

(No Model.)

2 Sheets—Sheet 1.

R. K. CARPENTER.

DRILLING MACHINE.

No. 291,876.

Patented Jan. 15, 1884.

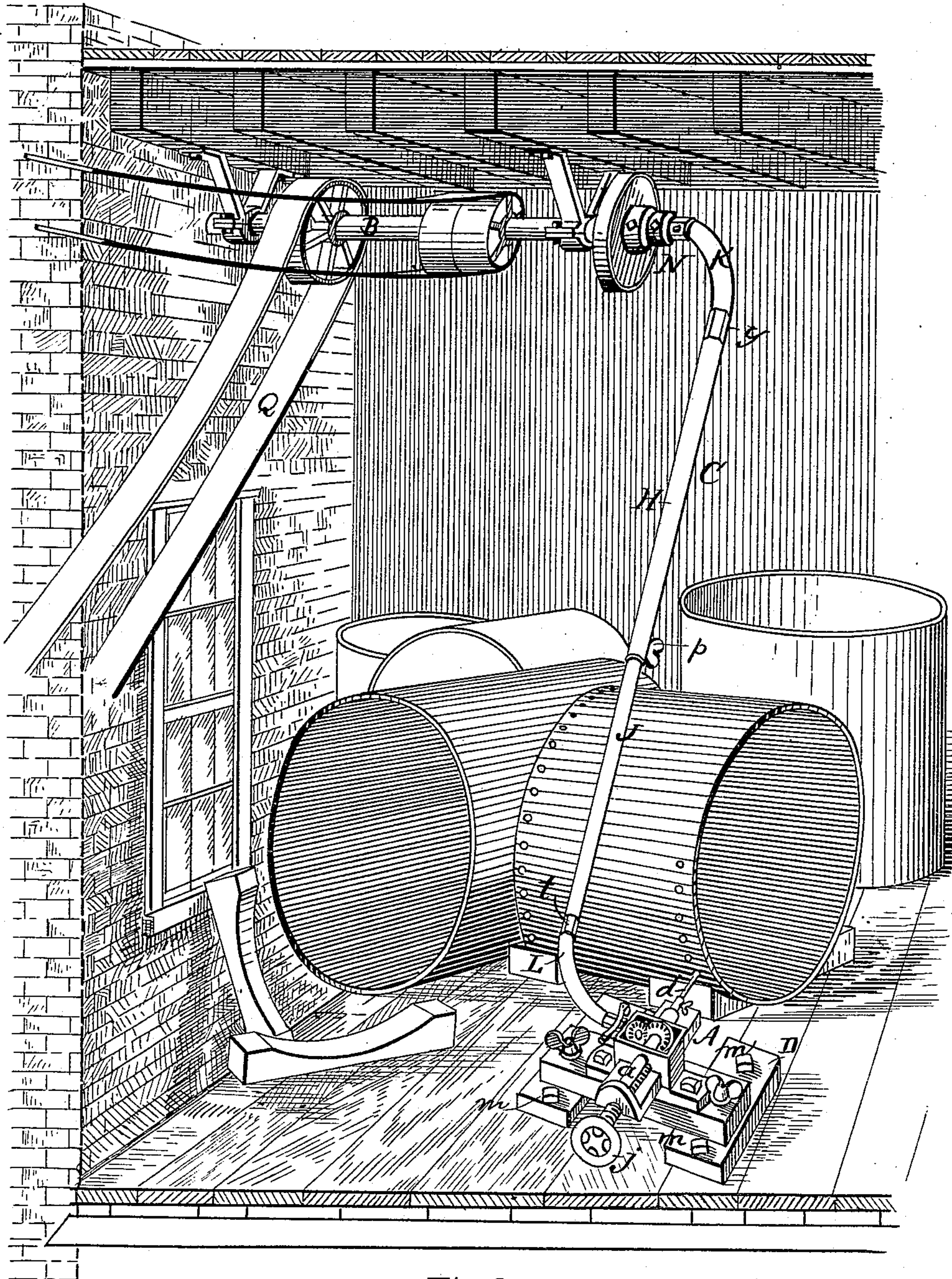


Fig. 1.

Witnesses,  
H. E. Parnell  
L. J. White.

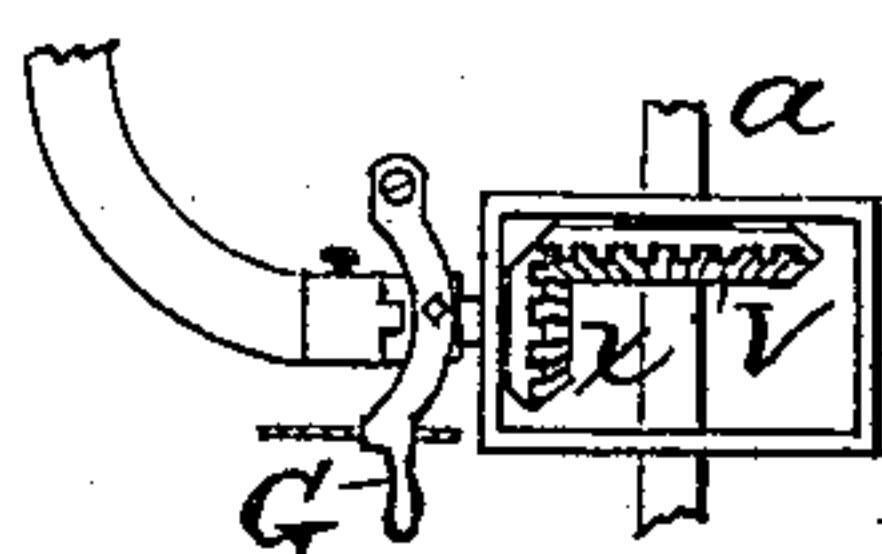


Fig. 2.

Inventor,  
Robert K. Carpenter,  
Per C. A. Shaw,  
Att'y.

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2 Sheets—Sheet 2.

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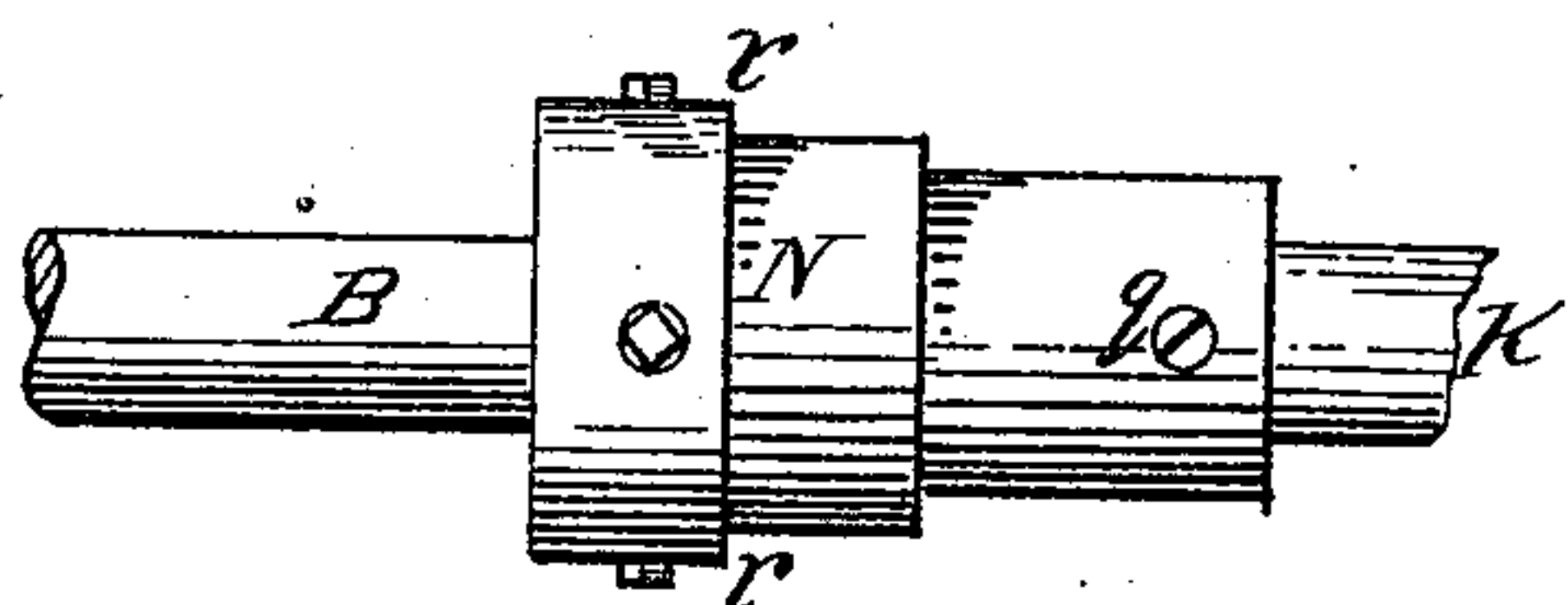


Fig. 3.

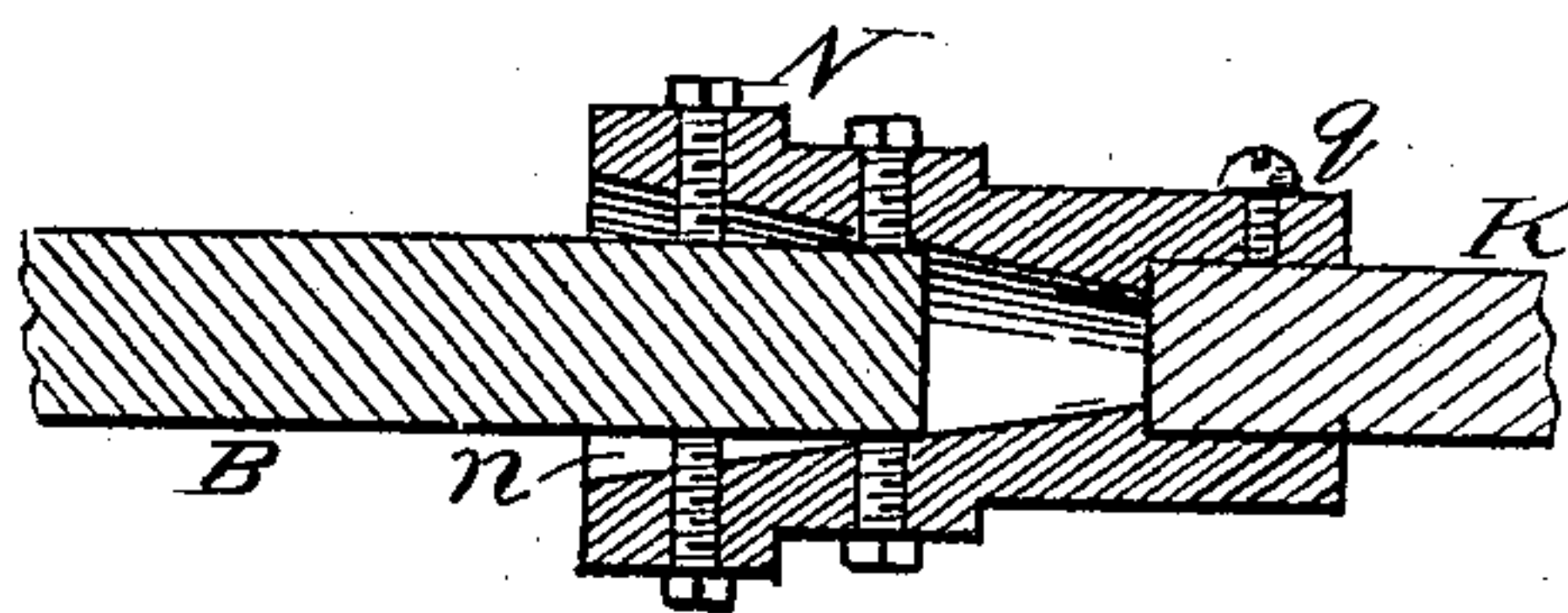


Fig. 4.

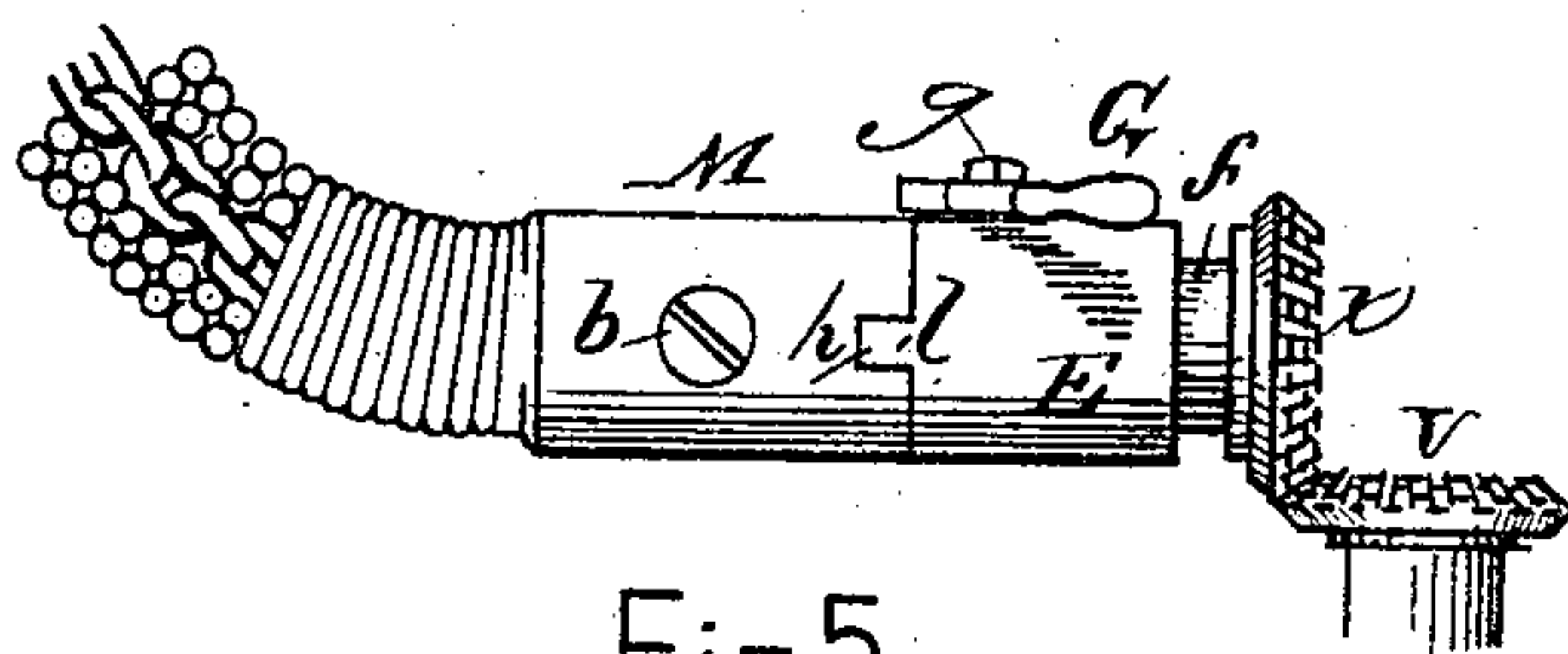


Fig. 5.

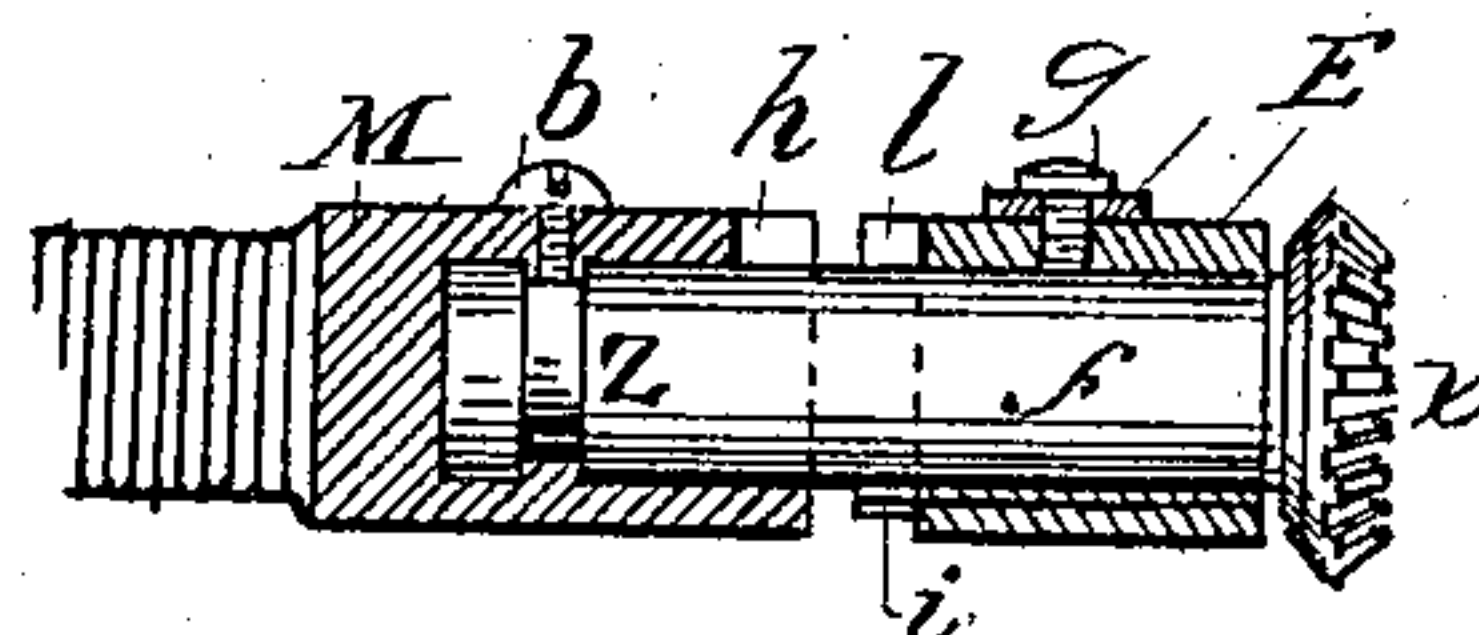


Fig. 6.

Witnesses:  
H. E. Remick.  
L. J. White.

Inventor  
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# UNITED STATES PATENT OFFICE.

ROBERT K. CARPENTER, OF MEDFORD, MASSACHUSETTS.

## DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 291,876, dated January 15, 1884.

Application filed August 6, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT K. CARPENTER, of Medford, in the county of Middlesex, State of Massachusetts, have invented a certain new and useful Improvement in Drilling-Machines, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an isometrical perspective view representing my improved drilling-machine in use; Fig. 2, a top plan view of the coupler; Fig. 3, a side elevation of the coupler; Fig. 4, a vertical longitudinal section of the same; Fig. 5, a side elevation of the clutch mechanism, and Fig. 6 a vertical longitudinal section of the same.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to that class of drilling-machines which are portable; and it consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a more effective article of this character is produced than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the frame of the drilling-machine proper; B, the main driving-shaft, and C the connecting-shaft. The drill *d* is secured in the usual manner in the shaft or mandrel *a*, which is journaled horizontally in the frame-work A, resting on the bed-pieces D, attached to the floor by the lag-screws *m*. The mandrel *a* is fitted to slide longitudinally and carries a miter-gear, *v*, which intermeshes with a smaller gear of the same description disposed on the short shaft *f*, also mounted in the frame A at right angles to the shaft *a*, and is provided with the feed-screw J. The shaft *f* is provided at its outer end with the annular groove, *z*, and between said groove and the gear *x* with the spline or fin *i*.

Fitted to slide longitudinally on the shaft *f*

there is a sleeve, E, provided interiorly with a groove for receiving the spline *i*, and at its outer end with the dog or projection *l*. This sleeve is moved back and forth on the shaft by means of the shipping-lever G, which has one of its ends pivoted to the frame A, and is centrally connected to the sleeve by the screw *g*.

The shaft C consists of the pipe H, pipe J, and two short flexible shafts, K L. The pipe J is fitted to slide in the pipe H, and thereby renders the shaft C extensible, a screw, *p*, being provided to prevent the pipe J from rotating in the pipe H when the drill is in use.

The shafts K L are composed of a coil or coils of wire in the ordinary manner, the shaft L being rigidly connected to the pipe J by the coupling *t*, and the shaft K to the pipe H in like manner by the coupling *y*.

Attached firmly to the outer end of the flexible shaft L there is a thimble-coupling, M, adapted to pass over the outer end of the shaft *f*, and provided with the screw *b*, which enters the annular groove *z*, and with a recess or aperture, *h*, for receiving the dog or projection *l*. The outer end of the flexible shaft K is provided with a coupling-thimble, N, to which it is attached by the screw *q*. This thimble is provided with a flaring or trumpet-shaped socket, *n*, for receiving the shaft B, and with a series of set-screws, *r*, for securing it to said shaft.

The object in making the opening or socket *n* flaring is to adapt it to shafts of different sizes, and also to center the coupling or render its central axial line coincident with that of the shaft to which it is applied when it is pushed onto the shaft to its fullest extent.

In the use of my improvement, the pipes J H being disconnected, the frame A, carrying the drill *d*, is first placed in a proper position and secured to the floor or any other convenient support. The coupling N is then attached to the projecting end of the shaft B, being pushed onto the shaft as far as possible, and secured thereto by the screws *r*, after which the coupling M is secured to the shaft *f* by the screw *b*. The pipe J is next inserted in the pipe H and secured by the screw *p*, and the sleeve E moved by the lever G, to cause the projection *l* to enter the aperture *h*, thereby coupling the shaft C to the shaft *f*, after which



power is applied to the shaft B by means of the belt Q, and the drill *d* caused to operate in a manner which will be readily understood without a more explicit description.

5 It will be obvious that the shaft C is both flexible and extensible, and that the drill *d* may be moved from place to place when provided with such a shaft, according to the work it is required to do, my improvement being especially  
10 valuable in connection with drills for drilling heavy boiler-work, marble-work, &c., which cannot be readily swung in a lathe or brought into position to be operated on by a stationary drill. It is also valuable on shipboard, as a  
15 drill provided with the shaft C may be readily operated in drilling on the outside of the ship, power being supplied from a driving-shaft on deck or in any other convenient locality.

I do not confine myself to using a drill in  
20 the mandrel *a*, as a bit or auger may be substituted therefor for boring wood; also, a polishing or grinding wheel and cutting implements of various kinds may be used as required in place of the drill.

25 Having thus explained my invention, what I claim is—

1. In a drilling-machine substantially such as described, the shaft C, consisting of the tubes

H J, screw *p*, and flexible shafts K L, in combination with means for connecting said shaft 30 with a driving-shaft, and with the mandrel of a drill or other tool, substantially as set forth.

2. In a drilling-machine substantially such as described, the coupling N, provided with the flaring socket *n* and set-screws *r*, in combination with the flexible shaft K, and means 35 for connecting said flexible shaft with the tool-carrying mandrel *a*, substantially as specified.

3. The improved drilling-machine herein described, the same consisting of the shaft K, 40 provided with the coupling-thimble N, having the screws *r* and flaring socket *n*, the pipes J H, provided with the screw *p*, the shaft L, provided with the thimble M, having the screw *b* and recess *h*, the shaft *f*, provided with the 45 gear *x*, spline *i*, and groove *z*, the sleeve E, having an interior groove to receive the spline *i*, and provided with the screw *g* and lever G, the mandrel *a*, provided with the gear *v*, drill *d*, and a feed-screw, *j*, the shaft B, and frame 50 A, all constructed, combined, and arranged to operate substantially as set forth.

ROBERT K. CARPENTER.

Witnesses:

C. A. SHAW,  
L. J. WHITE.