G. B. EDDY.

TUBE CUTTING APPARATUS.

APPLICATION FILED MAR. 14, 1917.

1,258,663.

Patented Mar. 12, 1918.

3 SHEETS—SHEET 1.

Fig. 1.

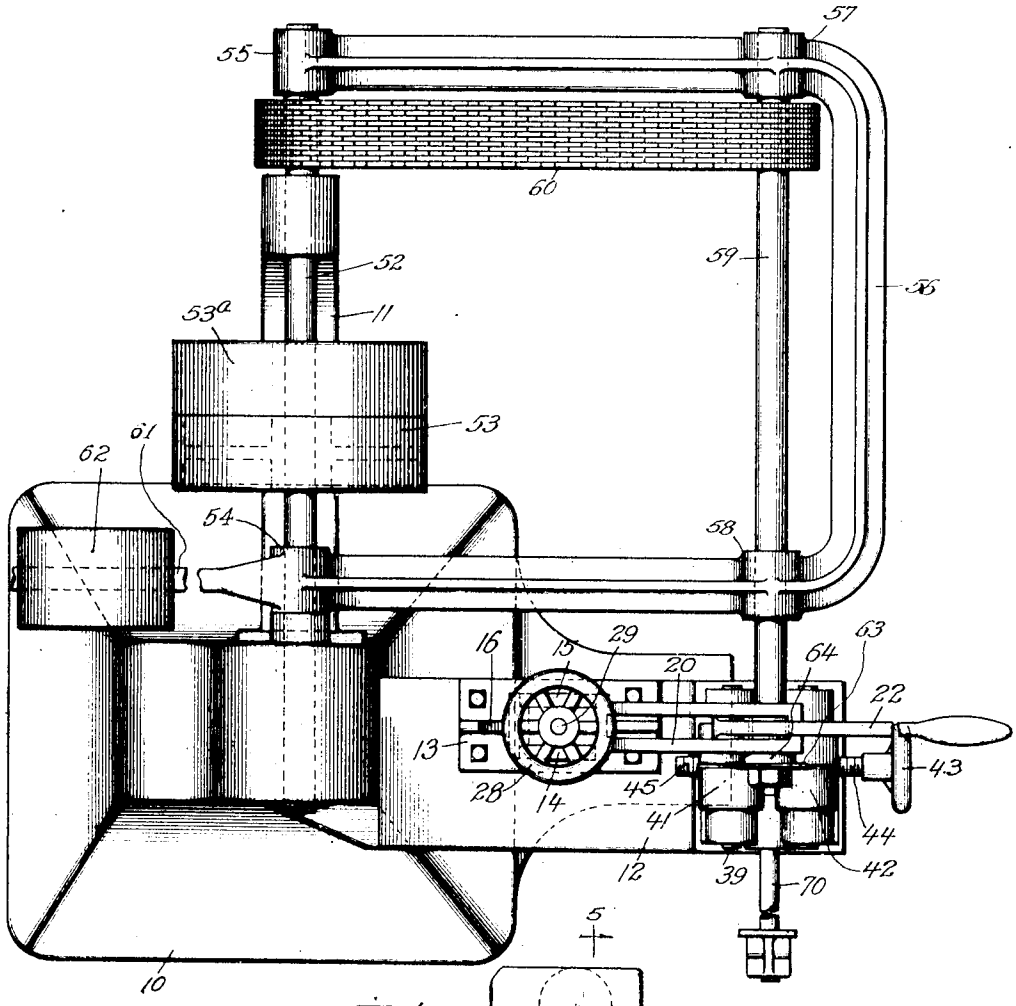
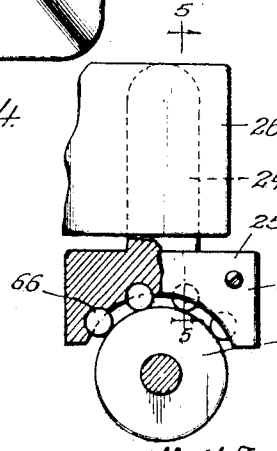


Fig. 4.



Witnesses:
Robert H. Weir
Arthur M. Carboy

Inventor
George B. Eddy
Offield Towle Graves & Offield Attys.

SACKETT & WILHELMS CORP. N.Y.

G. B. EDDY.

TUBE CUTTING APPARATUS.

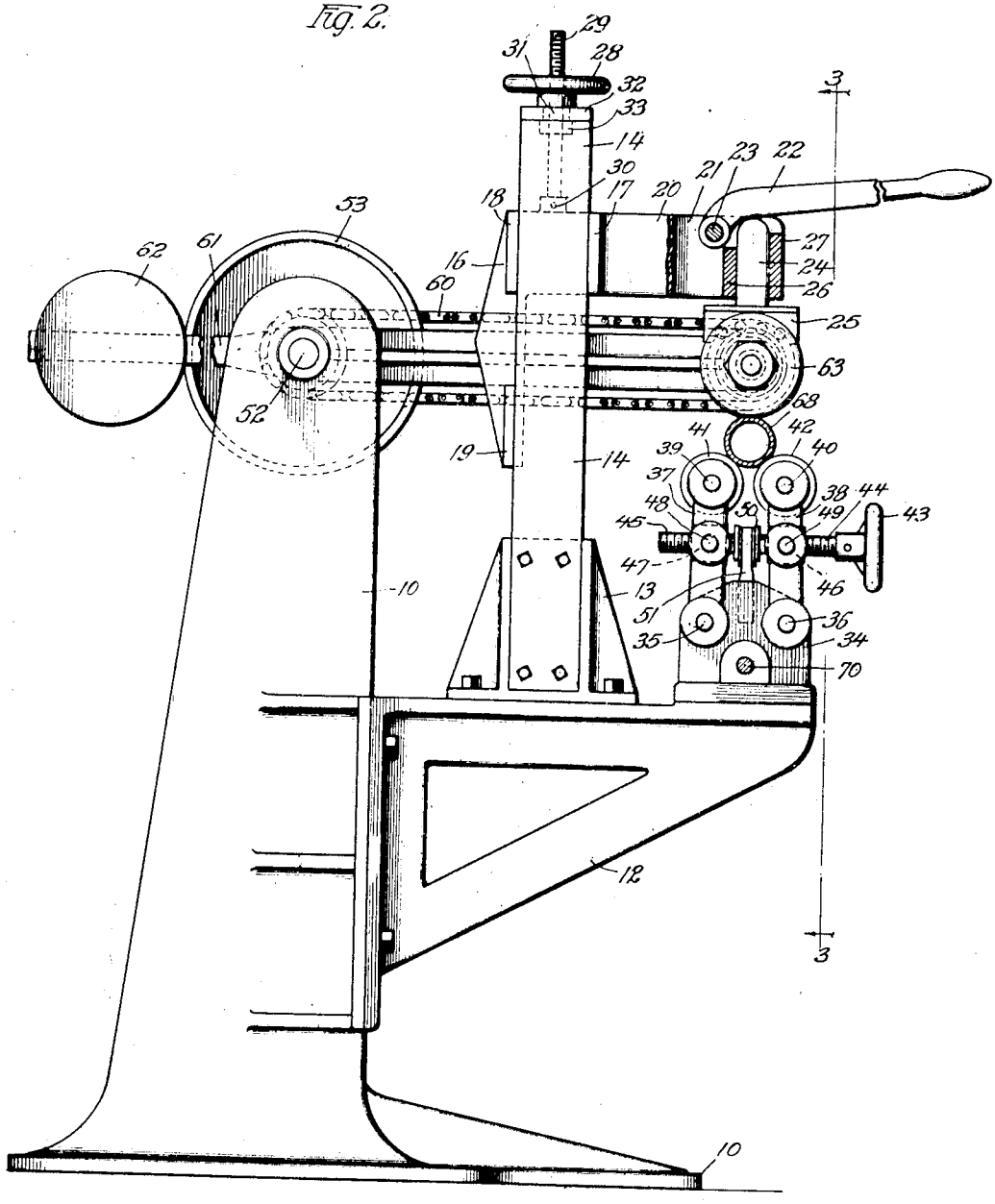
APPLICATION FILED MAR. 14, 1917.

1,258,663.

Patented Mar. 12, 1918.

3 SHEETS—SHEET 2.

Fig. 2.



Witnesses:

Robert H. Weir

Arthur M. Carlson

Inventor

George B. Eddy

Offield Towle Graves & Offield Attys.

G. B. EDDY.

TUBE CUTTING APPARATUS.

APPLICATION FILED MAR. 14, 1917.

1,258,663.

Patented Mar. 12, 1918.

3 SHEETS—SHEET 3.

Fig. 3.

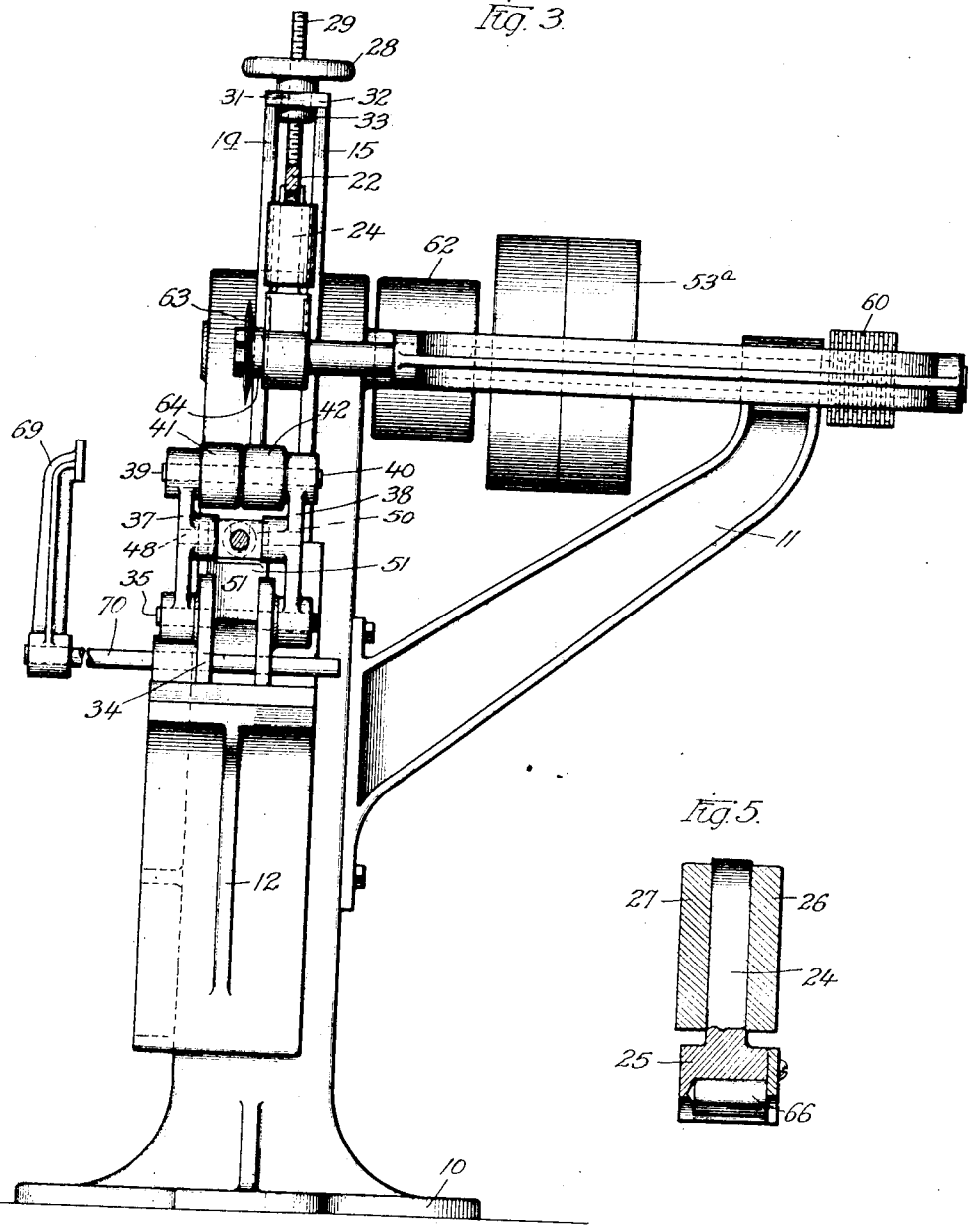


Fig. 5.

Witnesses:

Robert H. Weir

Arthur M. Carlson

Inventor

George B. Eddy

Offield Towle Graves & Offield Attys

UNITED STATES PATENT OFFICE.

GEORGE B. EDDY, OF CHICAGO, ILLINOIS.

TUBE-CUTTING APPARATUS.

1,258,663. Specification of Letters Patent. Patented Mar. 12, 1918.

Application filed March 14, 1917. Serial No. 154,683.

To all whom it may concern:

Be it known that I, GEORGE B. EDDY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tube-Cutting Apparatus, of which the following is a specification.

My invention relates to improvements in tube cutting apparatus, and its principal object is to provide an improved apparatus for rapidly, efficiently, and economically severing lengths of tubing, and particularly such tubing as may be used for general steam fitting purposes.

A further object of my invention is to provide a tube cutting apparatus of the rotary cutter type which shall be capable of being built and sold at comparatively small expense, thereby placing it within the reach of small jobbing concerns which would otherwise be financially unable to purchase power-driven tube cutting apparatus.

A still futher object of my invention is to provide an apparatus which shall be practically "fool-proof" and capable of being operated, maintained, and kept in repair by the ordinary steam fitter without requiring the attention of skilled machinists.

In the drawings, which illustrate a particular embodiment of my invention—

Figure 1 is a plan view of the invention;

Fig. 2 is an end elevation of the apparatus shown in Fig. 1;

Fig. 3 is a front elevation of the same;

Fig. 4 is an enlarged view of the thrust block and associated parts; and

Fig. 5 is a section taken on the line 5—5 of Fig. 4.

Referring to the drawings, the machine as a whole comprises a main frame or base casting 10 to which may be secured in any suitable manner, for instance by bolts, a side bracket frame 11 and a forwardly projecting bracket frame 12. Upon the bracket 12 I prefer to mount a cast-iron footing 13 to which are secured a pair of spaced apart upstanding flat bars or plates 14 and 15. Slidably mounted between said plates 14 and 15 is a shoe or slipper member 16 having transverse shoulders 17, 18, and 19 which fit against the front and rear edges of said plates and maintain the cross-head 16 in vertical alinement with said plates 14 and 15. The front of said cross-head 16 is extended forwardly to form a rigid cantaliver member 20 having a vertical slot 21 in which is pivoted a hand-lever 22 upon a transverse fixed pin 23. The extreme end of said cantaliver member 20 also receives the vertical slidable rectangular stem 24 of thrust block 25, the said stem being prevented from tilting sidewise by a pair of opposed guides 26 and 27 extending across the slot 21.

To accommodate different sizes of pipe, the position of the cross-head 16 may be adjusted by means of a hand-wheel 28 threaded to fit a screw 29, the lower end of which is rigidly secured to the cross-head 16 by means of a pin 30. The hand-wheel 28 has a hub, the lower end of which is reduced in diameter forming a neck 31 adapted to rotate freely in the cross-piece 32 connecting the upper ends of the plates 14 and 15. The lower end of said neck 31 extends below said cross-piece 32 and is equipped with a collar 33 rigidly united thereto for preventing axial movement of said hand-wheel 28. It is manifest that by rotating said hand-wheel 28 the cross-head 16 may be caused to move vertically along the plates 14 and 15.

On the front outer end of the bracket member 12 is an upstanding mounting 34 in which are mounted a pair of spaced apart pivot pins 35 and 36 projecting at both ends from the outside of the mounting 34, and upon said projecting ends of the pins 35 and 36 are pivoted two pairs of roller arms 37 and 38. The upper ends of the roller arms 37 and the upper ends of the roller arms 38 are respectively connected together by means of a roller pin 39 and a roller pin 40, said roller pins 39 and 40 constituting relatively fixed axles upon which revolve a pair of anti-friction rollers 41 and 42.

In order to adjust the spacing of the rollers 41 and 42 to accommodate different sizes of pipe, I prefer to employ a hand-wheel 43 pinned to the end of an adjusting screw equipped with right-hand threads 44 and left-hand threads 45, respectively adapted to coöperate with nuts 46 and 47, said nuts 46 and 47 being equipped with pairs of trunnions 48 and 49 journaled in the roller arms 38 and 37. The pair of rollers 41 and 42 is positioned against bodily movement by means of a grooved collar 50 between the threads 44 and 45 of the adjusting screw and fitting in the forked upper end of a small standard 51 mounted in the top of the mounting 34.

In the upper end of the main frame casting 10 there is journaled a main driving shaft 52, the outer end of which is rotatably supported in the upper end of the bracket 11. On the shaft 52 is a fixed pulley 53 driven from a suitable source of power by a belt which idly rotates a loose pulley 53ª when the machine is not operating. Rotatably mounted upon the shaft 52 by means of bearings 54 and 55 is a U-shaped arm or swinging bracket 56, the front or base end of which rotatably supports in bearings 57 and 58, a cutter shaft 59. The cutter shaft 59 is driven from the shaft 52 by means of a silent link chain 60 which connects gears keyed respectively to the shafts 52 and 59. Said chain 60 is preferably made of considerable width in proportion to the diameter of the gears so that the latter may be made as small as possible to prevent interference with the length of tubing which is being operated upon. In order to support the weight of the front end of the swinging arm 56, cutter shaft 59, and associated parts, I prefer to extend one of the arms of said U-shaped bracket 56 rearwardly some distance, as shown at 61, in order to accommodate the counter-weight 62 which normally tends to overbalance the weight of the front end of the arm and associated parts and cause the same to rise.

On the end of the cutter shaft 59 and suitably keyed thereto is the cutter 63 which, in the present instance, is a suitably hardened and tempered steel disk having its periphery of knife-like cross section, as is customary with such cutters. Also, on the end of said cutter shaft 59, but slightly behind the cutter proper 63, the shaft 59 is equipped with a steel hub 64 which coöperates with the thrust block 25 to prevent the cutter shaft 59 from rising, due to the counter-weight 62, and at the same time receive the thrust or pressure imposed on the stem 24 when the hand-lever 22 is actuated to engage the cutter with the pipe. The thrust block 25 preferably is furnished with a set of four parallel spaced apart anti-friction rollers or pins 66 which rotate in circular pockets drilled in the head of the thrust block 25 before the under side of the latter is turned off to expose the bottom portions of the said pins. It is understood that the radius of curvature of the concave under side of the thrust block 25 is slightly greater than that of the hub 64 so that the latter engages all of the rollers 66. A retaining plate 67 is applied to the side of the thrust block 25 in order to prevent the pins 66 from working out of the open ends of the pockets.

The operation of the apparatus is simplicity itself. The pipe or tube 68 which is to be cut off, is placed on the rollers 41 and 42, as shown in Fig. 2, the hand-wheel 28 having first been adjusted to bring the cutter shaft into the proper working position, and, the driving power having been applied, the operator bears down upon the end of the lever 22 and thereby forces the edge of the cutting wheel 63 into the outer wall of the pipe. When this occurs, the pipe 68 automatically revolves in an obvious manner upon the rollers 41 and 42. Continuing pressure upon the lever 22 causes the cutter to bite more and more deeply into the pipe 68 until the latter becomes severed.

In order to facilitate the cutting off of standard or definite lengths of tubing, I prefer to equip the apparatus with a gage finger 69 mounted upon the end of a shaft 70 carried in the lower part of the mounting 34.

I have described my invention with considerable detail in order to enable those skilled in the art to apply and make use of my improvement. It must, however, be understood that the specific details of construction are capable of considerable modification without loss or sacrifice of the salient benefits derived from my invention, the scope of which must be determined by reference to the appended claims.

I claim—

1. In tube cutting apparatus, the combination of a main frame, a shaft journaled in said frame and means for driving the same, an arm pivotally mounted on said frame to swing at right angles to the shaft axis, a cutter shaft journaled in said frame with its axis parallel to that of the first shaft, means connecting said shafts to rotate them together, a rotary cutter on said cutter shaft, a stationary support under said cutter provided with a pair of rollers journaled therein for rotatably supporting a pipe interposed between said shaft and said rollers, means normally tending to raise said arm and disengage the cutter from the pipe, an abutment for preventing said raising movement and provided with anti-friction rolls for resisting upward pressure of the cutter shaft, a vertically movable adjustable member in which said abutment is mounted for vertical movement, and a manually actuated lever for forcing said abutment downwardly and mounted on said vertically adjustable member.

2. In tube cutting apparatus, the combination of a main frame, a power-driven shaft horizontally journaled therein, an arm rotatably mounted to swing co-axially with said shaft, a cutter shaft journaled in the outer end of said arm, gearing connecting said shafts to rotate them together, a cutter on said cutter shaft, a support beneath said cutter, a pair of rollers journaled in said support for supporting a pipe interposed between said cutter and said rollers, means normally effective to raise the outer end of said arm, an abutment for preventing the

raising movement of said arm, means for forcing said abutment downwardly in order to operatively engage the cutter with said pipe, and a vertically adjustable overhanging arm for slidably supporting said abutment.

3. In tube cutting apparatus, the combination of a main frame, a power-driven shaft horizontally journaled therein, an arm rotatably mounted to swing in a vertical plane at right-angles to said shaft, a cutter shaft journaled in said arm and spaced apart from said first shaft, a silent chain drive connecting said shafts to rotate them together, a cutter on said cutter shaft, a support beneath said cutter, a pair of rollers journaled in said support for rotatably supporting a pipe interposed between said cutter and said rollers, means normally tending to raise said arm and disengage the cutter from the pipe, an abutment for preventing said raising movement, a vertically movable adjustable member in which said abutment is mounted for vertical movement, and a manually actuated lever for forcing said abutment downwardly to move the cutter into engagement with said pipe, and mounted on said adjustable member.

GEORGE B. EDDY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."