April 29, 1952 L. T. FERRIN 2,595,066

CONCRETE BLOCK MOLDING MACHINE

Filed Feb. 20, 1950 2 SHEETS—SHEET 1

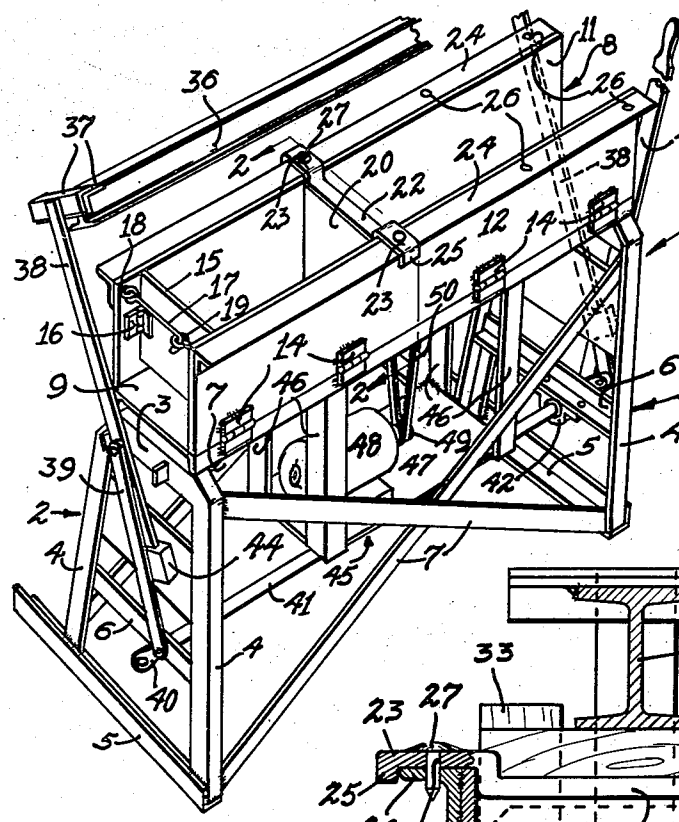


Fig. 1

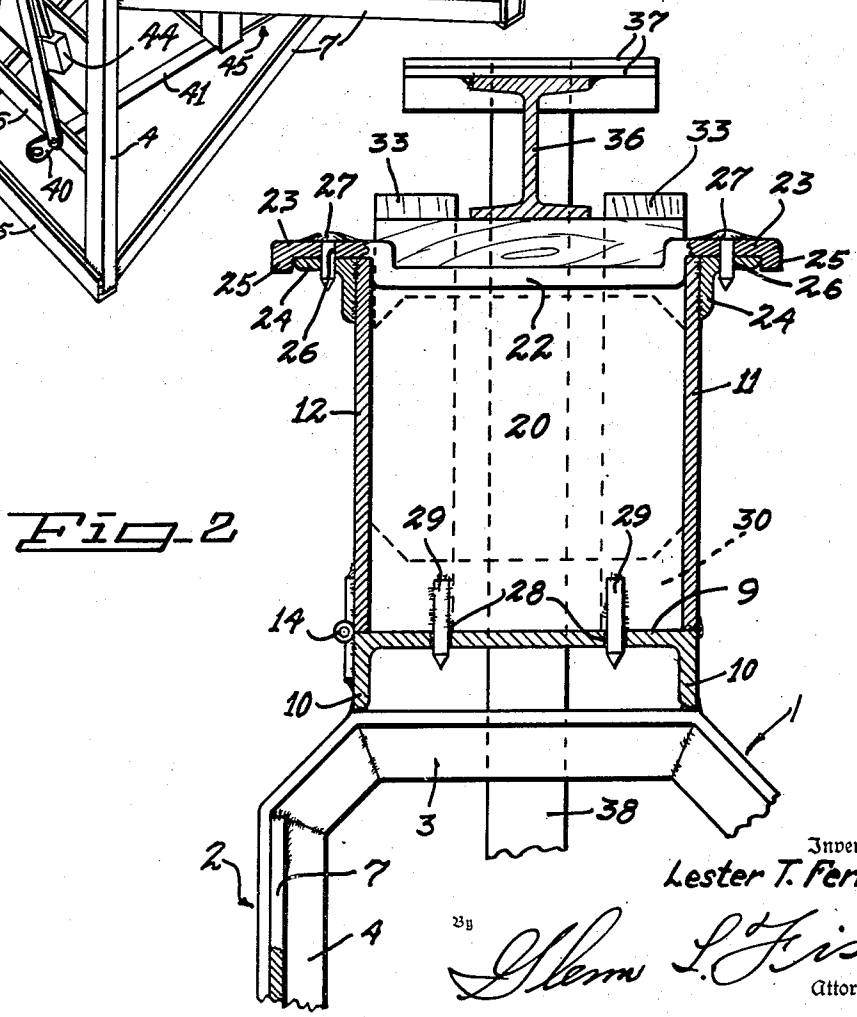


Fig. 2

Inventor
Lester T. Ferrin

By Glenn L. Fish
Attorney

April 29, 1952 L. T. FERRIN 2,595,066

CONCRETE BLOCK MOLDING MACHINE

Filed Feb. 20, 1950 2 SHEETS—SHEET 2

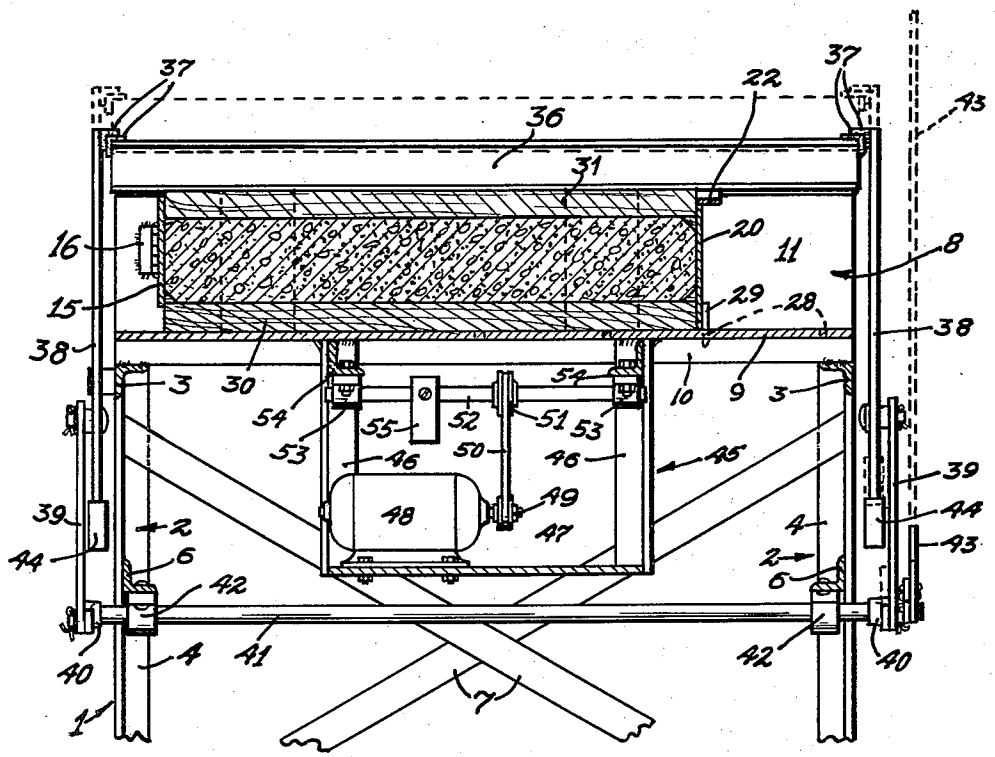


Fig. 3

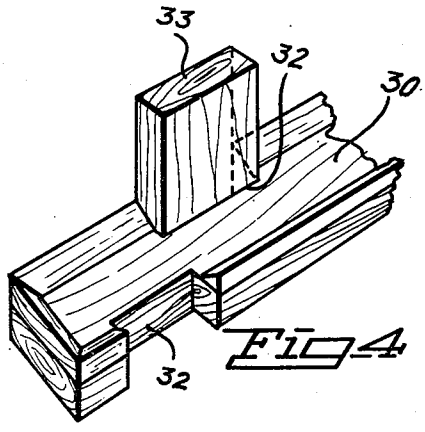


Fig. 4

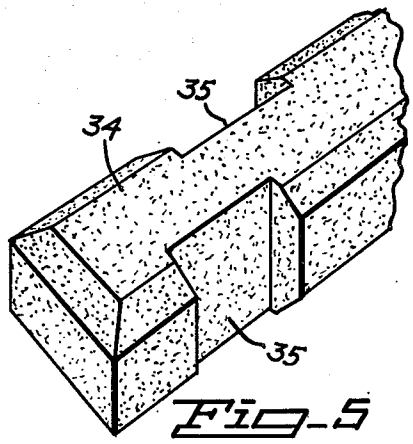


Fig. 5

Inventor
Lester T. Ferrin

By Glenn L. Fish
Attorney

Patented Apr. 29, 1952

2,595,066

UNITED STATES PATENT OFFICE

2,595,066

CONCRETE BLOCK MOLDING MACHINE

Lester T. Ferrin, Tonasket, Wash.

Application February 20, 1950, Serial No. 145,130

5 Claims. (Cl. 25—88)

1

This invention relates to a block-forming apparatus and it is one object to provide an apparatus by means of which concrete blocks used for building outdoor fire places and other structures may be formed.

Another object of the invention is to provide a block-forming apparatus including a box or mould in which concrete is poured and allowed to set and harden, means being provided for vibrating the mould and thus cause air bubbles to rise and pass off from the block-forming material and eliminate weak places in blocks formed by the improved apparatus.

Another object of the invention is to provide a block-forming apparatus wherein the mould or box has a stationary rear side wall and front side wall which is hinged along its lower edge for vertical swinging movement to a raised position, the front wall being held in its raised position by hooks carried by the rear wall and extending across end walls of the mold so that they serve to hold the end walls in a closed position as well as holding the front wall raised.

Another object of the invention is to provide the apparatus with a pressure applying bar which is movable into and out of position to rest upon an upper form placed in the mold or box and then movable downwardly to a pressure applying position.

Another object of the invention is to provide a block-forming apparatus wherein the means for creating vibration is mounted upon a shelf suspended from the bottom of the mold or box in which the blocks are formed.

Another object of the invention is to so form the mold that bottom and top forms may be easily fitted into and removed from the mold and the walls of the mold thoroughly cleaned after a block has been removed from the mould.

The invention is illustrated in the accompanying drawings wherein:

Fig. 1 is a perspective view of the improved block-forming apparatus.

Fig. 2 is a vertical sectional view taken transversely through the mould along the line 2—2 of Figure 1.

Fig. 3 is a longitudinal sectional view taken vertically through the block-forming apparatus.

Fig. 4 is a perspective view of an end portion of the bottom form used when forming a fire place black.

Fig. 5 is a perspective view of an end portion of a fire place block formed with the improved block-forming apparatus.

The improved block forming apparatus constituting the subject matter of this invention has a frame 1 which is formed of metal bars or strips and may be of any desired length and height. The frame has end standards 2 formed of angle metal bars which are bent to provide each standard with a bridge 3 and legs 4 extending downwardly therefrom with their lower ends welded, or otherwise secured, to ground-engaging cross bars or feet 5, which are also formed of angle metal. Bracing bars 6 extend horizontally between the legs 4 to prevent spreading transversely of the frame and in order to prevent the end standards from spreading longitudinally of the frame there have been provided diagonally extending bracing bars 7.

2

A mould or box 8 is supported upon the standards 2 and has a bottom 9 formed from a wide metal bar having depending flanges 10 along its opposite side edges, and from an inspection of Figures 2 and 3 it will be seen that end portions of the flanges rest upon the bridge portions 3 of the standards. A rear wall 11 extends upwardly along one side edge of the bottom to which it is welded, and a front wall 12 has its lower edge portion connected with the rear edge of the bottom by hinges 14 so that it may be swung from a raised position outwardly and downwardly to a lowered position. An end wall 15 normally closes one end of the mould and is connected with the rear wall by a hinge 16 so that it may be swung outwardly to an opened position. This end wall is held closed by a hook 17 carried by an eye 18 projecting from the inner surface of the rear side wall, and upon referring to Figure 1 it will be seen that the hook extends across the outer face of the end wall where it is engaged with an eye 19 carried by the front side wall. Therefore the hook serves to secure the front side wall and also the end wall. A similar hook may be provided for the other end of the mold. Within the mold is disposed a second end wall 20 which has its lower end resting upon the bottom instead of being spaced upwardly from the bottom, as is the end wall 15. This end wall 20 is shiftable longitudinally of the mold or box 8 and upon its upper edge is mounted a bar 22. This bar has its end portions projecting from opposite side edges of the wall 20 and bent to form ears 23 of such length that they extend across the upper outstanding flanges of angle metal strips 24 mounted along upper edges of the front and rear side walls. Outer ends of the ears are bent downwardly to form lips 25 which engage outer side edges of the flanges 24 and prevent the side walls from moving out of en-

gagement with opposite side edges of the end wall **20**. Longitudinally spaced openings **26** are formed through the flanges **24** to receive pins **27** projecting downwardly from the ears **23** and correspondingly spaced openings **28** are formed through the bottom to receive pins **29** carried by and projecting downwardly from the wall **20**. It will thus be seen that the wall **20** may be shifted longitudinally of the mold and firmly held in a predetermined spaced relation to the end wall **15** and thus allow a block of desired length to be formed.

When the block-forming apparatus is in use a bottom form **30** of a desired length is set at rest upon the bottom **9** of the mould or box **8** and concrete poured into the mould until the mould is filled to the depth shown in Figure 3. A top form **31** is fitted into the mould and rests upon the concrete. In the illustration the top and bottom forms have side recesses **32** in which are fitted blocks **33** so that concrete blocks **34** will be formed with recesses **35** near their ends but it will be understood that top and bottom forms of other shapes may be used for forming concrete blocks of other specific shapes. The blocks illustrated are particularly adapted for building outdoor fire places and when so used will have their end portions interlocked to hold the blocks firmly together and form walls and a chimney for the fire place.

After the top form has been set in place pressure should be applied to it for compressing the concrete. In order to do so there has been provided a pressure bar **36** of such length that it extends the full length of the mould. This pressure bar carries cross bars **37** at its ends which are formed of angle metal, and to these cross bars are welded arms **38** which extend downwardly therefrom along opposite ends of the mould and the frame and in spaced relation to their lower ends are pivoted to upper ends of links **39** extending upwardly from crank arms **40** to which they are pivotally connected. These crank arms are carried by ends of a shaft **41** which extends longitudinally of the frame **1** and is rotatably mounted through bearings **42** carried by the cross bars **6** of the standards **2** and at one end carries an upwardly projecting operating lever **43**. Weights **44** at lower ends of the arms **38** normally hold the arms in a vertical position with the pressure bar disposed over the mould midway the width thereof but allow the arms to be swung to the position shown in Figure 1 where it will be out of the way when filling the mould or removing a formed block from the mould. When the shaft is turned to a position in which the crank arms project upwardly from it the pressure bar will be held in the raised position indicated by dotted lines in Figure 3 and when the shaft is turned in a direction to swing the crank arms downwardly the pressure bar will be drawn downwardly into pressing engagement with the top form and concrete in the mould will be subjected to pressure which will cause it to completely fill all portions of the mould or box between the top and bottom forms.

In order to form a solid block of concrete air bubbles in the freshly poured concrete should be eliminated. This is accomplished by vibration which serves to shake the concrete and thus cause bubbles to move upwardly and pass from the concrete. Vibration is accomplished by mechanism suspended from the mold or box. This mechanism is shown in Figures 1 and 3 and referring to these figures it will be seen that under

the mould there has been provided a shelf **45** consisting of hangers **46** formed of angle metal and having their upper ends welded to the bottom **9** of the mould and their lower ends connected with corner portions of a platform of plate **47**. Upon the platform of the shelf is mounted an electric motor **48** carrying a pulley **49** and about this pulley is trained a belt **50** which extends upwardly therefrom and has its upper portion trained about a pulley wheel **51** carried by a shaft **52**. This shaft extends longitudinally of the shelf and the mould and is rotatably mounted in bearings **53** carried by cross bars **54** mounted between hangers at opposite sides of the ends of the shelf. The pulley **51** is larger than the pulley **49** so that the shaft **52** will turn at a slower speed than the shaft of the motor and upon the shaft **52** is mounted an off-balance weight **55** which swings about the shaft during rotation of the shaft and creates vibration which is imparted to the shelf and the mould or box and very effectively causes air bubbles in the concrete to move upwardly and pass off through the upper surface of the soft concrete. A very solid concrete block will thus be formed when the concrete has set and hardened.

Having thus described the invention, what is claimed is:

1. A block-forming machine comprising a box having a bottom, front and rear side walls, one side wall being hinged along its lower edge to a side edge of the bottom for pivotal movement to raised and lowered positions, an end wall hinged to one side wall and movable into and out of a closed position between end portions of said side walls, a fastener extending between said side walls and across the outer surface of said end wall and releasably holding the end wall closed and the movable side wall in its raised position, strips extending along upper edges of said side walls and having outstanding flanges formed with openings spaced from each other longitudinally thereof, the bottom being also formed with longitudinally spaced openings, an adjustable end wall disposed in said box between the side walls and being bodily shiftable longitudinally of the box, a cross bar mounted along the upper edge of the adjustable end wall and having end portions projecting therefrom and forming ears resting upon and extending across the flanges of said strips, pins extending downwardly from the lower edge face of said adjustable end wall and from said ears and fitted into selected openings of the bottom and the flanges of said strips and detachably holding the adjustable wall in predetermined spaced relation to the first end wall, and means for applying pressure to block-forming material in the box between the side walls and the end walls.

2. A block-forming machine comprising a box having a bottom and side walls, one side wall being stationary and the other hinged along its lower edge for vertical swinging movement from a lowered position to a raised position, an end wall hinged to the stationary side wall for horizontal swinging movement from an opened position to a closed position between the side walls, an eye carried by the movable side wall and projecting from the inner surface thereof, a hook carried by the stationary side wall and extending transversely across the outer face of said end wall and detachably engaging said eye and serving to hold the end wall closed and the movable side wall raised, a second end wall fitting into the box transversely thereof and being shiftable

along the box and detachably connected with the side walls and the bottom and thereby releasably held in predetermined spaced relation to the first end wall, and means for applying downward pressure upon block-forming material in the box.

3. A block-forming machine comprising a box having a bottom and side walls, one side wall being stationary and the other hinged along its lower edge for vertical swinging movement from a lowered position to a raised position, an end wall hinged to the stationary side wall for horizontal swinging movement from an opened position to a closed position between the side walls, an eye carried by the movable side wall, a hook carried by the stationary side wall and extending across the outer face of said end wall and detachably engaging said eye to hold the end wall closed and the movable side wall raised, strips along upper edges of said side walls having outstanding flanges formed with longitudinally spaced openings, a second end wall disposed vertically between said side walls and resting upon said bottom and being shiftable longitudinally of the box to adjusted positions, and a bar mounted along the upper edge of the second end walls and having its end portions extending across the flanges of said strips and having downwardly bent ends forming lips engaging across outer side edges of the flanges and bracing the side walls against outward strain, and pins projecting downwardly from the said end portions of said bar and fitting into selected ones of said openings and securing the second end wall in place.

4. A block forming machine comprising a box having a bottom and front and rear side walls, one side wall being movable to raised and lowered position, means to secure said wall in its raised position, an end wall movable into and out of a closed position between the side walls at one end of the box, a second end wall disposed vertically in said box between said side walls and being shiftable longitudinally of the box to adjusted positions, a frame supporting said box, a shaft rotatably mounted longitudinally of said

frame in downwardly spaced relation to said box, crank arms extending laterally from said shaft, links pivoted to said crank arms and extending upwardly therefrom, a bottom form fitting snugly in said box and resting upon the bottom between the ends walls, a top form fitting snugly in said box, a pressure bar, arms extending downwardly from ends of said pressure bar and pivoted in spaced relation to their lower ends being pivoted to upper ends of said links, balance weights at lower ends of said arms, and a lever carried by and projecting upwardly from said shaft for turning the shaft and shifting the links and the arms vertically to move the pressure bar into and out of position for applying downward pressure upon the upper form.

5. A block-forming machine comprising a box open at its top, a support for said box, a shaft spaced downwardly from said box and rotatably mounted longitudinally of said support, crank arms extending laterally from ends of said shaft, links pivoted at lower ends to said crank arms and extending upwardly therefrom, a pressure bar over said box extending longitudinally thereof, arms having upper ends connected with ends of said pressure bar and in spaced relation to their lower ends being pivoted to upper ends of said links, weights at lower ends of said arms, and a lever extending upwardly from one end of said shaft for rotating the said shaft and thereby effecting movement of the pressure bar into and out of a pressure applying position.

LESTER T. FERRIN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
824,235	Damon	June 26, 1906
935,483	Galassi	Sept. 28, 1909
1,387,175	Price	Aug. 9 ,1921
1,542,739	Smith	June 16, 1925
1,636,253	Smith	July 19, 1927