Feb. 18, 1930. C. B. NORRIS 1,747,317

EDGE TURNING MACHINE

Filed June 4, 1928 3 Sheets-Sheet 1

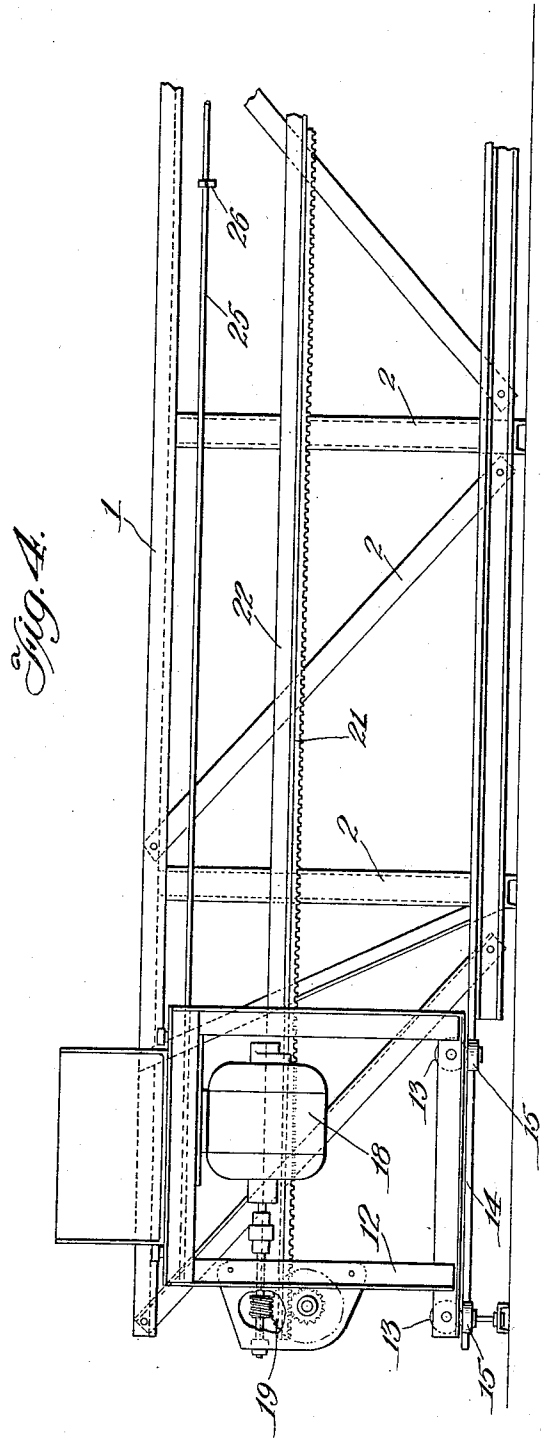


Fig. 4.

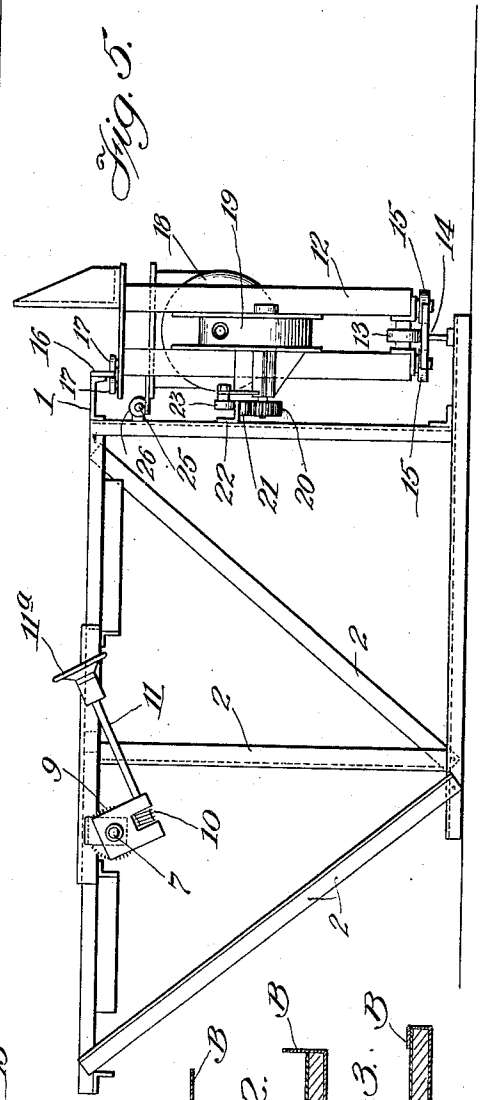


Fig. 5.

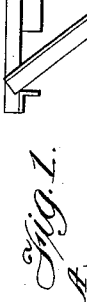


Fig. 1.



Fig. 2.



Fig. 3.

Inventor:
C B Norris.
By Wm. F. Freudenreich
Atty.

Feb. 18, 1930. C. B. NORRIS 1,747,317

EDGE TURNING MACHINE

Filed June 4, 1928 3 Sheets-Sheet 2

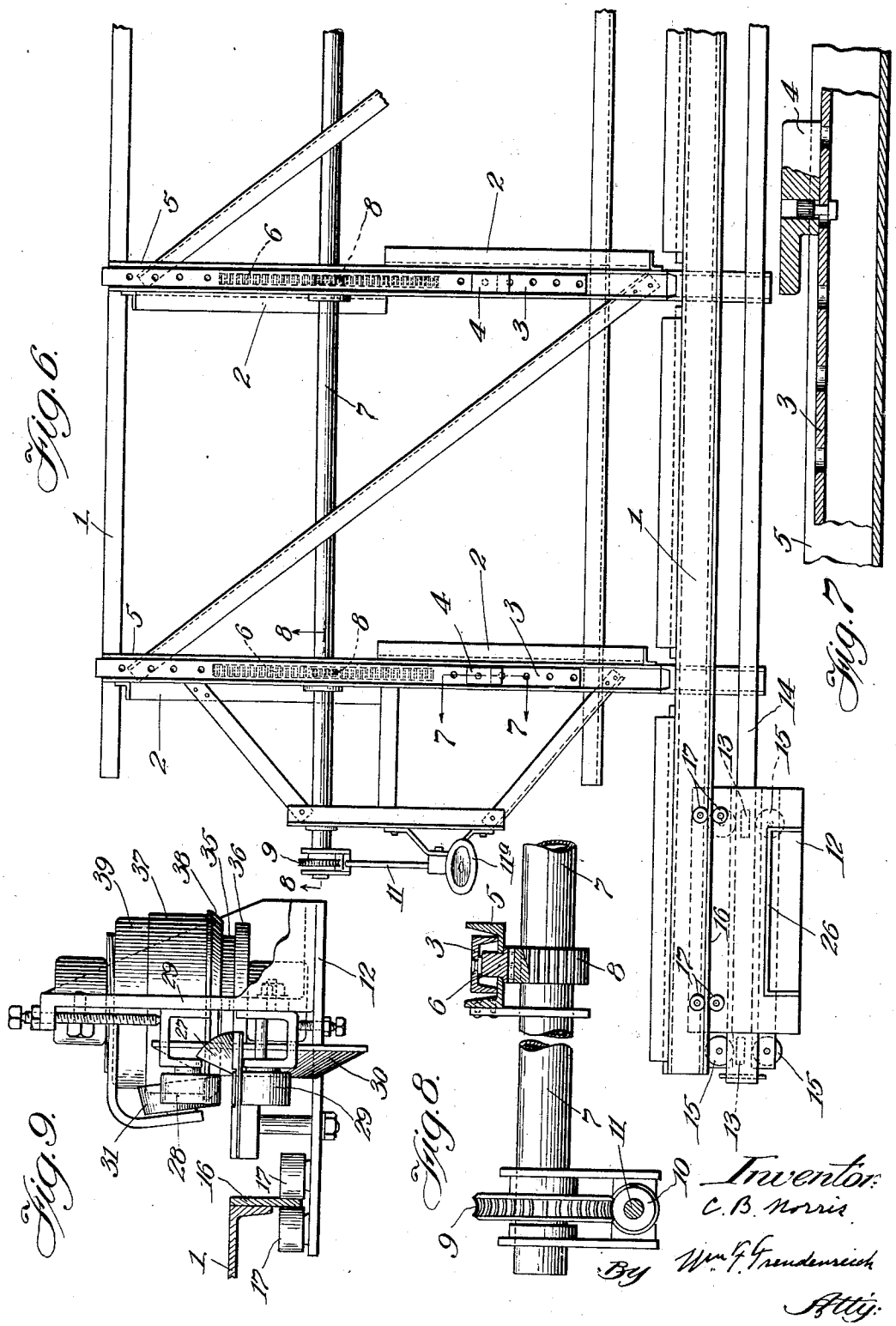


Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

Inventor:
C. B. Norris
By Wm. F. Trendemeich
Atty.

Feb. 18, 1930. C. B. NORRIS 1,747,317

EDGE TURNING MACHINE

Filed June 4, 1928 3 Sheets-Sheet 3

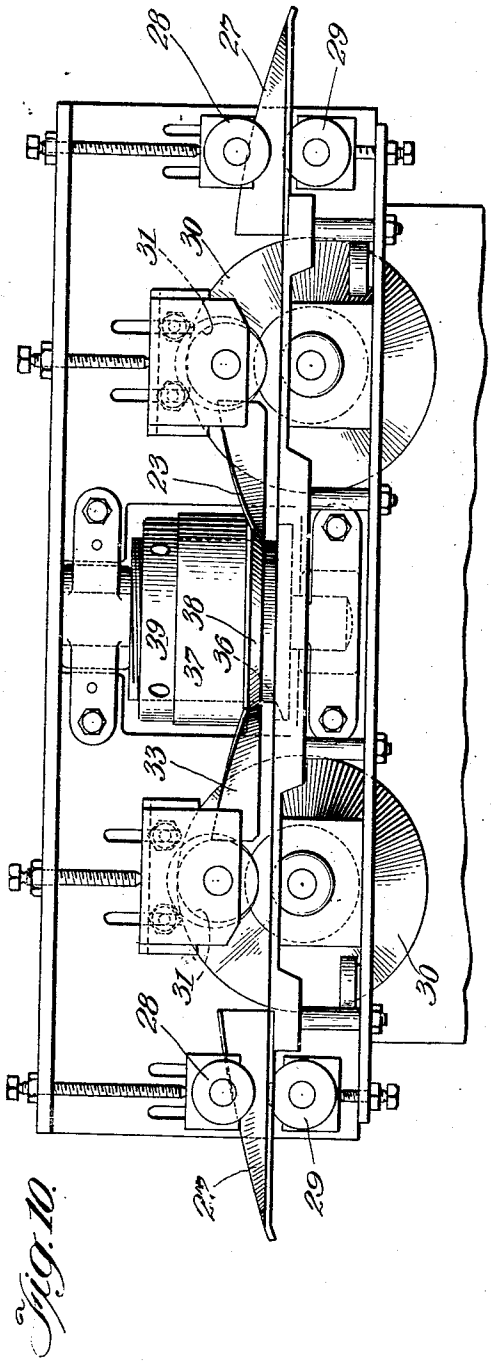


Fig. 10.

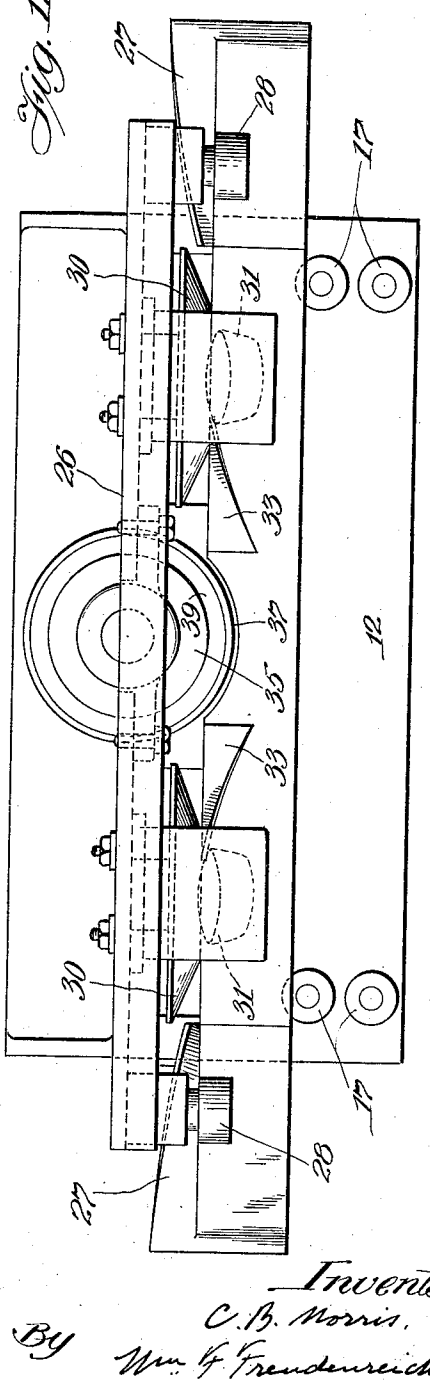


Fig. 11.

Inventor:
C. B. Norris.
By Wm. F. Freudenreich,
Atty.

Patented Feb. 18, 1930 1,747,317

UNITED STATES PATENT OFFICE

CHARLES B. NORRIS, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR TO HASKELITE MANUFACTURING CORPORATION, A CORPORATION OF NEW YORK

EDGE-TURNING MACHINE

Application filed June 4, 1928. Serial No. 282,876.

It is often desirable to carry the metal sheathing of metal-sheathed lumber over the edges so as completely to encase the interior or core. The present invention has for its object to produce a simple and novel machine whereby the sheathing on one face of a metal-sheathed panel, extending beyond an edge of the panel, may be turned up past said edge and over the adjacent marginal portion of the sheathing on the other face or side of the panel; thus making it possible effectively to sheathe an edge of a panel faced with metal on two sides, or to sheathe all of the edges so as to produce a metal casing or sheathing completely enclosing the core of the panel.

The various features of novelty whereby my invention is characterized will hereinafter be pointed out with particularity in the claims; but, for a full understanding of my invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawings, wherein:

Figure 1 is an edge view of a fragment of a panel before the edge turning operation; Fig. 2 is a view similar to Fig. 1, illustrating an intermediate stage in the edge turning operation; Fig. 3 is a view similar to Figs. 1 and 2, illustrating the completed product; Fig. 4 is a side elevation of one end of the machine by means of which the product shown in Fig. 3 is produced from the material shown in Fig. 1; Fig. 5 is an end view of the machine; Fig. 6 is a top plan view; Fig. 7 is a section on an enlarged scale taken on line 7—7 of Fig. 6; Fig. 8 is a section, on an enlarged scale, taken on line 8—8 of Fig. 6; Fig. 9 is an end view, on an enlarged scale, of the head portion of the travelling carriage, and a fragment of the frame of the machine; and Figs. 10 and 11 are respectively a side elevation and a plan view of the head portion of the carriage.

In carrying out my invention, I employ a stationary table or frame on which the panel is laid so as to bring the edge of the core in the vicinity of one edge of the table or frame, while the sheathing on the underside of the panel projects outwardly past the table or frame. Beside the table or frame I locate a travelling carriage having thereon a head that engages the projecting section of sheathing and gradually turns it up and over. The material on which the machine operates consists of a panel A, as shown in Fig. 1, sheathed on both broad faces with sheet metal; the sheathing on one face projecting beyond an edge or all of the edges of the panel as indicated at B. The flange or strip B is progressively bent up and over as indicated in Figs. 2 and 3.

Referring to Figs. 4 to 11 of the drawings, which illustrate the machine, 1 represents a long stationary table mounted in an elevated position on a suitable frame 2. In the top of the table, extending at right angles to one of the long edges that may be termed the front of the table are parallel movable bars 3 provided on their upper sides with adjustable stops 4 against which the rear edge of a panel, the metal at whose front edge is to be turned, abuts. By adjusting the bars simultaneously, the panel may be accurately positioned with respect to the front edge of the table. In the arrangement shown, each of the bars 3 is in the form of an inverted channel iron resting in the trough of a larger channel iron 5. Each of the channel irons 5 has a long central longitudinal slot through which projects a rack 6 secured to the corresponding movable channel 3. A shaft 7 extends transversely of the channel bars and underneath the same; there being on the shaft a series of pinions 8, each of which meshes with one of the racks. The shaft 7 has thereon a worm wheel 9 meshing with a worm 10 on an operating shaft 11 extending at right angles to the shaft 7 and revolubly supported at one end of the frame. There is a hand wheel 11ª on the upper end of the shaft 11, by means of which the latter may be rotated so as slowly to rotate the shaft 7. It will be seen that when the rear edge of a panel is laid against the adjustable stops on the sliding bars, the forward edge of the panel may be accurately positioned by slowly turning the hand wheel so as to cause the sliding bars to move forward.

The framework of the machine is extended beyond the left hand end of the table, as

viewed in Figs. 4 and 6 and is provided with a plurality of parallel tracks on the front side to support a travelling carriage 12. The carriage is provided with wheels 13 resting upon a stationary track 14 near the bottom of the frame. There are also two pairs of wheels 15 arranged at opposite ends of the carriage, conveniently in the vicinity of the wheels 13; the wheels of each pair lying on and engaged with opposite sides of the track 14. Secured to the front of the table is a rail 16 in the form of a flat plate laid on edge. At the top of the carriage are two other pairs of wheels 17, the wheels of each pair lying on opposite sides of and engaging with this track. The weight of the carriage is therefore borne by the rail 14 which, with the assistance of the track 16, also holds the carriage against tilting movements.

The carriage is provided with a motor 18 which, through a suitable transmission mechanism 19, is adapted to drive a pinion 20. The pinion 20 underlies and engages with a long horizontal rack 21 extending along the front of the frame. The rack is shown as secured to the underside of the horizontal flange of an angle iron 22 whose vertical flange is fixed to the front of the frame. The carriage is provided with one or more wheels 23 resting on top of the horizontal flange of the angle iron 22, to further steady the carriage and hold the rack and pinion in mesh. A horizontal rod 25, extending throughout the length of the machine, is mounted on the front of the frame. On this rod is an adjustable stop 26 adapted to cooperate with a suitable switch S, to open the motor circuit and bring the carriage to rest when it has travelled to a predetermined point.

The carriage is provided at the top with a head that serves to turn the projecting sheathing up over the edge of a panel lying on the table when the carriage is moved along the table and the panel lying thereon. The details of this head are best shown in Figs. 9, 10 and 11. The head comprises a suitable support in the form of a long vertical plate 26 fixed to the top of the carriage. At one end of the support is a shoe 27 the lower side of which lies approximately in the plane of the top of the table. The top face of the shoe, which is horizontal at the advance end, gradually swings up so that the inner or rear end is almost vertical. Therefore, if a panel having the sheathing on one side projecting therefrom is laid on the table with the projecting sheathing on the bottom and extending to the right hand edge of the shoe 27 as viewed in Fig. 9, a movement of the carriage toward the observer, as viewed in Fig. 9, will cause the flange-like part of the sheathing to be progressively bent up as the shoe passes underneath the same. Between the shoe and the edge of the table, about midway between the ends of the shoe, are two rollers 28 and 29 rotatable about parallel horizontal axes at right angles to the front edge of the table, to engage with the top and the bottom of the panel while the shoe is passing along the latter. The upper roller 28 serves to hold the panel down, while the lower roller 29 prevents the panel from rubbing too hard on the shoe.

Inwardly from the shoe is a roll 30 in the form of a frustum of a cone whose axis of rotation is horizontal and at right angles to the front edge of the table. As the flange, partly turned up by the shoe, engages with the conical face of the roller 30, it is turned up still further into the vertical position shown in Fig. 2. Just above the center of the roller 30, between this roller and the table, is a roller 31 whose axis of rotation is slightly inclined to the horizontal and whose periphery is slightly tapered. This permits the lower part of this roller to lie near the adjacent face of the roller 30, while the side of the roller 31 facing the roller 30 gradually recedes from the latter from the bottom toward the top. Therefore the roller 31 holds the panel down while the flange is being turned up by the roller 30, while at the same time clearance is provided for the free upper marginal portion of the flange as it passes between the rollers 30 and 31.

Inwardly beyond the rollers 30 and 31 is a shoe 33 similar to the shoe 27 but oppositely disposed. In other words, the flange on the panel rides up over the shoe 27 whereas it rides underneath the shoe 33; the shoe 33 having its working face curved or warped so as to pass from a vertical position at the advance end into a position making an angle of about forty-five degrees with the horizontal at the trailing end.

Inwardly beyond the shoe 33 is a finishing roll rotatable about a vertical axis and having in the periphery a groove through which the marginal portion of the panel will pass while the flange is being bent flat over the top of the panel. This finishing roll, as shown, comprises a cylindrical stem portion 35 of considerable diameter having an annular flange 36 at the lower end. This member is so mounted that the top face of the flange lies in the plane of the top of the table, so that the panel may rest on the flange while the carriage is travelling along the panel. Screwed upon the stem 35 is a sleeve-like part 37 having a flat lower end parallel with the flange 36 and, outwardly therefrom, a surface 38 in the form of a frustum of a cone. On the stem, above the member 37, is a locknut 39. The parts are so positioned that what may be termed the bottom of the groove formed between the lower end of the member 37 and the flange 36 will press against the edge of the panel, holding the upturned sheathing firmly against the edge of the core. As the partly turned-down flange on the panel

strikes the frusto-conical part of the finishing roll, the flange is bent farther down until it is compelled to pass underneath the horizontal wall forming the top side of the groove in the finishing roll. The width of this groove is such that the portion of the flange that is bent down on top of the panel is subjected to sufficient pressure to set it flat against the panel.

The rollers 28, 29 and 31 are adjustable in the vertical direction to accommodate panels of various thicknesses. In order to permit the finishing roll to operate on similar panels, the lock-nut need only be loosened whereupon the member 37 may be screwed up or down to vary the effective width of the groove in the finishing roll.

In order that the head may be double-acting, that is finish the edge of a panel when running along the panel in either direction, I have duplicated the parts 27 to 33, disposing them symmetrically with respect to the finishing roll.

It will thus be seen that I have produced a simple and novel machine by means of which a projecting sheathing or flange may be quickly and accurately turned or folded up from one side of a metal sheathed panel across the edge toward the opposite side, and then be firmly pressed down flat on the margin of the latter side.

While I have illustrated and described with particularity only a single preferred form of my invention, I do not desire to be limited to the exact structural details thus illustrated and described; but intend to cover all forms and arrangements which come within the definitions of my invention constituting the appended claims.

I claim:—

1. In a machine of the character described, a table for supportng a metal-sheathed panel having the sheathing on one side projecting beyond an edge of the core in the form of a flange, with the flange lying beyond one side of the table, a carriage movable lengthwise of the table along said side, means on the carriage for progressively turning said flange past said edge of the core and partly over the marginal portion of the panel on the oposite face, and a roll on said carriage rotatable about an axis at right angles to the top of the table, said roll having a peripheral groove shaped to receive the edge of the panel and press the flange firmly against said edge and down against the sheathing on the opposite side of the panel from that from which the flange projects.

2. In a machine of the character described, a table for supporting a metal sheathed panel having the sheathing on one side projecting beyond an edge of the core in the form of a flange, with the flange lying beyond one side of the table, a carriage movable lengthwise of the table along said side, a roller at the middle of the carriage rotatable about a vertical axis, said roller having in the periphery a groove to receive the edge of the panel, with the metal flange partly bent, and set the bent flange, and means in front of and in advance of said roller to bend up said flange past the edge of the panel and down upon the top, regardless of the direction in which the carriage is moved along the table.

3. In a machine of the character described, a table for supporting a metal-sheathed panel having the sheathing on one side projecting beyond an edge of the core in the form of a flange, with the flange lying beyond one side of the table, a carriage movable lengthwise of the table along said side, means at the middle of the carriage in position to engage the edge of the panel, with the metal flange partly bent, and set the bent flange, and means in front of and in advance of the aforesaid means to bend up said flange past the edge of the panel, regardless of the direction in which the carriage is moved along the table.

In testimony whereof, I sign this specification.

CHARLES B. NORRIS.