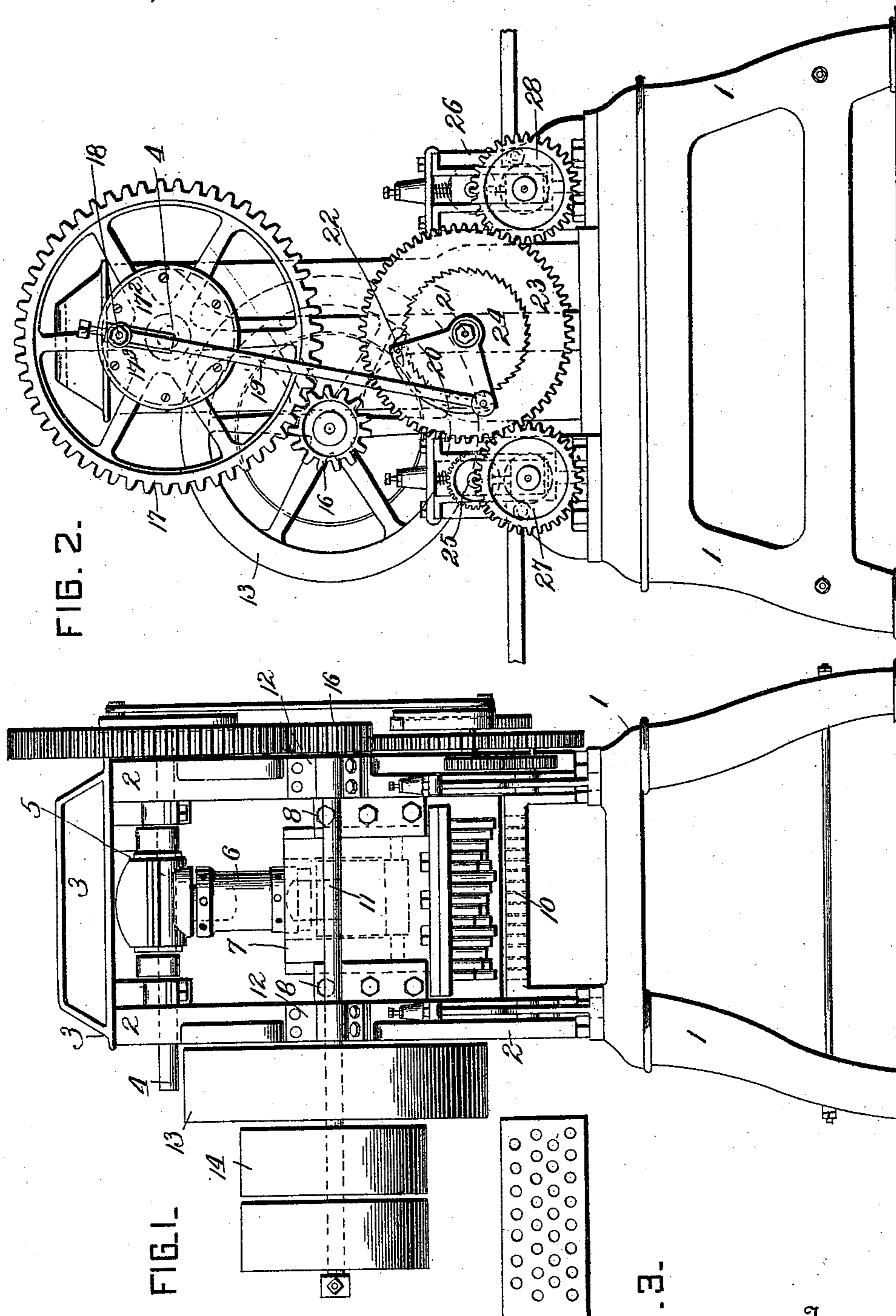


(No Model.)

J. L. CLARKE.
BOARD PUNCHING MACHINE.

No. 497,566.

Patented May 16, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN LYLE CLARKE, OF BALTIMORE, MARYLAND.

BOARD-PUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 497,566, dated May 16, 1893.

Application filed October 5, 1891. Serial No. 407,713. (No model.)

To all whom it may concern:

Be it known that I, JOHN LYLE CLARKE, a citizen of the United States, and a resident of Baltimore city, in the State of Maryland, have
5 invented certain new and useful Improvements in Board-Punching Machines, of which the following is a specification.

My invention relates to a machine for making
10 laths.

On the 13th day of December, 1887, a patent No. 374,826 was issued to me for a backing for plaster, consisting of a board perforated with holes the interiors of which are
15 larger than the exterior, and which when plaster is applied to them, form a secured key for the plaster in the board. The present application is designed to describe and cover the machine by which the board described in
20 said patent is made.

Figure 1, is a front elevation of my machine with the front feeding rollers removed so as to show the punches beyond. Fig. 2, is a side elevation of the machine. Fig. 3, is a plan of
25 the die plate.

In the drawings, 1 is the stand of the machine. 2, 2, are vertical standards securely bolted to the stand.

3 is a yoke connecting the upper ends of
30 the said standards.

4 is a shaft journaled in said standard and provided in its center with a crank 5 having the desired amount of motion necessary to cause the punches to penetrate the board.

35 6 is a connecting rod.

7 is the cross head reciprocating in guides 8, 8, which are bolted on the interior sides of the standards 2, 2. To the upper end of the cross head 7, the crank 6 is secured. To the
40 lower end of the cross head 7 is bolted a plate carrying the punches 9, 9, which, as shown in the drawings, are arranged in series of varying lengths.

I employ about thirty punches arranged in
45 four rows which are of different lengths. I find that in practice it is very desirable to employ punches which are of uneven lengths to prevent splitting the board, besides which, it greatly reduces the amount of power necessary to operate the machine. When all the
50

punches are of the same lengths the maximum resistance is offered by the board. But if they are made of different lengths and operate successively upon the board, the resistance is little more than the aggregate resistance of
55 those punches which strike the board at the same time. This is due to the fact that the resistance offered by the board at certain stages of the punch is much greater than at others.

10 is the die plate into which the punches enter. The holes in said bed are made of the same size as the said punches so that when the plug of wood is forced from the board by a punch, it is sheared at its edge by these
60 holes. Fig. 3, is a plan view of the die plate 10 which rests upon suitable supports below the punches and with which they co-operate.

11 is a shaft journaled in suitable bearings 12, 12, upon the sides of the standards 2, 2, upon one end of which is keyed a fly wheel
65 13, pulley 14 and upon the extreme end of which an idle pulley 15 is journaled. On the opposite end of the shaft 11 is keyed a pinion 16 which meshes with a large gear wheel 17, keyed upon the end of the shaft 4.

18 is a crank pin screwed into a plate 172. Said plate is secured to the side of the gear wheel 17 and is provided with a number of
70 holes 173 into which the crank pin may be screwed, which are located at various distances from its center, so as to give to the crank pin any desired throw, or a radial slot may be cut in the plate 172 in which the crank pin may be bolted for the same purpose.

19 is a connecting rod secured upon the crank pin 18 by a suitable strap and key at the upper end and to a segmental pawl carrier 20 at its lower end.

20 is a pawl carrier made in the form of a
75 segment of a circle journaled upon the shaft 21. The connecting rod 18 is secured to its lower end and to its upper is pivoted the pawl 22 provided with a suitable spring to maintain it in contact with its ratchet.

21 is a stud shaft secured into one of the standards 2 at the opposite side from the fly wheel and upon which is journaled a gear 23. To this gear is secured the ratchet wheel 24 which is also journaled upon the shaft 21.
80 85 90 95 100

25 and 26 are two pairs of feed rolls, one in front of the punching apparatus and one behind it.

27 and 28 are a pair of pinions keyed to the shaft of the lower roll of each pair and each meshing with the gear 23.

The operation of the device is as follows: Power is applied to the pulley 14, which turns the shaft 11 and carries the fly wheel 13. Shaft 11 turns the gear 16. 16 turns the gear 17 which is a large gear and develops a large amount of power due to its size. The gear 17 turns the shaft 4 and crank 5, reciprocating the cross head 7 and the punches. The crank pin 18 operates the connecting rod 19 which moves the pawl 22, a distance regulated by the location of the crank pin 18. Pawl 22 turns the ratchet 24 and gear 23 the distance also regulated by the location of the crank pin 18 and the wheel 23 turns the gears 27 and 28 a proportionate distance, feeding forward the board a desired distance so as to locate the series of holes punched in the proper place. It will be noticed that the upward motion of the connecting rod 19 moves the board forward while at the same time the punches are being raised and that the downward motion of the connecting rod 19 moves the pawl back-

ward and leaves the boards stationary while the punches are descending and doing their work.

Having described my invention, what I desire to claim and secure by Letters Patent is—

In a punching machine the combination of a die plate, a series of punches of unequal length and a reciprocating cross-head operating the punches, a connecting rod and crank operating the cross-head, an independent crank upon one extremity of the main crank shaft, two pairs of feed rolls for feeding the board to the punches and withdrawing it from them, provided with driving gears which mesh with a central gear between them to which is secured a ratchet wheel and a pawl mechanism operated by a connecting rod from the crank on the extremity of the main crank shaft of the machine whereby the feed rolls are driven and given an intermittent motion, substantially as described.

Signed at Baltimore, in the State of Maryland, this 26th day of September, A. D. 1891.

JOHN LYLE CLARKE.

Witnesses:

JNO. T. MADDOX,
M. TURNER.