No. 763,863. PATENTED JUNE 28, 1904.

W. H. DRURY.

DRAWING MECHANISM FOR SPINNING OR OTHER MACHINERY.

APPLICATION FILED NOV. 20, 1903.

NO MODEL.

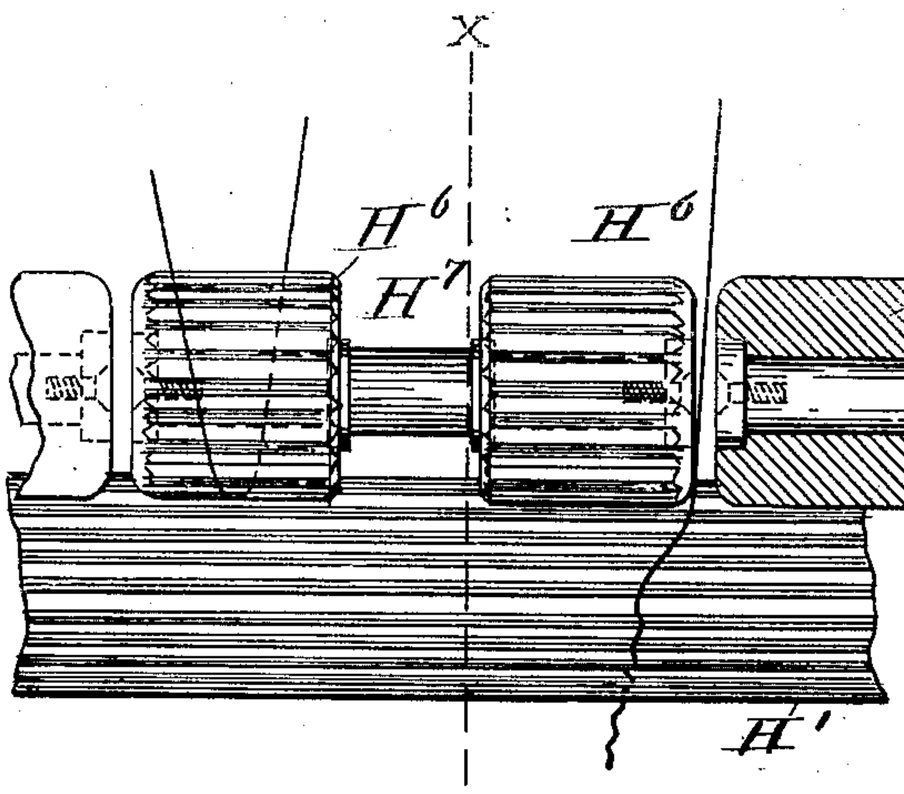

Fig-4

Fig-3

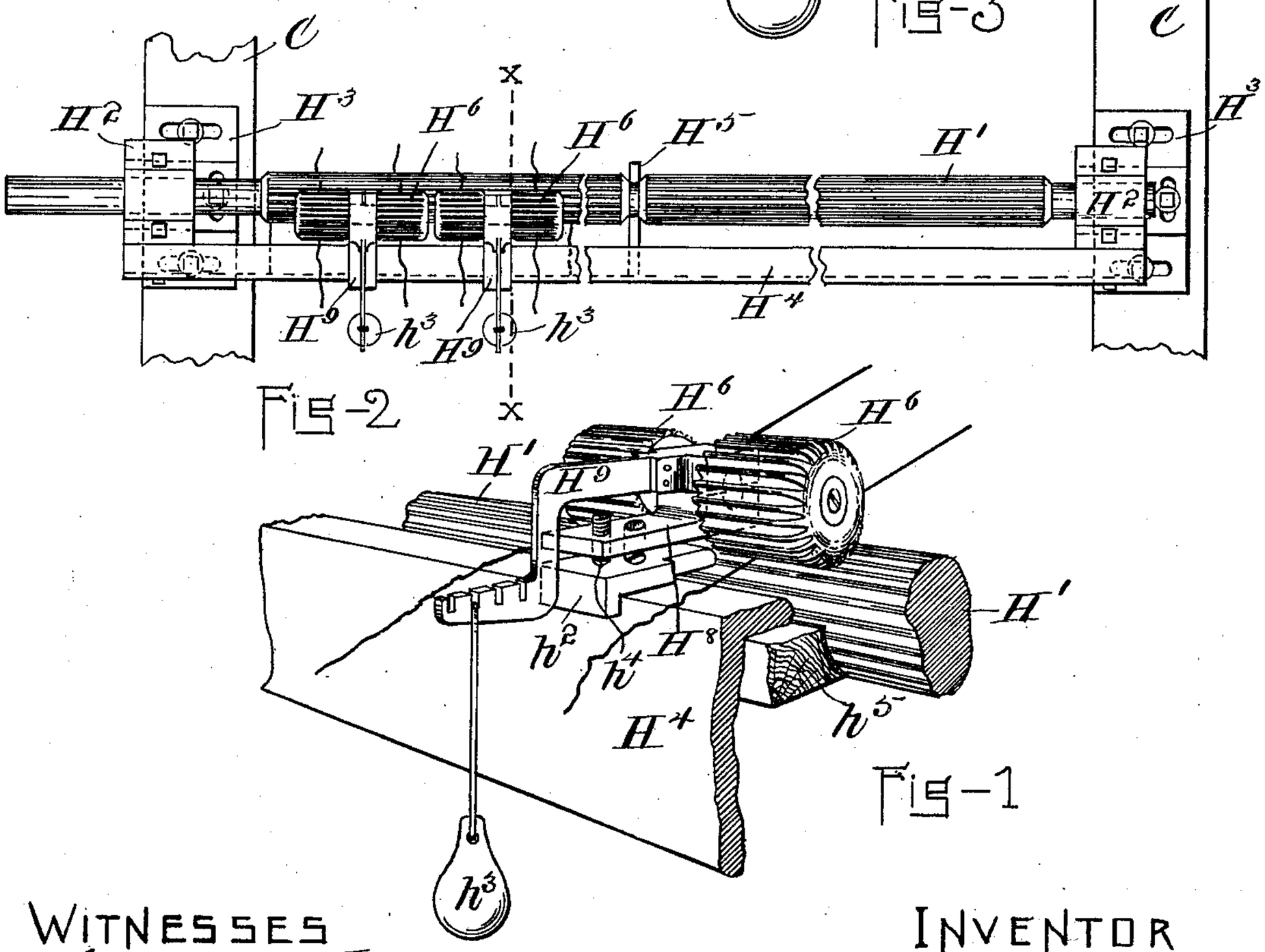

Fig-2

Fig-1

WITNESSES

Horace Tobey

Charles Hafner

INVENTOR

William H. Drury

By Marcellus Bailey his Atty.

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UNITED STATES PATENT OFFICE.

WILLIAM HENRY DRURY, OF WALTHAM, MASSACHUSETTS, ASSIGNOR TO GEORGE TOD FORD, OF WASHINGTON, DISTRICT OF COLUMBIA.

DRAWING MECHANISM FOR SPINNING OR OTHER MACHINERY.

SPECIFICATION forming part of Letters Patent No. 763,863, dated June 28, 1904.

Original application filed November 2, 1903, Serial No. 179,631. Divided and this application filed November 20, 1903. Serial No. 181,965. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY DRURY, a citizen of the United States, residing at Waltham, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Drawing Mechanism for Spinning or other Machinery, of which the following is a specification.

This application is a division of my application, Serial No. 179,631, filed November 2, 1903, for spinning machinery for manufacturing yarn direct from the carded fibrous material and is directed to the drawing mechanism of that application, which mechanism while designed more particularly for use in connection with the other special yarn-making appliances set forth and claimed in my aforesaid application is nevertheless adapted to be used with good results in connection with spinning-mules or wherever it is necessary or desirable to draw yarn or roving.

My improved drawing mechanism comprises a power-driven under roll and a number of upper rolls axially in line with one another, all driven from the lower roll, but each rotatable independently of the other, appropriated, respectively, to the strands of yarn or roving to be drawn, with an open space at one end of each of them to admit of the ready insertion between the rolls of the appropriate yarn end. The upper rolls are combined with means for adjusting them to any desired proximity to the under roll and for maintaining them in their adjusted position with regulable yielding pressure.

In the accompanying drawings, to which reference will now be made for a better understanding of my invention, Figure 1 is a perspective view of the under drawing-roll, a pair of upper drawing-rolls, and the parts immediately associated therewith. Fig. 2 is a plan illustrative of a complete set of drawing devices, together with their supporting-girder and adjusting means, whereby the set of drawing-rolls as a whole can be bodily adjusted either fore and aft or crosswise of the drawing-frame. Fig. 3 is a section on line x x, Figs. 2 and 4, together with a side elevation of the compound lever-frame which carries each pair of upper rolls. Fig. 4 is a front elevation of one pair of upper drawing-rolls and the portion of the lower roll associated with them. On the right of the pair of upper rolls is shown one of the shell-rolls in section to illustrate the manner in which the shell-rolls are mounted on their respective axles.

The rolls are fluted, as in gear-cutting. The under roll H′ runs in the boxes H^2, which are adjustable inward and outward on the castings H^3, being clamped thereto by screws, which extend through oblong slots in the boxes. The castings H^3 are adjustable transversely on the sides C of the drawing-frame in a similar manner. The angle-iron girder H^4 is firmly clamped to said boxes by screws, as shown. An intermediate journal on roll H′ runs in a bearing H^5, suitably fastened in said girder, as shown, and there may be as many such intermediate journals and bearings as the length of the shaft may require. Only four upper drawing-rolls H^6 are shown in Fig. 2; but there are as many of them as there are strands of yarn or roving to be drawn, there being one upper roll H^6 for each strand.

The entire system is seen to be adjustable bodily fore and aft and lengthwise or laterally from side to side. The lateral adjustment is to bring the middle of each upper roll into proper position to draw the strand which it is its business to draw, and the fore and aft adjustment is to put the system nearer to or farther from the devices from which the strands are received.

The upper rolls H^6 are shell-rolls running independently of each other. They are arranged in pairs, each pair running on the cylindrical hubs of an axle H^7, preferably of brass for easy running. The shell-rolls are held on their hubs between shoulders on the hubs at one end and washers sunk into recesses in the rolls and screwed on the ends of the hubs, as indicated in the drawings and as will be understood without further explanation. Each of the axles H^7, at a point between its two hubs, is grasped tightly by the two halves of a concave bearing or box, forming

part of a grasping device consisting of the two parts H^8 and H^9, hinged together at h, as shown in Fig. 3. The part H^8 is hinged at h' to the casting h^2, which is fastened firmly to the girder H^4. The part H^9 may be considered as a lever of the second order whose fulcrum is at h, and on its outer graduated end is hung a weight h^3. The entire grasping device H^8 H^9 may be considered a lever of the first order, fulcrumed at h'. The weight acts doubly, both to hold up away from the under roll H′ axle H^7 as far as it can go and at the same time to bear upon and hold that axle with yielding pressure down as near the under roll as it can go.

The proximity of the shell-rolls to the under roll is determined by the set-screw h^4 in the part H^8. Turning the set-screw one way brings the shell-rolls nearer the under roll, while turning it the other way will permit the part H^8 and the shell-rolls which it carries to recede therefrom. The under roll drives the shell-rolls as one gear drives another. The set-screw h^4 determines the normal bite of the drawing-rolls upon the strand or strands passing between them. The weight h^3 or its equivalent determines the yielding pressure exerted upon the strand or strands by the shell roll or rolls, permitting the latter to accommodate themselves to lumps or other unevennesses. A spring may be used on the graduated end of the lever H^9 instead of a weight, as indicated by dotted lines in Fig. 3. The device h^5, Figs. 1, 3, is a clearer to prevent yarn from winding around the under roll or fiber from gathering on it. Under this arrangement the operator is enabled to piece up broken ends easily and safely while the machine is running. However fast the rolls run it involves no personal danger, and it is perfectly simple and easy to put a strand of yarn or roving down upon the under roll through the open space shown at one end of the appropriate shell-roll, steer it into its proper place, and let it go of its own accord into the action of the drawing mechanism. Furthermore, the action of the rolls can be easily, quickly, and accurately adjusted.

It will be noted also that the lever part H^9 can whenever desired be raised and turned back on its hinge h far enough to permit the axle H^7 and the shell-rolls which it carries to be lifted out and removed from the frame for any purpose without disturbing the running of the other members of the system.

Having described my improvement and the best way now known to me of carrying the same into effect, what I claim herein as new, and desire to secure by Letters Patent, is as follows:

1. A drawing mechanism comprising a power-driven fluted under roll, and a row of pairs of fluted upper rolls axially in line with, and rotatable independently of, each other, and parallel with and engaging the under roll, with an open space at one end of each, through which the strand of yarn or roving can be introduced into the bite of its appropriate rolls, and means whereby each pair or set of upper rolls may be adjusted to any desired proximity to the under roll and held in its adjusted position with yielding pressure, substantially as and for the purposes set forth.

2. In a drawing mechanism, and in combination with a power-driven under drawing-roll, an upper drawing-roll engaging and driven by the under roll, and a supporting-frame for the upper roll, consisting of the two levers H^8, H^9 in the meeting faces of which are formed the bearing for the upper roll, the lever H^8 hinged to its support as a lever of the first order, the lever H^9 hinged as a lever of the second order to the extremity of lever H^8 overhanging the under roll, means for adjusting the lever H^8 into desired proximity to the under roll, and a weight, applied to and exerting yielding pressure upon the free end of lever H^9, substantially as and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 19th day of November, 1903.

WILLIAM HENRY DRURY.

Witnesses:
ALEXANDER H. SEAVER,
E. LULA RICH.