

(No Model.)

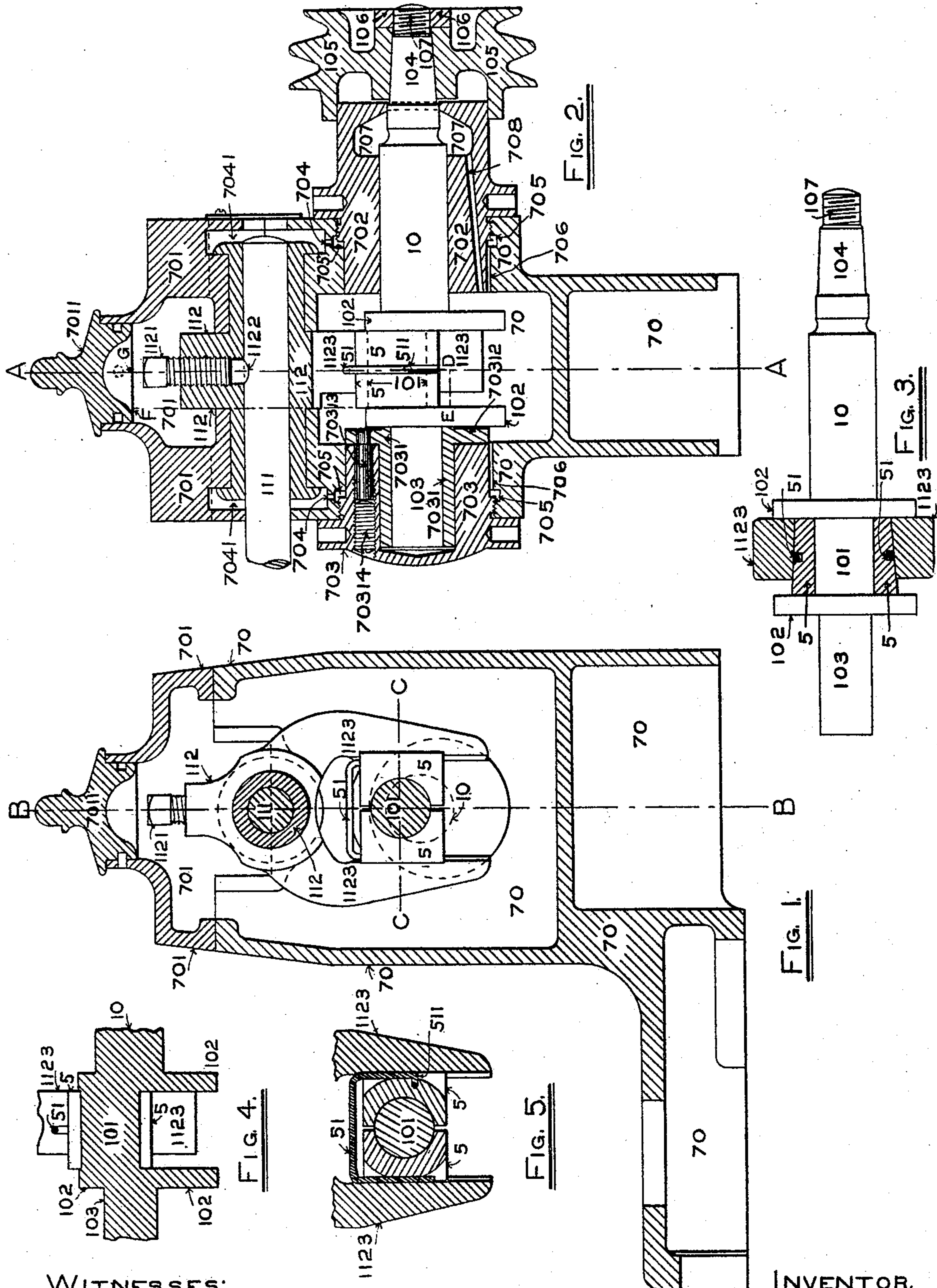
2 Sheets—Sheet 1.

W. P. CANNING.

ACTUATING MECHANISM FOR DOFFER COMBS OF CARDING ENGINES.

No. 492,537.

Patented Feb. 28, 1893.



WITNESSES:

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(No Model.)

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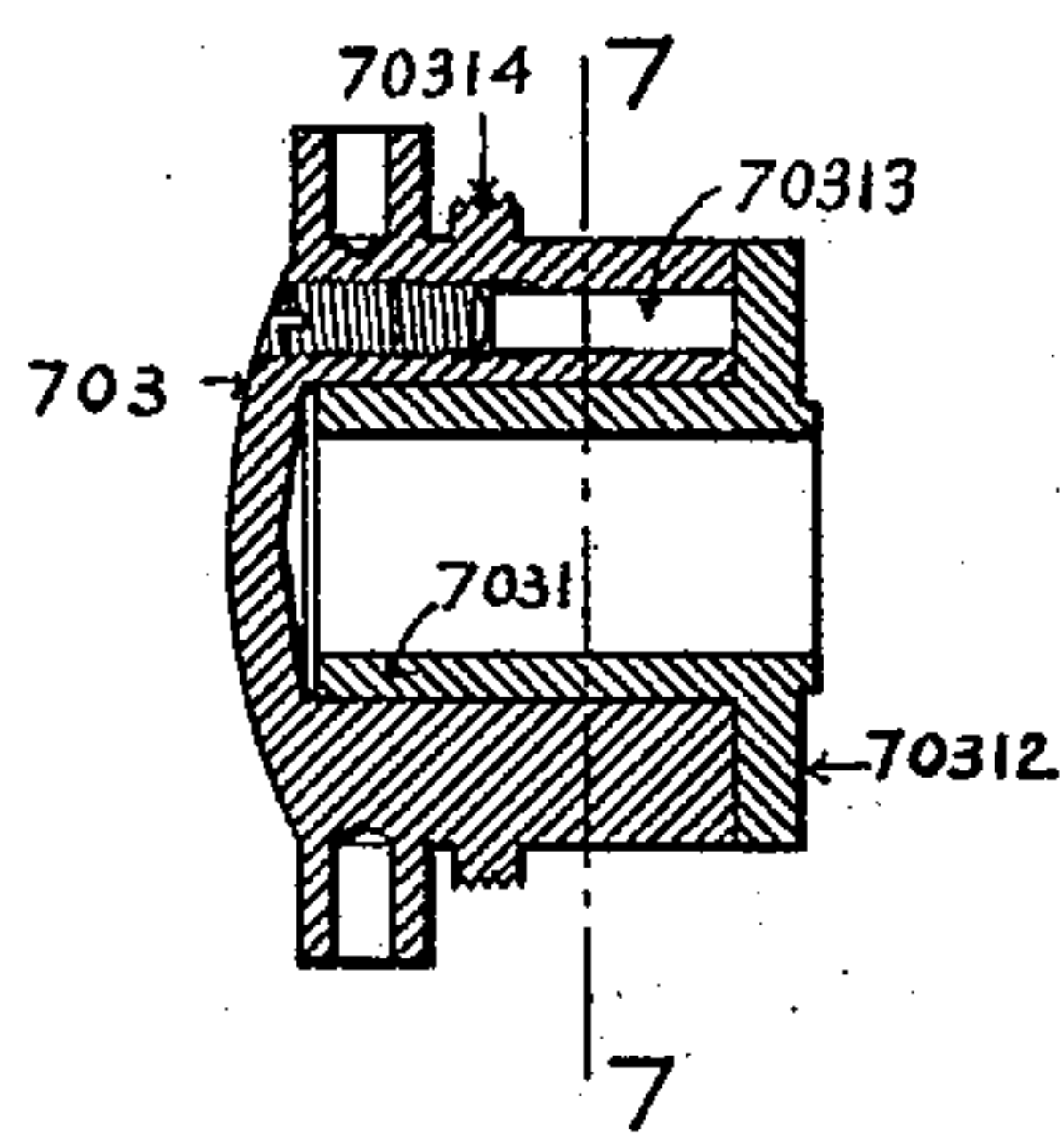


FIG. 6.

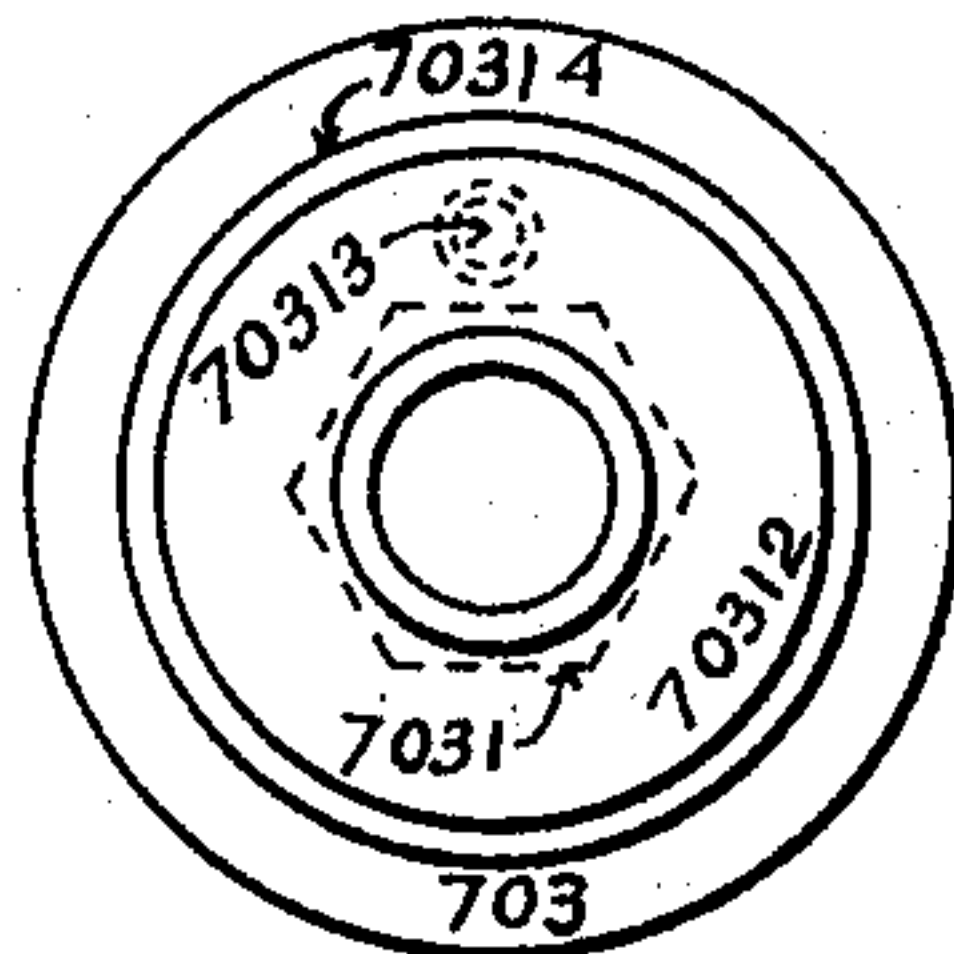


FIG. 8.

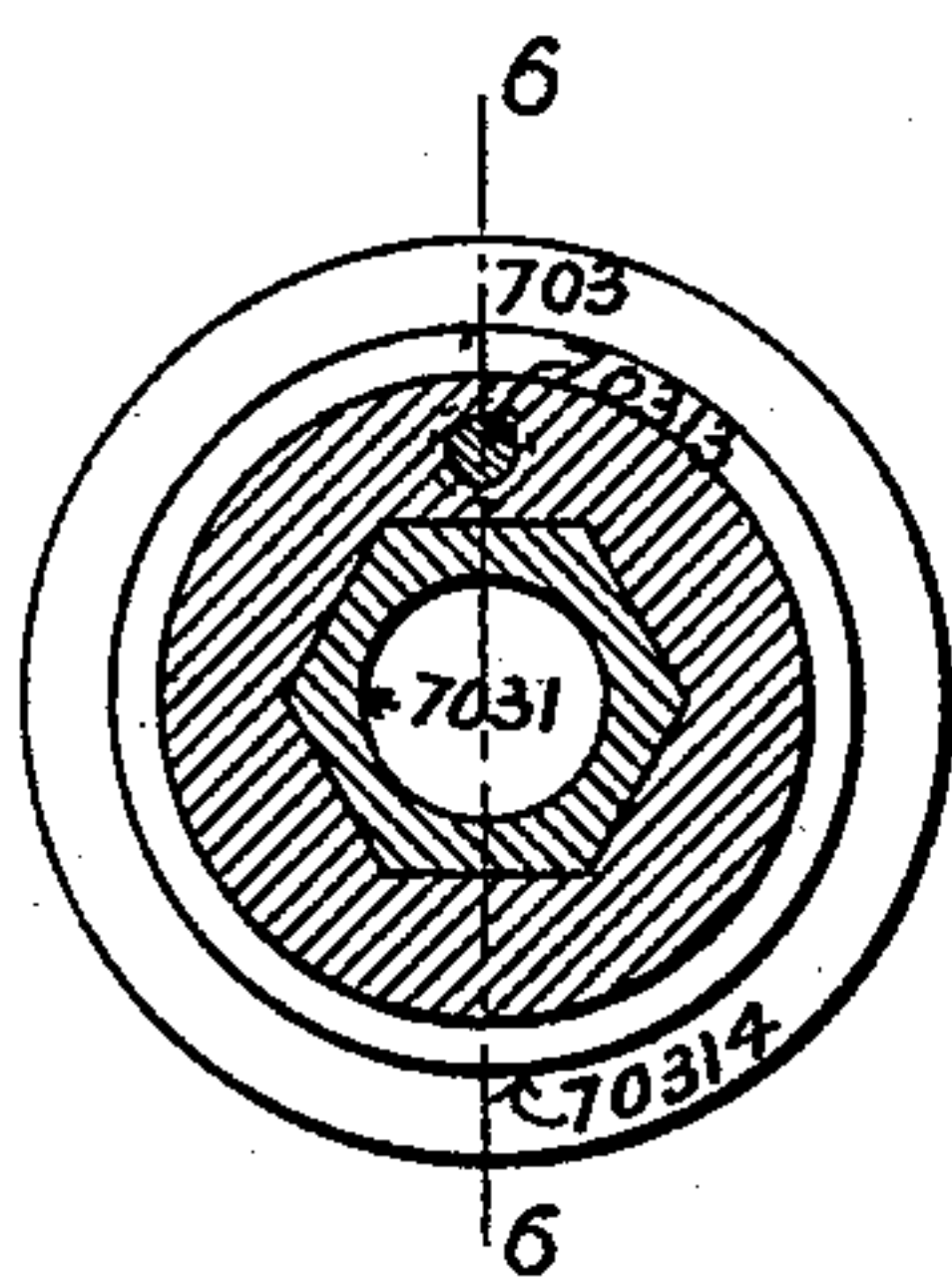


FIG. 7.

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ACTUATING MECHANISM FOR DOFFER-COMBS OF CARDING-ENGINES.

SPECIFICATION forming part of Letters Patent No. 492,537, dated February 28, 1893.

Application filed December 30, 1892. Serial No. 456,771. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM PITT CANNING, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Improvement in Actuating Mechanism for Doffer-Combs of Carding-Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to the devices which are employed for the purpose of communicating to the doffer comb of a carding engine the quick vibratory movements which cause it to comb or strip from the doffer the fleece of fibrous material that has been received thereon.

More particularly, the invention relates to the bearings for the crank-shaft which serves for the actuation of the comb, and to the devices for effecting the adjustment which compensates for the wear of the contacting surfaces of the jaws of the oscillator which is connected to the comb-shaft, the wrist or crank-pin of the actuating crank-shaft, and the split-bearing which is fitted to the said wrist or crank-pin and plays between the said jaws. Also, it relates to the ducts for returning to the oil-well in the body of the comb-box the oil which works out at the ends of the bearings for the oscillator on the comb-shaft and is collected in the chambers which are formed in the comb-box adjacent to such ends.

The main objects of my invention are to provide a novel and improved means of effecting the adjustment aforesaid, and to provide adjusting means having the external parts thereof projecting but slightly from the surface of the comb-box, and so shaped and formed as to afford very little opportunity for flyings to lodge and accumulate thereon.

The invention consists in certain novel and useful features of construction and combinations of parts, all as is hereinafter fully explained, and first will be described with reference to the accompanying drawings, and then will be particularly pointed out and clearly defined in the claims at the close of this specification.

In the drawings, Figure 1 is a view, in vertical section on the line A, D, E, F, G, A, of Fig. 2, of doffer-comb actuating devices embodying my invention. Fig. 2 is a view of the same, mainly in vertical section on the plane indicated by the line B—B in Fig. 1. Fig. 3 is a view in plan, partly in horizontal section on line C—C in Fig. 1, of certain of the parts which are seen in the preceding figures. Fig. 4 is a view of certain parts in vertical section on the plane indicated by the line B—B in Fig. 1. Fig. 5 is a view showing the same parts in vertical section in a plane at a right angle to that of the section in Fig. 4 on the line A A of Fig. 2. Figs. 6, 7 and 8 are views showing a modification.

At 70 is shown the comb-box, which, in practice, is secured to the framing of a carding-engine, in a position adjacent to the doffer.

At 701 is shown the cap of the comb-box, at 7011 the plug which is fitted to the hole that is formed in the said cap.

At 111 is shown one end of the comb-shaft, at 112 is shown the oscillator which is mounted on the said end, and at 1121 is shown the screw by which the oscillator is secured to the comb-shaft, the end of the said screw bearing against the saddle shown at 1122, which is interposed to prevent the wearing of the shaft by the screw. The laterally-extending cylindrical portions of the oscillator take bearing, as shown, in portions of the body and cap of the comb-box. At the opposite ends of the oscillator the chambers 7041, 7041 are formed in the body and cover of the comb-box for the purpose of catching such oil as may work out of the bearings for the oscillator.

At 1123, 1123, are shown the two jaws of the oscillator 112, within which jaws slides the split-bearing 5, 5, which is placed on the wrist 101 of the crank-shaft 10, the said wrist connecting the disks 102, 102 on the said shaft, and the split-bearing fitting between the said disks.

At 103 is shown the inner journal of the crank-shaft, and at 104 is shown the outer tapered portion of the said shaft on which is fitted the driving pulley 105, the said pulley being secured in place by means of the nut

106 threaded on the extreme outer end 107 of the crank-shaft 10. The external lateral surfaces of the split-bearing 5, 5, and the inner surfaces of the jaws 1123, 1123, are formed upon an angle, as shown, so that as wear takes place between the wrist 101 and the inner surfaces of the split-bearing, and also between the outer surfaces of the split-bearing and the jaws of the oscillator, the parts may be brought into close contact again by the action of this angular formation when the crank-shaft is moved endwise and carries the split-bearing with it.

The parts so far described are of known construction.

As heretofore, the bearings for the crank-shaft are contained in exteriorly-threaded bearing-pieces which are fitted to screw-threaded holes in the side-walls of the comb-box. The bearing-piece 702 is formed as a bushing or sleeve, as heretofore, and the interior of the said bearing-piece itself forms the bearing for the portion of the crank-shaft which passes therethrough, the said bushing being formed with an annular chamber 707 which will catch the oil that works out around the crank-shaft, the said oil being returned by the duct 708 formed in the bushing 702 to the oil-well which is formed by the cavity in the body of the comb-box.

In accordance with my invention the side-walls of the body of the comb-box are of considerable thickness, in order that the bearing-pieces which are introduced into the holes or openings in the said side-walls may have support throughout a considerable part of their length. The outer portion of the said holes or openings are screw-threaded interiorly, and the inner portions thereof are of somewhat reduced diameter. The bearing-pieces have screw-threaded portions to fit the threaded portions of the said holes, and plain inner portions of reduced diameter to fit the inner portions of the holes, and are formed with the ports 706, 706. The foregoing construction provides secure support for the bearing-pieces, and insures steadiness while the crank-shaft is rotating. The spaces between the shoulders on the bearing-pieces and the shoulders on the interiors of the holes or openings form annular oil-chambers 705, 705, into which the ports 704, 704 and 706, 706 open. Oil from the oil-chambers at the ends of the bearings for the oscillator passes through the ports 704, 704 to the chambers 705, 705, and thence through the ports 706, 706, to the oil-well in the cavity of the body of the comb-box.

I construct the bearing-piece 703 as follows. The outer end thereof has a flange intended to fit against the outside of the corresponding wall of the body of the comb-box, and, as is the case with the similar flange formed on the bearing-piece 702, the said flange is formed so as to permit it to be engaged by a tool which is applied thereto for the purpose of turning the bearing-piece. In the drawings I have shown radial holes formed in the said

flanges. The said outer end of the bearing-piece 703 is closed, as shown clearly in Fig. 2, and within the said bearing-piece is closely fitted the bushing 7031, on the inner surface of which the journal 103 of the crank-shaft takes its bearing. For the purpose of moving the crank-shaft endwise, so as to effect the transverse adjustment of the split-bearing 5, 5, between the jaws 1123, 1123 of the oscillator 112, whereby play between the wrist 101, the split-bearing, and the said jaws is taken up, I provide as follows. At its inner end the bushing 7031 is formed with a collar 70312, and rests in contact with the adjacent disk 102, or a similar circumferential enlargement on the crank-shaft, thereby constituting an annular thrust-bearing. Into the collar 70312 is securely fastened the pin 70313 which enters a passage formed in the bearing-piece 703 parallel with the axis of the crank-shaft 10. The outer extremity of the said passage is threaded, as shown, to receive the set-screw 70314, the end of which takes bearing against the end of the pin 70313, and thus, as the set-screw 70314 is turned, it acts against the pin 70313 to force the inner end of the bushing against the disk 102 of the crank-shaft, thereby occasioning endwise movement of the shaft. As will be seen, the adjusting devices are entirely inclosed within the bearing-piece, and the projection of the outer end of the bearing-piece 703 is very slight, there being afforded thereby but little lodgment for flyings. Considerable trouble has been experienced heretofore on account of the fact that the devices which have been provided for supporting the journal 103 of the crank-shaft, and for effecting the lateral adjustment of the parts as herein described, and the cap or cover which has been applied thereto, have formed a comparatively large projection extending from the side of the body of the comb-box. On such projection flyings have collected and accumulated until a large bunch or ball has formed. Finally this would fall off upon the web of fibrous material passing away from the doffer, and would enter with the web into the sliver, making a large dirty bunch therein. This is practically prevented by the construction shown in the drawings.

For convenience, I may employ the wire 51 which is represented most clearly in Fig. 5. This wire is bent so as to fit around three sides of the split-bearing, it fitting in grooves formed in the two halves 5, 5 of the said split-bearing, and having one end thereof formed into a hook 511 which is snapped into a hole drilled into one of the said halves. The wire constitutes a clasp for holding the two halves 5, 5, in position on the wrist 101, while the parts are being assembled and the oscillator put in place.

In the reduction of my invention to practice, I may, in some embodiments thereof, employ simply a collar or ring 70312, forming an annular thrust-bearing for the disk 102, and in this case the bushing 7031 may either be

formed separately from the said collar, or omitted. In some cases, also, the adjusting-screw 70314 will bear directly against the annular thrust-bearing instead of against a pin 70313. The pin 70313 in the construction illustrated being rigidly connected with the collar 70312 serves as a means of preventing the collar and bushing from rotating.

In Figs. 6, 7 and 8 I have shown a modified construction in which the pin 70313 is not connected with the collar or ring 70312 but merely presses against the side of the same by one of its ends. The bushing and its collar are prevented from turning by forming the exterior of the bushing and the interior of the bearing of a contour which in cross-section is irregular. In the said figures I have shown the exterior of the bushing and the interior of the bearing made polygonal in cross-section. Fig. 6 shows the bearing, bushing, &c., in vertical section on the line 6—6 in Fig. 7; Fig. 7 shows the same parts in vertical section on the line 7—7 in Fig. 6; and Fig. 8 shows the same in elevation viewed from the right in Fig. 6. Other known or obvious means of preventing the bushing from rotating may be adopted in practice.

I claim as my invention—

1. The combination with the comb-box, the comb-shaft, the oscillator having arms formed with angular contact-surfaces, the bearing moving between the said jaws and also formed with angular contact-surfaces, and the crank-shaft having a wrist on which the bearing is fitted, with an annular thrust-bearing resting in contact with a circumferential enlargement on the crank-shaft, a bearing-piece for one journal of the crank-shaft, and adjusting devices contained within the said bearing-piece, acting upon the annular thrust-bearing, and serving to move the crank-shaft endwise to take up wear, substantially as described.

2. The combination with the comb-box, the comb-shaft, the oscillator having arms formed with angular contact-surfaces, the bearing moving between the said jaws, and also formed with angular contact-surfaces, and the crank-shaft having a wrist on which the bearing is fitted, with an annular thrust-bearing resting in contact with a circumferential enlargement on the crank-shaft, a bearing-piece for one journal of the crank-shaft having a closed outer end, and adjusting devices contained within the said bearing-piece, acting upon the annular thrust-bearing, and serving to move the crank-shaft endwise to take up wear, substantially as described.

3. The combination with the comb-box, the comb-shaft, the oscillator having arms formed with angular contact-surfaces, the bearing moving between the said jaws and also formed with angular contact-surfaces, and the crank-shaft having a wrist on which the bearing is fitted, with a bearing-piece for one journal of the crank-shaft, a bushing within the said bearing-piece resting at one end in contact with a circumferential enlargement on the

crank-shaft, and adjusting devices for said bushing contained within the bearing-piece, serving to move the crank-shaft endwise to take up wear, substantially as described.

4. The combination with the comb-box, the comb-shaft, the oscillator having arms formed with angular contact-surfaces, the bearing moving between the said jaws and also formed with angular contact-surfaces, and the crank-shaft having a wrist on which the bearing is fitted, with a bearing-piece for one journal of the crank-shaft, a bushing within the said bearing-piece resting at one end in contact with a circumferential enlargement on the crank-shaft, and an adjusting screw contained in a hole in the bearing-piece, acting to move the bushing, and serving to move the crank-shaft endwise to take up wear, substantially as described.

5. The combination with the comb-box, the comb-shaft, the oscillator having arms formed with angular contact-surfaces, the bearing moving between the said jaws, and also formed with angular contact-surfaces, and the crank-shaft having a wrist on which the bearing is fitted, with a bearing-piece for one journal of the crank-shaft, a bushing within the said bearing piece, resting at one end in contact with a circumferential enlargement on the crank-shaft, and formed with a collar, a pin connected with the said collar and fitted to a hole in the bearing-piece, and an adjusting-screw also fitted to the said hole, substantially as described.

6. The combination with the crank-shaft having an annular enlargement, of a bearing-piece for one journal of the said shaft, a bushing within the said bearing-piece, resting at one end in contact with the circumferential enlargement, and formed with a collar, a pin connected with the said collar and fitted to a hole in the bearing-piece, and an adjusting screw also fitted to the said hole, substantially as described.

7. The combination with the comb-shaft, the oscillator, and the crank-shaft, of the comb-box having bearings for the oscillator, and also having the oil-chambers at the ends of such bearings, and the ports 704, 704, leading from such oil-chambers, and the bearing-pieces fitted in holes in the sides of the comb-box, and having the ports 706, the parts being formed to produce the annular chambers 705, 705, into which the ports 704, 704 and 706, 706 open, substantially as described.

8. The combination with the comb-shaft, the oscillator, and the crank-shaft, of the comb-box having bearings for the oscillator, oil-chambers at the ends of such bearings, the ports 704, 704 leading from such oil-chambers, and openings in the side walls thereof screw-threaded in their outer portions and of reduced diameter in their inner portions, and the bearing pieces fitted in the said holes, having screw-threaded portions to fit the threaded portion of such holes and plain inner portions of reduced diameter to fit the

inner portions of the holes, and also formed with the ports 706, 706, the spaces between the shoulders on the bearing-pieces and the shoulders on the interiors of the holes forming annular oil-chambers 705, 705 into which the ports 704, 704 and 706, 706, open, substantially as described.

9. The bearing piece having the bushing and provided with means for adjusting the said bushing longitudinally therein, and also with means for preventing the said bushing

from rotating, combined with the comb-box in which the said bearing piece is mounted, and the crank shaft having an annular enlargement against the side of which the end of the bushing bears, substantially as described. 15

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

WILLIAM PITT CANNING.

Witnesses:

CHANNING WHITAKER,
SAML. G. STEPHENS.