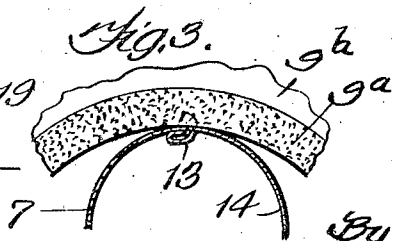
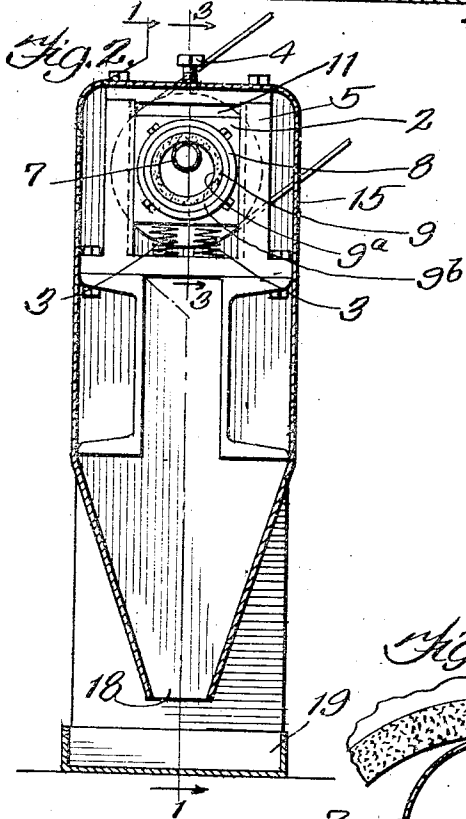
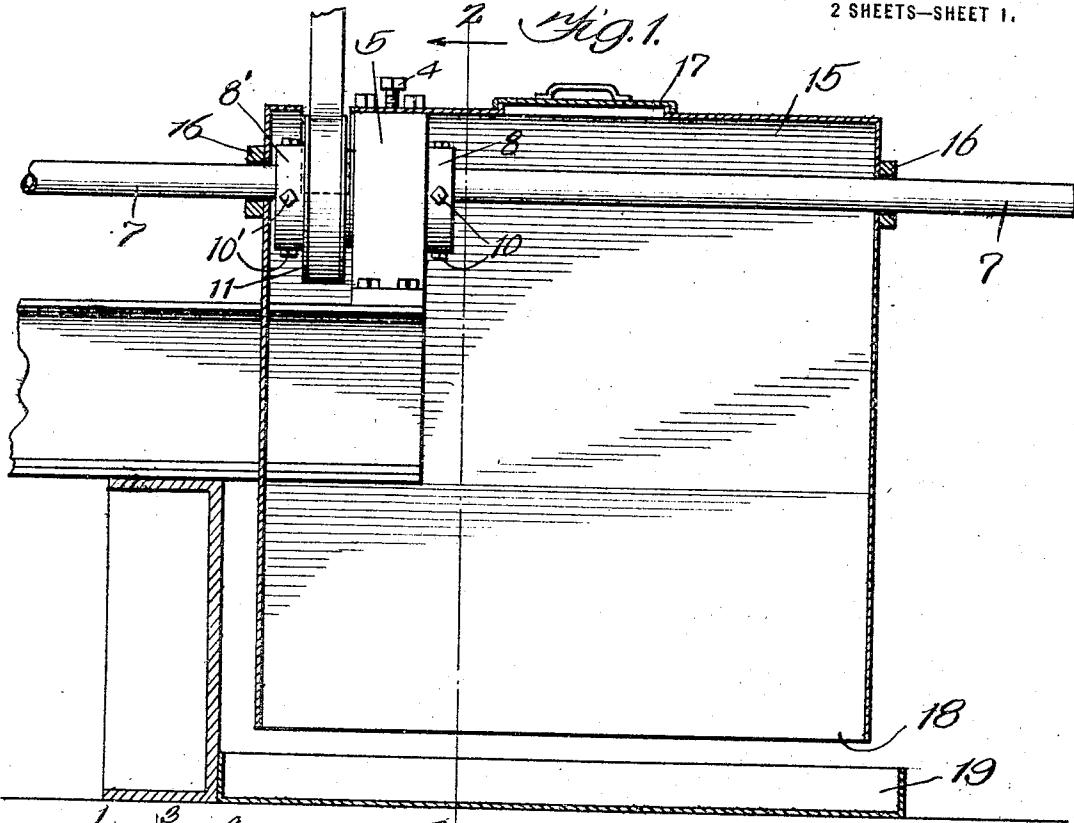


P. H. FRIEL, DEC'D.
H. D. FRIEL, ADMINISTRATRIX.
RUBBING MECHANISM.
APPLICATION FILED NOV. 15, 1916.

1,306,533.

Patented June 10, 1919.

2 SHEETS—SHEET 1.

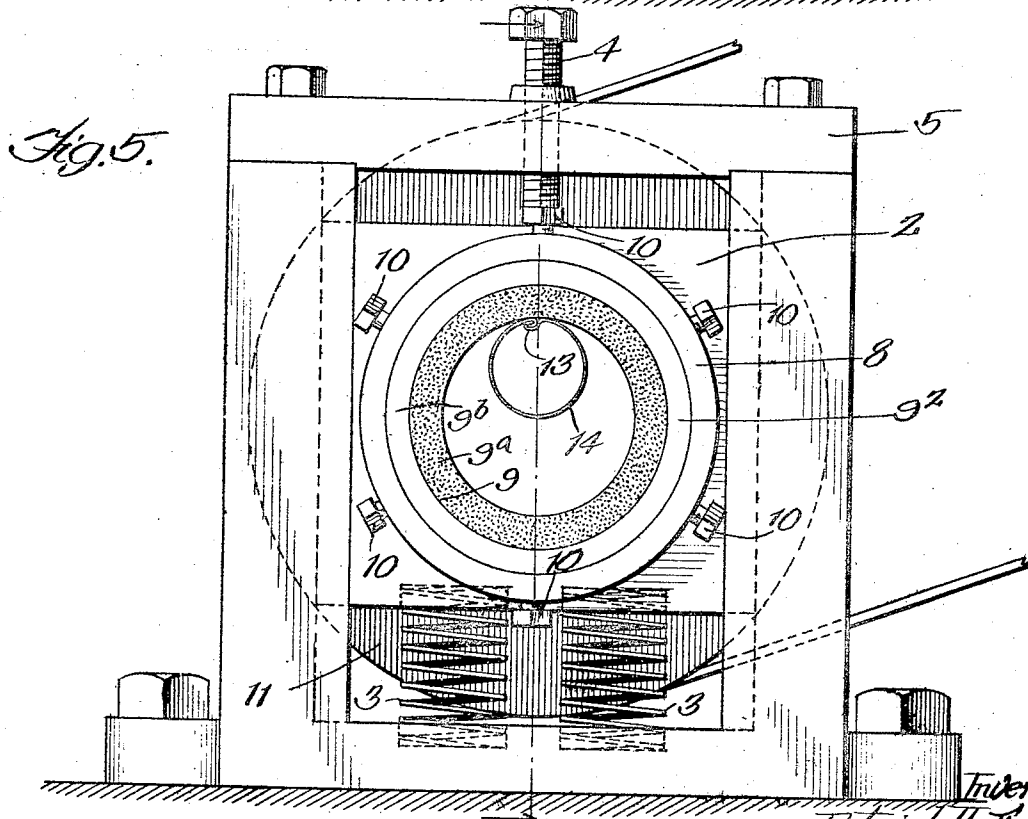
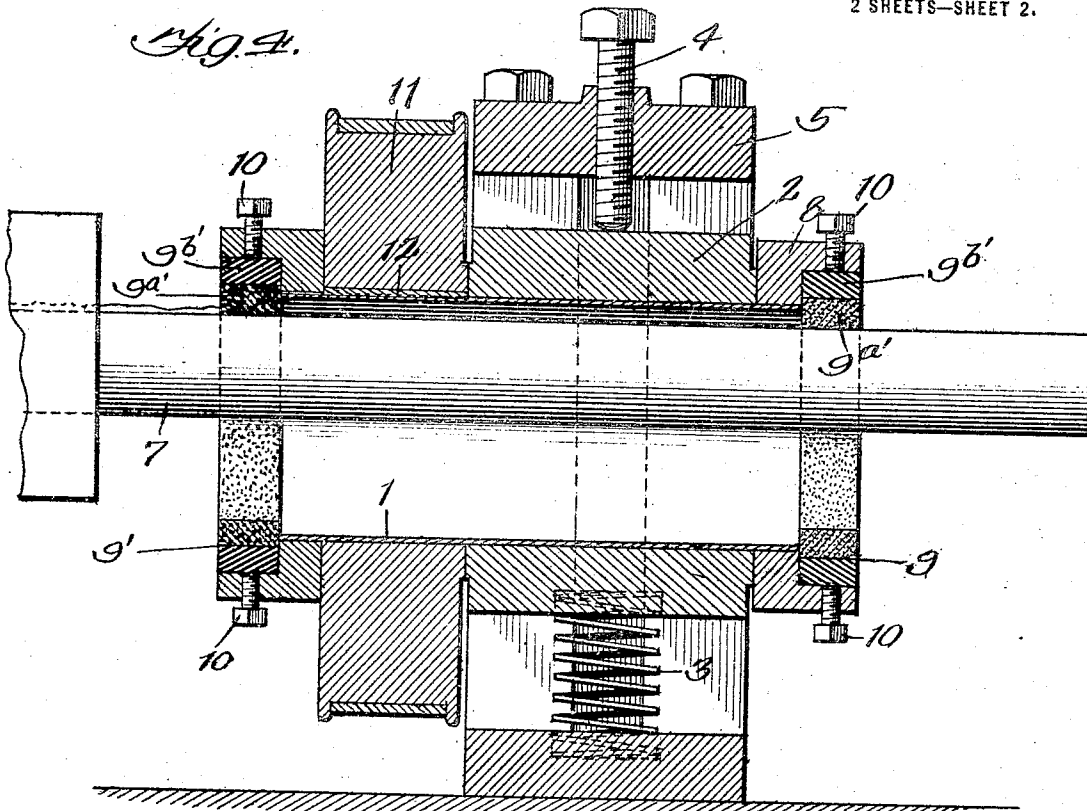


Inventor:
Patrick H. Friel.
By *L. L. Grogg* atty.

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2 SHEETS—SHEET 2.



Inventor:
Patrick H. Friel.
By L. L. Gray, Atty.

UNITED STATES PATENT OFFICE.

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RUBBING MECHANISM.

1,306,533.

Specification of Letters Patent. Patented June 10, 1919.

Application filed November 15, 1916. Serial No. 131,552.

To all whom it may concern:

Be it known that I, PATRICK H. FRIEL, citizen of the United States, residing at Kenosha, in the county of Kenosha and State of Wisconsin, have invented a certain new and useful Improvement in Rubbing Mechanism, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to rubbing or grinding devices and has for its object the provision of an improved rubbing or grinding structure that is inclusive of an annular rubbing element whose inner annular or circular surface is the rubbing surface. My invention also has for its object the provision of an improved rubbing machine or grinding machine for rubbing or grinding tubing; this invention being of particular service in grinding down the rough exterior portions of tube seams or joints, particularly when such joints or seams are welded.

As a further feature of my invention I employ adjusting means and supporting devices to adapt the device of my invention to varying work.

My invention also resides in an improved dust guard to prevent the dust from finding access to operatives.

The foregoing and other features of my invention will be fully explained by reference to the accompanying drawings showing the preferred embodiment thereof and in which—

Figure 1 is a view in elevation with associate parts in section; Fig. 2 is a view on line 2—2 of Fig. 1; Fig. 3 is an enlarged end view of a part of the structure; Fig. 4 is a longitudinal sectional elevation; and Fig. 5 is a front view.

Like parts are indicated by similar characters of reference throughout the different figures.

The machine illustrated is one which is adapted for the grinding of seams in rolled tubing, but the invention is not to be limited to such embodiment. In the embodiment of the invention illustrated there is a hollow shaft 1 mounted to rotate in a journal box 2. This journal box is supported upon springs 3 that exert upward pressure upon the journal box, the journal box being depressed or elevated into any selected position by means

of the adjusting bolt 4 passing through the top of the frame 5 that houses the journal box and acting in cooperation with the springs 3, the housing 5 and journal box 2 having groove and slot engagement at 6 whereby the journal box may be moved up and down without being moved longitudinally of the axis of rotation of the shaft 1 whose axis of rotation is thus adjustable. Where the machine is to be used for grinding tubing that issues from a tube making machine, the shaft 1 is hollow and is located close to the tube making machine so that the pipe 7 issuing from the tube making machine will pass through the bore of the shaft 1. Whether hollow, for the purpose of grinding or rubbing pipe, or solid, the shaft 1 carries an annular enlargement, such as a collar 8, at its forward end. Within this collar there is disposed a rubbing ring 9 whose rubbing or grinding surface is at its inner circle which is of smaller diameter than the bore of the shaft 1 in order that work passed through the shaft may properly reach the rubbing surface of the ring. This ring is co-axial with the shaft 1 and has its axis adjustable with the axis of said shaft by means of the elements 3 and 4. Where the rubbing ring 9 is a grinding ring it is desirably made of two parts, the inner part 9^a being made of abrasive material such as emery, carborundum, etc., while the outer part 9^b of the ring constitutes a mounting for the rubbing part of the ring and is preferably made of metal such as lead. The rubbing ring may be held in fixed relation with the shaft 1 by means of the set screws 10, these set screws 10 constituting with the collar 8 a check for holding the rubbing ring and shaft in fixed relation. The axis of the inner cylindrical or annular surface of the rubbing ring and the axis of the shaft 1 are coincident. Any suitable means may be employed for imparting rotary motion to the shaft, such as a belt driven pulley 11 keyed upon the shaft at 12. As illustrated, the machine is adapted to the grinding of the welded seam 13 in a tube or pipe 14 formed in a tube making machine. The pipe 7 issues from the tube making machine without turning and with its seam 13 presented to the top portion of the rubbing element 9^a that has grinding action upon the exterior of the seam to make it smooth. Other objects, how-

ever, may be ground or rubbed by the inner cylindrical or annular surface of the rubbing wheel. The grinding or rubbing wheel may be readily adapted to its work by the adjustment of the bolt 4 acting in coöperation with the springs 3.

I employ a dust hood or guard 15 which incloses at least the top and sides of the chuck 8—10 and the pipe 7 issuing therefrom. The dust resulting from the grinding will fall downwardly into or through the hood and will not issue through the forward end thereof, particularly if the pipe 7 is caused to issue through a packing ring or element 16 that is carried upon the front end of the hood to guard against the emission of dust between the pipe 7 and the surrounding front part of the hood. The top of the hood may be provided with a transparent closure 17 of isinglass or other transparent material through which the effect of grinding or rubbing upon the work may be observed. If the dust hood is open at the bottom as indicated at 18 so that the dust may readily fall therethrough, I desirably provide a dust pan 19 below the opening 18 to catch the dust. The opening 18 is desirably in the form of a slot which preferably extends from the housing 5 to the forward end of the hood 15, the dust pan 19 being of similar length.

Among other advantages of my invention is the fact that by means of the adjusting mechanism 3—4, the grinding ring may be adjusted to compensate for wear until the metal supporting body 9^b therefor is nearly reached. Another advantage which should be obvious is the fact that the inner curved rubbing or grinding surface of the rubbing or grinding ring conforms sufficiently to the curvature of the tube being ground as to leave no flat spots upon the tube. When a tube is ground upon the outer periphery of a grinding wheel, as hitherto, flat spots are frequently formed upon the tube.

In the embodiment of the invention illustrated I have also provided upon the rear end of the shaft 1 a grinding or rubbing arrangement which is similar to that shown at the front end of the shaft. Parts at the rear end of the shaft which are similar to parts at the front end of the shaft in function and construction are given similar characters of reference with added exponent marks.

The rubbing ring 9^a at the rear end of the shaft has its inner and rubbing circle of preferably slightly larger diameter than the inner and rubbing circle of the ring 9. When these rubbing rings are grinding rings the ring 9^a will operate to take off the rougher or bur portions upon the object being ground, the grinding ring 9 at the front end of the shaft smoothing the surface roughly ground by the ring 9^a at the rear end of the shaft.

While I have herein shown and particularly described the preferred embodiment of my invention I do not wish to be limited to the precise details of construction shown as changes may readily be made without departing from the spirit of my invention, but having thus described my invention I claim as new and desire to secure by Letters Patent the following:—

A grinding machine including a grinding ring whose inner annular surface is the grinding surface and a hood surrounding the ring for confining the dust, said hood having a packing device at its forward end through which the work operated upon passes and which serves to prevent dust from leaving the hood at the forward end thereof.

It witness whereof, I hereunto subscribe my name this 8th day of November A. D., 1916.

PATRICK H. FRIEL.

Witnesses:

JESSE RUTHERFORD,
BENJ. M. D. DIEMAR.