(No Model.) 5 Sheets—Sheet 1.

F. WALTON.

MACHINE FOR THE MANUFACTURE OF MOSAIC FLOOR CLOTH.

No. 523,610. Patented July 24, 1894.

Fig. 1.

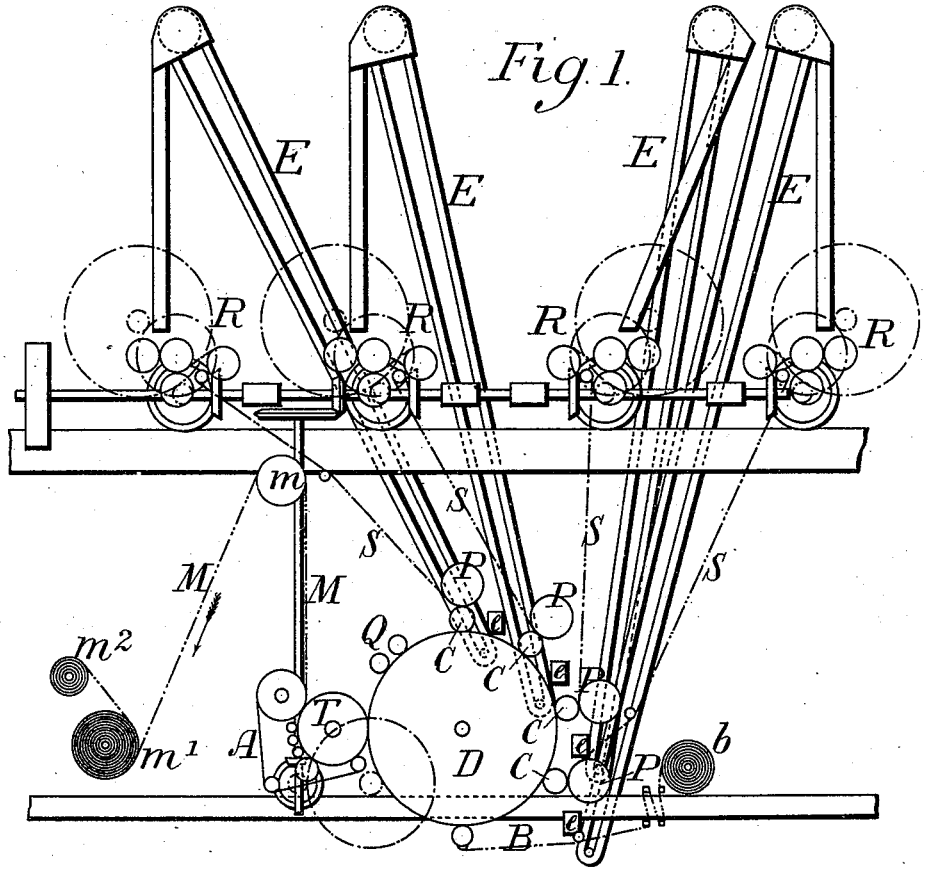

Fig. 2.

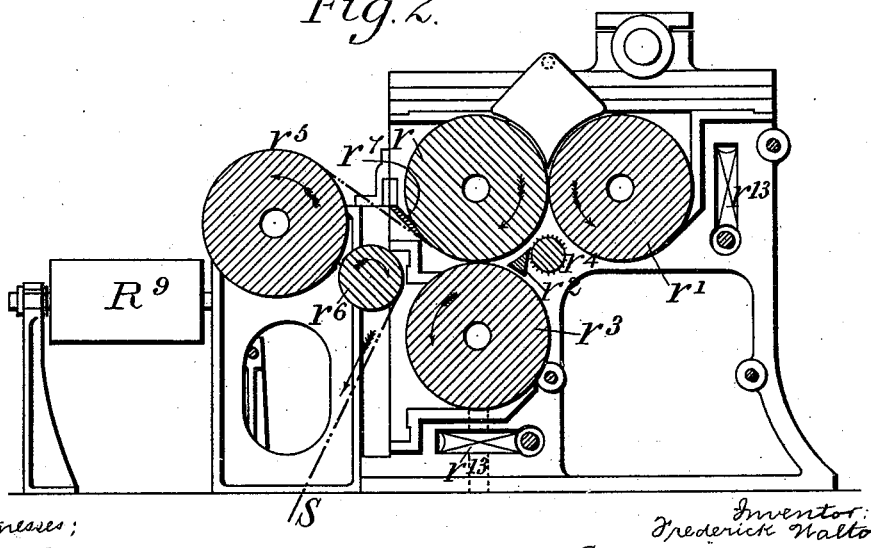

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Fig. 3.

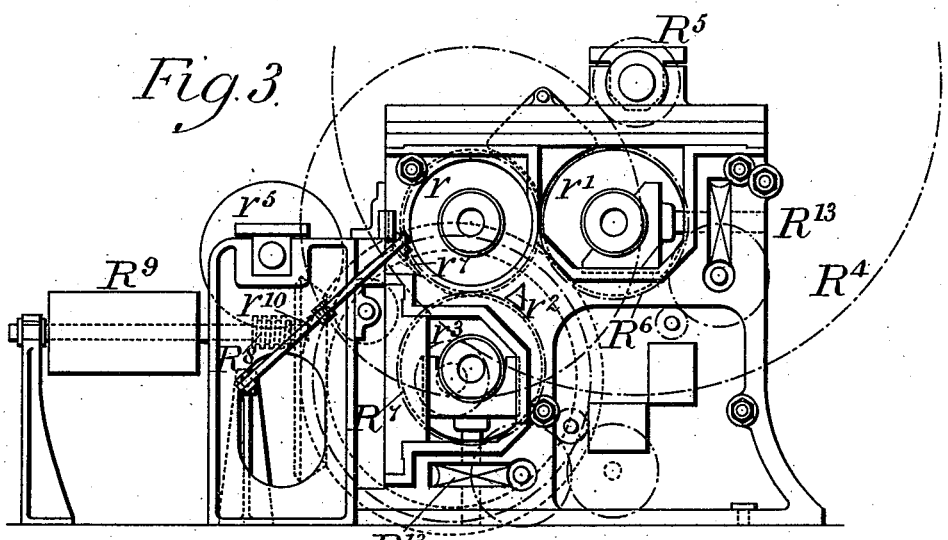

Fig. 4.

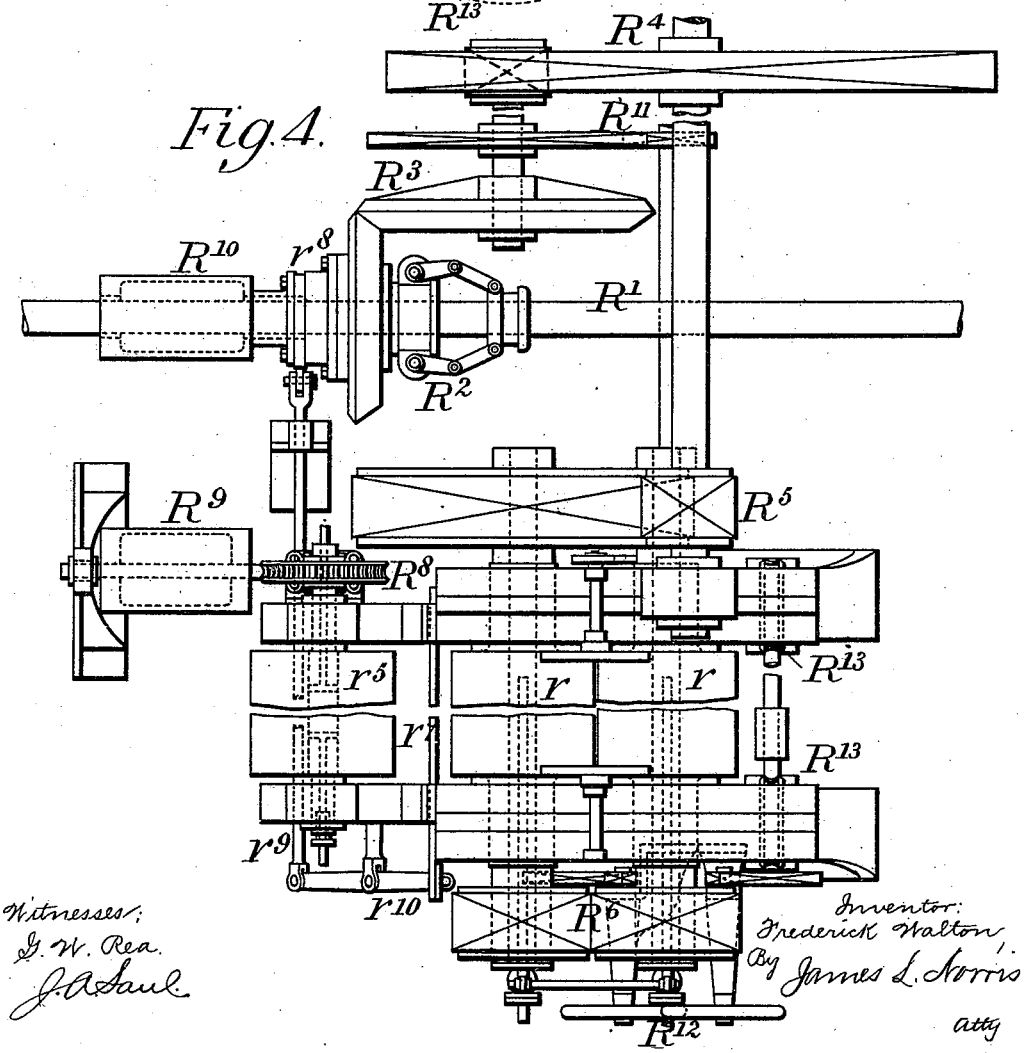

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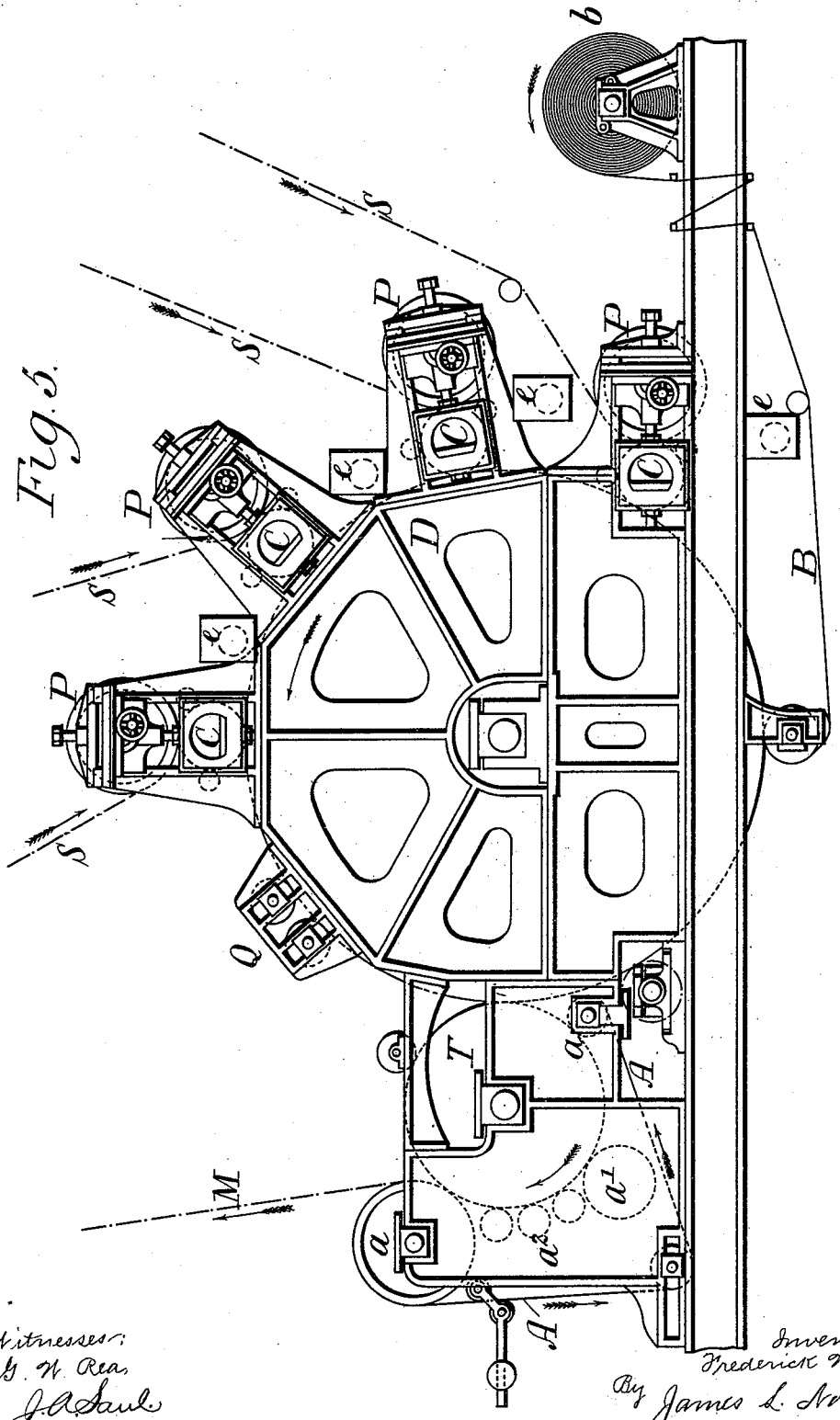
Fig. 5.



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MACHINE FOR THE MANUFACTURE OF MOSAIC FLOOR CLOTH.

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Fig. 7.

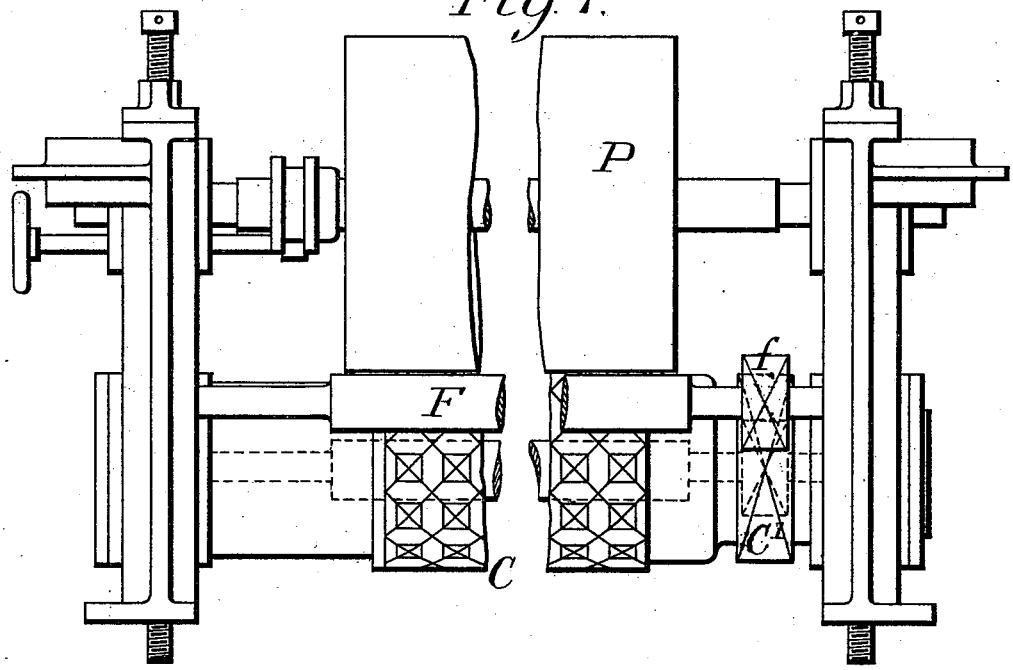

Fig. 6.

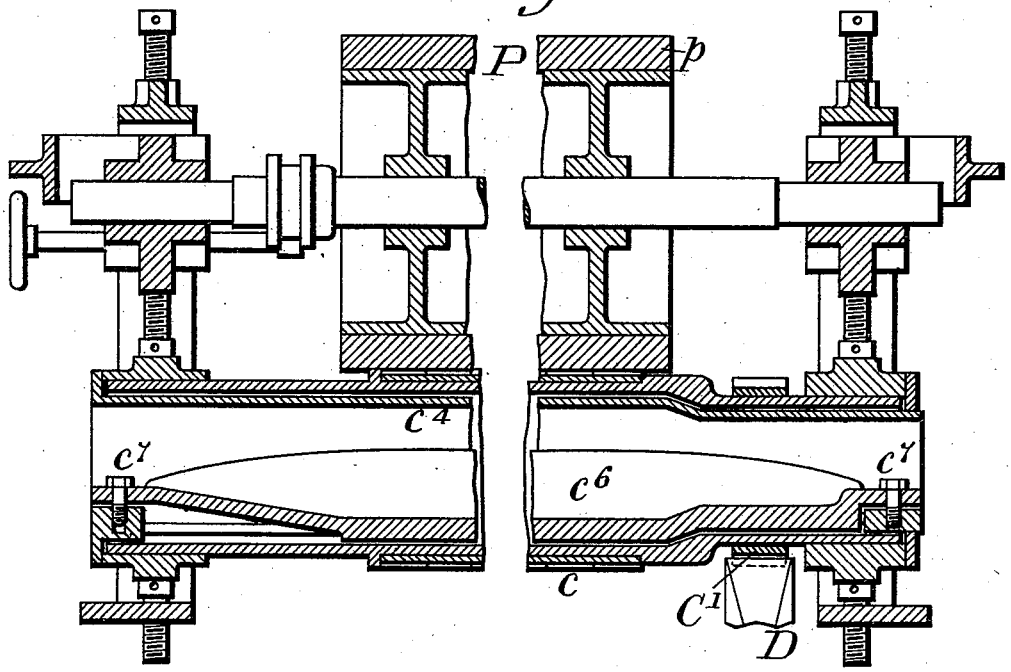

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Fig. 8.

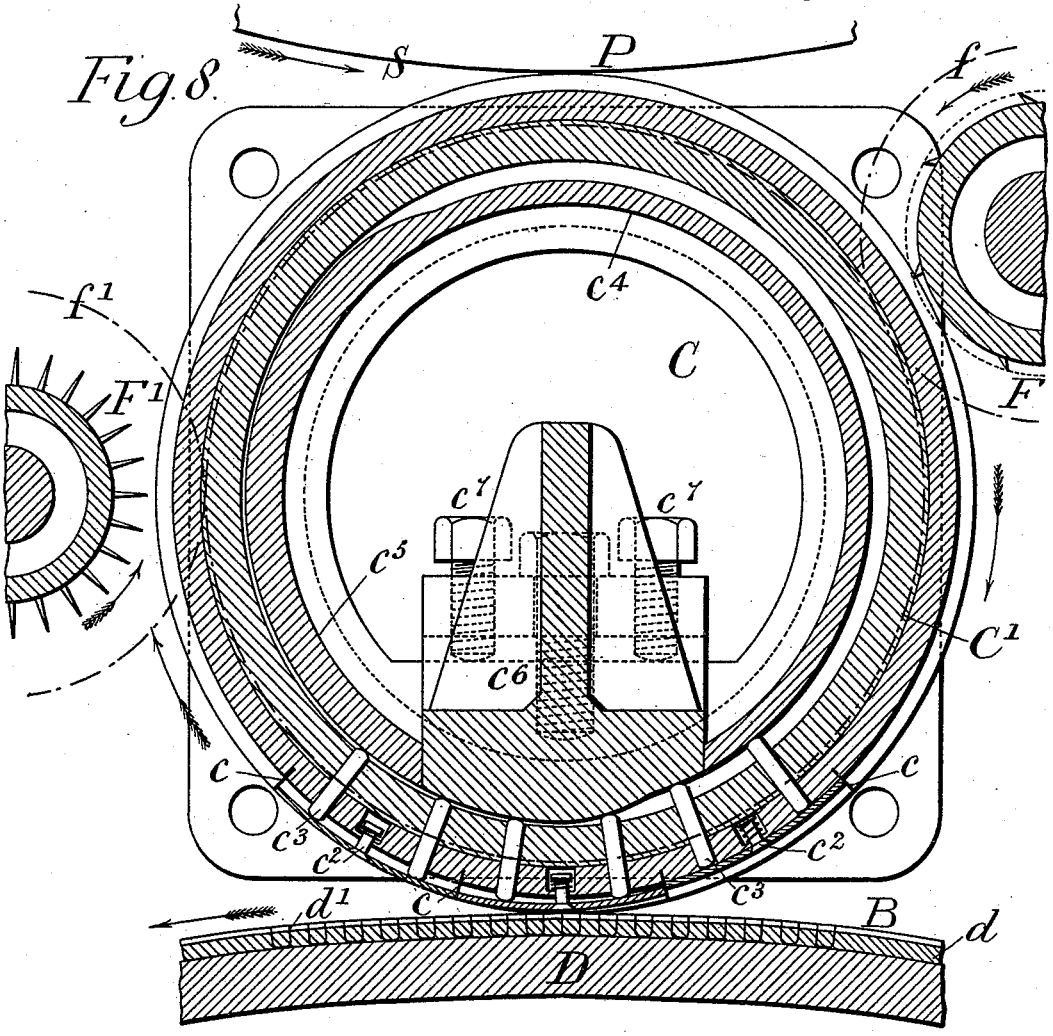
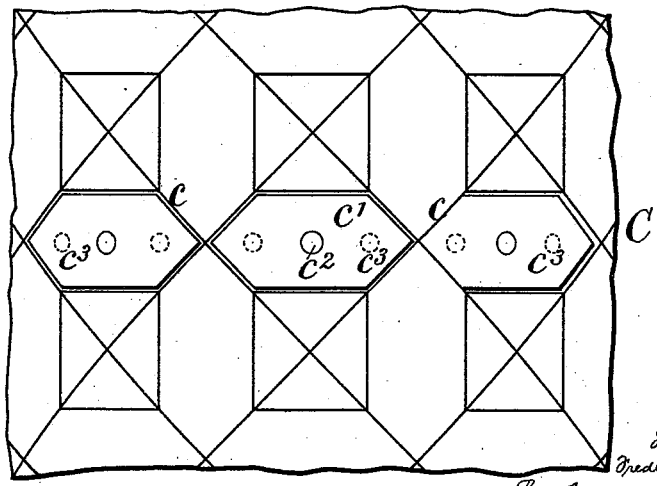


Fig. 9.



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UNITED STATES PATENT OFFICE.

FREDERICK WALTON, OF LONDON, ENGLAND.

MACHINE FOR THE MANUFACTURE OF MOSAIC FLOOR-CLOTH.

SPECIFICATION forming part of Letters Patent No. 523,610, dated July 24, 1894.

Application filed March 29, 1894. Serial No. 505,624. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK WALTON, a citizen of England, residing at 114 Holborn, in the city of London, England, have invented certain new and useful Machines for the Manufacture of Mosaic Floor-Cloth, of which the following is a specification.

My invention relates to the manufacture of mosaic floor cloth by uniting together and fixing on a suitable backing of woven fabric a number of variously colored pieces of compound material such as is used for making linoleum and such like floor cloths. I find that by using the compound material of four different colors I can produce a sufficient variety of mosaic patterns. I shall therefore describe machinery according to my invention arranged for making mosaic patterns of four different colors, but it is to be understood that a like arrangement of machinery might be adopted for dealing with a number of colors less or greater than four.

In the accompanying drawings—Figure 1 is a diagrammatic side elevation of the whole machine. Fig. 2 is a transverse section of one set of the feeding rollers. Fig. 3 is a side elevation of the same. Fig. 4 is a plan of the same. Fig. 5 is a side view of the drum with the cutting, pressing and finishing rollers. Fig. 6 is a longitudinal section of a set of the cutting cylinders and pressing rollers. Fig. 7 is a side elevation of the same. Fig. 8 is an enlarged transverse section of a cutting cylinder, and Fig. 9 is an example of mosaic pattern with the knives of the cutting cylinder arranged to that pattern.

As shown in Fig. 1 there are four elevators E, which may be of any suitable known construction, and which raise from the lower parts of the apparatus those cuttings of material of the four different colors which are not used in the mosaic pattern, along with such additions of fresh material in each case as may be necessary to make up for those portions which are used up in making the mosaic. These additions may however be separately fed to the rollers. These portions of material are delivered from the elevators E into four sets of rollers R, more particularly described hereinafter, from which the material is in each case delivered in a continuous sheet S. The four differently colored sheets S pass down between a pressing roller P (see Fig. 5) and a cutting cylinder C, by which the pieces required for the mosaic are cut out of the sheet and transferred to backing B, while the waste pieces that is to say those which are not required for the pattern are extracted from the cutting cylinder and delivered into boxes *e* and conveyed by worms or otherwise to the bases of the elevator E to be carried up as above mentioned. The backing fabric B is drawn from a reel *b* and passes between the cutting cylinders and large drum D from an apron *d* on which a number of pins *d'* project through the backing (see Fig. 8). The cutting cylinders C, after having the waste pieces removed from them, are made, by a cam action, hereinafter described, to deliver each its colored pattern pieces on to the backing B pressing them on the pins *d'* by which they are held in position. From the last of the cutting cylinders C (the uppermost shown in Fig. 5) the backing B with the pieces of material on it passes first under a pair of pressing rollers Q and then more than half round a steam heated drum T between the surface of the drum and an endless apron A of strong fabric which is carried round by guide rollers and pressed against the drum T by rollers *a*, *a'* and a^2. After leaving the drum T the continuous sheet of mosaic M passes up over a guide roller *m* and down to a reel *m'* on which it is wound along with felt or equivalent material drawn from a reel m^2 to separate the convolutions of the mosaic and prevent them from adhering to one another.

The pressing roller *a'* although it appears cylindrical in the drawings is really polygonal, with the sides of the polygon slightly hollowed so that the angles of the polygon act on the soft floorcloth material in such a manner as to tend to crowd portions of it as they pass along the sides of the polygon somewhat closer together, forming slight undulations which are afterward leveled by the pressing rollers a^2. If the roller *a'* were truly cylindrical, its action on the soft floor cloth material would be to force it backward tending to detach it from the backing.

Such being the general arrangement and operation of the apparatus, I shall now de-

scribe more in detail the construction and operations of its several parts.

One of the sets of rollers R shown with its gear in Figs. 2, 3 and 4 operates as follows:— The colored compound material in fragmentary condition is fed between the heated rollers r r' of which r is the cooler and the sheet delivered from them adheres to the cooler roller r or if in excess rests on a stationary table r^2, and the surplus is scraped off by a rapidly revolving scraper roller r^4. The sheet after passing between rollers r and r^3 passes over a roller r^5 which may be termed the measuring roller back over a roller r^6 and down to the pressing and cutting rollers below.

In order to clear the sheet off the roller r a knife r^7 is caused to reciprocate longitudinally against the surface thereof by means of an eccentric r^8 which through a rod r^9 and lever r^{10} communicates motion to the knife r^7. The several rollers are worked from the prime moving shaft R′, through clutch R^2 bevel gear R^3, and train of cog wheels R^4 and R^5 driving roller r and rollers r^3 and r' by gearing R^6 and R^7. The measuring roller r^5 is driven by worm gear R^8 from one of a pair of pulleys R^9 and R^{10} which are slightly tapered in opposite ways so that by shifting a belt along them the speed of r^5 can be adjusted. The scraping roller r^4 is driven by gear R^{11}. By means of hand wheels R^{12} and suitable intermediate gear, worms and worm wheels R^{13} are turned, turning screws to adjust the bearings of the rollers r' and r^3 nearer to or farther from roller r.

One set of the pressing rollers and cutting cylinders is shown in Figs. 6, 7, 8 and 9. Sharp steel blades c, arranged in form of a pattern such as that shown in Fig. 9, project from the periphery of the cutting cylinder. Some of the spaces between these knives, such as c' the cuttings from which are to form tesseræ of the pattern, are fitted with plates, each having a central stud c^2 with a spring which draws the plate c' back. Behind each plate there are two sliding plungers c^3 which pass through the shell of the cylinder and bear against an inner cam consisting of a fixed part c^4 c^5 and a part c^6 adjustable radially by screws c^7. Above the cutting cylinder C is mounted the pressing cylinder P the periphery of which p is of somewhat soft material, preferably wood endwise of the grain. On one side of the cutting cylinder is mounted a picking roller F, and on the other side is mounted a scraping roller F′. The operation will be best understood by reference to Fig. 8. As the sheet S of colored material enters between the cutting cylinder C and the pressing roller P the knives c penetrate it dividing it into as many tesseræ as there are spaces between the knives. These tesseræ travel onward with the cylinder until they pass between it and the picking roller F which revolves at the same surface speed as cylinder C and is provided with teeth curving a little forward in the direction of its rotation, these teeth being so arranged on its periphery as to correspond only with the spaces between the knives containing tesseræ which are not to form part of the pattern. The teeth of roller F pick out these tesseræ and carry them round till the teeth pass through a comb plate (not shown) fixed beyond said roller F, by which the withdrawn tesseræ are cleared off the teeth thereof, and fall into the receptacle e (Fig. 5) to be carried up by the elevator E. The tesseræ such as c' which are to form part of the patteen and which are not pulled out by the teeth of roller F, travel onward with cylinder C until they reach the part of its revolution where the sliding plungers c^3 are acted on by the cam part c^5 so as to push out the plates c' and force the tesseræ on to the sheet of backing B and the pins d' which project through it. The tesseræ thus deposited on backing B which has the same surface speed as cylinder C, travel onward with it to be joined by tesseræ of other colors deposited on backing B in a similar manner. In case it should happen that any of the tesseræ, instead of being deposited on backing B should adhere to one of the plates c' it would be scraped off by scraping roller F′ before reaching the pressing roller P, the machinery being thus saved from the damage that would result if two thicknesses of material had to pass through between the cutting cylinder and the pressing roller. It is for this purpose that in order to keep the plates c' out until they have passed roller F the prominent part of the cam c^5 is continued nearly to the top. Such pieces as may be caught by scraping roller F′ can be removed by hand. The cutting cylinder C has on it a pinion C′ gearing with teeth on the circumference of the drum D. A pinion f on the picking roller F gears with pinion C, and similarly a pinion f' on the axis of roller F′.

Having thus described the nature of my said invention and the best means I know for carrying the same into practical effect, I claim—

1. A machine for the manufacture of mosaic floor cloth comprising several sets of rollers arranged to deliver sheets of colored floor cloth material to as many sets of pressing rollers and cutting cylinders arranged partly around a drum provided with an apron having projecting pins, comprising also a reel to deliver backing fabric, a pair of pressure rollers, a heated roller and set of pressing rollers with a traveling apron and its guide rollers, a reel to receive the floor cloth along with suitable fabric interposed between its layers, substantially as herein described.

2. In a machine for the manufacture of mosaic floor cloth a set of rollers for delivering a sheet of floor cloth material, consisting of three rollers r r' r^3 a stationary table r^2, a scraping roller r^4, a reciprocating knife r^7, a measuring roller r^5 and a guide roller r^6 in

combination with the gearing for driving and adjusting them, substantially as described.

3. In a machine for the manufacture of mosaic floor cloth the combination of a pressing roller and cutting cylinder, the latter provided with knives, intermediate plates with their spring studs and plugers, and an internal cam; a picking roller and scraping roller, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 13th day of February, A. D. 1894.

FREDERICK WALTON.

Witnesses:

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Chartered Patent Agent, 28 Southampton Buildings, London, W. C.

JNO. P. M. MILLARD,

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