May 9, 1933. J. DEAN 1,908,658

MACHINE FOR PRODUCING WALL BOARD

Filed Aug. 18, 1931 2 Sheets-Sheet 1

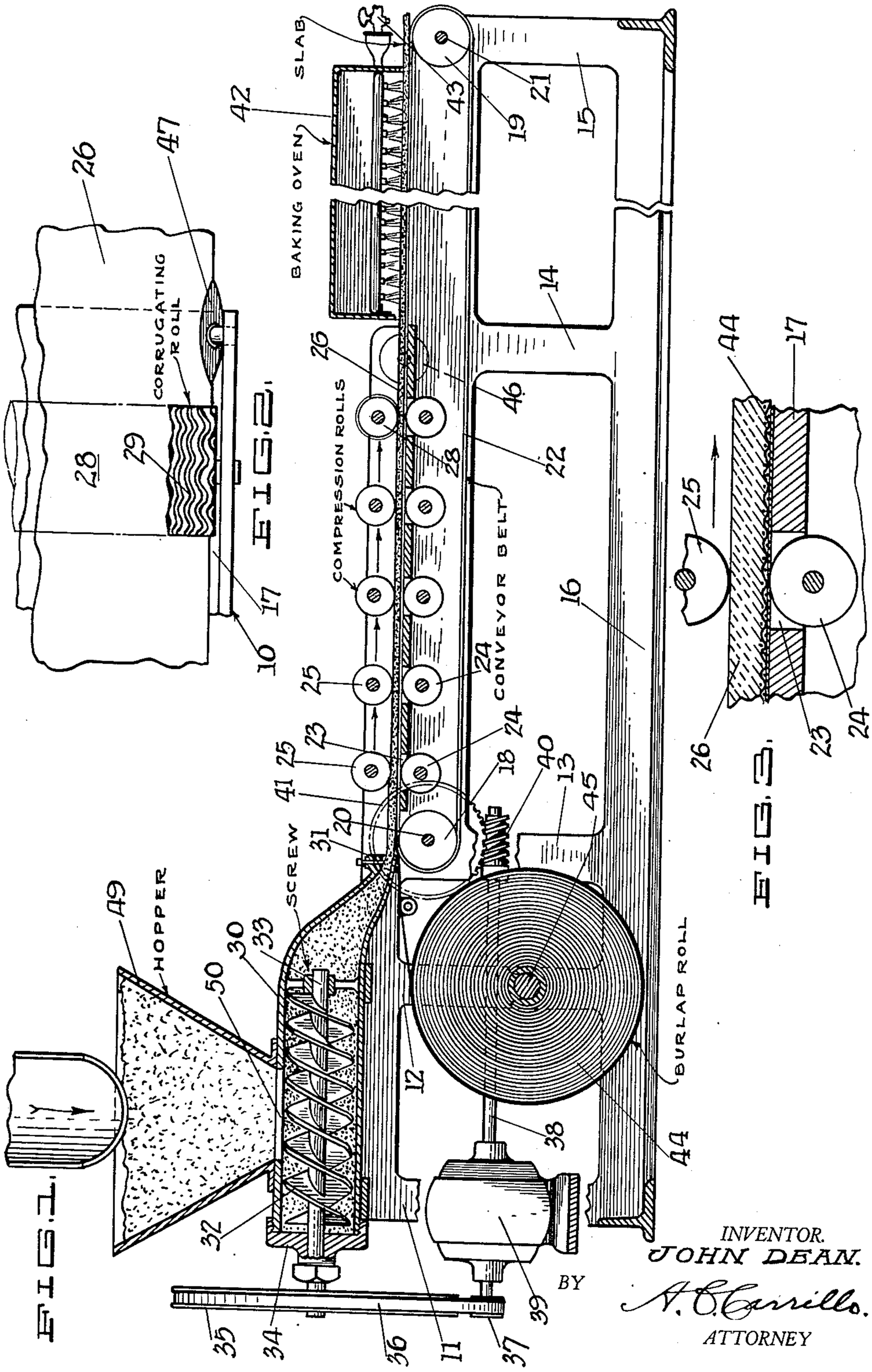

FIG. 1.

FIG. 3.

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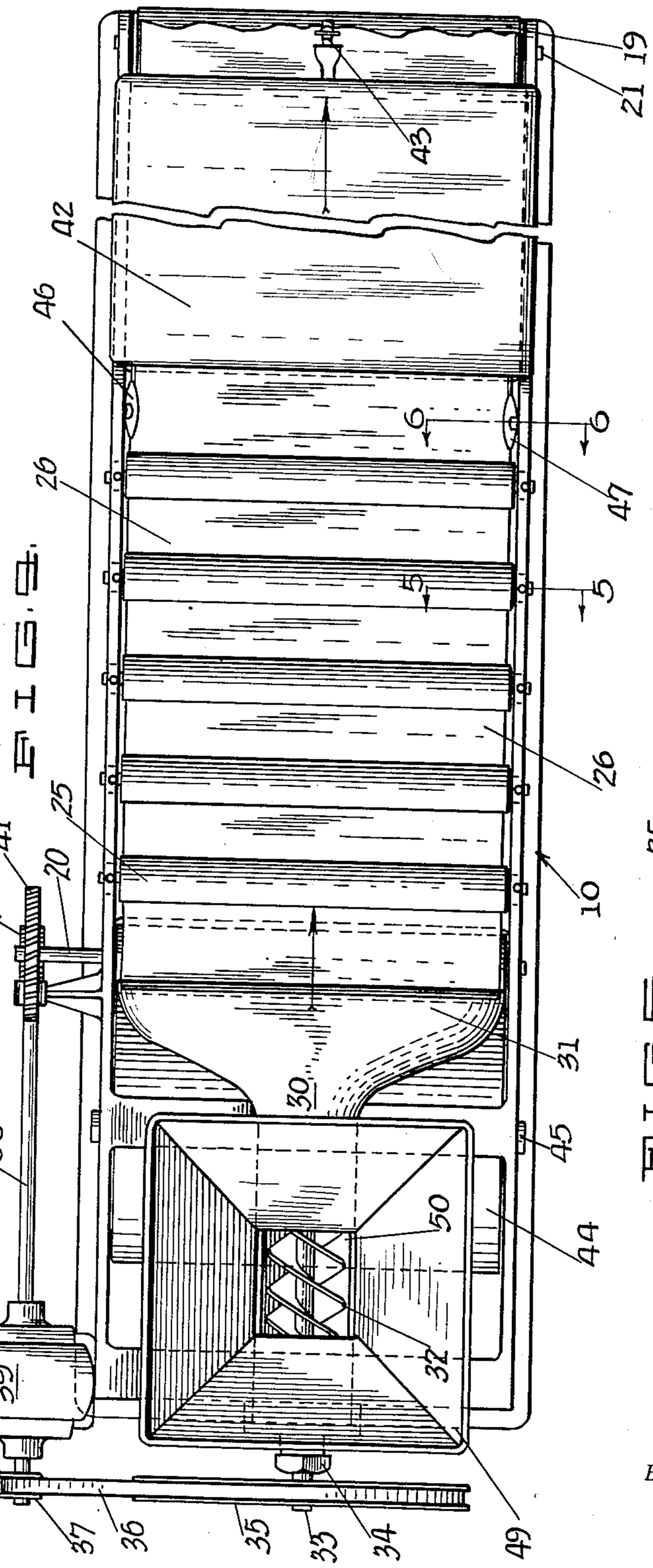

FIG. 4.

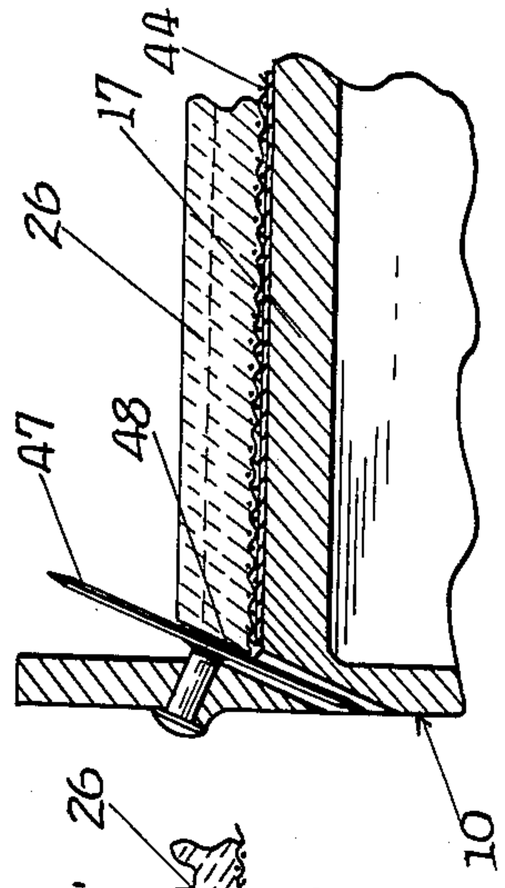

FIG. 6.

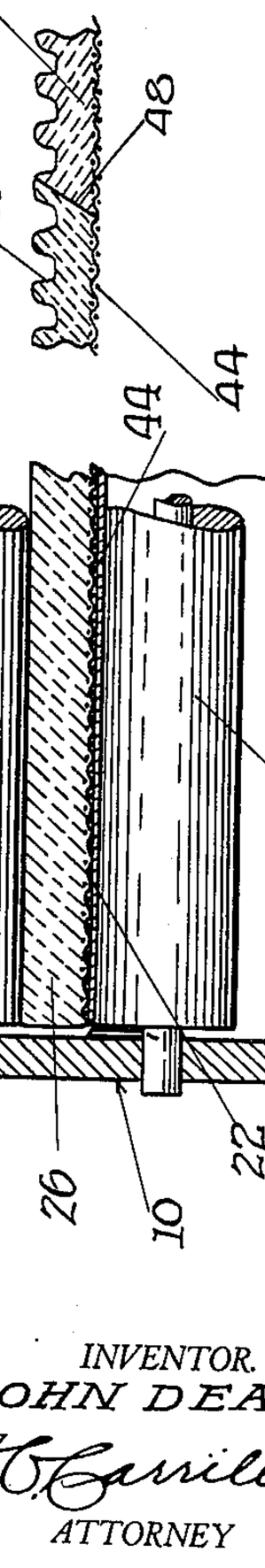

FIG. 7.

FIG. 5.

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UNITED STATES PATENT OFFICE

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MACHINE FOR PRODUCING WALL BOARD

Application filed August 18, 1931. Serial No. 557,775.

The present invention relates to new and useful improvements in automatic machinery and especially to that type of machinery adapted to produce building materials such as composition wall board and is particularly adapted to producing that class of wall board described and claimed in my co-pending patent application for composition wall board, filed July 3, 1931, Serial No. 548,611.

The purpose of the present machine is to quickly and cheaply produce a composition wall board of the type described in my co-pending application that will produce a continuous slab of wall board from a plastic state to the finished and baked product, the machine also embodying means for feeding a reinforcing material to the slab as it is being formed and means for corrugating the material as it is passed through the machine also means for bevelling the side edges of the material so that matching edges will fit tightly together when nailed in place.

The principal object of the invention is to provide a machine of the type described which will produce from plastic material a composition wall board in a continuously formed strip.

Another object of the invention is to produce a machine of the class described which will produce a continuous strip of reinforced or wall board rolled to exact thickness, corrugated, trimmed, and finally baked as it leaves the machine.

Still another object of the invention is to provide a machine of the class described which is entirely automatic in its operation and which will produce a continuous strip or slab of wall board at a minimum cost of manufacture.

Additional to the foregoing objects is that of providing an automatic machine of the type described which is comparatively simple in construction and easy to operate.

Other objects and advantages of my invention will become apparent with reference to the subjoined specification and the accompanying two sheets of drawings in which:

Figure 1 is a longitudinal sectional view illustrating my improved automatic machine for producing composition wall board, the view including the feeding hopper, feeding screw, compression rolls, corrugating roll and the baking oven for baking the strip as it leaves the compression rolls;

Figure 2 is a plan detail illustrating a fragment of the corrugating roll and the edge trimming or bevelling cutter;

Figure 3 is an enlarged sectional detail illustrating the bed-plate of the machine, a section of the conveyor belt and a set of the compression rolls;

Figure 4 is a top plan view of the entire machine showing the hopper, feeding screw, driving means therefor, conveyor belt, compression rolls and baking furnace;

Figure 5 is an enlarged sectional detail of a portion of the machine showing a set of compression rolls and the means for adjusting the upper compression rolls relative to the lower compression rolls, the section being indicated by the lines 5—5 in Figure 4;

Figure 6 is an enlarged sectional detail of the bed-plate of the machine and showing one of the angularly disposed rotary cutters for bevelling the side edges of the slab as it passes through the machine, the section being indicated by the line 6—6 of Figure 4; and

Figure 7 is a sectional detail of the portion of the finished wall board showing the wavy ridges formed by the corrugating rolls and the bevelled abutting ends of the strips.

Referring more particularly to the drawings in which the preferred form of my invention is disclosed, the numeral 10 in a general way designates an elongated rectangular frame having uprights 11, 12, 13, 14, and 15, said uprights having a suitable base 16 and a table 17, the uprights 13 and 15 being provided with transversely arranged rollers 18 and 19 carried by shafts 20 and 21 suitably journalled in the frame. The rollers 18 and 19 are provided with a suitable endless conveyor belt 22.

The conveyor belt 22 is adapted to slide over the table 17 and said table 17 is provided with a series of spaced slots 23 for the reception of a series of compression rolls 24 over which the conveyor belt passes, said rolls being flush with the top of the table so that the

conveyor belt will cause the rotation of the same.

Arranged directly above the compression rolls 24 are a series of compression rolls 25 said rolls 25 being adjustable to vary the thickness of the slab 26 by means of screw adjustments of suitable character 27, as clearly indicated in Figure 5. The material 26 is pressed between these rolls as it is carried toward the end of the machine by the conveyor belt 22 and the end upper roll 28 is the corrugating roll and is provided with a series of wavy ridges and depressions 29, as indicated in Figure 2.

The forward end of the machine is provided with a suitable tubular casing 30 rigidly mounted between the uprights 11 and 12 and said tubular member terminates in a flared mouth 31, as clearly indicated in Figures 1 and 4. A spiral screw 32 is journaled in the tube 30 and is carried by a shaft 33 having one end projecting through a stuffing-box 34 the outer end of said shaft carrying a pulley 35 belt-connected by means of a belt 36 to a small pulley 37 carried on the motor shaft 38 and driven by means of a suitable motor 39 mounted on the forward end of the machine.

The outer end of the shaft 38 is provided with a suitable worm 40 which worm meshes with a worm gear 41 carried by the shaft 20 and said worm and worm gear cause the functioning of the conveyor belt 22 at the desired speed. The relative speeds of the screw 32 and the conveyor belt 22 being such that the screw will force sufficient plastic material through the mouth 31 and on to the conveyor belt 22.

The end of the machine frame is provided with a suitable housing 42 which provides a baking oven having suitably arranged gas burners having their jets disposed downwardly upon the face of the slab as it is drawn through the machine, the burners being controlled by means of suitable valves 43.

A roll of burlap 44 is mounted in the forward end of the machine and is carried by the shaft 45 and the free end of the burlap is led over the roll 18 and on to the conveyor belt 22 and as the plastic material forming the strip or slab is forced out through the mouth 31 it causes the burlap to adhere to the conveyor and pass through the rollers and is compressed into the body of the plastic material and forms a reinforcing element as a base for the slab.

As the slab leaves the corrugating roll 28 it passes between angularly disposed rotary cutters 46 and 47, Figures 1, 2, 4 and 6, said rotary cutters tending to bevel the side edges of the slab to provide suitable abutted faces 48, as clearly indicated in Figures 6 and 7.

The operation of the machine is as follows:

A plastic material such as gypsum and sawdust is placed in the hopper 49 of the machine and gravitates through the opening 50 and into the screw chamber from whence it is forcibly compressed into the tubular casing 30 and out through a flared mouth section 31 thereof.

When the plastic material leaves the mouth 31 it is in the form of a ribbon approximately one-half of an inch in thickness, the conveyor belt then picks it up together with the continuous strip of burlap and carries it between successive sets of compression rolls until it has become thoroughly compressed and at this stage it passes under the corrugating roll 28 which causes it to be corrugated longitudinally throughout its length.

The slab as thus compressed and corrugated then passes between the bevelling cutters 46 and 47 and the side edges thereof are accordingly bevelled, the bevelled and corrugated strip or slab then passing through the baking oven to cause it to be set and dryed to a considerable extent.

The slab in its continuous state is then carried outwardly by the coveyor and is cut transversely in squares or sections of any suitable size by any suitable cutting means not shown.

It is obvious that a machine of this character when in operation will continuously produce a slab of composition material at a minimum cost per square foot and at a minimum expenditure of both time and labor.

I claim and desire to secure by Letters Patent of the United States the following:—

1. A machine of the class described comprising, a hopper having a flared material spreader, screw means associated with said hopper and adapted to force the plastic material outwardly, a conveyor-belt, a series of compression rolls arranged to receive the plastic slab and compress the same as it passes therebetween, corrugating rolls for corrugating one face of said slab, rotating elements for bevelling the side edges of said slab, and means for finally baking the compressed slabs.

2. A machine of the class described comprising, a hopper having a flared material spreader, screw means associated with said hopper and adapted to force the plastic material outwardly, a conveyor-belt, a series of compression rolls arranged to receive the plastic slab and compress the same as it passes therebetween, corrugating rolls for corrugating one face of said slab, means for feeding a reinforcing strip to said conveyor-belt, means for bevelling the side edges of said slab, means of finally baking the compressed slabs, and means for driving said screw and said conveyor-belt.

3. A machine of the class described for producing composition wall board, in combination, a supporting frame, a table carried by said supporting frame, a conveyor-belt mounted in said frame and having one sec-

tion thereof adapted to slide over the table, a plurality of compression rolls arranged in pairs, means for supplying reinforcing material to said conveyor-belt, and means for forcing a ribbon of plastic material onto said reinforcing material and between said sets of rollers, and cutters arranged in said supporting frame adapted to bevel the edges of the slab.

4. A machine of the class described for producing composition wall board, in combination, a supporting frame, a table carried by said supporting frame, a conveyor-belt mounted in said frame and having one section thereof adapted to slide over the table, a plurality of compression rolls arranged in pairs, means for supplying reinforcing material to said conveyor-belt, means for corrugating the outer surface of the slab longitudinally, means for forcing a ribbon of plastic material onto said reinforcing material and between said sets of rollers, and means for bevelling the side edges of said slab.

5. In a machine of the class described, a table, an endless conveyor-belt adapted to slide across said table, a plurality of sets of compression rolls arranged on opposite sides of said conveyor-belt, means for feeding a strip of reinforcing material to said conveyor-belt, means co-acting with said conveyor-belt to bevel the side edges of said plastic material, and means for driving said conveyor-belt, said bevelling means comprising angularly disposed rotatable discs arranged on opposite sides of said table.

In testimony whereof, I hereunto affix my signature.

JOHN DEAN.