

(No Model.)

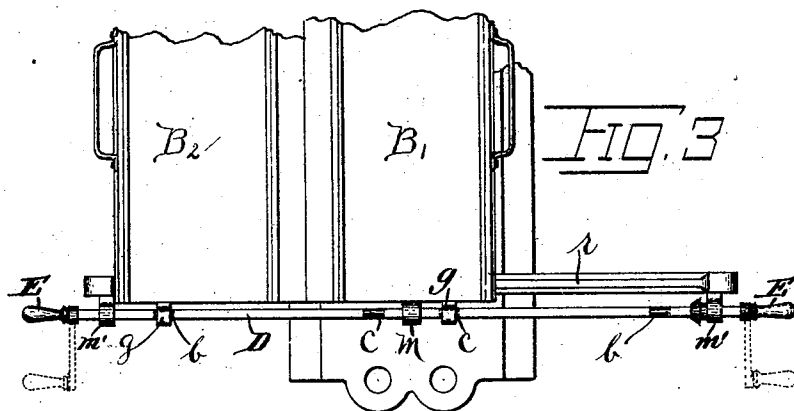
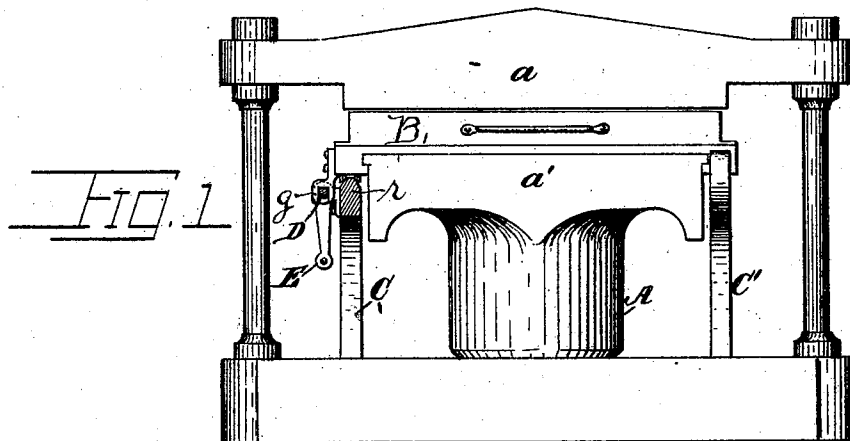
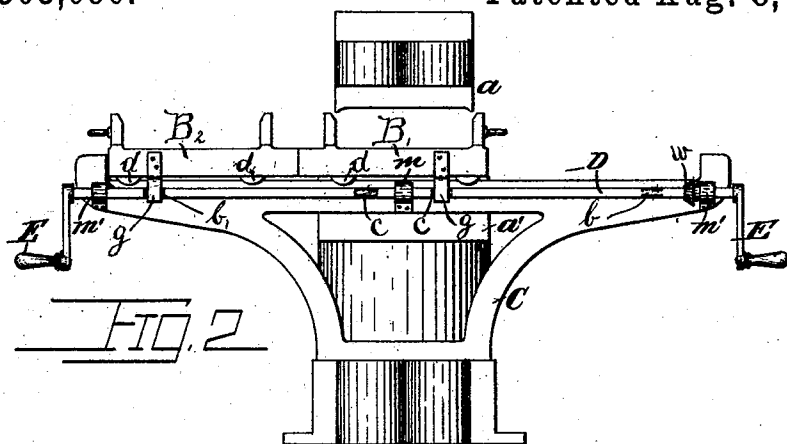
2 Sheets—Sheet 1.

W. KRUTZSCH.

AUTOMATIC LOCKING DEVICE FOR PRESS OPERATING MECHANISM.

No. 503,090.

Patented Aug. 8, 1893.



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(No Model.)

2 Sheets—Sheet 2.

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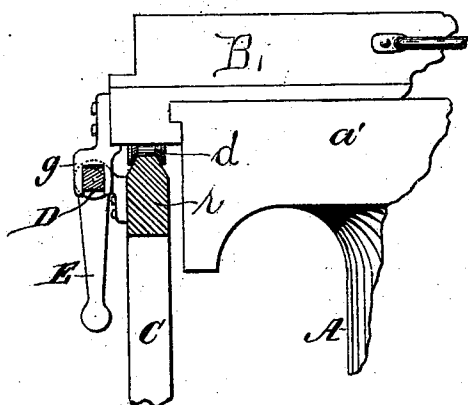


FIG. 4

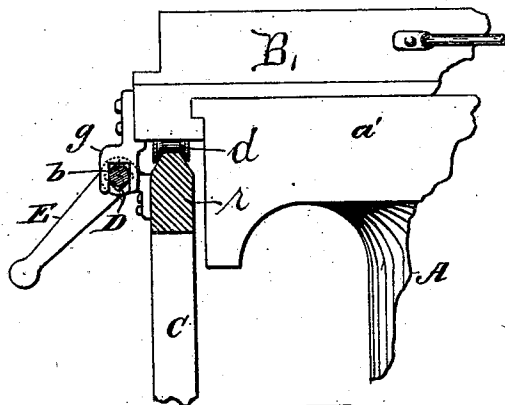


FIG. 5

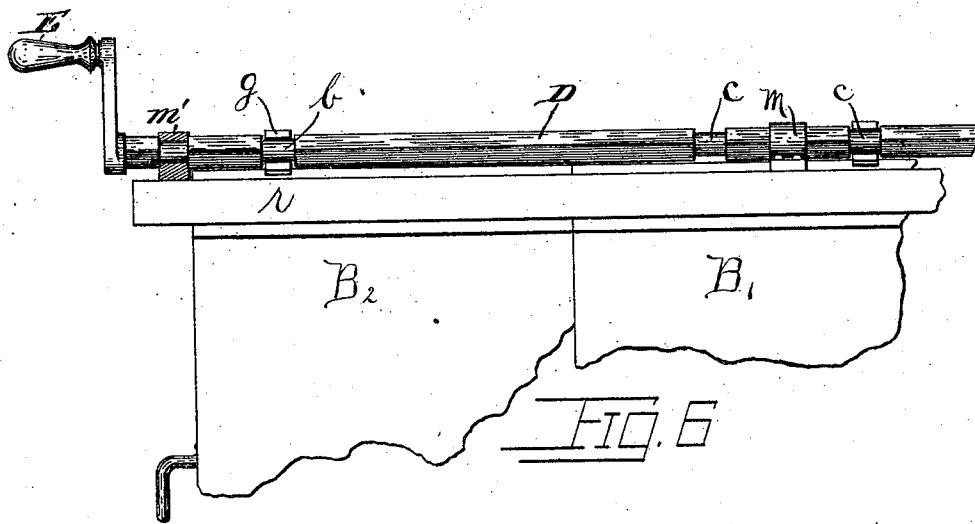


FIG. 6

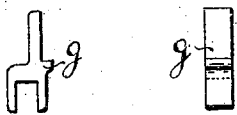


FIG. 7



FIG. 8

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UNITED STATES PATENT OFFICE.

WILLIAM KRUTZSCH, OF DAYTON, OHIO, ASSIGNOR TO THE BUCKEYE IRON AND BRASS WORKS, OF SAME PLACE.

AUTOMATIC LOCKING DEVICE FOR PRESS-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 503,090, dated August 8, 1893.

Application filed February 20, 1893. Serial No. 463,120. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM KRUTZSCH, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented new and useful Improvements in Automatic Locking Devices for Press-Operating Mechanism, of which the following is a specification.

My invention relates to locking mechanism for the valve operating gearing of hydraulic and steam presses and more especially to that class of hydraulic presses which are commonly used in linseed and cotton-seed oil mills for forming the meal into cakes preparatory to expressing the oil therefrom. Such presses are usually designated as "cake formers" or simply "formers."

My improvements pertain particularly to what are known as "double cake formers," that is to cake formers which are arranged to be worked by two attendants, one on each side of the press, one attendant or operator pressing his cake while the other is putting the meal into the molding box preparatory to pressing. In this way double the number of cakes can be pressed in a given time. Each attendant should have within his reach a handle to control the admission and discharge valves of the press cylinder. If either man should operate the valves while the other had his molding box partly between the platens of the press disaster would result. It is to prevent any such mistake that my automatic locking mechanism is devised. I thus make it impossible to operate the valves until both molding boxes, or all the boxes of a series, are in proper relative position.

To this end my invention consists in the novel features of construction and new combinations of parts in a locking mechanism for the valve operating gearing of presses, as hereinafter described and claimed.

In the annexed drawings illustrating the invention—Figure 1, represents an end elevation of a press or former and molding box. Fig. 2 is a side elevation of the same with the press columns removed to afford a clearer view of details and showing one molding box in proper position between the press platens and the other out on its track in position for filling. Fig. 3 is a partial top view of the

molding boxes, omitting the head block or upper platen of the press but showing the locking mechanism of the valve operating gearing. Fig. 4 is an enlarged partial end elevation of press and molding box with track rail and valve operating lock rod or shaft in section and showing the operating crank handle in its normal position as when the valve operating gearing is locked. Fig. 5 is a similar view showing the crank handle thrown to one side as when the valve operating gearing is released or unlocked. Fig. 6 is a bottom view of a portion of the molding boxes, the track on which they are moved and the locking mechanism in its unlocked position. Fig. 7 shows end and side views of a forked guard or locking lug that is secured to the side of a molding box and which straddles the lock rod or shaft in such position as to interlock therewith when the molding box is not in proper position as when it is only partly between the platens of the press. Fig. 8 shows side and end views of the center bearing of the lock rod or shaft.

Referring to the drawings the letter A designates a hydraulic press having the upper platen *a* and lower platen *a'*; and *B* *B*² designate a series of movable molding boxes.

C C' are brackets supported by the press frame and each having its upper portion formed into a rail or track *r* for the flanged wheels *d* of the molding boxes. One of these brackets also supports the boxes *m* and *m'* in which the lock rod or shaft *D* is journaled. The lock rod or shaft *D* extends along one side of the press from end to end and is provided with a crank handle *E* at each end. Keyed to this shaft or rod *D* near one end is a bevel pinion *w* which is arranged to mesh into a similar pinion having twice the number of teeth and secured on the end of a vertical shaft which operates the admission and discharge valves of the press. These valves and their vertical operating shaft and attached pinion are not shown, as they form no part of my invention. One turn of the shaft *D*, by means of either crank handle *E*, opens the supply valve and closes the exhaust or discharge valve and another turn reverses these operations.

The lock rod or shaft *D* is made rectangular.

lar in cross-section except at its bearings in the boxes m, m', m' and at the intermediate points b, c, b , where it is made cylindrical.

Each molding box $B' B^2$ has a forked locking lug or guard g , Fig. 7, bolted to it on one side in such position that it will straddle the lock rod or shaft D , as shown in Figs. 1, 4, 5 and 6. When either molding box is out on the track r in filling position its forked locking lug will straddle the rod or shaft D at one of its cylindrical portions b and when the box is properly between the press platens the forked lug will be at one of the cylindrical portions c , so that while the boxes are in these positions the rod or shaft D will be free to turn. But if either box be out of its proper position, or only partly between the press platens, the forked locking lug g will straddle and closely engage a rectangular portion of the lock rod or shaft D and will prevent it from being turned. It will thus be seen that the press valves cannot operate unless the forked locking lugs of both or all the molding boxes are straddling the cylindrical portions of the lock rod or shaft. When this is the case the molding boxes are in their proper relative positions and no harm will result from operating the press.

While I have described my invention as applied to hydraulic presses it is quite evident that it may be also readily adapted to presses operated by steam or by other power.

It is obvious that the locking portions of the rod or shaft D may be of any polygonal form in cross section, to correspond with the angular configuration of the forked locking lugs. But I prefer to employ a rod or shaft having alternate rectangular and cylindrical portions and to so form the forked portions of the locking lugs that they will closely embrace the rectangular portions of the shaft and only permit it to rotate when said lugs straddle its cylindrical portions.

What I claim is—

1. In a press, the combination with one or

more movable molding boxes, and the press operating mechanism, of a rotary lock-rod or shaft journaled parallel to the line of travel of the molding boxes and connected with the press operating mechanism, and a locking device carried by each molding box and adapted to automatically interlock with said lock-rod or shaft and render the press inoperative when the molding box is not in a proper position, substantially as described.

2. In a press, the combination with a series of movable molding boxes, and the press operating mechanism, of a rotary lock-rod or shaft journaled parallel to the line of travel of the molding boxes and connected with the mechanism for operating the press, said lock-rod or shaft having alternately arranged polygonal and cylindrical portions, and forked locking lugs secured to the molding boxes in position to straddle said lock-rod or shaft and adapted to closely embrace or interlock with the polygonal portions of said rod or shaft and thereby prevent it from being turned when a molding box is not in proper position, substantially as described.

3. In a press, the combination with the valve gearing or press operating mechanism, of a rotary lock-rod or shaft connected with said gearing or operating mechanism and provided with alternately arranged cylindrical and polygonal portions, a crank handle for operating said shaft, and a locking lug carried by a movable molding box or movable part of the press and adapted to interlock with a polygonal portion of the lock-rod or shaft and prevent it from being turned, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

WILLIAM KRUTZSCH. [L. s.]

Witnesses:

JOHN L. H. FRANK,
DAVID C. RENCH.