

No. 855,921.

PATENTED JUNE 4, 1907.

J. APPLEBY.
SPINNING FRAME.

APPLICATION FILED OCT. 26, 1906.

Fig. 1.

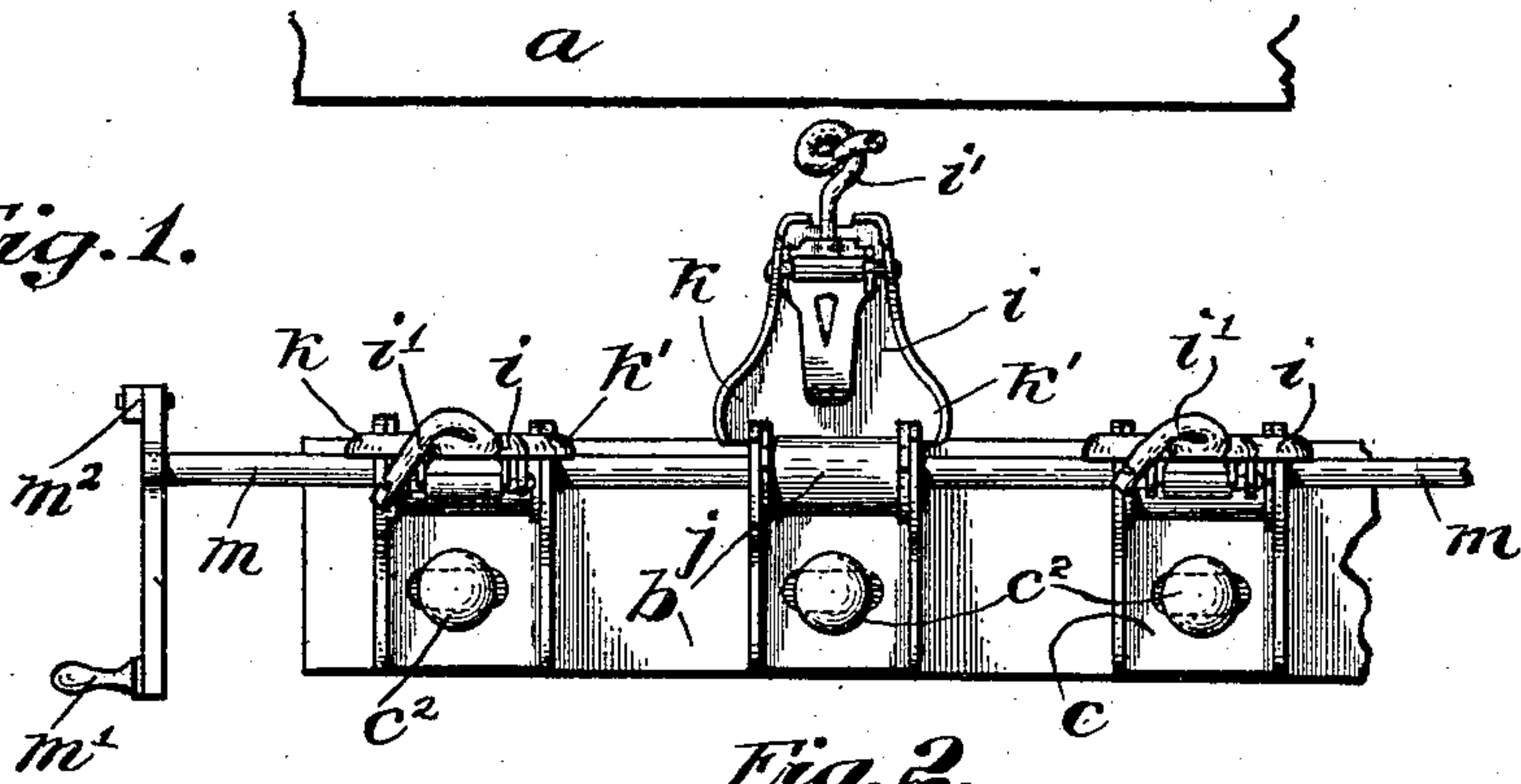
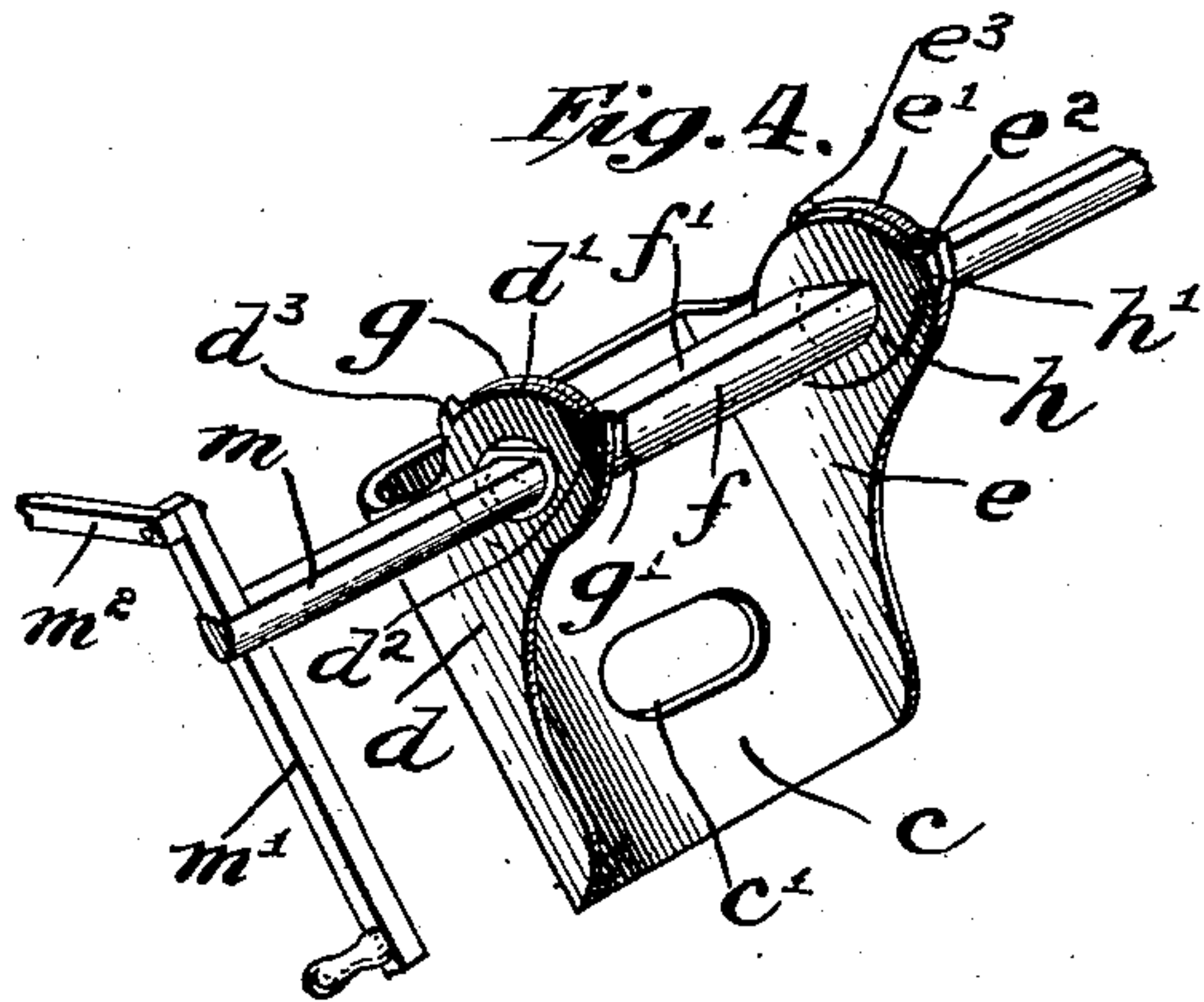
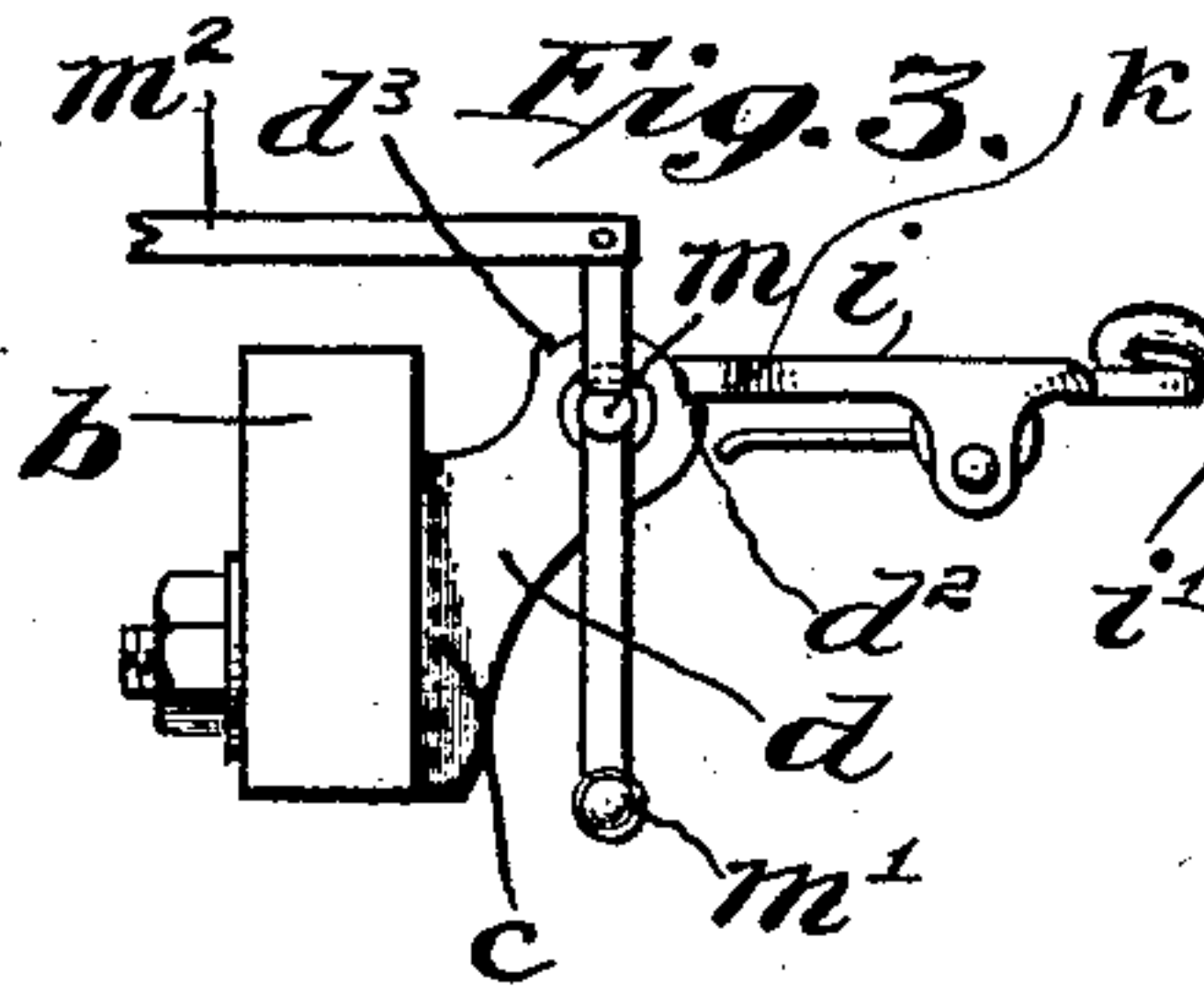
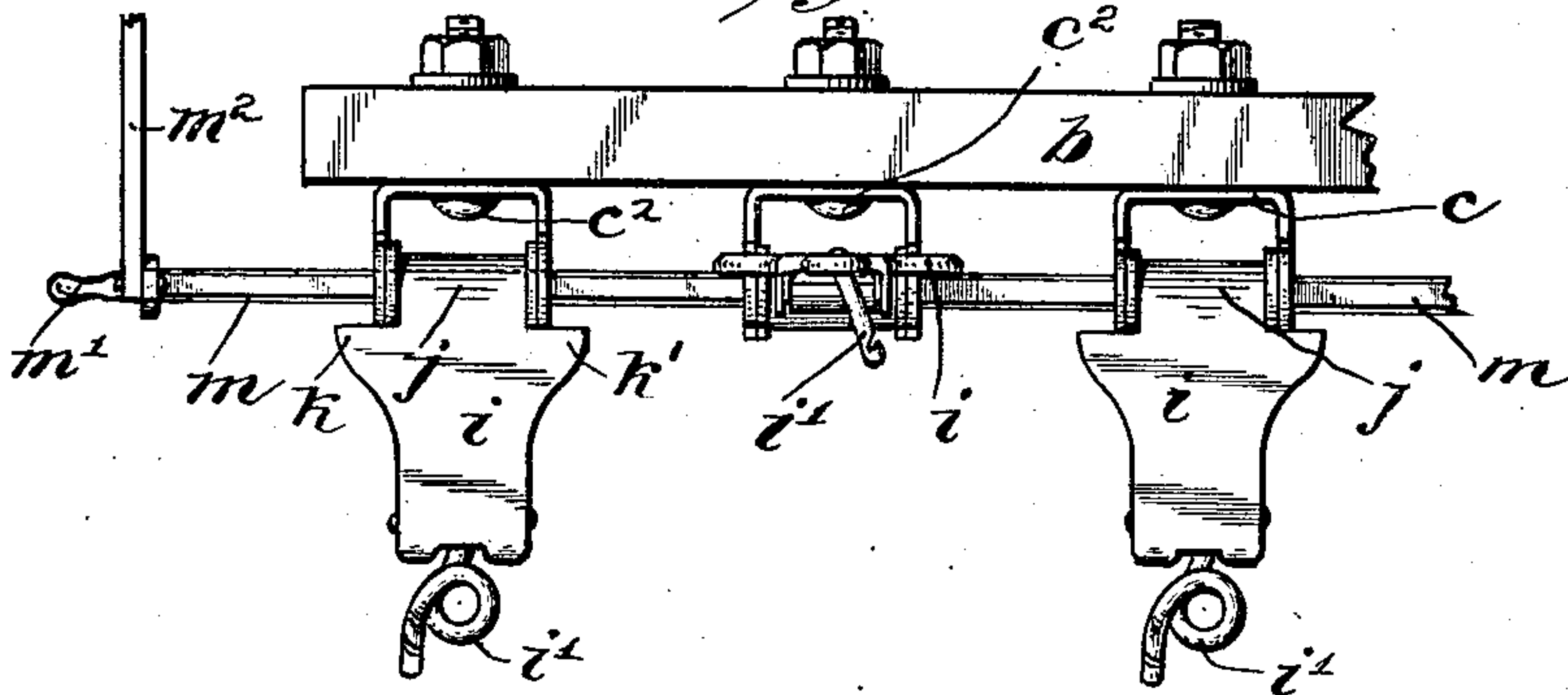


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOSEPH APPLEBY, OF ASTON, ENGLAND.

SPINNING-FRAME.

No. 855,921.

Specification of Letters Patent.

Patented June 4, 1907.

Application filed October 26, 1906. Serial No. 340,719.

To all whom it may concern:

Be it known that I, JOSEPH APPLEBY, a subject of the King of the United Kingdom of Great Britain and Ireland, residing at Aston, in the county of Warwick, England, have invented certain new and useful Improvements in Spinning-Frames, of which the following is a specification, reference being had therein to the accompanying drawings, which form a part thereof.

My invention relates to spinning frames and more particularly to the yarn controlling mechanism thereof.

The main object of the invention is to provide a yarn controller for spinning frames employing a plurality of finger or guide heads or flaps which are adapted to be raised individually or in groups simultaneously, wherein each such head or flap will be mounted in a support secured to the thread rail or a similar rail positioned below the drawing roller beam, in a manner to prevent said head or flap from working loose through the vibrations thereof, and to minimize such vibrations.

A further object is to provide a yarn controller wherein the guides may be pitched independently of the means supporting the head or flap relative to the rail.

A still further object is to provide a yarn controller of this character wherein each finger head or flap and its support, may be adjusted laterally of the thread rail, or may be removed and replaced without disturbing or removing any other head or flap, thus avoiding a fixed permanent positioning of a number of flaps relative to a thread rail and to each other.

A still further object is to provide a yarn controller wherein the various finger heads or flaps are loosely mounted on individual movable bearings which bearings are adapted to be moved in groups and raise said heads or flaps therewith.

A still further object is to provide a yarn controller employing finger heads or flaps as above described wherein the heads or flaps will be supported independently of the means raising same, whereby there may be movement of said bearings in excess of that required to permit said flaps to come to position above the spindle.

A still further object is to provide a yarn controller of this character wherein the heads or flaps may be both raised and lowered by the bearings.

A still further object is to provide a yarn controller wherein the hinge for the flap will be sufficiently large to minimize the effects of wear thereon, and be so fitted to the bearing as to avoid lateral movement independently thereof.

A still further object is to provide a yarn controller wherein the finger heads or flaps will be so spaced away from the thread rail as to bring the pig tail or other guide into the proper relation to the spindle and permit it to be turned upwardly either singly or in groups, without bringing the guide into engagement with the rollers.

A still further object is to so arrange the heads or flaps and their supports that when raised they will stand substantially vertical, thus facilitating their return to position either individually or in groups.

A still further object is to provide in a yarn controller, a finger head or flap and a support therefor which will be so constructed and arranged below the roller beam, as to leave an open space below said beam, thus preventing the accumulation of dust and dirt about the hinges on which the heads or flaps are turned in piecing or doffing. And a still further object is to provide a yarn controller wherein the flaps and their supporting means may be inexpensively produced, and in a form which will permit their being conveniently handled both in the shop and in shipping.

The invention consists in the novel features of construction and combination of parts hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawings: Figure 1 is a front view of a part of the thread board of a spinning frame showing a plurality of finger heads or flaps and the supports therefor, embodying my invention; Fig. 2 is a plan view thereof with one flap raised; Fig. 3 is a side view of a single flap and its support, and Fig. 4 is a perspective view of a single support with the head or flap removed.

Like letters refer to like parts throughout the several views.

There are three important types of thread rails and finger guides or flaps in this art: a wooden thread rail hinged to the machine and having wooden or metallic flaps hinged thereto by means of an ordinary hinge construction; metallic rails hinged to the machine having blanked hinge sockets formed on the front edge thereof, and metallic flaps

having co-operating hinge sockets mounted thereon, and rods mounted in bearings on the machine and having metal flaps loosely mounted thereon, and carrying tappets, or
 5 other abutments whereby said flaps are positioned on this rod, supported in the horizontal position, and turned up or raised in groups for doffing. The first type above referred to has the disadvantages that it is
 10 more costly than either of the other types; is apt to warp out of shape; is absorbent and thus less cleanly, and is less durable. The second type is more desirable than the old type, but possesses the disadvantage that the
 15 position of each flap relative to the thread board and adjoining flaps is fixed by the location of the hinge sockets thereof, and that the long thread boards cannot be conveniently handled in the shop, are difficult to
 20 make with the desired precision, and cannot be conveniently packed and shipped. In both these types of thread rails the pitch of the flaps is determined in riveting or otherwise attaching them to the machine, the boards
 25 and flaps when turned up or raised simultaneously extend to a height which is likely to cause the pig tails or other guides to contact with the rollers, and when horizontal or substantially so catch and accumulate there-
 30 on all dust and dirt which falls upon the rail. The last class, possesses the disadvantages that the bearings for the rod or shaft upon which the flaps are mounted are spaced apart considerably; that the tappets or abutments
 35 are not adjustable to permit the lateral movement of the flaps, or if adjustable are secured to the rod or shaft by means of set screws, thus not only making the rod the sole support for the flaps, but resulting in consid-
 40 erable vibration thereof and of its flaps and a likelihood of the said set screws being loosened thereby. In the embodiment of my invention shown in the drawings, I obviate these difficulties by mounting each flap on
 45 independent bearings adjustably secured to the thread rail and employing a key rod by means of which a plurality of flaps may be simultaneously raised or turned up, and held to any desired pitch irrespective of the means
 50 supporting the flaps relative to the thread rail.

In said drawings, I have indicated the roller beam at *a* and the thread rail at *b* both these parts being as in an ordinary spinning
 55 frame. Mounted on this rail *b* are a plurality of flap supports and flaps. Inasmuch as each of these is a duplicate of every other, a detailed description of but one of them will be entered into.

60 The support for the flap consists of a bracket comprising a base *c* having an elongated slot as *c'* therein whereby it may be adjustably secured to the rail *b* by means of the bolt *c''*, and forwardly and upwardly pro-
 65 jected oppositely disposed parallel arms *d e*.

The top of each such arm is circular as at *d'* *e'* forming a way of an arc of a little over 90 degrees. Mounted between the said arms *d* and *e* and concentric with the ways *d' e'* is a tubular sleeve *f* one side of which is indented
 70 or flattened as at *f'* to make what may be termed a **D**-sleeve thereof. Driven on said **D**-sleeve or otherwise permanently attached thereto adjacent to the end thereof so as to
 75 leave a spindle end adapted to rotate in the bearings in the arms *d e* are cam blanks *g h* each throughout the greater part thereof being circular and of substantially the same radius as the ways *d' e'*. These blanks are so
 80 disposed and distanced from each other that each is caused to bear against the side of its arm *d e* and thus hold the sleeve *f* against lateral movement. Each blank *g h* has a
 85 projection as *g' h'* adapted to engage either side of a finger head or flap, and raise or lower same. The indentation or flattening of the sleeve *f* will be along a chord of a circle of the diameter of the rest of the sleeve, thus not interfering with the free rotation of said
 90 sleeve in its bearings.

Each arm *d e* has oppositely disposed shoulders *d² d³, e² e³*, disposed at opposite ends of the ways *d' e'* respectively, and extending from substantially the horizontal
 95 radius of said sleeve *f* and beyond the vertical radius thereof, which shoulders respectively are adapted to hold the flaps on a substantially horizontal plane, and to prevent their falling back when raised to a point
 100 which would be inconvenient for the operator, when they are raised singly, to turn down again.

The finger heads or flaps each comprise a flanged guide support *i* in which a pig tail or other guide *i'* may be mounted or secured in
 105 any desired manner. The details of the guide and the means attaching same to the head, are immaterial to this invention, a well known patented form being shown in the drawings. The rear edge of this support
 110 is turned or formed into a single continuous loop or hinge socket as *j* of a length equaling the distance between the heads *g h*; and the sides thereof forwardly of said hinge socket are extended or projected into the path of
 115 the projections *g' h'* and between the shoulder *d² d³ e² e³* in a manner to form extensions *k—k'* adapted to be engaged by the former and to engage the latter. I preferably employ a continuous hinge socket as described
 120 as such entirely incloses the sleeve *f* and excludes dust and dirt from the hinge or bearing so formed, and it also provides an extended bearing, thus minimizing wear thereon.
 125

A **D**-rod *m* or other key rod of the same irregular configuration as the sleeve *f* is passed through a plurality of said sleeves and is adapted to be turned therewith by means
 130 of a lever *m'*. The end of the rod is provided

with a connecting arm as m^2 which is adapted to be connected to a similar connecting arm on the opposite side of a frame in a manner to raise the finger heads or flaps on both sides of the frame simultaneously.

The various parts of the yarn controller are preferably made of pressed metal, such being inexpensive, and are fitted together so as to allow no lost motion or looseness beyond that necessary to permit the independent movement of the flaps and their sleeves f .

Each flap and its support is assembled separately, the hinge socket j being fitted over the sleeve f , the cam blanks $g h$ fitted to said sleeve, and the ends of said sleeve projecting beyond said cam blanks forming spindle ends, inserted in the bearings in the arms $d e$, said arms being closed upon the blanks $g h$, holding all parts fairly tightly together. A plurality of these supports and flaps are then mounted on the rail b being trued up so as to permit a rod m to be passed through a number of shafts f .

Each bracket is capable of slight lateral adjustment to properly distance the flaps relative to each other and the spindles, by means of the slot c' and the bolt c^2 .

Under normal conditions, the shoulder d^2 will pitch the flaps properly, but if desired the rod m may be used to rotate the several sleeves f to so raise the flaps through the cam blanks $g h$ as to bring them to any desired pitch, the said shoulders or stops $d^2 e^2$ serving to prevent the flaps dropping downward beyond the horizontal.

It will be observed that each flap may be turned upon its socket or hinge j upon the sleeve f and raised for piecing or tying, and that a number of such may be raised simultaneously through the rod m in doffing. As said rod is turned through the lever m' , it rotates all sleeves f through which it passes the projections $g' h'$ on the several cam blocks engaging the under side of the extensions $k k'$ and raising said flaps respectively until they engage the stop shoulders $d^3 e^3$, the ways $d' e'$ permitting such movement. The shoulders $d^3 e^3$ in either case will limit the upward throw so as to prevent the flaps passing beyond the vertical radius of the sleeve f to an extent more than enough to permit them to stay up.

When it is desired to lower a single flap, it is merely necessary to throw it forward manually whereupon it will drop to place. After doffing, the direction of rotation of the various sleeves f is reversed to lower the various flaps, such flaps as are not turned through friction between its sleeve f and its loop i' , being thrown down by the projections $g' h'$ engaging the top of the extensions $k k'$. The circular portion of the cam blanks $g h$ permit the utilization of the projections $g' h'$ for both raising and lowering the flaps as described.

While shoulders and cam blanks acting on

both sides of the flaps are not absolutely necessary to the invention, I prefer to use such as making a more compact and more evenly balanced structure.

It will be observed that there is an open space between the rail b and the respective flaps by reason of the forwardly projected bracket arms, thus avoiding an accumulation of dust and dirt about the flap hinges.

By the construction heretofore described, the vibrations of each finger head or flap, are not transmitted to a long rod supporting a number of such heads or flaps, and are reduced to a minimum because of the short sleeve f and its brackets, together with the close fit of the several parts of the head and its support.

The various parts of the device excepting the guide are made from sheet metal by press work because this insures accuracy, uniformity and economy in the manufacture of the same, as well as producing an article which will be durable.

It is not my intention to limit the invention to the precise details of construction shown in the drawings and hereinbefore described, it being apparent that such may be varied without departing from the spirit and scope of the invention.

Having described the invention, what I claim as new and desire to have protected by Letters Patent is:

1. In a spinning frame, a yarn controller comprising a plurality of brackets, a rotary sleeve mounted in each such bracket, a finger head or flap loosely mounted on each said sleeve, a thread guide carried thereby, means carried by each said sleeve adapted to engage said head or flap and rotate it with said sleeve, and means whereby a plurality of said sleeves may be simultaneously rotated.

2. In a spinning frame, a yarn controller comprising a plurality of brackets each having forwardly and upwardly projected arms and a circular way on the top of each said arm and a substantially horizontal shoulder thereon, a rotary sleeve mounted between said arms, a finger head or flap loosely mounted on each said sleeve adapted to engage said shoulder said finger head having extensions thereon projecting into said way, a thread guide carried thereby, means carried by said sleeve adapted to engage said head or flap and rotate it with said sleeve, and means whereby a plurality of said sleeves may be simultaneously rotated.

3. In a spinning frame, a yarn controller comprising a plurality of brackets each having forwardly and upwardly projected arms and a circular way on the top of each said arm and a substantially horizontal and a substantially vertical shoulder thereon, a rotary sleeve mounted between said arms, a finger head or flap loosely mounted on each said sleeve adapted to engage said shoulders re-

spectively said finger head having extensions thereon projecting into said way, a thread guide carried thereby, means carried by said sleeve adapted to engage said head or flap and rotate it with said sleeve, and means whereby a plurality of said sleeves may be simultaneously rotated.

4. In a spinning frame, a yarn controller comprising a plurality of brackets, a tubular irregular rotary sleeve mounted in each such bracket, a finger head or flap loosely mounted on each said sleeve, a thread guide carried thereby, means carried by each said sleeve adapted to engage said head or flap and rotate it with said sleeve, and means whereby a plurality of said sleeves may be simultaneously rotated comprising rod of cross section similar to that of said sleeves adapted to pass through the opening in said sleeves respectively.

5. In a spinning frame, a yarn controller comprising a plurality of brackets, a tubular D-shaped rotary sleeve mounted in each such bracket, a finger head or flap loosely mounted on each said sleeve, a thread guide carried thereby, means carried by each said sleeve adapted to engage said head or flap and rotate it with said sleeve, and a D-rod adapted to pass through a plurality of said tubular sleeves whereby a plurality thereof may be simultaneously rotated.

6. In a spinning frame, a yarn controller comprising a plurality of brackets, a rotary sleeve mounted in each such bracket, cam blanks thereon adapted to engage said bracket arms respectively, a finger head or flap loosely mounted on said sleeve between said blanks, a thread guide carried thereby, projections on said blanks whereby said head or flap may be rotated with said sleeve and means whereby a plurality of said sleeves may be simultaneously rotated.

7. In a spinning frame, a yarn controller comprising a plurality of brackets, a rotary sleeve mounted in each such bracket, cam blanks thereon adapted to engage said bracket arms respectively, a finger head or flap having a hinge socket formed thereon adapted to engage said sleeve between said blanks, a thread guide carried thereby, projections on said blanks whereby said head or flap may be rotated with said sleeve and means whereby a plurality of said sleeves may be simultaneously rotated.

8. In a spinning frame, a yarn controller

comprising a plurality of brackets, a tubular sleeve of irregular configuration rotatably mounted in each said bracket, a finger head or flap loosely mounted on each said sleeve, a thread guide carried thereby, means carried by each said sleeve adapted to engage said head or flap and rotate it with said sleeve, a rod similar in configuration to the opening in said sleeves and adapted to pass therethrough, a connecting arm carried by said rod, means whereby said connecting arm may be connected to a similar connecting arm on a similar rod on the other side of a frame, and means rotating said first-mentioned rod.

9. In a spinning frame, a yarn controller comprising a plurality of brackets, a rotary sleeve mounted in each such bracket, a finger head or flap loosely mounted on each said sleeve, a thread guide carried thereby, means carried by each said sleeve adapted to engage said head or flap and rotate it with said sleeve, a shoulder or stop limiting the movement of said head or flap independently of said sleeve, and means whereby a plurality of said sleeves may be simultaneously rotated.

10. In a spinning frame, a yarn controller comprising a plurality of brackets each adjustably mounted below the roller beam of a frame, a rotary sleeve mounted in each such bracket a finger head or flap loosely mounted on each said sleeve, a thread guide carried thereby, means carried by each said sleeve adapted to engage said head or flap and rotate it with said sleeve, and means whereby a plurality of said sleeves may be simultaneously rotated.

11. In a spinning frame, a yarn controller comprising brackets adapted to be mounted on the thread rail, a rotatable finger head or flap, a hollow sleeve rotatably mounted in said brackets, means carried by said sleeve whereby said flap may be raised through the rotation of said sleeve, said flap being movable independently of said means and a key rod adapted to engage a plurality of said sleeves whereby a series of said flaps may be simultaneously raised.

In witness whereof, I have hereunto affixed my signature this eleventh day of October, 1906, in the presence of two witnesses.

JOSEPH APPLEBY.

Witnesses:

J. F. WOODROFFE,
E. M. WEBB.