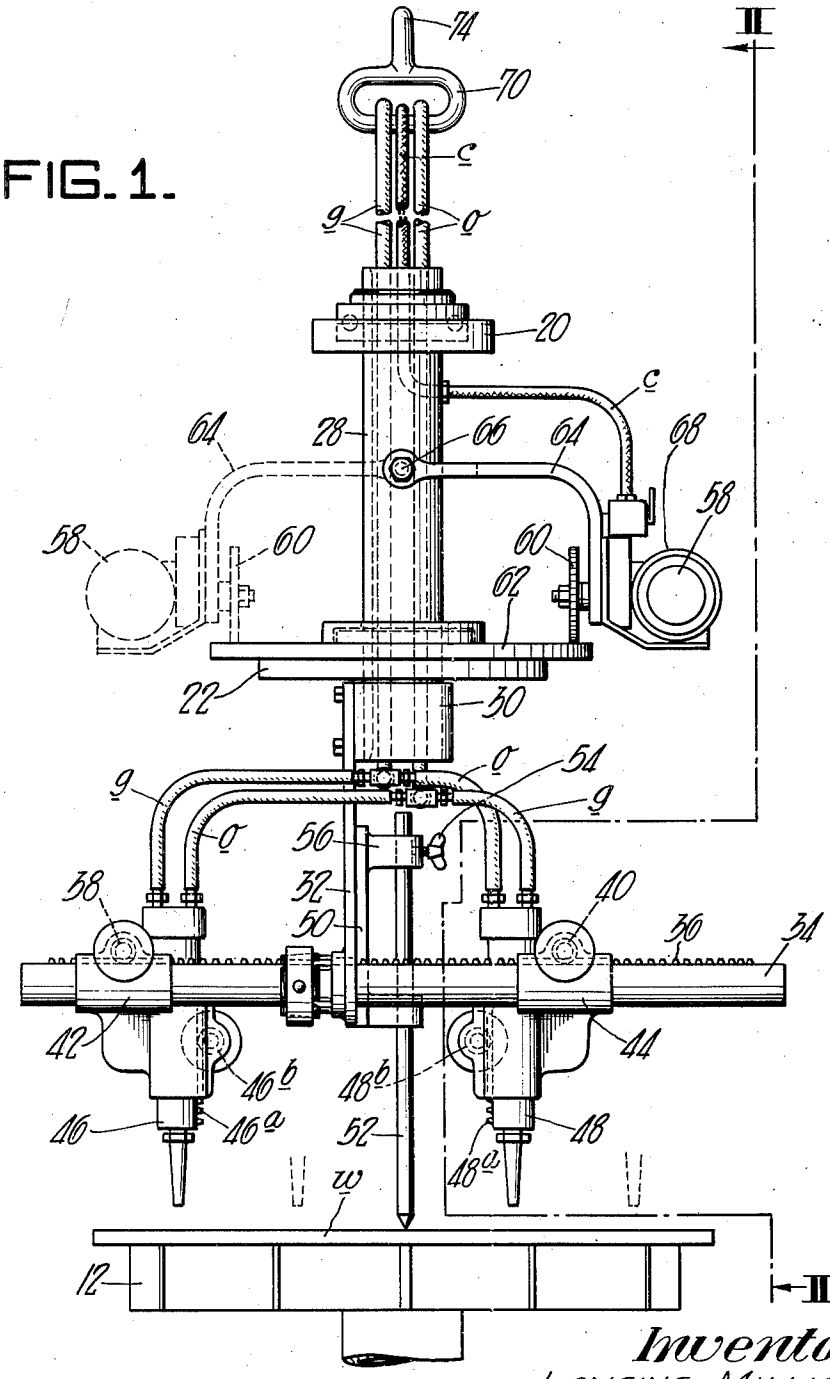
March 1, 1949. L. MILLIS 2,463,408

MACHINE FOR FLAME CUTTING CIRCLES

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FIG. 1.



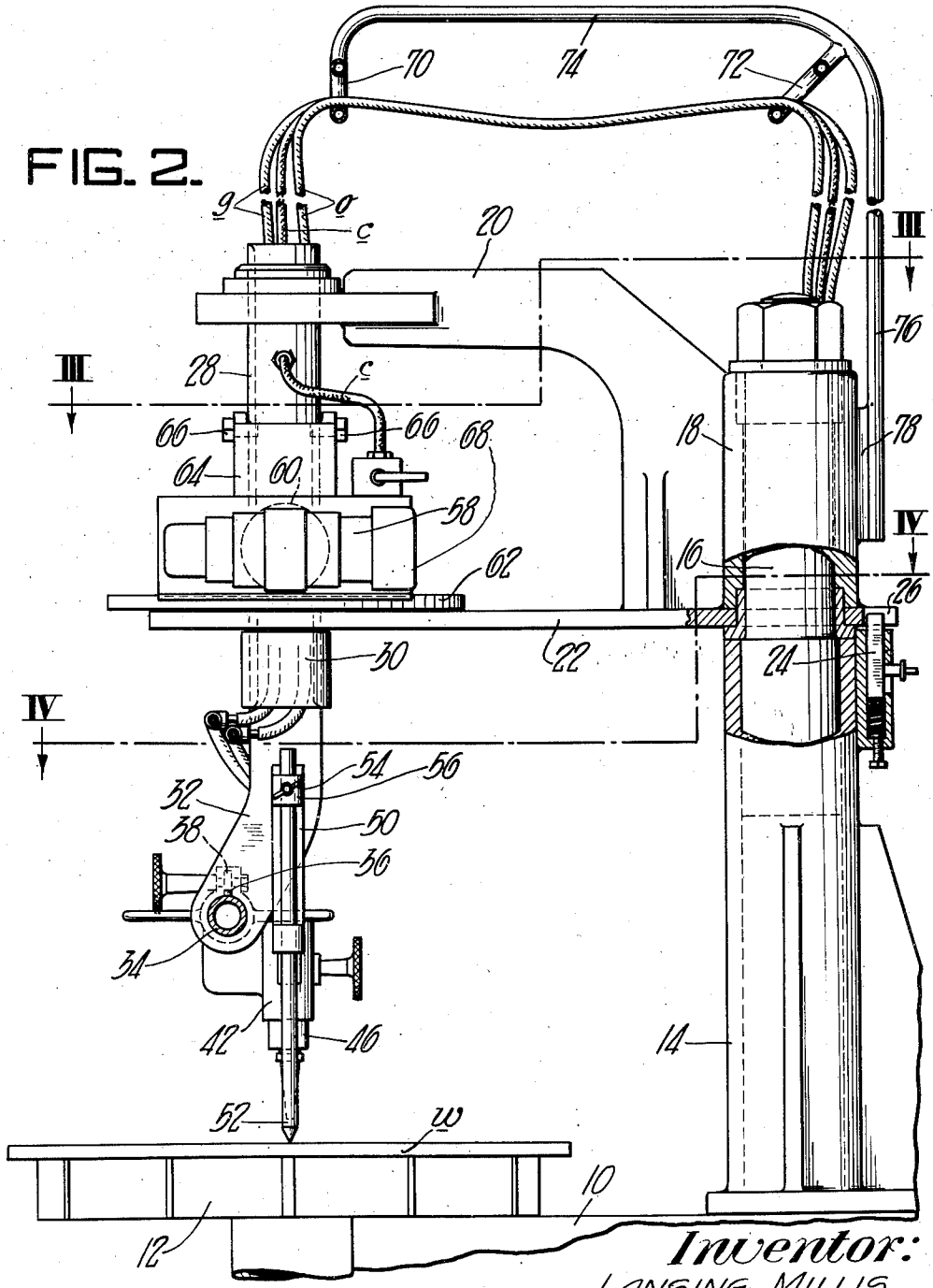
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MACHINE FOR FLAME CUTTING CIRCLES

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FIG. 2.



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FIG. 3.

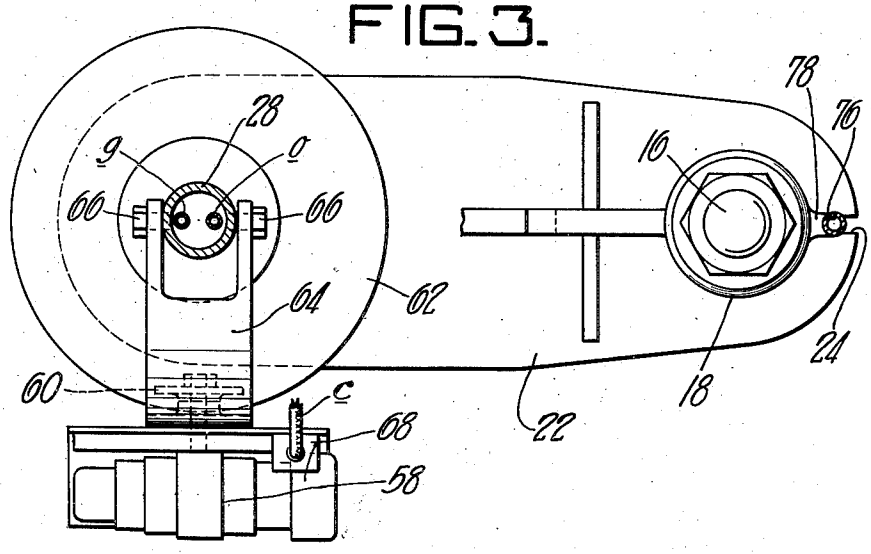
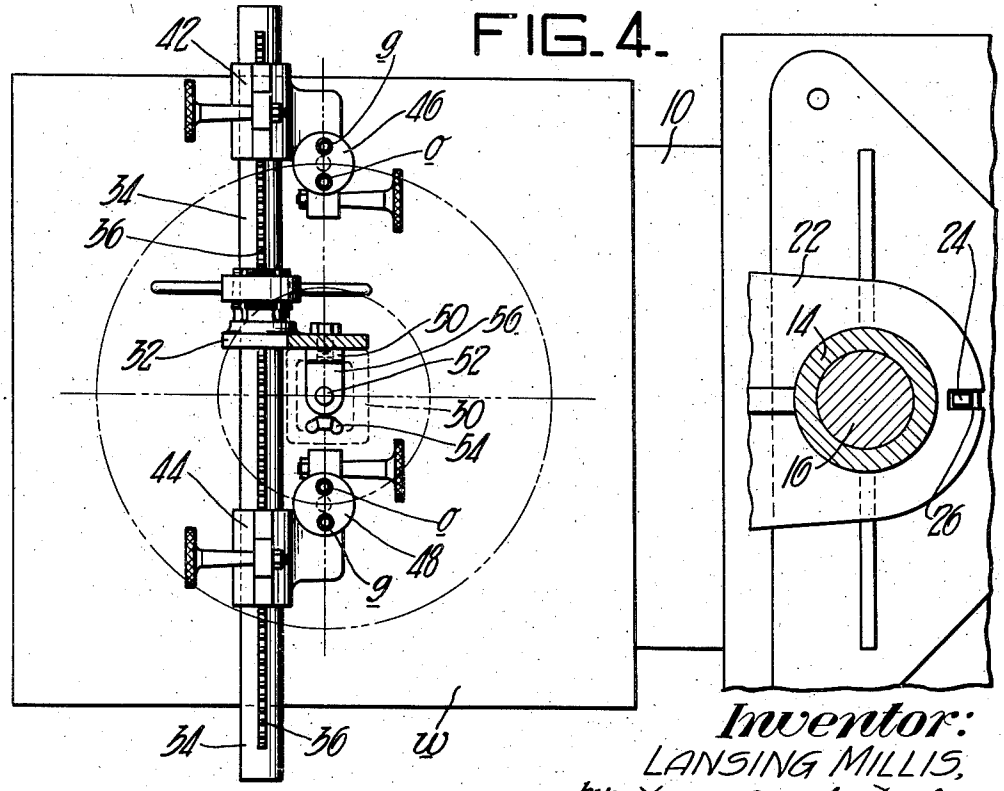


FIG. 4.



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MACHINE FOR FLAME-CUTTING CIRCLES

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Application October 3, 1946, Serial No. 701,037

2 Claims. (Cl. 266—23)

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The present invention relates to features of design and arrangement of flame cutting apparatus designed to cut one or more circular kerfs simultaneously in a metal plate or similar workpiece. The invention will be fully apparent from the following description when read in connection with the accompanying drawings, and the novel features will be defined with particularity in the appended claims.

In the drawings:

Figure 1 is an end elevation of a machine embodying the invention.

Figure 2 is a view partly in side elevation with parts sectioned off as indicated by the staggered line II—II of Figure 1.

Figure 3 is a horizontal section on staggered line III—III of Figure 2.

Figure 4 is a horizontal section on staggered line IV—IV of Figure 2.

Referring in detail to the drawings, 10 represents the bed of the machine to which is secured a vertically adjustable work-supporting table 12 of any conventional form. Spaced laterally from the table 12 there is an upright fixed pedestal 14, which near its upper extremity carries a journal pin 16 on which is rotatably mounted the hub 18 of a radial arm having upper and lower members 20 and 22, respectively. A spring loaded latch 24 coacts with the notch 26 formed in the hub 18 for releasably holding the radial arm in working position.

A hollow vertical shaft 28 is rotatably supported in suitable bearings carried by the members 20 and 22 of the radial arm. This shaft at its lower end has secured thereto a bracket 30 having an arm 32 offset as illustrated in Figure 2 so as to support a torch-carrying bar 34 in such manner that its axis is horizontal and slightly offset laterally from the vertical axis of the hollow shaft 28.

Secured to the bar 34 and extending longitudinally thereof there is a rack 36 which is adapted to coact with pinions 38 and 40 carried by the torch carriages 42 and 44, respectively. Mounted for vertical adjustment in these carriages there are respective flame cutting torches 46 and 48, which have racks 46*a* and 48*a* secured thereto, adapted to be vertically adjusted by a manipulation of pinions 46*b* and 48*b*. The flame cutting torches 46 and 48 are of conventional form and at their lower extremities they each include a blow pipe nozzle adapted to direct a cutting flame toward the workpiece *w* supported on the table 12. By suitably manipulating the pinions 38 and 40 it is apparent that the torches

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46 and 48 can be adjusted so as to simultaneously cut circles of different radii, and because the arm 32 secured to the lower end of the bracket 30 is offset from the vertical axis of the shaft 28, as shown in Figure 1, the nozzle of the torch 48 can be moved to a position coincident with the axis of said shaft 28.

A centering device, including a bracket 50 and centering pin 52, is removably secured by a clamp screw 53 to the offset bracket 32. The rod 52 is adjustably secured by means of a winged screw 54, which enters a tapped hole in a lug 56, extending outwardly from the bracket as shown in Figure 1. The bracket 50 carrying the centering pin 52 is adapted to be moved to a position clear of the torch carriage 44 when the latter is positioned for flame cutting a hole in the center of the workpiece coinciding with the axis of the vertical shaft 28. It will be understood that when the centering pin 52 is lowered, the pointed end thereof may be made to coincide with a center marked on the piece *w* to be cut; thus assuring that the center of rotation will be axially aligned with the marked center of the workpiece. After the work has been so centered on the table 12, the torches 46 and 48 may be adjusted to predetermined radial distances so as to simultaneously flame cut two concentric circular kerfs of the same or different radii in the workpiece. After the torches have been set to the desired radial positions, the shaft 28 is caused to rotate by energizing a motor 58, which acting through a suitable speed reducer, rotates a friction drive wheel 60, the peripheral edge of which bears on a circular table 62 secured to the radial arm 22. The motor 58 and the friction driving wheel 60 are jointly supported by an angular bracket 64 which is pivotally mounted by trunnion studs 66 carried by the vertical shaft 28. Although power can be applied to the vertical shaft 28 by various means, I prefer to use a variable speed motor, such as shown at 58 for driving a friction disc 60. The motor will be connected to conventional reduction gearing through a suitable clutch which will permit free wheeling.

The pipes *g* and *o* which supply gas and oxygen to the torches, and also the conductor *c* which supplies current to the motor, are conveniently led downwardly through the center of the hollow vertical shaft 28 and are supported overhead within the looped portions 70 and 72 of a radial bracket 74, having a downward extension 76 whose lower end is secured at 78 to the hub 18 of the radial arm.

The speed of the motor **58** will be controlled by a conventional device **68**. Speeds other than those provided by the motor control device **68** may be made available by varying the size of the friction disc **60**. For example, a disc of decreased size can be substituted for the one shown and the tread plate **62** slightly raised. The friction disc **60** is held in contact with the tread surface of the table **62** by weight of the motor and assembly, and thus provides sufficient traction to rotate the flame-cutting torches **46** and **48** in their respective circular orbits. For convenience in setting up and removing the work from the table **12**, the radial arm **22** can be swung about the vertical axis of the pedestal **14** so as to permit free access to the work table.

From the foregoing it will be apparent that the improved apparatus disclosed provides means whereby kerfs corresponding to concentric circles may be quickly and easily flame cut through a metal plate or other workpiece, and also provides means whereby the radii of one of the circles can be varied from zero to a maximum radius, limited only by the length of the bar **34**. The apparatus is of compact, rugged construction and requires a minimum amount of maintenance and repair to keep it in fit operating condition.

While I have described quite precisely a preferred embodiment of the invention, it is not to be construed that I am limited thereto since various changes in arrangement and substitutions of equivalents may be made by those skilled in the art without departure from invention, as defined in the appended claims.

What I claim is:

1. A flame cutting machine comprising a horizontal table adapted to support a flat workpiece, a vertical pedestal spaced from said table, an arm carried by said pedestal and overhanging said table in spaced relation thereabove, a vertical shaft journaled in said arm, a bracket attached to the lower end of said shaft, the lower end of said bracket being offset from the rotational axis of said shaft in two directions perpendicular to each other, a horizontal supporting bar carried by the lower end of said bracket, a cutting torch carried by said bar and being horizontally adjustable therealong and adapted to cut workpieces on said table, said cutting torch being inset from said bar a distance equal to the offset of said bar from the rotational axis of said shaft, a centerpiece carried by said bracket along the rotational axis of said shaft and being removable to enable said cutting torch to be adjusted to positions fully beneath said shaft, and means for rotating said shaft.

2. A flame cutting machine comprising a horizontal table adapted to support a flat workpiece, a vertical pedestal spaced from said table, an arm pivoted to said pedestal and overhanging said table in spaced relation thereabove, a vertical shaft journaled in said arm, a bracket attached to the lower end of said shaft, the lower end of said bracket being offset from the rotational axis of said shaft in two directions perpendicular to each other, a horizontal supporting bar carried by the lower end of said bracket, a cutting torch carried by said bar and adapted to cut workpieces on said table, said cutting torch being inset from said bar a distance equal to the offset of said bar from the rotational axis of said shaft, a continuous rack on said bar, a pinion on said torch cooperable with said rack for adjusting said torch horizontally along said bar, a centerpiece carried by said bracket along the rotational axis of said shaft and being removable, said bar being free of obstructions from its extremity to its point of attachment to said bracket when said centerpiece is removed so that manipulation of said pinion adjusts said torch to all positions along said bar including a position fully beneath said shaft, and means for rotating said shaft.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
495,233	Snow	Apr. 11, 1893
866,866	Gottrand	Sept. 24, 1907
1,748,870	Eberle	Feb. 25, 1930
1,959,650	Verity	May 22, 1934
2,088,695	Fausek et al.	Aug. 3, 1937
2,269,505	Anderson	Jan. 13, 1942
2,305,909	Stoneberg	Dec. 22, 1942
2,388,376	Young	Nov. 6, 1945

FOREIGN PATENTS

Number	Country	Date
15,571	Great Britain (1912)	Jan. 3, 1913
417,236	Germany	Aug. 8, 1925