No. 868,793. PATENTED OCT. 22, 1907.

M. A. METZNER.

TILE GAGING MACHINE.

APPLICATION FILED JAN. 29, 1906.

5 SHEETS—SHEET 1.

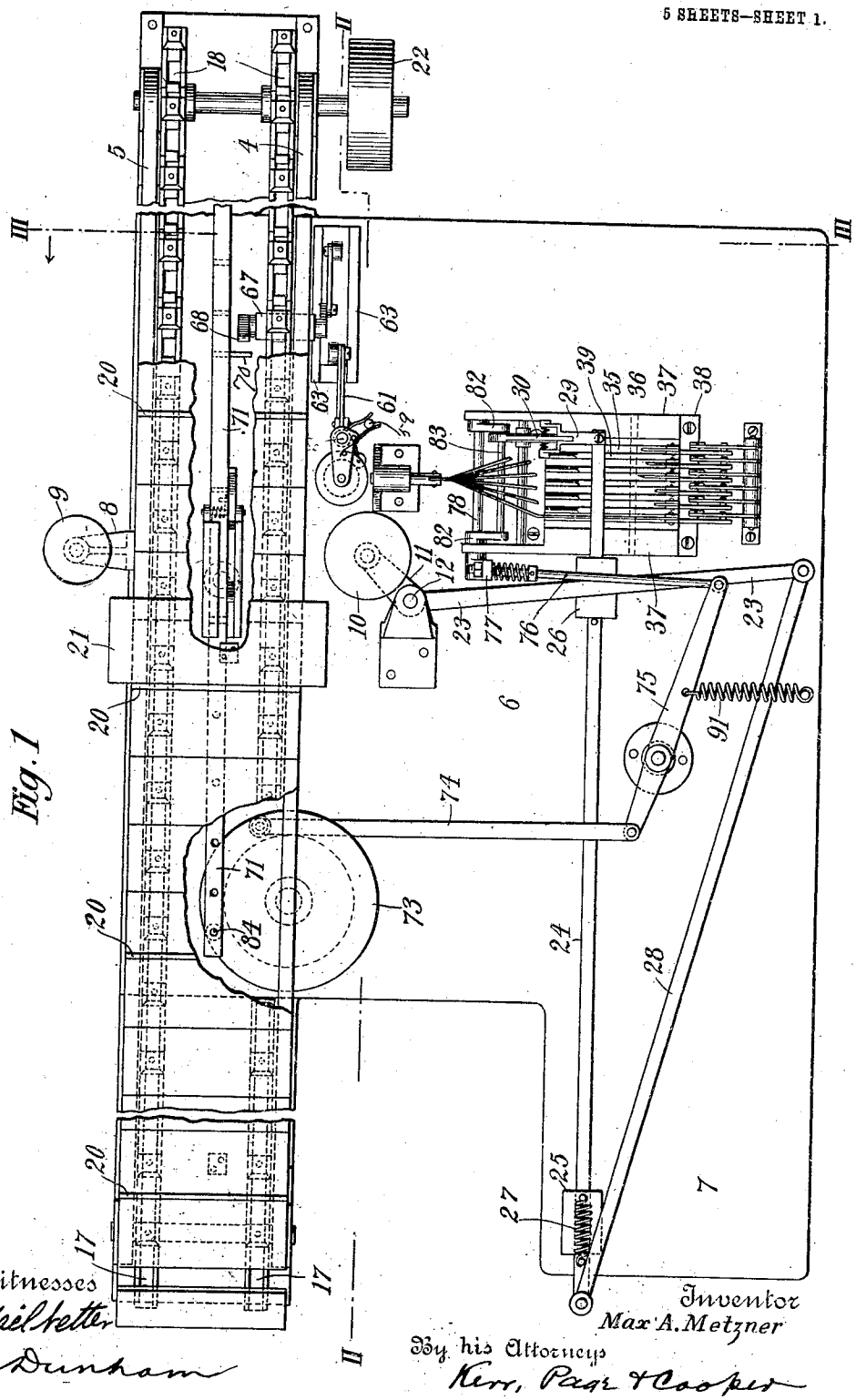

Fig. 1

Witnesses
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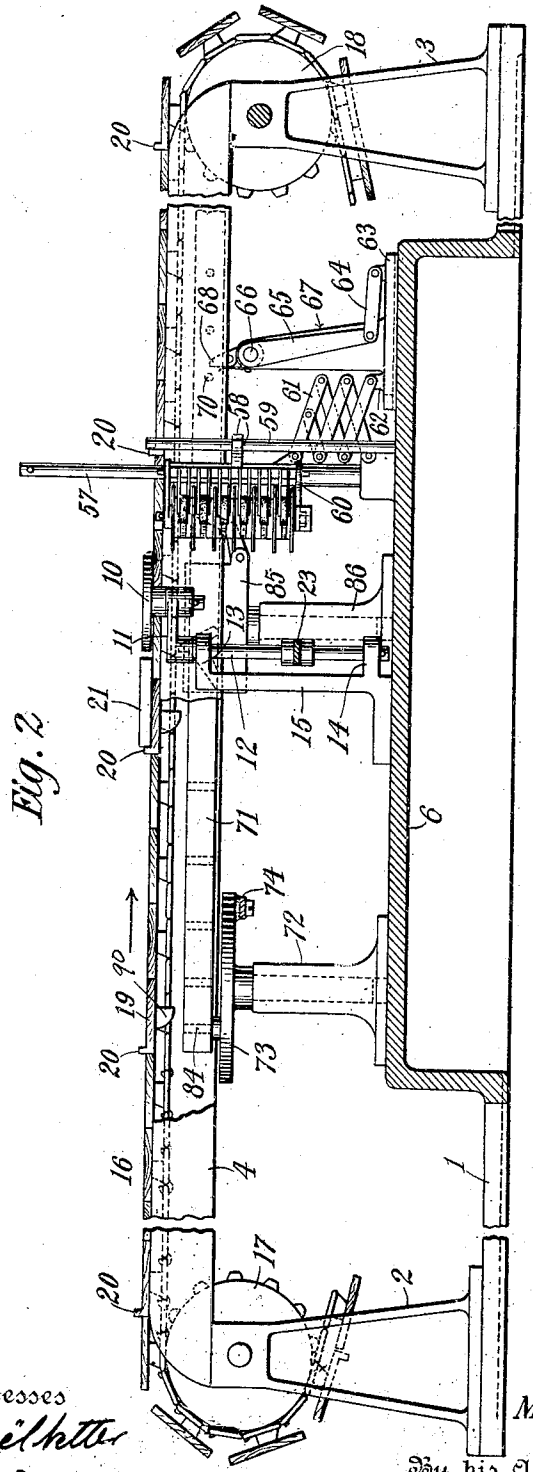

Fig. 2

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5 SHEETS—SHEET 3.

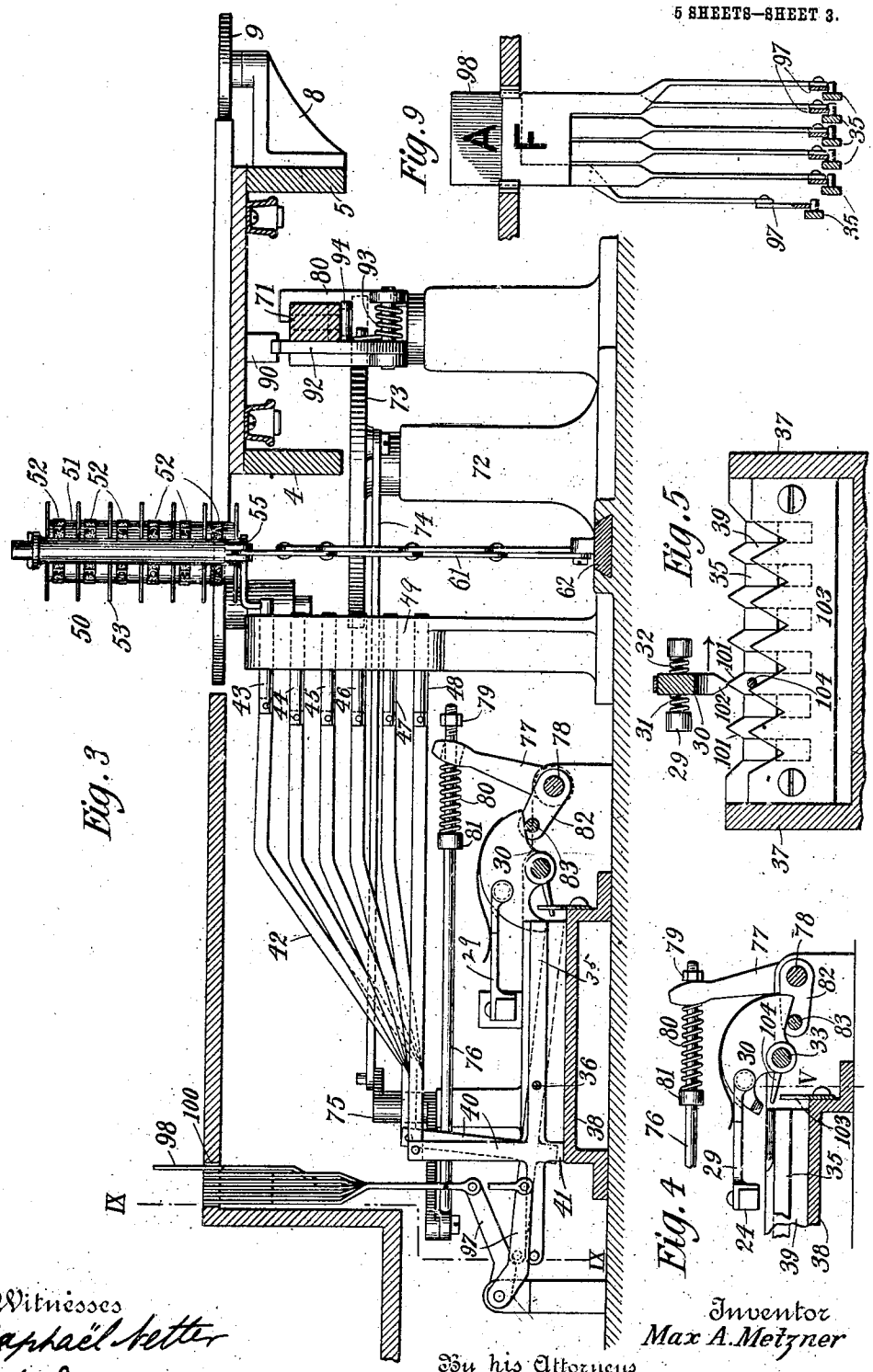

Fig. 3

Fig. 5

Fig. 4

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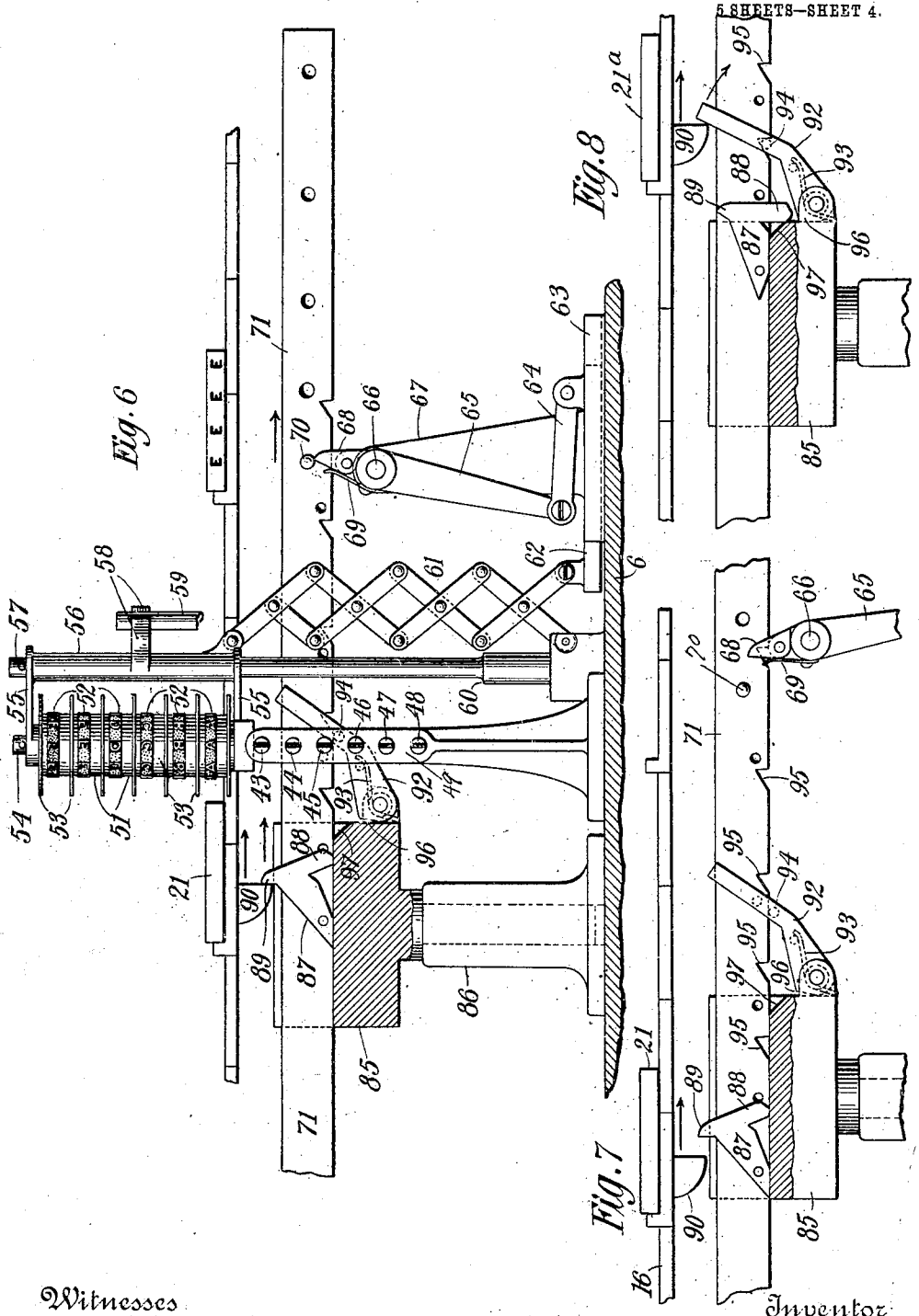

Witnesses
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5 SHEETS—SHEET 6.

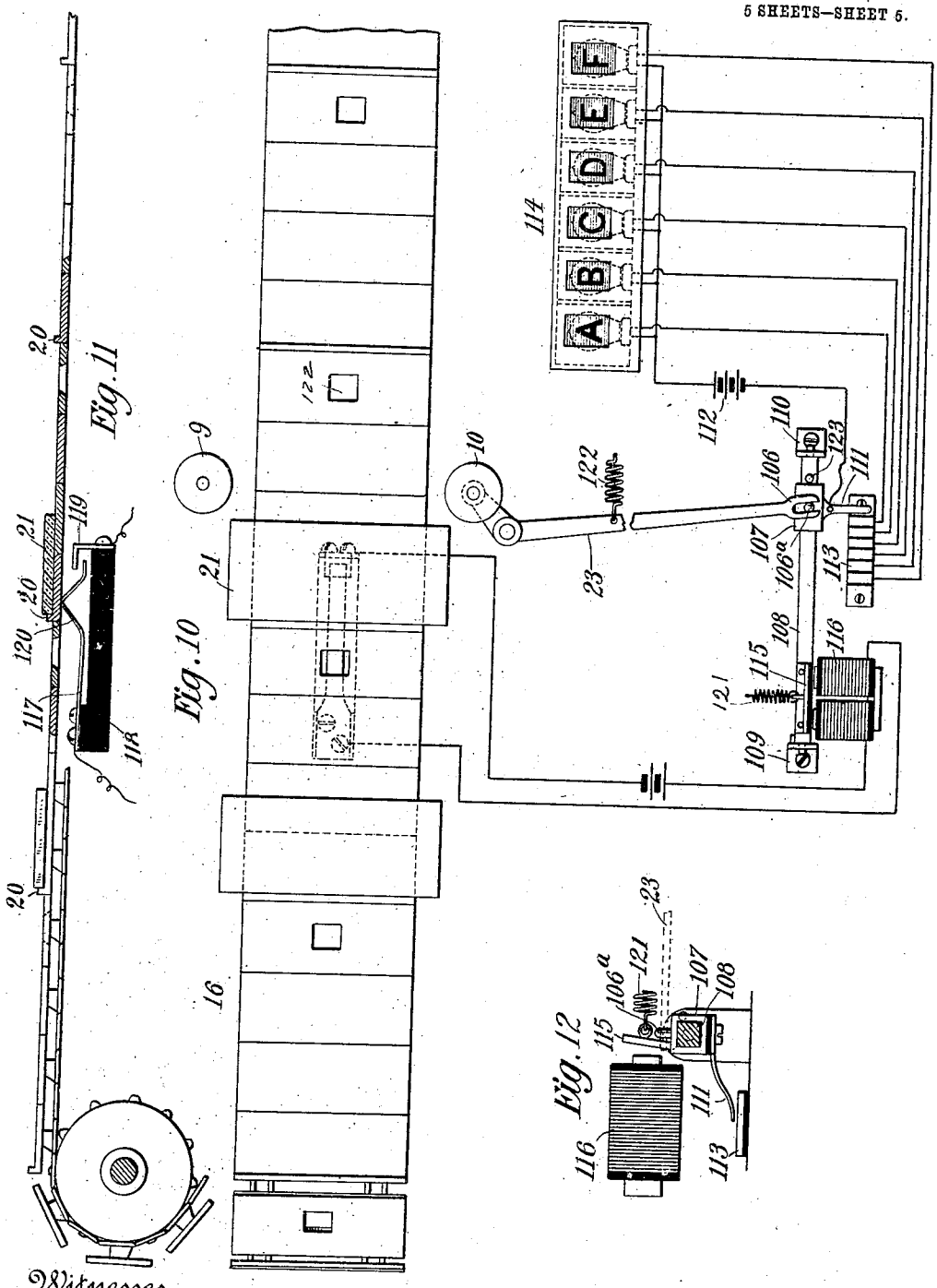

Fig. 10

Fig. 11

Fig. 12

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UNITED STATES PATENT OFFICE.

MAX A. METZNER, OF PERTH AMBOY, NEW JERSEY, ASSIGNOR OF ONE-HALF TO THE C. PARDEE WORKS, OF PERTH AMBOY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TILE-GAGING MACHINE.

No. 868,793. Specification of Letters Patent. Patented Oct. 22, 1907.

Application filed January 29, 1906. Serial No. 298,319.

To all whom it may concern:

Be it known that I, MAX A. METZNER, a citizen of the United States, residing at Perth Amboy, in the county of Middlesex and State of New Jersey, have invented certain new and useful Improvements in Tile-Gaging Machines, of which the following is a specification, reference being had to the drawings accompanying and forming part of the same.

Tiles for floor and wall coverings are made in various sizes, in some cases differing only by a fraction of an inch, and since such small differences are not always readily perceived by the eye it is customary to measure each tile, as by placing it alongside of a graduated scale or gage constructed to fit the tile so that the measurements may be taken easily and rapidly, and then to stamp on the unglazed back or edge of the tile a letter or numeral, or other character or characters, designating the size of the tile or the class to which it belongs. Tiles of the same size or class are of course molded to exactly the same dimensions, but in the process of firing they shrink unequally, since some must of necessity be farther from the source of heat than others. Hence when the tiles come from the kiln they are not uniform, and even marks impressed in the back or edge in the molding operation may not designate the size or class to which the tile actually belongs after firing. Furthermore, the shrinkage being unequal the tiles rarely fit one standard size or another, exactly; and good judgment on the part of the person who does the measuring is therefore required in order to assign each tile to the proper class. In any case errors due to fatigue, carelessness, etc., are liable to creep in. Need has therefore been felt for a machine which would measure the tile with unfailing accuracy and indicate the size thereof or imprint on the tile the proper designation of its size or class. This need my present invention is intended to meet, and in devising the same my object has been not only to provide a machine which would be reliable in operation but also to make the apparatus as simple and inexpensive as possible, and capable of rapid operation so as to turn out a large amount of work.

Broadly stated, my invention consists of mechanism in the nature of a gage which measures the tile, and recording or indicating mechanism adapted to be set or actuated by the gage. The first mentioned element, namely, the gage, may be constructed to measure any or all dimensions of the article, and the recording or indicating devices may of course be constructed to take account of as many different sizes or classes as may be desired. Most tiles of the kind mentioned are of oblong rectangular form, and the shrinkage of the longer dimension is of course more apparent than that of the shorter dimension. In fact the change in breadth may be and usually is disregarded, and hence for most purposes the machine need measure only the length, or longer dimension.

The gaging devices consist preferably of a pair of spaced rollers, one fixed in position and the other mounted on a swinging arm which is normally yieldingly held in such position that the space between the rollers is at least not greater than the length of the shortest tile which the apparatus is to measure. The tile being carried sidewise between and in contact with the rollers it is clear that the movable roller will be swung outwardly to a degree proportionate to the length of the tile.

The recording mechanism, which is controlled yb the gaging devices, preferably comprises a printing wheel located adjacent to the path of the tile as it passes between the gaging rollers and adapted to be thrown against the adjacent end edge of the tile at the proper time, so as to stamp or print the proper character thereon. This type wheel may be in the form of a cylinder, rotatably and longitudinally movable on a vertical shaft, and has a plurality of circular rows of type or dies, each row corresponding to a given size or class. As the wheel is rotated by the frictional contact of the passing tile, the several types or dies in the particular row selected by the gaging devices print the designating character at several points, so that if one type be damaged or filled with dirt and so produce an illegible impression another will give a mark which is legible.

The actuating and controlling means for the recording mechanism includes a system of levers, under the control of the tile feeding means, which in each operation first throws the type wheel to its highest position, and a number of selecting devices which then operate one or another of a series of stops depending on the extent to which the movable element of the gage has been swung outward, to maintain the type wheel in position to impress the proper character upon the tile. These stops are arranged one above the other below the type wheel, and hence the latter in dropping from its uppermost position will be brought to rest at one height or another, and with the corresponding type row opposite the edge of the tile, depending on which of the vertical series of stops has been thrown out. The type wheel being thus set it is next engaged by the edge of the tile and prints thereon the proper characters, as already described.

The machine may be simplified by substituting for the recording mechanism an annunciator which merely indicates the size of the tile. In this case the operator may be provided with a set of stamps from which he selects the proper one and then manually prints the designating character on the tile. If de-

sired, both mechanisms may be provided, so that the machine will give a visual indication of the size or class which it is printing on the tile.

The machine may be entirely mechanical in its operation, or it may involve electrical features. Both forms have been constructed and have been found to operate successfully. The former, however, having as it does no contacts to be kept clean, or batteries to be renewed, etc., will generally be found more satisfactory and has perhaps a more extensive field of use. In the annexed drawings I have illustrated both the wholly mechanical apparatus, which is the preferred form, and also a simple and convenient form of the electrical type.

Referring now to the drawings, Figure 1 is a plan view of the preferred embodiment, showing the gaging and recording mechanisms in their normal positions, with a tile about to pass between the gaging rollers. Fig. 2 is a longitudinal section, on line II—II, Fig. 1. Fig. 3 is a transverse section on line III—III, Fig. 1, but showing the type wheel in its uppermost printing position, resting on a stop selected by the gaging devices. Figs. 4 and 5 are detail views of part of the stop selecting mechanism, Fig. 5 being a section on line V in Fig. 4. Fig. 6 is a detail side view showing the type wheel in its highest (non-printing) position, before a stop has been selected and thrust into its path, and showing also certain paths of the mechanism for carrying the wheel against the edge of the tile to effect the printing. Figs. 7 and 8 are detail views showing different positions of certain parts shown in Fig. 6. Fig. 9 is a detail sectional view on line IX—IX, Fig. 3, showing the annunciator devices for indicating the size or class of the tile. Fig. 10 is a diagrammatic plan view of a machine involving electrical features, but with only devices for indicating the various sizes or classes, no printing or recording mechanism being shown. Fig. 11 is a side view of Fig. 10, partly in longitudinal section. Fig. 12 is a detail view of the contact selecting devices which determine which lamp is lighted in the annunciator.

The various operative parts of the machine are conveniently mounted on a frame consisting of a base 1, vertical end members, or standards, 2, 3, and a pair of parallel rails 4, 5, supported by the standards. The base is formed with an elevated part 6, provided with an extension 7. See Figs. 1 and 2. Secured to the rail 5 at a point adjacent to the center thereof is a fixed bracket or arm 8, on which a roller 9 is revolubly mounted on a vertical pivot. Directly opposite the said roller is another roller, 10, mounted on an arm 11 rigidly fastened to a vertical rock shaft 12, journaled in bearings 13, 14, carried by a standard 15 rising from the elevated part of the base. See Figs. 1 and 2. It is evident that if a tile somewhat longer than the space between the rollers be passed sidewise between them the swinging roller 10 will be swung outward with its supporting arm and rock the shaft 12. For the purpose of carrying the tiles in succession between the rollers there is provided an endless conveyer 16, passing over sprocket wheels 17, 18, suitably journaled in the end members or standards 2, 3. The conveyer consists of a pair of chain-belts running over the sprockets, and a number of tile-supporting plates or platforms, as 19, of any suitable material, such as wood, carried by alternate links of the chains. The arrangement of the conveyer devices is such, as is clearly shown in Fig. 2, that the platforms in moving along the upper reach slide on the rails 4, 5, thereby maintaining the platforms slightly below the plane of the measuring rollers 9 and 10. Certain of the platforms, as every fourth one, are provided with transverse stops, as 20, projecting slightly upward, against which may rest the tiles, one of which is indicated at 21, in their passage between the rollers. On the shaft of the sprockets 18 is a driving pulley 22, which may be driven from any convenient source of power.

When the roller 10 and arm 11 are swung outward by a tile, thereby rocking the shaft 12, an arm 23, fixed to the same shaft, is swung backward, or to the left, (see Fig. 1), the movement of which reciprocates a rod 24, mounted to slide freely in guides 25, 26, and normally retracted by a spring 27, the rod and arm being connected by a link 28. On the forward end of the rod is a yoke 29, (Figs. 1, 3 and 4), yieldingly embracing a semicircular tappet 30 by means of springs 31, 32, (Fig. 5), extending inwardly from the arms of the yoke or Y-shaped member and bearing against the tappet. This tappet constitutes a "selector", as hereinafter described. The springs 31, 32 should have sufficient tension to prevent any sidewise movement of the tappet relative to the yoke. The result is that when the rod 24 is reciprocated by the arm 23, which in turn is actuated by the tile passing between the rollers, the tappet 30 is also reciprocated on its shaft 33, on which it is mounted to turn freely. The tappet is thus brought over one or another of a series of levers 35, according, as will be readily understood, to the length of the particular tile which happens to be actuating the gaging roller 10. These levers are pivoted at 36 between vertical side pieces 37 on a supporting plate 38, and between the levers are guide bars 39, rigidly mounted in any suitable manner. The levers correspond in number to the sizes of tiles which the machine is to record, as for example 6, and each is provided with a vertical arm 40 and a depending lug or stud 41, which latter rests on the supporting plate when the lever is in its normal position. It will now be evident that if the tappet 30 be rocked in a counterclockwise direction, as viewed in Figs. 3 and 4, it will strike one of the levers and elevate the other end of the same, thereby throwing its arm 40 forward. The devices provided for thus actuating the tappet will be described hereinafter.

The horizontal series of levers 35 is connected by push-rods 42 to a vertical series of horizontal stops, six in number, indicated in Fig. 3 by 43, 44, 45, 46, 47, 48, so that when a lever is rocked by the tappet the corresponding stop will be projected. The stops are conveniently mounted to slide in a guide-standard 49, fastened to the elevated part of the base. When thus thrown out the stop projects into the path of a type-wheel, which will now be described, together with the parts which actuate it.

The type-wheel, indicated by 50, Fig. 3 is composed preferably of a cylinder 51, on which are six circular rows of characters, 52, separated by flanges, as 53. The wheel is carried rotatably on a vertical shaft 54, (see Fig. 6), supported between arms 55 projecting from a sleeve 56. The latter is mounted to slide vertically on a standard 57, and is also provided with a pair of resili-

ent fingers 58 which clasp a vertical rod 59 alongside of the standard 57, thereby permitting the sleeve to be rotated partially on the standard. The object of such movement is to permit the type-wheel to allow for various lengths of tiles, as will be more fully explained hereinafter. The parts which support the typewheel are located adjacent to the path of the conveyer 16, as shown in Fig. 1, and slightly in advance of the gage roller 10. Normally the wheel is below the conveyer, the sleeve 56 resting on a shoulder 60 on the standard 57.

For the purpose of lifting the type-wheel to the top of the standard the following instrumentalities are provided: Pivotally connected to the base of the standard is one lower arm of a set of lazy tongs 61, connected at the top to the sleeve 56. The other lower arm is connected to a slide 62, mounted in guides 63, and actuated by a link 64 and arm 65. The latter, (see Figs. 1, 2 and 6), is rigidly secured on the end of a rock shaft 66, mounted in bearings at the top of a vertical member 67. On the other end of the shaft is a pivoted actuating finger 68, held yieldingly in the position shown in Fig. 6 by a flat spring 69 fixed to the shaft. This finger is located below the upper reach of the conveyer and projects into the path of a stud 70 projecting laterally from an actuating bar 71, which latter is reciprocated by means described hereinafter. When the actuating bar is advanced in the direction of the arrow, Fig. 6, the stud engages the finger 68, which rocks the shaft 66, throwing the arm 65 to the left and with it the slide 62, thereby extending the lazy tongs and raising the type-wheel to its highest position. As this highest position is reached, the stud 70 escapes from the finger 68, whereupon the spring 69 restores the latter to its original position relative to the arm 65. The weight of the type-wheel would at once cause it to fall, but before the finger 68 is released one of the stops 43—48 is projected, as already explained, and the type-wheel is thus checked by whichever stop has been thrown out, to hold it in position to mark a tile. For the purpose of actuating these stops the following devices are provided. Below the rail 4, (Figs. 1 and 3), mounted to turn horizontally on a standard 72, is a crank disk 73. A pitman 74 is pivoted at one end to the periphery of the disk and at the other to one arm of a lever 75. The other arm of the latter is connected to a rod 76, which is in turn connected to an upstanding arm 77 on a rock shaft 78 mounted in bearings in extensions of the side members 37. The rod 76 passes through a suitable opening in the end of arm 77 and carries a stop nut 79. A spring 80, between the arm and a collar 81 on the rod provides a yielding connection to permit slight lost motion, if necessary, after the arm and shaft have been rocked to the fullest extent. The shaft 78 is provided with arms 82 between which is carried a tappet-actuating rod 83, directly under the inner end of the tappet 30. See Figs. 1, 3 and 4. It will now be apparent that if the disk 73 be rotated in the clockwise direction, as viewed in Fig. 1, the arm 77 will be thrown backward by the rod 76. The shaft 78 and arms 82 are thereby rocked, and the tappet-actuating rod 83, striking the rear end of the tappet will throw the same up. The other end of the tappet will therefore strike one of the levers 35 and cause one of the stops 43—48 to be thrown out, as already explained.

To partially rotate the crank disk 73, the latter is pivotally connected to the before-mentioned actuating bar 71 at the point 84. The latter is supported by and slides in a guide block 85 on an upright 86, (see Figs. 6, 7 and 8), and lies below the center line of the upper reach of the conveyer 16, as clearly shown in Fig. 1. The bar carries a pivoted actuating device or pawl 87, of substantially triangular shape, having a depending finger 88 and an upstanding lug 89. The pawl is located at the block 85 and is held normally in the position shown in Fig. 7 by reason of the finger 88 resting on the said block. The lug 89 projects into the path of a stud 90 on the underside of the conveyer, below the position occupied by the tile 21, each tile-carrying platform of the conveyer being provided with such a stud, as will be readily understood. When the advancing conveyer brings the stud 90 into engagement with the lug 89 the bar 71 is advanced also, thereby turning the crank disk 73, until the finger 88 drops off the block 85, as in Fig. 8, whereupon the pawl falls and carries the lug out of engagement with the stud. A spring 91 (Fig. 1), connected to the lever 75 and base 6, would then at once cause the bar 71 to be retracted, before the operation of printing had been completed, thus permitting the type-wheel to drop until one of the flanges 53 rested on the end of the tile and causing the impressions on the edge thereof to be blurred. In order to prevent this, a holding or locking pawl 92 is provided. It is pivoted to the guide block and is supported yieldingly in the position shown in Fig. 7, by a spring 93, with a pin 94, projecting from the side of the pawl, bearing against the under edge of the reciprocating actuating bar 71. This edge is provided with ratchet notches 95. As the bar advances from the initial position of Fig. 7 to the position of Fig. 8 the edge of the bar rides over the pin; but when spring 91 (Fig. 1) begins to retract the bar the pin rises into a notch, and the pawl being stopped by its shoulder 96 striking the guide block, further retraction of the bar is prevented. When the tile has been stamped, and has moved to the position shown at 21^a, Fig. 8, the stud 90 engages the upwardly projecting end of the pawl and depresses the same, thereby carrying the pin out of the notch and releasing the actuating bar. Whereupon the spring 91 retracts the parts connected with it. As the bar moves back to its initial position the finger 88 of the pawl 87 is lifted by the inclined cam surface 97 on the guide block.

The operation of the machine will now be readily understood. The tiles are laid on the conveyer, against the stops 20. Just before a tile reaches the gaging rollers the stud 90 on the underside of the conveyer strikes the lug 89, thus advancing the actuating bar 71. As the latter moves forward its stud 70 engages the finger 68 and the type-wheel is thereby elevated. The tile now reaches the rollers and swings the roller 10 outward to an extent proportional to the length of the tile, the tappet 30 being thereby brought over the corresponding lever 35, as previously explained. The continued movement of the conveyer and tile, through engagement of the stud 90 with the lug 89, causes the bar 71 to be advanced whereby the disk 73 is rotated, which in turn throws up the rod 83 and brings the tappet 30 down upon the lever 35, over which it had been carried by the movement of the

roller. The arm 40 on the lever is thus thrown inward and projects its stop below the type-wheel. The actuating bar 71 continuing to advance, the stud 70 escapes from the finger 68 and allows the type-wheel to drop down upon the stop and the wheel is thereby brought down into the proper row of characters in position to print on the edge of the tile, which now engages the wheel. The finger 88 of the pawl 87 having by this time fallen over the edge of the guide block 85 the bar 71 starts back under the influence of spring 91 but is checked, by the pin 94 on pawl 92 engaging one of the notches 95, until the tile moves out of engagement with the printing wheel, whereupon the stud 90 strikes the pawl 92 and by depressing it releases the bar 71. The spring 91 immediately retracts the lever 75, pitman 74, disk 73, actuating bar 71, the rod 76, and shaft 78. The return of the latter allows the spring to throw the tappet 30 back to its rearward position on the shaft 33. At the same time, the tile having passed beyond the rollers 9 and 10, the spring 27 retracts the rod 24, returning the tappet to its initial position at the right end of shaft 33, and restores the swinging roller 10 to the position shown in Fig. 1, thus completing a cycle of operation of the machine.

A simple annunciator mechanism, to give a visual indication of the class or size of the tile, may readily be combined with the foregoing apparatus. Such a mechanism is shown in Figs. 1, 3 and 9. Adjacent to the ends of the levers 35 opposite the tappet is a series of pivoted arms 97, each extending over its appropriate lever 35 and each carrying an annunciator card or plate, as 98, bearing a corresponding character. It is clear that when a lever 35 is actuated it will strike the arm 97 which lies over it, thus raising the card carried thereby, and holding the same in such position as long as the tappet 30 remains depressed.

Inasmuch as the tiles sometimes vary in length only by very small amounts it frequently happens that a tile is of such a length as to bring the tappet over one of the dividing plates 39 instead of over a lever, in which case the machine of course would not operate. To obviate such difficulty the upper edges of the plates 39 under the tappet are made of a knife-edge form, as shown at 101, in Fig. 5. Hence if the tappet comes to rest over one of the plates it will, on being depressed, be thrown against one or the other of the inclined faces, according to the size or class to which the tile most closely approximates, and is directed down upon the appropriate lever, against the tension of one or the other of the springs 31, 32. It may happen, however, that the tappet, whose striking face is also given a knife-edge form, as shown at 102, may come to rest with its apex directly over the apex of a dividing plate, in which case the mechanism might be locked, as explained above. Such a condition of affairs is illustrated in Fig. 5, where it is clear that the edge of the tappet would strike the edge of the dividing plate and stay there without being deflected one way or the other. Although this condition may not occur very often, means for avoiding it are provided, as follows: Across the inner ends of the levers 35 and spaced therefrom is a tooth plate 103, (see Fig. 5), arranged with the points of its teeth a little to one side or the other of the apex of the dividing plates. Projecting over this saw plate or rack is a finger 104, carried by the tappet, and in the same vertical plane. The finger is located at such distance below the striking face of the tappet that it reaches the saw teeth before the tappet could otherwise strike the edge of a dividing plate. Consequently under the conditions shown in Fig. 5 the finger will engage the right hand inclined face of the tooth and be carried to the right, carrying with it the tappet, so that by the time the latter has been depressed to the level of the apexes of the dividing plates it will have been slightly to one side and will therefore pass down to the adjoining lever. The saw plate 103 can readily be so arranged relative to the dividing plates that the finger 104 and the edge of the tappet can never fall on oppositely inclined faces. For example, in Fig. 5, with the finger in the position shown, the tappet will be carried to the right of the dividing plate before it strikes the same, although it may have been slightly to the left.

In Figs. 10, 11, and 12 is shown, somewhat diagrammatically, an embodiment of my invention involving electrical features but omitting the recording devices. In this form the arm 23′, actuated by the swinging roller 10, has on its end a fork 106 engaging a stud 106ª on a sleeve 107 adapted to slide on rock shaft 108 journaled in bearings 109, 110. The shaft and sleeve are of angular cross section, for example square, to prevent rotation of the latter on the former. Extending from the sleeve is a contact finger 111, electrically connected with one side of a battery or other source of current 112. Under the contact finger, in position to be traversed thereby as the sleeve is shifted by the swinging roller, is a series of insulated contacts 113, each connected with its appropriate lamp in the annunciator casing 114, the other terminals of the lamps being connected to the battery 112. In the present construction the annunciator is provided with six lamps, inclosed in separate compartments each of which has a transparent or translucent window bearing a letter or other symbol indicating a size or class. Fastened rigidly on one end of the rock shaft 108 is a flat plate of iron 115, constituting a magnet armature, and in position to attract the same and thereby rock the shaft and bring the finger 111 down upon the series of contacts, is an electromagnet 116. In the circuit of the magnet is a make-and-break device consisting of a spring contact strip 117, mounted at one end on an insulating body 118, with the free end of the spring lying under a fixed contact stop 119 carried by the insulating body. The make-and-break devices are located below the conveyer, and the spring strip is provided with an inverted V-shaped projection or lug 120 bearing against the under side of the conveyer plates, so that the strip is normally depressed out of contact with the stop 119. Back of each tile-stop 20 is an aperture 122, large enough to permit the projection 120 to rise into the same and bring the strip 117 into firm contact with its stop 119.

The operation of the devices just described will now be readily understood. When a tile enters between the rollers 9, 10, the latter is swung out, thereby shifting the sleeve 107 on the rock shaft until the finger is immediately over the contact corresponding to the size of the tile being measured. Shortly after the sleeve and finger come to rest the aperture in the conveyer, back of the tile, comes over the projection 120 and allows the spring strip to rise against its contact stop. The circuit of magnet 116 is thereby completed and the

shaft 108 is drawn over, bringing the contact finger down upon the selected contact in the series 113. The particular lamp connected with that contact is thus made to glow, showing its letter and indicating clearly to the attendant the size of the tile. As the tile passes from between the rollers the inclined face of the projection 120 causes the spring strip to be forced down out of contact with its stop, breaking the magnet circuit and permitting the spring 121 to draw the armature 115 back to its initial position. The spring 122 then restores the arm 23 and roller 10 to their first positions, sliding the sleeve 107 on the rock shaft to the right of the contacts 113, against a stop 123, and leaving the apparatus ready to measure another tile.

It will be evident to those skilled in the art that my invention may be embodied in numerous forms without departure from its proper scope, and I therefore do not consider myself limited to the use of the particular devices herein specifically described.

What I claim is:

1. In a machine for measuring tiles, the combination of a swinging roller, a roller fixed in position, means for carrying the tiles between said rollers, whereby the swinging roller will be shifted more or less, according to the size of the tile engaging the same, and means under the control of the swinging roller for printing measurement designations on the tiles, as set forth.

2. In a machine for measuring tiles, the combination of a swinging roller, a roller fixed in position, a conveyer arranged to carry tiles between said rollers, and means under the control of the swinging roller for printing measurement designations on the tiles, as set forth.

3. In a machine for measuring tiles, the combination of a swinging roller, a roller fixed in position, means for carrying tiles between the rollers, a printing wheel adjustable relatively to the path of the tiles and bearing measurement-designating characters, and means operatively connected with the swinging roller for determining the position of the printing wheel as set forth.

4. In a machine for measuring tiles, the combination of means for gaging the tiles, means for delivering the tiles thereto, a printing wheel adjustable relatively to the path of the tiles and bearing measurement-designating characters, means for shifting said wheel to its farthest position, and means under the control of the gaging means for limiting the return of the wheel according to the size of the tile being measured, as set forth.

5. In a machine for measuring tiles, the combination of means for gaging the tiles, means for delivering the tiles thereto, a printing wheel adjustable relative to the path of the tiles and bearing measurement-designating characters, means for shifting the wheel to its farthest position, and a plurality of stops under the control of the gaging means for projecting the stops singly in the path of the wheel to limit the return movement of the latter, as set forth.

6. In a machine for measuring tiles, the combination of means for gaging the tiles, a horizontally moving conveyer for delivering the tiles to the gaging means, a vertically adjustable printing wheel, means actuated by the conveyer for lifting said wheel to its uppermost position, a series of stops adapted to be projected into the return path of the wheel, and mechanism under the control of the gaging means for projecting said stops singly according to the dimensions of the tiles, as set forth.

7. In a machine for measuring tiles, the combination of means for gaging the tiles, a horizontally moving conveyer for delivering the tiles to the gaging means, a vertically adjustable printing wheel, means actuated by the conveyer for lifting the wheel to its uppermost position, a plurality of stops adapted to be projected into the return path of the wheel, a series of levers connected with said stops, a tappet movable relatively to said levers under the control of the gaging means, and mechanism actuated by the conveyer for actuating the tappet to depress the lever selected by the gaging means, as set forth.

8. In a machine for measuring tiles, the combination of gaging means for the tiles, a longitudinally adjustable printing wheel, a plurality of stops adapted to be projected into the path of the wheel, a series of levers connected with the stops to project the same, and a tappet to actuate the levers singly, adjustable under control of the gaging means relative to the levers to select a lever according to the size of the tile being measured, as set forth.

9. In a machine for measuring tiles, the combination of gaging means for the tiles a longitudinally adjustable printing wheel, a plurality of stops adapted to be projected into the path of the wheel, a series of levers connected with the stops to project the same, said levers being arranged parallel with each other on a common fulcrum, a tappet adjustable under control of the gaging means transversely across one end of the said series of levers, and means for actuating the tappet to actuate a selected lever, as set forth.

10. In a machine for measuring tiles, the combination of means for gaging the tiles, a conveyer for delivering tiles to the gaging means, an adjustable printing wheel adjacent to the path of the tiles, lazy tongs supporting the wheel, means actuated by the conveyer for extending the lazy tongs, and means under the control of the gaging means for determining the position of the printing wheel when lifted by the lazy tongs, as set forth.

11. In a machine for gaging tiles, the combination of means for gaging the length or breadth of a tile said means comprising spaced elements adapted to engage the opposite edges of the tile, and a rectilinearly movable feeding device moving between said elements to convey tiles to and from the gage and supporting the tiles while being gaged.

12. In a machine for measuring tiles, the combination of means for gaging the tiles, means for feeding tiles thereto, means for marking designations of measurements on the tiles, and means under joint control of the gaging and feeding means for operating said marking means.

13. In a machine for measuring tiles, the combination of means for gaging the tiles, means for feeding tiles thereto, marking means capable of marking different designations of measurements on the tiles, means operated by the feeding means to move the marking means relatively to the marking point, and mechanism under the control of the gaging means for selecting the designation to be marked upon the tiles.

14. In a machine for measuring tiles, the combination of means for gaging the tiles, means for feeding tiles thereto, marking means capable of marking different designations of measurements on the tiles, means for moving the marking means relatively to the marking point, devices for positioning the marking means to determine the designation to be marked on the tiles, a selector movable under control of the gaging means to a position for actuating any one of said devices, and means to throw the selector into engagement with the device determined by the gaging means.

15. In a machine for gaging tiles, the combination of means for gaging the tiles, means for feeding tiles thereto, marking means capable of marking different designations of measurements on the tiles, means for moving the marking means relatively to the marking point, stops for limiting the movement of said marking means to determine the designation to be marked on a tile, a selector movable under control of the gaging means to a position for actuating any one of said stops, and means to throw the selector into engagement with the stop determined by the gaging means.

16. In a machine for measuring tiles, the combination of means for gaging the tiles, means for feeding tiles thereto, marking means capable of marking different designations of measurements on the tiles, means for moving the marking means relatively to the marking point, devices for positioning the marking means to determine the designation to be marked on the tiles, a selector movable under control of the gaging means to a position for actuating any one of said devices, and means operated by the feeding means to throw the selector into engagement with the device determined by the gaging means.

17. In a machine for measuring tiles, the combination of means for gaging the tiles, means for feeding tiles there-

to, marking means capable of marking different designations of measurements on the tiles, an actuating element movable in one direction by the feeding means, connections between the element and marking means whereby the latter is moved relatively to the marking point, devices for positioning the marking means to determine the designation to be marked on the tiles, a selector movable under control of the gaging means to a position for actuating any one of said devices, and means also operated by the actuating element to throw the selector into engagement with the device determined by the gaging means.

18. In a tile measuring machine, the combination of means for gaging the tiles, marking means for the tiles capable of marking different designations of measurements on the tiles, a plurality of determining devices under control of the gaging means for determining the mark to be made on the tiles, and a visual indicator connected to each of said devices and operated thereby to indicate to the operator the mark made upon the tiles.

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Witnesses:
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