

Feb. 28, 1928.

1,660,616

J. F. JAMES

UNIVERSAL MARKING MACHINE

Filed Aug. 16, 1926

2 Sheets-Sheet 1

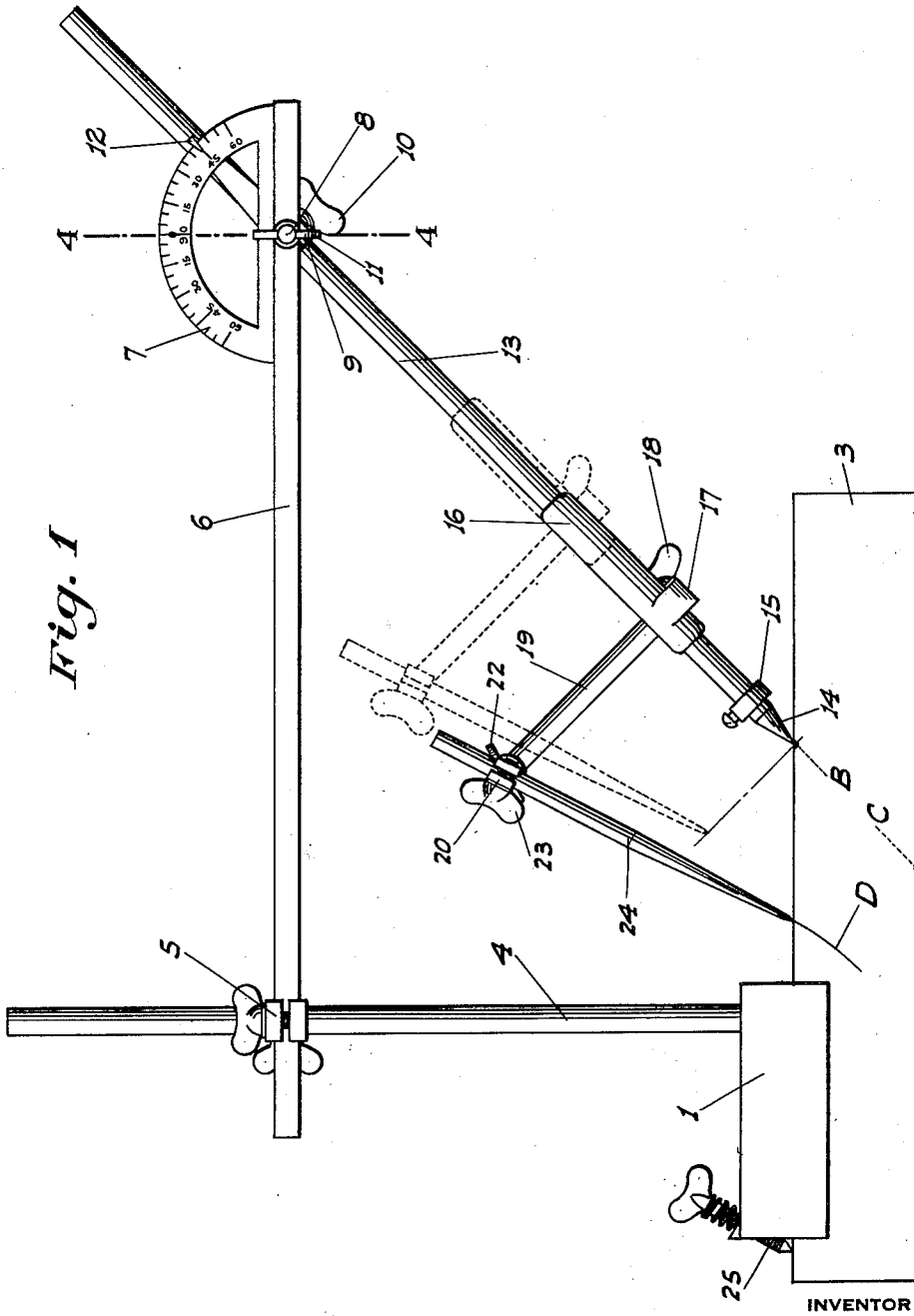


Fig. 1

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2 Sheets-Sheet 2

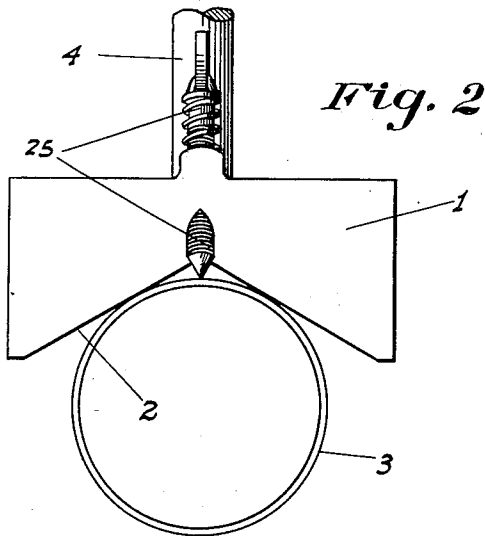


Fig. 2

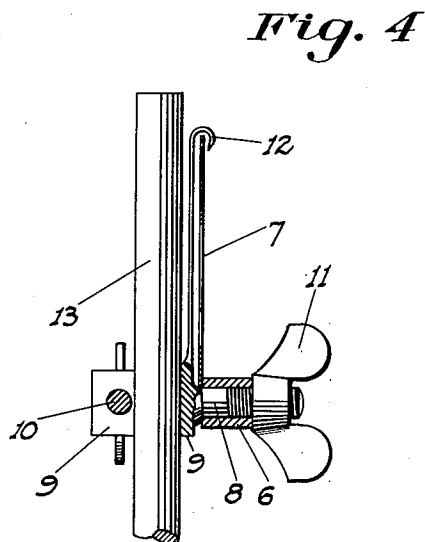


Fig. 4

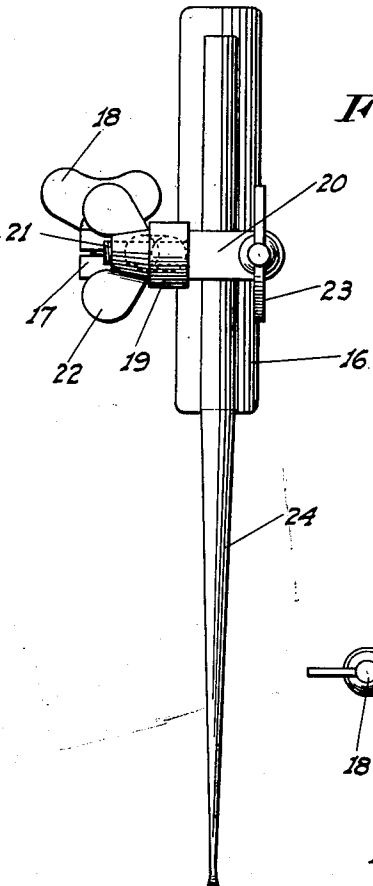


Fig. 3

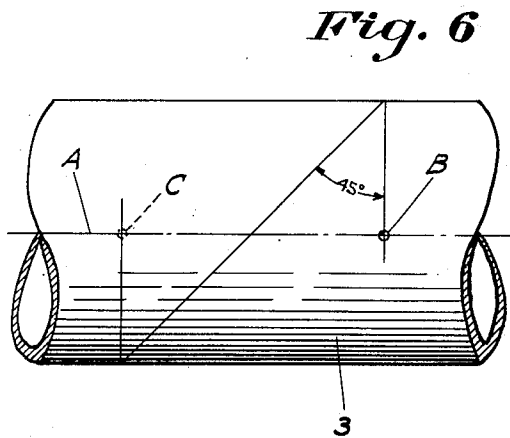


Fig. 6

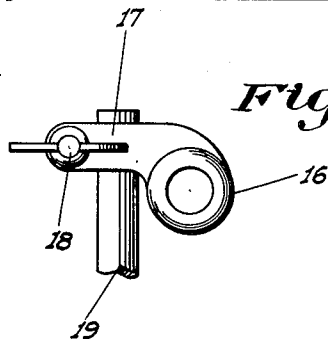


Fig. 5

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UNIVERSAL MARKING MACHINE.

Application filed August 16, 1926. Serial No. 129,399.

This invention relates to improvements in implements for marking or scribing lines, and particularly to a device especially of value to plumbers, tinsmiths and similar artisans.

The principal object of my invention is to provide an implement by means of which the lines of intersection of cylindrical objects one with the other, and at any given angle, may be easily marked on the faces of said objects. By means of this device therefore, one pipe to intersect another at any known angle may be readily marked off so that it may be then cut on the proper curve to fit the other pipe; and said other pipe can also be marked so that an opening can be cut therethrough of the proper size and outline to register with the cut edge of the pipe to be fitted thereto.

The device may also be used to easily and accurately outline a thorough ellipse on a plane surface or to describe circles.

A further object of the invention is to provide an implement for the purpose of a portable and readily dismantlable nature so that it may be carried in any tool kit of reasonable size.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

The above I accomplish by means of such structure and arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views in which:

Fig. 1 is a side elevation of the implement as set up in connection with a pipe to be marked off for cutting at a certain angle.

Fig. 2 is an end view of the saddle base of the device showing the same in position on the pipe.

Fig. 3 is an end view of the marker element and its supporting structure detached.

Fig. 4 is a fragmentary vertical section on the line 4-4 of Fig. 1 showing the connection of the center rod with the supporting bar.

Fig. 5 is a fragmentary top plan view of the center rod sleeve, showing the connection of the marker supporting rod therewith.

Fig. 6 is a fragmentary plan view of a piece of pipe showing the initial layout of

the longitudinal lines and center points thereon.

Referring now particularly to the numerals on the drawings, 1 denotes a base block of suitable size whose under side is formed as an obtuse angle groove as at 2, thus providing a saddle for resting on a pipe 3 of any reasonable size.

Rigidly secured to the base at one end thereof is an upstanding post 4 on which is mounted a vertically adjustable slide 5. Supported by the slide and mounted thereon to one side of the post for longitudinal adjustment is a rigid bar 6 projecting away from the base in longitudinal alignment with the pipe. Projecting upwardly from the bar at its outer end is a protractor 7 centralized in the bar, a stud 8 being turnably mounted in the bar at said central point. A split block 9, provided with a clamp screw 10, is fixed on one end of the stud, the other end having a wing nut 11 for engagement with the adjacent face of the bar. The block carries a pointer 12 to read against the graduations on the protractor.

Slidably mounted in the block is a circular rod 13 having a center point 14 on its lower end and an adjustable collar 15 adjacent said end. Freely slidable and turnable on the rod between the collar and block is a sleeve, 16, having a lateral projection 17 in the form of a split block fitted with a clamp screw 18. A rod 19 is supported by the block 17 and projects at right angles to the sleeve. The outer end of the rod supports a swivel block 20 which is turnably mounted on said rod by means of a transverse stud 21 projecting therethrough at right angles to the longitudinal plane of the sleeve and rod. A clamp screw 22 on the outer end of the stud enables the block 20 to be immovably but adjustably clamped against the rod.

The block 20 is provided with a clamp screw 23 and is arranged to slidably receive and hold a rigid marker rod 24 of suitable character, which may be a metal scribing member or a pencil as may be desired or expedient.

In operation, the pipe 3 which is to be cut so as to intersect and fit into another pipe of known diameter and at a predetermined angle, is first marked with opposite longitudinal lines, one of which is shown at A. A center punch depression B is placed on one line adjacent the place where the

pipe is to be cut, and a similar punch depression is made on the opposite line in longitudinally spaced relation to the depression B. This corresponds to the angle of intersection for the cut, which in this case has been chosen as being 45 degrees.

The base 1 is then clamped on the pipe in any suitable manner so that the line A faces upwardly and so that the depression C is closer to the base than the depression B. In order to properly line up the line A, the base at its end opposite the post has a centrally located pointed centering screw 25, this screw being engaged with the line A before the base is finally clamped on to the pipe. The rod 13 is then adjusted so that it lies at the desired angle (which is determined by noting the position of the pointer 12 on the protractor) and so that the point 14 of said rod seats in the depression B in the pipe. The rod is then rigidly clamped against further movement. The marker rod 24 is then set so that when the points of the rods 13 and 24 lie in a plane at right angles to the longitudinal plane of the rod 13, the distance between said points will be exactly equal to the radius of the pipe to be scribed. The sleeve 16 is then allowed to slide until the marker rod touches the pipe at the line A. The operator then manipulates the marker rod so that without interfering with the swivel and lengthwise movement of the sleeve 18, the point of the marker rod will scribe a line D half way down the pipe each way from the line A. The position of the pipe relative to the base is then reversed and shifted so that point 14 will engage the depression C.

The setting of the rod 13 is also reversed relative to the bar 6 without changing the angle of setting of said rod and without disturbing the set of the marker rod. The other half of the line D, to meet the portion already scribed, is then marked on the pipe by the marker rod in the same manner as above described. This complete line will be the line along which the pipe is to be cut, and at a true intersection at an angle of 45 degrees of a circle whose diameter is that of the pipe to which the pipe 3 is to be fitted.

To mark the other pipe the device is clamped on to the said other pipe, and the rod 13 is set at the same angle relative to the bar 6 as before. The distance between the points of the rods 13 and 24 is changed however, so that it will equal the radius of the pipe 3. The same procedure as above described is then followed.

To outline the ellipse on a sheet of paper or other flat surface and knowing the lengths of the major and minor axes of the

ellipse, the points of the rods 13 and 24 are set, when at a right angle to the rod 13, so that the distance therebetween equals the radius of the minor axis. The rod 13 is then set at a slant, without regard to any particular angle, so that when the rods 13 and 24 are set in a common vertical plane and the points of both are resting on the plane surface, the distance between said points will then equal the radius of the major axis. The rod 13 is then clamped against movement and the marker rod engaging and marking the surface is then swiveled completely about the fixed point 14 as the center. The result will be a perfect ellipse whose major and minor axes are equal to those specified.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention what I claim as new and useful and desire to secure by Letters Patent is:

1. A marking implement including a horizontal bar, a rod having a centering point on its lower end, a member in which said rod is slidably mounted swivelly clamped onto the bar for turning movement about a horizontal axis at right angles to the bar, a protractor associated with said bar and member and centralized axially of said member for determining the angle of setting of said member and rod relative to the bar, and a marker element mounted in connection with the rod for longitudinal movement relative thereto and independent rotative movement thereabout.

2. A marking implement comprising a base block to rest on the element to be marked, a post upstanding from the block, a bar projecting horizontally from the post, means for supporting the bar from the post in a manner to permit of vertical and longitudinal adjustment of the latter, a centering rod depending from the bar adjacent its outer end, means for supporting the rod from the bar to permit of swinging movement and longitudinal adjustment, a marker element disposed to one side of the rod, and connecting means between the marker and the rod to enable the marker to swing about the rod as an axis.

In testimony whereof I affix my signature.
JOHN F. JAMES.