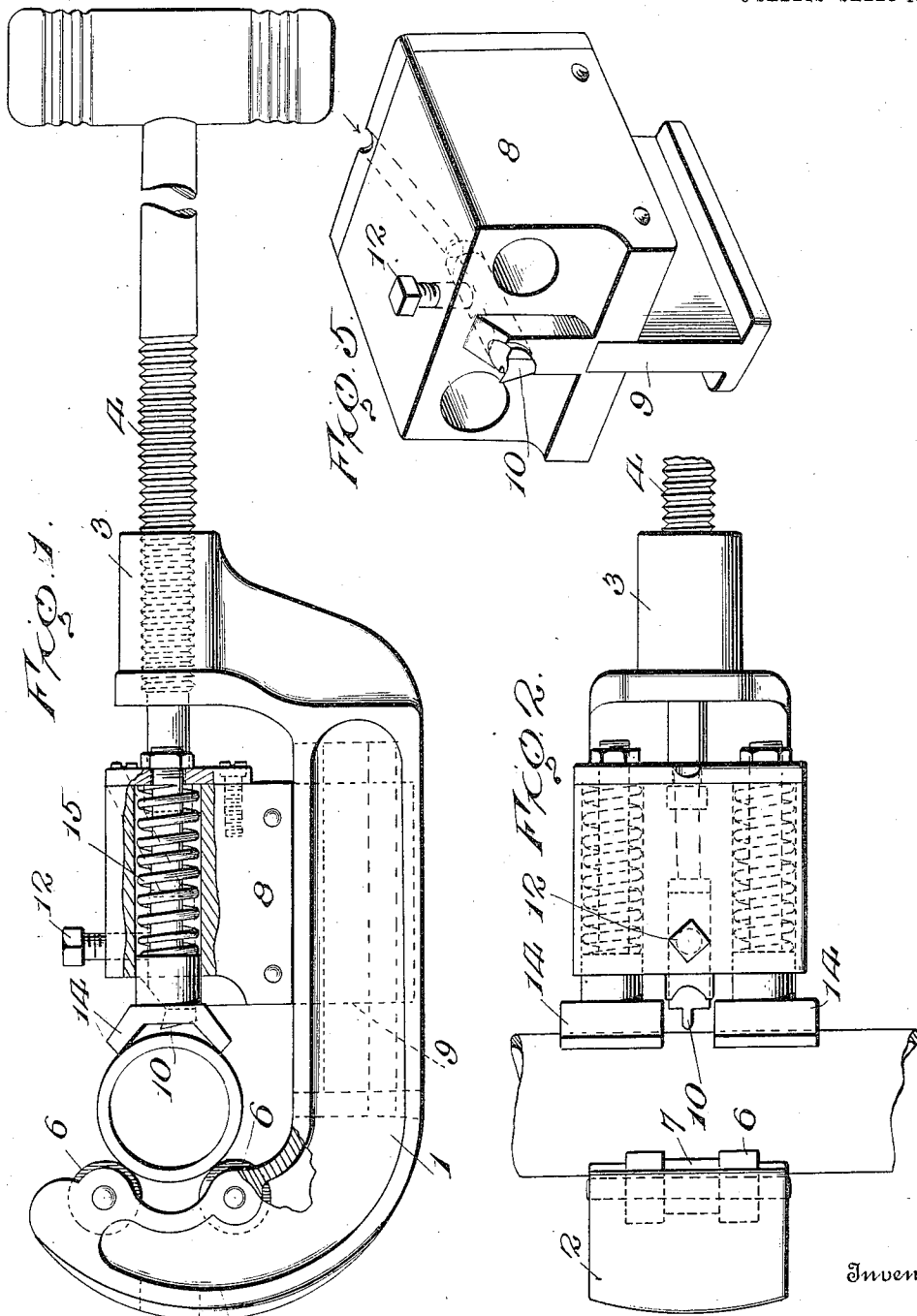


B. BORDEN.
 PIPE CUTTING TOOL.
 APPLICATION FILED MAY 3, 1910.

1,017,037.

Patented Feb. 13, 1912.

3 SHEETS—SHEET 1.



Witnesses
W. A. Williams.
Francis F. Maguire.

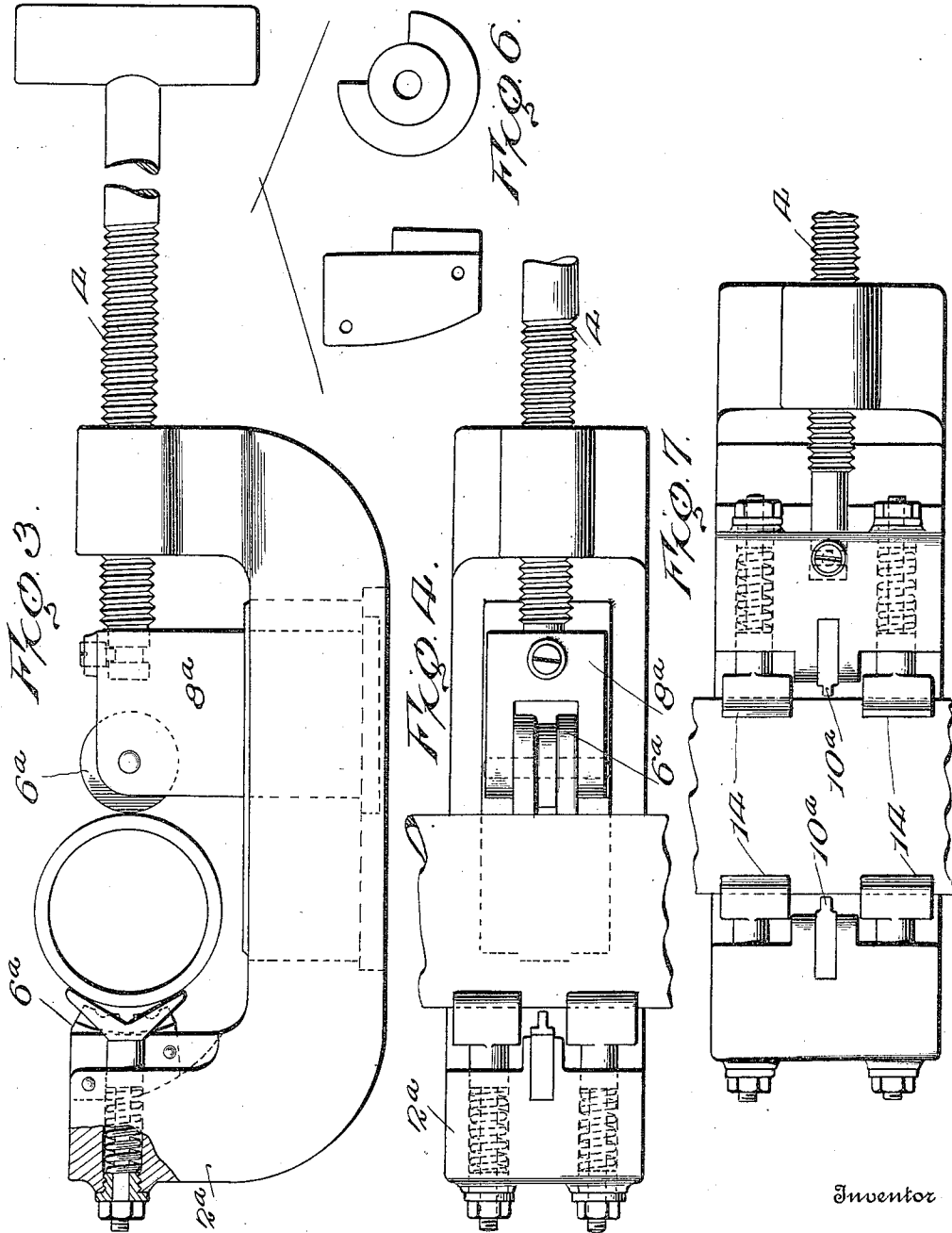
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3 SHEETS—SHEET 2.



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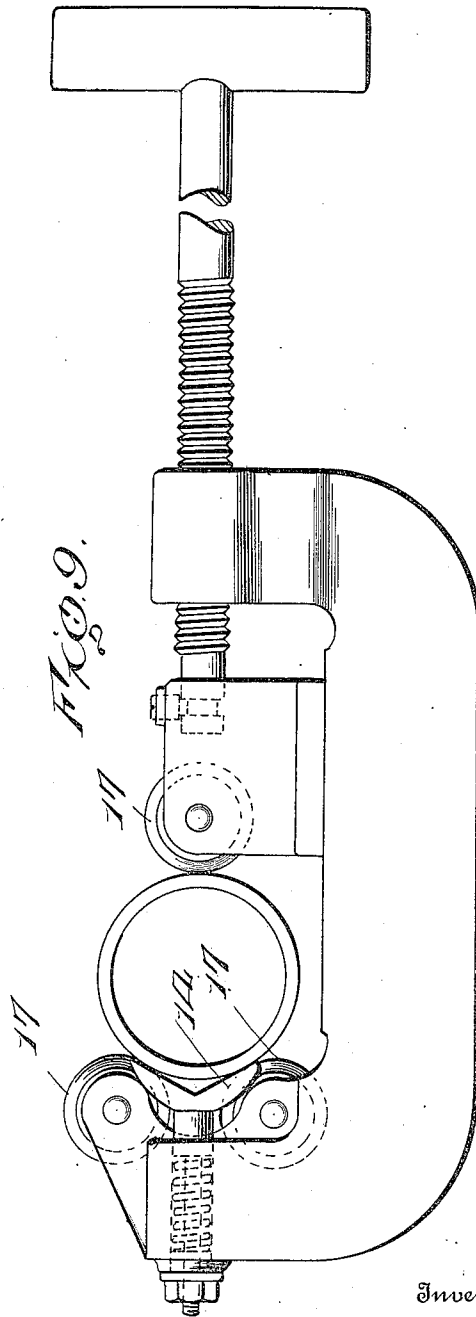
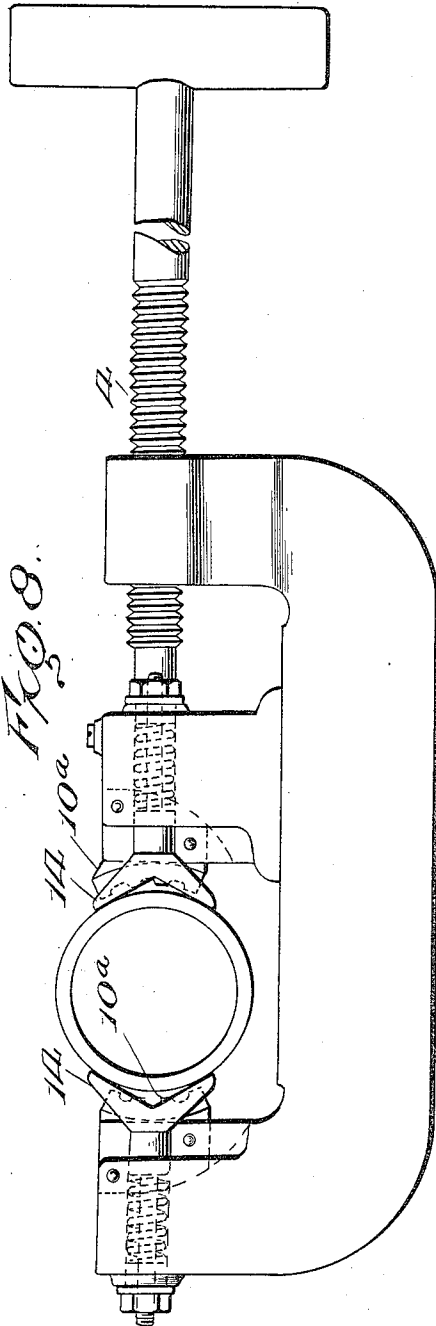
Attorney

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Francis S. Maguire

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UNITED STATES PATENT OFFICE.

BRADFORD BORDEN, OF TORONTO, ONTARIO, CANADA, ASSIGNOR TO THE BORDEN COMPANY, OF WARREN, OHIO, A CORPORATION OF OHIO.

PIPE-CUTTING TOOL.

1,017,037.

Specification of Letters Patent.

Patented Feb. 13, 1912.

Application filed May 3, 1910. Serial No. 559,070.

To all whom it may concern:

Be it known that I, BRADFORD BORDEN, of Toronto, in the Province of Ontario, Dominion of Canada, have invented certain new and useful Improvements in Pipe-Cutting Tools; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

It is well known that pipe may be squarely and evenly cut by using flat or fixed knives, while with revoluble cutting disks burs are formed on both the inside and outside of the pipe, and frequently these must be removed before the pipe-sections may be used. In consequence in pipe-cutting machines the cutting is usually done by flat or fixed knives, but in using such knives in hand-operated tools the knives, which are always of hardened metal, are liable to break if the tool is deflected laterally while being revolved around a pipe.

The object of my present invention is to provide a hand-operated pipe cutting tool having a flat or fixed knife with means for effectively preventing lateral deflection of the knife while the tool is being revolved. This I accomplish by providing broad bearing surfaces for engaging the pipe longitudinally thereof for considerable distances on opposite sides of the knife. These bearing surfaces are preferably in the form of spring-pressed saddles which take firm hold of the pipe before the knife engages therewith, the tendency of the saddles, when under compression, being to force the knife and the pipe away from each other.

A further object is to enable each saddle or pipe-engaging member to be independent of the other.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation, with parts broken away. Fig. 2 is a plan view. Fig. 3 is a side elevation and Fig. 4 a plan view showing a slight modification. Fig. 5 is a view of the knife carrier detached. Fig. 6 shows different forms of knives. Fig. 7 is a plan view and Fig. 8 a side elevation of another modification. Fig. 9 is a side view of a still further modified form.

Referring to the drawings, 1 designates

the main body which is shown as having at one end a fixed jaw 2 and at the other end an internally threaded bearing 3 for the threaded operating rod 4. In Figs. 1 and 2 I have shown jaw 2 as chambered and as having two rollers 6 journaled therein, one above the other, and both formed with circumferential reductions 7 at their centers.

8 is a movable slide or carrier mounted on body 1 and designed to be moved back and forth by turning rod 4, the end of which is secured to the carrier. The latter may be held to body 1 by any suitable means, that shown comprising a T-shaped portion 9 extending through a longitudinal slot in the main body. In this carrier may be mounted a fixed knife 10, which will be rigidly held by a screw 12. The knife may be of any preferred formation, as for instance, a bar with a cutting lug on the projecting end, as shown in Fig. 5.

In Fig. 6 I have shown different forms of knives which may be employed if desired. On opposite sides of the fixed knife are located pipe-engaging members which are designed to engage the pipe, longitudinally thereof, for some distance on each side of the knife, each member engaging the pipe on opposite sides of the plane of the knife. These engaging members are shown in the form of approximately V-shape saddles 14 having shanks fitted in the carrier, the saddles being normally extended beyond the end of the knife by springs 15 inclosed within the carrier, each saddle being controlled by a separate spring. It is necessary to turn the rod 4 several times before the springs may be overcome sufficiently to cause the saddles to recede a sufficient distance to allow the fixed knife to engage the pipe. In consequence, by the time this engagement is effected the pipe is firmly held by the saddles, the pressure of which is taken up, in the present instance, by rollers 6. By reason of the extended bearing surfaces afforded by the spring-pressed saddles, and the fact that these saddles travel in planes parallel with that of the knife, and on opposite sides thereof, lateral deflection is not likely to occur, and hence the danger of breaking the knife from this cause is reduced to a minimum.

The form shown in Figs. 1 and 2 as an embodiment of my invention is merely illustrative, and variations may be made without

departing from the spirit of the invention. For instance, a single grooved roller 6^a may be mounted in the adjustable carrier 8^a, as shown in Figs. 3 and 4, and in this form the
 5 spring-pressed saddles and the knife will be mounted on the fixed jaw 2^a in which event the latter has a movement relative to the carrier when the rod 4 is turned after the carrier roller engages the pipe. If desired,
 10 as shown in Figs. 7 and 8, the knife and the spring-pressed saddles may be duplicated, one series being mounted on the fixed jaw and the other series in the movable carrier. I have shown the knife as having cutting
 15 teeth 10^a. In Fig. 9 I have shown the spring-pressed saddles employed in connection with rotary cutting disks 17. The advantage of using the spring-pressed saddles on both sides of the cutter disks is to prevent
 20 lateral displacement in revolving the tool around the pipe. It is preferred, however, to employ a fixed knife because of the manifest advantages thereof over the disks.

The advantages of my invention are apparent to those skilled in the art. When the tool is placed on a pipe, and the rod 4 turned until the saddles have receded sufficiently to allow the knife to engage the pipe,
 25 lateral deflection in revolving the tool around the pipe is obviated because of the extended bearing surfaces longitudinally of the pipe on opposite sides of the knife, and the engagement of each saddle with the pipe on opposite sides of the plane of the knife.
 30 There being no side twist whatsoever on the knife the latter will gradually cut its way through the pipe without forming burs thereon.

I claim as my invention:—

40 1. A hand-operated pipe-cutting tool comprising a fixed member and a movable member, a cutting knife, two pipe engaging members arranged in different planes with the knife located between them, said knife
 45 and engaging members being mounted in one of the first mentioned members, each pipe engaging member being movable independently of the other, and means for effecting a relative movement between the
 50 fixed and movable members.

2. A hand-operated pipe-cutting tool comprising a fixed member and a movable member, a cutting knife, two corresponding pipe engaging saddles arranged in different planes, with the knife located between them,
 55 each saddle engaging the pipe on opposite sides of the plane of the knife, separate springs acting each on one of the saddles, the knife, saddles, and the springs being mounted in one of the before-mentioned
 60 members, and means for effecting a relative movement between such latter members.

3. A hand-operated pipe-cutting tool comprising a fixed member and a movable member, a cutting knife, two corresponding pipe
 65 engaging saddles arranged in different planes with the knife located between them, each saddle being of approximately V-shape and having broad bearing surfaces for engaging the pipe on opposite sides of the
 70 plane of the knife, separate springs acting each on one of the saddles, the knife, saddles, and the springs being mounted in one of the before-mentioned members, and means for effecting a relative movement between
 75 such latter members.

4. A hand-operated pipe-cutting tool comprising a body having a fixed jaw at one end and an internally threaded bearing at the other end, a carrier slidably mounted on
 80 said body, an externally-threaded rod mounted in said bearing and connected to said carrier, a fixed cutting knife mounted in said carrier, two saddles mounted in said carrier on opposite sides of the knife, separate
 85 springs acting each on one of the saddles, said saddles having broad bearing surfaces for engaging a pipe longitudinally thereof laterally of the knife, and rollers journaled in said fixed jaw for engaging
 90 the pipe on opposite sides of the plane of the knife.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

BRADFORD BORDEN.

Witnesses:

E. MERNER,

H. M. CHRISTMAN.