To all whom it may concern:

Be it known that I, Cyrus S. Wert, residing at Kendallville, in the county of Noble and State of Indiana, a citizen of the United States, have invented certain new and useful Improvements in Concrete-Brick Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to a machine for molding concrete blocks and has for its object to provide a machine for this purpose which will be adapted for molding a series of concrete blocks at the same time and which will be simple in construction and rapid and efficient in operation and will be particularly adapted for molding concrete blocks of the size and shape of ordinary building bricks either with or without facing, on one or two faces, of finer and more resilient material than that of which the main portion of the block is composed. A further object of the invention is to provide a machine in which a series of concrete blocks may be molded on a tray adapted to be lifted out and to serve as a support for the blocks during the curing process.

With the above indicated objects, and other objects hereinafter described, in view, my invention consists in the construction and combination of elements hereinafter described and claimed.

Referring to the drawings:

Figure 1 is a perspective view of complete machine embodying my invention, the parts being shown in position to receive the tray on which the blocks are to be molded.

Figure 2 is a detail sectional view showing the mechanism for moving the spacing plates backward and forward.

Figure 3 is a detail sectional view showing the mechanism for holding the tamper in raised position.

Figure 4 is a front view of the mold with the tray in position but with the front plate turned down.

Figure 5 is a side view of the mold with the hopper in place ready to receive the concrete mixture.

Figure 6 is a top view of the mold opened for removal of the finished blocks.

Figure 7 is a side view of the mold with the spacing plate for use in producing faced blocks in position.

Figure 8 is a detail view showing the cam clamp for the front plate in two positions.

Figure 9 is a perspective view of the mold closed in position to receive the concrete mixture.

Figure 10 is a perspective view showing the cutter or cover plate in forward position.

Figure 11 shows the dividing plate for use in producing faced blocks, in front and edge view, and Figure 12 shows the scraper in front and edge view.

In the drawings, 1, 1, indicate side bars at the top of the frame of the machine, supported by front legs 2, 2 and rear legs 3, 3, the frame having lower side bars 4, 4, each secured to a front leg 2 and a rear leg 3 near their lower ends. Vertical bars 5, 5, each extend from a lower side bar 4 to an upper side bar 1 at points somewhat to the rear of half-way between the front and rear legs. 6, 6 are diagonal brace rods for the front legs 2, 2.

On the upper edges of the side bars 1, 1, are secured side plates 7, 7, by means of vertical posts or bars 8, 9 and 10. To these side plates near their upper edges are secured horizontal bars 11, 11, which extend rearward back of the posts 10, the rear ends 85 of these horizontal bars being connected to the front legs 3, 3, by inclined brace bars 12, 12.

To the front ends of the side bars 1, 1, is hinged a plate 13 which forms the front plate of the mold. Across the forward portion of the top of the machine and resting on the top bars 1, 1 are supporting bars 14, which are adapted to support the removable tray 15 which forms the bottom of the mold and is provided with a support 16 at each end adapted to extend downward outside the side bars during the molding
operation and to support the tray carrying the molded blocks while they are curing, the supports 16 being of such length that one tray may be stacked on another without danger of injury to the molded blocks.

Opposite the hinged front plate 13 is the rear plate 17 extending across the machine and having a series of slots 18 formed therein extending from its upper edge down to the level of the upper face of the tray 13 when it is in position on the supporting bars 14.

In rear of the supporting bars 14 and mounted to slide forward and rearward between the side plates 7, 7, through the slots 18 of the rear plate 17, is a series of vertical partition plates 20, connected together midway between their ends by cross plate 21, this cross plate forming, when in forward position, a support for the rear plate 17 of the mold. The lower edges of these spacing plates are adapted, when in forward position, to rest on the upper face of the tray 15 when it is in position on the supporting bars 14, with their forward ends against the front plate 13 which is held in elevated or closed position by clamps 22 carried by arms 23 pivoted to posts 8. There is thus found a rectangular mold open at the top and separated into a series of rectangular molds by the partition plates 20, the front of the mold being formed by front plate 13, the bottom by the tray 15 and the rear being formed by the back plate 17. The ends of the mold are formed by the end plates of the series of partition plates which rest against guide bars 24 on the inner sides of the side plates 7. A hopper or funnel 25 provided at its ends with lifting handles 26 is adapted to fit in the open top of the mold formed as above described, the sides of the hopper being preferably strengthened by angle irons 27 extending from end to end near the upper edges of its sides. This hopper serves as a guide to receive the concrete mixture and direct it into the mold and is intended to be removed by means of the handles 26 when the mold has been filled and tamped.

On the partition plates 20 is arranged a trimming or cutter plate 28 of a width corresponding to the width of the mold and extending from end to end of the mold and having its ends 29 turned down to fit over the end partition plates and to slide freely on the partition plates. Until the mold is filled and tamped and the hopper removed, this trimming or cutter plate rests on the rear portions of the partition plates. After the mold is filled and tamped and the hopper removed, this trimming or cutter plate is slid forward over the block or series of blocks in the mold to trim off any excess of concrete and to protect their top surfaces during the withdrawal of the partition plates.

In the operation of the machine, the partition plates 20 being in retracted or rearward position, a tray 15 is placed on the supporting bars 14 with its supports 16 extended downward outside the side bars 1, 1, and the hinged front plate is swung up and secured in vertical position by the clamps 22. The partition plates 20 are then pushed forward through the slots 18 of the rear plate 17 until their front ends rest against the front plate 13, the cross plate 21 serving to support the portions of the rear plate between the slots 18, against rearward movement. The mold is then ready to receive the hopper 25 and, when this is placed in position, concrete mixture is poured into the hopper until the mold is filled, the hopper preventing overflow of any one section from passing over the sides or ends of the mold and facilitating the distribution of the concrete mixture to all of the sections. When the mold has been thus filled the concrete is tamped preferably by a tamper 20 formed in sections 31 corresponding to the sections into which the mold is divided by the partition plates 20. After the tampering the hopper is lifted off and the trimming or cutter plate 28 is drawn forward to trim off any excess of concrete and leave the tops of the sections even with the upper edges of the partition plates 20. The partition plates are then drawn rearward through the slots 18 of the back plate, the trimming or cutter plate 28 preferably moving back with the partition plates 20 so as to protect the upper faces of the sections against injury. The front plate 13 is then swung down and the tray with the series of blocks on it is lifted off and carried away to be stacked for curing.

When it is desired to produce blocks having their front faces provided with a facing, a dividing plate 33 having slots 34 adapted to fit over the partition plates 20 is inserted in the mold, before any concrete is introduced, near the front plate 13 from which it is suitably spaced by strips 35 secured to the dividing spacing plate outside the end partition plates 20. An angle iron 36 secured to the transverse spacing plate serves to stiffen the plate, to space it away from the front plate and to prevent the entrance of concrete into the space between it and the front plate. Blocks 37 carried by the arms 23 are adapted to engage the rear face of the dividing plate and hold it from rearward movement. When this dividing plate is in position the spaces back of it are filled with concrete mixture of relatively coarse character and the dividing plate is then drawn out, leaving a space between it and the front plate.
This space is then filled with concrete mixture of relatively fine character suitable for forming a hard, waterproof facing. When this space is filled the tamper 30 is brought down to solidify the concrete and cause it to fill the mold and also to force the facing material and the main portions of the blocks into intimate union. After this tamping the hopper is removed and the trimming or cutter plate 28 is brought forward to trim off the excess of concrete as before described. If it is desired to produce blocks having facing on two faces, the upper surface of the main portion and front facing is removed to a depth, preferably, of about one-fourth inch, by a scraper 40 having its edge serrated as shown at 41 and having deep notches 42 at intervals corresponding to the intervals between the partition plates 30.

The hopper is then replaced and a concrete mixture suitable for facing is poured in and the tamper again brought down to solidify the facing and to force it into intimate union with the block already formed. While the broad invention as above described is independent of specific mechanism for moving the several parts of the machine I prefer to make use of the mechanism hereinafter described.

The partition plates 30, connected together by the cross plate 21, are arranged to be moved forward and rearward by levers 50 secured about midway of the length on shaft 51 journaled in bearings 52 secured to the vertical bars 5. The upper ends of these levers 50 are connected in any convenient manner with the partition plates. For this purpose the cross plate 21 may be provided on its lower edge with arm 53 carrying pins 54 adapted to extend into an open ended slot 55 in the upper ends of levers 50.

To the lower ends of the levers 50 are pivoted links 56, the other ends of which are pivoted to arms 57 secured on a shaft 58 journaled in bearings 59 on the lower side bars 44 near the front legs 2, 2. On this shaft 58 is secured, at one side of the frame of the machine, an operating lever 60 having handle 61. A stop 62 secured to a front leg 2 in the path of movement of the operating lever serves to limit its forward swing. When this operating lever is pushed rearward the upper ends of levers 50 will swing forward moving the partition plates into their forward position as above described and by swinging the operating lever forward until it comes against stop 62, the partition plates are drawn backward through the slots in the back plate.

The clamps 22 for the hinged front plate 13 are pivoted on the ends of rods 23 and each comprises a handle 63 and a cam 64 so arranged that on swinging the handle on its pivot the cam will act against the front face of the hinged front plate to force it strongly rearward.

The tamper 30, consists of a series of sections 31 preferably formed integral with a bar 70 carried by arms 71 preferably bent as shown pivoted at their rear ends to the upper ends of the inclined braces 12. Cross brace rods 72 are used to prevent side movement of the arms 71. The arms 71 extend forward beyond the bar 70 and are connected by a rod 73 which serves as a handle to be grasped to bring the tamper down onto the material in the mold.

To the arms 71 at points about one-third of the distance from the pivots of these arms to the bar 70 are pivotally connected lifting rods 74. The lower ends of these lifting rods are pivotally connected to arms 75 on a shaft 76 journaled in the rear legs 3, 3, near the lower side bars 4, 4. These arms are connected together by rod 77 and at a point about midway of its length, a tension spring 78 is connected to this rod, the upper end of the spring being connected to a cross bar 79 here shown as secured at its ends to the bars 71. This spring acts to draw the rod 77 and arms 75 upward and, through the lifting rods 74, to keep the tamper normally in elevated position but permits it to be pulled down when required to effect the tamping operation.

While the machine as shown is constructed to produce rectangular blocks of uniform size and shape, it is obvious that it may be readily adapted to form a series of blocks differing in size and differing from rectangular shape. It is also obvious that the inner face of the front face and the faces of the tamper sections may be provided with a pattern die by which a surface other than plain may be given to the front or upper face of the block or both.

It should further be understood that I do not desire to be limited to the particular construction or arrangement shown or described as it is obvious that many changes in construction and arrangement may be made without departing from the spirit of the invention.

Having thus described my invention what I claim is:

1. A machine for molding concrete blocks, the combination of a supporting frame, a back plate carried by the supporting frame having a series of vertical slots formed therein, a removable tray resting on the supporting frame and adapted to form the bottom of the mold having its rear edge in contact with the back plate, a front plate hinged to the supporting frame and adapted to be held in contact with and extending upward from the front edge of the removable tray, vertically arranged partition plates
adapted to slide through the slots in the back plate over the removable tray into contact with the front plate to form the ends of the mold and to divide the mold into sections, a removable dividing plate adapted to extend from end to end of the mold parallel with the front plate having slots formed therein to fit over the partition plates and having means for spacing it away from the front plate, arms pivoted to the supporting frame and provided with clamping means adapted to engage the front plate and hold it in upright position, and means carried by said arms for holding the dividing plate against rearward movement.

In testimony whereof I hereunto affix my signature.

CYRUS S. WERT.