

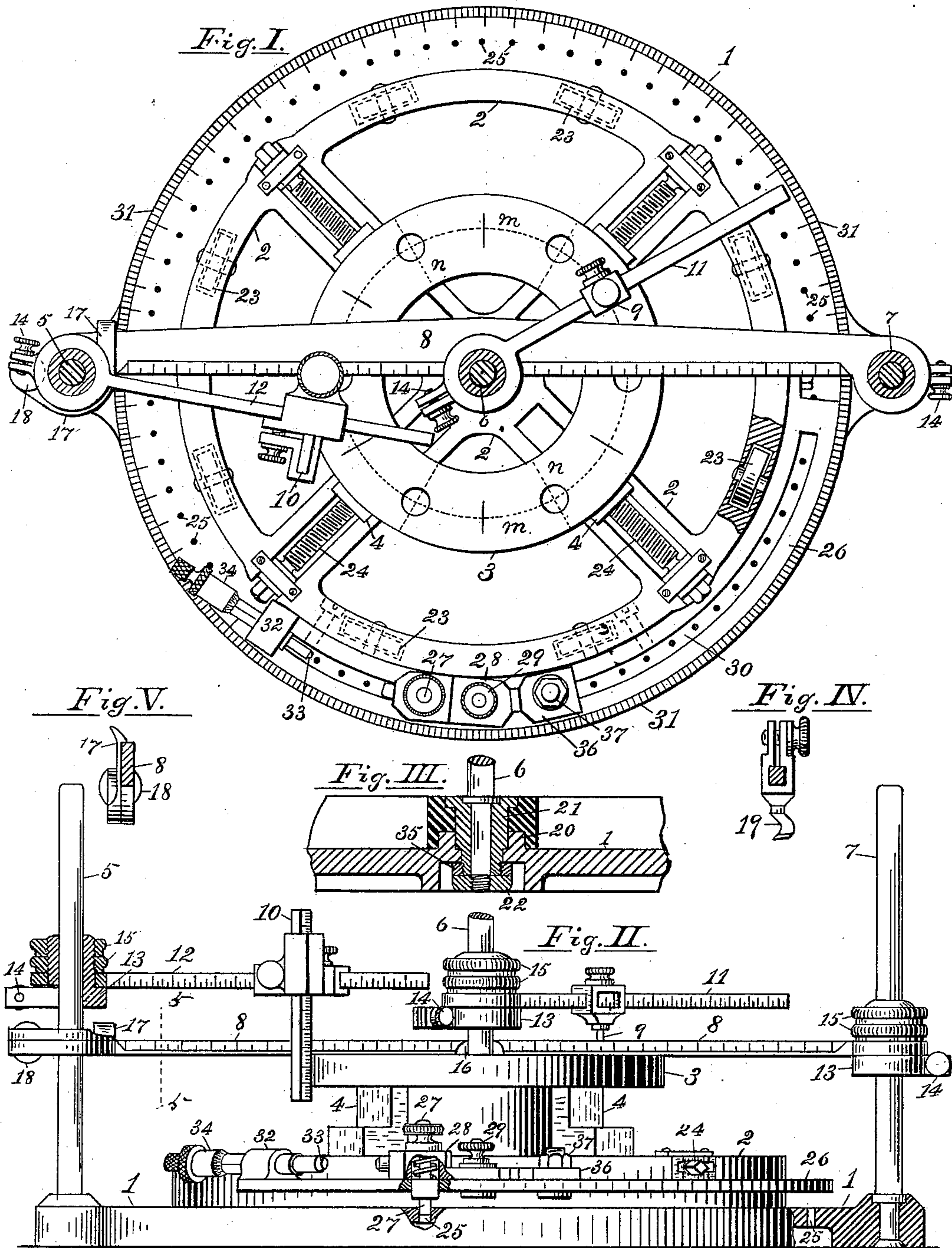
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H. M. BURNETT.
LAYING-OUT OR LINING DEVICE.

(Application filed Jan. 4, 1898.)

(No Model.)



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LAYING-OUT OR LINING DEVICE.

SPECIFICATION forming part of Letters Patent No. 607,158, dated July 12, 1898.

Application filed January 4, 1898. Serial No. 665,537. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. BURNETT, a citizen of the United States, residing at San Francisco, county of San Francisco, and State of California, have invented certain new and useful Improvements in Laying-Out or Lining Devices; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to laying out or marking machine-work, technically called "lining," and to a machine or implement whereby circular lines, spacing and subdivision of circular lines, determining and marking radial lines, also lines parallel to the axes of circular pieces, can be rapidly and accurately done.

My improvement consists of a supporting base or frame whereon is mounted a revoluble holding form or chuck provided with jaws or other suitable devices to hold and present the work to be lined, a circular spaced scale on the stationary base-plate, and a sector on the movable plate or chuck provided with gages to determine various degrees of arc through which the work is to be moved, adjustable marking implements mounted on axes fixed in respect to the revoluble plate or chuck, with various features of construction and operation hereinafter more fully explained in connection with the drawings.

The objects of my invention are to attain celerity and accuracy in laying out or lining machine-work and to avoid the use of instruments or templates commonly employed for this purpose.

Referring to the drawings, Figure I is a plan view of one of my improved laying-out or lining machines with various marking implements mounted in position for use. Fig. II is a side elevation of the same machine, some of the parts being shown in section. Fig. III is a detail section through the pivot on which the revoluble plate turns. Fig. IV is a side view of a cutting or scoring implement to fit on the bar 11. Fig. V is a detail showing a section on the line 5 5 in Fig. II.

In the drawings, 1 is a base-plate on which the operating parts are mounted; 2, a revoluble chuck or holding form on which the work 3

to be lined is mounted and held by the movable jaws 4. The rigid vertical standards 5, 6, and 7 are fastened in the base-plate 1 and are to receive and support the straight-edge 8 for marking the radial lines, the trammel 9 for curved lines, and the scaled bar 10 for vertical lines.

The trammel 9 and the vertical scribing-bar 10 are supported and adjusted on the radius-bars 11 and 12, marked with scales of distance from the center, and the straight-edge 8 swings on the standard 7 when detached from the standard 5, as hereinafter explained. All these bars having radial or swinging movement are held by the shell-supports 13, movable upward and downward on the standards 5, 6, and 7, clamped by means of the screws 14 and provided with collar-nuts 15, as shown in section in Fig. II. These shell-supports 13 form an especial feature of my invention, are interchangeable between the standards 5, 6, and 7, and are applicable to implements of any kind that require pivoted support or revolve about a center.

The straight-edge 8 swings on the standard 7, is notched at 16 to clear the middle standard 6, and is attached, when in a working position, to the standard 5 by a hinged clamp 17, pivoted at 18, that embraces the standard and hooks over the main bar 8, as seen in Fig. V. The front or working edge of this bar 8 coincides with axis of the chuck-plate 2 and has a scale of linear measures marked thereon, as indicated in the drawings.

In using the trammel 9, which is for scribing or cutting circular lines, the straight-edge 8 can be loosened from the standard 5 and swung out of the way. This trammel, besides the scribing implement 9, is provided with an angular pointed tool 19, (shown in Fig. IV,) that will cut an angular groove of any shape desired, that has the advantage of permanence, and assists in holding packing in flanged work laid out by the machine. The radius—as, for example, to the line *m*—is determined either from the scale of inches or other measure on the straight-edge 8 or by scale on the radius-bars 11, reading from the axis of rotation. The vertical scribing-bar 10 is employed in marking lines and positions parallel to the axis of rotation, such as divid-

ing the periphery of flanges or other circular pieces into certain divisions or spaces, as hereinafter explained.

It will be understood that hand implements or others than are illustrated can be used to mark, line, scribe, or drill the work when adjusted, as hereinafter described.

Referring further to the revoluble form or chuck-plate 2, this revolves on the nipple 20, formed on the base-plate, and on the bushing 21, which is clamped to the base-plate 1 by means of the nut 35 and is further secured by the screw-nut 22. This construction permits the removal of the central standard 6 when laying out work that is solid and has no central bore to accommodate the standard 6. To cause this chuck or plate 2, with the work held thereon, to revolve easily, I mount it on rollers 23, as shown in Fig. I. The work to be lined is adjusted and held by the jaws 4, that are moved by screws 24 in the manner of a common chuck.

Referring to the adjustment for circular division, which is an important function of the machine or device, I drill around the outer edge of the base-plate 1 a row of accurately-spaced holes 25—for example, seventy-two in number—and on the side of the revoluble chuck-form 2 I attach a slotted sector 26, provided with a spring stop-pin 27, that fits into the holes 25. This pin 27 is fitted in a movable block 28, that can be clamped to the sector 26 by means of the screw-bolt 29, that, like the stop-pin 27, passes through the slot 30.

The circular adjustment of the revoluble chuck 2 can be made in various ways. I have shown a very simple form consisting of a single row of holes 25, preferably seventy-two in number or some multiple of that number, and a spring stop-pin 27, having a point that fits into said holes 25, as shown in Fig. II. To support the said stop-pins or equivalent locking device, I attach to the side of the revolving chuck 2 a slotted sector 26, provided at one end with a micrometer-screw 34, fitting in a block 32, made integral with the sector 26. The stop-pin 27 is mounted in a block 28, that can be clamped to the sector 26 by a screw 29, so as to hold the chuck 2 in a fixed position when the work is being marked or lined. A movable stop 36 is also provided, so that in case of loosening or moving the block 28 it can be returned again to the same position on the sector 26.

In mounting the work, if there is a definite starting-point or divisions are to be made with respect to some line already made, the relation between such mark or point and the chuck 2 is adjusted by means of the micrometer-screw. The work being fastened in the jaws 4, the point 33 of the micrometer-screw is brought into contact with the block 28 and the screw is turned to the right or left until the desired starting-point on the work is in alinement with the straight-edge 8 or the vertical bar 10, after which the stop-pin 27 will make the required division. For finer divi-

sions several circles of holes 25 can be drilled in the base-plate 1 in the usual manner of index or spacing plates for dividing-machines. I do not confine myself to any particular mode or way or device for making this circular adjustment, as it can be performed in various ways—as, for example, by tangent or worm gearing, a pawl and ratchet, or other suitable known means that will produce the required spacing for lines or graduations.

I claim as new and desire to secure by Letters Patent—

1. In a laying-out or lining device, the combination of a base-plate, having a circular spaced scale on its outer margin, a revoluble holding-chuck mounted on said base-plate concentrically with said circular scale, radially-moving jaws for holding the work to be lined, and means for adjusting the chuck to accurate divisions of arc, substantially as specified.

2. In a laying-out or lining device, the combination of a base-plate having a circular spaced scale on its outer margin, a revoluble holding-chuck mounted on said base-plate concentrically with said circular scale, means for adjusting said chuck to accurate divisions of arc, a centrally-rising standard 6 secured in said base-plate, and a radial swinging graduated arm 11, borne on said central standard, bearing a movable and adjustable tram-mel-block 9, substantially as specified.

3. In a laying-out or lining device, the combination of a base-plate having a circular spaced scale on its outer margin, a revoluble holding-chuck mounted on said base-plate concentrically with said circular scale, means for adjusting said chuck to accurate divisions of arc, upright standards 5, 6, 7, secured in said base-plate, a graduated straight-edge supported on standards 5, 7, capable of swinging on one of said standards, and a graduated radius-arm 11, swinging on central standard 6, said radius-arm bearing a movable tram-mel 9, substantially as specified.

4. In a laying-out or lining device, the combination of a base-plate having a circular spaced scale on its outer margin, a revoluble holding-chuck mounted on said base-plate concentrically with said circular scale, means for adjusting said chuck to accurate divisions of arc, upright standards 5, 6, 7, secured in said base-plate, a graduated straight-edge supported on standards 5, 7, capable of swinging on one of said standards, a graduated radius-arm 11 swinging on central standard 6, said radius-arm bearing a movable tram-mel-block 9, and a graduated radius-arm 12, swinging on standard 5, said arm bearing a vertically-adjustable scaled bar 10, substantially as specified.

5. In a laying-out and lining device, the combination of the base-plate 1, centrally-mounted revoluble chuck 2, supported on bearing-rollers 23, radially-moving holding-jaws 4, means for setting the chuck to accurate divisions of arc, and radial swinging arm

11, bearing adjustable trammel 12, substantially as specified.

6. In a laying-out or lining device, the base-plate 1, revoluble holding-chuck 2 set and moving concentrically thereon, the movable shell or sleeve 21 forming an axis for the chuck and a bearing for the removable standard 6 with nuts 35 and 22 to fasten the shell and standard respectively, substantially as described.

7. In a laying-out and lining device, the main base-plate 1, revoluble holding-chuck 2, means to adjust and hold the work thereon, vertical standards 5 6 and 7 and the adjustable shell-supports 13 adapted to sustain the straight-edge 8 swinging bars 11 and 12 and the marking-tools thereon, substantially as specified.

8. In a laying-out or lining device, a revoluble chuck to hold and present the work, implements to mark parallel, radial and circular lines, standards on which these implements are mounted and the movable shells 13 provided with clamping-screws and interchangeable between the standards and for the marking implements, substantially as specified.

9. In a laying-out or lining device, a main base-plate 1 having a scale or division of arc around its periphery and a circle of spaced holes 25, a revoluble holding-chuck 2 mounted thereon and attached to the latter a spacing-sector 30 provided with a stop-pin 27 en-

gaging the spaced holes 25 in the base-plate, substantially as specified.

10. In a laying-out or lining device, the base-plate 1 provided with the circular scale 31 and spacing-holes 25, a revoluble chuck 2 mounted thereon, provided with a sector 30, stop-pin 27 to fit in the holes 25, the clamping-screws 28 to attach the stop-pin 27, to the sector and the movable stop 36, all combined and operating in the manner, substantially as specified.

11. In a laying-out or lining device, the fixed base-plate 1 revoluble chuck 2 and spacing-holes 25 in the base-plate, a sector 30 attached to the chuck, the movable stop-pin 27, stop 36 and the micrometer-screws 34 for subdivisions of arc, combined and operating, substantially as described.

12. In a laying-out and lining device, the combination of base-plate 1, centrally-mounted revoluble chuck 2, having radially-moving holding-jaws 4, means for setting the chuck to accurate divisions of arc, standards 5, 7, supporting diametral scaled bar 8, and central standard 6, supporting radial swinging graduated arm 11, said arm carrying movable and adjustable trammel-block 9, substantially as specified.

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