

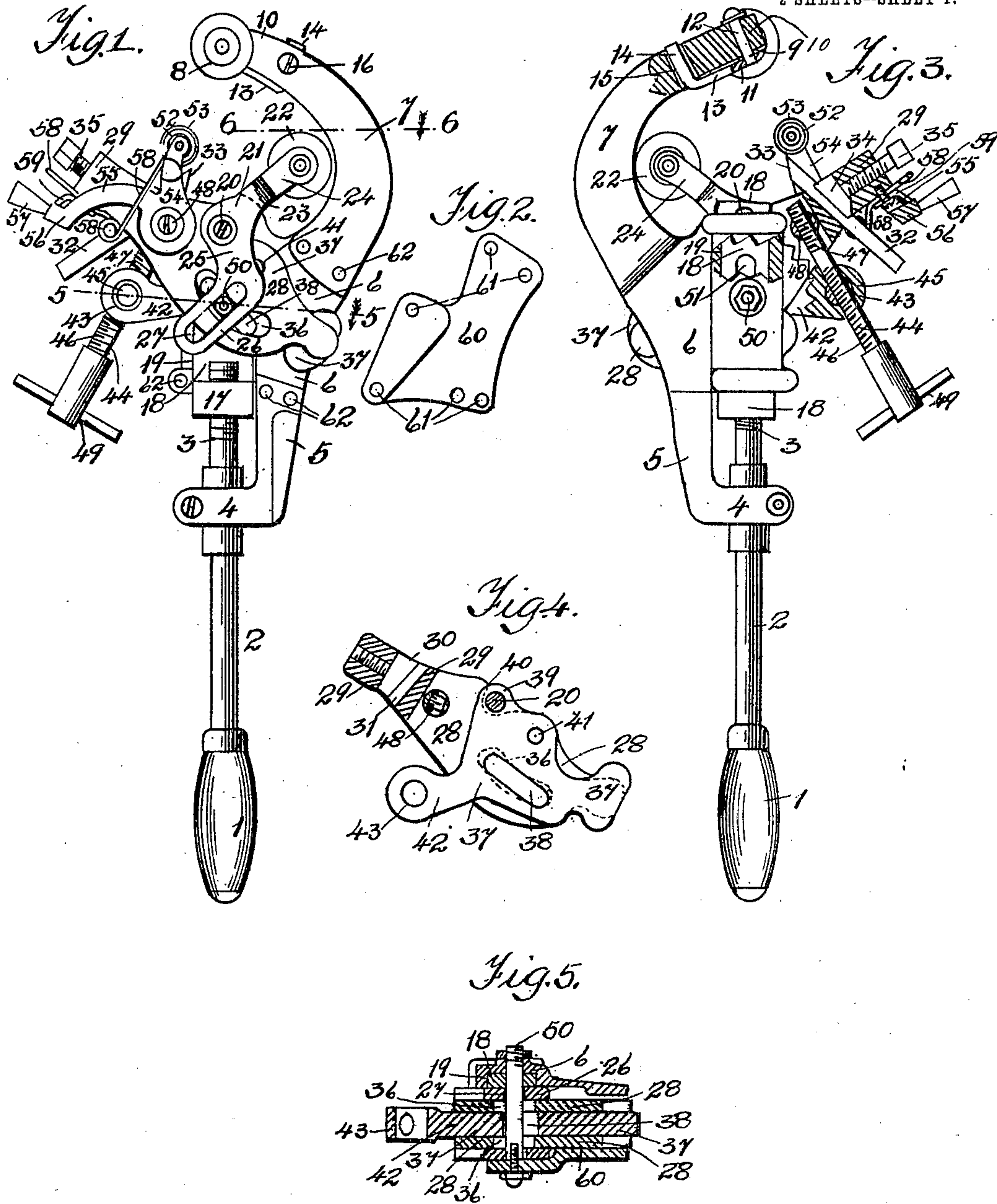
No. 812,210.

PATENTED FEB. 13, 1906.

A. KOVACS.
PIPE CUTTER.

APPLICATION FILED JULY 20, 1905.

2 SHEETS—SHEET 1.



Witnesses:
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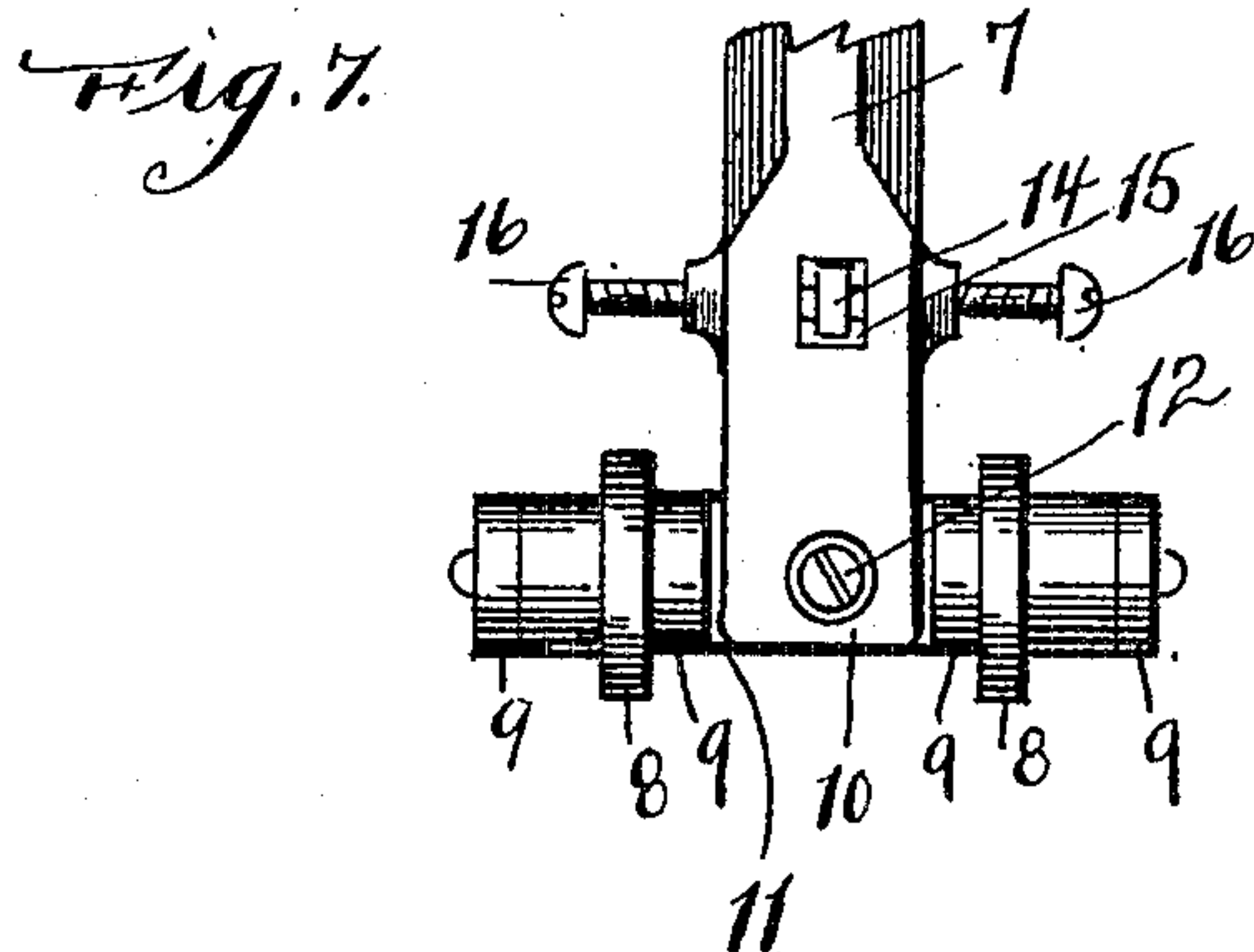
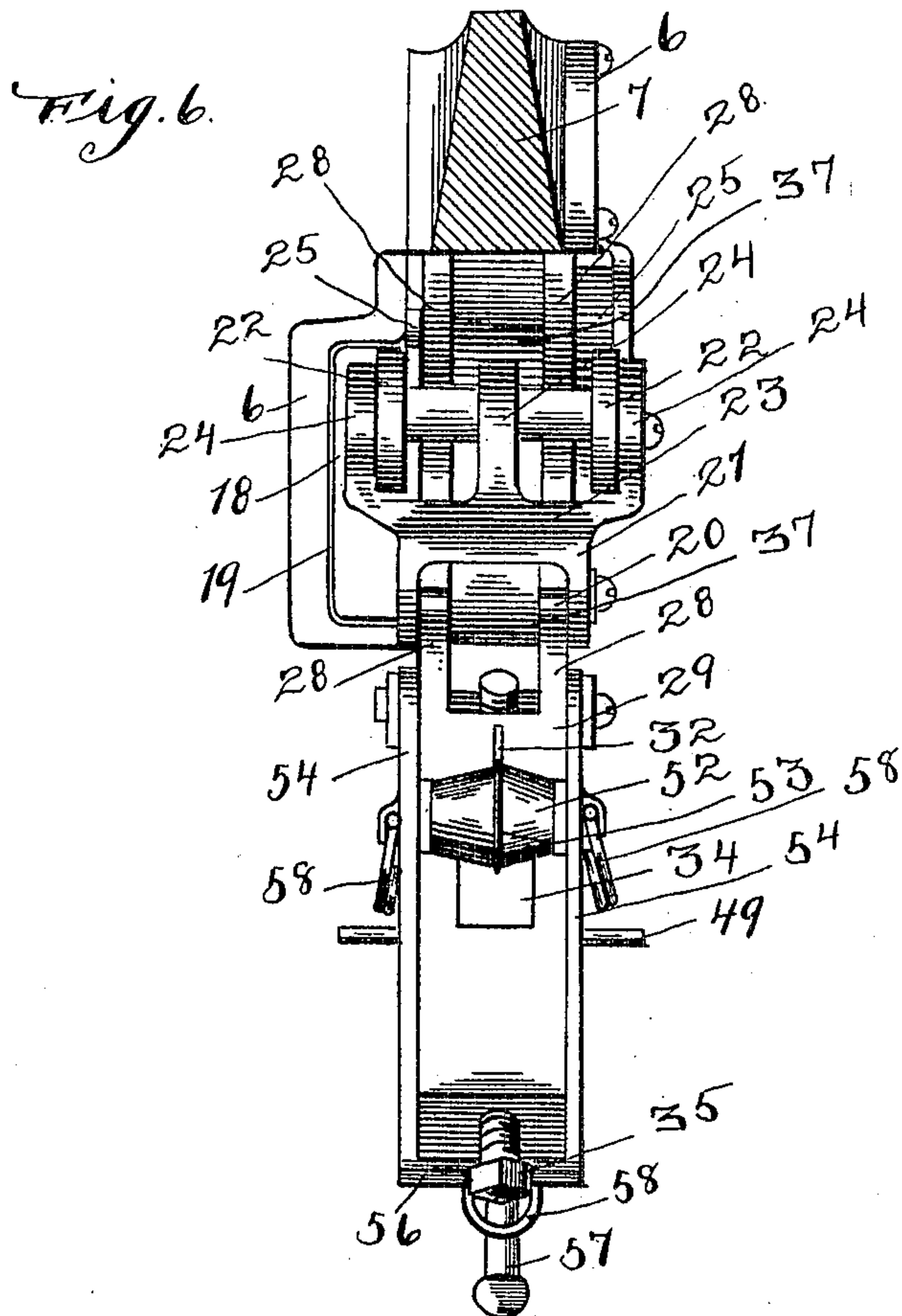
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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PIPE-CUTTER.

No. 812,210.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed July 20, 1905. Serial No. 270,517.

To all whom it may concern:

Be it known that I, ALEXANDER KOVACS, a subject of the King of Austria-Hungary, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Pipe-Cutters, of which the following is a specification.

The object of this invention is to provide for a considerable range of adjustment, adapting the cutter for use on pipes of different sizes; and the invention consists in the means for positioning and holding the pipe during the cutting operation and preventing its displacement and in the means for holding and regulating the cutting-tool.

Another object of the invention is to provide means for holding the cutting-tool in exact position as the groove is formed in the pipe, thereby enabling the cut to be true, smooth, and exact and preventing waste of material and unnecessary labor in smoothing the cut surface after the operation of the cutter.

Another object of the invention is to improve the mechanical details of the cutter as a whole, so that the cutter will be strong, durable, easy of operation, and perfect in its adjustment at all times.

The invention consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings illustrating the invention, Figure 1 is a side elevation of the entire cutter with the outer plate of the casing removed; Fig. 2, a view of the casing-plate; Fig. 3, a view of the opposite side of the cutter, showing portions of the cutting mechanism in section; Fig. 4, a detail of a portion of the adjusting mechanism; Fig. 5, a cross-section taken through line 5 5 of Fig. 1; Fig. 6, a view taken on line 6 6 of Fig. 1 looking in the direction of the arrow, and Fig. 7 a top or plan view of the rollers at the upper end of the cutter.

The cutter consists of a handle 1, into which is inserted a shank 2, provided with screw-threads 3 at its upper end, and the shank passes through a collar 4, extending at right angles to a depending arm 5, formed integrally with a casing 6, which has upwardly extending therefrom an inwardly-curved bow-shaped arm 7, upon which is mounted a pair of upper rollers 8, which are pivoted to ears 9 on opposite sides of the end 10 of the

bow-shaped arm and are connected by means of a cross-head 11, which is pivoted to the end 10 by means of a pivot 12. The cross-head 11 has extending therefrom an arm 13, which terminates in a transversely-extending finger 14, which passes loosely through a transversely-extending slot 15 in the bow-shaped arm and is laterally adjusted therein by means of a pair of inwardly-extending set-screws 16, which arrangement allows of a slight turning of the cross-head 11 upon the pivot 12, which serves to compensate for any wear upon either of the rollers 8, so that the bearing-faces of both rollers will always be held in close contact with the surface of the pipe to be cut. The rollers are positioned in vertical alinement with the shank 2, so that they will serve as a pivot around which the entire cutter may be swung.

The screw-threaded end of the shank is entered into a block 17, which inwardly extends from an elongated bar 18, which is slidably mounted within a groove 19 in the casing 6, and the inner face of the bar 18 will lie flush with the inner face of the casing, which is cut away to allow for the action of the adjusting mechanism, to be hereinafter described. The bar 18 has inwardly projecting therefrom a pivot-stud 20, which serves as a mounting for a bracket 21, which carries rear rollers 22, and the bracket consists of an integral body portion 23, from which upwardly extend a pair of ears 24, between which the rollers are pivoted. The bracket further consists in a pair of adjusting-arms 25, extending in substantially transverse relation to the ears 24. The adjusting-arms terminate in end portions 26 at right-angle relation to the portions 25. Each of the end sections 26 of the adjusting-arms is provided with an elongated slot 27, and the arms themselves are adapted to straddle a pair of cutter-adjusting plates 28, which are connected by a solid head 29, through which is cut a transversely-extending slot 30, having on its inner side a groove 31, into which is inserted a knife or cutting-tool 32, which is beveled to a gouging-point 33 at its inner end. The knife is clamped in place by means of a block 34, entered into the slot 30 and held in place by means of a set-screw 35, entered into the end of the solid head 29. The cutter-adjusting plates and the connecting-head extend in substantially transverse

relation to the wheel-carrying bracket, and the plates are each provided with a bow-shaped slot 36, which crosses under the slots 27 in the contacting ends 26 of the adjusting-arms 25. The cutter-adjusting plates are separated a sufficient distance to embrace an inner plate 37, which is best shown in Fig. 4 and which is provided with an elongated slot 38 in substantial alinement with the slots 36 in the plates 28. The inner plate is provided with a central hump 39, through which is passed the pivot-stud 20, and the connected plates 28 are not pivoted to the stud 20, but are each provided with a recess 40, which abuts against the pivot-stud 20 when thrown forward, allowing the plates 28 to rock back and forth and permitting considerable freedom of movement. The inner plate 37 is pivoted to the cutter-adjusting plates 28 by means of a pivot 41 and is provided at its lower forward corner with a neck 42, terminating in a head 43, through which passes an adjusting-screw 44, mounted in a bearing 54. The adjusting-screw is provided with right and left threads 46 and 47, and the inner end of the screw passes through a bearing 48, which passes transversely through the cutter-adjusting plates 28 near the cross-head 29. The adjusting-screw terminates in a handle 49, which allows the cutter-adjusting plates to be swung around the pivot 41 as an axis to increase or decrease the distance from the head 43 on the central plate, which serves as a relatively fixed support for the adjusting-screw. The several parts of the adjusting mechanism are held in place by means of a fixed stud 50, which passes through the slots 27, 36, and 38, hitherto described, and through a slot 51 in the slidable bar 18. This arrangement allows the pivot-stud 20 to be raised and lowered by the movement of the slidable bar 18 to increase or decrease the distance from the fixed stud 50, along which the slotted portions of the adjusting members travel as the parts are moved to different positions of adjustment. As the slidable bar is raised and the distance between the pivotal and fixed studs increased the rear wheels 22 will be brought closer to the cutter, and as the distance between the studs is decreased the slotted arms 26 of the wheel-supporting bracket will be thrown forward along the fixed stud and the wheels thrown backward, increasing the distance between the wheels and the cutter. At the same time that the wheel-supporting bracket is moved in one direction the cutter-supporting plate and the inner adjusting-plate will simultaneously move in the opposite direction, so that the adjustment of the parts can be made with great rapidity.

Immediately above the gouging end of the cutter is located a wheel 52, provided with a circumferential rib 53, in exact alinement with the end of the cutter, which rib is adapt-

ed to enter the cut made by the cutter to prevent any wobbling or displacement of the cutter during the succeeding revolutions. The wheel is mounted between arms 54, which are pivoted to the outwardly-projecting ends of the transversely-extending bearing 48 and are connected by means of yoke-arms 55 and a cross-head 56, provided with a handle 57. The wheel is held in forwardly-projected position by means of a spring 58, and the forward movement of the wheel is limited by means of a stop 59, against which the cross-head 56 is adapted to abut.

The casing is closed by means of an outer plate 60 of suitable configuration provided with screw-holes 61, adapted to register with screw-holes 62 in the walls of the casing 6.

In use the screw-threaded handle-shank is initially revolved to draw down the slidable bar 18, which serves to throw back the lower wheels 22 and the cutter in opposite directions, allowing the pipe-cutter as a whole to be inserted onto a pipe, after which the handle is turned and the slidable bar moved upwardly, which movement serves to decrease the distance between the wheels and the cutter and tighten the device preparatory to use. After the proper adjustment of the handle has been made still further adjustment can be effected by turning the adjusting-screws 44, which moves the knife-carrying head independently of the remainder of the adjusting mechanism. This allows the ribbed wheel 52 to be brought into close contact with the surface of the pipe and it is advisable that before the cutting operation begins the bracket-arms 54 and connecting-yoke be forced back against the tension of the spring 58, so that the ribbed wheel will be held under strong tension against the surface of the pipe. This enables the rib in the wheel to follow into the cut made by the knife with each succeeding revolution. The projection of the knife can be regulated by means of the set-screw 35, which bears against the clamping-finger 34, so that the knife can be adjusted to any desired position.

In manipulating the adjusting mechanism it is necessary for the cutter-adjusting plates 28 to swing upon the pivot 41 as an axis during certain movements of adjustment and also slide along the fixed stud 50 during other movements of adjustment, and for this reason the bow-shaped slots 36 are sufficiently enlarged to provide for these two movements. The slots 27 in the ends 26 of the bracket-arms 25 and the slot 38 in the inner plate 37 are both straight and of proper size for the walls of the slotted portions to closely embrace the fixed stud 50, which arrangement is necessary since the stud serves as a fixed bearing for shifting the position of these two portions of the adjusting mechanism. The close contact of the fixed stud 50 against the walls of the slot 38 in the inner plate 37 and

the pivoting of said plate to the pivot-stud 20 prevents any appreciable movement of the plate during the adjustment of the screw 44, so that the head 43 serves as a relatively fixed pivotal bearing for the screw to regulate the connected cutter-adjusting plates 28, which are pivoted at a single point and adapted to have considerable freedom of movement. The device as a whole is one which enables the operator to make a clean perfect cut without danger of the cutter wobbling or slipping, and the method of adjusting the cutter is one which enables it to be used with pipes of different sizes, since the user is enabled to make a rough adjustment by turning the handle-shank and a fine adjustment by manipulating the right and left adjusting-screw and changing the position of the knife or cutter to suit the requirements.

20 What I regard as new, and desire to secure by Letters Patent, is—

1. In a pipe-cutter, the combination of a casing, a bar slidably mounted in the casing, a movable pivot-stud rigidly secured to the slidable bar, a fixed pivot-stud rigidly secured to the casing, a wheel-bracket pivoted to the movable stud and provided with a slot embracing the fixed stud, a knife-adjusting plate extending at an angle to the bracket, a plate to which the knife-adjusting plate is pivoted, said latter plate being pivoted to the movable stud and provided with a slot embracing the fixed stud, an adjusting means carried by the plate and adapted to regulate the knife-carrying plate, a lower wheel on the bracket, an upper wheel, an arm to which the upper wheel is pivoted, a knife carried by the cutter-adjusting plate and means for moving the movable bar, substantially as described.

40 2. In a pipe-cutter, the combination of a fixed pivot, a relatively movable pivot, a bracket pivoted to the movable pivot and provided with a slotted portion embracing the pivot, a knife and knife-adjusting mechanism pivoted to the movable pivot and provided with a slot embracing the fixed pivot, and means for varying the distance between the two pivots, substantially as described.

3. In a pipe-cutter, the combination of a fixed pivot, a relatively movable pivot, a bracket pivoted to the movable pivot and provided with a slotted portion embracing the fixed pivot, a knife, a knife-adjusting plate, a plate to which the knife-adjusting plate is pivoted, said latter plate being pivoted to the movable pivot and provided with a slot embracing the fixed pivot, means for regulating the relative position of the pivoted plates and means for regulating the distance between the two pivots, substantially as described.

4. In a pipe-cutter, the combination of a fixed pivot, a relatively movable pivot, a bracket pivoted to the movable pivot and provided with a slotted portion embracing

the fixed pivot, a knife, a knife-adjusting plate, a plate to which the knife-adjusting plate is pivoted, said latter plate being pivoted to the movable pivot and provided with a slot embracing the fixed pivot, means for regulating the relative position of the pivoted plates, a slidable bar to which the movable pivot is rigidly secured, a casing to which the fixed pivot is rigidly secured, and a handle carried by the casing and provided with a screw-threaded shank adapted to regulate the position of the slidable bar with respect to the casing, substantially as described.

5. In a pipe-cutter, the combination of a fixed pivot, a relatively movable pivot, a wheel-carrying bracket pivoted to the movable pivot and provided with a pair of slotted arms embracing the fixed pivot, knife-adjusting plates united in a solid head and positioned between the slotted bracket-arms, an inner plate between the knife-adjusting plates to which said plates are pivoted, said inner plate being pivoted to the movable pivot and provided with a slotted portion embracing the fixed pivot, a knife mounted between the knife-adjusting plates, an adjusting-screw carried by the inner plate and adapted to regulate the position of the knife-adjusting plates, a slidable bar to which the movable pivot is rigidly secured, a casing to which the fixed pivot is rigidly secured, and means for adjusting the movable bar, substantially as described.

6. In a pipe-cutter, the combination of a fixed pivot, a relatively movable pivot, a wheel-carrying bracket pivoted to the movable pivot and provided with a pair of slotted arms embracing the fixed pivot, knife-adjusting plates united in a solid head and positioned between the slotted bracket-arms, an inner plate between the knife-adjusting plates to which said plates are pivoted, said inner plate being pivoted to the movable pivot and provided with a slotted portion embracing the fixed pivot, a knife mounted between the knife-adjusting plates, an adjusting-screw carried by the inner plate and adapted to regulate the position of the knife-adjusting plates, a slidable bar to which the movable pivot is rigidly secured, means for adjusting the movable bar, and a wheel rotatably mounted on the knife-adjusting plates and provided with a circumferential rib in alignment with the cutting end of the knife, substantially as described.

7. In a pipe-cutter, the combination of a fixed pivot, a relatively movable pivot, a wheel-carrying bracket pivoted to the movable pivot and provided with a pair of slotted arms embracing the fixed pivot, knife-adjusting plates united in a solid head and positioned between the slotted bracket-arms, an inner plate between the knife-adjusting plates to which said plates are pivoted, said inner plate being pivoted to the movable pivot and

provided with a slotted portion embracing the fixed pivot, a knife mounted between the knife-adjusting plates, an adjusting-screw carried by the inner plate and adapted to regulate the position of the knife-adjusting plates, a slidable bar to which the movable pivot is rigidly secured, a casing to which the fixed pivot is rigidly secured, means for adjusting the movable bar, a bracket pivoted to the knife-adjusting plates, a spring for holding the bracket forward under tension and a wheel carried by the bracket and provided with a circumferential rib in alinement with the cutting end of the knife, substantially as described.

8. In a pipe-cutter, the combination of a casing provided with a substantially bow-shaped arm, an upper wheel pivoted to the arm, an adjustable wheel-carrying bracket, a rear wheel secured thereto, a knife, an adjustable support for the knife, a bracket pivoted to the adjustable support, a spring bearing against the bracket, a wheel carried by the bracket and provided with a circumferential rib in alinement with the cutting end of the knife and means for regulating the position of the rear wheel and knife with respect to one another, substantially as described.

9. In a pipe-cutter, the combination of a knife, a rear wheel adjustably mounted with respect to the knife, a casing, an upwardly-extending supporting-arm secured to the casing, a pair of upper wheels, a cross-head provided with ears to which the wheels are pivoted, a pivot for securing the cross-head to the supporting-arm, a finger secured to the cross-head and extending through the supporting-arm and adjustable therein, and set-screws bearing against the finger for adjusting the position of the cross-head and the wheels pivoted thereto, substantially as described.

10. In a pipe-cutter, the combination of a casing, a bar slidably mounted in the casing,

a bow-shaped supporting-arm upwardly extending from the casing and provided at its end with a suitable bearing-surface, a fixed pivot rigidly secured to the casing, a relatively movable pivot rigidly secured to the slidable bar, a screw-threaded handle-shank for regulating the position of the slidable bar, a bracket pivoted to the movable pivot and provided with a pair of slotted arms embracing the fixed pivot, a wheel pivoted to the opposite end of the bracket, knife-adjusting plates extending in angular relation to the bracket and united at their outer end, a knife rigidly secured to the knife-adjusting plates, an inner plate embraced by the knife-adjusting plates to which said plates are pivoted, said inner plate being pivoted to the movable pivot and provided with a slot embracing the fixed pivot, a neck outwardly extending from the inner plate and terminating in a head, and an adjusting-screw mounted in the head and adapted to regulate the position of the knife-adjusting plates, substantially as described.

11. In a pipe-cutter, the combination of a handle provided on its end with screw-threads, an upper relatively fixed roller, a rear roller adapted to be adjusted by the rotation of the screw-threaded handle, a cutter-carrying plate, an adjusting-screw adapted to regulate the cutter-carrying plate, and a resiliently-mounted guide-wheel provided with a rib in line with the end of the cutter, substantially as described.

12. In a pipe-cutter, the combination of a relatively fixed roller, an adjustably-mounted rear roller, an adjustably-mounted wheel provided with a rib in line with the end of the cutter adapted to enter the groove formed by the cutter, substantially as described.

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