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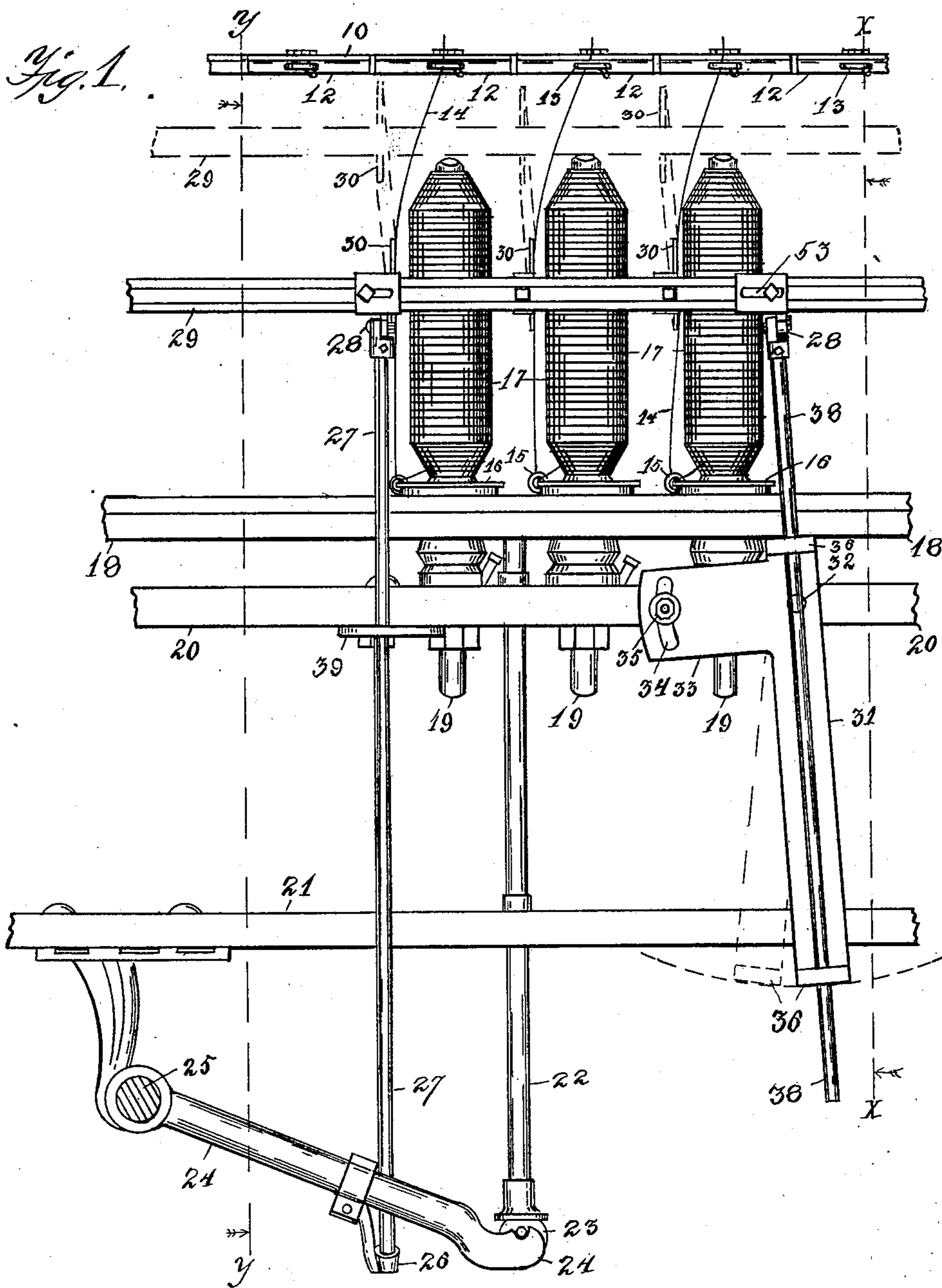
PATENTED JUNE 21, 1904.

H. K. SMITH.
SEPARATOR MECHANISM FOR SPINNING FRAMES.

APPLICATION FILED MAR. 24, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES:

G. T. Johnson
A. W. Kettle

INVENTOR

Henry K. Smith
BY

J. Arthur Baldwin
ATTORNEY

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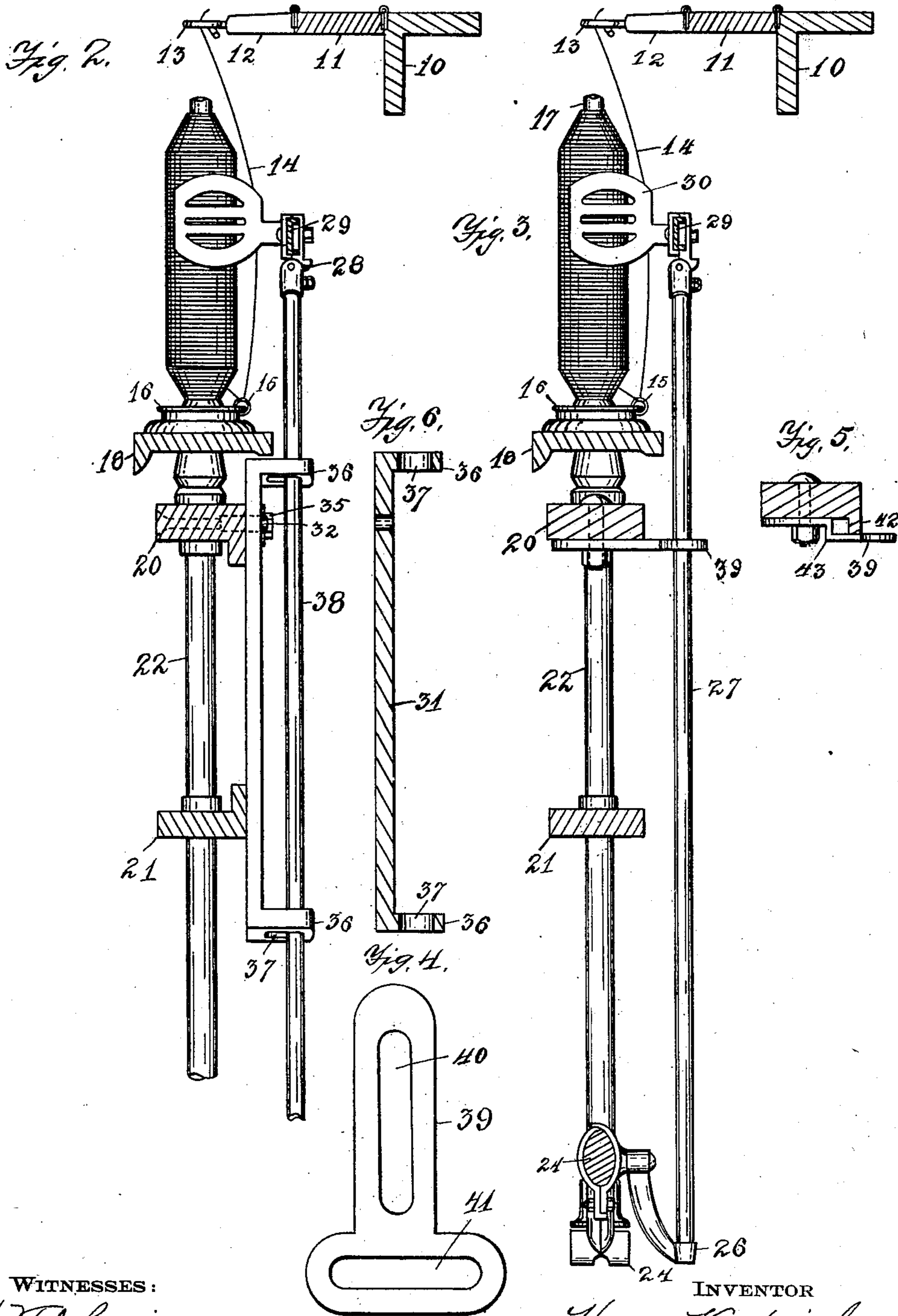
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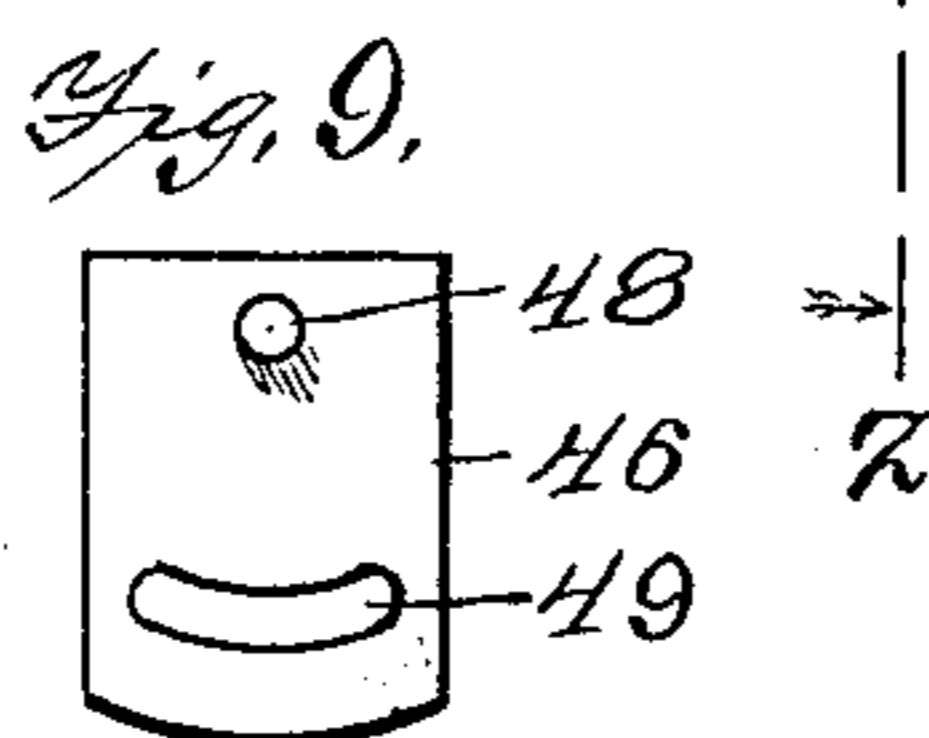
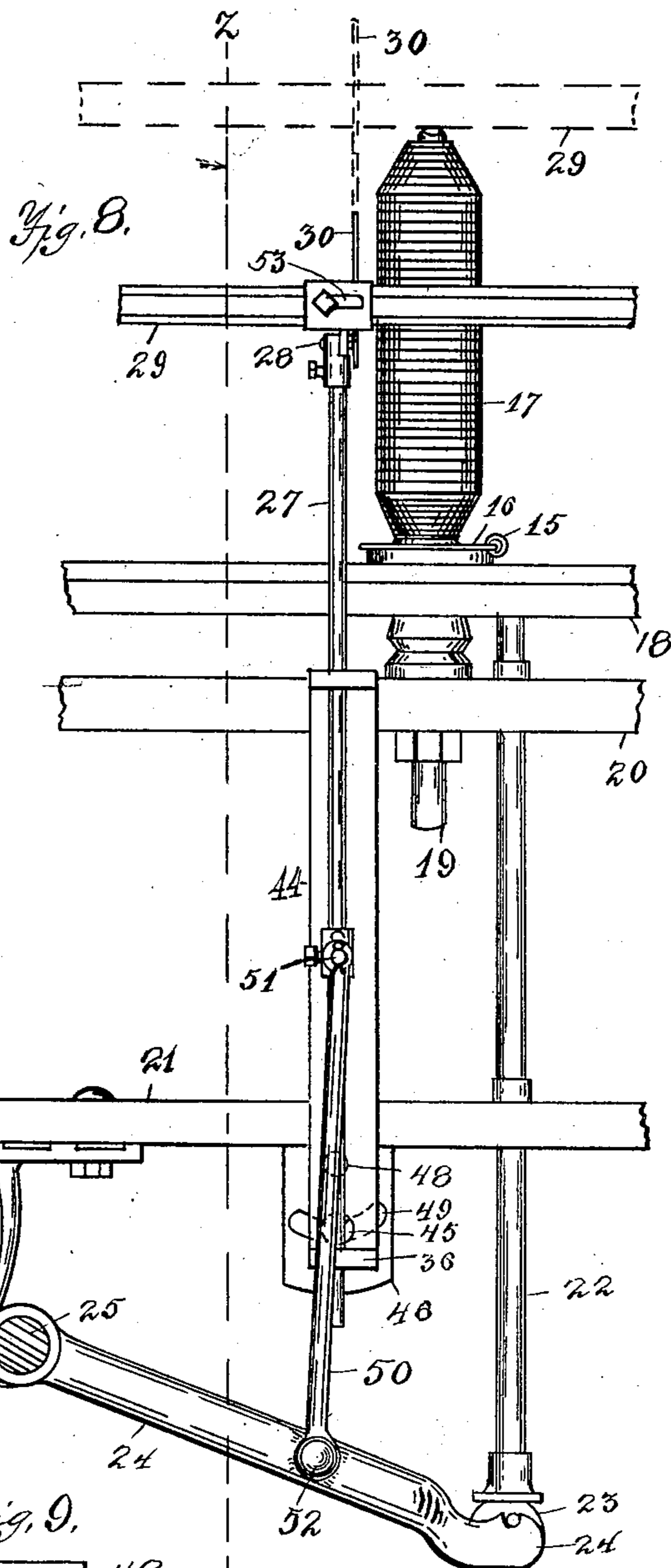
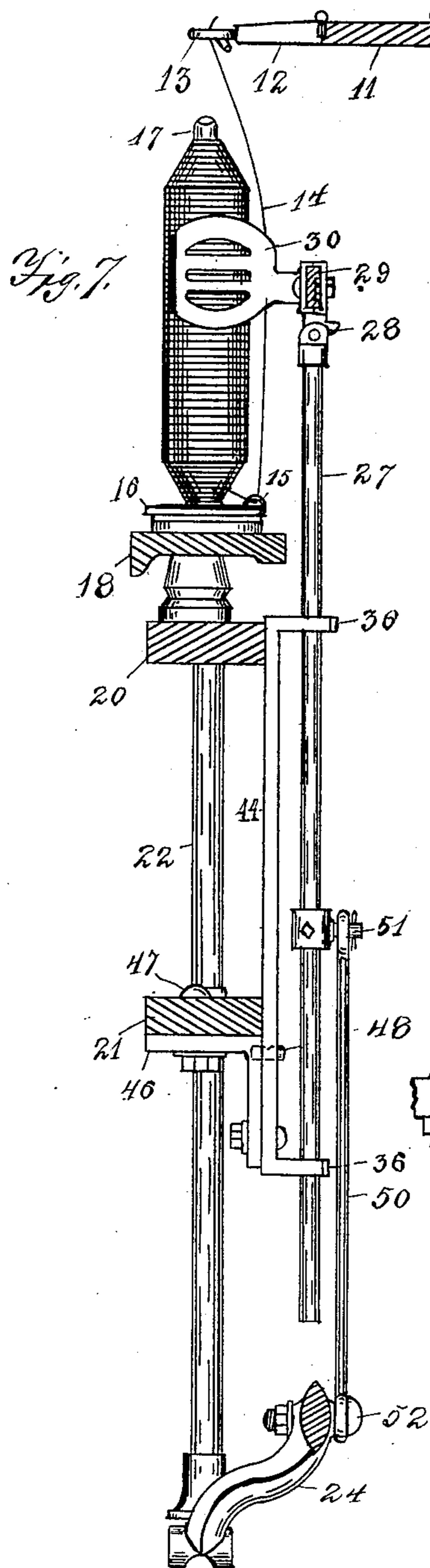
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UNITED STATES PATENT OFFICE.

HENRY K. SMITH, OF JAMESTOWN, NEW YORK.

SEPARATOR MECHANISM FOR SPINNING-FRAMES.

SPECIFICATION forming part of Letters Patent No. 763,120, dated June 21, 1904.

Application filed March 24, 1903. Serial No. 149,237. (No model.)

To all whom it may concern:

Be it known that I, HENRY K. SMITH, a citizen of the United States, and a resident of Jamestown, in the county of Chautauqua and State of New York, have invented a new and useful Separator Mechanism for Spinning and Twisting Frames, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to operating mechanism of separators or thread-guards between adjacent spindles which control the "balloon" of the yarn and prevent the "lashing" or striking together of the threads and consequent breakage of ends. As commonly used the separator-blades occupy a position central between adjacent spindles and rise vertically or with a straight traverse. Many operators consider it desirable, however, for the more effective control of the balloon that the blades should be offset—i. e., nearer one of the adjacent spindles and correspondingly distant from the other at the point of largest balloon of the yarn. This offset is obtained by combining a sidewise movement of the blades with their upward movement, resulting in an angular upward traverse.

Warp and filling spindles generally revolve in opposite directions, and the separator-blades must be offset on opposite sides to correspond to the direction of rotation. In other words, the side of the spindle to which the blade must be nearest changes with the direction of spindle rotation. Accordingly, separator mechanism which allows of offset only on one side and the corresponding angular traverse is therefore not admissible when it might be necessary to reverse the direction of rotation of spindles.

The objects of my improvement are, first, to obtain in one separator mechanism a combination of both the above-mentioned types with the advantages which may obtain with either straight or angular lifts and central or offset blades and to provide a simple means of adjustment whereby the separators can be immediately changed from one to the other; second, to provide mechanism whereby the direction of traverse of all these separator-blades

of one entire side of a frame may be adjusted from one easily-accessible point; third, to provide independent means, so that the separator-bar can be given horizontal endwise adjustment at one point; fourth, to arrange said adjusting mechanism so that all adjustments can easily be made while the frame is running and to make it simple in design, and thereby materially lessen the cost of construction; fifth, to provide a system of slotted guide-clips for the rods, whereby freedom of lateral movement is attained and latitude of adjustment is insured.

In the drawings, Figure 1 is an elevation of the rear side of a portion of the rails, bars, rods, and spindles and showing my separator mechanism. Fig. 2 is a sectional view of the rails, separator-bar, and roller-beam of a spinning-frame at line X X in Fig. 1 and showing my adjustable guide-rod for the separator-bar; and Fig. 3 is a sectional view of the same at line Y Y, showing my adjustable clip on the spindle-rail and a separator lifting-rod held thereby. Fig. 4 is a plan view of adjustable clip. Fig. 5 is a detail of clip as adapted to a different form of spindle-rail. Fig. 6 is a lengthwise sectional view of the separator-guide-rod bracket, showing the slotted lugs. Fig. 7 is a sectional view at line Z Z in Fig. 8 of the rails, separator-bar, and lifting-arm of a spinning-frame, showing a modification of my separator-guide-rod bracket as attached to the lower rail and using a separator lifting-rod for a guide-rod. Fig. 8 is an elevation of the rear side of the rails, separator-bar, spindle, and modification of my separator-guide-rod bracket shown in Fig. 7. Fig. 9 is a detail of angle-iron for adjusting the separator-guide-rod bracket.

Similar numerals refer to corresponding parts in the several views.

The numeral 10 represents the roller-beam. A thread-board 11 is hinged to beam 10, and a finger-board 12 is hinged to thread-board 11 in the usual manner. In the edge of finger-board 12 is a yarn-guide 13, and the yarn 14 passes through guide 13 and down to traveler 15 on ring 16, thence to the bobbin 17 on ring-rail 18. The spindles 19, on which bobbins 17 are mounted, are secured in spindle-rail 20

at suitable distances apart. A lower rail 21 of the frame is placed at the desired distance below spindle-rail 20.

A lifting-rod 22 for the ring-rail 18 is stepped in a bowl 23 on the common form of lifting-arm 24 and rocker-shaft 25. A bracketed socket 26 is attached to arm 24, and a separator-bar lifting-rod 27 is supported in socket 26. Lifting-rods 27 are supplied for the separator-bar at suitable distances along the side of the frame to support the bar and raise the same. Lifting-rods 27 have an adjustable hinged attachment 28 at their upper ends, connecting them to separator-bar 29. Separator-bar 29 has the separator-blades 30 attached thereto on its front side, and the hinged attachment 28 allows the bar 29 and blades 30 to be turned back for doffing.

In order to adjust the traverse of the separator-bar 29 and blade 30, I attach a bracket or plate 31 to the inner side of spindle-rail 20 by means of a pin 32, on which bracket 31 is pivotally mounted. Bracket 31 has a side extension 33 with a curved slot 34 therein, in which a screw-bolt 35 works in clamping the bracket to the spindle-rail.

It is now apparent that bracket 31 can be adjusted so as to stand vertically or at any desired angle either side of a vertical line. At its upper and lower ends bracket 31 extends out in lugs 36, which have the slotted openings 37 therein. A guide-rod 38 is mounted in slots 37 and has a hinged attachment 28 to separator-bar 29 the same as lifting-rods 27 for doffing. Guide-rod 38 hangs from separator-bar 29 and works freely up and down in slots 37, which prevent sidewise movement of rod 38.

In order to give due support to lifting-rods 27 in their peculiar sidewise upward movement when the separator-bar is given an angular traverse, I attach a clip 39 to the under side of spindle-rail 20 by suitable bolt in a slot 40 in the tailpiece of clip 39. Slot 40 allows clip 39 to be horizontally adjusted crosswise of the rail, thereby adjusting the forward position of separator-blades 30 as to the bobbin. A second slot 41 is made in the clip 39 at right angles to slot 40 and allows rods 27 the sidewise movement above mentioned as bar 29 and blades 30 move to one side in controlling the balloon of the yarn. Spindle-rail 20 is sometimes made with a downward flange, as shown at 42 in Fig. 5, in which case clip 39 is given a corresponding angular bend 43, slot 40 being made in clip 39 behind said angle 43.

In the modification of my separator-guide-rod bracket shown in Figs. 7, 8, and 9 bracket 44 has the slotted lugs 36 the same as bracket 31. An angle-piece 46 is attached by suitable bolt 47 to the under side of lower rail 21. Angle-piece 46 has a pin 48 thereon and a circular slot 49 near its lower extremity. Bracket 44 is pivotally mounted upon

pin 48, and the position of the bracket is fixed by a clamping-bolt 45 in slot 49. In this modification I have made use of a regular lifting-rod 27, the only difference being that I have cut off its lower end and actuated it by an arm 50, which is pivotally attached to rod 27 at 51 and to lifting-arm 24 at 52. It is apparent that this modification of bracket 31 will accomplish my purpose, but not in as convenient and substantial a manner. It necessitates the providing of a special angle piece 46, which is not needed in the use of the bracket 31, and a crank-arm 50.

The pivotal point of adjustment on pin 32 is much nearer to the separator-bar than on pin 48 and the adjustment is more easily attained. The upper end of the bracket 31 is more firmly supported, thereby holding the guide-rod 38 true to the desired angle of traverse.

The use of regular lifting-rods 27 as guide-rods is also objectionable, since it is more complicated, and the slotted bearings 37 cannot be used, for if the slotted bearings 37 were used the forward position of the blades could not be controlled as they are by my clips 39.

The slotted opening 53 in hinged head 28 on guide-rod 38, in combination with clips 39, allows of the endwise adjustment of the entire length of separator-bar 29 and blades 30 from the one point, because of the freedom for sidewise movement for the series of lifting-rods 27 in clips 39. Such adjustment by means of slot 53 is entirely independent of adjustment of traverse, either angular or vertical, by means of bracket 31 and is necessary for the lateral adjustment of the blades 30 between the bobbins. For instance, when it is desired to retain the central position of the blade at the foot of the traverse, yet a change is required in the angle of traverse. It is apparent that if the angle of traverse is changed by means of bracket 31 and the guide-rod the blades will be moved from said central position and must be readjusted by means of slot 53. It is now obvious that with my mechanism the same angle of traverse may be retained and the position of the blades changed or the reverse, or any desired combination of the two independent means of adjustment may be arranged and from the one point in each for the whole side of a frame.

The operation of my separator mechanism is simple. Blades 30 are usually first adjusted to the desired position between the bobbins, and guide-rod 38 is given the desired angle of traverse, though rod 38 can be adjusted after the machine is started. With the starting of the machine rocker-shaft 25 raises arm 24, and thereby lifts rods 22 27, the ring-rail 18, and separator-bar 29, thereby giving the desired traverse to ring-rail 18 and separator-bar 29 with blades 30. Guide-rod 38 gives bar 29 the desired direction for said traverse whether it be vertical or angular to right or left. One

guide-rod 38 is sufficient for a separator-bar 29, which bar may extend along the entire side of the spinning-frame or a part of that distance, bar 29 being supported at suitable distances by separator lifting-rods 27, as stated. It is obvious that rod 38 must give exactly the same throw to all the separator-blades on bar 29 and that this throw can be adjusted to suit the work, as desired, by the spinner in order to control the balloon of the yarn. Separator lifting-rods 27 pass up through slots 41 in clips 39, and slots 41 allow rods 27 any desired sidewise movement and at the same time control the forward position of rods 27, and thereby of separator-bar 29, so that blades 30 on bar 29 may be adjusted backward or forward, slot 40 in clip 39 allowing such horizontal adjustment of the clip. It is apparent, however, that if clips 39 were adjusted either backward or forward a corresponding movement will be given to lifting-rods 27 and bar 29, and then guide-rod 31 would bind in lugs 36 unless allowance were made for such adjustment in openings 37 in said lugs. Openings 37 are therefore made in the slotted form, which confines guide-rod 38 from sidewise motion, but allows it a movement to or from the frame.

The ease with which my separator mechanism can be adjusted is apparent when it is noted that the point of adjustment for guide-rod 38 is below the spindle-rail and that a wrench can easily be applied to bolt 35 to loosen the same. Bracket 31 can then be turned to the right or left, as desired, and bolts 35 tightened, thereby adjusting the angle of traverse of the entire length of separator-bar 29 to the new angle. The length of separator-bar 29 is, as stated, usually the entire side of a frame. Accordingly the angle of traverse of the entire length of one side of the frame is controlled at the one pivotal point, pin 32. The lateral position of blades 30 is adjusted at one point, slot 53, for the entire length of the separator-bar 29, because of the freedom for sidewise movement of the series of lifting-rods 27 in the clips 39, and the forward position of the blades is controlled by clips 39, as stated, and these changes can be quickly made, if necessary, and owing to the slotted bearings without interference with the guide-rod bracket 31. All points of adjustment are easy to get at, and the necessity of stopping the machine to adjust the separator, as is necessary when such mechanism is attached to the roller-beam, is done away with. It is also apparent that there are no parts attached to the roller-beam in my device to catch cotton flyings. In fact, I have reduced the number of the parts as low as possible and the parts themselves to their simplest form and retain the complex action necessary for a successful separator.

I claim as new—

1. In a spinning or twisting frame, separator-blades and means for lifting the same, and

means of adjustment to give either a vertical or angular lift or traverse to said blades.

2. In a spinning or twisting frame, a series of separator-blades having freedom of sidewise movement, means for lifting said blades, said series of blades being adjustable at one point as to their angle of lift or traverse.

3. In a spinning or twisting frame, a separator-bar and separator-blades thereon, means for lifting said bar, and a guide-rod attached to said bar having adjustable bearings to give either a vertical or angular lift to said blades.

4. In a spinning and twisting frame, a separator-bar and separator-blade thereon, means for lifting said bar, a guide-rod adjustably attached to said bar to allow endwise adjustment of the bar, and a bracket pivotally mounted on the frame having slotted bearings allowing of the free movement of said guide-rod crosswise of the frame.

5. In a spinning or twisting frame, a separator-bar, separator-blades on said bar, supporting means for said bar whereby the bar and its supports can be adjusted horizontally at one point.

6. In a spinning or twisting frame having a series of separator-blades and means for supporting and lifting the same, means for adjusting said series of blades to either a vertical or angular lift in combination with an independent means for sidewise adjustment of said series of blades from one point.

7. In a spinning or twisting frame, separator mechanism having lifting-rods, supporting-clips for said rods attached to the spindle-rail, there being a slot in said clips lengthwise of said frame for sidewise movement of said rods, and another slot in said clip crosswise of said frame for adjusting said attachment to the rail.

8. In a spinning or twisting frame having a separator-bar with separator-blades thereon, lifting-rods for said bar and means for actuating said rods, supporting-clips for said rods attached to the spindle-rail, slotted openings in said clips at right angles to each other to allow of the free sidewise movement of the rods and adjustable attachment to the rail.

9. In a spinning or twisting frame, a separator-bar and separator-blades thereon, lifting-rods for said bar having supporting means which allow free sidewise movement of the rods, a guide-rod for said bar having adjustable bearings on said frame which control the sidewise movement of said guide-rod, and a slot-and-bolt attachment of said rod to said bar for endwise adjustment at one point.

10. In a spinning or twisting frame, a separator-bar and separator-blades thereon, lifting-rods for said separator-bar and means for actuating said rods, supporting-clips for said rods which allow sidewise movement of the rods, and a guide-rod for said bar having bearings adjustable to different angles.

11. In a spinning or twisting frame, a sep-

arator-bar and separator-blades thereon, lifting-rods for said bar having supporting means which allow sidewise movement of the rods, a bracket pivotally supported on said frame, 5 crosswise-slotted bearings in said bracket, and a guide-rod adjustably attached to said separator-bar and mounted in said crosswise slots.

12. In a spinning or twisting frame, a separator-bar and separator-blades thereon, lifting-rods for said bar and actuating means therefor, supporting means which allow sidewise movement of said rods, a bracket pivotally supported on said frame and means for 15 clamping said bracket in different positions, and a guide-rod mounted in said bracket and attached to said separator-bar to give a vertical or angular lift to said blades.

13. In a spinning or twisting frame, a separator-bar and separator-blades thereon, lifting-rods for said bar having adjustable connection thereto, means for actuating said rods, supporting-clips for said rods which allows them a free sidewise movement and a crosswise adjustment, a guide-rod adjustably attached to said bar to allow endwise adjustment, and a bracket pivotally mounted on the spindle-rail having slotted bearings allowing of free crosswise movement of said guide-rod. 20

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 25

HENRY K. SMITH.

Witnesses:

THOS. HENRY SMITH,
A. W. KETTLE.