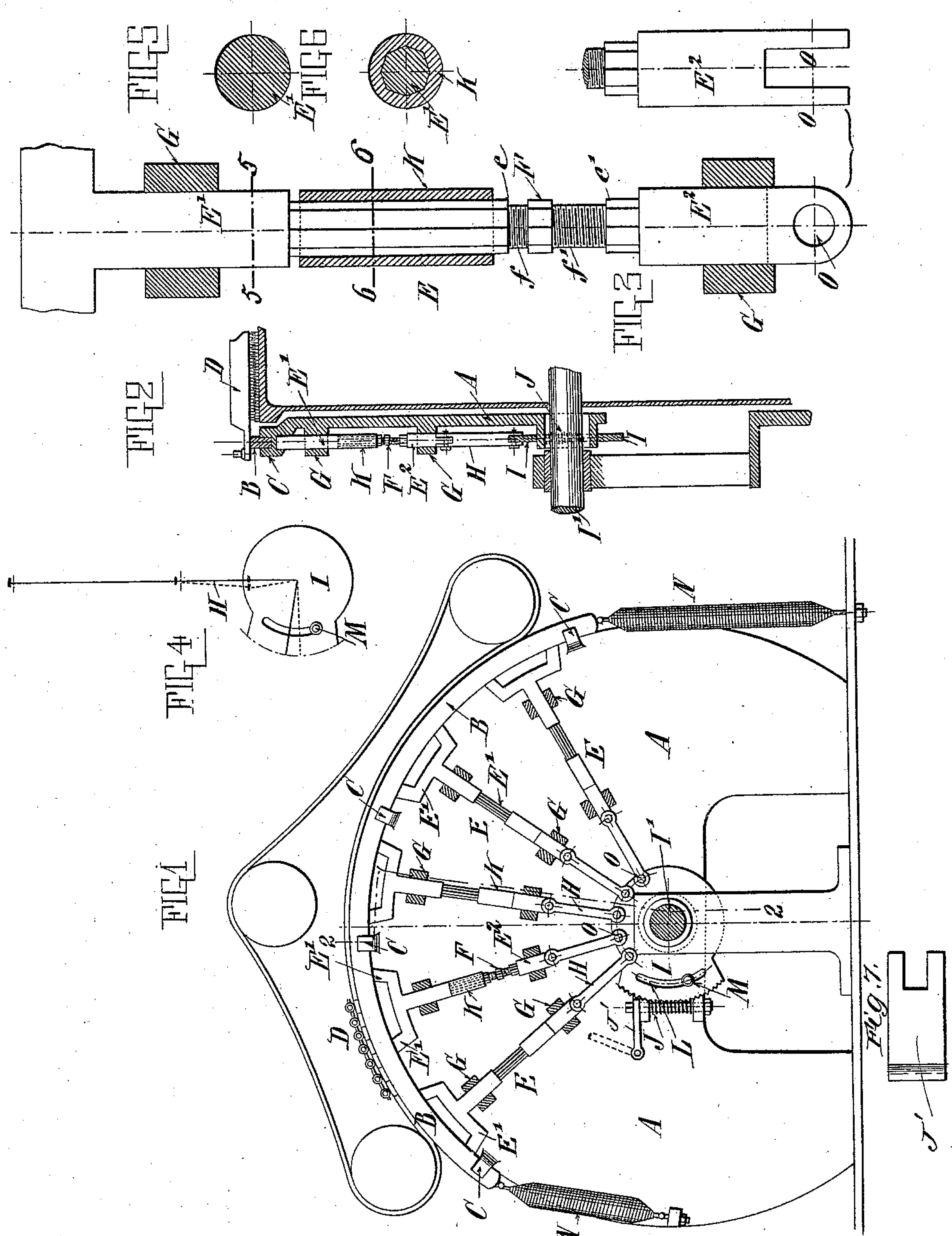
(No Model.)

G. FAUQUET.

CARD WITH REVOLVING FLATS.

No. 575,565. Patented Jan. 19, 1897.



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CARD WITH REVOLVING FLATS.

SPECIFICATION forming part of Letters Patent No. 575,565, dated January 19, 1897.

Application filed June 12, 1895. Serial No. 552,521. (No model.) Patented in France November 12, 1894, No. 242,810, and in England November 14, 1894, No. 22,038.

To all whom it may concern:

Be it known that I, GEORGES FAUQUET, of La Foudre, Petit Quevilly les Rouen, in the Republic of France, have invented certain new and useful Improvements in Cards with Revolving Flats, (for which Letters Patent were granted to me in France, No. 242,810, dated November 12, 1894, and in England, No. 22,038, dated November 14, 1894,) of which the following is a specification.

My invention relates to carding-engines having revolving flats. Carding-engines with revolving flats, of which exist a considerable variety, can be classed into two principal categories: First, those in which the adjustment of the flats is produced from a single point or by a single manipulation. The adjustment of the flats is accomplished in all these carding-engines in a simple and quick manner. It permits the flats which are arranged concentrically to the axle of the carding-cylinder (that is supposed to be unshiftable) to be moved with considerable precision, but it presents at the same time a serious inconvenience, namely, that if by the wear of the bearings, the traction of the endless belt, or from other causes the axle of the carding-cylinder should be displaced the adjustment becomes naturally defective, though a number of constructions were proposed by which the position of the axle could be varied, but which constructions were very delicate in operation. Furthermore, all the flats, the first as well as the last, are regulated at the same distance from the carding-cylinder, without it being possible to give the first flats a greater distance, a mode of adjustment which is appreciated by a number of practitioners. In the second category are placed all the carding-engines in which the adjustment is effected at different points, so that at will the distance of the flats can be varied for all points of their work and they can be adjusted always on the circumference of the carding-cylinder whatever may be the displacement caused by the wearing off of the axle of the latter. On the other hand the mode of adjustment on each side of the same at five, seven, or more points requires great care and attention, which is not usually found with the workman charged with such kind of work.

The system of cards which forms the subject of the present invention combines the advantages and avoids the inconveniences of the two classes of adjustable cards before mentioned, namely, the adjustment of the flats takes place at a single point at each side of the card in an absolutely correct and reliable manner and to an extent that is clearly indicated on a graduated circle. Besides, in addition to the correct and quick adjustment, a special device is employed for the changing of the approach of the flats at a certain point of their path and to make them follow at will the displacements of the cylinder due to that of its axis, so that after once the adjustment is made all the flats are adjusted from one point, so as to correspond to the new position given to the cylinder in consequence of its wear.

In the accompaning drawings, Figure 1 represents a side elevation of my improved cards with revolving flats. Fig. 2 is a vertical section of the same on line 2 2, Fig. 1. Fig. 3 is a detail sectional view of one of the arms of the apparatus for adjusting the cards. Fig. 4 is a diagram indicating the mode of adjusting the cards. Figs. 5 and 6 are sections of the arm respectively on lines 5 5 and 6 6, Fig. 3; and Fig. 7 is a detail view of the hinged locking-arm.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, an endless chain formed of a number of flats D is supported during its motion over the cylinder by a flexible bend B, which is made of a suitable material of uniform thickness throughout its length. The bend B is held in stretched position by means of helical springs N N, which are attached to its ends and to suitable points of support. The flexible bend B is retained by keepers C, which are applied to the supporting-frame A, and which keepers prevent the lateral shifting of the bend B. Intermediately between the keepers on the outside of the frame A are arranged the forked sections E′ of radial arm E. Any required number of radial supporting-arms E can be provided, five

being shown in the drawings, but it is obvious that more arms can be used. All the arms E are of the same construction and are guided in keepers G, which are made, like the keepers C, integral with the supporting-frame A, so as to prevent a radial displacement of the arms. The arms E are composed of two parts E′ E², having screw-threaded adjacent sockets, (see dotted lines in Fig. 3,) and which are connected with each other by means of a dowel-screw F, the screw-threaded ends of which screw into the said sockets. The inner ends of the arms are connected by pivot-links H with the circumferential portion of a disk I, that can be turned on its axis I′ and on a set-screw or pin M on the supporting-frame A, which set-screw extends into a curved concentric slot L in the disk.

The length to which the arms E and the pivot-links H are to be adjusted can be varied according as the constructor desires to give the part a greater or less degree of adjustability. The disk I is provided at one side with a toothed segment of a somewhat larger diameter than the same, the teeth of which segment mesh with the worm J, that turns in bearings of the supporting-frame A and that serves to impart to all the flats the same adjustment by one motion of the worm. For producing the partial adjustment of one or the other portion of the flexible bend B the dowel-screw F is employed, which is provided on its respective ends with a fine thread *f* and with a coarse thread *f′*, as shown in Fig. 3, (the sockets in the sections of the arms being correspondingly threaded,) whereby by the rotation of the dowel-screw the arm E is either elongated or shortened for a length equal to the difference in the threads on the screw.

When, for example, a dowel-screw having one thread of two and one-half millimeters and the other three millimeters is used, one turning of the screw-nut changes the length one-sixteenth of a millimeter, from which will be seen that the adjustment of the arms, and thereby of the flats, can be made with great precision. A portion of each of the forked sections E′ of arms E is made of octagonal cross-section at *e*, and on this portion slides a sleeve K, which corresponds at its interior surface to the octagonal shape of the arm. For turning the dowel-screw F, the head of which is also octagonal and of the same exterior shape as the octagonal portion *e* of each of the arms, the sleeve K must be raised so as to clear the screw, as shown on one arm E in Fig. 1, and then lowered again after the adjustment of the screw is made onto an octagonal boss *e′* on the inner portion E² of each arm, as shown clearly in Fig. 3. The dowel-screws F are each thereby retained firmly in position, so that they cannot be turned by any outside means, whereby the two sections of the arms will always be retained in proper position and at an invariable length. A simple and practical means is therefore obtained for adjusting every one of the supporting-arms of the flexible bend B, but it is obvious that other means for adjusting the arms besides the dowel-screw F may be employed.

For obtaining by a single motion the simultaneous adjustment of all the supports of the flexible bend all that is necessary is to turn the disk I for a certain angle by means of the worm J, whereby the pivot-links H assume an inclined position to the radial arms E, as shown in dotted lines in Fig. 4, which has the effect of moving all the arms E as little as may be desired toward the axis of the carding-cylinder, and consequently also the flexible bend in inward or outward direction the flexible bend on the arms E, which, assisted by the action of the helical springs N of the bend B and the weight of the flats on the flexible bend. This is the quicker and more convenient mode of adjustment and is indicated in Figs. 1, 2, and 4. After this adjustment is once made the disk I is clamped by the screw M to the supporting-frame A, the curved slot L in the disk providing for the movement of the disk on the screw M. Means can also be provided for locking the worm J into position by a suitable stop consisting of a recessed locking-arm J′, the recess of which receives the head of the worm, or any suitable evident means may be employed. In this manner not only the adjustment of each individual arm E can be made and reliably retained, but also the simultaneous adjustment of all the arms may be accomplished and retained, so that therefore my improved system of cards has the following advantages:

First. The attendant by means of the partial adjustment of the arms can arrange all the points of the flexible bend at the same distance from the cylinder, and can furthermore raise the first traveling flats of the cards slightly more than the rest.

Second. The attendant can after each grinding operation adjust all the flats to an equal extent for even a small degree, which can be done, if he desires, by the worm and disk. This operation is very simple and reliable and is accomplished with almost mathematical precision.

Third. If by the wear of the axis of the carding-cylinder the latter should not turn concentrically with the flats, the partial adjustment of the supporting-arms permits some parts of the flexible bend to be placed into the required position in such a manner that as soon as this partial adjustment has been accomplished the same is fully retained and can then be adjusted again by means of the worm for all the arms, as before described.

It need not be feared that any wear or play of the articulated portions will be permitted, as the weight of the flats and the tension of the springs have always the tendency to bear on all the supporting-arms and to retain them

in position, so that the cards as well as the supporting-arms perform the proper function required in operating the carding-machine.

My improved carding-machine is especially designed for treating cotton, but may be employed for carding any other fibers.

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

1. The combination, with an endless chain of flats, of a flexible bend, radially-guided arms the outer ends of which support the bend, each arm being composed of two sections and a dowel-screw having threads of different pitch for connecting said sections and adjusting each arm individually as to its length, a crank-disk concentric with said bend, pivot-links connecting the inner ends of the radial arms with said disk, and means for turning said disk, whereby all of the supporting-arms are simultaneously adjusted, substantially as set forth.

2. The combination, with an endless chain of flats, of a flexible bend, radial arms the outer ends of which support said bend, each arm being formed of two sections and a dowel-screw having threads of different pitch for connecting said sections and adjusting said arm individually as to its length, keepers for guiding said arms in radial direction, a centrally-journaled disk having a toothed peripheral portion, pivot-links connecting the inner ends of the radial arms with the disk, and a worm-screw meshing with the toothed portion of the disk for turning the same, substantially as set forth.

3. In a card having an endless chain of flats and a flexible bend, radial arms the outer ends of which support said bend, each arm being formed of two sections and a dowel-screw provided with screw-threads of the same direction but of different pitch and engaging correspondingly screw-threaded sockets in the adjacent ends of said sections, substantially as set forth.

4. In a card having an endless chain of flats and a flexible bend, radial arms the outer ends of which support the bend, each arm being formed of two sections and a dowel-screw provided with a polygonal head and with screw-threads of the same direction but of different pitch at opposite sides of said head, and engaging correspondingly screw-threaded sockets in the adjacent polygonal ends of said sections, and a sleeve having an interior polygonal shape adapted to slide over the adjacent ends of said arm-sections and the head of said dowel-screw or clear the same for permitting the adjustment of the arm, substantially as set forth.

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

GEORGES FAUQUET.

Witnesses:
A. FAROULT,
PAUL PELFRÈRIE.