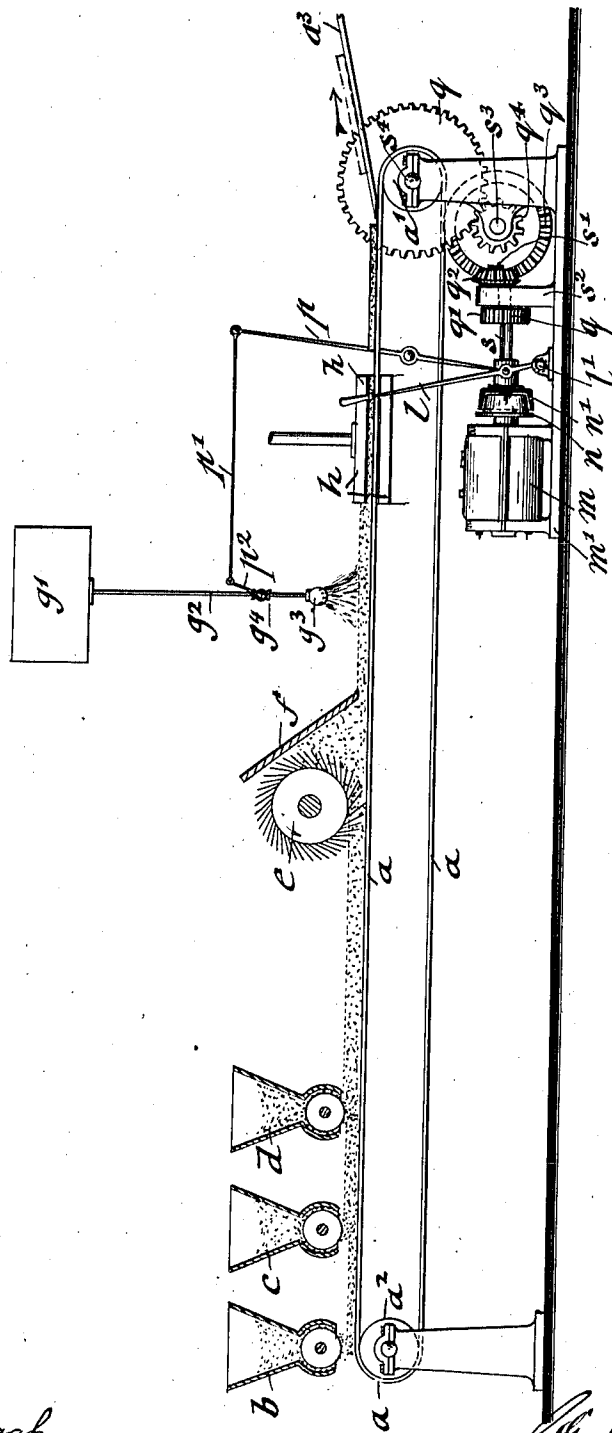


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 APPARATUS FOR MAKING FLAT AND CORRUGATED CEMENT PLATES.
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APPARATUS FOR MAKING FLAT AND CORRUGATED CEMENT PLATES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GUSTAV H. LIEBAU, a citizen of the United States of America, residing in Metuchen, in the county of Middlesex and State of New Jersey, have invented certain new and useful Improvements in Apparatus for Making Flat and Corrugated Cement Plates, of which the following is a specification.

- 10 This invention relates to an improved machine for making flat and corrugated cement-plates to be used for inside and outside building plates, roof-plates and fireproof doors, and the like; and the invention consists of an apparatus for making flat and corrugated cement-plates which comprises an endless traveling apron, feeding hoppers for feeding successively fibers, cement and sand in superposed layers onto the apron, a mixing device, a gage, a spraying device, and an intermittently actuated press for compressing the moistened mixture of cement, sand and fibrous material into a compact plate, and means for interrupting the action of the spraying device and for arresting the motion of the endless apron while the mixed and moistened layer of cement, sand and fibrous material is subjected to the action of the press.
- 30 The accompanying drawing represents a vertical longitudinal section of my improved apparatus for making flat or corrugated cement-plates.

Referring to the drawings, the fibrous material, cement and sand are preferably supplied successively and in superposed layers by means of feed hoppers *b*, *c*, *d*, which are arranged above an endless traveling apron *a* that passes over suitable driving and guide-rolls *a'*, *a''*. The cement and sand may be mixed before and supplied by one feed-device. The superposed layers of fibers, cement and sand are mixed on the apron by one or more brushes, rollers or similar mixing devices *e*, the object being to thoroughly mix the materials together and spread them in a uniform layer on the apron. Adjacent to the brush *e* is arranged an inclined board *f* which serves for holding back the mixture mixed by the brush, and act at the same time by its tapering lower edge as a gage for controlling the thickness of the layer of mixed substances. Adjacent to the inclined wall *f* is arranged a spraying device by which the mixture of fibers, cement and sand is moistened. The spraying device consists of a sup-

ply-tank *g'*, a spray-pipe *g''* provided with a nozzle *g'''* and a stopcock *g''''*. The mixture is soon permeated by the spray of water supplied thereto and then conducted to a press *h*, which comprises die-plates of straight or corrugated shape, or similar means of compressing the moistened layer into thin and strong cement-plates. According to the shape of the die-plates, a flat or corrugated cement-plate, fireproof door or other object is obtained.

When a press with die-plates is used, the motion of the apron has to be interrupted for a time, so as to permit the die-plates to act on the moist cement mixture, while simultaneously the spraying device is shut off so as to interrupt the supply of water to the mixture on the apron during the pressing action. As soon as the cement-plate is formed, the movable die-plate of the press is raised by the attendant, the spraying device reopened, the apron set in motion and the cement-plates conducted off over the inclined plate *a''* for drying. The stopping of the apron and the closing or opening of the stop-cock of the spraying device is accomplished at the proper time by means of a hand-lever *l* which is pivoted to perforated ears *l'* on a base-plate *m'* on which an electric or other motor *m* is supported. The lever *l* is pivotally connected with the movable member *n'* of a clutch *n*, and with the lower end of a fulcrumed lever *p*, the upper end of which is connected by a pivot-rod *p'* with a crank-arm *p''* on the stop-cock *g''''*. The shaft *s* transmits rotary motion by a gearwheel *q* and pinion *q'* to a short shaft *s'* which is supported, like the shaft *s*, in journal-bearings of an upright standard *s''*, the short shaft *s'* transmitting rotary motion by a bevel-pinion *q''* and bevel gearwheel *q'''* to a short shaft *s'''* from which rotary motion is again transmitted by a pinion *q''''* and gearwheel *q'''''* to the shafts *s''''* of the driving pulley *a'* for the endless apron *a*, as shown at the right-hand side of the drawing.

When the moistened cement mixture is to be subjected to the pressing action of the press-plates, the lever *l* is moved toward the right, whereby the clutch is released from the driving shaft *s* and the motion of the transmitting mechanism and of the apron interrupted. Simultaneously therewith the stop-cock *g''''* of the spraying device is closed and the spraying action interrupted. The

upper press-plate is then lowered by the attendant and the moistened mixture of fibers, cement and sand compressed and left for a short time under pressure. The press-plate is then raised again, the motion of the apron started and the stop-cock of the spraying device opened by returning the lever *l* toward the left and placing the clutch on the driving shaft whereby the cement-plate is moved away from the press and the next quantity of the mixture fed into the press for forming the heat cement-plate, and so on.

When the cement-plates are desired to be strengthened, a web of wire-netting or sheet-metal can be inserted into the dry layer formed by the mixing brush before the layer is moistened by the spray. When the layer is moistened by the spray, the web will sink into it in consequence of the vibrations to which the apron is subjected during its motion, so that the cement composition covers both sides of the reinforcing web.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. An apparatus for making flat or corrugated cement-plates, which comprises an endless traveling apron, a plurality of feed-devices for successively supplying fibers, cement and sand on the apron, a mixing device for said materials, a gage for regulating the thickness of the layer, a spraying device above the apron for moistening the mixture thus obtained, a stationary press-

plate below the apron, an intermittently-operated press-plate above the apron for compressing the moistened mixture into plates, means for interrupting the motion of the traveling apron while the pressing of the plates takes place and means for interrupting simultaneously therewith the action of the spraying device.

2. In an apparatus for making flat and corrugated cement plates, the combination of an endless traveling apron, a plurality of feed-devices for successively supplying fibers, cement and sand to the apron, a mixing device for said materials, a gage for regulating the thickness of the mixture, a spraying device above the apron for moistening the mixture thus obtained, a stationary press-plate below the apron, an intermittently-operated press-plate above the apron for compressing the moistened mixture into plates, means for intermittently interrupting the motion of the traveling apron while the pressing of the plates takes place, means for simultaneously interrupting the action of the spraying device while the pressing of the plates takes place, and means for conveying off the pressed plates for drying.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

GUSTAV H. LIEBAU.

Witnesses:

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