Nov. 3, 1925. 1,560,293

W. T. FELS

WALL MOLDING APPARATUS

Filed May 13, 1925 2 Sheets-Sheet 1

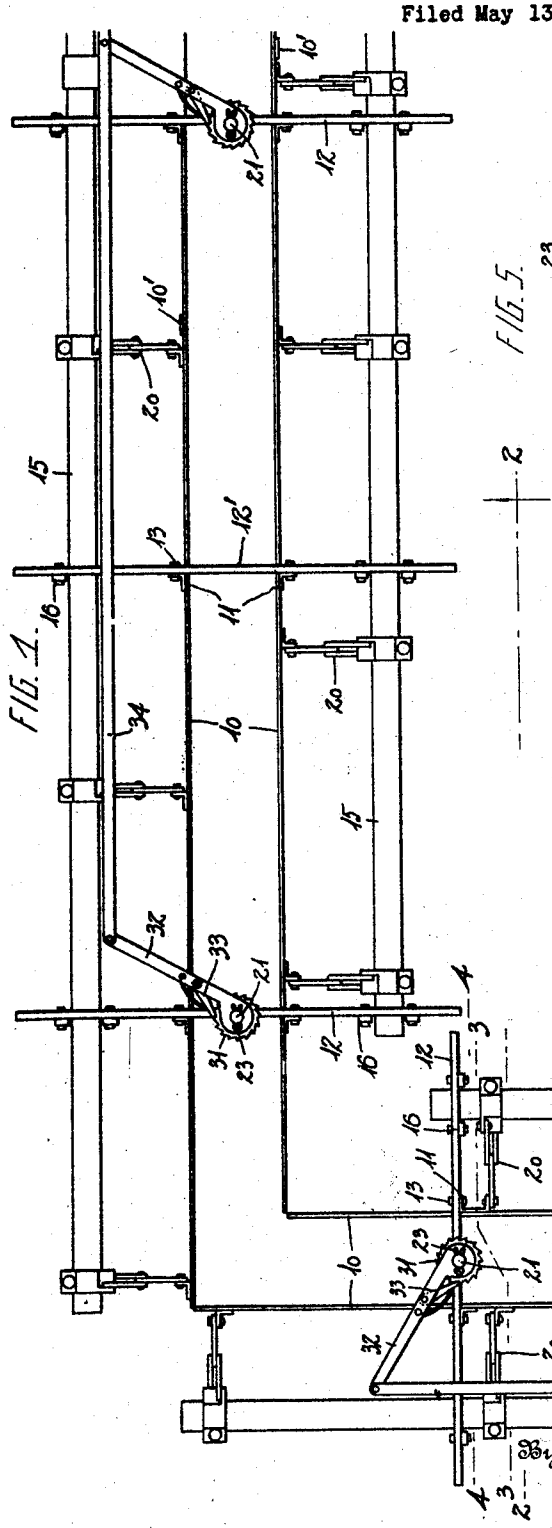


FIG. 1.

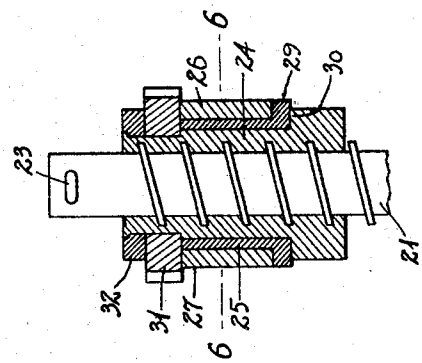


FIG. 5.

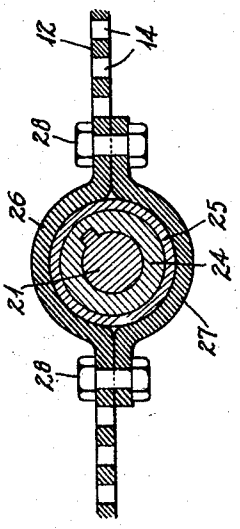


FIG. 6.

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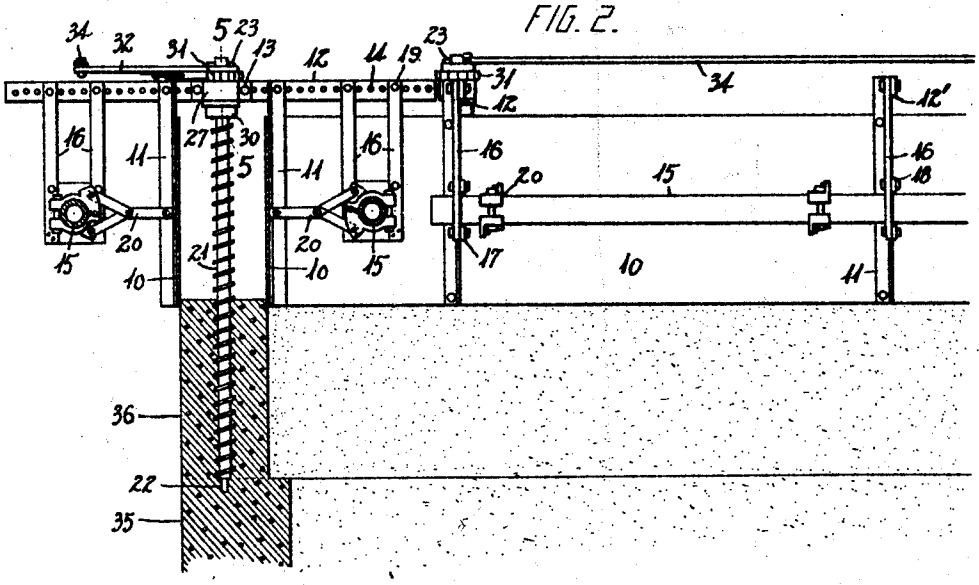
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W. T. FELS

WALL MOLDING APPARATUS

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FIG. 2.



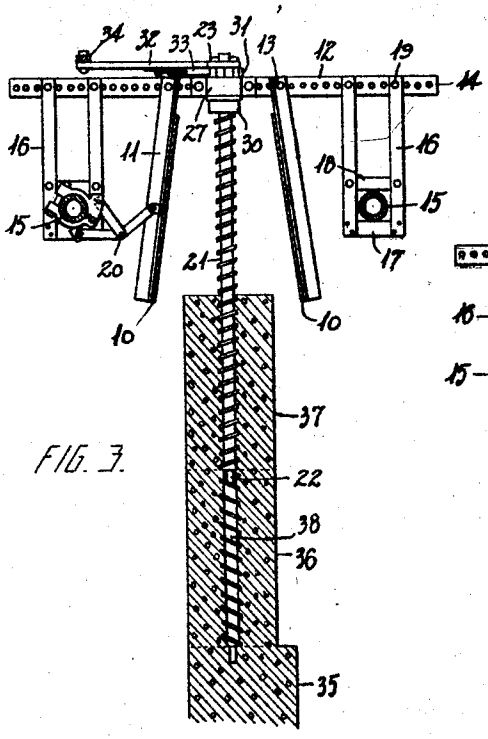
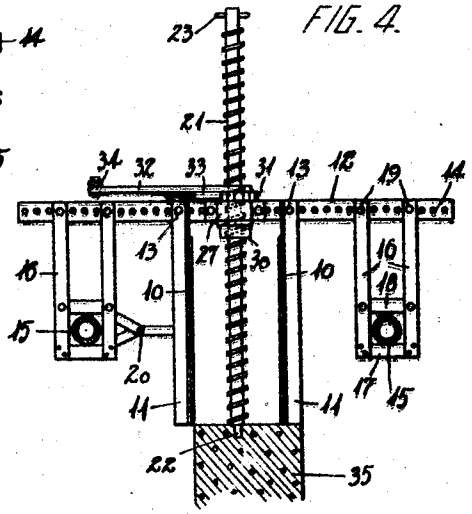


FIG. 3.

FIG. 4.



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UNITED STATES PATENT OFFICE.

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WALL-MOLDING APPARATUS.

Application filed May 13, 1925. Serial No. 30,073.

To all whom it may concern:

Be it known that I, WALTER T. FELS, a citizen of the United States, residing at Fox Chase, Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Wall-Molding Apparatus, of which the following is a specification, reference being had therein to the accompanying drawing.

The present invention relates to apparatus for molding the walls of concrete or similar buildings, and is particularly an improvement over the apparatus disclosed in my copending application Serial No. 729,955, filed Aug. 4, 1924 (now Patent No. 1,539,655 dated May 26, 1925).

It is the object of the invention to provide a novel and improved apparatus for molding walls in superimposed courses in a simple and convenient manner, and with a simple mechanism, which eliminates cumbersome and expensive framework.

It is also an object of the invention to provide such an apparatus comprising a novel and efficient construction and combination of the component elements.

With the foregoing and other objects in view, which will be apparent as the description proceeds, the invention resides in the construction and arrangement of parts, as hereinafter described and claimed, it being understood that changes can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a fragmentary plan view of the improved apparatus.

Fig. 2 is a vertical section on the line 2—2 of Fig. 1.

Fig. 3 is a vertical section on the line 3—3 of Fig. 1 showing the side plates separated and raised after completing the course for which the parts are positioned in Fig. 2.

Fig. 4 is a cross section on the line 4—4 of Fig. 1 showing the parts in position to start the first course on the base or foundation.

Fig. 5 is an enlarged sectional detail on the line 5—5 of Fig. 2.

Fig. 6 is a section on the line 6—6 of Fig. 5.

The apparatus is constructed in sections, one section extending along each wall of the building, and each section may be the entire length of the wall. The sections may also be arranged at different angles relatively to one another, according to the form or plan of the building under construction. Fig. 1 shows two sections arranged at a right angle relatively to one another.

Each section of the apparatus for one wall of the building comprises a wall form or mold proper including the inner and outer side plates 10 of sheet metal, wood or other suitable material. Said plates are of suitable height to define one course of the wall. Said plates may be in sections, with the sections secured together end to end in abutment by means of joint bars 10′ overlapping the adjacent ends of the sections and bolted or otherwise secured thereto. The sections of plates may be of different lengths so that the form can be of any desired length, according to the length of the wall to be constructed.

The side plates 10 are supported by hangers 11, which are of angle iron as shown, and which are bolted or otherwise secured to said plates with the upper terminals of said hangers projecting above the upper edges of the plates for connection with the cross bars 12 and 12′ extending transversely over the plates at suitable intervals longitudinally of the form. The upper ends of the hangers 11 are pivoted by means of bolts 13 to the cross bars, said cross bars having longitudinal series of apertures 14 to receive said bolts, whereby the plates 10 may be spaced apart different distances for producing walls of different thicknesses.

Means are suspended from the cross bars at the opposite sides of the plates 10 for swinging said plates toward and away from one another. Thus, rock shafts 15 are supported by hangers 16 which are arranged in pairs, said hangers being connected at their lower ends by cross pieces 17 on which the shafts 15 seat. Cross pieces 18 are detachably bolted or otherwise secured to the hangers 16 above the shafts 15 for holding said shafts in place, and said cross pieces 18 may be removed from the hangers when assembling the shafts and hangers or separating them. The upper ends of the hangers 16 are secured by bolts 19 or other securing elements to the cross bars, the apertures 14 providing for adjustments of the hangers 16 to correspond with the adjust-

ments of the plate hangers 11. The shafts 15 are connected by toggle links 20 with the plates 10, so that when the toggle links are straightened out, the plates 10 are swung toward one another to vertical parallel position to define the sides of the wall. Said shafts may be turned by any suitable means, and when the toggle links 20 are "broken" as seen in Fig. 3, the plates 10 are swung away from one another so as to release them from the wall which is under construction.

The form or mold is supported directly and solely from the wall which is under construction, without using a special framework, thereby providing a simple and convenient construction, to save time and expense. For this purpose, vertical screws 21 are provided and serve three purposes, namely; the form or mold proper is supported by the screws which are supported from the wall under construction, the screws are employed for raising the form or mold as each course is completed and the screws serve to guide the form or mold vertically so that the wall is plumb. Each screw has a reduced lower terminal 22, and has a cotter pin 23 or other suitable stop at its upper end, and the thread of the screw has its convolutions spaced apart in order that the screw may be unscrewed from the concrete as will hereinafter more fully appear.

Each cross bar 12 is supported from one of the screws 21, the cross bars 12' being used between the cross bars 12 to assist the toggle links 20 in preventing the plates 10 from being bulged or sprung outwardly due to the pressure of the concrete when poured between the plates. A nut 24 is fitted snugly on each screw, and is swivelled to the intermediate portion of the corresponding cross bar 12 between the corresponding hangers 11. Thus, the nut 24 is journaled for rotation within a bearing 25 that is secured to the bar 12. The bar 12 has an arcuate offset portion 26 between its ends, an arcuate piece 27 complements the offset 26 and is bolted or otherwise secured, as at 28, to the bar 12 to provide a clamp embracing the bearing 25 and holding said bearing securely in position. The bearing 25 has a lower flange 29 on which the bar 12 and piece 27 seat, and the nut 24 has a lower flange or shoulder 30 on which the bearing 25 seats. Thus, the nut 24 is supported by the thread of the screw 21, the bearing 25 is supported by the nut, and the bar 12 is supported by the bearing, and the plates 10 being suspended from the bars 12 will therefore support the form or mold from the screws 21 which are disposed between the plates 10.

In order to simultaneously rotate the nuts 24 of one section of the apparatus, a ratchet wheel 31 is secured on the upper protruding portion of each nut 24 above the bar 12, and a lever 32 is mounted loosely on the upper end portion of the nut above the ratchet wheel 31, said lever being free to turn on the nut while the ratchet wheel 31 and nut 24 rotate one with the other. Each lever 32 carries a pawl or dog 33 to engage the ratchet wheel 31, and the levers 32 of each section of the apparatus are connected by a bar 34 so that the levers of one set may be oscillated simultaneously. By oscillating the levers 32 the ratchet wheels 31 and nuts 24 are given an intermittent rotary movement to compel the nuts 24 to either climb up on the screws 21, or to rotate the screws so as to unscrew them from the concrete.

The apparatus is used as follows: The ends 22 of the screws 21 are inserted in recesses or holes provided in the base or foundation 35, as seen in Fig. 4. Toggles 20 are straightened out so as to move the plates 10 to a vertical position. The screws 21 are then adjusted so as to be plumb or vertical with careful accuracy, in order that the wall will be started upwardly plumb. The concrete or grout is then poured between the plates 10, with the form or mold held firmly in position, thereby producing the first course 36 on the base or foundation 35. With the form in starting position as seen in Fig. 4, the plates 10 contact at their lower edges with the base or foundation, and the nuts 24 are located intermediate the ends of the screws, with the screws projecting upwardly above the bars 12. When the first course 36 has been poured and has set sufficiently so as to firmly support the screws 21, the form is then raised so as to enable the next or second course to be formed. The nuts 24 are rotated by reciprocating the bar 34, so that said nuts climb upwardly on the screws, said screws having their lower portions embedded in the course 36. The bars 12 and plates 10 will be raised with the nuts, the toggles 20 having been previously broken so as to swing the plates 10 away from one another out of contact from the course 36. This permits the form to be raised conveniently with the plates 10 spaced from the concrete. When the nuts 24 reach the stops 23, the toggles 20 are straightened out again, to swing the plates 10 toward one another, as seen in Fig. 2, with the lower edge portions of said plates overlapping the upper portion of the course 36, as seen in Fig. 2. The concrete or grout for the second course is then poured between the plates 10 of the form, thereby producing the second course 37 on the course 36, with the screws 21 embedded in both courses 36 and 37. After the course 37 has set or hardened sufficiently, the form is again raised to position it for the third course. The toggles 20 are first broken to swing the plates 10 away from one another out of contact from the course

37, and the bar 34 is reciprocated to rotate, through the ratchet devices, the nuts 24. Said nuts contacting with the stops or members 23 will prevent the nuts from climbing upwardly further on the screws, and the screws are therefore compelled to rotate with the nuts. The screws 21 being rotated will be unscrewed partially from the wall which is under construction. Thus, as seen in Fig. 3, the screws 21 are unscrewed from the course 36 but remain in the course 37 when the plates 10 have been raised sufficiently to position them for the production of the next course. The plates 10 are then again swung toward one another to bring their lower edges into overlapping relation with the course 37, and the operation is repeated as hereinbefore described. The screws 21 remaining in the course 37 will support the screws and form from the course 37. In this way, the screws are always supported by the last course and remain therein until the next upper course has set sufficiently, at which time the screws are unscrewed for the next operation. The screws thus travel upwardly in the wall under construction to continually support the form from the wall, to move the form upwardly, and to guide it for vertical movement so that the wall will be plumb. It will be noted that the screws have at least their lower halves embedded in the concrete in order to prevent the screws from inclining out of plumb, and the wall will therefore be built up vertically providing the screws 21 are started in true plumb positions. As the screws move upwardly with the building up of the wall course after course, vertical holes or passages 38 are left in the wall. These passages are not objectionable and may be used for ventilation, electric wires, or the like, inasmuch as inlets and outlets may be drilled in the wall to the passages 38. By completely unscrewing the screws 21 from the last course the apparatus is quickly removed from the wall. It will also be noted that as the wall progresses upwardly the wall is entirely unobstructed below the form, the apparatus being confined to the upper edge portion or course of the wall. This enables other work to be done on or adjacent to the wall as the wall is built up.

Having thus described the invention, what is claimed as new is:—

1. In a wall molding apparatus, a plurality of screws to engage in the upper portion of a concrete wall under construction and adapted to travel upwardly and withdraw partially from the concrete as the wall is built up course upon course, a nut on each screw to travel upwardly thereon by the rotation of the nut on the screw, the screws having stops thereon above the nuts for the contact of said nuts, a wall form supported by said nuts, and means connected to said nuts for simultaneously turning them.

2. In a wall molding apparatus, a screw to engage in the upper portion of and be supported from a concrete wall under construction and adapted to travel upwardly and withdraw partially from the concrete as the wall is built up course upon course, a nut on the screw to travel upwardly thereon by the rotation of the nut on the screw, a cross bar swivelled on said nut, and side plates carried by said bar for movement toward and away from one another.

3. In a wall molding apparatus, a screw to engage in the upper portion of a concrete wall under construction, a nut on said screw, a stop on the screw to limit the upward movement of the nut thereon, a wall form supported by said nut, and means for rotating the nut to cause the nut to climb upwardly on the screw and to rotate the screw when said nut contacts with the stop.

4. In a wall molding apparatus, a screw to engage in the upper portion of a concrete wall under construction, a nut on the screw, the screw having a stop to limit the upward movement of the nut on the screw, a cross bar having a swivel connection with said nut, side plates carried by said cross bar for movement toward and away from one another, and means for rotating said nut to cause it to climb on the screw to rotate the screw when the nut contacts with said stop.

5. A wall molding apparatus comprising screws to engage in the upper portion of a concrete wall under construction, nuts on said screws, the screws having stops to limit the upward movements of the nuts on the screws, a wall form supported by said nuts, and means for simultaneously rotating said nuts.

6. A wall molding apparatus comprising screws to engage in the upper portion of a concrete wall under construction, nuts on the screws, cross bars having swivel connections with said nuts, side plates supported by said bars for movement toward and away from one another, the screws having stops to limit the upward movement of the nuts thereon, and means for simultaneously rotating said nuts to cause them to climb on the screws and to rotate the screws when the nuts engage said stops.

In testimony whereof I hereunto affix my signature.

WALTER T. FELS.