

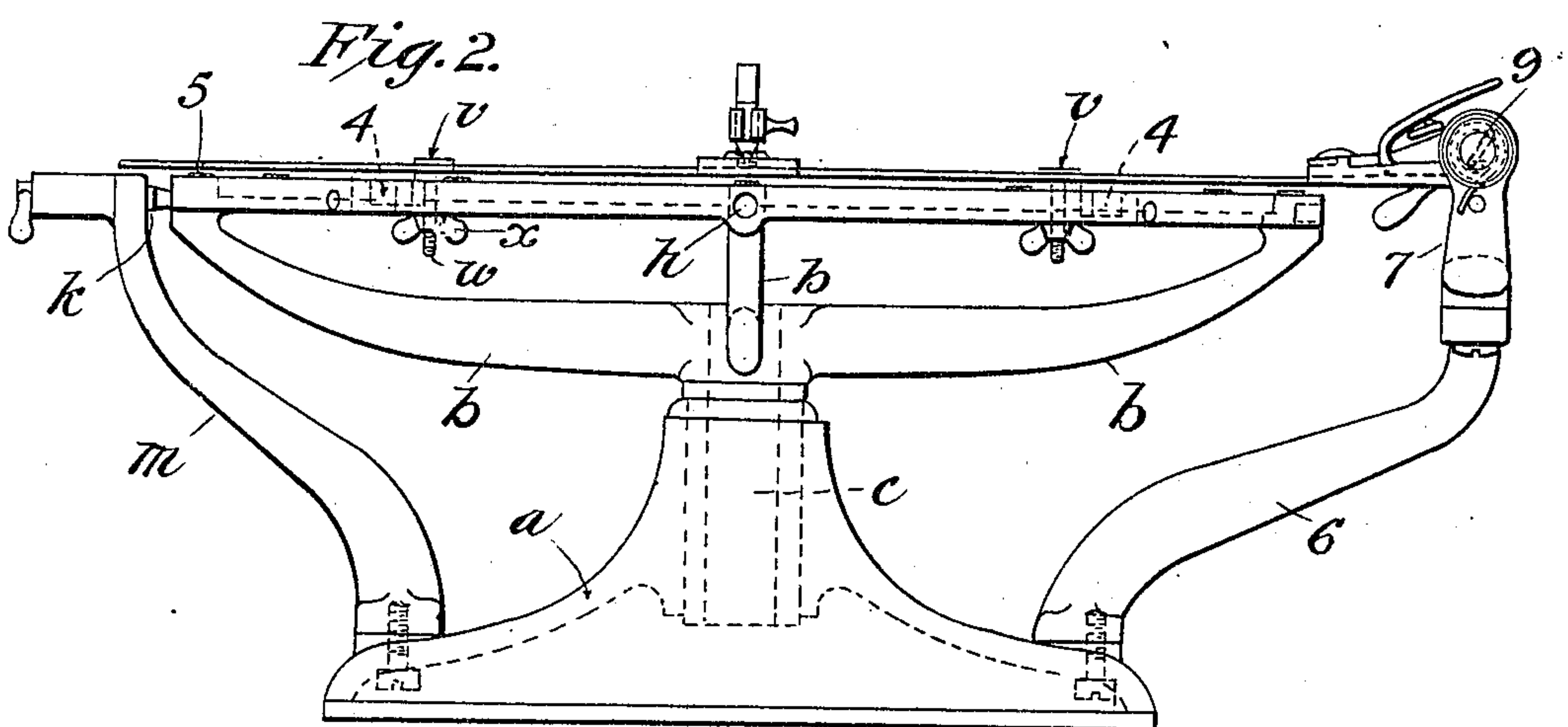
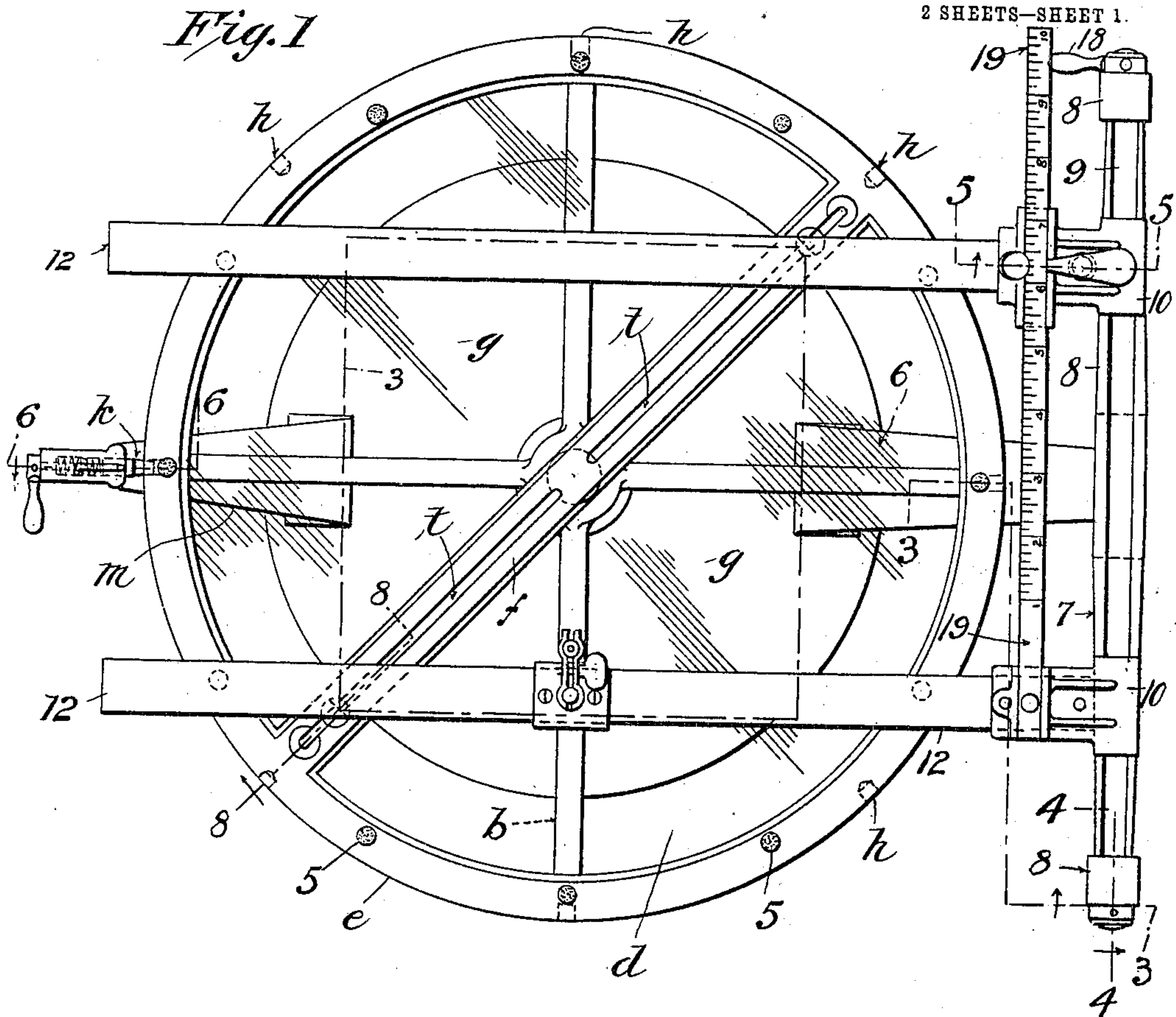
No. 837,112.

PATENTED NOV. 27, 1906.

J. L. PERKINS.
PLATE OR NEGATIVE SQUARING MACHINE.

APPLICATION FILED NOV. 27, 1905.

2 SHEETS—SHEET 1.



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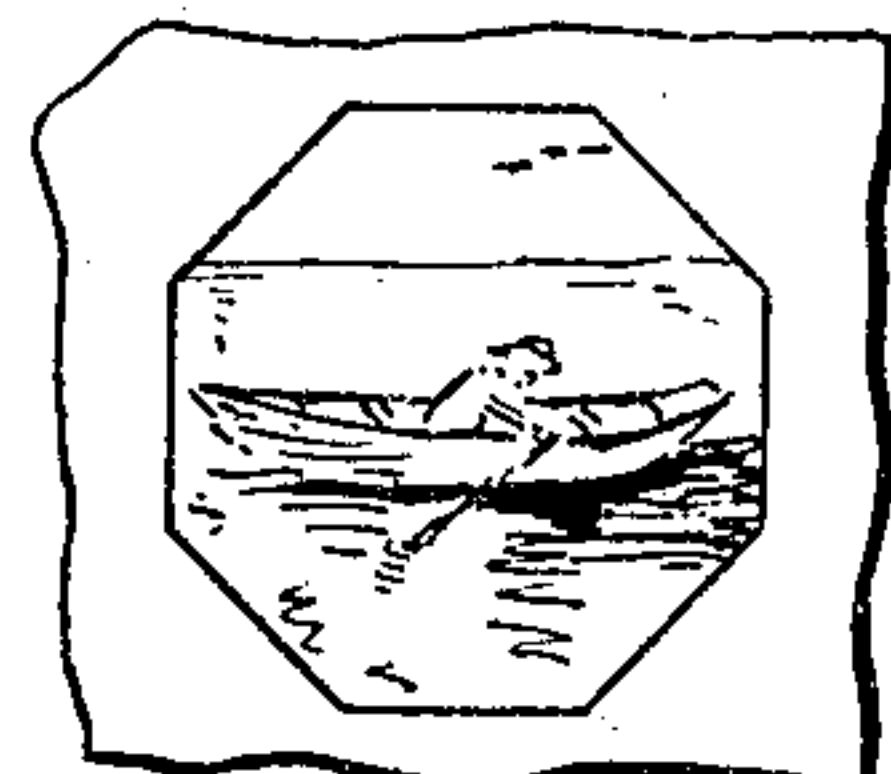
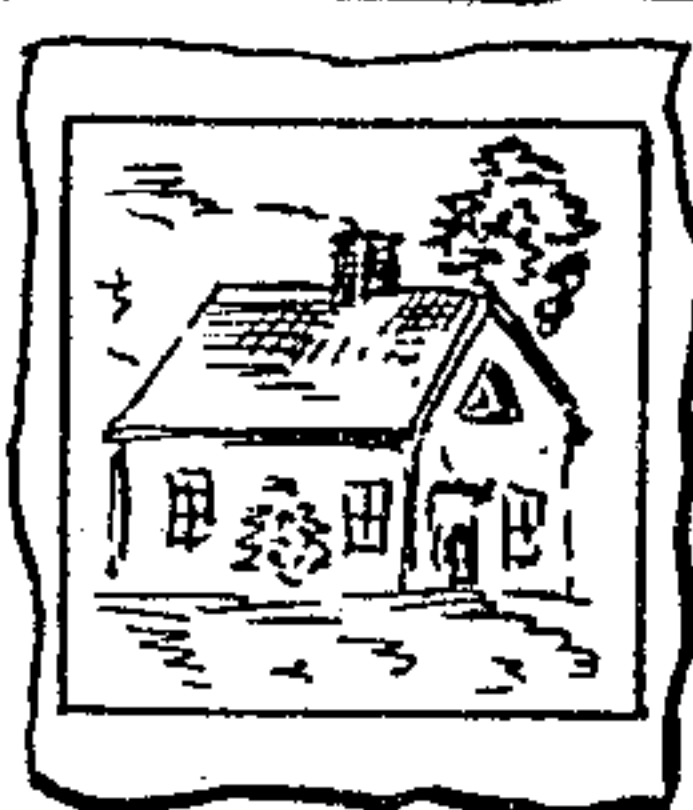
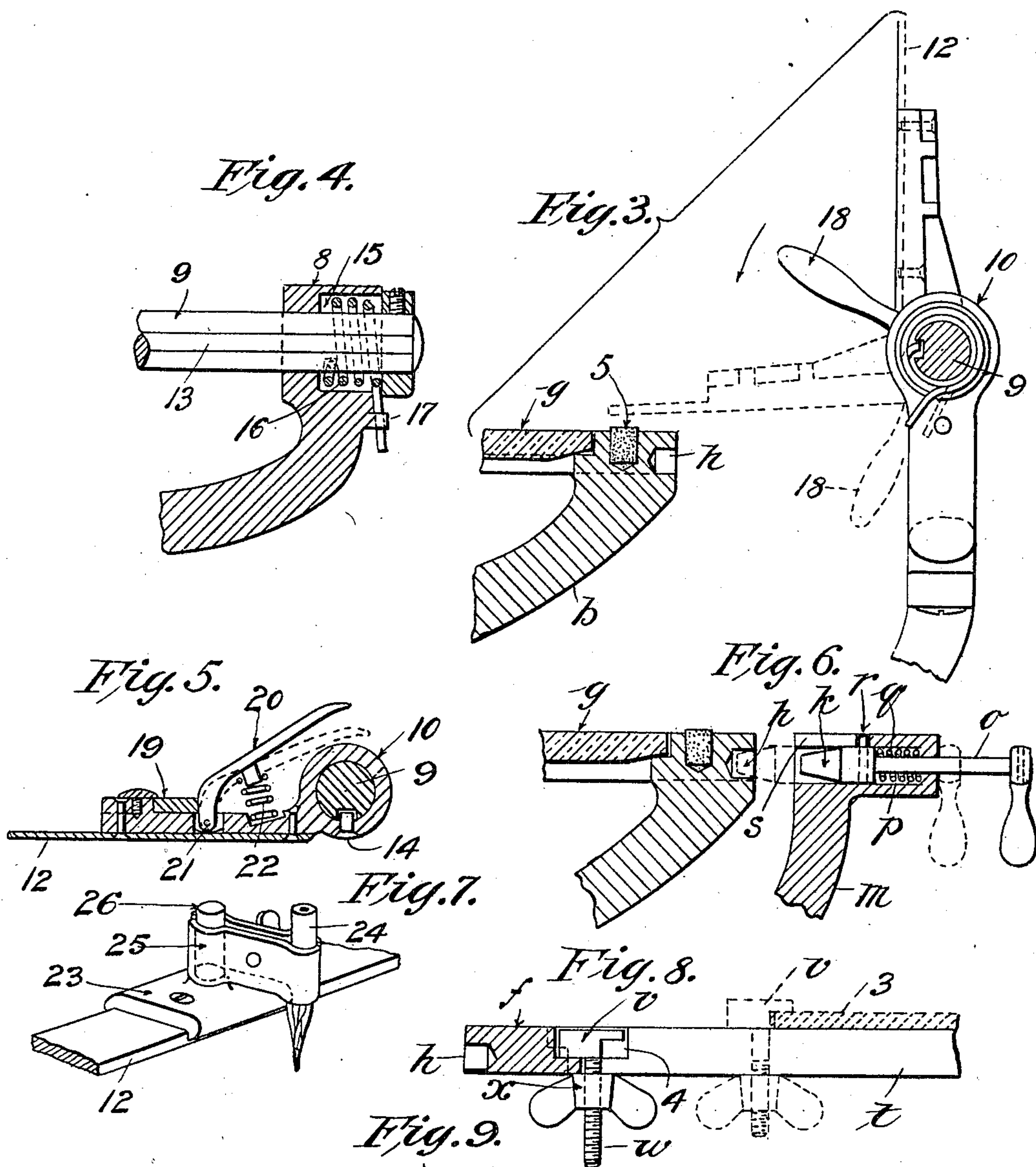
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UNITED STATES PATENT OFFICE.

JULIAN L. PERKINS, OF WEST SPRINGFIELD, MASSACHUSETTS.

PLATE OR NEGATIVE SQUARING MACHINE.

No. 837,112.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed November 27, 1905. Serial No. 289,333.

To all whom it may concern:

Be it known that I, JULIAN L. PERKINS, a citizen of the United States of America, residing at West Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Plate or Negative Squaring Machines, of which the following is a specification.

This invention relates to an instrument for accurately and quickly squaring or outlining photolithographers' plates or negatives and similar articles, the object thereof being to provide an instrument of this class which is particularly adapted to the use of photolithographers, photolithographers, and the like so arranged that any geometrical figure of substantially regular form may be readily marked out, whereby a proof or photographic plate or a process-plate of any kind may be marked for cutting to the desired dimensions.

Certain special objects of the invention lie in the improvements of the details of construction of this instrument which operate to make it more convenient and useful than devices now in general use and all of which will be fully described in the following specification and pointed out in the claims appended thereto.

The invention is fully illustrated in the drawings forming part of this application, in which—

Figure 1 is a plan view of a construction in which the invention is embodied in its preferred form. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged sectional view in the plane of line 3 3, Fig. 1, showing a portion of the rotating table and showing a rock-shaft with rulers adjustable thereon and showing locking devices for securing the rulers to the shaft when the latter is rotated toward the table. Fig. 4 is a sectional elevation of the bearing for the rock-shaft and shows the mode of applying the locking device to the latter. Fig. 5 is a sectional view on line 5 5, Fig. 1, through the hub carrying one of the rulers and showing the construction of a locking device for a scale associated with said rulers. Fig. 6 is a sectional view of another part of the table on line 6 6, Fig. 1 and showing the construction of an index-pin. Fig. 7 is a perspective view of a part of one of the rulers, showing the mode of attaching a pencil thereto on a sliding carriage. Fig. 8 is a sectional elevation in the plane of line 8 8, Fig. 1, showing the mode of constructing the clamps, whereby a plate is se-

cured on the rotating table; and Fig. 9 is a view comprising several geometrical figures which may be outlined by the use of the invention embodied in this machine.

In carrying out this invention a base *a* is provided of any suitable type, and mounted centrally thereof is a frame consisting of suitably-disposed arms *b*, secured to a shaft *c*, stepped in a vertical position in the base *a*, whereby the table *d*, supported on the arms *b*, may be freely rotated.

Preferably the table consists of a ring *e*, cast integrally with the arms *b* and, as shown particularly in Fig. 1, having a diametrically-disposed bar *f* cast flush with the top of the ring, whereby the table is divided into two semicircular portions, the flat surface thereof being provided by the insertion of two semicircular glass plates *g*, to receive which the inner edge of the ring and the inner edge of the bar *f* are rabbeted, as shown, to provide proper supports for the plates, these being secured in place by suitable cement.

At suitable equal distances around the outer edge of the ring *e* index-holes *h* are provided, into which a tapered pin *k* may enter, said pin being supported on an arm *m*, secured to or forming part of the base. The construction of this pin *k* is shown very clearly in Fig. 6, in which it is seen that it is provided with a stem *o*, extending through a socket *p* in the upper end of the arm *m*, a spiral spring *q* being located back of the pin, which serves to hold the latter in one of the index-holes *h* to prevent the table from rotating. In the pin *k* is a small transverse pin *r*, which engages an angular slot *s* in the end of the arm, whereby when the pin is retracted and rotated it will be held within the socket *p* with its spring under compression. The two positions of this index-pin are shown clearly in said Fig. 6.

As many of the index-holes *h* as desired may be located around the periphery of the ring *e*, but preferably they are so disposed that by the engagement therewith of the index-pin an octagonal or hexagonal figure or a square may be outlined on the table by suitably-disposed rulers carried on the machine, which will be described further on.

The diametrically-disposed bar *f* is slotted longitudinally thereof, as at *t*, and in these slots are the clamps *v*, consisting of a suitably-flanged head and a stem *w*, extending down through the slots to the under side of the table, these stems having a nut *x* thereon. The

flanged heads of the clamps are adapted to engage a plate 3, placed on the rotating table, as shown in dotted lines in Fig. 8 and as outlined by the dotted line in Fig. 1, to hold it securely thereon, while the outline of any form to which the plate is to be cut may be traced thereon.

At each end of the slots *t* in the bar *f* are the depressions 4 to receive the heads of the clamps *v*, as shown in full lines in Fig. 8, to the end that these may be dropped below the level of the table when it is desired to locate on the latter a plate which would extend beyond the borders of the table or beyond the limits of the slots *t*. To provide for holding such a plate, there are disposed around the face of the ring *e* pieces of rubber 5, let into holes in the face of the ring and almost flush with the latter, on which a large plate would rest, and whereby it would be prevented from slipping when the table is rotated or while it was being outlined on the table.

Secured to the base *a* opposite the arm *m* is another arm 6, carrying a transversely-disposed arm 7, provided with suitable end bearings 8, in which the rock-shaft 9 is supported. On this shaft 9 are two sliding hubs 10, and to each hub is secured a ruler 12, of thin flexible steel, rigidly secured in the hub in parallelism one with the other and extending transversely of the rotating-table *d*. The rock-shaft 9 is provided with a spline-groove 13, and in each of the hubs 10 is a pin or feather 14, (shown in Fig. 5 particularly,) which prevents the rotation of the hubs on the rock-shaft.

In one of the end bearings 8 of the arm 6 a socket 15 is provided, as shown in Fig. 4, in which is located a spiral spring 16, one end of which engages the shaft 9 and the other end of which extends out of said socket past a projection 17 on the arm 6, with which it is so engaged that when the rock-shaft 9 is rotated in one direction it will place the spring 16 under torsional tension. This spring is made of such strength that when the rock-shaft is rotated as described (which is effected by swinging the hubs carrying the rulers from the substantially vertical position shown in Fig. 3 down into contact with the surface of the table) the pins or feathers 14 in the hubs 10 will bind so tightly in the spline-groove in the rock-shaft that the hubs 10 will be secured to the shaft; but when the hubs are swung up again to vertical position the torsional tension of the spring will be relaxed, thereby permitting the easy adjustment of the hubs 10 longitudinally of the shaft.

It will be noted, as shown in Figs. 1 and 3 particularly, that the end of the shaft 9 opposite to that provided with the spring 16 has secured thereto a handle or lever 18, the purpose of which is to rotate the shaft 9 when the rulers 12 have been swung down in contact with the table, whereby the binding

effect between the feathers or pins 14 and the hubs 10 may be overcome and the hubs adjusted even after they have been swung down to bring the rulers against the surface of the table.

Secured to one of the hubs 10 is a thin metal scale 19, which extends past the other hub and, as shown in Fig. 5, has a sliding engagement therewith, and on this second hub is mounted a spring-actuated locking-lever or binding-lever 20, pivoted to the hub at 21, the edge of the lever being held in contact with the border of the scale by means of a spring 22, which serves to bind this scale so tightly to the hub as to prevent the movement of one hub relative to the other or at least without considerable effort. The object of the scale is to determine the distance between the contiguous edges of the two rulers 12 and to lock them together when they are swung up to vertical position.

From the foregoing description it is seen that when the rulers are in a substantially vertical position and united, as they are by the scale 19, they may be moved as one piece on the rock-shaft 9, and by depressing the end of the lever 20 to release the scale 19 they may be moved one relative to the other, and then if the lever 20 is released and the rulers swung down level with the plate they become as one piece with the shaft 9, the adjustments of the parts being such as to permit the rulers to be raised some little distance above the plate to permit the table *d* to be rotated without any relaxation of the binding effect between the hubs and the shaft 9, and it is only when these rulers have been swung upwardly to a considerable degree that the tension of the spring 16 is relaxed sufficiently to permit the rulers to be moved.

As shown in Fig. 7, a sliding carriage 23 may be mounted on one of the rulers, this carriage carrying a pencil 24, mounted in a suitable spring-clip 25, which fits over a post 26 on the carriage. By thus fitting a pencil on one of the rulers it is possible to strike a circle on the plate or to lay out a figure having one or more curved sides or portions.

It is thus seen that the machine is adapted to quickly outline any one of the forms in which plates or blocks are used by photolithographers especially and that the work can be done with great accuracy. Photographic negatives or prints of any kind may also be outlined for cutting, and as the machine is constructed all this may be done while the operator has an unobstructed view of the work.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In an instrument of the class described comprising a rotatable table, a pair of rulers rotatably supported on an arm extending from the base of the table and one side of the

latter, and means connecting the pair of rulers so as to permit them to swing together toward and from the surface of the table, and a suitable stop to lock the table at any desired point during its rotation.

2. In an instrument of the class described comprising a rotatable table, a pair of rulers slidably and rotatably supported near one side of the table in the same plane and parallel one with the other, and means connecting the rulers to permit them to swing together toward and from the surface of the table, and a suitable stop to lock the table at any desired point during its rotation.

3. In an instrument of the class described comprising a rotatable table, a shaft supported near one side thereof in a plane parallel with that of the table, a pair of rulers on the shaft having a sliding non-rotatable engagement therewith and supported thereon in parallelism and in the same plane, the rotative movements of the shaft serving to swing said rulers toward and from the surface of the table, together with means to lock the rulers against endwise movement on the shaft when the latter is rotated toward the table.

4. In an instrument of the class described comprising a rotatable table having a diametrically-located slot therethrough and one or more clamps slidably mounted in the slot whereby articles may be secured to the surface of the table, a pair of parallel rulers supported near one side of the latter and constructed to swing toward and from the surface of the table; means to adjust the rulers one relative to the other, and a suitable stop to lock the table at any desired point during its rotation.

5. In an instrument of the class described comprising a rotatable table, a rock-shaft supported near one side of the latter and parallel with the surface thereof, and a pair of rulers adjustably supported on said shaft and in the same plane; said rulers having a sliding non-rotatable engagement with said shaft, one or more clamps to secure articles to the surface of the table, means to lock the rulers to the rock-shaft actuated by the rotative movement of the latter toward the table, and a stop to lock the table at any desired point during its rotation.

6. In an instrument of the class described, a rotatable table, a rock-shaft supported in proximity to one edge thereof and having a groove running lengthwise thereof, a pair of rulers provided with suitable hubs through which the shaft extends, and a pin or feather in said hubs to enter said groove, a spiral spring on the shaft secured by one end thereof to and by its opposite end to a fixed point,

whereby when the rulers are swung toward the table the resistance of said spring to torsion will cause said pins to bind in said grooves and lock the rulers against endwise movement on the shaft.

7. In an instrument of the class described, a rotatable table, a rock-shaft supported in suitable bearings substantially in the plane of the table near one edge thereof and provided with a longitudinal groove, a pair of rulers provided with hubs through which the shaft extends, and a pin or feather in the hubs to enter the groove whereby said rulers may have a sliding non-rotatable engagement with the shaft; a spiral spring on the shaft secured thereto by one end and by its opposite end to a fixed point whereby, when the rulers are swung toward the table, the resistance of said spring to torsion will cause said pins to bind in said groove to lock the rulers against endwise movement, together with means to rotate said shaft to overcome the resistance of said spring to permit endwise movement of the rulers.

8. In an instrument of the class described comprising a rotatable table, a pair of rulers supported near one side thereof in parallel relation and in the same plane, a scale secured to one of said rulers and having a sliding engagement with the other, and means to lock said scale to the last-named ruler to secure said rulers at any desired distance apart; a stop-pin slidable toward and from the edge of the table into and out of engagement with holes located in the edge thereof, said table being provided with a series of plugs of frictional material extending somewhat above the surface thereof to prevent a plate or the like from sliding on the table, and said rulers being constructed to swing toward and from the table.

9. In an instrument of the class described, a rotatable table, means for locking the same in various adjustments, a pair of parallel rulers rotatably mounted at one side thereof and connected by means of a ruler, said table having a transparent top, a transverse piece having slots therein, clamps in the slots for securing a piece to the upper side of the table, and means to hold the parallel rulers against the table but permitting them to swing freely in a vertical plane, a marking device adapted for adjustment mounted on one of the rulers, whereby various shaped figures may be delineated on the upper surface of the table, as described.

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Witnesses:

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