

J. E. SCHAEFFER.  
EXPANSION REAMER.  
APPLICATION FILED OCT. 27, 1908.

925,515.

Patented June 22, 1909.

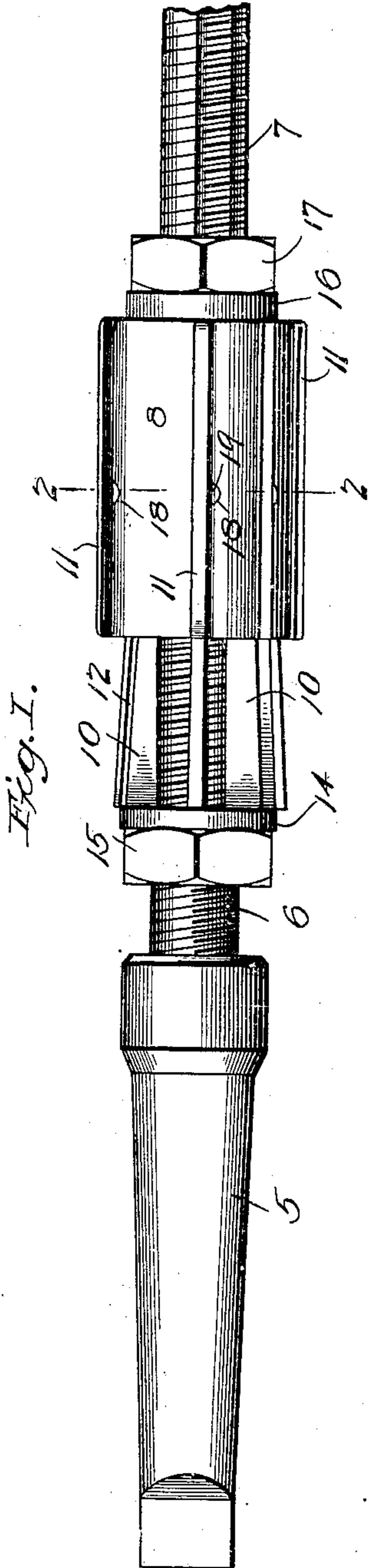


Fig. I.

Fig. II.

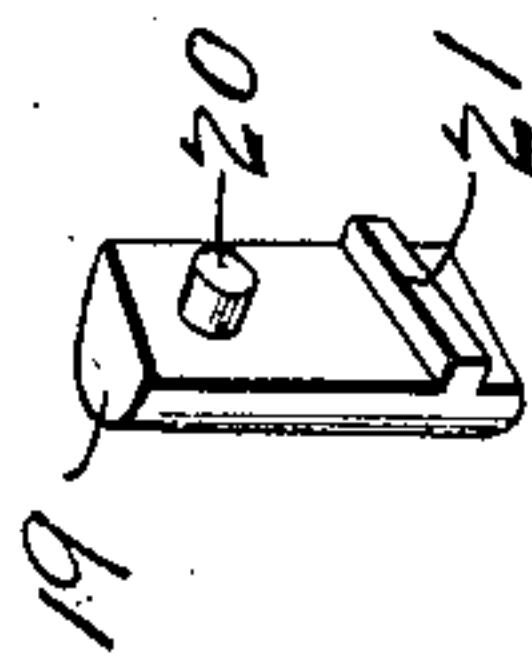


Fig. III.

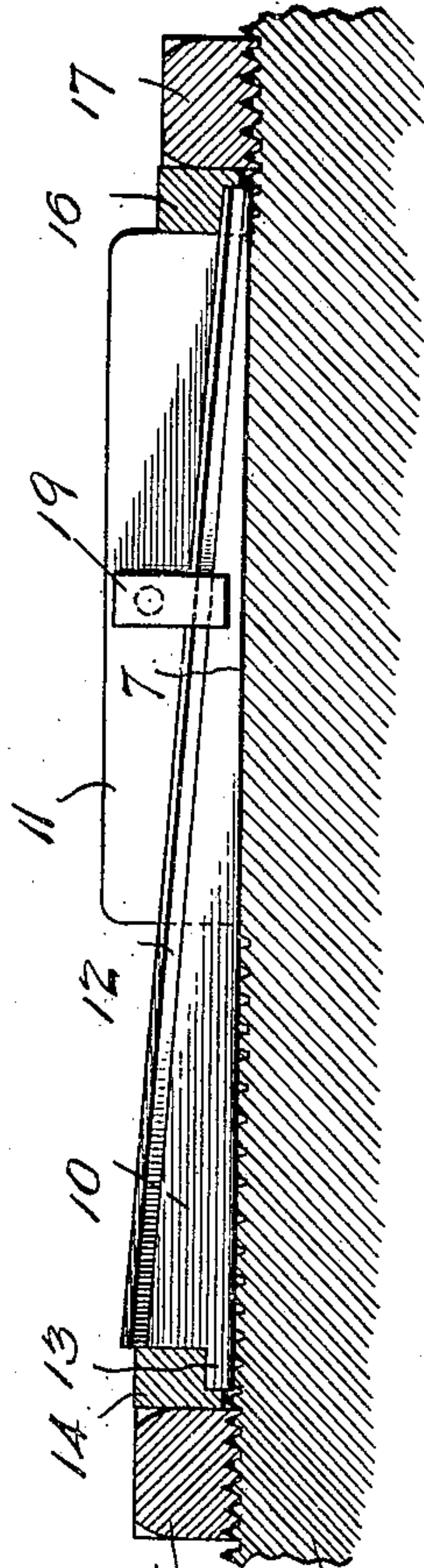
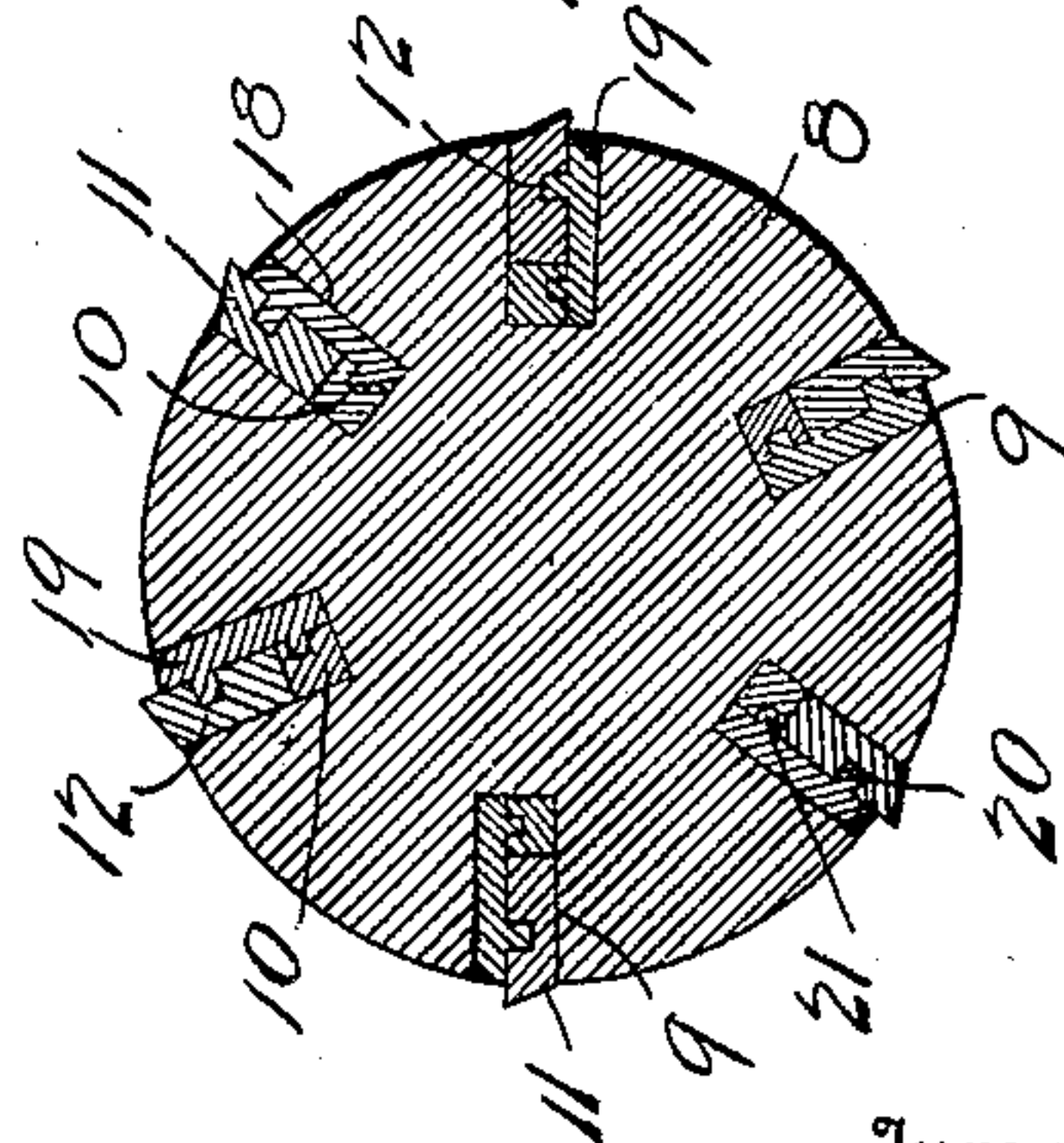


Fig. IV.



Inventor

John E. Schaeffer

Witnesses  
P. L. Krockman  
J. W. L. M. Cathran

By E. C. Vrooman,  
his Attorney.



# UNITED STATES PATENT OFFICE.

JOHN E. SCHAEFFER, OF SOUTH CHICAGO, ILLINOIS.

## EXPANSION-REAMER.

No. 925,515.

Specification of Letters Patent.

Patented June 22, 1909.

Application filed October 27, 1908. Serial No. 459,800.

*To all whom it may concern:*

Be it known that I, JOHN E. SCHAEFFER, a citizen of the United States, residing at South Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Expansion-Reamers, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to expansion reamers, and the object thereof is to provide a simple and improved construction of devices of this character whereby the cutting blades may be adjusted and clamped firmly in position with facility.

To the accomplishment of the recited object and others coördinate therewith, the preferred embodiment of my invention resides in that construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and embraced within the scope of the appended claims.

In said drawings:—Figure I is an elevation of the reamer embodying my invention. Fig. II is a transverse sectional view taken along lines 2—2 of Fig. I. Fig. III is a fragmentary longitudinal section of the reamer, and Fig. IV is a detail perspective view of one of the links.

Referring more particularly to the drawings for a detail description of my invention, the numeral 5 designates the shank having formed integrally therewith the screw threaded head portion (6), the latter being provided with a series of longitudinally disposed recesses (7) and having arranged medially of its vertical extent a stock (8), preferably, of cylindrical conformation and having radial recesses or slots (9) which correspond in number and direction to the recesses (7) in the head (6). The function of the recesses (7) and (9) is to seat and form a perfectly reliable guidance for the wedge members (10) and the blades (11), each member being equipped adjacent its outer edge with an oblique slot (12), the lower edge of each blade (11) being reversely inclined and lying contiguous the similarly inclined outer edge of the wedge (10). One end of each wedge (10) is furnished with a rabbet (13) which is designed to be inclosed in the follower collet (14), the under face of said collet (14) lying contiguous with relation to the adjusting nut (15). The other end of each wedge (10) is similarly secured by the collet (16), it being obviously unnecessary to rabbet this

terminal owing to the diminution in width of the blade at this point of connection. An adjusting nut (17) is superposed with respect to the collet (16) and occupies the same relative position as the adjusting nut (15) on the opposite portion of the head (6). Centrally of the longitudinal extent of the stock (8) and in juxtaposition to the wedge members (10) and the blades (11) I provide semicircular slots, as 18, for the reception of the links or coupling devices (19), the latter also having a semicircular contour. Extending laterally from the flat surface of the link (19) is a small cylindrical lug (20) and an inclined projection (21), the said projection (21) extending transversely to opposite sides of the link, the said lug (20) and the projection (21) being adapted for engagement with the blade (11) and the oblique slot of the wedge members (10) as clearly shown in Fig. II of the accompanying drawings.

When it is desired to expand the blades (11) it only becomes necessary to manipulate the adjusting nut (15) with respect to the head (6), it being assumed that the adjusting nut (17) occupies a position removed from the collet (16) in order to permit the radial expansion of the blades (11). When occasion requires the blades (11) to exert their cutting action within a smaller circumference the adjusting nut (15) is loosened from the head (6) and the adjusting nut (17) is rotated in a similar manner. It will, of course, be understood in the expanding operation that the wedges (10) are forced outwardly, owing to the increment of the width at the end of said wedges, the blades (11) are simultaneously forced outwardly, and that the reverse movement of the blades is produced by the gradual decrement in the longitudinal extent of the wedge members (10). In each adjusting operation the links (19) maintain the proper relative positions of the wedges (10) and the blades (11) and preclude any possibility of displacement. Considered as an entirety, the tool may be expeditiously adjusted to the maximum and minimum size of work.

It should be understood that in its broader aspect my invention comprehends the employment not only of the various means described, but of equivalent means for performing the recited functions. While the arrangement shown is thought, at the present time, to be preferable, it is desired to reserve the right to effect such modifications



and variations thereof as may come fairly within the scope of the appended claims.

What I claim is:—

5 1. In an expansion reamer, the combination with a head having a stock, each provided with longitudinally extending slots, the stock being provided with transverse openings at one side of its longitudinal slots, a plurality of wedges movable in the slots of  
10 the head and stock, a blade superposed with respect to each wedge, and a link in each transverse opening of the stock and having a connection with each wedge and the superposed blade in the adjacent slot.

15 2. In an expansion reamer, the combination with a head having a stock each provided with longitudinally extending slots,

the stock being provided with transverse openings at one side of each slot, a wedge mounted in each slot of the head and stock 20 and provided with an obliquely disposed recess, a blade mounted upon each wedge, a link carried by each blade engaging the transverse opening and having a projection engaging the recess of the wedge, and means 25 for adjusting said wedges and their superposed blades radially.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

JOHN E. SCHAEFFER.

Witnesses:

JOHN W. SCHAEFFER,  
CARL J. A. SWANSON.