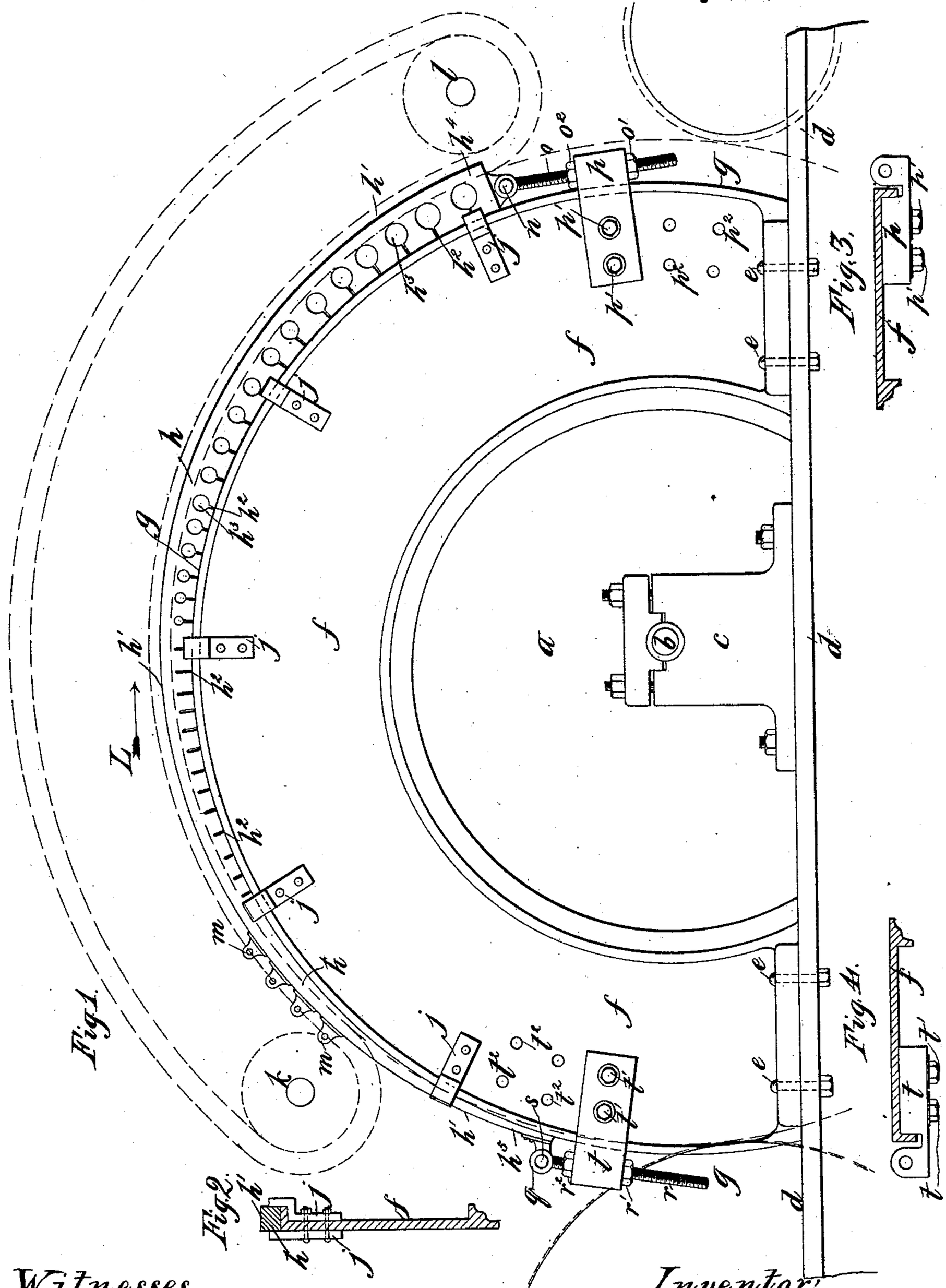
(No Model.) 2 Sheets—Sheet 1.

T. KNOWLES.

MECHANISM FOR ADJUSTING TRAVELING FLATS OF CARDING MACHINES.

No. 428,778. Patented May 27, 1890.



Witnesses
John Bickel
P. Meissner

Inventor;
Thomas Knowles
by attorneys
Brown & Griswold

(No Model.) 2 Sheets—Sheet 2.

T. KNOWLES.

MECHANISM FOR ADJUSTING TRAVELING FLATS OF CARDING MACHINES.

No. 428,778. Patented May 27, 1890.

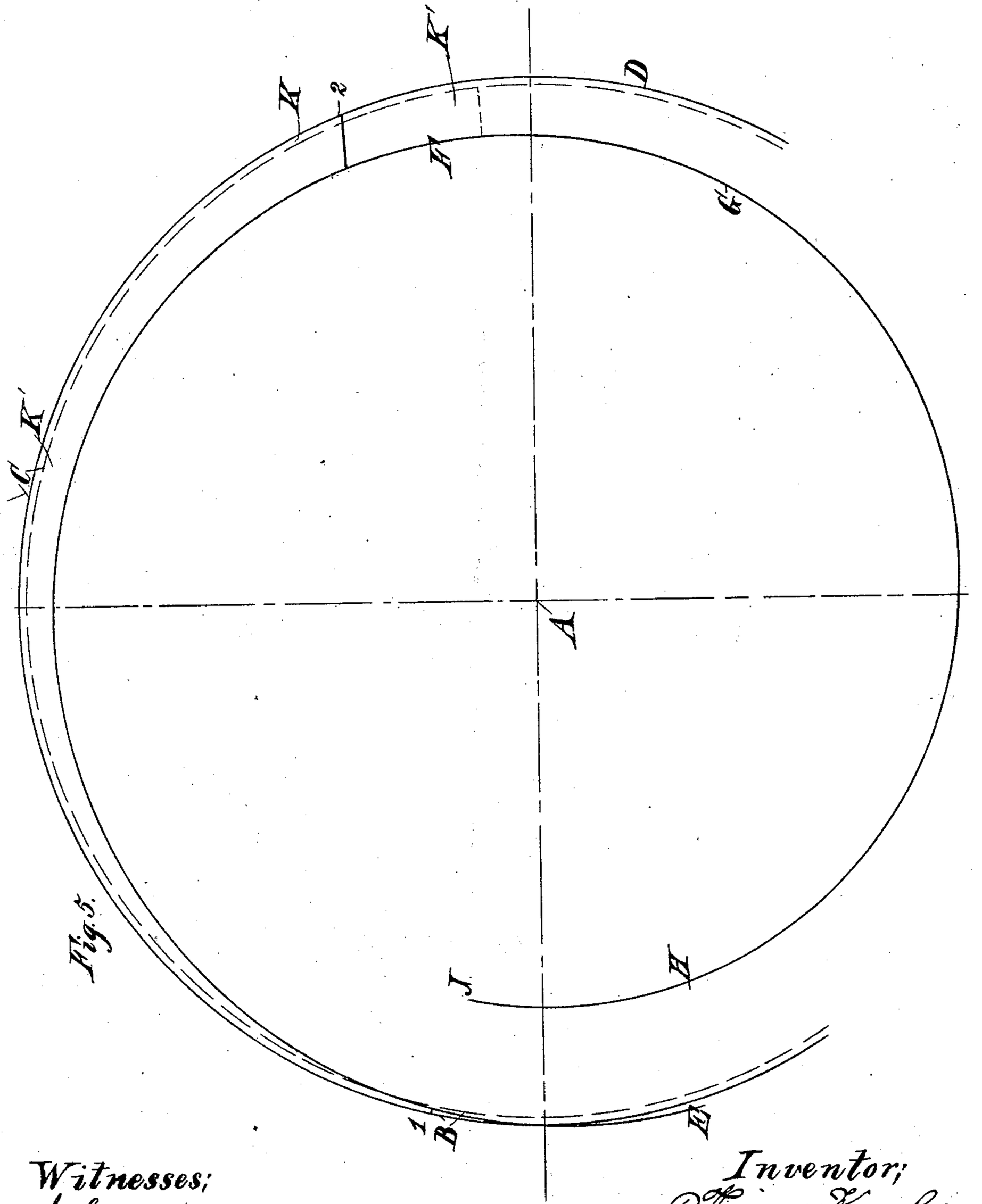


Fig. 5.

Witnesses;
A. Lin Bicker
P. Meissner

Inventor;
Thomas Knowles
by attorneys
Brown & Griswold

UNITED STATES PATENT OFFICE.

THOMAS KNOWLES, OF BOLTON, COUNTY OF LANCASTER, ENGLAND.

MECHANISM FOR ADJUSTING TRAVELING FLATS OF CARDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 428,778, dated May 27, 1890.

Application filed March 28, 1889. Serial No. 305,078. (No model.) Patented in England May 7, 1886, No. 6,204.

To all whom it may concern:

Be it known that I, THOMAS KNOWLES, of 287 Blackburn Road, Bolton, in the county of Lancaster, England, have invented certain new and useful Improvements in Mechanism for Adjusting Traveling Flats of Carding-Machines, (for which I have obtained Letters Patent of Great Britain, No. 6,204, dated May 7, 1886,) of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to such of the machines known as "carding-engines" as are provided with traveling flats; and it consists in the means hereinafter described and claimed, by which I am enabled to adjust the said flats relatively to the surface of the main cylinder of the carding-engine in conjunction with which they are employed with greater accuracy and facility than has hitherto been possible.

In the accompanying drawings, Figure 1 is a side view of so much of a carding-engine as is requisite to illustrate my invention, and Figs. 2, 3, and 4 are views showing detached portions.

In Fig. 1, *a* is the main cylinder of the carding-engine mounted upon an axle *b*, supported by the pedestal *c*, secured to the side framing *d* of the carding-engine. Secured to the side framing *d* of the carding-engine by bolts *e* is a bend *f*. I form the outer circumference of the bend *f* with an inclined or spiral surface or cam *g*, which supports a flexible band *h*, of metal, formed wedge-shaped in its vertical longitudinal section. The flexible band *h* of metal is prevented from moving sidewise by means of brackets *j*, secured to the bend *f*. The brackets *j* are shown in the detached view, Fig. 2.

k and *l* are the usual rollers around which the flats *m* travel. For convenience, only a few of the flats *m* are shown in the drawings. The edge *h'* of the flexible band *h* serves as a support and guide along which one end of each of the flats *m* travels while such flats *m* are being acted upon by the main cylinder *a* for carding. To make the band *h* as flexible as possible I form nicks h^2 in such band *h*, which nicks h^2 pass partially through the band *h*, and are in cases in which holes may be conveniently formed in the band *h*, connected with holes h^3. The outer edge *h'* of the band *h* is an arc of a circle having its center in the axis of the axle *b*. I secure the end h^4 of the flexible band *h* by a pin *n* to a screw *o*, which passes through a hole formed in the bracket *p*, (shown in plan in Fig. 3,) which bracket *p* is secured by set-screws *p'* to the bend *f*. I provide the screw *o* with nuts o' o^2. To the end h^5 of the flexible band *h*, I secure a bracket *q*, to which a screw *r* is jointed by a pin *s*. The screw *r* passes through a hole formed in a bracket *t*. (Shown in plan in Fig. 4.) The bracket *t* is secured by set-screws *t'* to the bend *f*. I provide the screw *r* with nuts r' r^2. I form the circumference of the bend *f*, which constitutes the inclined surface or cam *g*, as a portion of a spiral formed around the axis of the axle *b*, which spiral approaches the axis of the axle *b* at a uniform rate.

Fig. 5 is a diagram illustrating the principle to be observed in carrying my invention into effect.

In Fig. 5, A is the axis of the main cylinder of the carding-engine, and B C D is a dotted circle which represents the circumference of the main cylinder. E F G H J is a spiral formed around the axis A, which spiral approaches the axis A at a uniform rate. I form the inclined surface or cam *g* upon the circumference of the bend *f* (shown in Fig. 1) of a curve corresponding to that portion of the spiral which is between the points E and G. Upon the spiral E F G H J is placed the flexible band K, the edge of which nearest to the axis A coincides with the spiral E F G H J. The outer edge 1 2 of the flexible band K forms an arc of a circle the center of which is in the axis A.

If the flexible band K be moved along the spiral E F G H J, as shown by the dotted lines K', it will be found that the outer edge 1 2 will still be parallel to the circumference of the circle B C D. It will thus be seen that by forming the inclined surface or cam *g* upon the circumference of the bend *f* as a spiral, and forming the inner edge of the flexible band *h* to correspond with the curve of the inclined surface or cam *g* upon the circumference of the bend *f*, the outer edge *h'* of

the flexible band *h* may be caused to approach or recede from the axis of the axle *b* of the main cylinder *a* and still be concentric with the said axis.

When for any reason it is desired to adjust the flats *m* relatively to the card-surface of the main cylinder *a* of the carding-engine, the flexible band *h* is traversed along the inclined surface or cam *g* upon the circumference of the bend *f* by the nuts *r' o'*. If the flexible band *h* be traversed in the direction indicated by the arrow L, the flats *m* will be caused to approach the card-surface of the main cylinder *a;* but if the flexible band *h* be traversed in a direction opposite to that indicated by the arrow L the flats *m* will be moved away from the card-surface of the main cylinder *a*. To enable the flexible band *h* to be moved a considerable distance in the direction indicated by the arrow L and avoid making the screws *o r* of great length, I form a number of holes p^2 t^2 through the bend *f*, which holes p^2 t^2 enable the brackets *p t* to be secured upon the bend *f* in any position required for adjusting the flexible band *h*. When the flexible band *h* has been adjusted in position upon the bend *f*, it may be secured in such position by means of the lock-nuts o^2 r^2.

The carding-engine is provided at both sides with the apparatus above described, so that both ends of each flat may be adjusted relatively to the card-surface of the main cylinder *a*.

In order that the same amount of adjustment may be given to both ends of each of the flats, the flexible bands *h* at each side of the carding-engine must receive the same amount of motion in the same direction.

By means of the arrangements above described I am enabled to adjust the traveling flats employed in carding-engines to the main cylinders of such carding-engines with greater accuracy and facility than has hitherto been possible.

What I claim as my invention is—

The combination, with the main cylinder and traveling flats of the carding-engine, of the stationary inclined or spiral cam *g* and a fixed support therefor, and the flexible band *h*, adjustable on said cam and having one edge formed to correspond with said cam and the other edge of the form of an arc of a circle, the center of which is in the axis of the main cylinder, substantially as and for the purpose herein set forth.

THOMAS KNOWLES.

Witnesses:

ARTHUR E. HALL,
9 *Mount St., Manchester, England.*
W. T. CHEETHAM,
18 *St. Ann's Street, Manchester.*