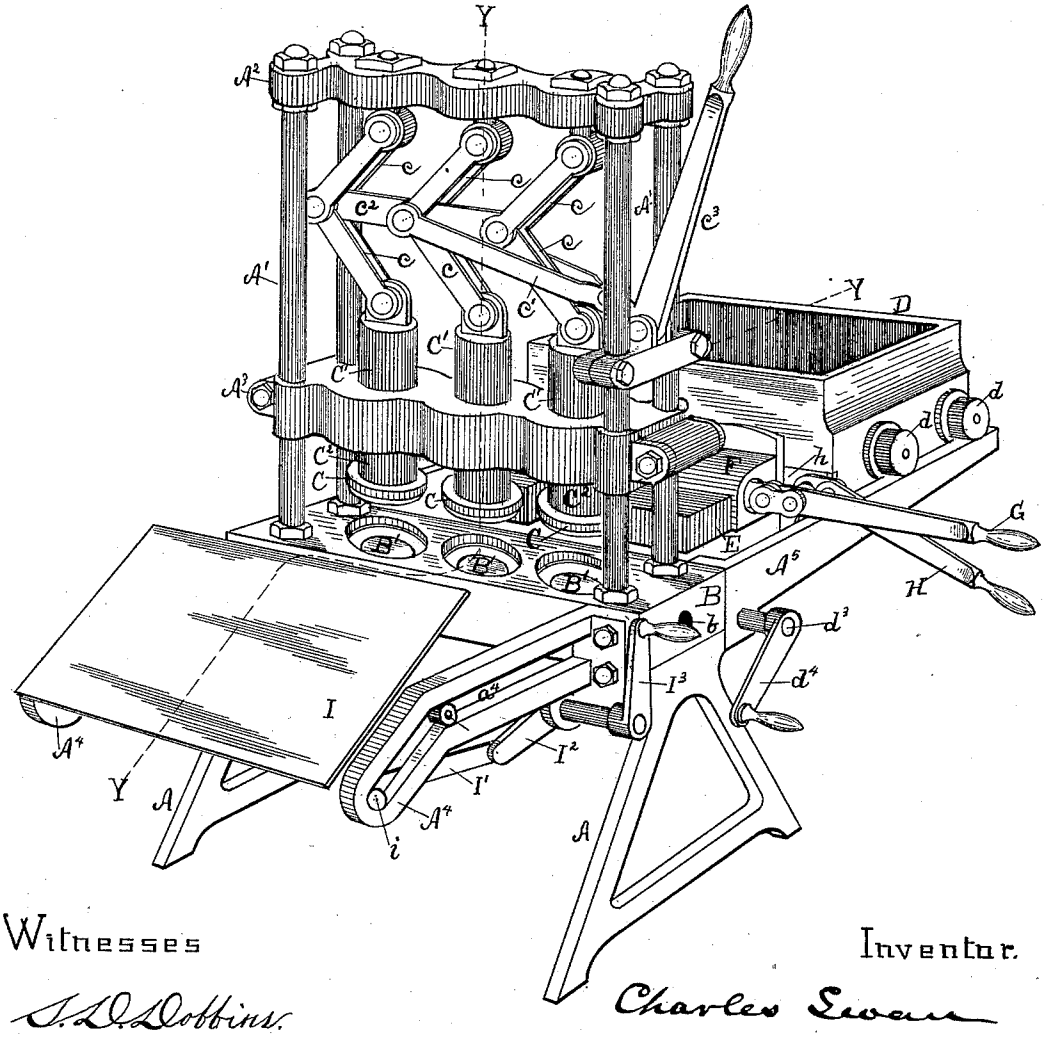
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C. SWAN.

MACHINE FOR MOLDING TARGET PIGEONS.

No. 422,655. Patented Mar. 4, 1890.

Fig. 1



Witnesses

S. D. Dobbins.

Henry E. Fish

Inventor.

Charles Swan

By His Att'ys. Hallock & Hallock

N. PETERS. Photo-Lithographer, Washington, D. C.

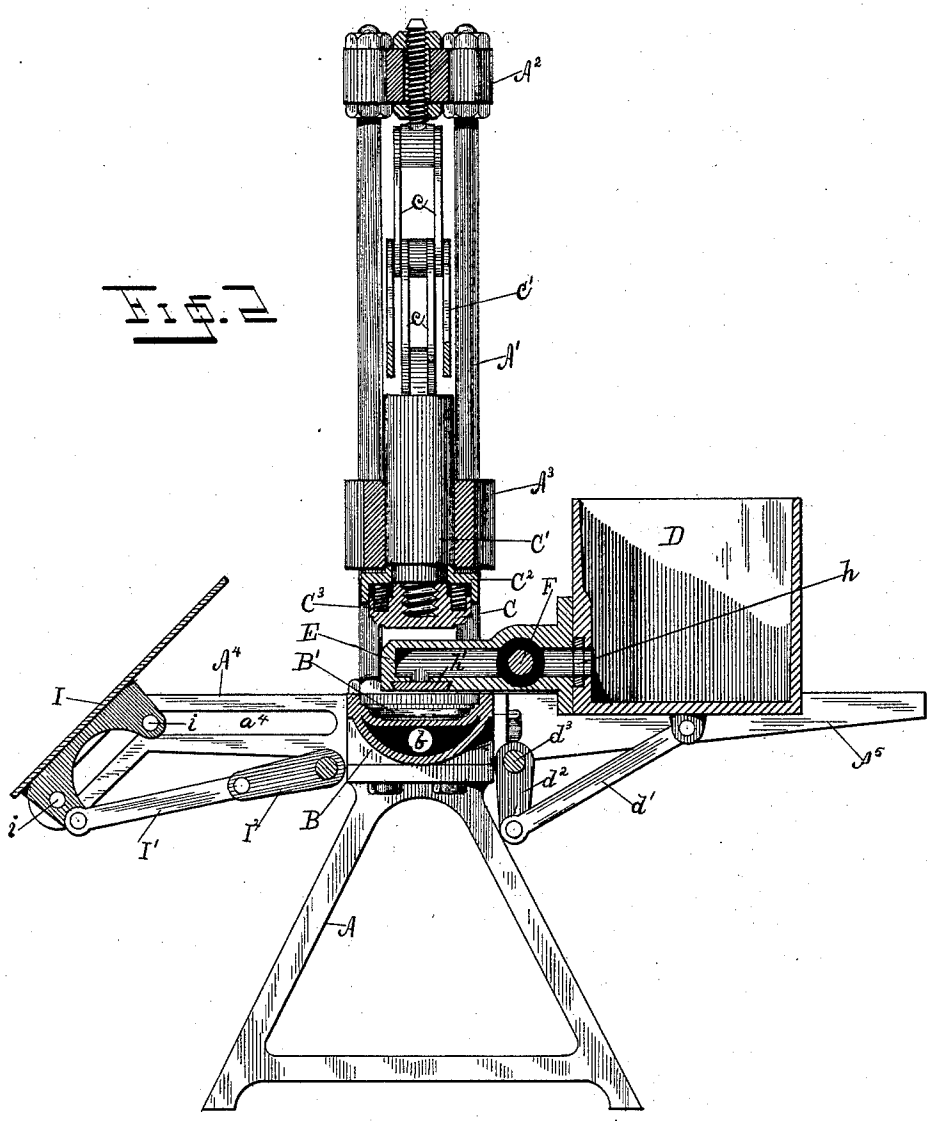
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Fig. 2.



Witnesses

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(No Model.) 3 Sheets—Sheet 3.

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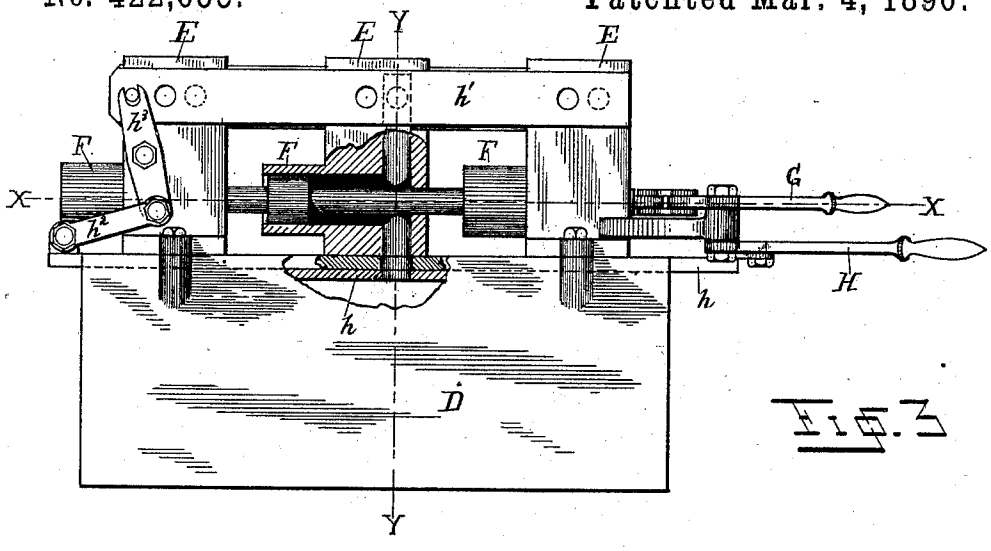


Fig. 3.

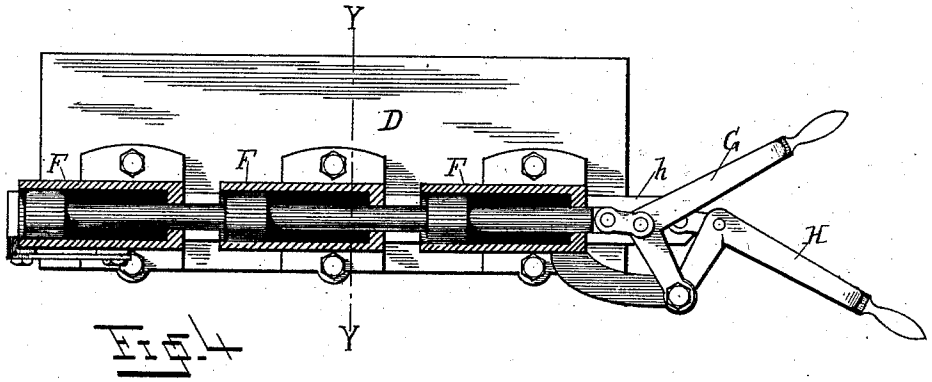


Fig. 4.

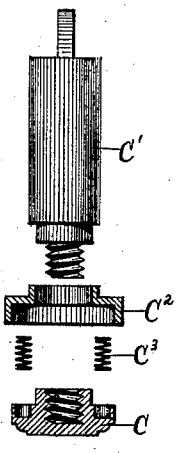


Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES SWAN, OF CORRY, PENNSYLVANIA.

MACHINE FOR MOLDING TARGET-PIGEONS.

SPECIFICATION forming part of Letters Patent No. 422,655, dated March 4, 1890.

Application filed November 4, 1889. Serial No. 329,164. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SWAN, a citizen of the United States, residing at Corry, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Molding Target-Pigeons, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to machines for molding target-pigeons from pitchy concrete; and it consists in certain improved features of construction, as will be hereinafter fully set forth, and pointed out in the claims.

The invention is illustrated in the accompanying drawings as follows:

Figure 1 is a perspective view of the machine. Fig. 2 is a transverse vertical section on the line *y y* in the various figures. Fig. 3 is a plan view of the under side of the concrete-vat and mold-filling apparatus with parts broken away to show construction. Fig. 4 is a longitudinal vertical section taken on the line *x x* in Fig. 3. Fig. 5 shows details of construction of the molding-dies.

The illustrations show a machine having but three molds; but in actual construction each machine may have fifty or more molds operated together in the same manner that the three are shown to be. The number of molds is immaterial in a mechanical sense.

Letters of reference indicate parts as follows:

A A′ A^2 A^3 A^4 A^5 mark the frame-work of the machine; B, the molding block or table; B′, the female part of the molds or dies; C C^2, the male part of the molds or dies; C′, the die-stalk of the male dies; *c*, *c′*, c^2, and c^3, the levers by which the male dies are operated; D, the concrete-vat; *d*, the rollers or wheels on which the said vat is mounted; *d′*, d^2, d^3, and d^4, the mechanism for moving the said vat from and toward the molds; E, spouts or nozzles extending from the vat D, through which concrete is conveyed to the molds; F, pumps for forcing concrete through the nozzles E; G, the lever for operating said pumps; *h* and *h′*, cut-off gates; H, the lever for operating said gates; I, a traveling table for receiving the newly-molded pigeons, and I′, I^2, and I^3 the mechanism for moving said table.

The construction is as follows: The molding-board B is mounted on a base-frame A. The concrete-vat is mounted on a bracket-frame A^5, and is on wheels, so it can move from and toward the molding-board. The receiving-table I is mounted on a bracket-frame A^4, so it can move from and toward the molding-board. This table runs on rollers *i i* in a deflected slot a^4 in the bracket-frame pieces A^4, so that as the table moves away from the molding-board it is tilted into an inclined position, and when it approaches the molding-board it assumes a level position. This table slips over the molding-board and under the male dies when they are raised up. The receiving-table is moved by the crank I^3, rock-arms I^2, and links I′. The concrete-vat is moved by the crank d^4, rock shaft and arms d^3 d^2, and links *d′*. The molding-board is hollow, the inner cavity being connected with openings *b*, so that it can be kept cool by water running through it. The female dies B′ are depressions in the molding-board, and they are kept cool by the contained water. The concrete-vat will be kept hot by a proper application of heat to it.

The concrete-vat has on its side next to the molding-board as many nozzles E as there are molds, and the concrete is drawn into and forced from these nozzles by pumps F, which are operated by the lever G simultaneously. A gate *h* closes and opens the openings from the vat into the nozzles simultaneously, and a similar gate *h′* closes and opens the openings at the ends of the nozzles simultaneously. Both these gates are operated by the lever H, which acts directly upon the gate *h*, and through the link h^2 and lever h^3 upon the gate *h′*, and the action is such that when the gate *h* is closed the gate *h′* is opened, and vice versa.

When the molds B′ are to be charged with concrete, the operator works the crank d^4 and draws the vat D toward the molding-table, so that the mouths of the nozzles E are over the molds B′. He then closes the gate *h* and simultaneously opens the gate *h′* by a move-

ment of the lever H, and then operates the lever G, which acts upon the pumps F, and their action forces a proper quantity of concrete out of the nozzles into the molds B′. He then reacts the lever H, which closes the gates h' and opens the gates h, then reacts the lever G, and then reacts the crank d^4, which draws the vat back and uncovers the filled molds B′.

The concrete which has been placed in the molds B′ by the last-described operation is hot, while the molds B′ are kept as cold as possible by a running stream of water through the cavity of the molding-table. The chief object in keeping the molds B′ cold is to prevent the molded pigeons from adhering to the female mold. The molds B′ are not so chilled as to cool the whole mass of concrete deposited in them at once; but they are chilled enough to so cool the concrete in immediate contact with them that the molded pigeon will not adhere to the mold.

As soon as the operator has drawn back the vat D and uncovered the filled molds he forces the male dies down upon the concrete in the female dies and molds the pigeons. The male dies C are on plungers or stalks C′, which are guided in the cross-beam A^3 of the frame-work.

The plungers C′ are preferably designed to be moved simultaneously; but this is not essential, and I have shown them as operated by toggle-levers c c, all of which are connected together by a bar c^2 so as to move as one, and a connecting-rod c' connects them with an operating-lever c^3. I do not, however, desire to be limited to the exact means shown for moving the plungers, as there are many other well-known mechanical appliances which can serve as well.

In Fig. 5 a detail of the construction of the male die is shown. It consists of the central part of the die C and a stripper C^2, which is a sleeve which slides over the rim of the die. This stripper is kept raised up by springs C^3 underneath it; but when the plungers C′ are raised the stripper strikes against the cross-bar A^3 and is pushed down. It should be noted, however, that the stripper C^2 forms one of the members of the die as it enters the female die, and aids in forming the outer rim of the pigeon.

The male dies are not chilled, as are the female dies, and when they are raised from the female dies they draw the molded pigeons up with them, as they will adhere to the male dies and not to the female dies.

The operator when he reacts the lever C^3 and draws up the male dies does not at once raise the dies to their extreme upward limit, but pauses before the strippers come in contact with the beam A^3 and operates the crank I^3 so as to draw the table I back in under the plungers and above the molds B′. He then actuates the levers c^3 so as to draw the plungers C′ up to their extreme limit, and this pushes down the strippers, and they strip the pigeons from the male dies and they fall upon the table I. The operator then reacts the crank I^3, which draws the table I back from under the plungers and tilts it up, as shown in the drawings, so that the pigeons will slide off from it onto a conveyer, (not shown,) which is in place to receive them. As soon as this last action occurs the machine is ready to repeat the operations above described.

My invention should not be limited to the use I have named above, as it may be used for making other articles—as, for instance, small earthen dishes, cakes of soap, candies, and confections. If used for making soap cakes and other articles, it may be desirable to use hot water in the cavity of the molding-board in place of cold water.

What I claim as new is—

1. In a machine for the purposes named, the combination of a chilled female die, a non-chilled male die, and a stripper which expels the molded pigeons from the male die.

2. In a machine for the purposes named, the combination of a fixed female die, a movable male die, a stripper for stripping the molded pigeons from the male die, and a receiving-table which can be moved into position to receive the pigeons as they are removed from the male die, and then moved back so as to remove the pigeons from between the dies.

3. In a machine for the purposes named, the combination of a fixed female die, a movable male die, a laterally-movable tilting table, which can be moved in between the dies and out from between them laterally, and when moved out it is tilted into an inclined position.

4. In a machine for the purposes named, a male die consisting of the parts C and C^2, of which the part C^2 is sleeved upon the part C and movable thereon and serves to strip the molded pigeons from the part C.

5. In a machine for the purposes mentioned, the combination, with a fixed female die and a movable male die, of a laterally-movable concrete-vat having a nozzle extending therefrom and means for expelling concrete therefrom, arranged substantially as shown, whereby when the dies are separated the nozzle of the concrete-vat can be brought into position to charge the female die.

6. In a machine for the purposes named, the combination of a series of fixed female dies, a series of movable male dies, a laterally-movable concrete-vat, a series of spouts or nozzles extending from said vat and registering with the series of female dies, gates controlling the inlets and outlets of said nozzles simultaneously, and ejecting-pumps connected with each of said nozzles and with mechanism for operating them simultaneously.

7. In a machine for the purposes named, the combination of a series of fixed female dies, a series of movable male dies, a series of levers for moving the male dies, which are op-

erated simultaneously by a main operating-lever, a laterally-movable concrete-tank, a series of nozzles extending from said tank and registering with the series of female dies, a series of ejecting-pumps operated by a common lever, and a laterally-movable receiving-table which can be moved under all the male dies and receive the molded pigeons therefrom and convey them away from between the dies.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES SWAN.

Witnesses:
JNO. K. HALLOCK,
E. S. WILLIS.