

(No. Model.)

H. COTTRELL.

EXPANDER FOR EXPANDING AND SECURING METAL BUNG
BUSHINGS INTO CASKS.

No. 311,960.

Patented Feb. 10, 1885.

Fig. 1.

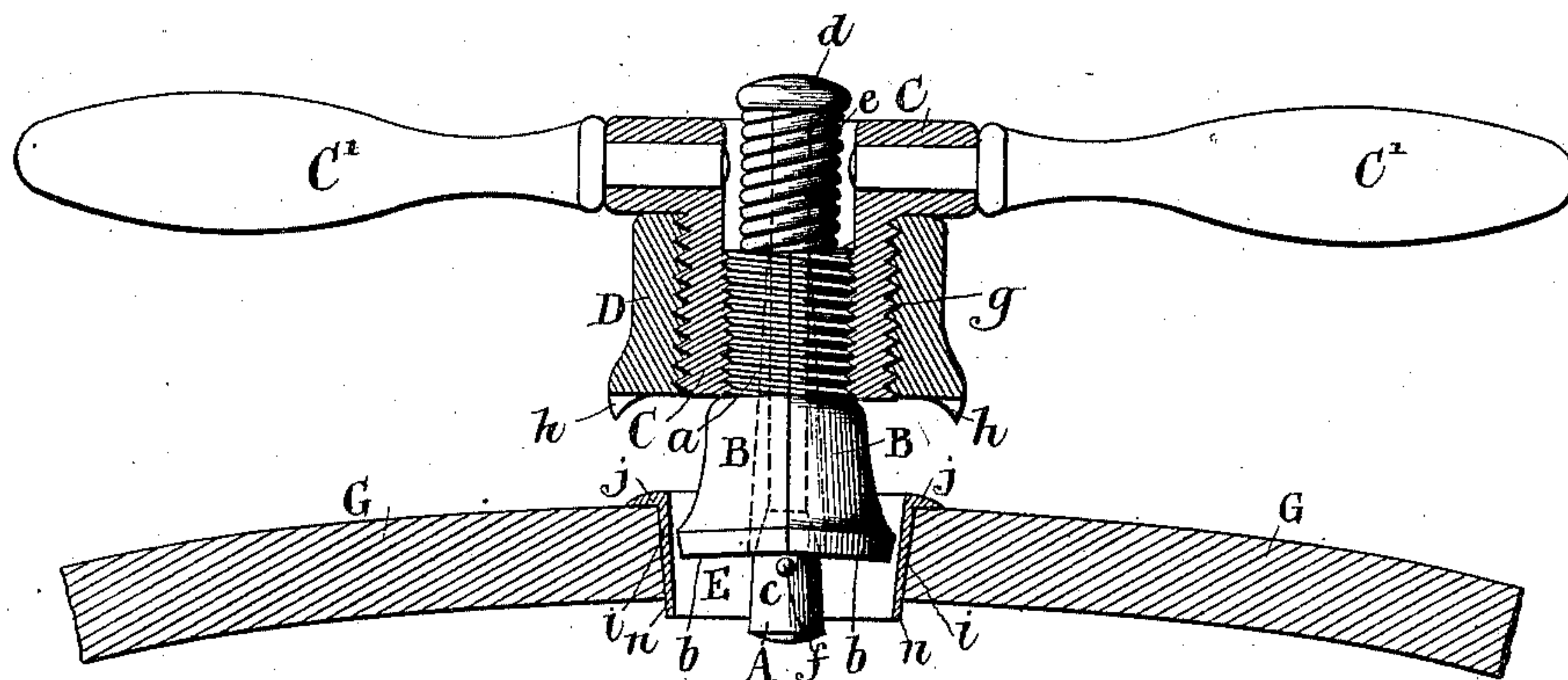


Fig. 2.

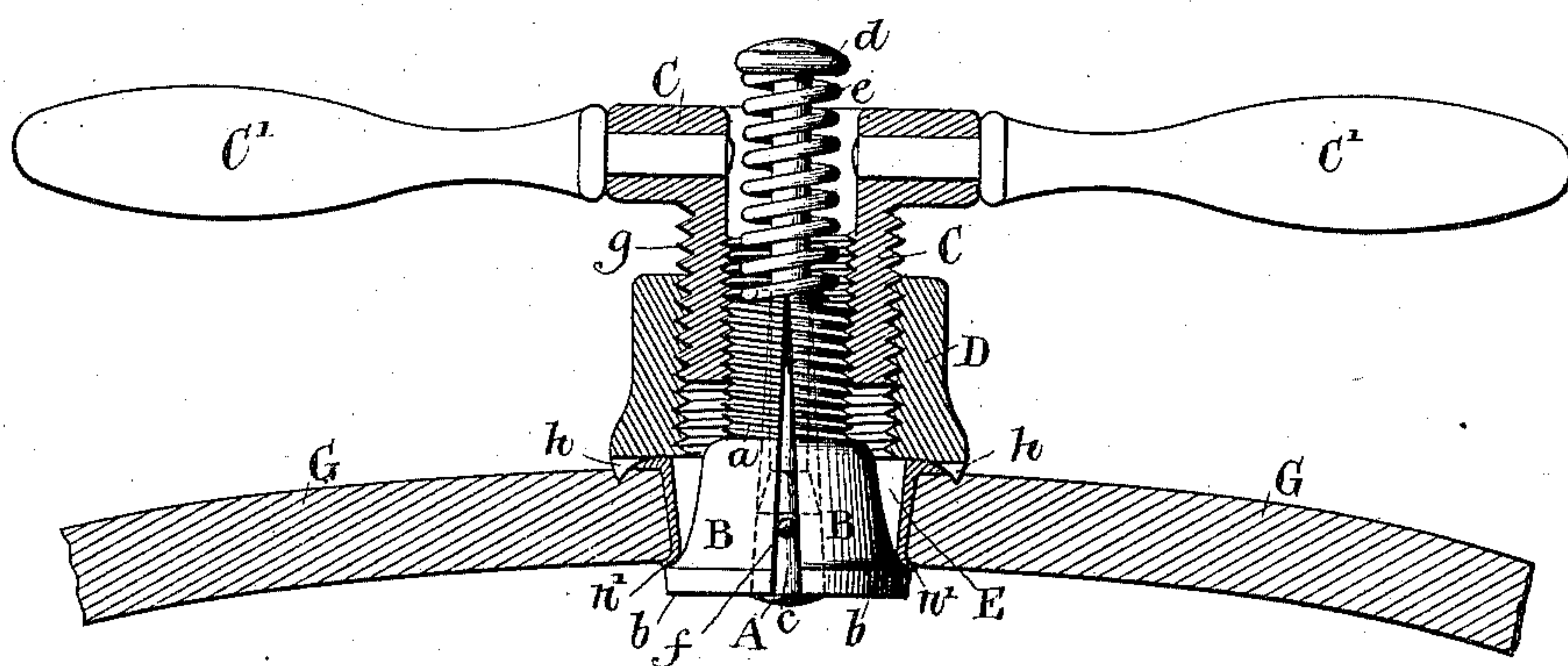
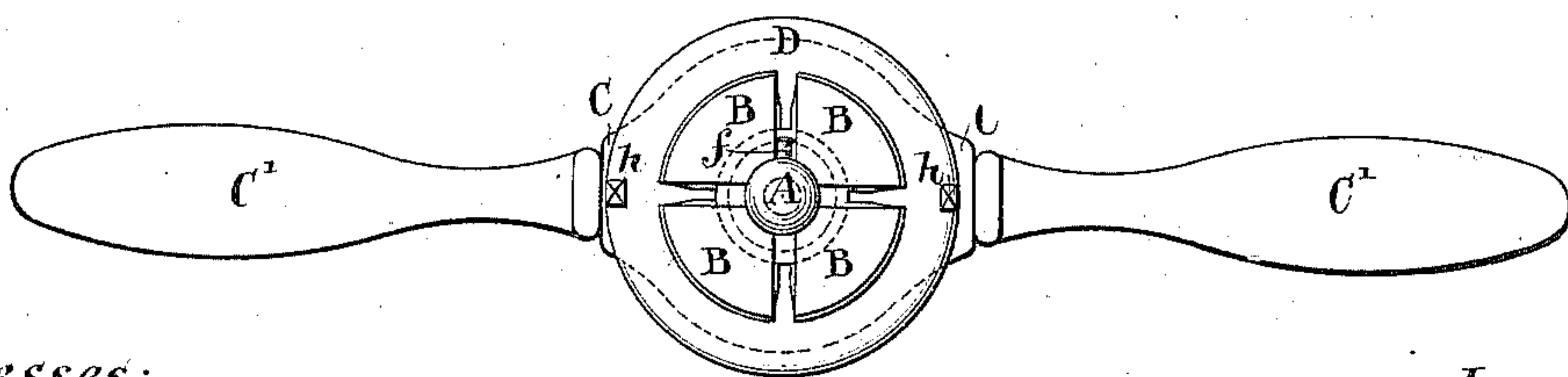


Fig. 3.



Witnesses:-

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HERBERT COTTRELL, OF NEWARK, NEW JERSEY.

EXPANDER FOR EXPANDING AND SECURING METAL BUNG-BUSHINGS INTO CASKS.

SPECIFICATION forming part of Letters Patent No. 311,960, dated February 10, 1885.

Application filed April 17, 1884. (No model.)

To all whom it may concern:

Be it known that I, HERBERT COTTRELL, of Newark, in the county of Essex and State of New Jersey, have invented a new and useful
5 Improvement in Expanders for Expanding and Securing Metal Bung-Bushings into Casks, and for other purposes, of which the following is a specification, reference being had to the accompanying drawings, forming
10 part of this specification.

The principal object of my invention is to provide an expander which can be conveniently used by brewers or others for the purpose of applying and securing metal bung-
15 bushings in barrels after the latter are finished, and for tightening such bushings in barrels wherein they have been previously applied, but wherein they have from any cause become loose.

20 The invention consists, principally, in the combination, with an externally-screw-threaded expanding sectional mandrel and a core, of two differentially-screw-threaded nuts, as hereinafter described, whereby a very powerful pressure may be so brought upon the
25 inner edges of a flanged metal bushing after the insertion of the latter into a bung-hole that the said edges may be thereby turned outward and the bushing thereby caused to
30 clamp the stave tightly around the inner edge of the bung-hole.

It also consists in certain details of construction, hereinafter described.

Figure 1 of the drawings is a side view,
35 partly in section, of an expander constructed according to my invention, showing it in the act of insertion into a bung-bushing in a cask. Fig. 2 is a similar view of the expander, but showing it in the act of expanding the bush-
40 ing. Fig. 3 is an inverted plan of the same.

Similar letters of reference indicate corresponding parts in the several figures.

A is the central core, and B B are the expanding sections forming the principal parts
45 of the expanding sectional mandrel. The sections B B, of which there are four represented, but of which there may be any other convenient number, combine to form a longitudinally-divided expanding shell surrounding the central core A, the said shell

having on the upper portion of its exterior a screw-thread, *a*, and on the lower portion of its exterior a flange, *b*, the upper face of which is cavetto-shaped, the other portion of its exterior between the cavetto and the
55 screw-thread being slightly taper.

C and D are differentially-threaded nuts working one within the other. The inner nut, C, fits the screw-thread *a* on the exterior of the mandrel-sections and holds them to-
60 gether around the core A, the lower portion, *c*, of which is made larger than the portion above, and slightly tapered upward, and has the interiors of the expanding sections B B fitted to it. The upper end of the core is
65 furnished with a broad head, *d*, between which and the top of the nut C a spiral spring, *e*, is placed around the core for the purpose of drawing the latter upward within the sections with a tendency to keep them ex-
70 panded by the conical or taper portion *c* of the core. On the lower part of the core is a projection, *f*, which enters between two of the expanding sections B B, for purpose of en-
75 abling the mandrel to be turned by the core whenever desirable, as will be hereinafter explained. The thread of the external nut, D, and the corresponding male screw-thread, *g*, provided for it on the exterior of the nut C, have the same direction as the thread *a* on
80 the mandrel and the corresponding internal thread of the nut C—that is to say, both are right-handed or both left-handed—but the thread *g* and nut D are of coarser pitch, the pitch of the thread *a* and the interior of the
85 nut C being, say, one-tenth of an inch, and the pitch of the said thread *g* and the interior of the nut D being, say, one-eighth of an inch. The external nut, D, forms the base of the expander, and is furnished on its bottom
90 with teeth *h h*, to enter the wood of the stave of a cask and keep the said nut D from turning thereon. The nut C is furnished with lever-handles *C'*, by which to turn it within the nut D and upon the screw-thread *a* at the
95 same time, the threads *a* and *g* then acting as a differential screw.

The expander is made to operate in the following manner: To prepare it for operation the nut D is run back on the screw-thread *g*, 100

and the screw-thread *a* is run back into the nut D, as shown in Fig. 1, and to prepare the cask G and bushing E for its operation the bushing is inserted into the bung-hole *i i*, to which it fits snugly and beyond which it projects slightly, as shown at *n n* in Fig. 1, with its flange *j* bearing on the exterior of the cask. The core *d* is then pressed down by the operator within the expanding sections B B of the mandrel, which are then allowed to come together sufficiently to allow the flange *b* to pass into the bushing, as shown in Fig. 1. The implement being then held by its handle C', the mandrel is pushed down so that its flange *b* passes through the bushing, and the base or nut D brought down upon and over the flange of the bushing, so that its teeth *h* indent themselves into the wood of the cask sufficiently to prevent D from turning. The flange *b* being through the bushing and the core liberated, the spring *e* forces the core upward and expands the mandrel-sections B so that their flange *b* projects laterally beyond the inner edge, *n*, of the bushing, and that the said sections press against the bushing with sufficient force to prevent the mandrel from turning. All is now ready for the operation, which is effected by turning the nut C by its handles C' in a direction to make it move up within the nut D and upon the thread *a*, neither of which rotates. In this way the expanding mandrel is drawn up very slowly by the differential action of the screws, but made to exert a very powerful outward pressure upon the edges *n n* of the bushing, which are expanded outward by the taper lower portion of the sections B, and also both turned upward and outward, as shown at *n' n'*, Fig. 2, by the cavetto-shaped upper surface of the flange *b*, and so made to clamp the edges of the bung-hole very tightly.

If, on the insertion of the implement in the bushing, as hereinbefore described, the flange *b* will not pass through the bottom of the bushing when the base or nut D comes down to the cask, the mandrel may be screwed down within the nut C by turning the core by

means of its knob *d*, the projections *f* causing the mandrel to turn with the core. If, on the other hand, before placing the implement in the bushing the mandrel should have been set so low down in the nut C that the flange *b* passes farther than is necessary through the bushing, the said flange may be brought up to the bushing in a position of readiness to commence the expanding operation by turning the mandrel by means of the knob of the core. In this way the tedious operation of bringing up the flange to the bushing by the slow differential action of the two nuts is avoided and the process of expanding the bushing may be shortened. It may be here stated that the spring *e* is not absolutely indispensable to the apparatus, as the core might be held up by the hand during the insertion of the implement into the bushing; but the spring affords much greater convenience for manipulating the instrument.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with an expanding externally-screw-threaded sectional mandrel and a core, of a nut fitted to the screw-thread of the mandrel, and having upon its exterior a thread of different pitch, and a second nut fitted to the thread on the extension of the first-named nut, substantially as herein described.

2. The combination, with the expanding mandrel composed of externally-screw-threaded and flanged sections B B, of the core A, having a taper, *c*, the spring *e*, and the differentially-threaded nuts C and D, substantially as herein described.

3. The combination, with the mandrel-sections B B and differentially-threaded nuts C and D, of the core A, having a projection, *f*, to engage between the mandrel-sections, substantially as and for the purpose described.

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Witnesses:

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