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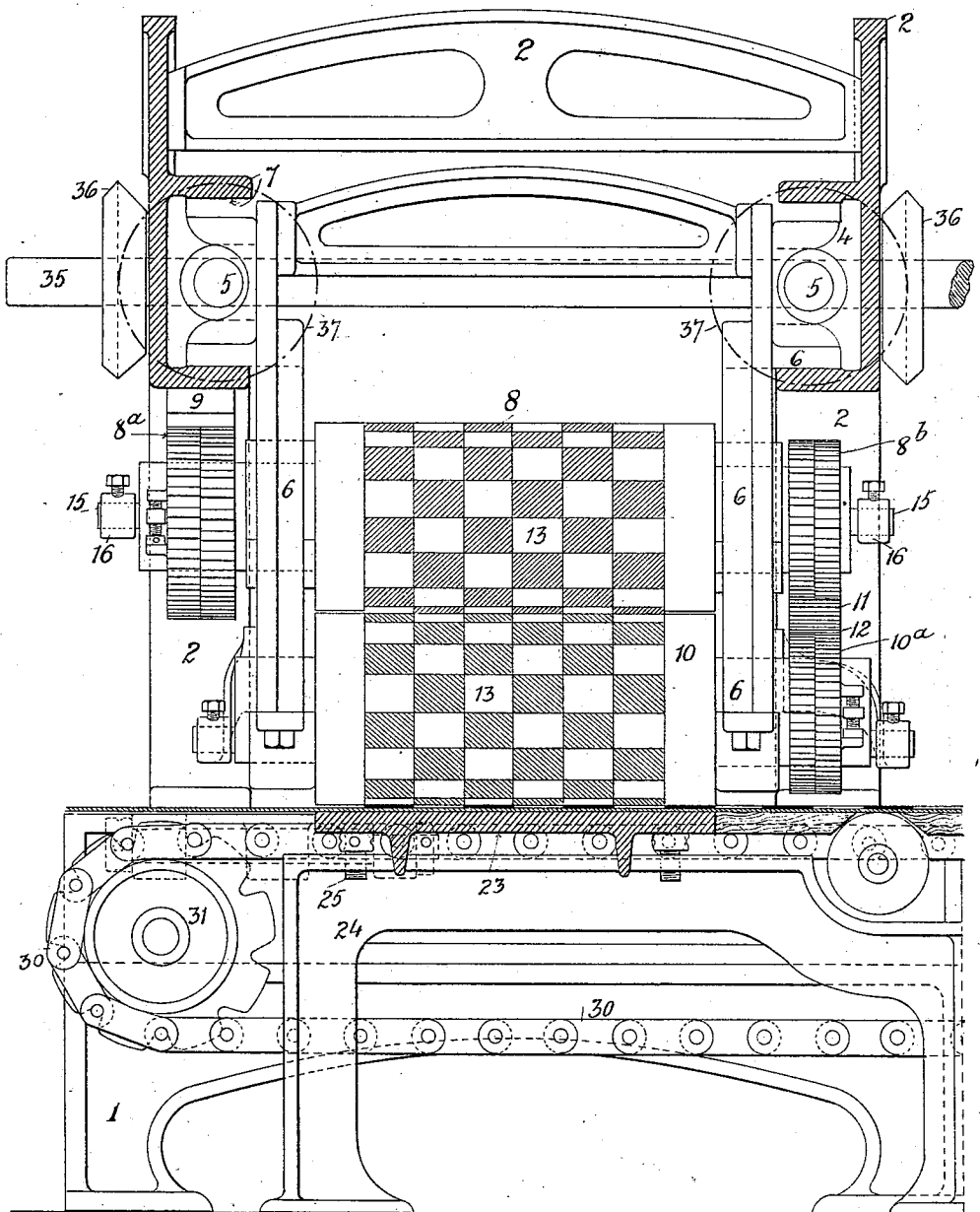
J. S. FARMER.

MACHINE FOR THE MANUFACTURE OF SOLID COLOR FLOOR CLOTHS.

No. 521,157.

Patented June 12, 1894.

Fig. 1.



Witnesses:

E. B. Bolton

E. H. Sturtevant

Inventor:

James Salter Farmer

By

Richard R.

his Attorneys.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.)

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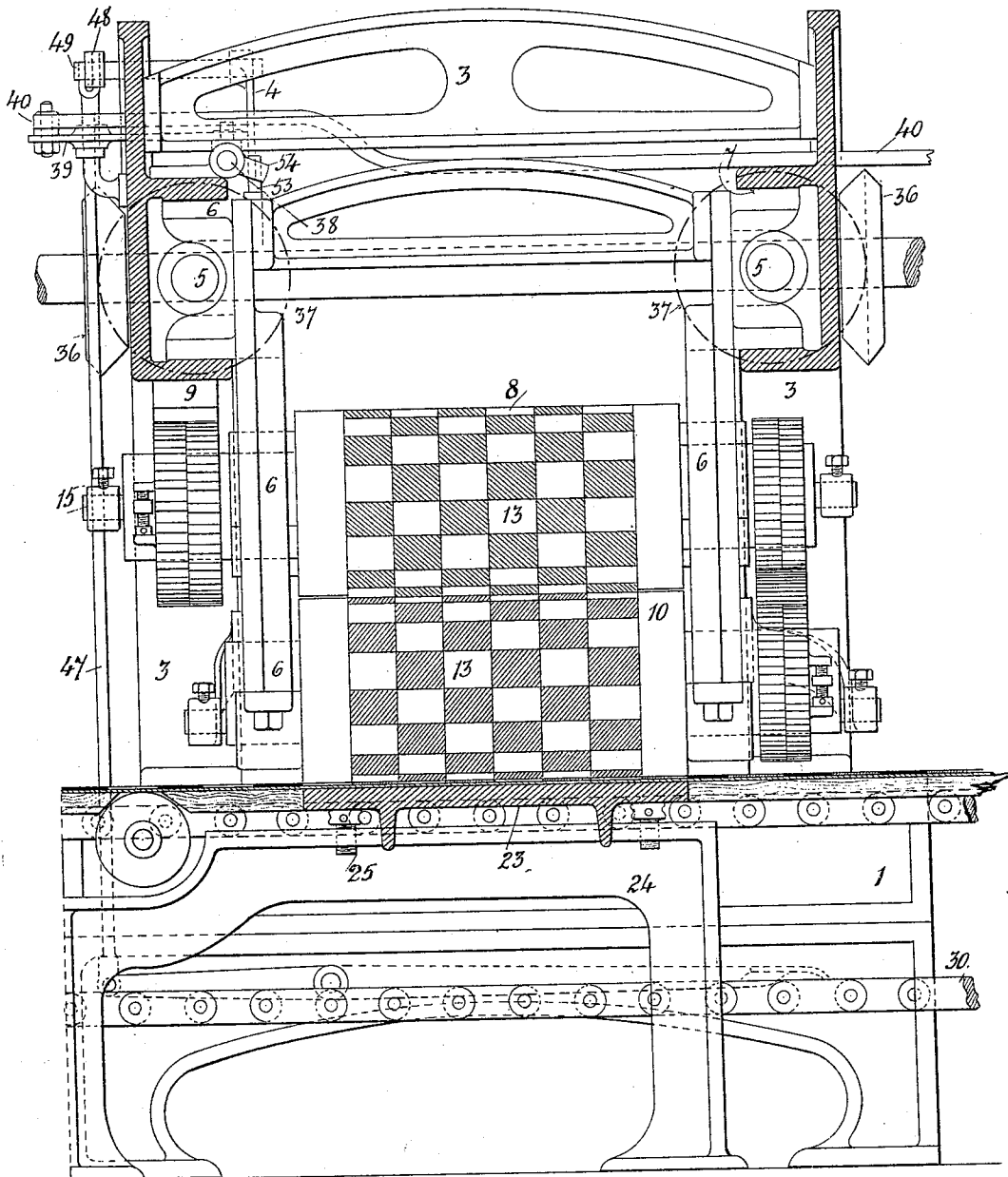
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MACHINE FOR THE MANUFACTURE OF SOLID COLOR FLOOR CLOTHS.

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Fig. 1.^a
A



B

Witnesses:

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6 Sheets—Sheet 3.

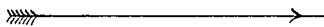
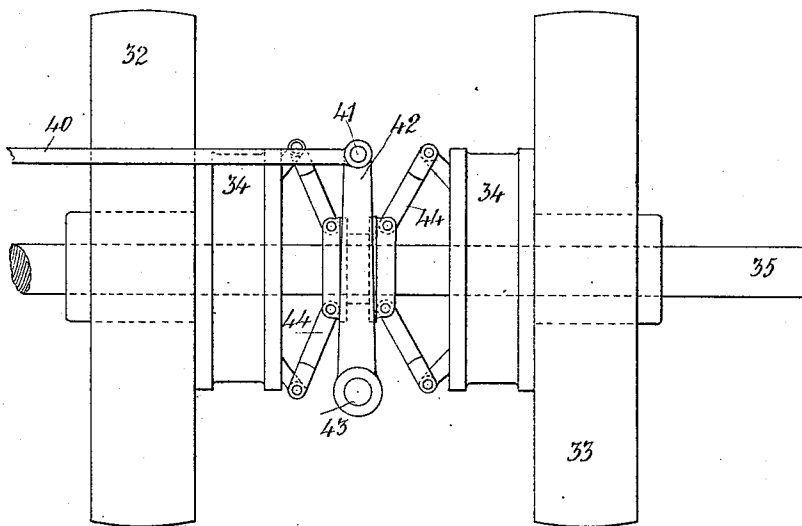
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Fig. 1^b.



Witnesses:

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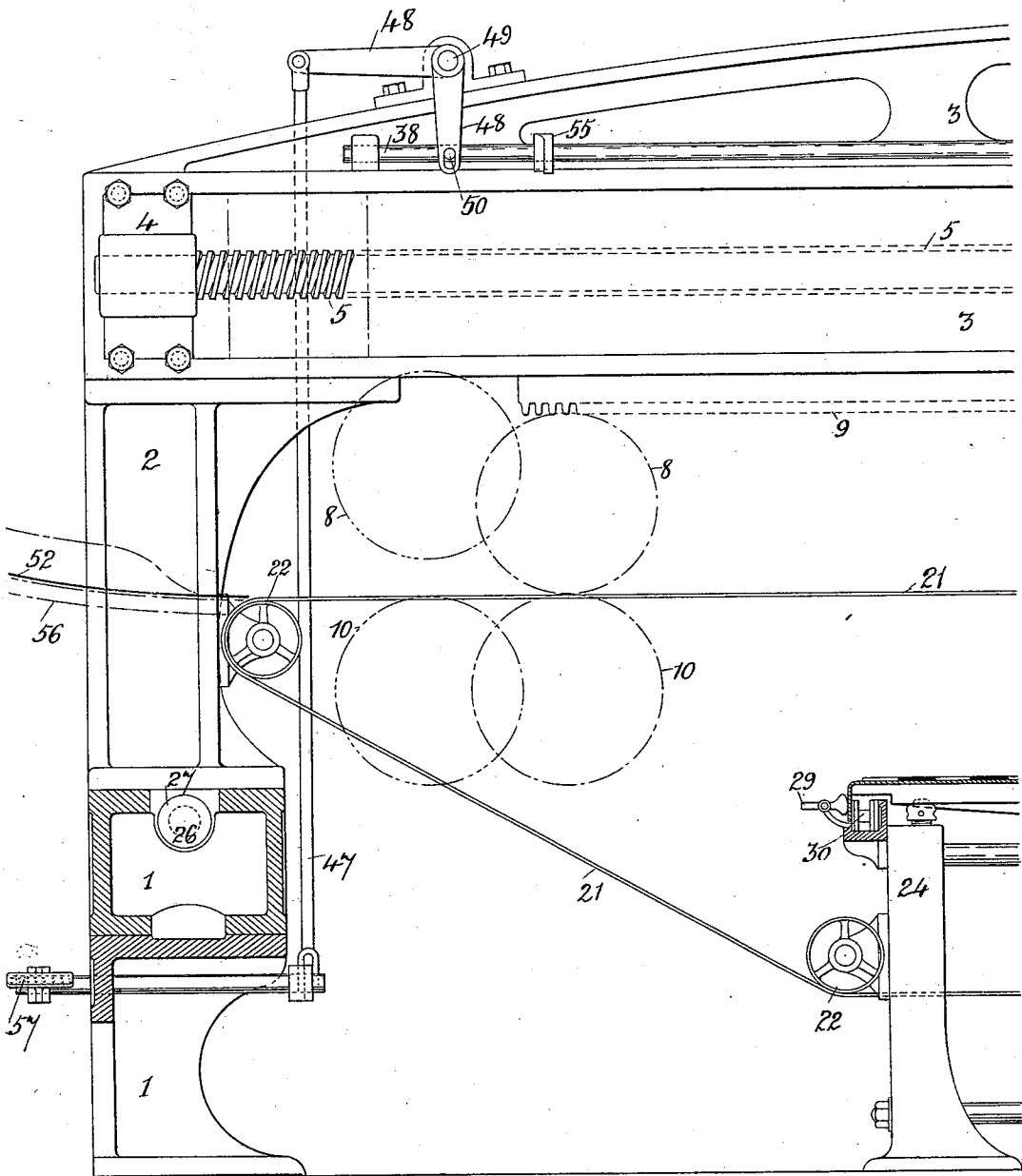
J. S. FARMER.

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Fig. 2.



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6 Sheets—Sheet 5.

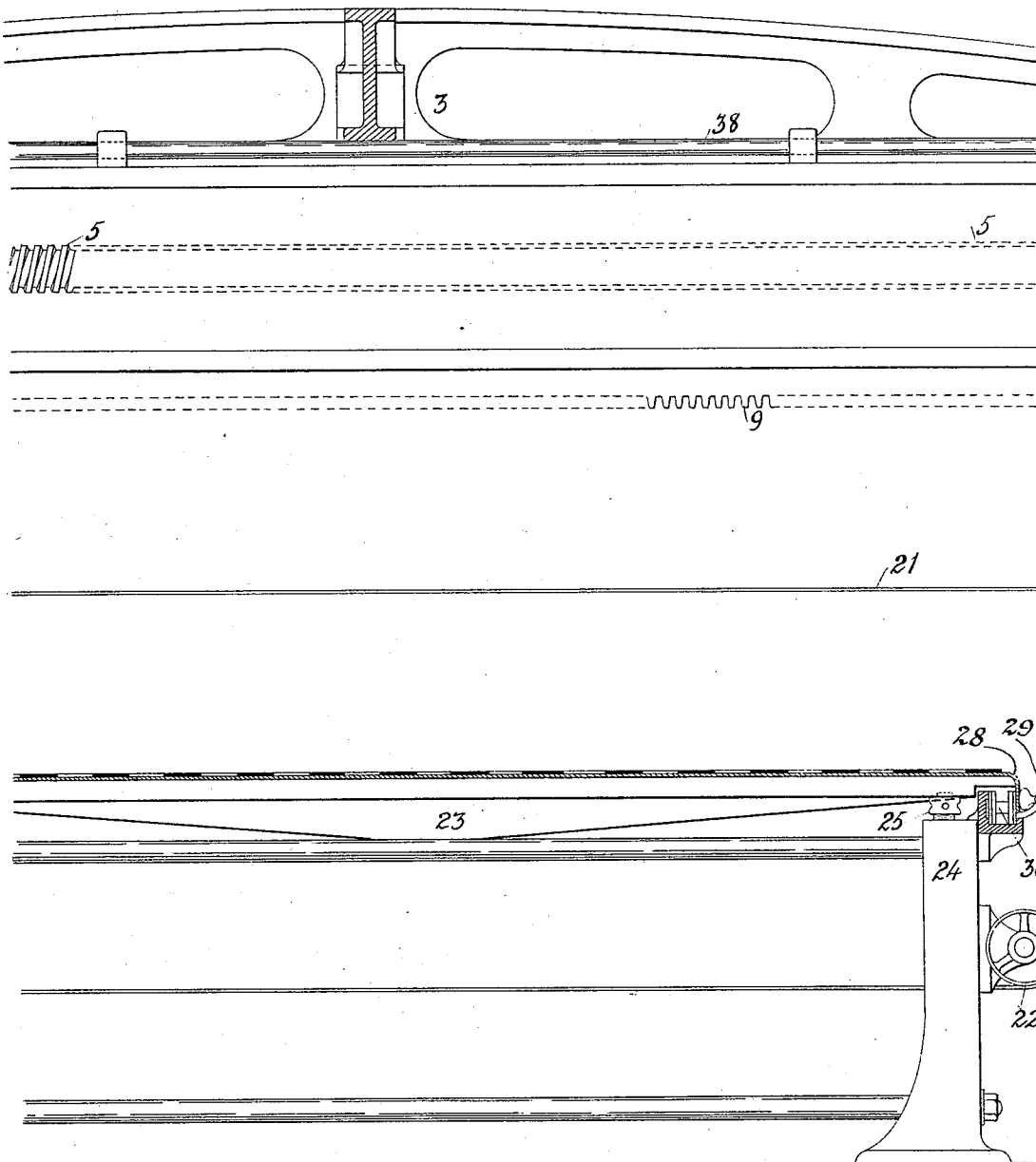
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MACHINE FOR THE MANUFACTURE OF SOLID COLOR FLOOR CLOTHS.

No. 521,157.

Patented June 12, 1894.

Fig. 2^a.



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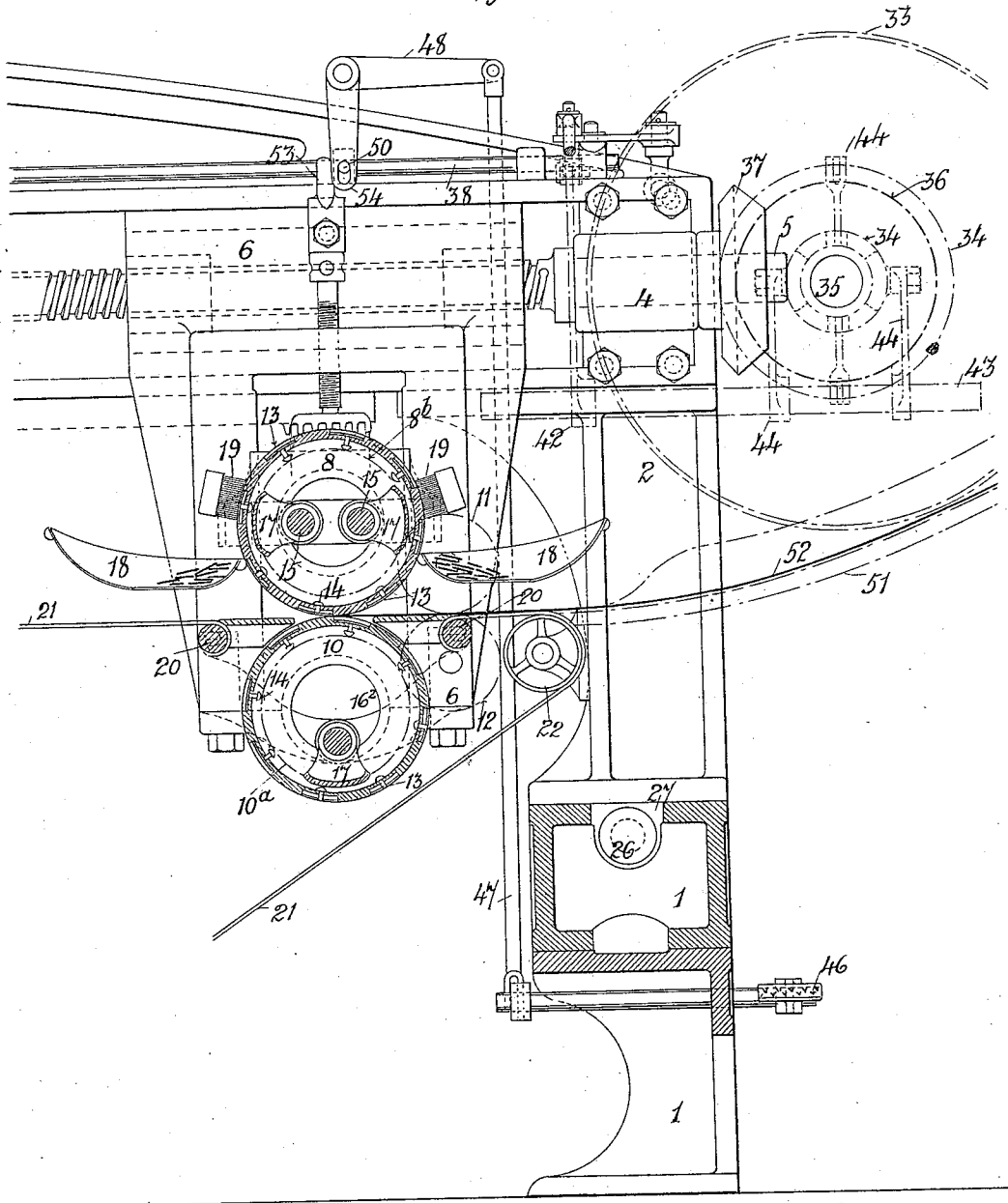
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MACHINE FOR THE MANUFACTURE OF SOLID COLOR FLOOR CLOTHS.

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Patented June 12, 1894.

Fig. 2^b.

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UNITED STATES PATENT OFFICE.

JAMES SALTER FARMER, OF SALFORD, ASSIGNOR OF THREE-FIFTHS TO
HERBERT LUSHINGTON STOREY AND ISAAC HENRY STOREY, OF LAN-
CASTER, ENGLAND.

MACHINE FOR THE MANUFACTURE OF SOLID-COLOR FLOOR-CLOTHS.

SPECIFICATION forming part of Letters Patent No. 521,157, dated June 12, 1894.

Application filed April 16, 1894. Serial No. 507,738. (No model.) Patented in England March 2, 1894, No. 4,396.

To all whom it may concern:

Be it known that I, JAMES SALTER FARMER, a subject of the Queen of Great Britain, and a resident of Salford, in the county of Lancaster, England, have invented certain new and useful Improvements in Machines for the Manufacture of Solid-Color Floor-Cloths, (for which I have obtained Letters Patent in Great Britain, numbered 4,396, bearing date March 2, 1894,) of which the following is a specification.

My invention relates to improvements in the manufacture of solid color floor cloths, such as linoleum, kamptulicon, corticine, and the like, in connection with which Letters Patent of the United States were granted to me and to H. L. Storey and I. H. Storey, numbered 508,925 and dated November 21, 1893.

The chief object of my present improvements is to enable such floor cloths to be made by machinery in greater widths say for example up to four yards or more in width, and of any convenient length, without necessarily employing very wide cutting out rollers. I effect this object by traveling the canvas or other foundation fabric lengthwise over a table through my improved machine by means of grip chains or other appliances having an intermittent motion and arranging the cutting out rollers to travel to and fro transversely over the fabric while stationary and deposit upon it the tesserae or pieces of combined pigment and composition of materials of which the solid color floor cloth is composed.

I employ a separate pair of cutting out rollers for each color in the finished design and traverse the several pairs of rollers by preference simultaneously across the fabric to deposit their respective tesserae thereon and when this has been done the foundation fabric is moved forward either by hand or otherwise the exact distance required ready for the next traverse of the series of rollers. The grip chains or other appliances carry the floor cloth forward into a press and while the fabric is stationary the press is arranged to nip the cloth with the requisite amount of pressure for closing the seams between the tes-

serae. The cutting out rollers are supported in pairs in carriages which are free to move in slideways placed across the machine at right angles to the path of the fabric, and are traversed to and fro by right and left hand screws or any other suitable mechanism. One cutting out roller in each pair is rotated on its axis by rack and pinion or other gearing and it drives the other roller by means of gearing. A sheet of the combined pigment and materials is fed to each pair of the cutting out rollers on each side of the machine either by hand or automatically and in order to support the sheets as they follow up the pairs of cutting out rollers a series of flexible metal or other strips or bands are connected to the traveling carriages on each side of the nip of each pair of rollers and are passed round guide pulleys down under the table over which the foundation fabric is traveled intermittently so as to form practically endless bands. On each side of the machine there is a suitable knocking off or reversing mechanism for each traveling roller carriage by means of which the motion of the carriage at the end of each traverse is stopped or automatically reversed as required. And in order that my invention may be fully understood and readily carried into effect I will describe the accompanying six sheets of drawings reference being had to the figures marked thereon.

Figures 1, 1^a and 1^b show side views of detached sections of my improved machine partly in section and Figs. 2, 2^a and 2^b show like views of a transverse section taken on the line A B, Fig. 1.

In the drawings,—1 represents the base of the machine frame, on to which are fitted adjustable transverse frames 2 and 3. The frame 2 supports in suitable fixed bearings on either side of the machine a pair of screws with right and left hand threads respectively which pass through nuts in a carriage 6 mounted in slideways 7 on the frame 2. The carriage 6, carries a pair of cutting out rollers 8, 10, which are constructed for cutting out the tesserae from a sheet of combined pigment and materials as described in the

aforesaid Patent No. 508,925, and to the top roller 8 is secured a box wheel 8^a constructed in two parts for taking up backlash and also arranged for adjustment on its axis to insure correct register in the ordinary manner well understood by calico printers and others; this wheel 8^a gears into a rack 9 secured to the frame 2 and therefore rotates the top cutting out roller 8 when the carriage 6 is traversed by the screws 5. The bottom roller 10 is driven from the top roller 8 by the box wheel 8^b and 10^a and the intermediate gears 11, 12, which are mounted on studs carried by the carriage 6. The cutting out rollers have recesses 13 of the shape required and the recessed portion in one roller comes opposite a solid portion in the other roller; in each recess 13 of the rollers is a plate of metal to which is secured a button headed stud 14 that passes through a hole in the shell of the roller. Two stationary shafts 15 are held in bearings 16 bolted to the roller carriage 6 and on these shafts which pass through the top roller 8 are secured curved brackets with cam surfaces 17 which extend right across the roller. A similar bracket 17 is secured upon a stationary shaft 16² which passes through the bottom roller 10 and these plates and studs are operated by the cam surfaces to expel the material from the recesses 13. I do not however desire to confine myself to this particular mode of expelling the tesserae from the recesses 13 in the rollers as any other convenient and suitable means may be employed. In the case of the top roller, the brackets 17 acting upon the heads of the studs 14 move them outward and force out any material from the recesses 13 into the troughs 18 provided for the purpose and secured to the carriage 6 while brushes 19, fixed or rotary, take off the tesserae and clean the plates, while the tesserae expelled from the bottom roller 10 are deposited upon the foundation fabric 28.

To the roller carriage 6 are secured two transverse bars 20 to which endless bands of sheet metal or other substance 21 are connected, these bands 21 pass over and round guide pulleys 22 and under a table 23 which supports the foundation fabric and is mounted upon standards 24 adjustable by screws 25. The transverse frame is so fitted on to the frame 1 that its position can be accurately adjusted relatively to the frame 3 by screws 26 which pass through nuts 27 on the frame 2 so that the tesserae deposited by each pair of rollers will fit between those deposited by a previous pair or pairs of rollers.

The edges of the foundation fabric 28 turn over the table 23 and are gripped by means of the clamps 29 which are pivoted on the chains 30 which pass over carrier chain wheels 31, see Fig. 1. These chains 30 extend beyond the depositing machine to a press, which is not shown but may be of any suitable construction to press and consolidate the fabric at one point while the rollers are depositing

tesserae thereon at another point as described. The wheels for driving the chains are placed beyond the pressing machine and may be turned by hand or otherwise in order to actuate the chains and feed the foundation fabric through the machine intermittently as required. The driving pulleys 32 and 33 driven by crossed and open belts respectively and a double clutch 34 may be placed at any suitable position on the driving shaft 35 on which they are mounted as well as bevel wheels 36 which gear into and drive bevel wheels 37 on the screws 5 for traversing the roller carriage 6 across the machine, suitable means to be described hereinafter being employed to stop and reverse the carriage after each traverse.

The machine shown is a two color machine, and consequently there are two pairs of cutting out rollers 8, 10, and two roller carriages 6, the second carriage 6 being carried by the frame 3 and driven by a pair of right and left hand screws 5 as described. In a three color machine there would be three such carriages and pairs of rollers and for more than three colors there would be an additional traveling roller carriage and pair of cutting out rollers for each additional color.

Fig. 2^b shows the roller carriage at its extreme right hand position, the machine having been brought to a stand by means of a stop piece 53 on the carriage 6 having come into contact with a stop piece 54 secured upon a rod 38 and moved the latter far enough to swivel an elbow lever 39 which acts upon a rod 40 pivoted at 41 to a lever 42, fulcrumed on a shaft 43 acting on fixed clutch forks 44; the oscillating movement imparted to the shaft 43 by the lever 42 when the rod 38 was moved by the stop piece 53 on the carriage as described moves the lever 42 into the vertical position shown in Fig. 1^b, and takes the clutch 34 out of the pulley 32 and stops the machine. The attendant now pushes a sheet of the prepared colored material 52 into the nip of the cutting out rollers 8, 10, and to start the machine puts his foot on a treadle 46 and depresses it thereby raising a rod 47 pivoted to an elbow lever 48 which is fulcrumed at 49 and at the other end is slotted and fits over a stud 50 in the rod 38 so that the upward movement of the rod 47 causes the rod 38 to move still farther to the right hand Fig. 2^b, thus actuating the elbow lever 39, rod 40 and lever 42 which oscillates the shaft 43 and by the clutch forks 44 moves the clutch 34 into the pulley 33 and so gives motion to the driving shaft 35 whereby the screws 5 traverse the roller carriages 6 from the right to the left of the machine.

As the carriages 6 begin to move the pairs of cutting out rollers 8, 10, are rotated by means of the racks 9 and gearing described and as they turn on their axes they draw with them the sheets of material 52 which as they leave the guide tables 51 are supported by the endless bands 21. The recesses 13 in the rollers 8, 10, thus become charged by the

time that the carriages 6 come over the foundation fabric 28 stretched on the table 23. Then by the action of the cam surfaces 17 the tesserae from the bottom rollers 10 are simultaneously deposited upon the foundation fabric 28 while the tesserae in the top rollers 8 are expelled into the left hand trough 18, Fig. 2. When the carriages reach the opposite side of the machine they are stopped automatically by the stop piece 53 coming into contact with the stop piece 55 on the stop motion rod 38 and by moving it a certain distance to the left draws the clutch 34 out of the pulley 33 and so stops the machine. Then the attendant having placed fresh sheets of material 52 on the guide tables 56 and fed them into the nips of the pairs of cutting out rollers 8, 10, and also having moved the foundation fabric 28 forward by means of the chains 30, puts his foot on the treadle 57 and by the connecting rod 47 and elbow lever 48 moves the stop motion rod 38 and so thrusts the clutch 34 into the driving pulley 32 and reverses the motion of the screws 5 thereby traversing the carriages 6 and cutting out rollers 8, 10, in the opposite direction across the machine until they again reach the position shown in full lines Fig. 2. The cutting out rollers traverse at each side of the machine some distance beyond the foundation fabric 28 on the table 23 in order that the rollers may be charged with the colored material before the lower roller on the return traverse reaches the fabric 28 upon which it deposits its tesserae and leaves sufficient material on the margin to be trimmed off afterward. At the left hand side of the machine as shown in Fig. 2 the cutting out rollers 8, 10, traverse a little distance beyond the rack

9 so that the upper roller 8 can be raised and each roller left free to be turned round by hand independently of the other for cleaning purposes when necessary.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim, and desire to secure by Letters Patent of the United States, is—

1. In combination with a suitable frame work, a traveling carriage, a pair of cutting rollers carried thereby and rotating therein and a traveling support for the foundation fabric moving at right angles to the line of travel of the cutting rollers, substantially as described.

2. In combination with a traveling support, a foundation fabric clamped thereto, two or more laterally movable supports, traveling carriages supported thereby and cutting rollers on said carriages, substantially as described.

3. In combination with the support for the foundation fabric, a traveling carriage, cutting rollers supported thereby, a feed band 21 connected to the carriage frame, and a feed chute 52, substantially as described.

4. In combination, a traveling carriage, cutting rollers, receptacles arranged on either side of the upper roller and a traveling table for the foundation fabric adapted to receive the tesserae from the bottom roller, substantially as described.

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

JAMES SALTER FARMER.

Witnesses:

H. B. BARLOW,

HERBERT R. ABBEY.