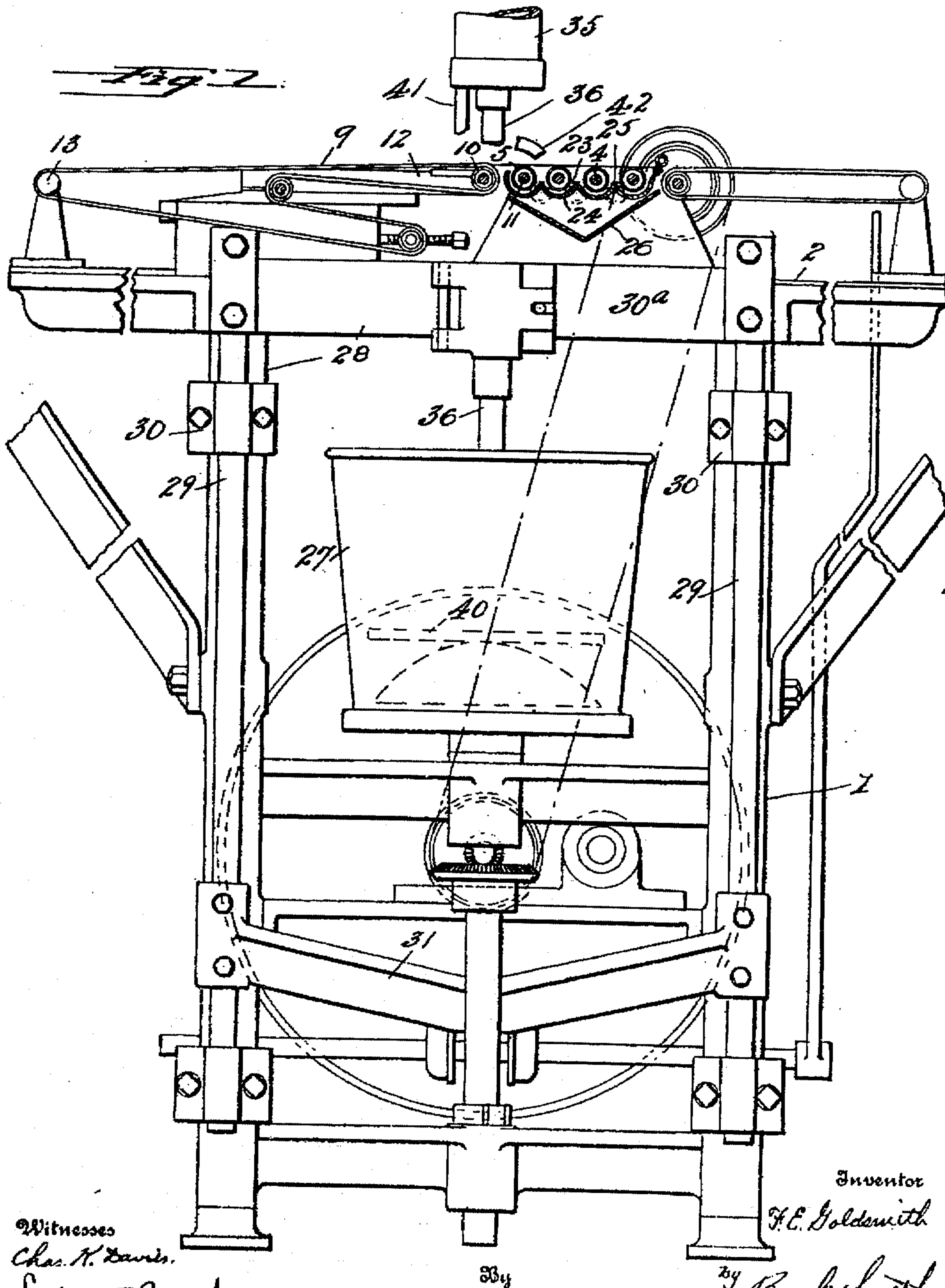


F. E. GOLDSMITH.
TILE COATING MACHINE.
APPLICATION FILED JULY 26, 1906.

948,011.

Patented Feb. 1, 1910.

3 SHEETS—SHEET 1.



Witnesses
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Lilian Brock

Inventor
F. E. Goldsmith

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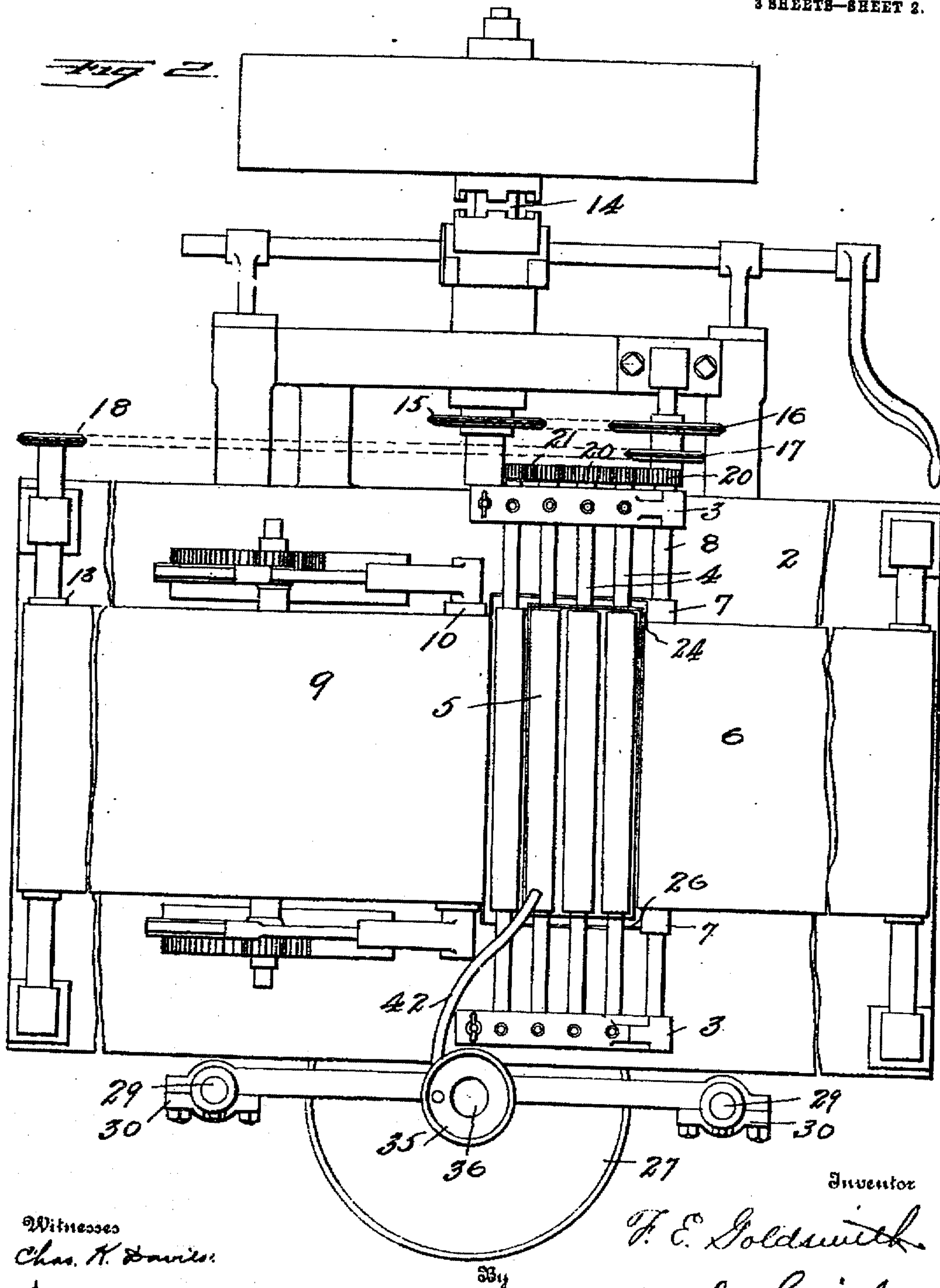
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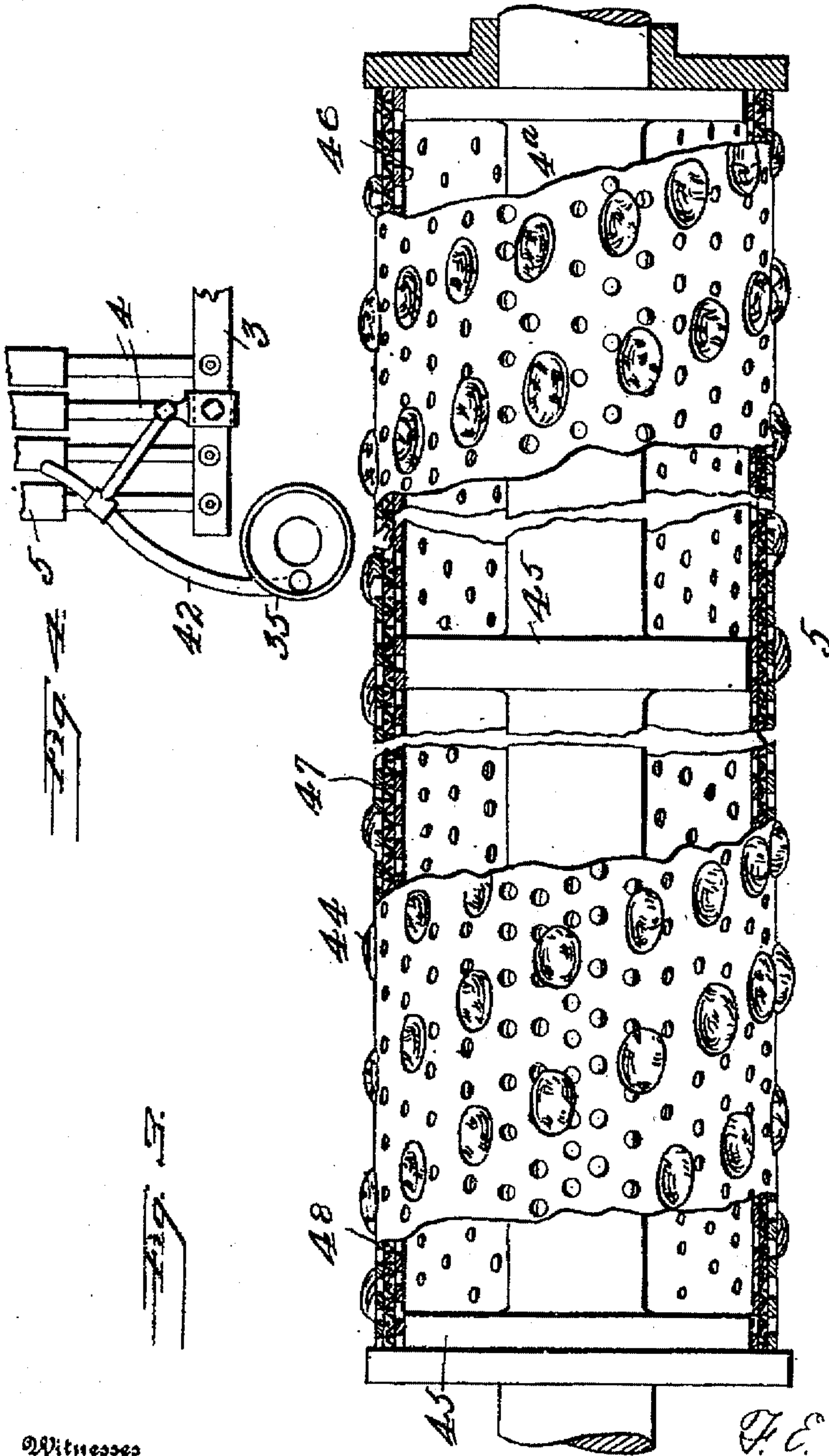
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3 SHEETS—SHEET 3.



Witnesses
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UNITED STATES PATENT OFFICE.

FREDERICK E. GOLDSMITH, OF MIDDLETOWN, OHIO, ASSIGNOR TO THE CERAMIC MACHINERY COMPANY, OF HAMILTON, OHIO.

TILE-COATING MACHINE.

948,011.

Specification of Letters Patent.

Patented Feb. 1, 1910.

Application filed July 26, 1906. Serial No. 327,921.

To all whom it may concern:

Be it known that I, FREDERICK E. GOLDSMITH, a citizen of the United States, and a resident of Middletown, in the county of Butler and State of Ohio, have invented a new and useful Tile-Coating Machine, of which the following is a specification.

The general object of the invention is to provide mechanical means for rapidly and efficiently applying coating material to objects such as tile.

In tile making it is highly important that the "biscuit," as the tile is called before being coated and fired, should have applied to it on one surface a very even and uniform deposit of coating material, and that this coating should not overrun the edges of the surface which it is desired to coat. It is also highly desirable in many cases to apply the coating material to the biscuit in such a manner that when it is fired the finished tile will show a spotted or mottled effect. This is conveniently accomplished by applying a coating in such a way that more of the coating is deposited at certain points on the tile than at others. A coating roll which serves to accomplish this result and which I term a spotting roll is, therefore, an important part of the present invention. To augment the rapidity with which the biscuit may be coated, to improve the evenness and regularity of deposition of the coating, and to secure various effects in spotted or mottled tile, I have found that it is frequently desirable to pass the biscuit over two or more coating rolls, and the provision of a plurality of such rolls in a single machine is, therefore, an important feature of this invention.

Exemplifying structures embodying my invention are illustrated in the accompanying drawing, in which—

Figure 1 is a side elevation of a coating machine; Fig. 2, a plan view; Fig. 3, a view of a coating roll partly in section; and Fig. 4, a detail view of a support for the spout or spouts.

Reference numeral 1 designates a main frame; 2, a table on top of the frame; 3, brackets, one near each side of the table; 4, roll shafts, one or more in number, journaled in the brackets 3; 5, the general designation of coating rolls, one on each of shafts 4; 6, a feed table, which may be stationary, but which more conveniently is as shown in the form of a belt or apron; 7, a roller sup-

porting the delivery end of the belt 6 and constituting a driving pulley for moving the belt; 8, a shaft for the roller 7, journaled in the brackets 3; it is to be understood that the other end of the apron 6 is suitably carried by a roller or the like; 9, a carry-off belt; 10, a roller therefor adjacent to the coating roll; 11, a shaft for roller 10; 12, a bracket carried by the table and provided with journals for shaft 11; 13, a roller for the delivery end of belt 9 suitably mounted on the table; 14, a main driving shaft to which power is conveyed from any suitable source; 15, a pulley thereon; 16, a pulley on roller shaft 8, belted to the pulley 15; 17, a pulley on shaft 8; 18, a pulley on shaft of roller 13 belted to pulley 17; 20, gears, one on each of the roller shafts 8 and roll shafts 4; 21, gears interposed between each two of the gears 20; 23, a trough supported in any suitable manner below and adjacent to the coating rolls; this trough may be of varying shapes, but is desirably, as shown in the drawing, formed with curved depressions 24, conforming more or less to the shape of the rolls, and raised parts 25 intermediate the rolls; by so shaping the trough any fluid in it is brought in close proximity to the surface of the coating rolls; 26, a pan beneath the trough; 27, a bucket mounted on the frame containing any suitable coating fluid; this bucket is preferably revolvably mounted and is continuously rotated while the machine is in operation by belting or gearing; 28, a reciprocable frame having side rods 29 moving in guides 30 on the frame, an upper cross piece 30^a and a lower cross piece 31; this frame is continuously reciprocated, during operation of the machine, conveniently by a pitman connected to cross piece 31 and to a crank or eccentric on the main shaft 14; 35, a tank for coating, carried on a pipe 36 borne by the reciprocable frame 28; 40, any suitable pump for conveying coating material from the bucket 27 to the tank 35, in the present instance conveniently being a diaphragm pump borne on the lower end of pipe 36 within the bucket 27 and operated by the reciprocations of frame 28; 41, a spout leading from the tank 35 and terminating in a discharge opening 42 out of the trough 23 and preferably above the axis of one of the coating rolls 5; in some cases a plurality of spouts or discharge openings or both may be provided, so that coating may

be discharged over a plurality or each of the coating rolls; the spout or spouts 41 are preferably made flexible to accommodate the pumping movement, and are conveniently held near the discharge end 42 by a suitable bracket or other device carried by the frame in fixed relation to the trough or to the roll or rolls upon which the coating fluid is delivered, and this bracket may be made adjustable to regulate the position of the spout in relation to the rolls or trough as may be desired, and as illustrated in Fig. 4.

In operation the main shaft 14 is rotated, driving through pulleys 15 and 16 roller shaft 8, and moving the feed apron 6 toward the coating rolls. Through the train of gears 20, 21 the coating rolls are also revolved in a left-hand direction as seen in Fig. 1 at the same rate of speed, the carry-off belt 9 is at the same time driven by pulleys 17 and 18. The biscuit are placed upon apron 6, and are carried to the coating rolls, across which they pass, and are removed by the carry-off belt 9. The bucket 27 is in the meantime being continuously rotated and its contents are disturbed by contact with parts of the pump 40 or by agitator blades which may be provided on the pump tube 36 if desired. This agitation is highly important in order to keep the coating material in proper consistency for use. The pump 40 is also in continuous operation forcing the coating material from the bucket into the tank 35, from which it passes through the spout 41 and discharge nozzle 42 onto one or more of the coating rolls, and into the trough 23; all of the rolls dip into the trough, and in rotating carry up a part of the coating material, and as the biscuit pass across the rolls this coating fluid is brought into contact with the under sides of the biscuit. The plurality of rolls provided insure an even application of the coating material.

A copious circulation of the coating material is highly desirable, and for this reason it is preferred to so operate the pump that a great deal more of the coating material is continuously delivered into trough 23 than is taken up by the biscuit. The overflow falls over the edges of the trough and is caught by pan 26, and from the pan is re-delivered into the bucket 27. Continuous and rapid circulation of the coating material is thus provided.

The preferred shape of the trough 23 is such that a very small quantity of coating material in the trough suffices to come into proper contact with and supply all of the coating rolls.

Referring now to Fig. 3: 4^a is a spindle for a coating roll, which may be identical with the shaft 4 on which the roll is mounted, or may be separate from and attached to said shaft; 45, annular flanges to support the coating surface of the roll; 46, an inner per-

forated or cupped tube carried on the flanges 45; 47, an intermediate pervious surface conveniently of wire mesh; 48, an outer perforated covering for the roll, forming the coating surface proper which comes in contact with the biscuit; 44, "spots", consisting of pieces of sponge, felt, rubber, or any other suitable material, secured to the surface of the roll, conveniently by wiring through the perforations of the roll, in any suitable design or arrangement—they may be separate as shown in the figure, or may be in the nature of more or less connected and regular designs.

Each of the coating rolls before referred to is desirably constructed in approximately the manner just described. It will be understood that the coating material which is carried in the trough adjacent to the rolls will readily flow from the pervious covering to the rolls, and owing to the cup-like perforations of the surface will be carried readily upward by the roll as it revolves and into contact with the biscuit. A very uniform delivery of the coating fluid is by this means attained. If the biscuit are intended to have a uniform coating of a single color the spots may be omitted; but if a variegated or mottled surface is desired, the spots serve to carry more of the coating fluid than the normal surface of the roll, and when they contact with the biscuit they deposit at these contact points a greater amount of the fluid, and this additional deposition results, when the biscuit is fired, in producing a different shade or color from that of the remainder of the tile.

The tubes or roll coverings 46 and 48 may either or both conveniently be of rubber, or they may be of metal, in which case they are of such thickness as to yield somewhat, and of whatever material they are made it is preferred that the roll present a somewhat yielding or flexible surface to the biscuit. In the construction shown in the drawing with the outer covering 48 made of rubber underlaid by the intermediate surface 47, the desired flexible construction is attained and the inner covering 46 may sometimes be omitted. The broad idea involved in the construction of the coating roll is to provide a flexible or yielding contact with the tile, and the details of construction which produce this result are in a broad sense non-essential.

Reference is hereby made to my copending applications, Serial No. 370,656, filed April 27, 1907, for tile coating machine, and Serial No. 465,589, filed December 2, 1908, for machine for coating tiles, etc.

I claim:

1. In mechanism for coating tile and the like, the combination of a plurality of rolls mounted revolubly on axes in the same plane, a trough beneath the rolls, a main

coating supply, and means for circulating coating material between the main supply and trough so that the rolls are partially immersed in the circulating coating material.

5 2. In mechanism for coating tile and the like, the combination of a plurality of rolls mounted revolubly on axes in the same plane, a trough beneath the rolls, a main coating supply, and means for supplying
10 coating material continuously from the main supply to the trough in excess of the amount required for use, the trough and main supply being arranged so that surplus coating material is returned from the trough
15 to the main supply.

3. In mechanism for coating tile and the like, the combination of a plurality of rolls mounted revolubly in axes in the same plane, a trough beneath the rolls, a main
20 coating supply, means for supplying coating material continuously from the main supply to the trough in such quantity that the rolls are covered above their centers and in excess of the amount required for coating, and
25 means for returning the excess coating to the main supply.

4. A roll for coating tile and the like comprising a permeable cylindrical shell provided with suitably arranged projections.

30 5. A roll for coating tile and the like comprising a permeable cylindrical shell provided with spots of absorbent material secured to its outer surface in suitable arrangement.

35 6. A roll for coating tile and the like comprising a permeable cylindrical shell provided with spots consisting of pieces of sponge secured to its outer surface in suitable arrangement.

7. A roll for coating tile and the like 40 comprising a shaft, circular flanges thereon, a permeable cylindrical shell carried by the flanges and projecting spots of flexible material secured to the outer surface of the shell.

8. In mechanism for coating tile and the like, the combination of a roll revolubly mounted, a trough beneath the roll, a main coating supply, and means for circulating
45 coating material between the main supply 50 and trough so that the rolls are partially immersed in the circulating coating material.

9. In mechanism for coating tile and the like, the combination of a roll revolubly mounted, a trough beneath the roll, a main
55 coating supply, and means for supplying coating material continuously from the main supply to the trough in excess of the amount required for use, the trough and main supply being arranged so that surplus coating
60 material is returned from the trough to the main supply.

10. In mechanism for coating tile and the like, the combination of a roll revolubly mounted, a trough beneath the roll, a main
65 coating supply, means for supplying coating material continuously from the main supply to the trough in such quantity that the rolls are covered above their centers and in excess of the amount required for coat-
70 ing, and means for returning the excess coating to the main supply.

In testimony whereof I have affixed my signature in the presence of two witnesses.

FREDERICK E. GOLDSMITH.

Witnesses:

WM. LEVY,
ALBERT DELL.