

(No Model.)

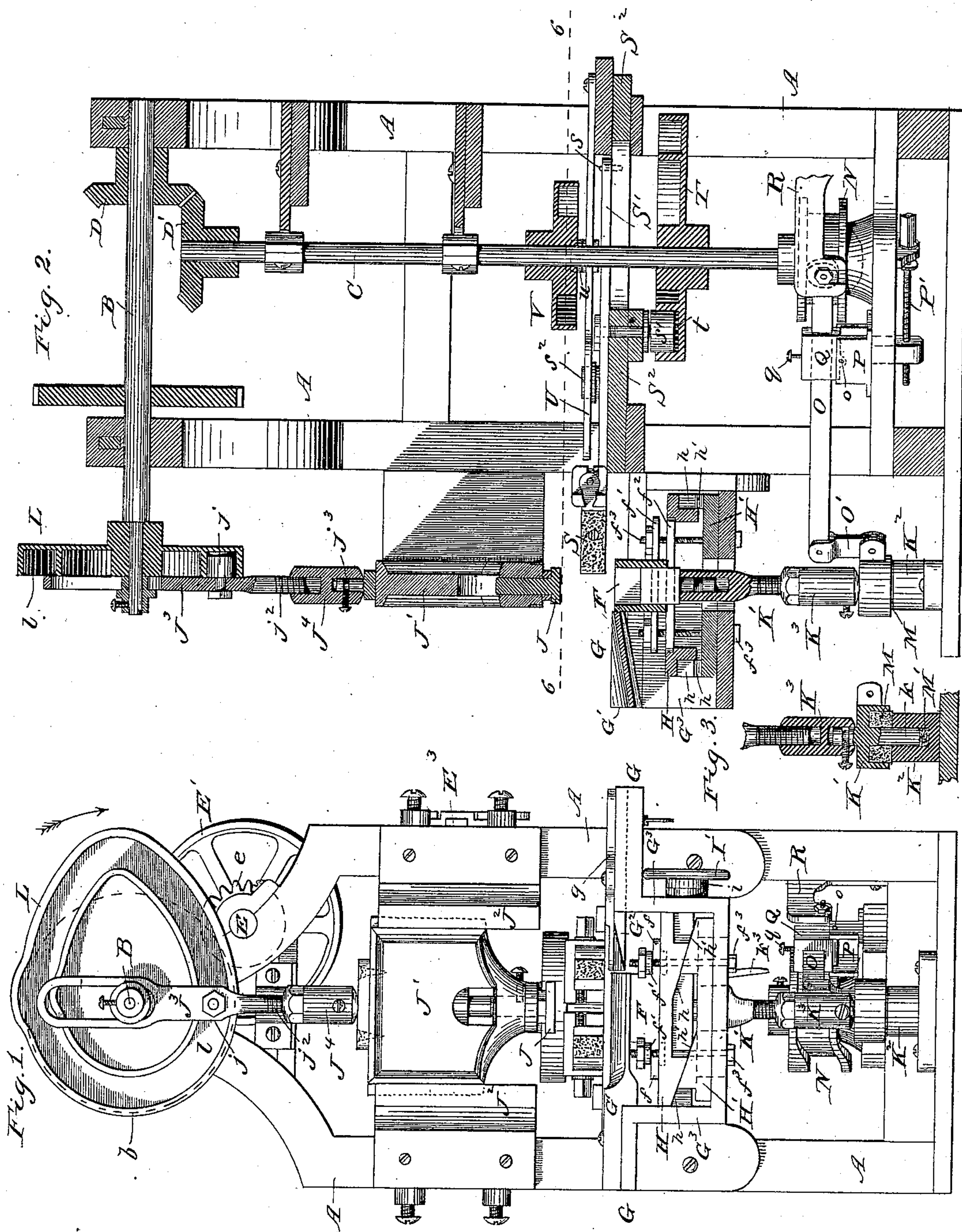
2 Sheets—Sheet 1.

J. DENNIS & J. A. CORAM.

SOAP PRESS.

No. 333,505.

Patented Jan. 5, 1886.



Witnesses:

N. N. Low
C. A. Dick

Inventors:

John Dennis &
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(No Model.)

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Fig. 6.

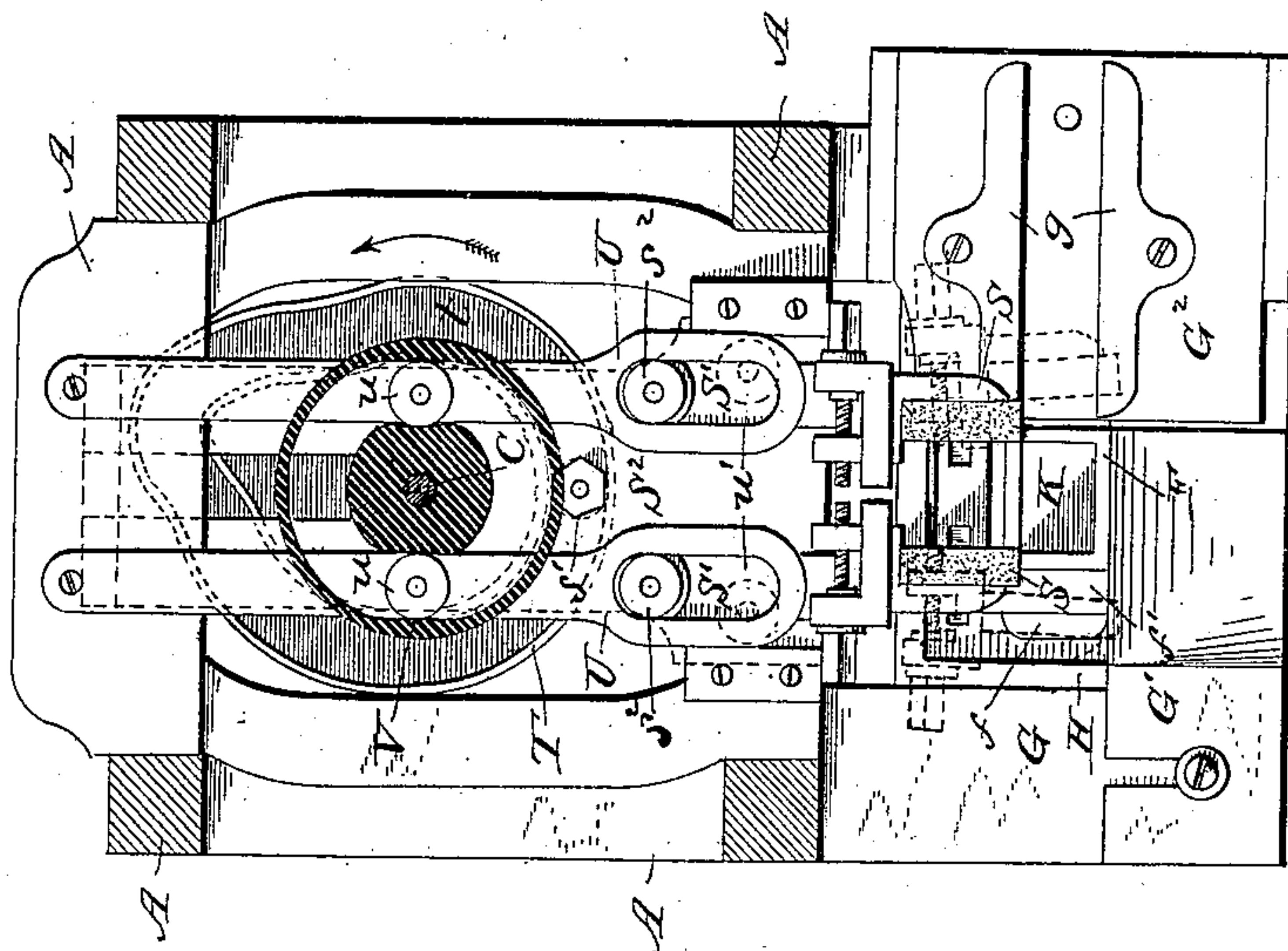


Fig. 5.

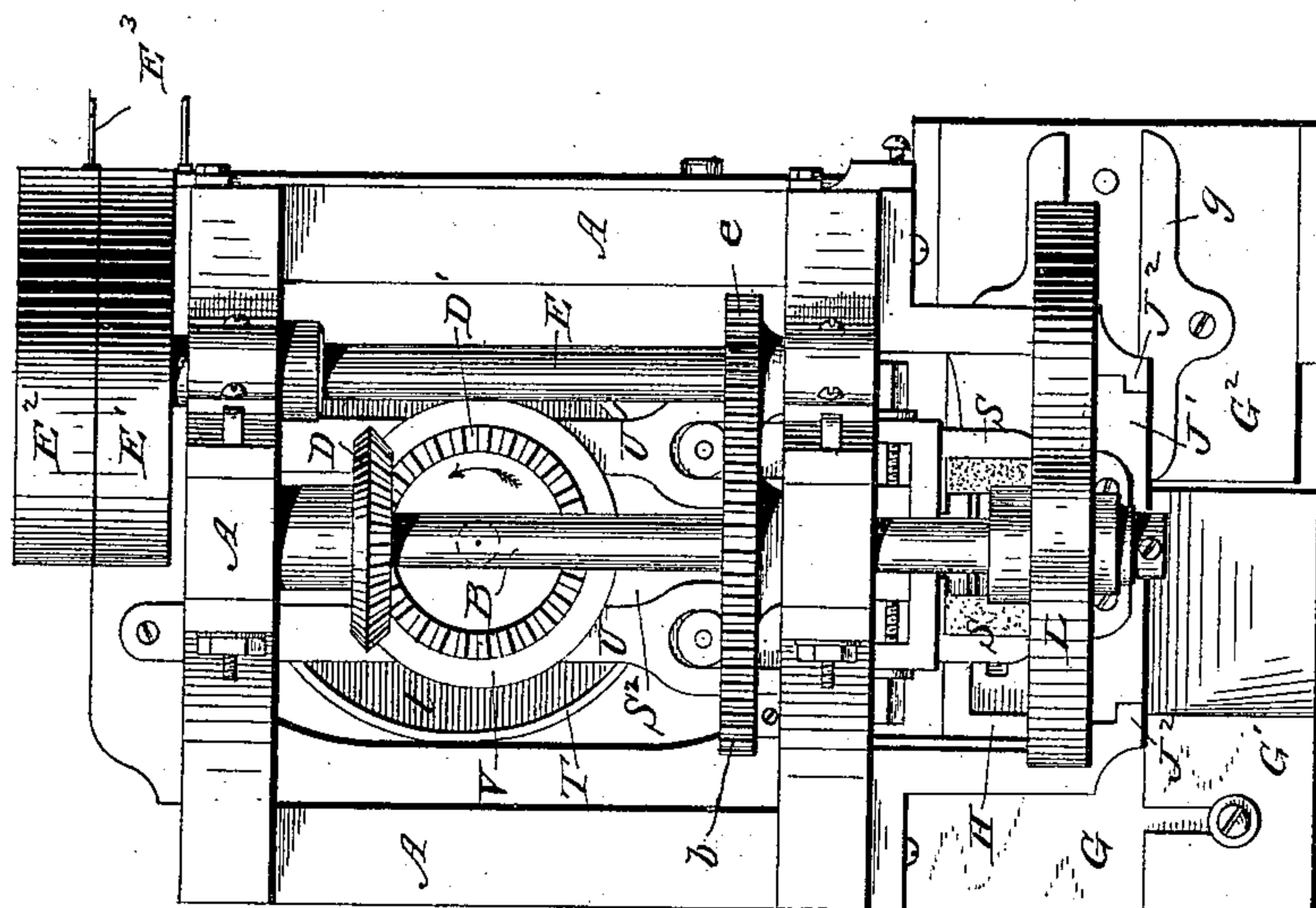
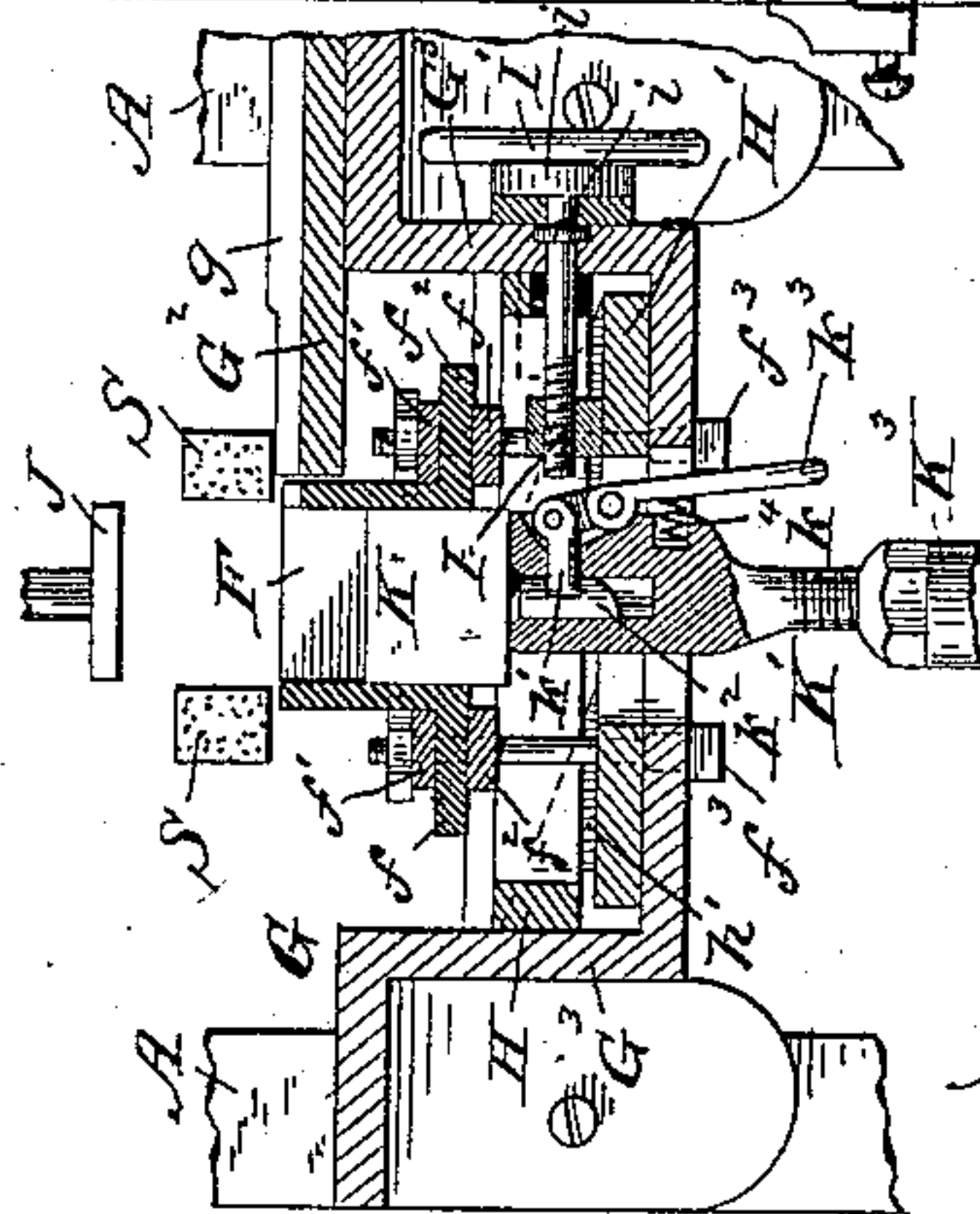


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN DENNIS AND JOSEPH A. CORAM, OF LOWELL, ASSIGNORS TO SAID
CORAM AND STEPHEN M. CROSBY, EXECUTOR OF NATHAN CROSBY,
DECEASED, OF BOSTON, MASSACHUSETTS.

SOAP-PRESS.

SPECIFICATION forming part of Letters Patent No. 333,505, dated January 5, 1886.

Application filed May 19, 1885. Serial No. 166,004. (No model.)

To all whom it may concern:

Be it known that we, JOHN DENNIS and JOSEPH A. CORAM, both residing at Lowell, county of Middlesex, and State of Massachusetts, have invented a certain new and useful Improvement in Soap-Presses, of which the following is a specification.

The press which we have devised is adapted to form materials of soft and yielding consistency into cakes, and to impress thereon letters or other desired figures. It is especially useful in the manufacture of soap, in connection with which the invention will be described. It relates to a press of a character similar in some respects to that described in Letters Patent No. 294,311, dated February 26, 1884.

The object of the present invention is to provide a more efficient means for mounting and actuating the lower die, for adjusting the dies and die-box, and for operating the nippers which remove the pressed material, and to attain other advantages in the construction and operation of the press.

For the purpose of making our invention clearly understood, we have shown in the accompanying drawings a means for carrying it into effect.

In said drawings, Figure 1 is a front elevation of a press embodying our invention. Fig. 2 is a longitudinal section of the same, certain of the parts, however, being shown in elevation. Fig. 3 is a vertical section of the parts which support the lower die. Fig. 4 is a transverse vertical section showing the dies and adjacent parts. Fig. 5 is a plan view. Fig. 6 is a horizontal section on line 66, showing the nippers and their operating mechanism.

Referring to the drawings, A represents the supporting-frame of the press, in which are mounted shafts B and C at right angles to each other. Ordinarily the shaft B will be horizontal and the shaft C vertical, both being in the same plane, and geared together by miter-wheels D D'. Power may be applied to these shafts in any desired manner, as by a power-shaft, E, provided with fast and loose belt-pulleys E' E², and geared with shaft B by wheels e b. A belt-shifter, E³, controls the application of power to the press. At the front of the press, under one end of the shaft

B, is the work-table G, in which is situated the die-box F. The top of the table is made in sections G' G², which may be adjusted to fit die-boxes of different sizes. Guides g serve to direct the material to the die-box.

We have arranged for holding different sizes of die-boxes by the following means. The die-boxes have horizontal flanges f, which are held between bars f' f², situated above and below said flanges. The lower bars, f², rest upon a centrally-open portion, H, of the table. The bars f' are clamped down upon the table by bolts f³, thus securing also the flanges f and lower bars, f².

We have also provided for adjusting the die-box vertically. The part H, which supports the die-box and clamping bars, is vertically movable, but held from lateral motion by suitable engagement with the table, as by the upright portions G³ thereof. It has inclined planes h upon its lower face, which rest upon similar inclined planes, h', formed upon the upper face of a laterally-movable slide, H', supported by the table. A screw, I, having a hand-wheel, I', and engaging with the table by collars i, engages also by its screw-thread with the slide H'. In using these devices the die-box is placed with its flanges f between the clamping-bars and adjusted horizontally to the proper position by means of the hand-wheel I. The proper vertical adjustment is given, and all of the parts are then securely clamped by the bolts f³.

Of the two dies which operate in the above-described die-box the upper, J, is a plunger, which carries down into the box a sufficient portion of the material to form a cake, and the lower, K, is stationary, or nearly so, during the operation of pressing, and subsequently rises to the top of the box to aid in the delivery of the cake. The upper die, J, is detachably secured to a slide, J', operated upon vertical ways J² by rod J³ and cam L. The latter is carried by the shaft B, and has a cam-track, l, of suitable shape, in which is situated a friction-roller, j, journaled upon a pin fixed in the rod J³. The latter is guided vertically at its upper end by the shaft B, which projects through a slot in the rod.

To adjust the upper die vertically, I have provided for lengthening or shortening the rod J³. For this purpose it is divided and a

screw-thread, j^2 , formed upon one part and a circumferential groove, j^3 , Fig. 2, upon the other. A coupling, J^4 , engages at one end with the screw-thread and at the other with the groove, and may be used in an obvious manner to regulate the height of the upper die. The lower die, K , is situated in the die-box, in which it may move vertically when in its lowest position, and during the operation of pressing, it is supported through the medium of its carrier K' upon a step, K^2 . A pin, k , projecting from the lower end of the die-carrier, enters a corresponding recess in the step K^2 , and assists in guiding the lower die during its vertical movement.

In order to prevent an undue straining or breakage of the machine in case too great a quantity of material should be carried into the die-box, we have arranged for a yielding of one of the dies. As shown, the lower die is thus arranged, a rubber or other elastic or spring cushion, M , being interposed between the die-carrier and the step K^2 . Preferably an additional cushion, M' , is placed under the pin k . The vertical adjustment of the lower die is effected by a coupling, K^3 , in a similar manner to that of the upper die.

To enable the lower die to be easily removed and one of different size or with different embossing devices to be substituted therefor, we provide the carrier K' with a latch-pin, k' , adapted to enter a notch in the stem k^2 of the die when said stem is inserted into the upper end of the carrier, as seen in Fig. 4. The stem is preferably beveled to itself thrust back the latch as the stem is inserted.

To free the die, the latch-pin may be withdrawn by a hand-lever, k^3 , through which also, under the action of a spring, k^4 , the latch may be normally held in its locking position.

The movement of the lower die to raise the finished cake clear of the die-box is effected as follows: The shaft C carries at its lower end a double-face cam, N , which operates to raise and depress a roller carried by a horizontal journal fixed to one end of a lever, O . The other end of the lever is connected with the die-carrier K' , as by a link, O' , and is fulcrumed between its ends at o . The vertical movement imparted by the cam N to one end of the lever is thus transmitted to the lower die. To vary the throw of said die for different depths of die-boxes, and for the different thicknesses of soap to be pressed, provision is made for shifting the position of the fulcrum o . A convenient means for this purpose is shown in Fig. 2. A bearing-piece, P , is arranged to slide upon the frame A toward either the cam N or the die-carrier K' , as may be desired. This adjustment can be effected conveniently by the screw P' . A second bearing-piece, Q , is adjustably secured to the lever O , as by a set-screw, q , and is adapted to be pivoted to the bearing P , such pivot constituting the fulcrum o . To change the throw of the lower die, the set-screw q' is loosened, the bearings moved toward either

the right or the left by means of the screw P' , and the set-screw q tightened. To maintain the lever in proper relation to the cam N during this operation, a guard, R , attached to the frame A , engages with a lateral projection on said lever by means of a slot, which maintains the lever in position longitudinally and laterally, but permits its vertical oscillation. The nippers which grasp the finished cake, remove it from between the dies, and release it, are shown at S , their grasping-faces being lined with rubber. The nippers are carried by levers S' , fulcrumed at s to a slide S^2 , the latter being adapted to reciprocate longitudinally in the frame A . The slide is actuated by a cam T on the shaft C , the groove t of the cam engaging a roller, s' , carried by the slide. The groove t is of such shape as to move the slide and nippers forward till the grasping-jaws are in line with the die-box, then to pause while, by mechanism hereinafter to be described, the jaws are closed upon the cake and the upper and lower die withdrawn, then to resume the forward movement till the cake has been carried from between the dies where it is released, and then to withdraw the slide and nippers to the first position, and there maintain them while the operations of pressing and raising the next cake are performed.

The nippers described in our former patent have the above motions, with the exception of the pause during the grasping of the cake. With the mechanism there shown an approach of the jaws toward one another was necessarily simultaneous with a portion of their forward movement. With such mechanism their coming to rest and their obtaining a hold upon the cake was intended to be simultaneous; but inequalities in the size of cakes and in the friction of the inner faces of the jaws upon the cakes may defeat this intention, with the result that the jaws obtain a hold upon a cake and move it horizontally before the upper and lower dies recede, seriously defacing any embossment produced by said dies upon the cake. In our present machine, however, we have provided a means for bringing the jaws together which is not dependent upon their forward movement, and which need not begin to act till after they have come to rest.

U represents two levers, pivoted to the frame A , and adapted to oscillate in a horizontal plane parallel to the motion of the nipper-levers S' . The levers U are provided with rollers u , which enter the groove of a cam, V , carried by the shaft C . The form of said cam and its relation to cam T are such that it will bring the forward ends of levers U together immediately after the latter cam has brought the nipper-jaws to rest in line with the dies. This movement of levers U is imparted to the rollers s^2 , with which they engage, and to the levers S' , on which the rollers are journaled. The reciprocation of the rollers s^2 while remaining in engagement with levers U is permitted by slots u' in the latter.

The cams L , N , T , and V have such form

and are so timed relative to one another that the operation of the machine is as follows: A die-box and dies of the desired shape and size having been adjusted in the press, and the upper die being in the position shown in the drawings, motion is imparted to shaft B, and thence to shaft C, in direction shown by the arrows. The material to be pressed—as, for instance, soap—is shoved along in a continuous series of bars or cakes between the guides *g* till one bar is over the die-box. The upper die then descends by the action of cam L and carries said bar of soap into the die-box, in which and between the dies it is formed into a cake and properly embossed. The upper die then rises, followed, but more slowly, by the lower die, actuated by cam N. Cam T is now advancing the nippers S. The lower die having carried the lower surface of the finished cake clear of the die-box, and the upper die having moved slightly above the nippers, both pause momentarily, and the nippers having now no longitudinal movement close upon and grasp the cake under the action of cam V. The lower die then descends and the upper ascends, and the nippers holding the cake resume their forward movement, and having carried the cake from over the die box release it where it may slide from the table into a suitable receptacle. The upper die during the latter part of these operations has remained at the upper part of its throw. The above-described operations are then repeated.

Having described our improvements and the manner in which the same can be carried into effect, what we claim as new and of our own invention is—

1. The combination, with the die-box and the upper and lower dies, of the longitudinal shaft B and its cam, the upright shaft C and its cams, and devices operated by said cams to compress the cake, raise it from the die-box, and deliver it, substantially as set forth.

2. The combination, with the die-box, of a laterally-extensible clamp for engaging boxes of different sizes, and means for securing said clamp to the table, substantially as set forth.

3. The combination, with the die-box, of two supports provided with inclined planes, and means for imparting lateral motion to one of said parts to cause said planes to operate and raise or lower the die-box, substantially as described.

4. The combination, with the die-box, of a laterally-extensible clamp, two supports having inclined planes, one of said supports being laterally movable, and bolts *f*³, for securing together the parts of the clamp, the die-box, and the supports, substantially as described.

5. The combination, with the die-box F, the upper die, J, and its operating mechanism, of means, as the coupling J⁴, for adjusting said die toward or from the die-box without turning or removing the die, substantially as described.

6. The combination, with the die-box and the lower die situated therein, of the die-carrier and a latch and operating-handle for holding the die and releasing it from the carrier, substantially as set forth.

7. The combination, with the die-box F, the die K, and its operating mechanism, of means, as the coupling K³, for adjusting said die in the die-box without turning or removing the die, substantially as set forth.

8. The combination, with the die-box and the upper and lower dies, of the longitudinal shaft B, the cam L, shaft C, the cam N, and a lever and connections for transmitting motion from the cam N to the lower die, substantially as set forth.

9. The combination, with the die-box and pressing devices, of the lever O, for raising the lower die, mechanism for operating the lever, and an adjustable fulcrum, whereby the throw of the lever may be accommodated to die-boxes of different depths and different thicknesses of soaps, substantially as set forth.

10. The combination, with the lower die and the lever O, connected therewith, of the cam N and a guard for preventing longitudinal movement of the lever and keeping it in proper relation to the cam, substantially as set forth.

11. The combination, with a press, of an automatic picking-off device, the grasping parts of which are arranged to operate during a pause in the movement of the device, substantially as set forth.

12. The combination, with a press, of an automatic picking-off device and mechanism for moving said device relatively to the dies of the press, there being combined with the grasping parts of said device a mechanism for positively opening and closing said parts irrespective of the motion of the whole device, substantially as described.

13. The combination, with the pressing mechanism and the mechanism for raising the cake from the die-box, of a slide at substantially right angles to the pressing device, nipper-levers and jaws pivoted to said slide, and means for reciprocating said slide and for operating the nipper-levers, substantially as described.

14. The combination, with the pressing and cake-raising mechanism, of a slide at substantially right angles to the pressing devices, nipper-levers and jaws pivoted to the slide, levers U, engaging with the nipper-levers and adapted to permit their reciprocation, and cams T and V, for reciprocating the slide and operating the levers U, substantially as set forth.

In testimony whereof we have hereunto signed our names this 13th day of May, 1885.

JOHN DENNIS.

JOSEPH A. CORAM.

Witnesses:

ALBERT M. MOORE,
GERTRUDE M. DAY.