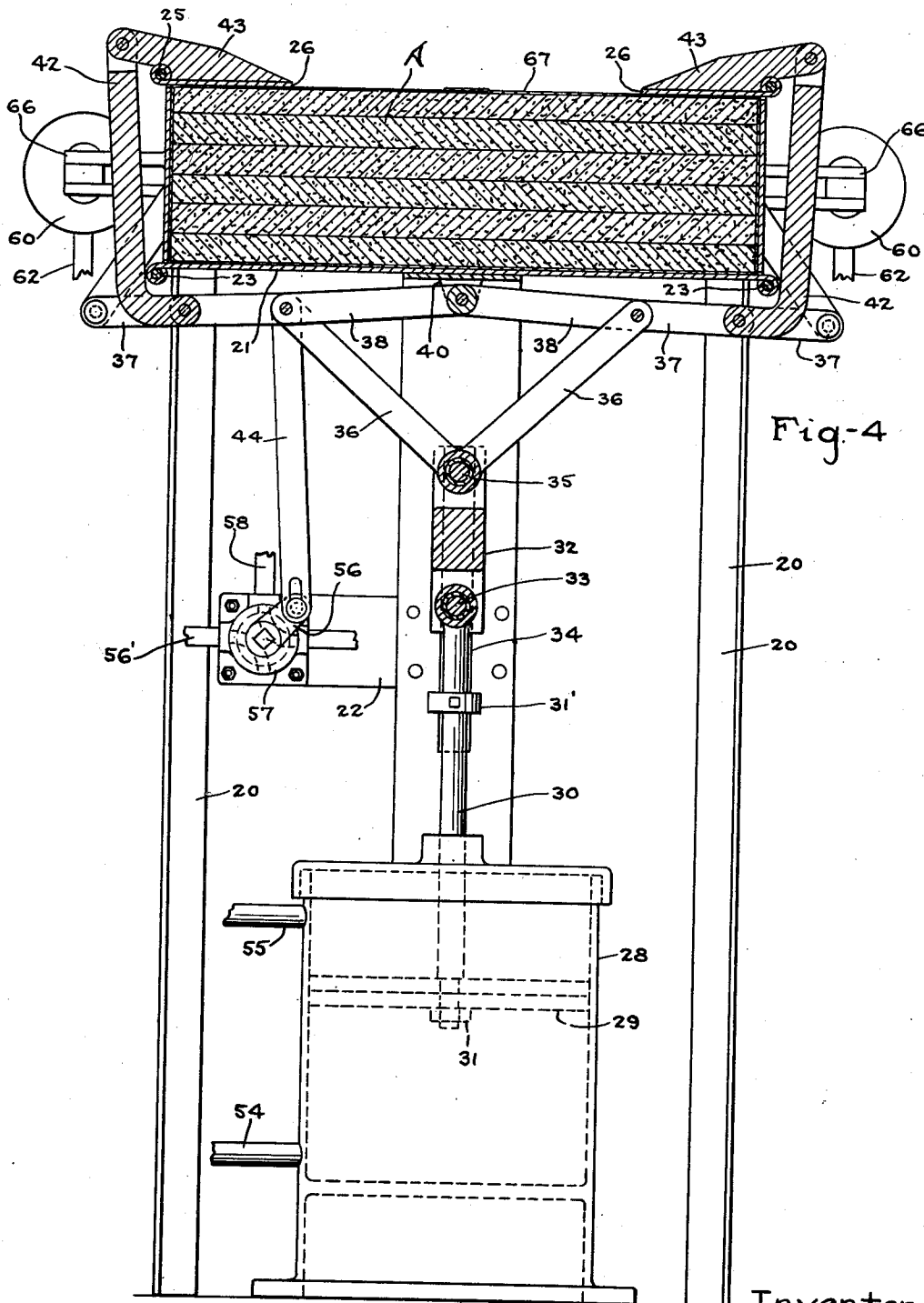


Fig. 4

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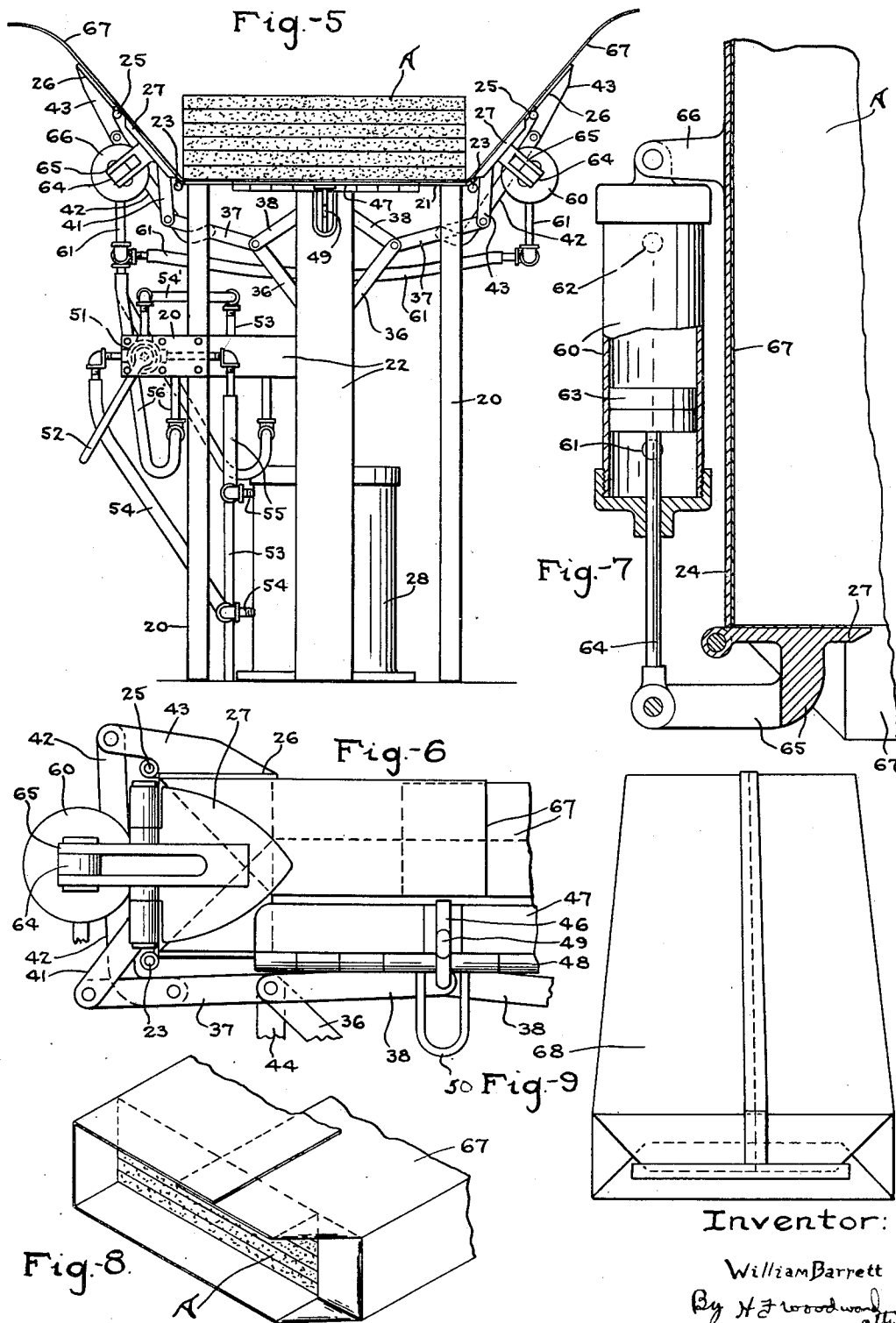
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UNITED STATES PATENT OFFICE

2,066,449

BUNDLING APPARATUS

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Application August 20, 1934, Serial No. 740,572

6 Claims. (Cl. 93—2)

This invention relates to apparatuses forming articles into bundles and has reference more particularly to apparatuses forming wall board into bundles preparatory to shipment.

In the building industry a number of wall boards, plaster boards, and plaster wall boards have been developed which have in a great part become substitutes for the ordinary wood lath. The wall boards are shipped with plurality of such boards in a package and an object of this invention is to provide means for forming these boards into compact, tight bundles which may be readily handled and transported.

A further object of the invention is to provide an apparatus or machine for bundling articles in a rapid and efficient manner.

Other objects of this invention will become apparent with reference to the subjoined specification and to the accompanying drawings in which:

Figure 1 is a side view of the bundling apparatus.

Figure 2 is a sectional view of the table of the bundling apparatus showing a series of wall boards in position to be wrapped.

Figure 3 is a view taken along lines 3—3 of Figure 1.

Figure 4 is a sectional view similar to Figure 3 in which the table sides or wing members are in the closed position.

Figure 5 is an end view of the bundling machine.

Figure 6 is a view of a bundle of wall board with portions thereof broken away.

Figure 7 is a view with portions broken away of the end fold means.

Figure 8 is a view of a bundle of wall board showing the manner in which the ends of the table are folded.

Figure 9 is a view showing a completed bundle of wall board.

Figures 10 and 11 are sectional views of the control valves.

For the purpose of this application there has been elected to set forth one particular arrangement of the apparatus for bundling articles but it is to be understood that they are here set forth for illustrative purposes only and are not to be accorded any interpretation such as might have the effect of limiting what is claimed as the invention short of its true and comprehensive scope in the art.

Referring to the drawings by numerals 20 indicates frame members for supporting the table top 21, secured substantially under the center

of the bundling table are members 22, whose function will hereinafter be described. Along the longitudinal edges of the bundling table are formed hinge like members 23, to which are hingedly secured side members 24 and at the outer ends of members 24 there are hingedly connected at 25 members 26.

For folding the paper in at the ends of the bundle there are hingedly connected to members 24 at each end thereof, members 27 and it is important that they be in the form of that disclosed in Figure 6 (substantially parabolical).

Suitably mounted between members 22 is power cylinder 28 which has operatively mounted therein piston 29. Removably connected to the piston is rod 30 by means of nut 31, which is secured upon the thread end of the member 30. The rod 30 extends through a suitable opening in the top of the cylinder and is operatively connected to slide plate 32. This may be accomplished by having a pin like member 33 extend through a suitable opening formed in the upper end of piston rod 30. The plate 32 is adapted to slidably engage slide plates or guide ways 34. These guide plates are suitably mounted on members 22 or supported in any other desired manner. The length of the piston stroke is adjustable; this may be accomplished by placing movable secured collar 31' on rod 30.

A pin member 35 is mounted in the upper edge of the plate member 32 and connected thereto are arm members 36, at whose outer end are connected members 37 and 38. The members 38 are hingedly connected at 39 and if desired the connecting point 39 may be attached to the underside of the table 21 by member 40. At the outer ends of members 37 are hingedly connected members 41 which are rigidly connected to the table side members 24.

Connected to members 37 inwardly of the outer end are members 42 which have at their outer ends hingedly connected members 43 who in turn are rigidly connected to members 26. At the inner end of one of the members 37 is connected operating lever 44.

In the lower end of operating member 44 is elongated aperture 45, the purpose of this aperture is to cause the members 27 to operate in a predetermined time relation with the members 24 and 26.

Suitably connected to the underside of the table members 21 and 46' are lever members 46. These members are connected to members 47 which are hingedly mounted on the ends of the table for the purpose of folding upward the edge of the

paper during the bundling operation. It is often desirable that a spring member be suitably mounted around the hinged connections 48 for holding them in the extended position. Connected to members 46 and extending outwardly beyond the edge of the table are operating handles 49. The members 46 are mounted in loop members 50 as shown in Figure 6.

Suitably mounted upon the table support 20 is a four way valve 51, having control handle 52, suitably connected thereto, and leading to one side of the valve is pipe member 54' which in turn is connected to the fluid supply pipe 53 and through which fluid is supplied to the system for operating the apparatus, extending from the valve member 51 to the lower end of cylinder 28 is fluid supply pipe 54. Extending from the upper end of the cylinder 28 to the valve member 51 is fluid supply pipe 55.

Operatively connected to the member 44 is valve handle 56 for controlling the fluid flowing through the four way valve 51. This valve is connected to the fluid supply source by supply line 58. Extending from the valve 51 is supply line 56' which is connected to cylinders 60 at one end thereof by means of pipes 61. Extending from the cylinders 60 near one end are fluid supply lines 62 which are in turn connected to the valve member 57.

Suitably mounted in the cylinders 60 are pistons 63 which are of any suitable type, operatively connected to the pistons 63 are piston rods 64 which are hingedly connected to members 65 which in turn are rigidly connected to members 27. The cylinders 60 are hingedly connected to members 66 which are rigidly connected to members 24.

The bundling machine may be used for bundling any article desired but is preferred to be used in connection with bundling wall board. A sheet of suitable wrapping material such as paper 67 is placed on the bundling table 21 and edges extend outwardly therefrom as shown in Figure 5. The material to be wrapped, for instance wall board A is then placed upon the table 21, and after a sufficient number of boards have been placed thereon the operating lever 52 is moved so that the fluid supply line is connected to the line 54 which causes the piston 29 to be raised in the cylinder 28. The raising of the piston 29 forces the piston rod 30 upward, resulting in the arms 36 forcing the members 37 outwardly, which causes the side members 24 of the table to fold the paper vertically along the sides of the wall board and to align the wall board evenly as is shown in Figure 4. The members 26 are forced into the horizontal position as shown in Figure 4 by the continued movement of the arms 37 through the members 42.

The operating lever 44 is moved upwardly by the movement of the arms 37 and when the valve handle 56 has reached the end of the aperture in the operating lever the fluid supply source is connected to the outer ends of the cylinders 60. This actuates the pistons 63 moving them toward the outer end of the cylinder 60 causing member 27 to fold into the position shown in Figure 6 and folding the paper in the manner shown in Figure 8. The operators then grasp the operating handles 49 and force the end members 47 into a vertical position, thus folding the near edge of the paper in a horizontal position. The members 47 may be operated manually or they may as well be operated mechanically. The upper edge of the paper is then folded downwardly

and the bundle 64 sealed in any suitable manner as by tape as shown in Figure 9.

The valve controlled lever 52 is then moved so as to connect the fluid supply source with conduit 55, and pipe 54 to the exhaust port of the valve. The piston 29 then moves downwardly thus causing the members 24 and 26 to assume the position shown in Figure 5. As the members 37 are traveling to the position shown in Figure 3 the operating lever 44 connects the fluid supply source with the opposite ends of the cylinders 60 which causes the end folding members 27 to assume the extended position as shown in Figure 1 after the side members 24 have assumed their opened position. Thus it can be seen that it is highly important that the members 27 be of the form and shape as disclosed in Figures 1 and 6 and that these members do not tend to assume the extended position until after the side members 24 have opened.

It is to be understood that certain changes and modifications may be made in the apparatus and the method of using the same but no limitation is intended by the disclosure other than those indicated in the appended claims.

What I claim is:

1. In a machine for wrapping wall board, a table for receiving wall board in face to face position, sides hingedly connected to the table for folding wrapping material up and around the wall board, members hingedly connected to the sides for folding wrapping material at the ends of the wall board, fluid piston members hingedly and horizontally mounted on said sides and connected to said end folding means for controlling the end folding members, a slidable member mounted beneath the table, diverging bars connected to the slide member, a pair of members connected to the table and to said bars, a valve operating arm connected to one of said bars and to a valve, said valve connected to said piston members and controlling the supply of operating fluid to the said piston members, and means for connecting said pair of members to the sides.

2. In a bundling machine a platform for wrapping a plurality of wall boards, means hingedly secured to said platform for aligning the wall boards and folding wrapping material in a vertical position, means hingedly secured to said last mentioned means for folding wrapping material in a horizontal position and for compressing the wall board while the wrapping material is being secured in place, means for folding the corners of the wrapping material at the ends of said wall board, fluid operated means horizontally mounted and hingedly connected on the vertical folding means and connected to said end folding means for operating the end folding means, and fluid controlled means for actuating said aligning and said compressing means.

3. In a machine of the class described comprising a table for receiving a pile of sheet material, hingedly mounted side members for folding wrapping material up and around the said sheet material, end members hinged to said side members for folding the wrapping material, fluid operated means hingedly connected to the side members at one end and hingedly and operatively connected to the end members at the opposite end.

4. In a machine for wrapping sheet material comprising means for supporting sheet material, hingedly mounted side members for folding a wrapper up and around the material, members

hingedly connected to one edge of the side members for compressing the sheet material, end members hingedly connected to said side members for folding the wrapper, pistons hingedly connected to the side members at one end and hingedly connected to the end members at opposite end.

5 5. In a machine for wrapping articles, comprising a support for the articles, hingedly mounted side members for folding a wrapper up and around the articles, substantially parabola shaped end members hinged to said side members for folding the wrapper; fluid operated means hingedly connected to the side members
10 at one end and hingedly and operatively con-

nected to the end members at the opposite end.

6. In a machine for wrapping a sheet of paper about a pile of fiber composition boards, a table for supporting a sheet of paper and a pile of boards, side members hingedly connected to the table for folding the paper against the sides of the boards, top folding members hingedly attached to the side members for folding the paper over the top of the boards, end members hinged to the side members, and pistons mounted in a horizontal position and hinged at one end to the side members and at the opposite end to the end members.

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