(No Model.) 2 Sheets—Sheet 1.

E. CORNELY.

EMBROIDERING MACHINE.

No. 338,488. Patented Mar. 23, 1886.

Fig. 2.

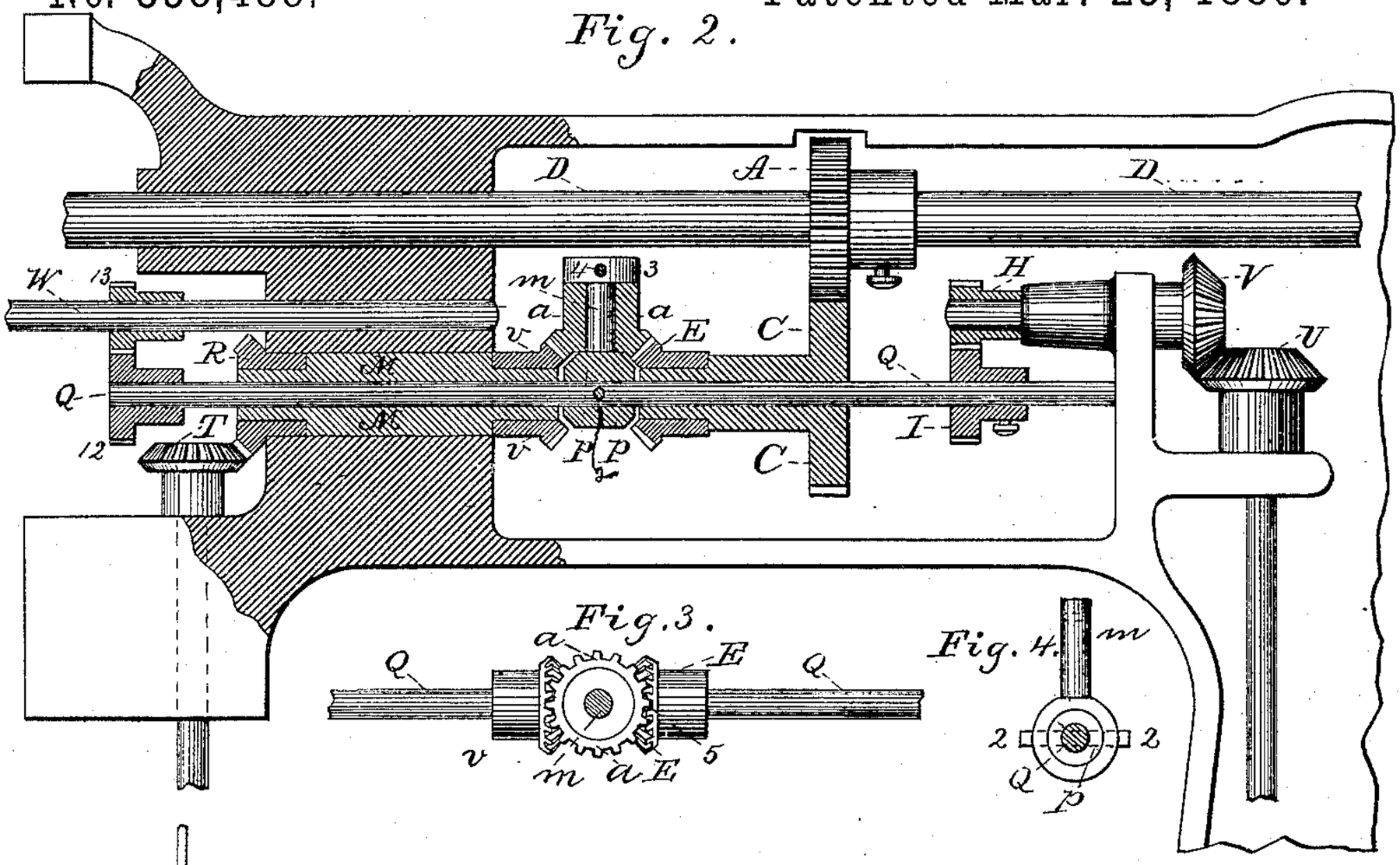
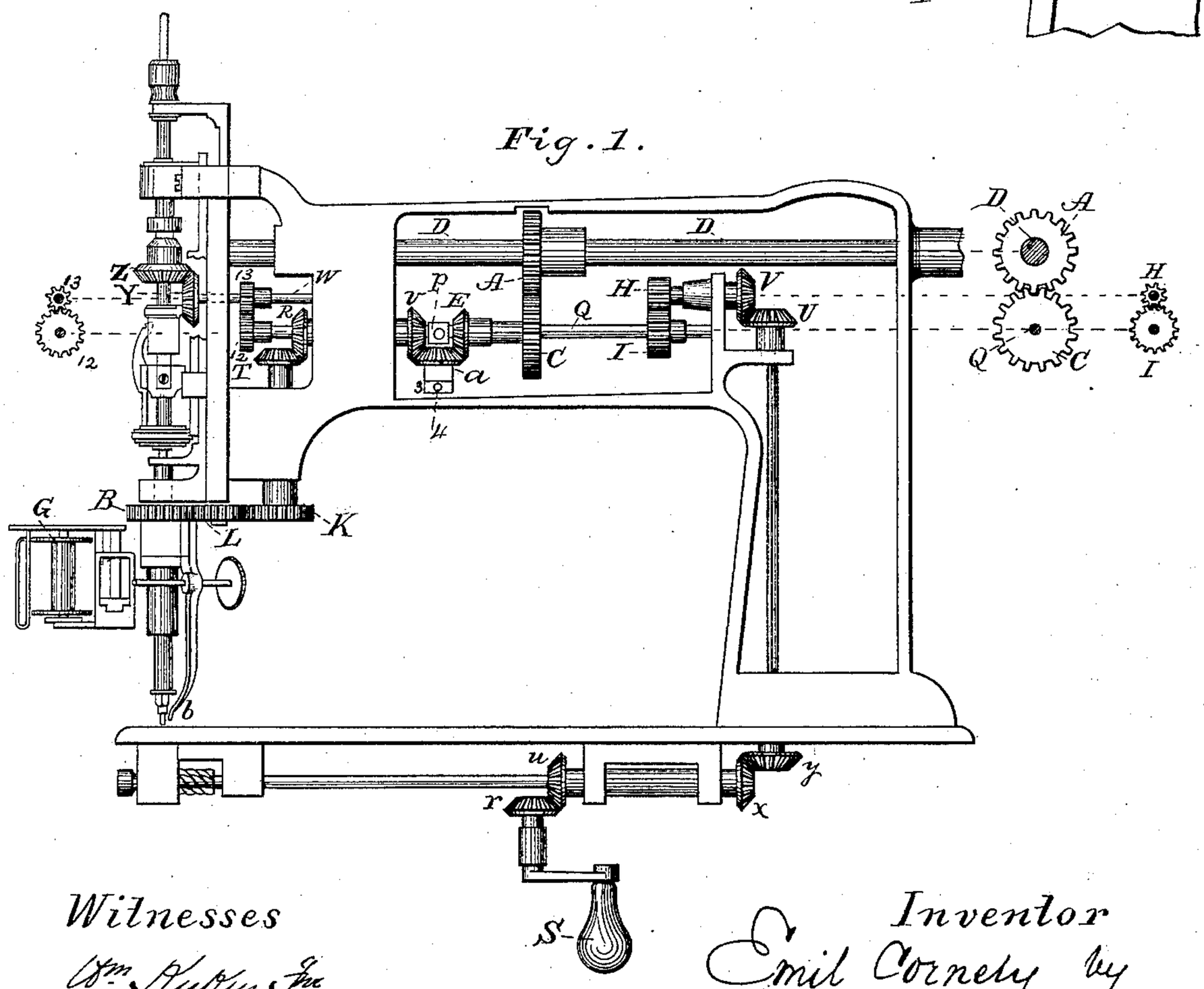


Fig. 3.

Fig. 4.

Fig. 1.



Witnesses
Wm. Perkins. Jr.
C. J. Hedrick

Inventor
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his attorney.

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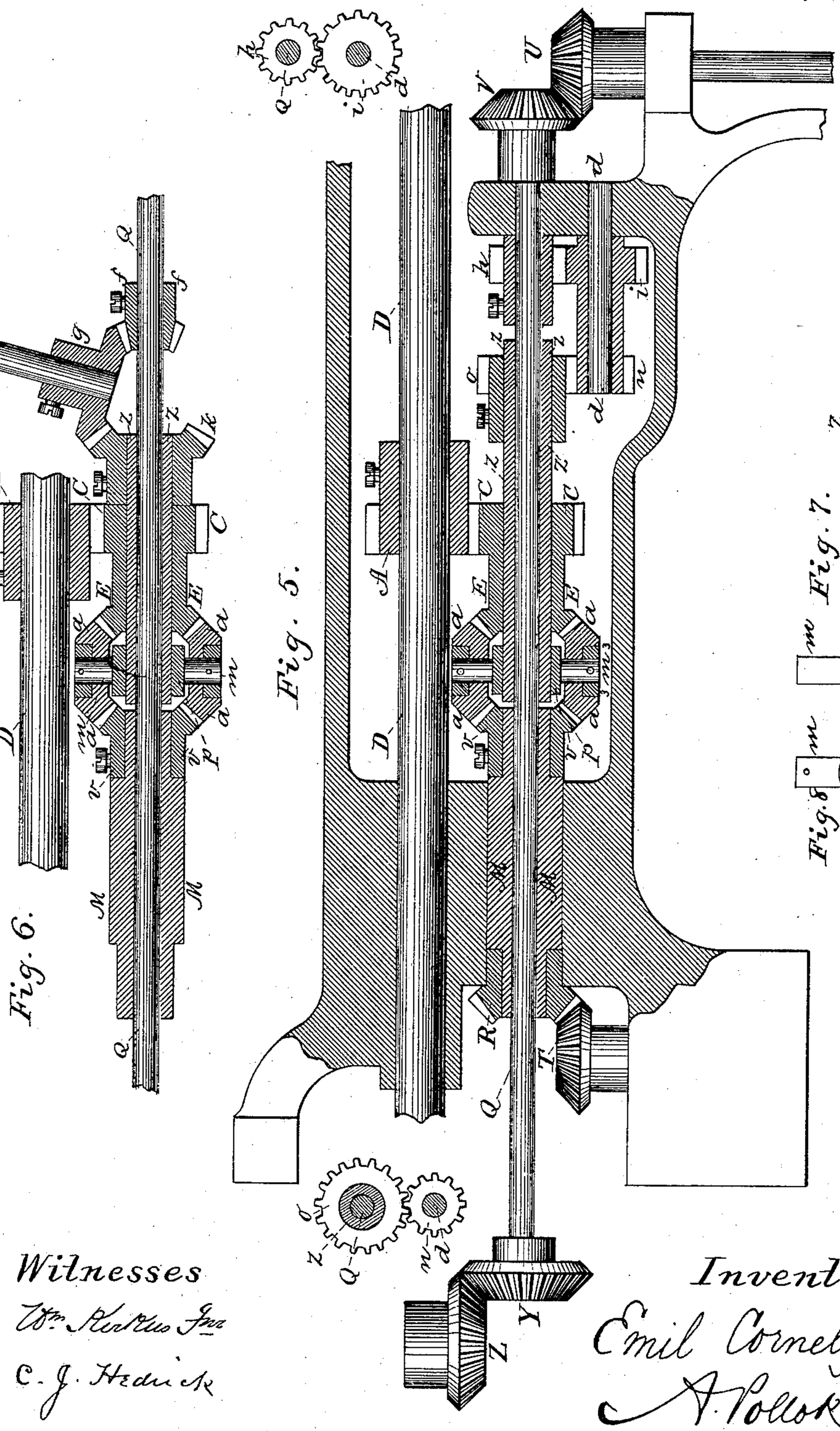

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his attorney.

UNITED STATES PATENT OFFICE.

EMIL CORNELY, OF PARIS, FRANCE.

EMBROIDERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 338,488, dated March 23, 1886.

Application filed June 15, 1885. Serial No. 168,736. (No model.)

To all whom it may concern:

Be it known that I, EMIL CORNELY, a resident of the city of Paris, France, have invented a new and useful Improvement in Embroidering-Machines, which is fully set forth in the following specification.

In Letters Patent No. 262,742, of August 15, 1882, I have described and claimed a mechanism for driving a revolving thread-carrier, which, during its revolutions around the needle, can still be guided by the crank of a universal-feed machine.

The object of the present invention is a mechanism for attaining the same result, by which said mechanism is much more simplified than the one described in Letters Patent No. 262,742.

Figure 1 represents a side view of the entire machine to which the said mechanism is applied. Fig. 2 represents a full-sized view of the mechanism for operating the revolving thread-carrier. The other five figures represent detached views, hereinafter to be referred to.

D represents the main driving-shaft of the machine; Q′, the feed-directing shaft, which transmits the motion from the crank-handle S to the universal feed of the machine by means of a series of pinions, *r u x y* U V. A pinion, A, which is secured to the shaft D, transmits its revolving motion to a pinion, C, of equal size, which turns loosely on shaft Q. A pinion, E, is secured to the hub of pinion C, and turns with the latter loosely on shaft Q. A sleeve, *p*, Figs. 2 and 4, is secured to the shaft Q by means of a pin, 2, and is provided with a stud, *m*, on which a pinion, *a*, turns loosely. It is held thereon by means of a washer, 3, and a pin, 4. The pinion *a* is in gear with a bevel-wheel, *v*, which is secured to the hollow shaft M, similar to the one described and claimed in Letters Patent No. 228,445, of June 8, 1880, and in which hollow shaft the shaft Q can turn freely. The revolving motion of the shaft D is thus transmitted through the pinions A, C, E, *a*, and *v* to the hollow shaft M, and thence, by means of the pinions R, T, and K L B to the revolving thread-carrier *b*, as already fully explained in the above-named Patents Nos. 228,445 and 262,742; but upon turning the shaft Q by means of the crank-handle S, the sleeve *p*, stud *m*, and pinion *a* are turned with it, and the latter imparts its motion to the pinion *v*, and thus to the revolving thread-carrier *b*. The motion of the latter is thus a compound one, and consists, first, in a continuously-revolving motion imparted to it from the shaft D by means of pinions A C E *a v*, &c.; second, in the turning motion of the crank-handle S, imparted to it through the pinions *r u x y* V U H I, shaft Q, and pinions *a* and *v*, &c., which motions are both transmitted to the thread-carrier *b* by means of hollow shaft M and pinions R, T, K, L, and B. When the pinion *a* is turned by means of shaft Q, its tooth 5, Fig. 3, acts as a bearing against the pinion E, and it turns thereon and thus acts upon the pinion *v* like a pinion of double diameter, and communicates to it and to the thread-carrier *b* twice the number of revolutions which it receives from shaft Q, which would render the work impossible. To obviate this difficulty, the pinions H and I are interposed, the former having half the size of the latter, so that pinion I makes half a turn only to each full turn of the crank-handle S, which motion, by means of pinion *a*, is transmitted as a full turn to pinion *v* and to thread-carrier *b*.

The two pinions H and I might be entirely done away with upon the condition that pinion V is made of double the size of pinion U.

To transmit the motion of the crank-handle S to the pinions Y and Z and to the universal feed itself, it requires another pair of pinions, 12 and 13, of which the former has double the diameter of the latter, so that the full turn of the crank-handle S, which is transmitted to shaft Q in half a turn, may be transmitted again in a full turn to shaft W and to pinions Y and Z.

Figs. 5 and 6 represent cross-sections of certain modifications of the mechanisms above described without changing anything in the principle of my invention. By these modifications the two pinions 12 and 13, as well as the shaft W, can be entirely dispensed with, and the entire mechanism can be inclosed within a smaller space, thus permitting a smaller head of the machine, such as represented at Fig. 5. The feed-directing shaft Q is secured directly to the pinions V and Y, the same as is the case in the original and single-thread

embroidering-machine, and a pinion, *h*, is secured to it, which actuates a pinion, *i*, which turns loosely on shaft *d*. The diameters of the said two pinions are as three to four, and at each entire turn of pinion *h* the pinion *i* makes three-fourths of a turn. The pinion *n*, which is secured to the pinion *i*, actuates pinion *o*. The diameters of the pinions *i* and *o* are like two to three, and at each three-fourths turn of pinion *n* pinion *o* makes one-half a turn. The pinion *o* is secured to the hollow shaft *z*, which can play freely on the directing-shaft Q, and which, owing to the pinions *h*, *i*, *n*, and, *o* will make half of a turn to each full turn of the pinion V and of the crank-handle S. The pinions C and E, which are rigidly connected together, turn loosely on the tube *z* and actuate the pinions *a* and *v* in the manner above described. The sleeve *p*, provided with its two studs *m*, is secured to the tube *z*, and two pinions, *a*, turn thereon and operate in the same manner as the single pinion *a*, above described. At each entire turn of the crank-handle S one-half of a turn is communicated to the tube *z* by means of the pinions *r u*, *x y*, U V, *h i*, and *n o*, which half-turn is transmitted through the pinions *a* and is converted by them in a full turn in transmitting it to the the pinion *v* and through the gearings to the revolving thread-carrier, as above described. In this construction the employment of the twin pinions *a* was found necessary, owing to the shortness of their studs *m*, which are limited in their length by the space between the shafts D and Q. Thus the two pinions *a*, turning on their two shafts, which are diametrically opposed one to another, balance the resistances which they encounter, and thus will have a smooth and true run. The studs *m* might also be secured directly to the tube *z*, as represented in Fig. 7, instead of being secured to the sleeve *p*, as shown in Fig. 8.

Fig. 6 represents still another arrangement, in which three pinions, *f*, *g*, and *k*, are substituted for the four pinions *h i n o* shown in Fig. 5. The pinion *f* is of half the size of pinion *k*, which latter is secured directly to the tube *z*.

I claim—

1. The combination, with the main shaft, the mechanism for controlling the direction of the feed, and the rotary thread-carrier, of the connecting-gearing, which comprises a cogged wheel on the main shaft and a train of pinions and cogged wheels driven by said cogged wheel on the main shaft, for imparting continuous rotation through continuously-rotating parts from the main shaft to the thread-carrier, and a pinion or pinions connected with the said feed-controlling mechanism and forming part of said train, for guiding the thread-carrier in accordance with the direction of the feed, substantially as described.

2. The combination, with a shaft actuated by the feed-directing mechanism, of the stud or studs on said shaft, the pinion or pinions on said stud or studs, and the gears engaging said pinion or pinions on opposite sides, for communicating motion through the same to the thread-carrier, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

E. CORNELY.

Witnesses:
ROBT. M. HOOPER,
DAVID T. S. FULLER.