

(No Model.)

J. W. BOWERSOX.

MACHINE FOR TWISTING TWINES AND CORDS.

No. 352,804.

Patented Nov. 16, 1886.

Fig. 1.

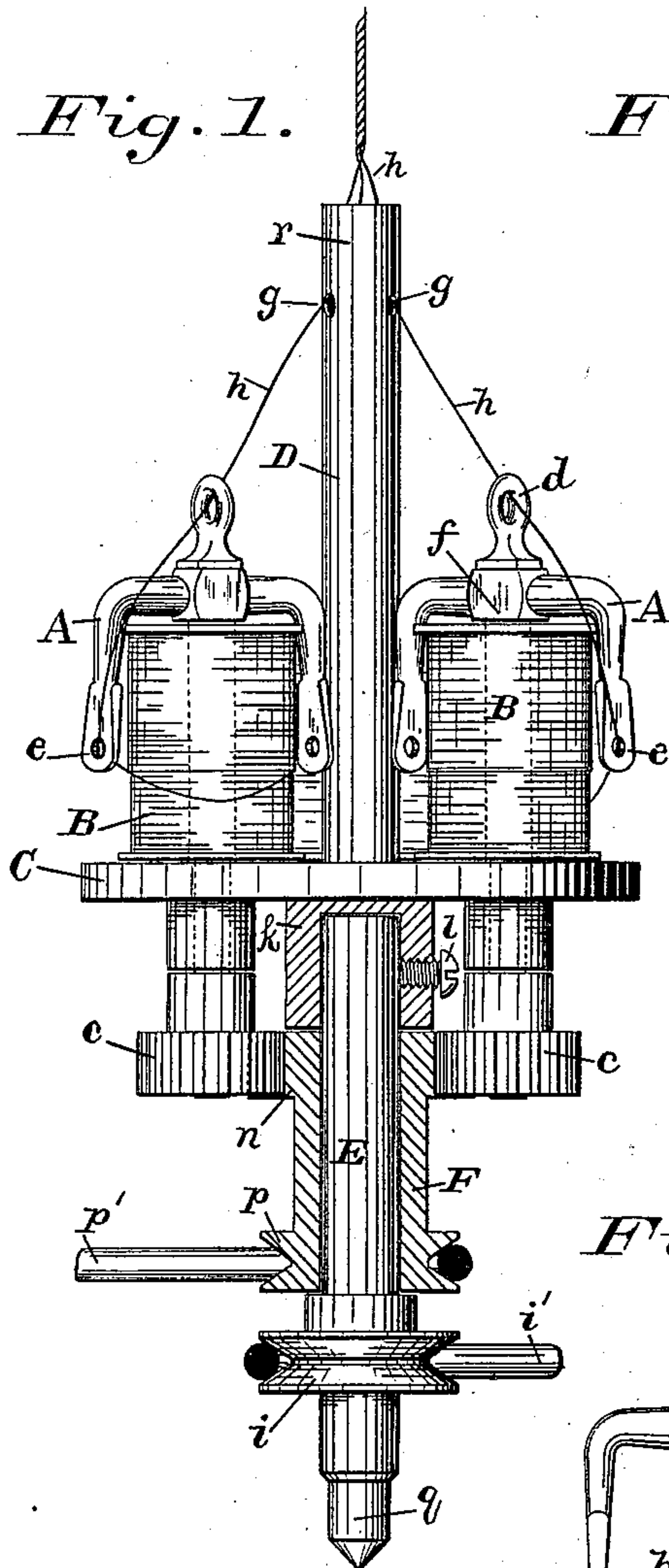


Fig. 2.

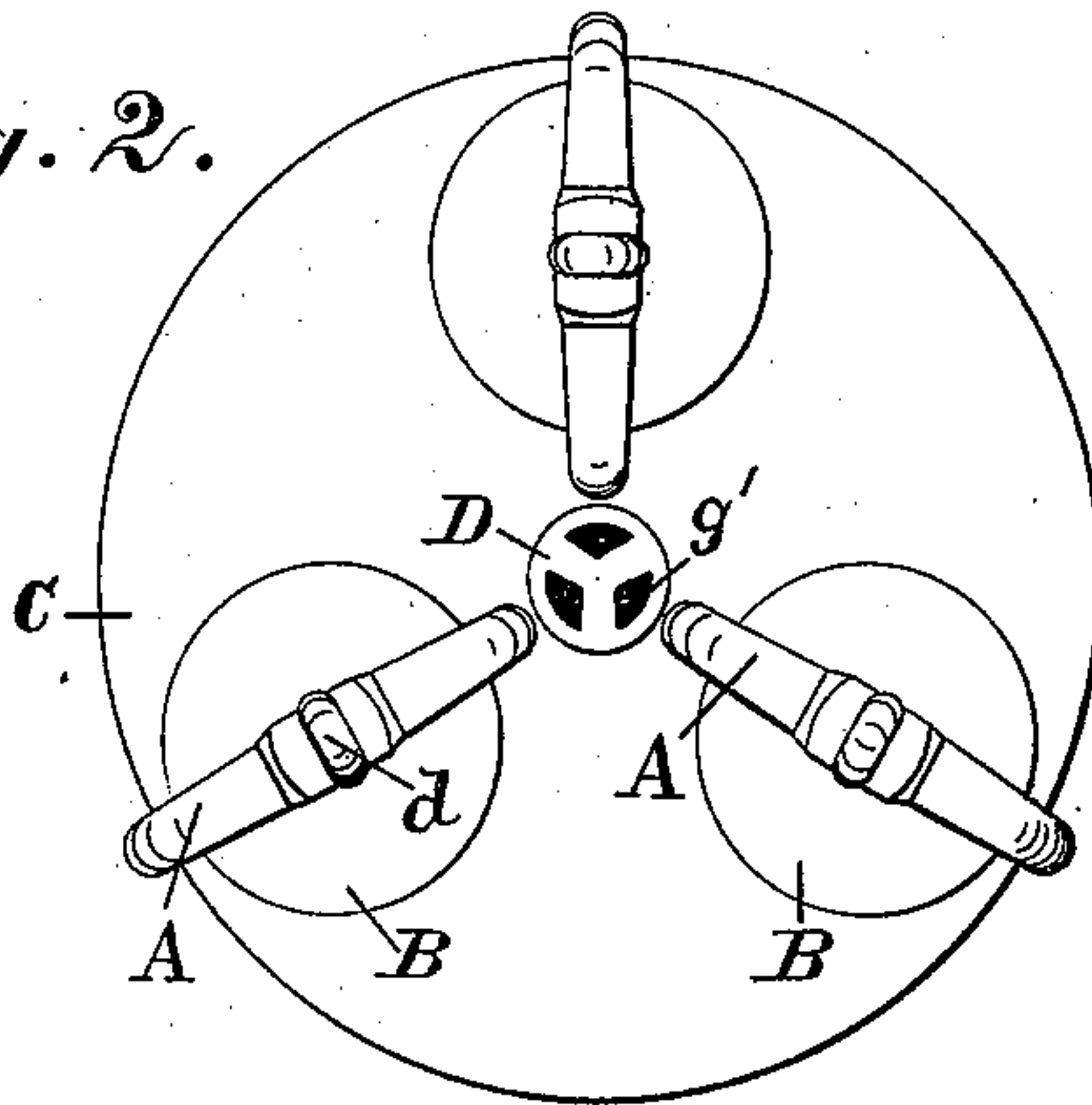


Fig. 3.

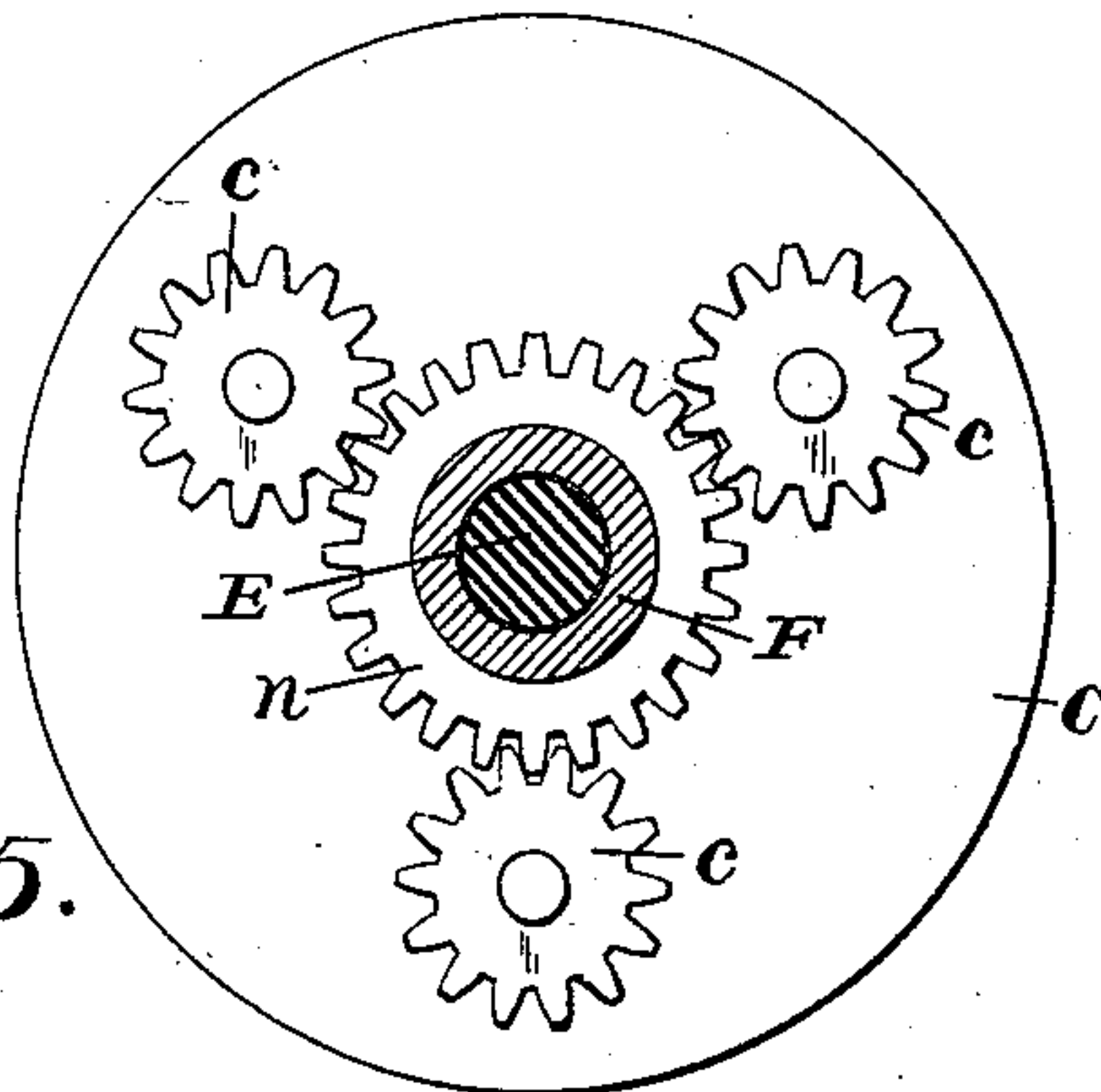


Fig. 5.

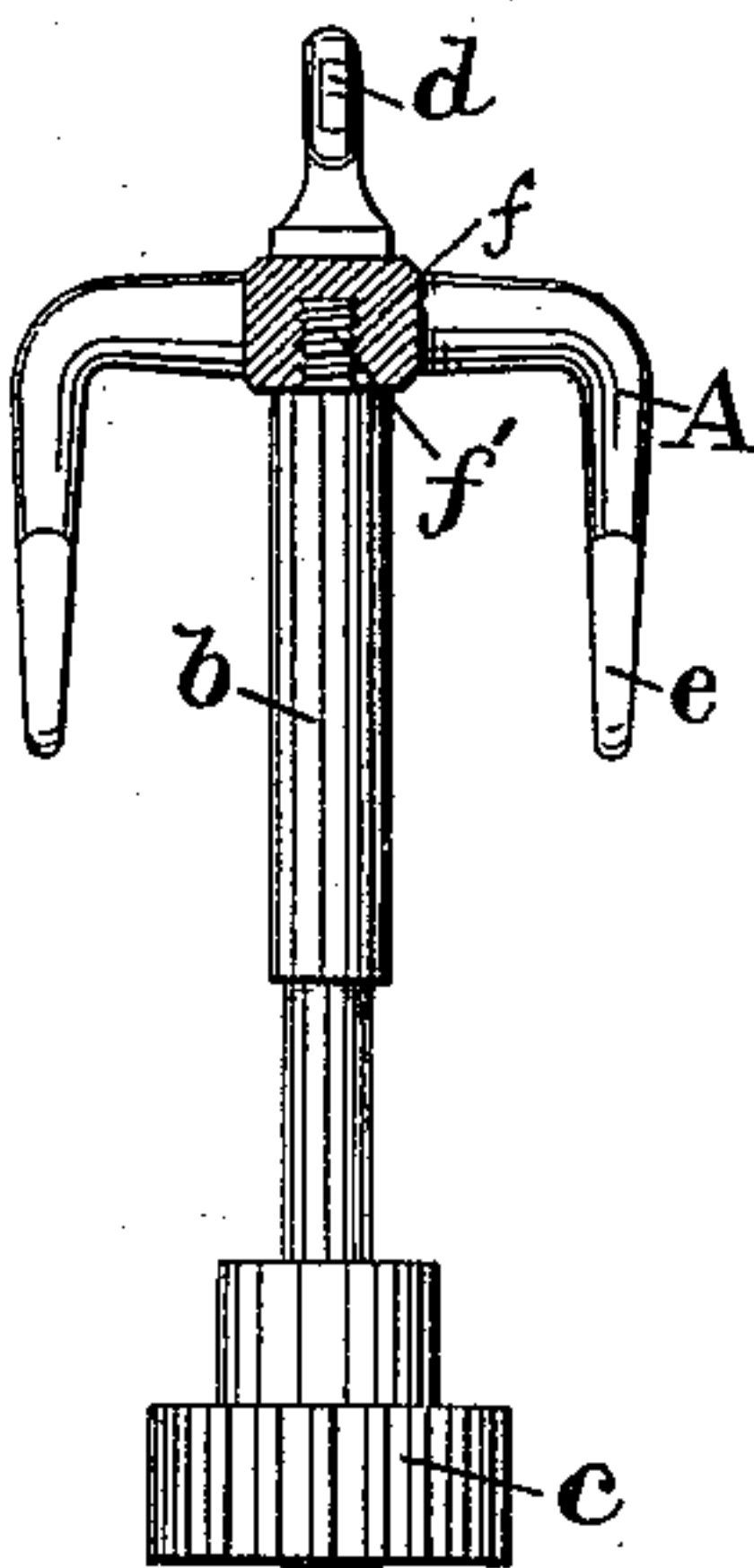


Fig. 4.

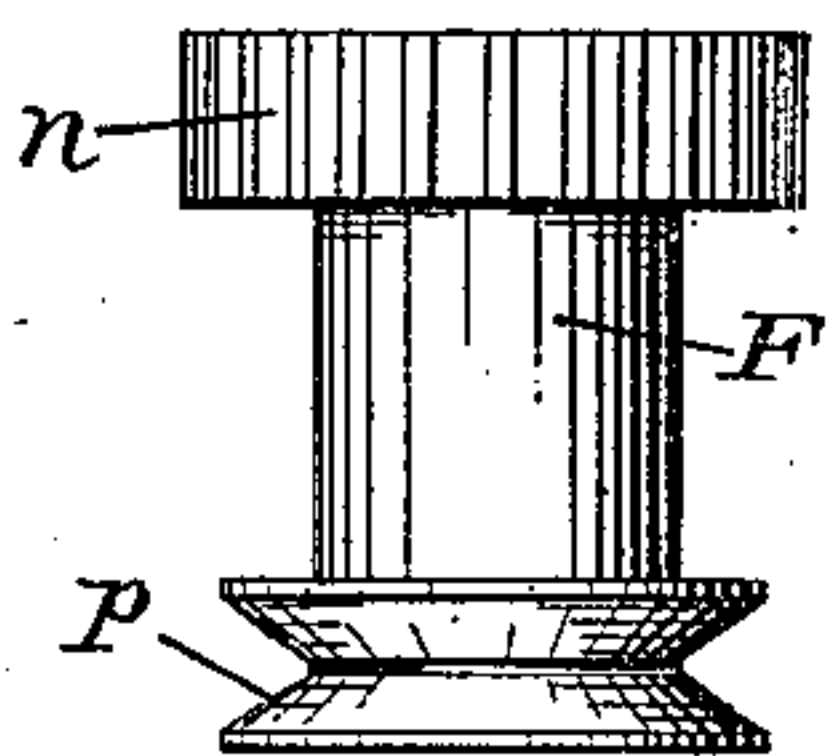
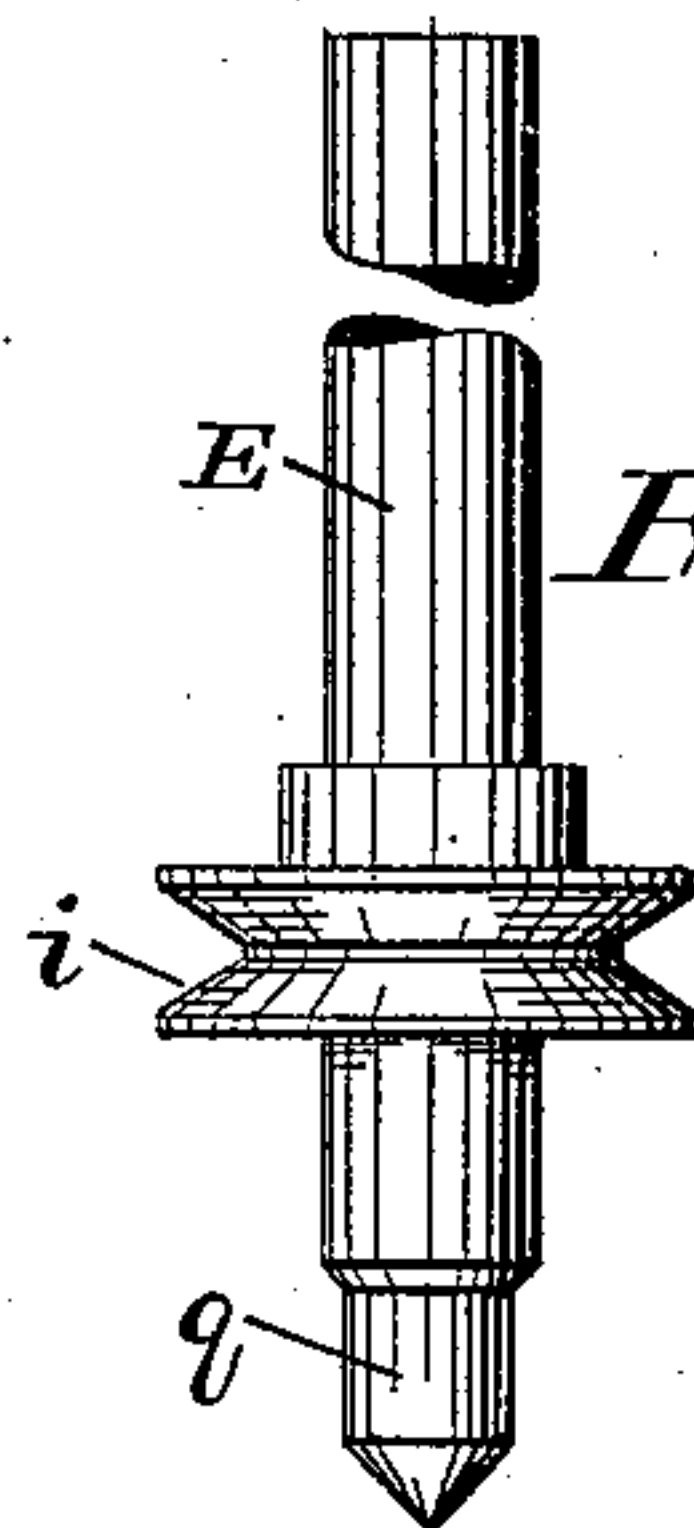


Fig. 6.



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JOSEPH W. BOWERSOX, OF WOODBERRY, MARYLAND.

MACHINE FOR TWISTING TWINES AND CORDS.

SPECIFICATION forming part of Letters Patent No. 352,804, dated November 16, 1886.

Application filed January 31, 1885. Serial No. 154,498. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. BOWERSOX, a citizen of the United States, residing at Woodberry, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Machines for Twisting Twines and Cords, of which the following is a specification.

My invention relates to machines for twisting twines and cords, and has for its object to provide an improved twisting-head which will twist the soft yarns or "first lay" which is to compose each of the several strands, and also in the same operation twist the strands together.

The construction of the improved twisting-head will be described in connection with the accompanying drawings, in which—

Figure 1 is an elevation, partly in section and partly side view, of the twisting-head. Fig. 2 is a top view of the twisting-head. Fig. 3 is an inverted view of the same, in which the spindle and loose hub thereon are shown in section. Fig. 4 is a view of the "whirl" and the hub which drives the fliers. Fig. 5 is a view of one of the fliers and connected parts, in which the flier at the top of the spindle is shown in section to expose the connecting-screw. Fig. 6 is a view of the spindle and whirl, by which the head is driven.

The letter A designates the fliers mounted on the tops of spindles *b*, each of which is provided on the lower end below its bearing with a pinion, *c*. At the center and top of each flier is an eye, *d*, and each flier-arm has an eye designated by *e*. The flier-arm is connected to and is detachable from the top of the said spindle *b* by a screw, *f*. Three fliers, A, each supported at the top of a spindle, *b*, are mounted in bearings on a plate, C, and spaced apart equidistant around the center of said plate, which is arranged to revolve in a horizontal plane, thereby carrying the fliers around a common axis.

The spool B is placed on the spindle *b* of the flier, and is seated on the plate C. While all the spools are carried around the axis of the plate C, no provision is made for rotating each separate spool. The yarn *h* is passed through the eye *e* of one flier-arm, and thence through the center eye, *d*. By this arrangement the

soft yarn on each spool, which is to compose one of the strands of the twine, may be twisted. A shaft, D, is fixed rigidly on top and at the center of the rotary plate, and projects axially therefrom. Near the end of this shaft D are the usual lateral openings, *g*, one for each of the three yarns. Each opening has its terminus *g'* at the end of the shaft. This shaft, with the openings, constitutes the twister for uniting the several strands into twine. The twisted strand *h* from the center eye, *d*, of each flier passes into one of the openings *g* and out of the terminus *g'*, where they unite. The rotation of this shaft with the plate C effects the twisting together of the several strands, as has heretofore been done in other machines. The rotary plate C, the independently-rotating fliers A, carried around by the plate, and the twister-shaft D, centrally fixed to the said plate, constitute the "twister-head," whereby each strand *h* is first twisted, and then all the strands are twisted together.

It will be observed that the construction and arrangement of the parts—namely, plate C, shaft D, spindle *b*, and flier-arms A—afford at all times perfect accessibility to the thread or yarn on each spool B, and render it very easy and convenient to pass the thread from the spool to the openings *g* in the twister-shaft.

The rotary plate C has on its lower side a central hub, *k*, provided on the side with a set-screw, *l*, and the upper end of the supporting-spindle E enters the central hub, and is made fast thereto by the set-screw. This construction allows the plate and the parts mounted on it to be readily separated or detached from the supporting-spindle. A driving pulley or whirl, *i*, is on the supporting-spindle below the plate, and a cord, *i'*, passing over said pulley causes the plate to revolve. The flier-spindles *b* turn freely in their bearings in the plate C, and project below it, and the flier-pinions *c* are on the lower projecting ends of the spindles.

A loose hub, F, is mounted on the supporting-spindle E, between the central hub, *k*, of the plate and the pulley *i*. This loose hub has a driver gear-wheel, *n*, with which the flier-pinions *c* engage, and a cord, *p'*, passes over a whirl, *p*, on the hub, and drives the loose hub and turns all the fliers, whereby the

latter have a positive rotation independent of that of the plate C and twister-shaft D.

The twister-head may be supported in the machine by the lower end, *g*, of its spindle setting in a step or socket on the rail of the machine, and the end *r* of the twister-shaft D, above the lateral openings *g*, is to be stayed in a bearing on an upper rail (not shown) of the machine. Any desired number of these heads
10 may be placed in a row along the said rails.

While three fliers are here shown and described, four or other greater number may be used.

All the mechanism for driving the parts is
15 below the plate C, where it is out of the way and does not obstruct the hands of the operator when attending to the strands. The particular construction and arrangement of the fliers, their spindles *b*, the pinions *c* below the
20 plate, and the drive-wheel *n* and whirl *p*, turning loosely on the supporting-spindle, provide for a positive rotary motion of the fliers.

I am aware that gearing to impart motion
25 to spindles in machines of this class is old; also, that twister-shafts and fliers have been used in such machines; but I am not aware that a machine has heretofore been made wherein so few parts have been combined to produce
30 the same advantageous results.

Having described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combination of a rotary plate, C, having a twister-shaft, D, centrally fixed to
35 the top thereof, flier-spindles *b*, mounted in bearings in the plate, substantially as shown, so as to have the spools seated on the plate, and each spindle projecting through the said
40 plate, and having a pinion, *c*, on the end, which projects below the plate, a flier, A, having downwardly-curved arms mounted on the top of each spindle and provided with a top center eye, *d*, a supporting-spindle, E, below the
45 plate, provided with a fixed drive-pulley, *i*, and a loose-turning hub, F, provided with a whirl, *p*, and a driving gear-wheel, *n*, engaged with the several pinions aforesaid, as set forth.

2. The combination of a rotary plate, C, having a twister-shaft, D, centrally fixed to
50 the top thereof and provided on its lower side with a central hub, *k*, flier-spindles *b*, mounted in bearings in the plate, and each spindle having a pinion, *c*, fliers mounted on each spindle, a supporting-spindle, E, detachably secured
55 in the said central hub and provided with a fixed drive-pulley, *i*, and a loose-turning hub, F, provided with a whirl, *p*, and a wheel, *n*, to drive the fliers, as shown and described.

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

JOSEPH W. BOWERSOX.

Witnesses:

JOHN E. MORRIS,
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