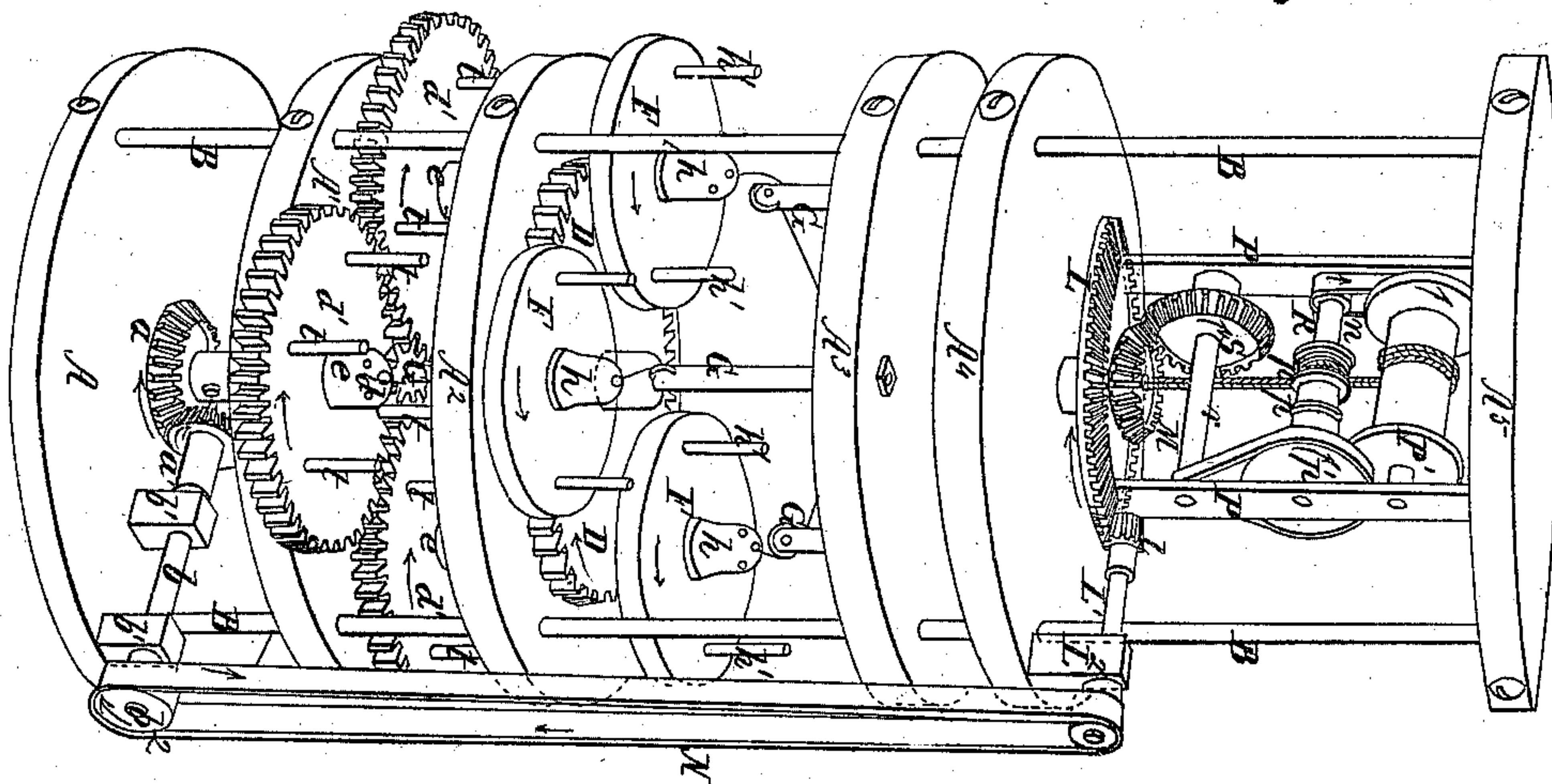


*J. Bachelder*  
*Covering Cord.*

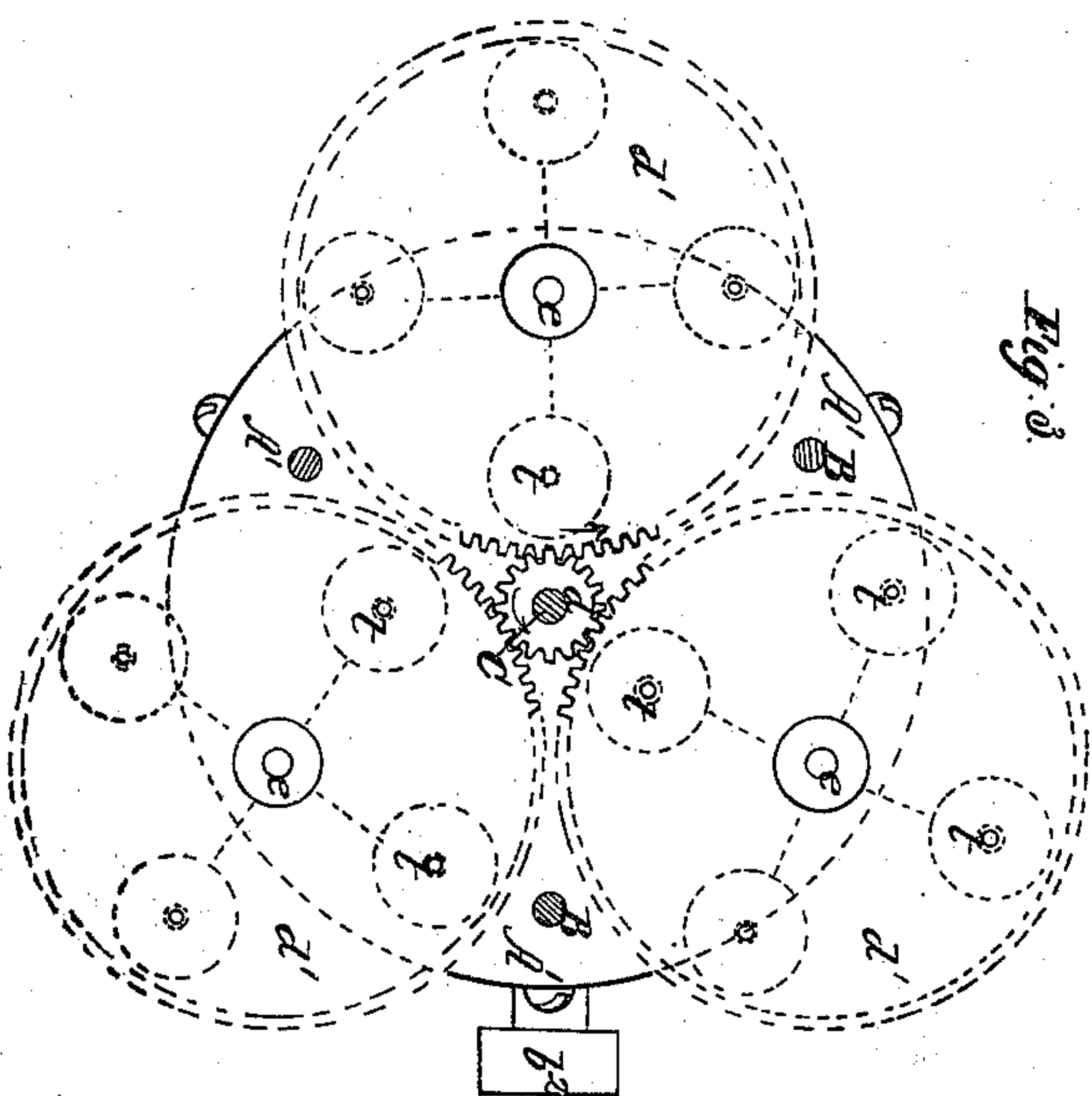
*Sheet 1-2 Sheets.*

*N<sup>o</sup> 81,577.*

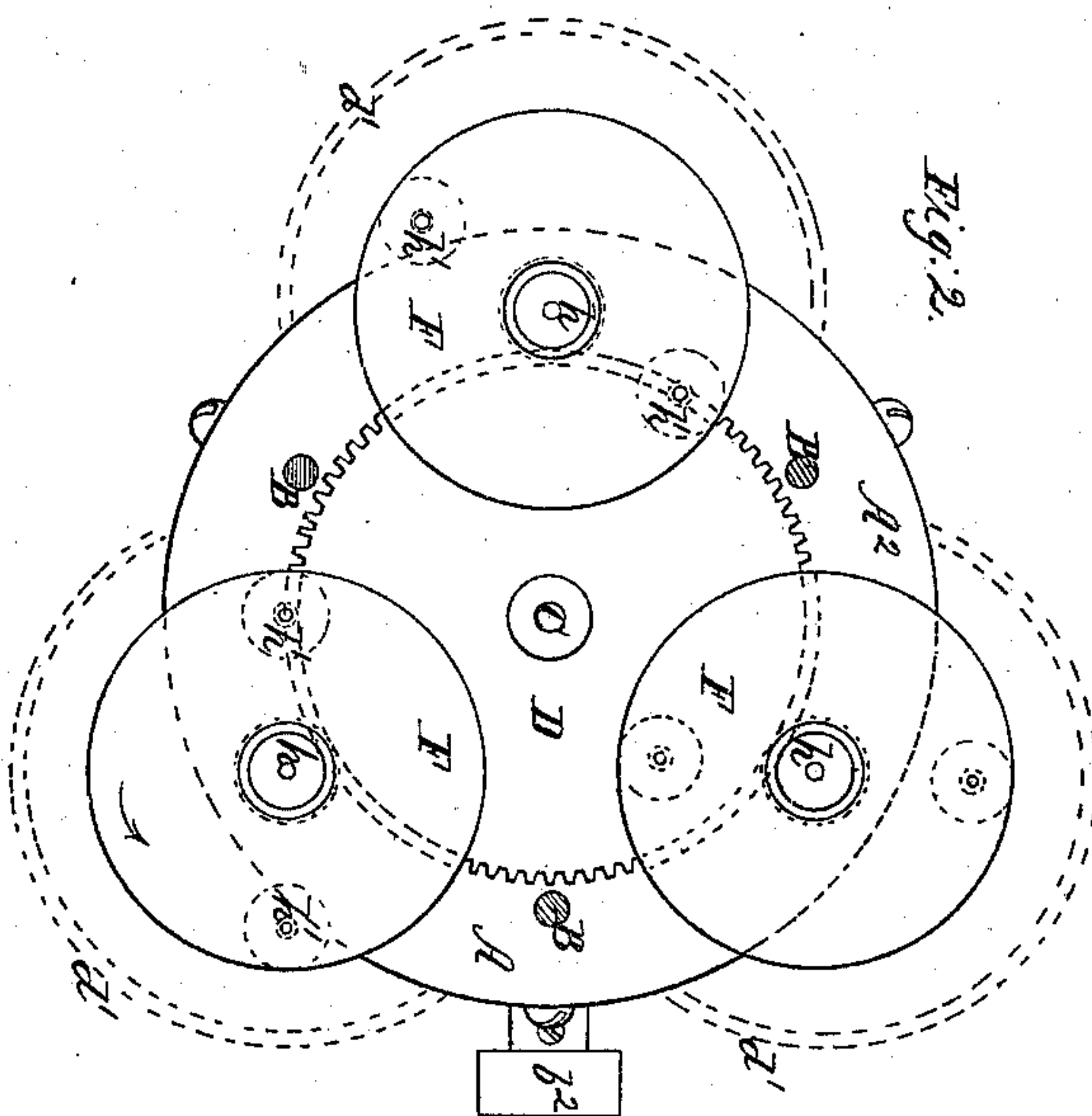
*Patented Sept. 1, 1868.*



*Fig. 1.*



*Fig. 2.*



*Fig. 3.*

*Witnesses*

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*By*  
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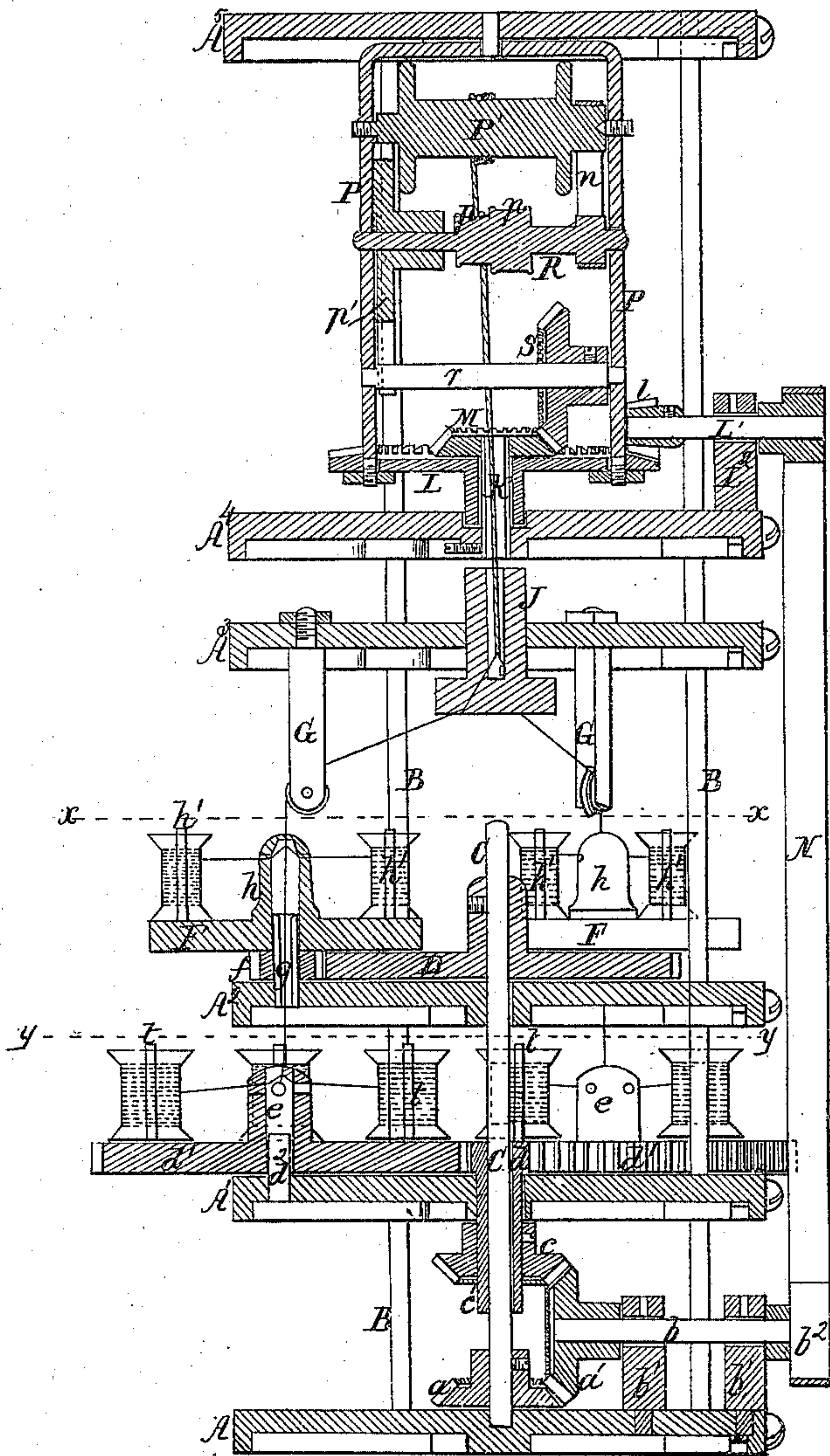
Sheet 2-2 Sheets.

*J. Bachelder.*  
*Covering Card.*

*N<sup>o</sup> 8,577.*

*Patented Sept. 1, 1868.*

*Fig. 4.*



*Witnesses*  
*R. J. Campbell*  
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# UNITED STATES PATENT OFFICE.

JOHN BACHELDER, OF NORWICH, CONNECTICUT.

## MACHINE FOR COVERING CORD.

Specification forming part of Letters Patent No. 81,577, dated September 1, 1868.

### *To all whom it may concern:*

Be it known that I, JOHN BACHELDER, of Norwich, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Machinery for Covering and Laying Cord; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, Plate 1, is a perspective view of the improved machine complete. Fig. 2, Plate 1, is a section through the machine, taken in the horizontal plane indicated by line *x x* in Fig. 4 of Plate 2. Fig. 3, Plate 1, is a section taken through the machine in the horizontal plane indicated by line *y y* in Fig. 4 of Plate 2. Fig. 4, Plate 2, is a vertical section taken through the center of the machine.

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

This invention relates to certain new and useful improvements on machinery which is designed for covering twisted strands of comparatively coarse and cheap threads with silk or other more expensive threads, in the manufacture of cord which is used for hanging picture-frames, and for other purposes, thereby producing a much cheaper article than could be made by the use of an expensive material alone.

The nature of my invention consists in the employment, in a machine which will cover each twisted strand with silk or other suitable covering material, of certain mechanism which will lay the covering material upon the twisted strands in a converse direction to the twist given to each one of said strands, thereby producing cord which will be smoother and more compact than cord produced in any other manner, as will be hereinafter explained.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

The frame of the machine which I am about to describe may be constructed in any suitable manner which will adapt it for receiving and supporting the cording mechanism. I prefer to construct this frame of several horizontal disks or circular plates,  $A A^1 A^2 A^3 A^4 A^5$ , secured in a suitable manner to upright posts or rods  $B B B$ , which are arranged con-

centrically around the centers of the disks at equal distances apart, as shown in the drawings.

Upon the bed-plate or bottom disk  $A$  is stepped a vertical rod,  $C$ , which passes up through the centers of the two disks  $A^1 A^2$ , and carries two spur-wheels upon it, which rotate in the direction indicated by the arrows in Fig. 1. The bevel-spur wheel  $a$  is keyed on the rod  $C$  near its lower extremity, and engages with a bevel-spur wheel,  $a'$ , upon a horizontal driving-shaft,  $b$ . This shaft  $b$  is supported in blocks  $b^1 b^1$  upon the bed-plate  $A$ , and carries a belt-drum,  $b^2$ , upon it outside of said blocks.

The bevel-spur wheel  $a'$  also engages with a bevel-spur wheel,  $c$ , which is fast upon a collar or tube,  $c'$ , through which latter the rod  $C$  passes freely. This collar passes freely through the center of the disk  $A^1$ , and carries upon its upper end a pinion spur-wheel,  $d$ , which is caused to rotate in a direction opposite to the rotation of the rod  $C$ , as indicated by the arrows in Fig. 1.

The pinion-wheel  $d$ , which is on top of plate  $A^1$ , engages with the teeth of three spur-wheels,  $d^1 d^1 d^1$ , that are applied upon fixed studs  $d^2$  projecting perpendicularly from the top surface of the plate  $A^1$ , and arranged equidistant from each other around the axis of the rod  $C$ . Each one of the spur-wheels  $d^1$  has a hollow central hub,  $e$ , with four holes made laterally into it, leading into a central vertical hole made through its upper end. The holes through the sides of the hub  $e$  are equal distances apart. Each wheel  $d^1$  is also provided on its top surface with four vertical studs,  $t$ , arranged opposite the lateral holes through the hub  $e$ , which studs receive spools carrying the threads to form the strands of the cord which it is designed to produce. Said spools or bobbins are indicated in Figs. 3 and 4, and are supported upon friction-cushions to prevent them from turning too freely.

On top of the plate  $A^2$ , and keyed to the rod  $C$ , is a large spur-wheel,  $D$ , the teeth of which engage with pinion spur-wheels  $f$ , which are applied to tubular studs  $g$ , so as to turn freely around these studs. The studs  $g$  are short tubes, which are secured firmly into holes made through the plate  $A^2$ , for the pur-



pose of receiving through them the twisted strands of thread leading from the lower twisting-wheels  $d^1$ , as shown in Fig. 4, and allowing these twisted strands to be covered with silk or other suitable covering material.

The pinion spur-wheels  $f$  are secured fast to the bottoms of horizontal rotary disks  $F$   $F$   $F$ , and in the centers of these disks. From the top surfaces of the disks  $F$ , and in the centers thereof, hollow hubs  $h$  project, through which the twisted strands pass on their way to the flier. Each one of said disks  $F$  carries two studs,  $h'$   $h'$ , upon which the spools or bobbins are placed that carry the covering material. The covering-threads pass from each pair of spools through holes made laterally through the hubs  $h$ , and they are wound or laid upon the twisted strands within these hubs as the strands are slowly drawn toward the flier to be twisted into cord.

The twisted and covered strands are carried from the upper ends of the hubs  $h$  of plates  $F$  over grooved sheaves in pendants  $G$ , which are secured to the plate  $A^3$ , and from these sheaves the strands are carried up through the center of a vertical tube or guide,  $J$ , which is secured fast in a hole made centrally through the frame-plate  $A^3$ , as shown in Fig. 4. Directly above the tube or guide  $J$  is another tube or guide,  $K$ , which is secured fast in a hole made centrally through the frame-plate  $A^4$ , and which extends a short distance above the top of this plate. Upon this tube  $K$  is a large bevel-spur wheel,  $L$ , which turns freely around it, and also a smaller bevel-spur wheel,  $M$ , which is secured fast to it above the wheel  $L$ . The wheel  $L$  engages with a pinion-wheel,  $l$ , upon a shaft,  $L^1$ , which has its bearings in a block,  $L^2$ , upon plate  $A^4$ , and which receives motion from the main shaft  $b$  through the medium of a belt,  $N$ , as shown in Figs. 1 and 4.

The wheel  $L$  carries an upright rectangular frame,  $P$ , which is centrally attached to the top plate  $A^5$ , so that it will turn freely with the said wheel, and form a flier for laying together the three twisted and covered strands, and producing a cord of these strands. This flier-frame  $P$  carries, near its upper end, a reel or flanged drum,  $P'$ , upon which the cord is wound as it is finished, which drum receives motion from a shaft,  $R$ , through a belt,  $n$ . The shaft  $R$  carries one or more tension-drums,  $p$   $p$ , and also a belt-drum,  $p'$ , which latter receives motion from a shaft,  $r$ , carrying a bevel-spur wheel,  $s$ , that engages with the stationary bevel-wheel  $M$ . As the flier-frame is rotated in the direction indicated by the arrow in Fig. 1, the slack of the cord will be taken up, and the cord will be wound upon the reel or drum  $P'$ , from which it can be removed at pleasure.

The fixed tube  $J$ , through which the three twisted and covered strands of thread are carried, is constructed with an enlarged head upon its lower end, through which holes are made converging toward and leading into the central hole through this tube. Thus it will be seen that the twisting together of the three twisted and covered strands will be effected above the lower end of the said tube. Motion may be transmitted to the shaft  $R$  from the shaft  $r$  by means of spur-wheels, instead of the belt, as shown; but it is desirable to transmit motion to the reel or winding-drum shaft by means of a belt,  $n$ , for the reason that this belt will slip whenever the cord has wound on the reel or drum to such an extent as to take up the manufactured cord faster than the belt travels. This belt  $n$  is, however, always tight enough to turn the reel or drum fast enough to take up the slack cord.

I do not confine my invention to a flier which carries the taking-up spool or drum, but intend to employ either the same or any of the well-known fliers and take-up arrangements which may be adapted for use in connection with my invention.

With the arrangement of take-up drum which I have shown, it is essential that the drum be driven by a band which will slip on its pulleys as the bulk of cord increases, such band acting always with sufficient friction to turn the drum.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The miter-gears  $a' a c$ , central shaft  $C$ , supports  $A^1 A^2$ , bobbin-gears  $d^1$ , covering-cord carriers  $F$ , guide  $J$ , and gears  $l L$ , in combination, and operating so that each thread of a strand is covered with finishing material, and the several strands thus covered twisted, the finishing material being laid in a converse direction to the twist imparted to the respective strands, all substantially as set forth.

2. The shaft  $b$ , gears  $a' a$ , shaft  $C$ , sleeve  $c'$ , and pinions  $c d$ , stationary support  $A^1$ , geared spool-carrying plates  $d^1$ , support  $A^2$ , gear  $D$ , covering-cord carriers  $F$ , and guide  $J$ , combined and operating substantially as and for the purpose set forth.

3. In combination with the above, the winding-and-twisting flier, constructed and operating as described.

JOHN BACHELDER.

Witnesses:

JNO. L. WAIT,  
J. HULSEY.