

No. 748,429.

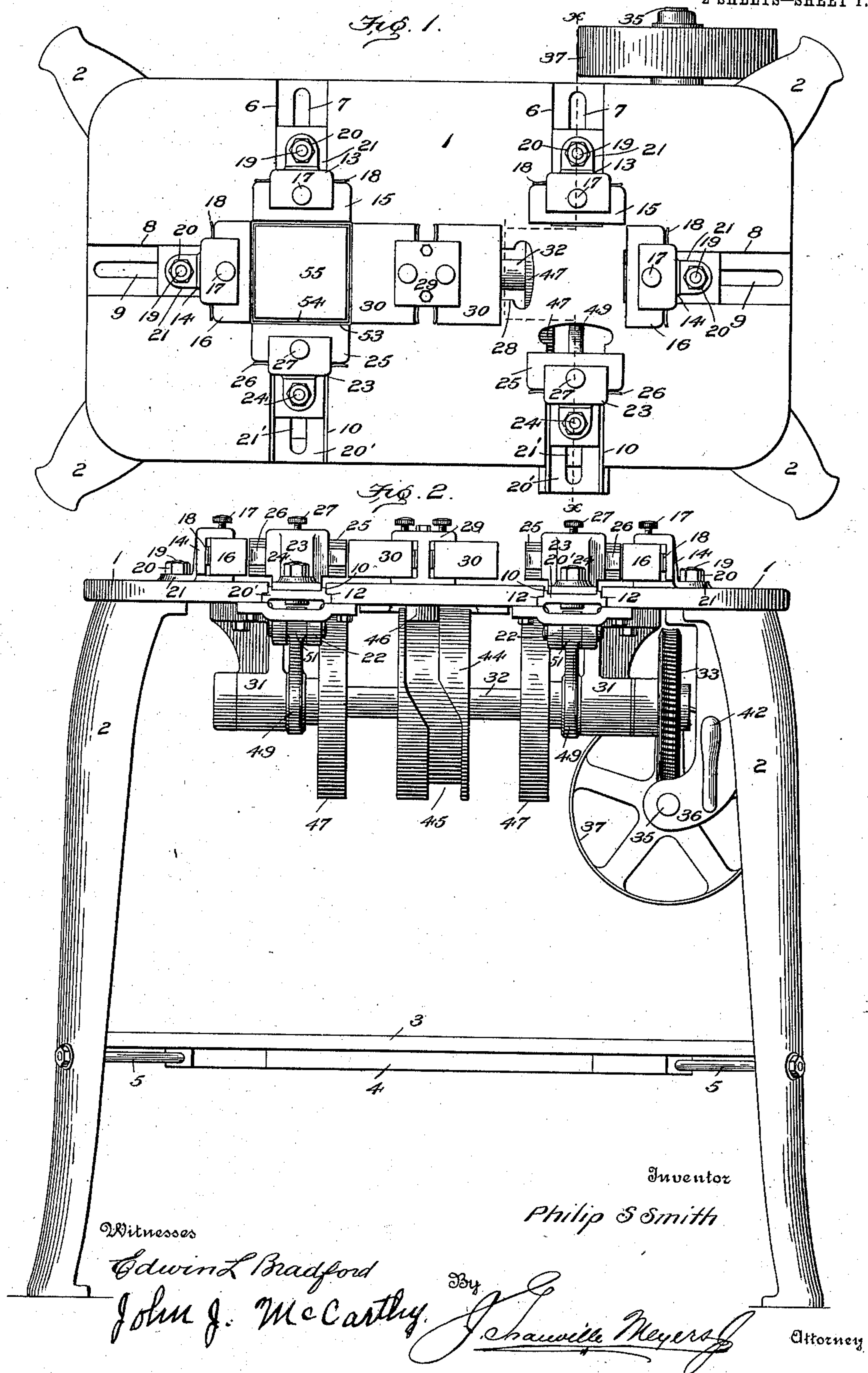
PATENTED DEC. 29, 1903.

P. S. SMITH.
MACHINE FOR PRESSING NECKS IN BOXES.

APPLICATION FILED JULY 25, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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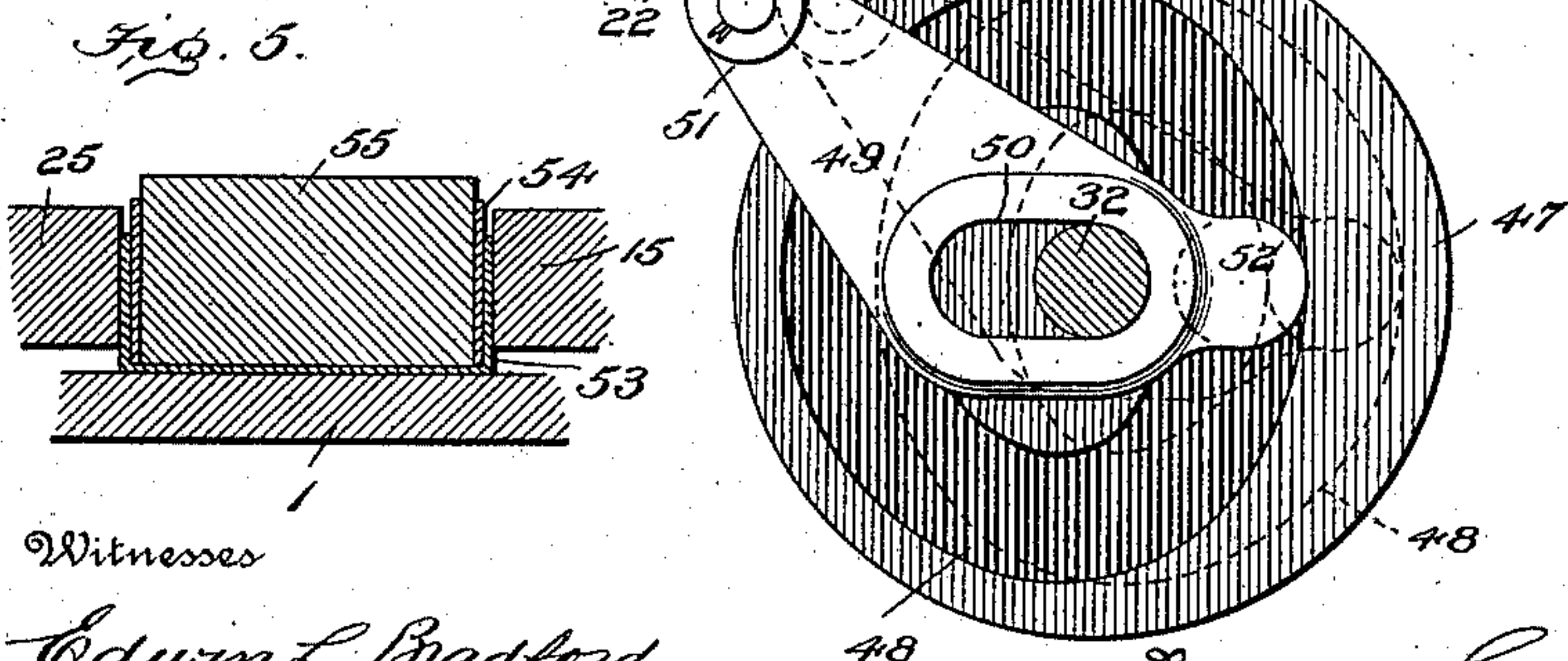
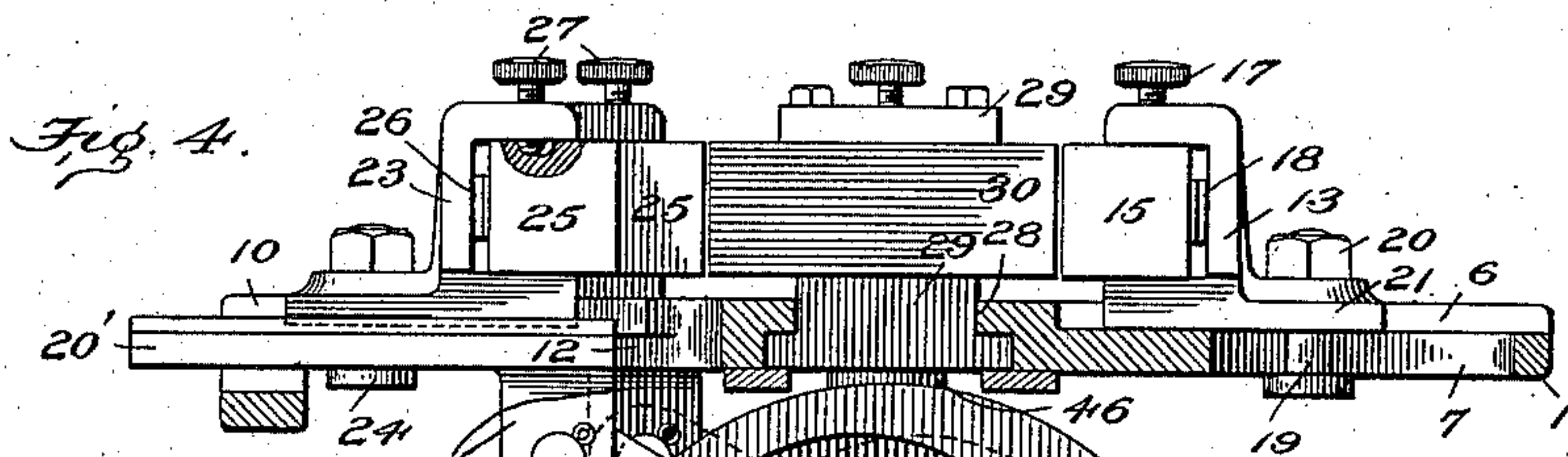
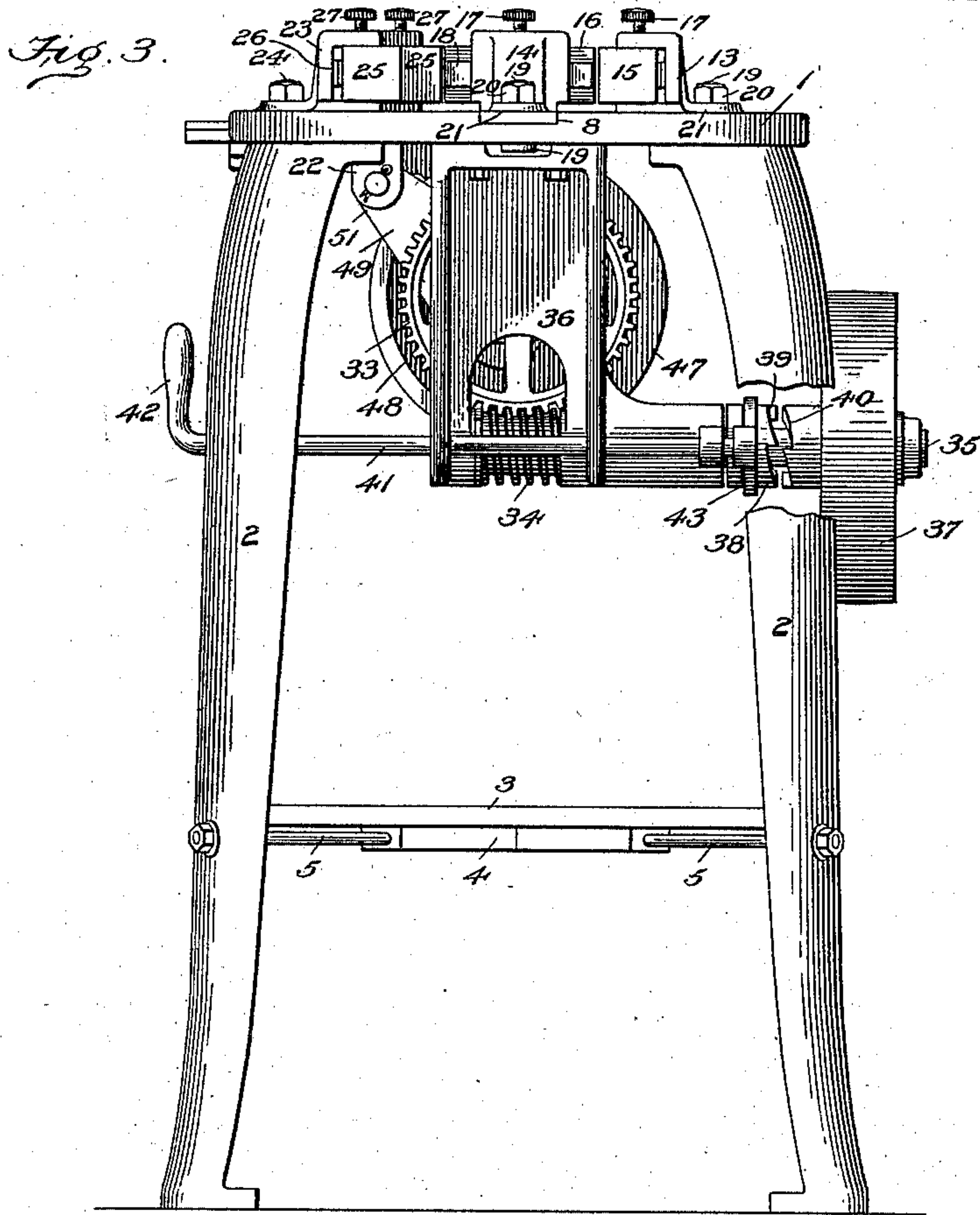
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UNITED STATES PATENT OFFICE.

PHILIP S. SMITH, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR PRESSING NECKS IN BOXES.

SPECIFICATION forming part of Letters Patent No. 748,429, dated December 29, 1903.

Application filed July 25, 1903. Serial No. 166,988. (No model.)

To all whom it may concern:

Be it known that I, PHILIP S. SMITH, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Machines for Pressing Necks in Boxes, of which the following is a specification.

My present invention relates to a machine for pressing the necks in paper boxes and is known in the art as a "neck-presser."

In the manufacture of paper or veneer boxes a strip or band of carboard or like stout material is sometimes pasted to the interior walls of the box in such manner that the same will project slightly above the upper edges thereof whereby to provide a support or retainer for the box-cover. This strip or band is known in the art as the "neck." Heretofore and prior to my present invention these necks have been pasted or affixed to the inner walls of the box entirely by hand, and this operation is not only slow, costly, and tedious, but it is almost impossible to give the required amount of pressure by hand to effect such a firm union of the parts as is necessary to produce a firm, neat, and durable box.

The purpose, therefore, of the present invention is to provide a simple automatic machine for pressing the necks of paper boxes; and it has for its objects, first, to provide a machine of the character set forth that will be simple in construction, effective in operation, and comparatively inexpensive of manufacture; second, to provide a power-machine that will require no exertion or care on the part of the operator or attendant to operate the same; third, to provide either a single or a duplex machine whereby the pressing operation may be carried on intermittently or continuously; fourth, to provide a machine that can be easily and quickly adjusted to accommodate boxes of different sizes; fifth, the invention has in view other objects which will be made apparent in the following detailed description.

Briefly and generally stated, the invention comprises a table having adjustably mounted thereon two or more fixed abutment-blocks arranged or located so as to engage two outer side walls of a box and two or more adjustably-mounted reciprocatory presser-blocks

movable to and from the said abutment-blocks, so as to engage the two opposite walls of the box, the said four blocks constituting a mold between which the box to be pressed is placed, and means for actuating the said reciprocatory presser-blocks to cause them to simultaneously approach the said fixed abutment-blocks and impart a pressure to the outer walls of the box on all sides thereof.

In order to enable others to clearly understand, make, and use my said invention, I will now proceed to describe the same in detail, reference being had for this purpose to the accompanying drawings, in which—

Figure 1 is a top plan view of the machine. Fig. 2 is a side elevation of the same. Fig. 3 is an end view. Fig. 4 is an enlarged detail sectional view taken on the broken line xx of Fig. 1, and Fig. 5 is a sectional view taken through the box during the pressing operation.

In the present instance I have shown a duplex machine comprising two sets of presser devices, whereby the pressing operations may be carried on continuously; but it will be obvious that I may employ only a single set of presser devices, and I wish it understood that such a machine is within the spirit and scope of the invention.

Similar reference-numerals indicate corresponding parts throughout the several views.

The numeral 1 designates a table supported upon legs 2, and 3 designates a shelf supported upon a skeleton frame 4, which latter is connected to the legs 2 by means of bolts or rods 5. The upper face of the table is provided on one side with a pair of grooved ways 6, extending from the edge thereof inward, each way having an elongated slot 7, extending through the bottom thereof, and the table is also provided at each end with a similar grooved way 8, having a slot 9 therein. The face of the table is further provided at its opposite side with grooved ways 10, which are arranged in line with the ways 6 and are substantially like the latter, except that the sides of the ways are undercut, as at 12. Adjustably mounted in each of the ways 6 and 8 are heads 13 14, grooved, as shown, to receive abutment-blocks 15 16, preferably of wood, the said blocks being held to the heads by means of set-screws 17. Interposed be-

tween the rear face of each block and its head is a leaf or other spring 18, whereby the blocks may yield slightly during action. The heads 13 14 may be moved back and forth in the ways, as desired, and when properly adjusted are held securely in position by means of headed bolts 19, each having a nut 20 on its upper end, the said bolts passing through the slots in the ways and through a tailpiece 21 on each head, all as more clearly shown in Fig. 4. It will be seen that the abutment-blocks 15 are arranged at a right angle to the corresponding abutment-blocks 16 in order to form supporting-walls for two sides of a box, as will hereinafter more clearly appear.

Slidably mounted in each of the undercut ways 10 is a plate 20', having an elongated slot 21' therethrough and a downwardly-projecting lip 22 on its inner end. A head 23, similar in all respects to the heads 13 14, is adjustably secured to each plate 20' by means of a headed bolt 24, and carried by each head 23 is a presser-block 25, the said blocks being directly in line with and capable of being moved toward and from the blocks 15 in a manner presently to be described. A leaf or other spring 26 is interposed between the blocks 25 and heads 23, and said blocks 25 are held in place by means of thumb-screws 27.

Arranged to move back and forth in grooved undercut ways 28 at the center of the table is a head 29 carrying presser-blocks 30, the said blocks being arranged in line with the end abutment-blocks 16. These presser-blocks 30 are yieldingly mounted and are held in place by thumb-screws, like the other blocks referred to.

By the arrangement described it will be seen that the four blocks of each set are so arranged as to form a rectangular mold within which a box to be pressed may be placed, two of said blocks of each set being adjustably mounted and constituting fixed abutments and the other two being connected to suitable mechanism whereby they are caused to simultaneously approach and recede from the said abutment-blocks. By referring to Fig. 1 it will be seen that the blocks to the left of the figure are shown in their pressing position, the mold being closed, while the blocks to the right have receded, leaving the mold open in order to permit a box to be inserted therein. In order to accomplish the alternate opening and closing of the two molds, I have provided the following means.

Journaled in suitable hangers 31, secured to the under side of the table 1 is a rotary shaft 32, having a worm-gear 33 on one end thereof, with which a worm 34 meshes, said worm being mounted upon a shaft 35, journaled in a bearing formed in a hanger 36, the said shaft 35 carrying a loose driving-pulley 37, driven from any suitable source of power. A clutch-sleeve 38 is splined upon the shaft 35 and is provided on one edge with teeth 39, arranged to be brought into clutching engage-

ment with corresponding teeth 40 on the pulley 37. The clutch-sleeve 38 may be shifted back and forth by means of a slidable rod 41, having a handle 42 on its outer end and a U-shaped yoke 43 on its inner end, the said yoke lying in a peripheral groove in the clutch-sleeve 38, all as more clearly shown in Fig. 3.

Mounted centrally upon the shaft 32 is a disk 44, having a peripheral cam-groove 45, and playing in said groove is a projection 46, carried by the central head 29, the arrangement being such that as the cam-disk is rotated the said head, with its presser blocks 30, will be caused to move alternately back and forth to and from the fixed abutment-blocks 16, or first toward one mold and then toward the other. The said shaft 32 also carries two disks 47, each having a camway 48 in one face thereof, as shown in Fig. 4, one of said disks being arranged on either side of the central disk 44, as shown in Fig. 2. Two operating-links 49, each having an elongated slot 50, through which the shaft 32 loosely passes, are provided for alternately actuating the presser-blocks 30. Each link 49 is arranged alongside its operating-disk and is pivoted at its upper end at 51 to one of the before-described lips 22, projecting from the under side of each plate 20. Each link is further provided with an extension 52, having a lateral projection which plays in the camway 48, the arrangement being such that as the cam-disks are rotated the links will be actuated, so as to cause the plates 20 and their presser-blocks to be reciprocated. The disks 47 are so mounted upon the shaft 32 that the camways 48 will be located opposite to each other, so that when said disks are rotated the links will be actuated to alternately reciprocate the presser-blocks. The cam-groove 45 in the disk 44 is constructed to move the presser-blocks 30 back and forth in timed relation with the presser-blocks 25 and in such manner that the molds will alternately open and close, thus enabling the pressing operation to be carried on continuously.

The operation of the machine is as follows: Referring to Figs. 1 and 5, the numeral 53 designates a box, and 54 the neck arranged in position therein, it being understood that either the box or the neck has been previously glued. A form 55 of about the size and shape as the interior of the box is now placed within the latter, and the box with its form are now placed in the open mold formed by the two receding and two fixed blocks. The machine being in operation, the presser-blocks of the open mold will now be brought together to press the four sides of the box and firmly affix the neck thereto, and during this closing movement of the blocks of one mold a corresponding opening movement of the blocks of the other mold will take place, so that the operator can place a box therein and then remove the pressed box from the

first-named mold and insert another therein, and so on, the operation being carried on continuously.

I do not wish to be understood as limiting myself to the precise means herein shown and described for actuating the presser-blocks, as other mechanism for accomplishing this movement may be employed without departing from the spirit of the invention. Likewise I do not wish to be understood as limiting myself to a duplex machine, as it will be evident that the pressing operation may be carried on with a single set of blocks, although not so expeditiously.

The type of machine herein shown is constructed to operate upon a rectangular box; but it will be obvious that the machine can be readily changed to operate upon boxes of other shapes, it being only necessary to change the shape or contour of the working faces of the abutment and presser blocks.

It will be obvious that I may make all the blocks of each set movable instead of employing two fixed and two movable blocks, in which case the four blocks of each set would be caused to move to and from each other, and I wish it understood that such a construction is within the spirit and scope of the invention.

Having thus described my invention, what I claim is—

1. In a machine of the class described, abutment-blocks arranged at an angle to each other and constituting supports for some of the walls of a box, presser-blocks movable toward and from said abutment-blocks and arranged to engage other walls of the box, a rotary shaft, two disks mounted on said shaft, and each having a camway, independent connections between said cams and movable presser-blocks for simultaneously moving the latter toward and from the abutment-blocks, and means for rotating said shaft.

2. In a machine of the character described, two abutment-blocks arranged at right angles to each other and constituting supports for two walls of a box, two movable presser-blocks arranged at right angles to said abutment-blocks and arranged to engage two other walls of the box, a rotary shaft, a disk having a cam-groove in one face mounted upon said shaft, a link having a connection at one end with one of said presser-blocks and provided at its other end with a projection which enters said cam-groove, a second disk having a cam-groove in its periphery also mounted upon said shaft, a projection on the other presser-block which enters the said peripheral groove, and means for rotating said shaft for the purpose specified.

3. In a machine of the class described, two sets of pressing devices for pressing the outer walls of boxes, and means for simultaneously actuating said sets of presser devices, to cause them to be alternately brought into and out of pressing operation.

4. In a machine of the class described, two sets of pressing devices for pressing the outer walls of boxes, some of the pressing devices of each set being fixed and others being movable, and means for simultaneously actuating the said movable presser devices to cause those of one set to move inward while those of the other set are moving outward.

5. In a machine of the class described, a table two sets of presser devices mounted upon said table, each set of such devices comprising two fixed and two movable blocks and means for causing the said movable blocks of one set to move inward toward their cooperating fixed blocks and for simultaneously moving the movable blocks of the other set away from their cooperating fixed blocks.

6. In a machine of the character described, two sets of pressing devices for pressing the outer walls of boxes, and means common to both sets of devices for simultaneously actuating the latter to cause them to be brought alternately into and out of pressing operation.

7. In a machine of the class described, two sets of pressing devices for pressing the outer walls of boxes, each set comprising two fixed abutment-blocks and two movable presser-blocks arranged at an angle to the said abutment-blocks, and means for alternately actuating each pair of movable presser-blocks to cause one pair to approach their cooperating abutment-blocks and the other pair to simultaneously move away from their cooperating abutment-blocks.

8. In a machine of the class described, two sets of presser devices for pressing the outer walls of boxes, each set comprising a pair of fixed and a pair of movable blocks arranged at right angles to each other, and means for causing the movable blocks of one set to move toward their cooperating fixed blocks and for simultaneously moving the movable blocks of the other set away from their cooperating fixed blocks.

9. In a machine of the character described, two sets of pressing devices arranged side by side, a head located between said two sets of pressing devices, a presser-block of each set carried by said head, and means for moving said head back and forth toward and from each set of said pressing devices.

10. In a machine of the character described, two sets of pressing devices arranged side by side, a reciprocatory head located between said two sets of devices, a presser-block of each set carried by said head, and a rotary cam for actuating said reciprocatory head.

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

PHILIP S. SMITH.

Witnesses:

GEORGE Z. SUTTON,
WALTER F. HENRY.