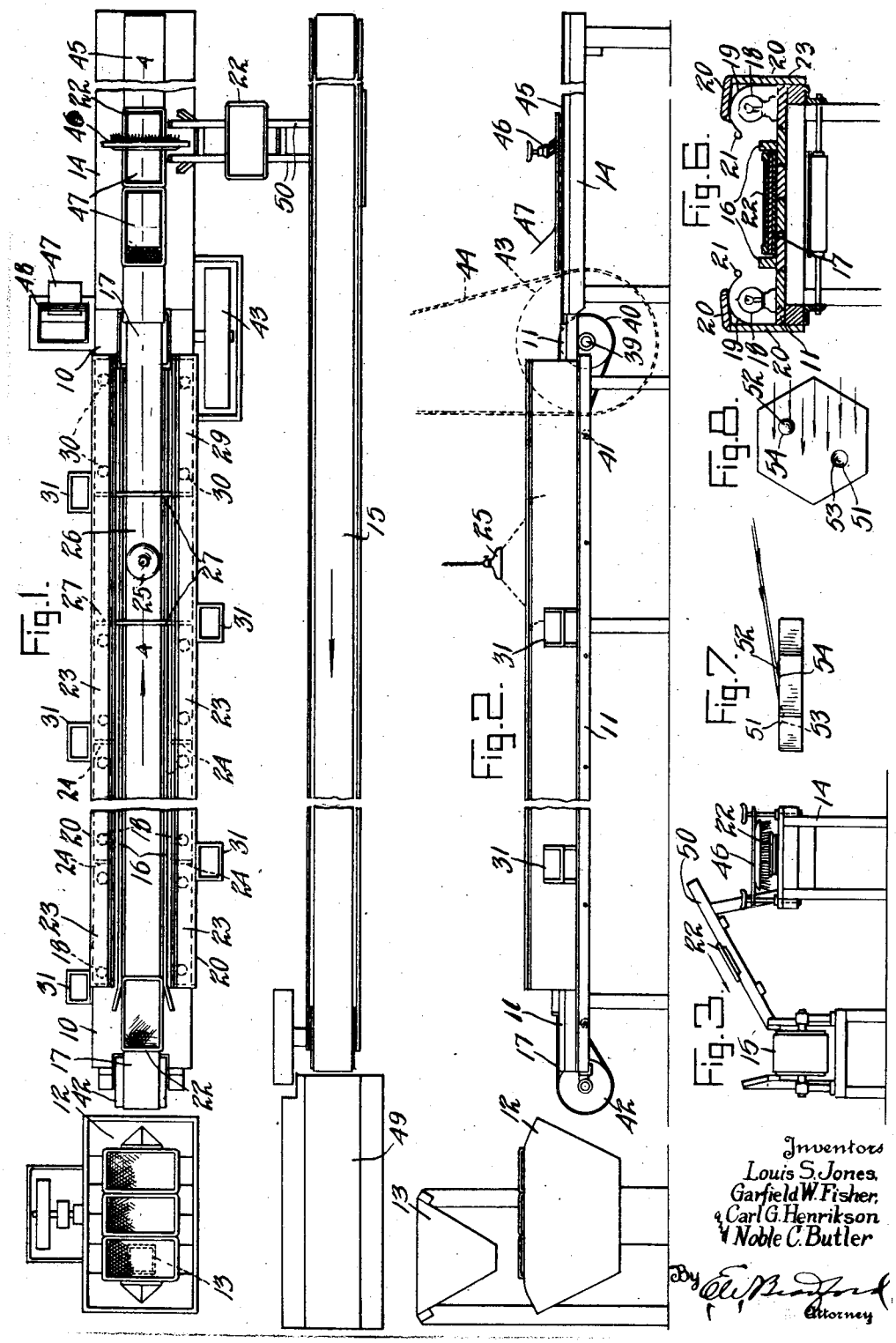
Aug. 13, 1929. L. S. JONES ET AL 1,724,764

MACHINE FOR MOUNTING TILE

Filed April 9, 1925 2 Sheets-Sheet 1



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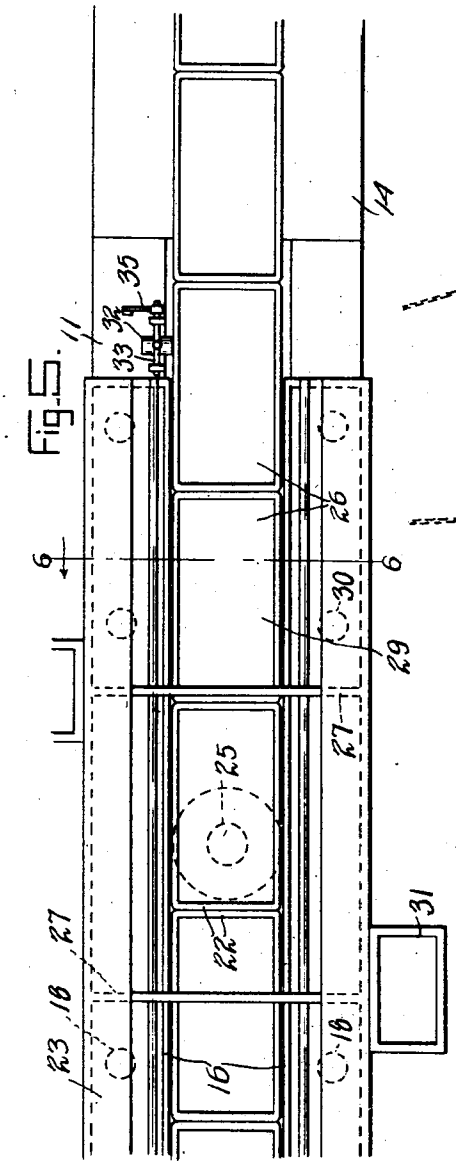


Fig. 5.

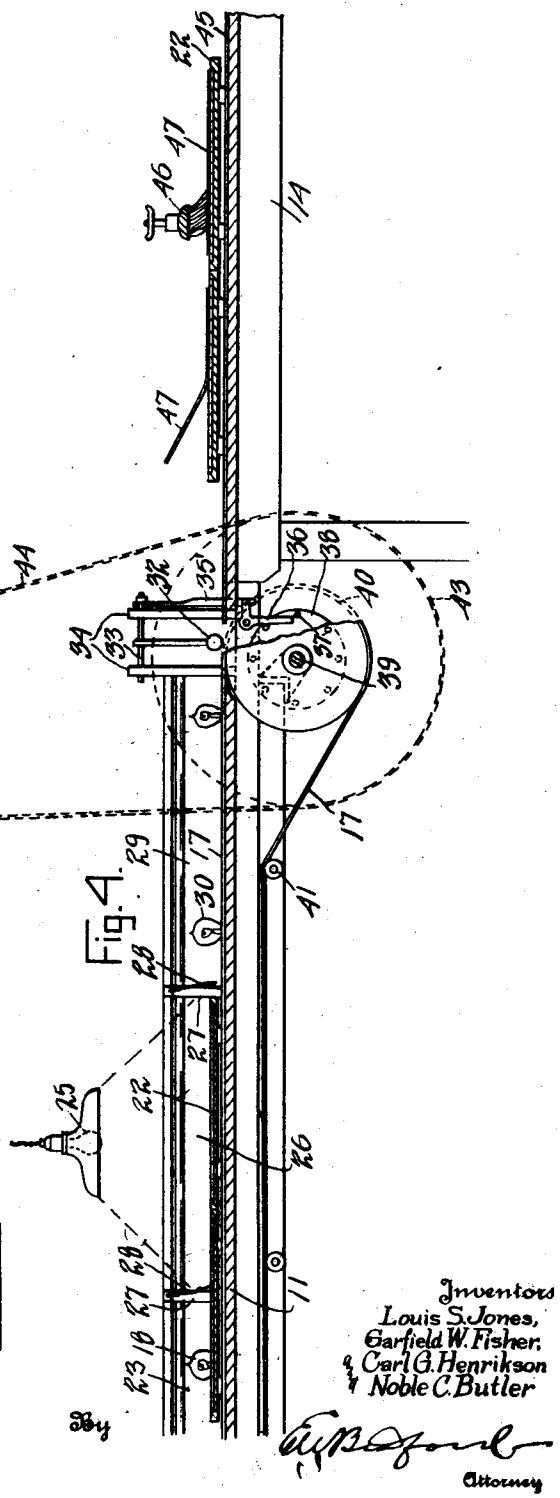


Fig. 4.

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UNITED STATES PATENT OFFICE.

LOUIS S. JONES, GARFIELD W. FISHER, CARL G. HENRIKSON, AND NOBLE C. BUTLER, OF ANDERSON, INDIANA, ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE NATIONAL TILE COMPANY, OF ANDERSON, INDIANA, A CORPORATION OF OHIO.

MACHINE FOR MOUNTING TILE.

Application filed April 9, 1925. Serial No. 21,937.

Our said invention relates to a machine for mounting tiles and it is an object of the invention to provide means for feeding tiles mechanically to a mounting board which is mechanically agitated to position the tiles with reference to a pattern on the board.

A further object is to provide means whereby the empty boards can be placed on the machine and filled boards can be removed without stopping the operation.

Another object is to provide improved facilities for inspecting the filled boards.

Other objects are to provide means for setting the tiles securely in place on the board, means for pasting a retaining sheet of paper or the like on the group of tiles after the board has been inspected, means for returning empty boards to the mechanical shaker and means for controlling the speed at which the boards pass the inspectors.

Referring to the accompanying drawings which are made a part hereof and on which similar reference characters indicate similar parts,

Figure 1 is a plan of the machine showing the shaker, the inspection, settling and pasting table and a returning conveyor,

Figure 2, a side elevation of the machine,

Figure 3, an end view of the machine,

Figure 4, a longitudinal section of the inspection, settling and pasting table, taken on line 4—4 of Fig. 1,

Figure 5, an enlarged plan of the inspection table and the settling mechanism,

Figure 6, a section on line 6—6 of Fig. 1, and

Figures 7 and 8 show details of the tile.

In the drawings reference character 11 indicates the inspection table having one end adjacent to a shaker 12 such as described in our copending application No. 20,823, filed April 4, 1925, above which is suspended on suitable framing a hopper 13. A pasting and delivery table 14 forms a continuation of the inspection table and a return conveyor 15 extends alongside said tables to a table or magazine 15ª which holds empty mounting boards such as shown and described in our application above referred to. Upon table 11 are found guide rails 16 between which runs a belt conveyor 17, in the direction of the arrow. Between rails 16 and the edge of table 11 are mounted rows of lamps 18 which are covered by reflectors 19 which serve to intensify the light and also to project it within certain bounds. The reflectors 19 are protected by suitable boxing 20 within which they are mounted. The extended portions 21 of reflectors 19 are brought down over lamps 18 to prevent the light rays from these lamps from blinding the operators or inspectors. Carried on conveyor belt 17 are the loaded mounting boards 22 which have been loaded with tiles by means of hopper 13 and shaker 12.

The spaces between rails 16 and extended portions 21 of reflectors permit light rays from lamps 18 to fall upon the tile carried on mounting boards 22 at such an angle that they will produce shadows and light spots caused by irregularities and defects in the surface of the tiles, permitting the operator to readily discern these defective tiles and replace them or turn them over in their places. This operation is performed by inspectors being stationed at either side of table 11, each pair of inspectors being stationed opposite compartments 23 which are separated by partitions 24 and in which one or more lamps are mounted. The various directions of the light rays thrown by lamps 18, and in a measure shut off by partitions 24, serve to throw shadows across the tile which if not brought out by one of the lamps will be disclosed by some other lamp situated at a different angle, thus permitting thorough inspection of the tile upon the mounting boards as to irregularities and defects in their surfaces as they pass through this part of the process.

Suspended above conveyor belt 17 and immediately following the series of compartments 23, is a lamp 25 which is provided with a suitable shade of any conventional design for preventing the light from being thrown into the eyes of the inspectors, the purpose of this light being to illuminate the tile in such a manner that soft or insufficiently fired tile can be discerned through their difference in color or otherwise from perfect tile. This operation is impossible where the light rays fall upon the tile in any but a substantially vertical direction. The compartment 26 over which lamp 25 is suspended is bounded by partitions 27 and curtains 28 suspended in

such a manner that they will drag over the face of the mounting boards as they pass and so that the light rays from lamp 25 will not interfere with the previous inspection operation or the following inspection operation.

The next operation performed on table 11 is termed a final inspection operation and is performed opposite compartments 29 which is constructed and illuminated by means of lamps 30 in a similar manner to the compartments 23 and in which the inspection is more general than the previous inspections and which is performed by older and more experienced operatons. The driving means for the machine includes any suitable speed-changing means whereby the belt may be made to travel faster or slower to suit the capacity of the inspectors. Boxes are provided along the edge of table 11 by means of which the inspectors are supplied with additional tile for replacing defective tile. After the tile have been thus inspected they are settled into their proper outlines (as illustrated in Figs. 7 and 8 of the copending application above referred to) in the following manner:

As the mounting boards pass off conveyor belt 17 they are struck four or five times at one edge by a hammer 32. The hammer 32 is suspended from a rockshaft 33 which is carried in standards 34 and operated by means of a rockarm 35 and a link 35′ which is connected to a bell crank 36 pivoted on the framework of table 11, one arm of the bell crank being moved by a series of pins 37 which as they pass beyond the end of this arm in the direction of the arrow permit it to fall back releasing the hammer 32 so that it will strike the mounting boards. Pins 37 are mounted on a disk 38 which is carried on a shaft 39 upon which is mounted a pulley 40 over which the belt conveyor 17 runs, the belt 17 being returned over rollers 41 to a pulley 42 which is mounted at the opposite end of table 11. On shaft 39 is mounted a driving pulley 43 which through belt 44 is connected to any suitable variable speed driving mechanism; as, for example, that illustrated in our copending application No. 20,823, above referred to.

The mounting boards as they come off the conveyor belt 17 are pushed along on table 14 upon which is fastened a metallic plate 45 for the purpose of reducing friction. Upon table 14 is adjustably mounted a brush 46 which serves to apply a retaining sheet of paper or other suitable material 47 firmly and uniformly to the finished upper surface of a group of tiles which are carried upon one of the mounting boards 22 and which have passed inspection as to their surface, hardness and perfection, such application not being made until the board has been completely filled. This sheet of paper 47 has been previously coated with adhesive in any suitable coating machine such as indicated by 48, as can be seen in Fig. 1, and placed upon the tile by an operative previous to passing under brush 46.

After the mounting board has passed under the brush 46 there is placed upon it a follow-board; the two are then picked up and inverted depositing the sheet 47 with the tile upon it and adhering thereto, upon the follow-board. The mounting board 22 is then removed and placed upon conveyor 15 where it is returned to the table 15ª from which it may be taken and re-loaded by means of hopper 13 and shaker 12.

During the course of the mounting boards 22 through the operations performed at table 11, it happens that sometimes the inspection has not been complete or some of the spaces have not been filled with tiles. In this case no paper is pasted onto the tile and the incompletely filled mounting board is thereupon returned on conveyor 15 where the operator engaged in transferring the boards from the shaker 12 to belt conveyor 17 may return it to be re-inspected. It sometimes requires an operator at each side of table 14 to remove the follow-boards. In order that the operator standing at the far side of the belt 17 may place the empty boards on conveyor 15, there is provided a pair of inclined rails 50 down which the boards may slide onto belt 15, and which may be easily reached by this operator.

Referring to Figs. 7 and 8, it will be seen how the shadows are thrown by irregularities in the tiles, the tile illustrated having a depression 51 and a projection 52. The light shining across them in the direction of the arrows produces shadows 53 and 54 respectively, by which means the defects are readily discerned, as previously described.

The hopper shown in the drawings is suitable for our purpose, but may obviously be replaced by others of various designs. Other changes in design and arrangement will also be obvious to those skilled in the art and therefore we do not limit ourselves to what is shown in the drawings and described in the specification, but only as indicated in the appended claims.

Having thus fully described our said invention what we claim as new and desire to secure by Letters Patent, is:

1. A machine for mounting tiles comprising conveying means for a filled mounting board, means for tapping the edge of the board, and means for applying a sheet of adhesive paper to the exposed face of the tiles on said mounting board, substantially as set forth.

2. A machine for mounting tiles comprising coveying means for filled mounting boards, a hammer swingable toward and from the conveyor for tapping the edge of

a mounting board, and means moving in synchronism with the conveyor for actuating said hammer, substantially as set forth.

3. A machine for mounting tiles comprising a conveyor for a mounting board, means for tapping the edge of the mounting board as it is carried by the conveyor, and a brush disposed above the conveyor to force a sheet of adhesive against the tiles on the mounting board, substantially as set forth.

4. The combination of a conveyor for boards upon which tiles are to be mounted, means for laterally agitating the board as it is moved along by the conveyor, and an adjustably mounted brush associated with the conveyor for yieldingly pressing an adhesive sheet against the tiles on the mounting board, substantially as set forth.

5. In a machine for mounting tiles, conveying means for a mounting board, and means for laterally agitating the mounting board as it is supported on the conveyor for causing the settling of the tiles, substantially as set forth.

In witness whereof, we have hereunto set our hands at Anderson, Indiana, this 2nd day of March, A. D. nineteen hundred and twenty-five.

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