

No. 646,878.

Patented Apr. 3, 1900.

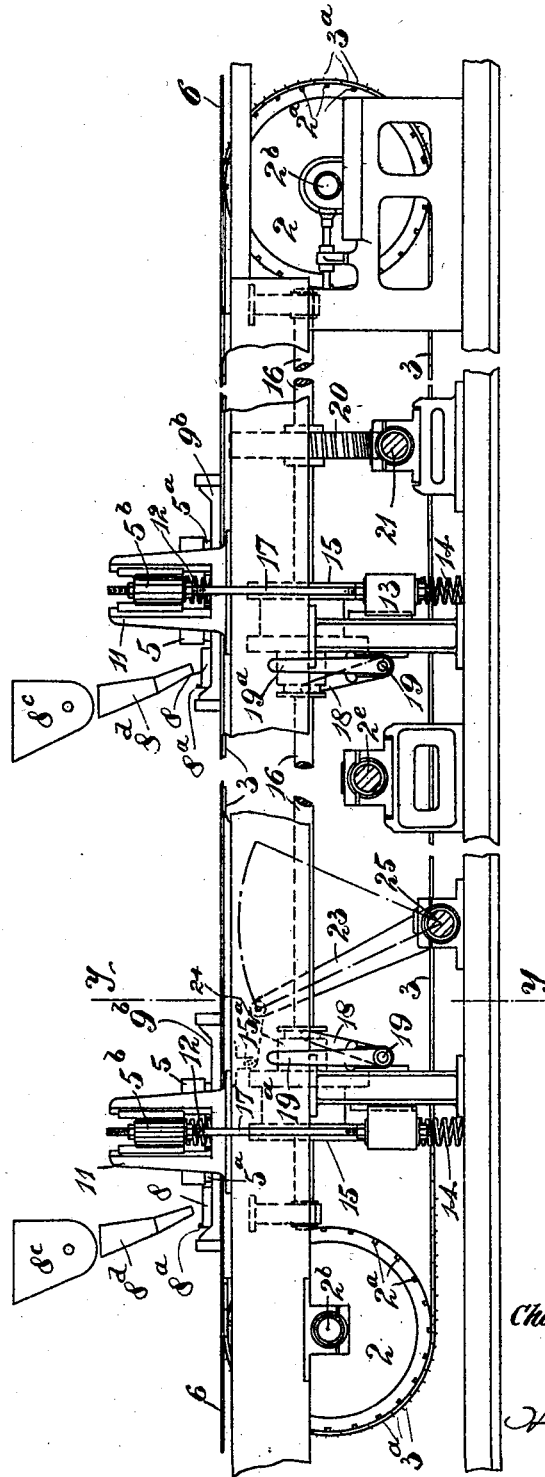
C. H. SCOTT.
LINOLEUM MACHINE.

(Application filed July 26, 1898.)

(No Model.)

6 Sheets—Sheet 1.

Fig. 1.



Witnesses:
C. L. Belcher
H. M. Capel.

Inventor
Charles H. Scott
By
H. L. Townsend
Attorney

No. 646,878.

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(No Model.)

8 Sheets—Sheet 2.

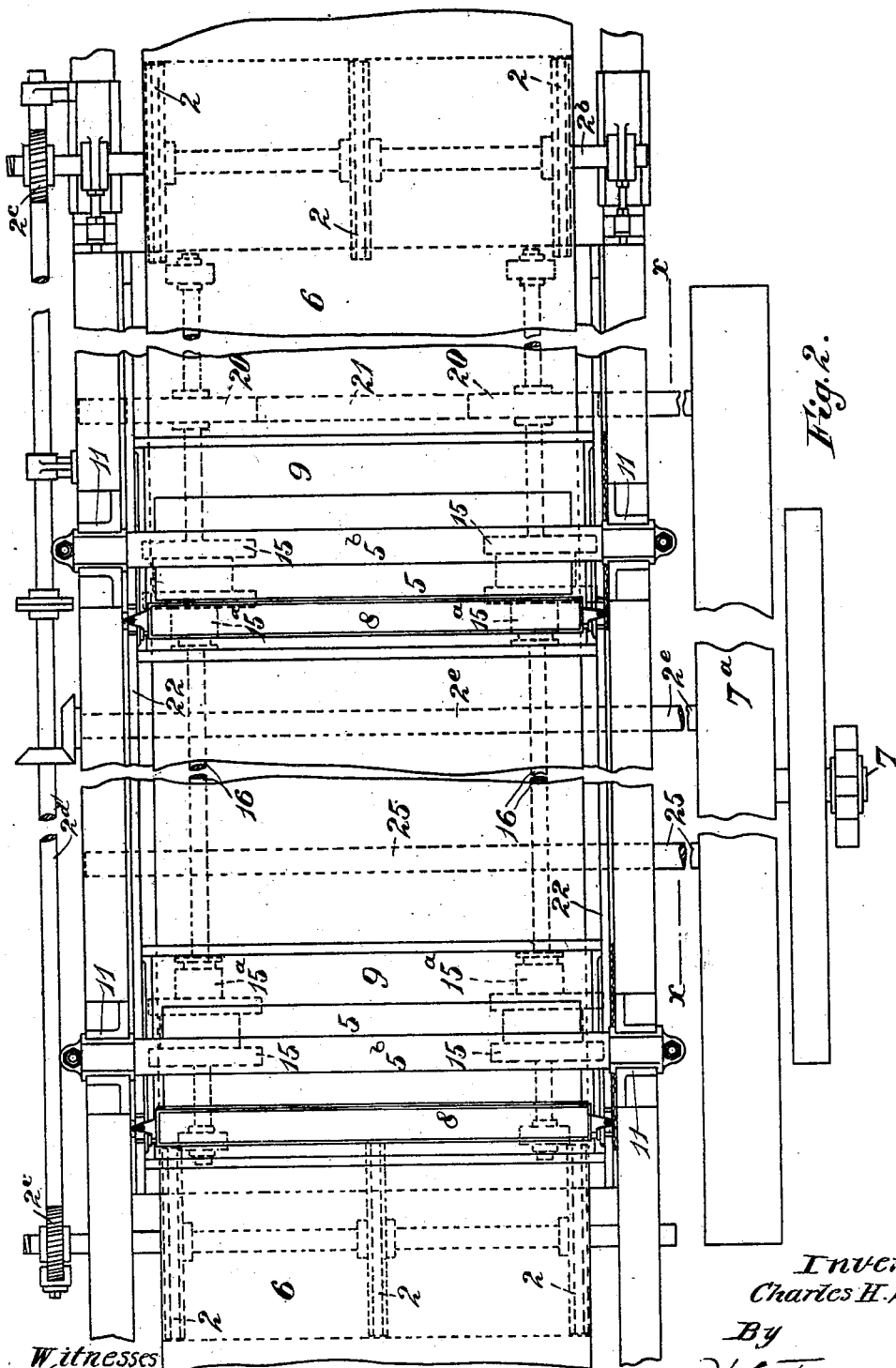


Fig. 2.

Witnesses
C. L. Belcher
T. H. Capel.

Inventor
Charles H. Scott
By
H. L. Townsend
Attorney

No. 646,878.

Patented Apr. 3, 1900.

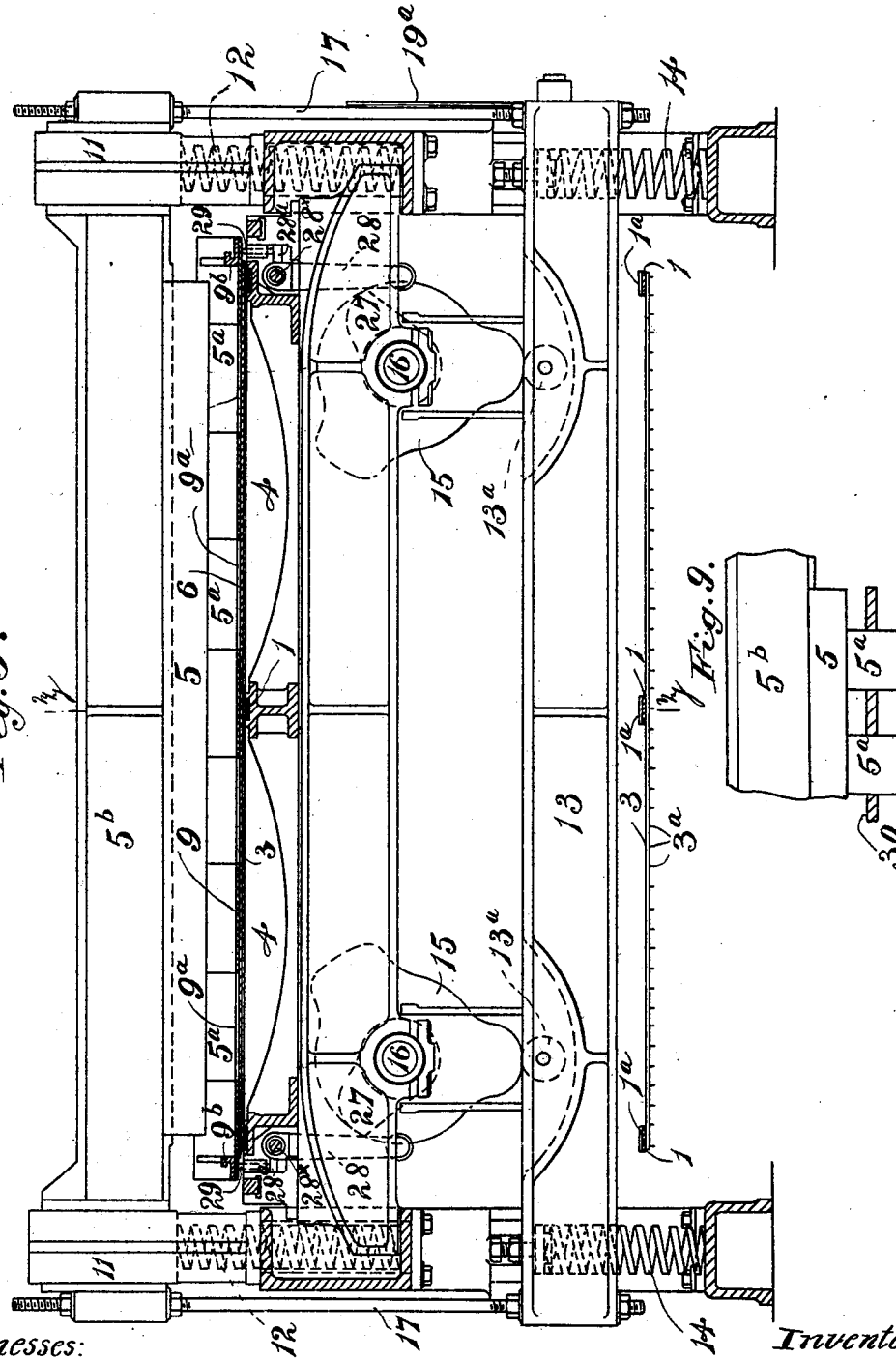
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6 Sheets—Sheet 3.

Fig. 3.



Witnesses:
C. L. Belcher
J. M. Leavelle

Inventor
Charles H. Scott
By
J. L. Townsend
Attorney

No. 646,878.

Patented Apr. 3, 1900.

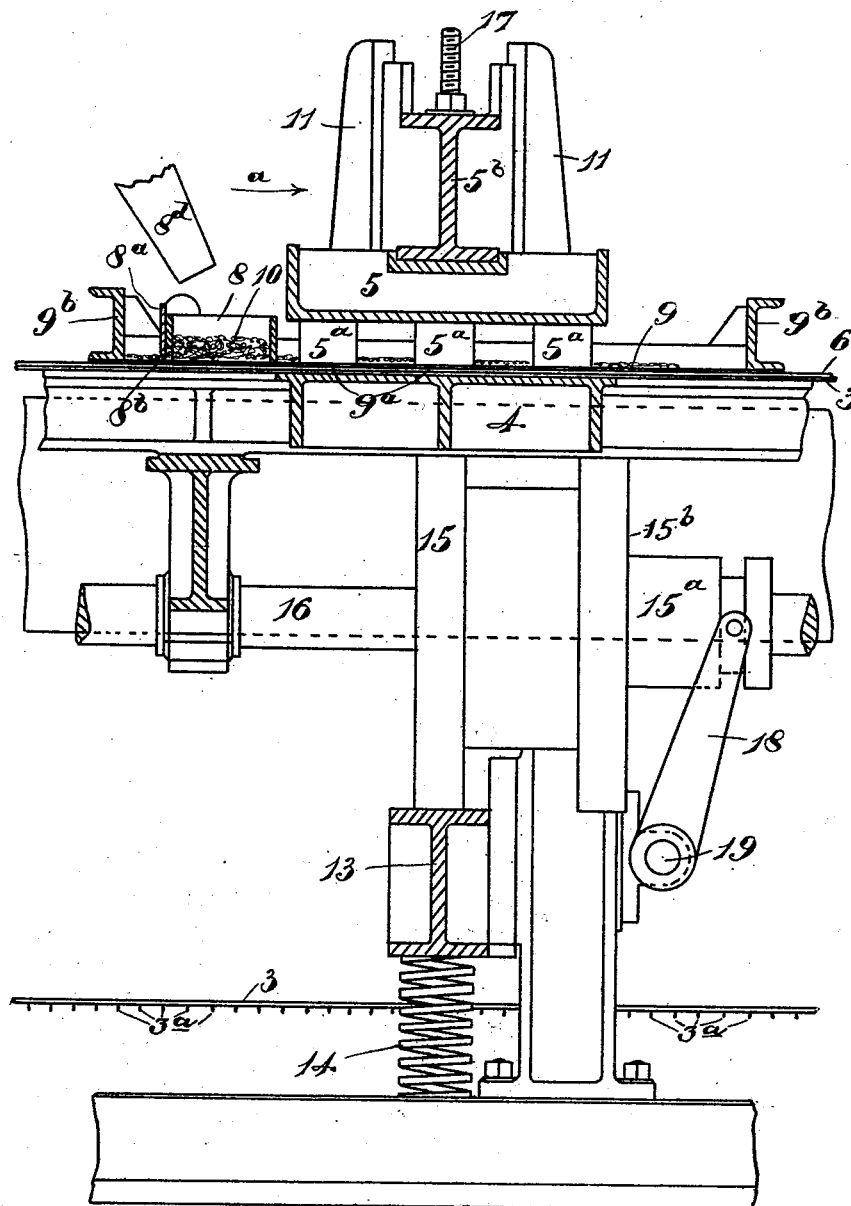
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(Application filed July 26, 1898.)

6 Sheets—Sheet 4.

Fig. 4.



Witnesses:
C. L. Belcher
M. A. Chapel.

Inventor
Charles H. Scott
By
H. L. Townsend
Attorney

No. 646,878.

Patented Apr. 3, 1900.

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(No Model.)

6 Sheets—Sheet 5.

Fig. 6.

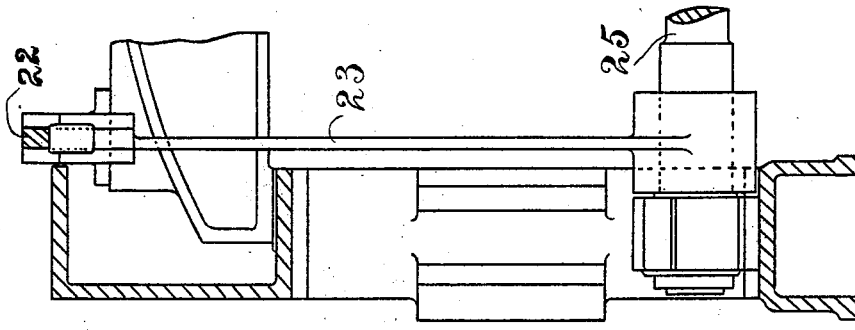
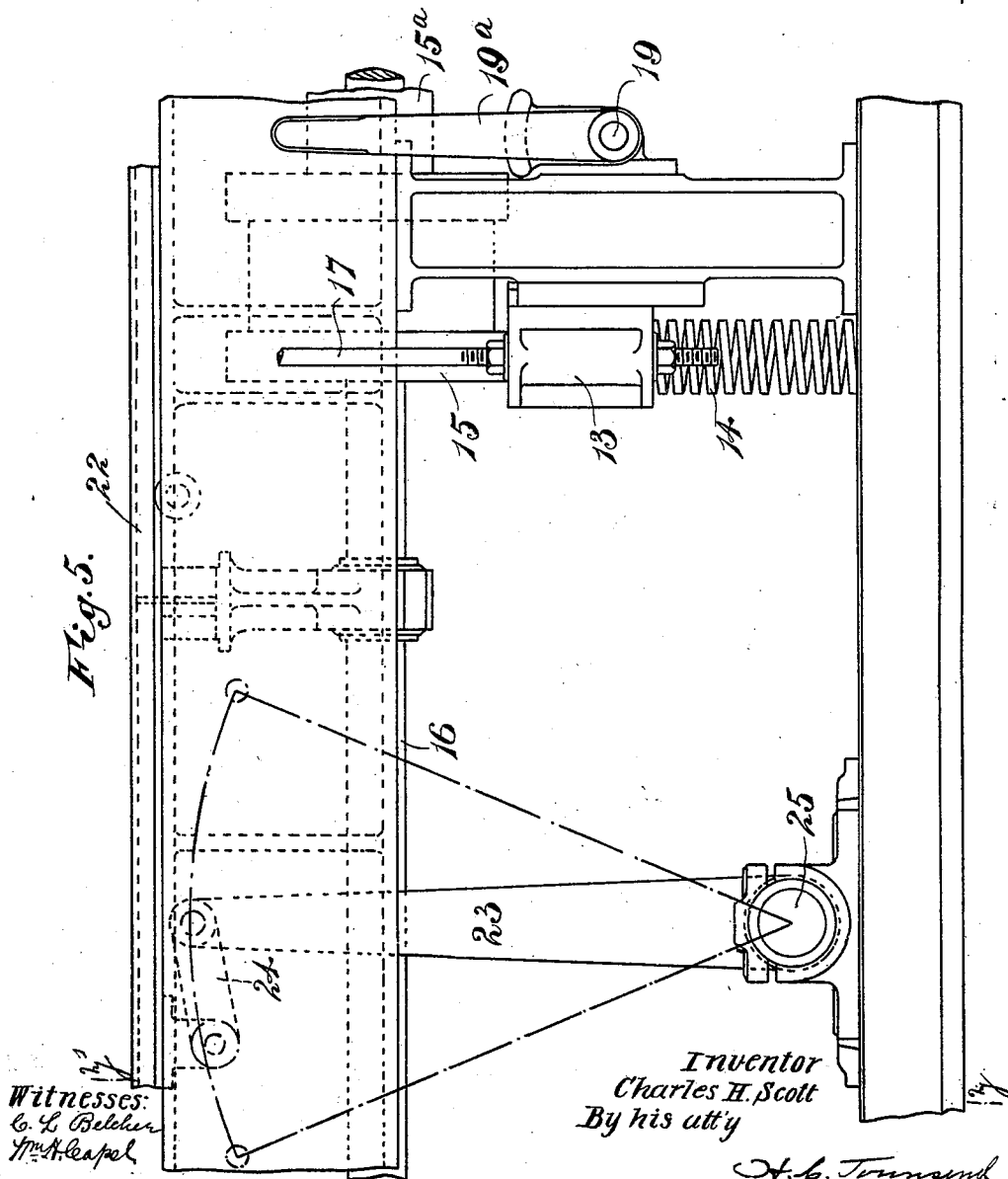


Fig. 5.



Witnesses:
C. L. Belcher
Wm. A. Leavelle

Inventor
Charles H. Scott
By his att'y

H. B. Townsend

No. 646,878.

Patented Apr. 3, 1900.

C. H. SCOTT.
LINOLEUM MACHINE.

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(No Model.)

6 Sheets—Sheet 6.

Fig. 7.

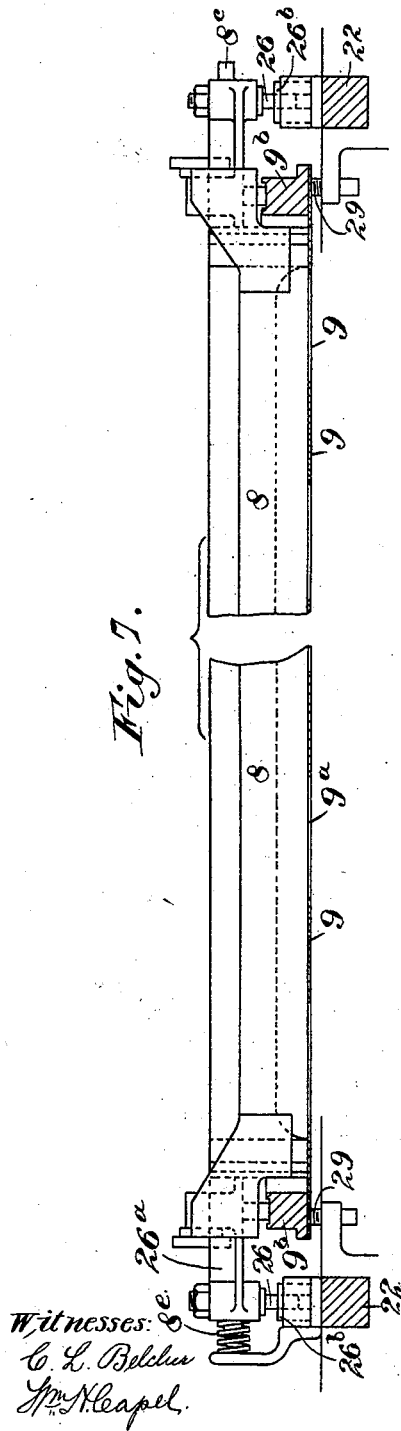
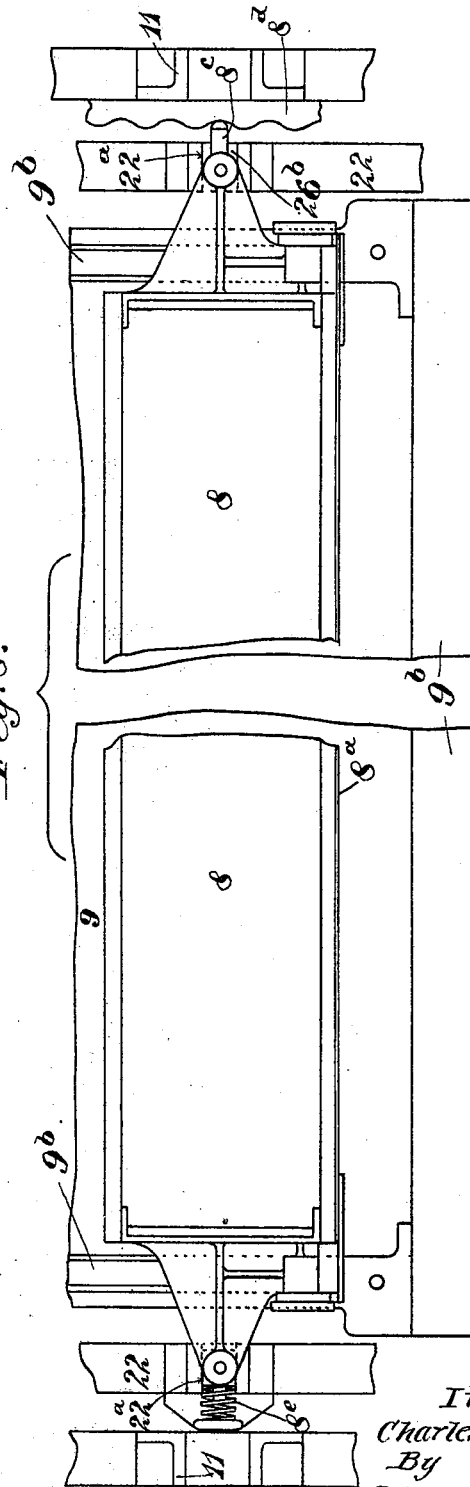


Fig. 8.



UNITED STATES PATENT OFFICE

CHARLES HERBERT SCOTT, OF GLOUCESTER, ENGLAND.

LINOLEUM-MACHINE.

SPECIFICATION forming part of Letters Patent No. 646,878, dated April 3, 1900.

Application filed July 26, 1898. Serial No. 686,910. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HERBERT SCOTT, a subject of the Queen of Great Britain and Ireland, residing at Gloucester, in the county of Gloucester, England, have invented Improvements in the Manufacture of Linoleum and in Machinery or Apparatus Therefor, (for which I have obtained a patent in Great Britain, No. 978, dated January 13, 1898,) of which the following is a specification.

This invention relates to improvements in the manufacture of linoleum and in machinery or apparatus therefor. According thereto the canvas backing, which may be covered with a preliminary coating of linoleum or other substance, is moved forward step by step and receives in an intermittent manner portions of linoleum to form the desired pattern, as I shall now describe, with reference to the accompanying drawings, wherein—

Figure 1 is a side elevation, partly in section, on the line *xx* of Fig. 2; and Fig. 2 is a part plan showing one construction of machine for carrying out my invention. Fig. 3 is a cross-section corresponding to the line *yy* of Fig. 1, but drawn to a larger scale. Fig. 4 is a part longitudinal section of the machine on the line *zz* of Fig. 3. Fig. 5 is a part side elevation thereof, and Fig. 6 is a part cross-section on the line *z'z'* of Fig. 5. Figs. 7 and 8 show, respectively, in cross-section and plan part of a tiering-plate and its corresponding tiering-box and operating mechanism. Fig. 9 is a sectional detail view showing a modification.

In order to prevent irregular movement of the backing, the latter is carried by and connected to an endless conveyer comprising endless metal bands 1, (or chains,) say, of steel, provided with suitable catches or projections 1^a to fit in holes or slots 2^a in the wheels 2, around which the conveyer works, the bands being united by transverse strips 3 of suitable material, such as wood, that are placed close together and arranged to slide over a stationary table 4, that serves to receive the thrust of the pressure-blocks 5 and plungers 5^a when applying linoleum to the backing 6. The transverse strips 3 are provided with suitable means, such as small

spikes 3^a, adapted to engage the said backing and prevent the same slipping on the said strips. The shafts 2^b, carrying the wheels 2, may be rotated in an intermittent manner through any suitable mechanism—as, for example, through worm-gearing 2^c from a longitudinal shaft 2^d, driven from a transverse shaft 2^e, which is rotated in an intermittent manner from a driving-shaft 7 through suitable gearing located within a casing 7^a. By the means described the backing, instead of being dragged from one end over the table, and consequently stretched irregularly, as heretofore usual, is secured at a number of points to a firm wooden or other surface, by which it can be moved with the greatest desired regularity.

For producing inlaid linoleum ordinary linoleum mixture in a granulated condition and of the proper colors or kinds for use in producing the desired pattern is, according to this invention, delivered into tiering-boxes 8, by which it is distributed to a suitable depth over tiering-plates 9, made as stencil-plates, and through the perforations 9^a, in which the linoleum mixture is forced onto the backing by the action of the vertically-movable blocks 5 and plungers 5^a. In the example shown, which is suitable for the production of irregular patterns, such as flowers or ferns, each tiering or stencil plate 9, made as thin as practicable and stiffened at the edges, as by being secured to a frame 9^b, (see Fig. 4,) is provided with a tiering-box 8, which is arranged to travel forward and backward over the surface of the plate and has its rear side 8^a vertically adjustable in order to vary, according to requirement, the rate of flow of linoleum mixture 10 from the box through the slit 8^b, and consequently the depth of the layer of such mixture deposited on the plate 9 during the forward motion of the box. The linoleum mixture may be fed by a feeding device 8^c and chute 8^d into each tiering-box when the same is in its rearward position. Above each stencil-plate is a vertically-movable pressure-block 5, provided with plungers 5^a, adapted to fit the perforations 9^a in the stencil-plate 9. Below the several stencil-plates 9 the backing 6 is caused to move in a step-by-step manner by an endless conveyer, such as that here-

inbefore described. Each time the backing comes to rest the tiering-box 8 of each stencil-plate 9 is caused to move in one direction—say the forward direction shown by the arrow *a* in Fig. 4—and deposit all over the said plate a layer of linoleum mixture of suitable thickness, the mixture extending through the perforations in the stencil-plate onto the backing. When the box has arrived at the end of its forward movement, the corresponding pressure-block 5, with plungers 5^a, is caused to descend and compress the linoleum mixture which is over the perforations 9^a in the stencil-plate 9 onto the backing 6 and to the level of the upper surface of the said plate and then to rise, after which the box 8 is returned to its initial position. During the return movement of the box loose linoleum mixture on the plate is caused to reënter the box through the slit 8^b at its lower rear end and also to enter and completely fill any perforations 9^a or parts thereof in the stencil-plate 9 which may not be already filled. The pressure-block 5 and plungers 5^a are then caused to again descend and further compress the material in the perforations 9^a of the stencil-plate 9 until the level of such material practically coincides with the lower surface of the said plate, whereupon the stencil-plate is slightly raised by suitable means—for example, cams—from the portions of linoleum previously compressed on the backing and upon which the stencil-plate rested, after which the pressure-block 5 and plungers 5^a are again raised. The backing 6, with the compressed pieces of linoleum thereon, is then moved forward a suitable distance, the stencil-plate lowered on the compressed pieces of linoleum, and the above-described operations repeated. In this way the backing can be completely covered with pieces of linoleum to form the desired pattern and is finally led away and treated in the ordinary manner.

Each block 5, with plungers 5^a, can be raised and lowered by any convenient means. In the example shown each block is carried by a cross-piece 5^b, the ends of which are arranged to work vertically in guideways in standards 11 and are carried by springs 12, which tend to raise and hold the block, with plungers, in the raised position. Each block is moved downward against the action of its springs 12 by a transverse beam 13, which is arranged below the stationary table 4 and is moved downward against the action of springs 14 by cams 15, arranged to be rotated by two longitudinal shafts 16 and to act against anti-friction-rollers 13^a on the beam 13. The connection between the blocks 5 and cross-pieces 5^b and the means for depressing them may be such that any one of the blocks can be put out of action while the machine continues in motion. For this purpose each block 5, through its cross-piece 5^b, may be connected to the corresponding beam 13 below it by a pair of rods 17, so that the block and beam rise and fall together, and the cams

15 are feathered to the shafts 16, so that they will rotate therewith, but are capable of being moved endwise thereon by forked levers 18, which engage grooved bosses 15^a on the cams and are fixed on a rock-shaft 19, provided with a hand-lever 19^a, the arrangement being such that by operating the hand-lever in one direction or the other the pair of cams can be brought over or moved from above the beam 13, according as it is desired to put the corresponding block in or out of operation. The cams 15 are each formed with two projecting or operative parts, as shown in Fig. 3, so that they will act to depress the pressure-block and plungers twice and to different extents for each rotation of the shafts 16, as and for the purposes hereinbefore explained. The said shafts 16 may be driven through worm-gearing 20 from a transverse driving-shaft 21.

In the example shown the tiering-boxes 8 are moved backward and forward over their respective stencil-plates 9 by longitudinal tiering-bars 22, to which they are attached and which are caused to move to and fro on the framing of the machine by a pair of lever-arms 23, that are connected to the said bars by links 24 and are fixed to a rock-shaft 25, which extends from one side of the machine and is rocked at the required times by suitable means, such as cams, within the casing 7^a. Each tiering-box 8 is arranged to travel on the sides of the frame 9^a of the corresponding stencil-plate 9, and a lateral to-and-fro jiggling motion is imparted to it to insure the linoleum mixture flowing freely therefrom by causing a pin 8^c on one side of the box to travel over a fixed corrugated surface 8^d, against which it is kept in contact by a spring 8^e. To admit of this lateral motion of the tiering-box and also of slight vertical motion thereof, the connection between the box and each tiering-bar 22 comprises a pin 26, that is fixed to a lateral extension 26^a on the box and extends into a block 26^b, which fits a transverse slot 22^a in the adjacent tiering-bar 22, so that it can slide transversely relatively to the bar, but must move endwise with such bar. The tiering-bars 22 may be connected to any suitable arrangement of energy-accumulator that will serve to cushion them and their attached parts at each end of their strokes and by giving out energy facilitate their movement in the reverse direction.

The vertical movement of each stencil-plate 9 may conveniently be effected at the required times by cams 27, fixed on the shafts 16 and arranged to act upon the long arms 28 of bell-crank levers pivoted at 28^x, so as to raise the short arms 28^a of such levers and through vertical adjustable screws 29 slightly raise the stencil-plate and hold the same raised until the pressure-block, with plunger, has been again raised and the backing 6, with pieces of linoleum thereon, has been fed forward another step, when it is allowed to fall back.

onto the table of the machine. The extent of lift of the plate can be varied by adjusting the screws 29 vertically.

A perforated plate 30, Fig. 9, corresponding in shape to the stencil-plate 9, may be fitted to slide on the plungers 5^a for the purpose of removing any linoleum mixture that may adhere between them. This plate may be caused to descend and press lightly on the surface of the loose material before the plungers do so, or such plate may be fixed relatively to the said plungers or to the stencil-plate.

It will be evident from the foregoing description that the thickness of the linoleum applied to the backing is regulated by the depth of the layers of linoleum mixture tiered onto the stencil-plates and not by the thickness of the stencil-plates.

To make linoleum of a greater thickness than would be made when proceeding in the manner just described, each stencil-plate, after the corresponding pressure-block 5 and plungers 5^a have made their first stroke and before they are again raised, may be lifted slightly, so that when the plungers afterward rise the holes in the plate will on the return movement of the tiering-box be able to receive the further quantity of linoleum mixture necessary to produce the extra thickness of linoleum required, the additional quantity of linoleum being afterward pressed through the stencil-plate until level with the under side thereof, as before. The said raising of the stencil-plate may be effected by cams 27 in the manner and through the means hereinbefore described, the said cams being, however, each formed with two operating parts, so that they will act to lift the stencil-plate in two successive steps for each rotation. Additional pairs of cams 15^b are also provided for depressing the pressure-blocks, with plungers, to the desired lesser extent. Each cam 15^b may be fixed to the boss 15^a of the corresponding cam, as shown in Fig. 4, so that either cam can be brought into position over the corresponding beam 13 to suit requirement.

The effective portions of the stencil-plates 9 hereinbefore described are preferably arranged at a distance apart equal to three or more times the width of the pattern or part thereof to be produced by each block and plate. Two or more stencil-plates may in some cases be used for producing a given portion of a pattern, the holes in one plate corresponding in relative position to the cross-bars or connecting parts in another plate.

What I claim is—

1. Apparatus for the manufacture of linoleum comprising a stationary table, means for feeding a backing over the same in a step-by-step manner, two or more tiering or stencil plates arranged above said bed, means for feeding linoleum over each of said plates, and vertically-movable plungers adapted to force portions of said linoleum through each of said stencil-plates onto said backing.

2. Apparatus for the manufacture of linoleum comprising a stationary table, means for feeding a backing over the same in a step-by-step manner, two or more tiering or stencil plates arranged above said bed, means for feeding linoleum over each of said plates, one or more vertically-movable plungers arranged above each of said stencil-plates and adapted to force one or more portions of linoleum through the stencil-plate below onto said backing, means for raising and lowering said plunger or plungers, and means whereby one or more plungers can be put out of operation without interfering with the operation of the remaining plunger or plungers.

3. Apparatus for the manufacture of linoleum comprising a stationary table, means for feeding a backing over the same in a step-by-step manner, two or more tiering or stencil plates arranged above said bed, means for feeding linoleum over each of said plates, two or more sets of vertically-movable plungers adapted to force portions of said linoleum through said stencil-plates onto said backing, pressure-blocks adapted to depress said plungers, means for raising and lowering said pressure-blocks and plungers, and means whereby any one or more of said pressure-blocks can be put out of action without interfering with the other or others.

4. In a machine for making linoleum, the combination with feeding mechanism for intermittently feeding a backing therethrough, of two or more plates, tiering-boxes for distributing granulated linoleum over said plates, means for reciprocating said plates and boxes relatively to each other so as to cause linoleum to be tiered over said plates, vertically-movable plungers arranged above each of said plates, pressure-blocks for depressing said plungers, and means for raising and lowering said blocks independently of each other, substantially as described.

5. In a machine for making linoleum, the combination of a horizontal plate having holes therethrough, a tiering-box mounted to reciprocate over said plate, plungers adapted to force linoleum through the perforations in each plate, means for reciprocating said box over said plate, and means for raising and lowering said plungers.

6. In a machine for making linoleum, the combination of two or more horizontal plates, movable tiering-boxes mounted on said plates and adapted to deposit a layer of granulated linoleum thereon, and means for reciprocating said tiering-boxes relatively to and over said plates.

7. In a machine for making linoleum, the combination of a tiering-plate, a tiering-box having a slit or opening in one end near the bottom, and means for reciprocating said plate and box relatively to one another.

8. In a machine for making linoleum, the combination of a tiering-plate, a linoleum tiering-box adapted to deposit a layer of granulated linoleum on said plate said box

having a vertically - adjustable side; and means for reciprocating said box and plate relatively to one another.

9. In a machine for making linoleum, the combination of two or more horizontal tiering-plates having holes therethrough, tiering-boxes mounted to slide on said plates and distribute granulated linoleum thereon and each having a vertically - adjustable side, means for reciprocating said boxes over said plates, vertically-movable plungers adapted to force portions of linoleum through the perforations in said plate, and means for raising and lowering said plungers, substantially as described for the purpose set forth.

10. In a machine for making linoleum, the combination of vertically-movable pressure-blocks arranged above the table of the machine, vertically-movable beams arranged below the respective pressure-blocks and the table, means for connecting each beam to the pressure-block above it, springs for raising said blocks and beams, pairs of cams adapted to depress said beams, rotary shafts for rotating said cams, and means for rendering said pairs of cams operative or inoperative at will on said beams, substantially as described.

11. In a machine for making linoleum, the combination with means for feeding backing material in an intermittent manner over the table of the machine, of a horizontal plate, means for placing a layer of linoleum on said plate, a vertically-movable pressure-block with means adapted to remove portions of linoleum from said layer thereof and transfer them to said backing, and means for raising and lowering said pressure-block and attached parts.

12. In a machine for making linoleum, the combination of a horizontal plate having holes therethrough, means for placing a layer of linoleum over said plate, vertically-movable plungers adapted to descend through the holes in said plate and force pieces of linoleum therethrough onto a backing below, a pressure-block for said plungers, means for raising and lowering said block and plungers, and means for raising and lowering said plate, substantially as herein described.

13. A machine for making linoleum comprising a table, feeding mechanism adapted to move a backing in an intermittent manner over said table, two or more horizontal tiering or stencil plates arranged above said table and backing, tiering-boxes mounted to slide on said plates and deposit a layer of granu-

lated linoleum on each of them, sets of vertically-movable plungers adapted to force portions of linoleum through the holes in each stencil-plate onto the backing below, vertically-movable pressure-blocks adapted to raise and lower said sets of plungers, means for reciprocating said tiering-boxes over said plates, means for raising and lowering said blocks with plungers independently of each other, and means for raising and lowering said tiering or stencil plates, substantially as herein described for the purposes specified.

14. In a machine for making linoleum, the combination of a stencil-plate, a tiering-box for distributing granulated linoleum over the same, vertically-movable plungers adapted to force portions of linoleum through the perforations in said plate onto a backing below, means for raising and lowering said plungers twice for each complete operation of the machine said means acting to lower said plungers to a greater extent on the second downstroke than on the first one, and means adapted to move said tiering-box first in one direction at the commencement of each complete operation and while the plungers are raised and afterward in the opposite direction after the plungers have made their first downstroke and upstroke, substantially as described for the purpose specified.

15. In a machine for making linoleum, the combination of a stencil-plate, a tiering-box for distributing granulated linoleum over the same, vertically-movable plungers adapted to force portions of linoleum through the perforations in said plate onto a backing below, means for raising and lowering said plungers twice for each complete operation of the machine said means acting to lower said plungers to a greater extent on the second downstroke than on the first one, means adapted to move said tiering-box first in one direction at the commencement of each complete operation and while the plungers are raised and afterward in the opposite direction after the plungers have made their first downstroke and upstroke, and means for raising said stencil-plate to a small extent after the plungers have made their first descent and while they are in their lowered position substantially as described for the purpose specified.

Signed at Gloucester, England, this 13th day of July, 1898.

CHARLES HERBERT SCOTT.

Witnesses:

JOHN WATKINS HULBERT,
JOHN EDWARD WESTLE.