

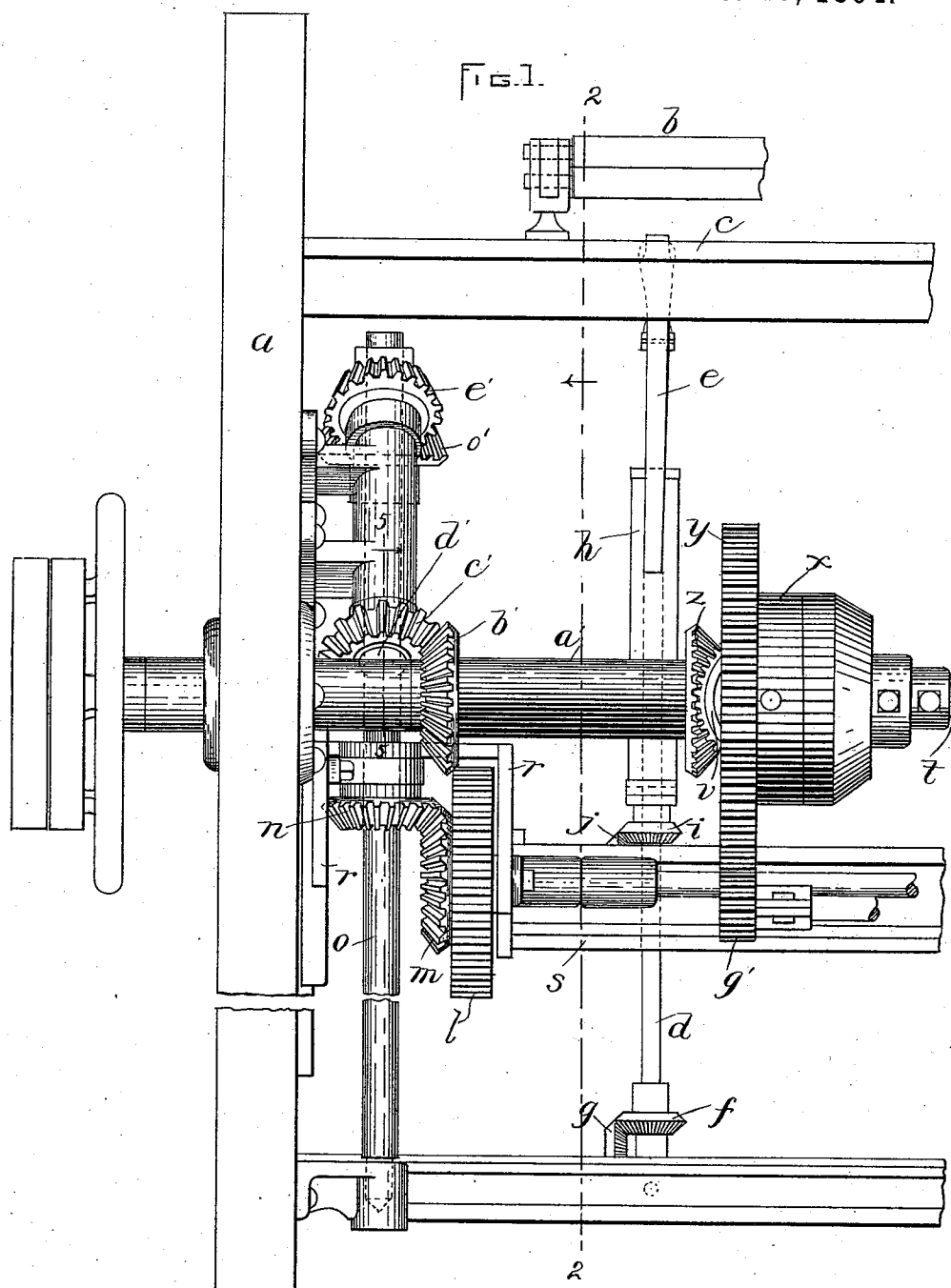
(No Model.)

3 Sheets—Sheet 1.

M. CAMPBELL.
ROVING FRAME.

No. 531,156.

Patented Dec. 18, 1894.



WITNESSES:

A. D. Harrison
W. H. M. Lead:

INVENTOR:

M. Campbell
by M. H. Brown, Attorney.

(No Model.)

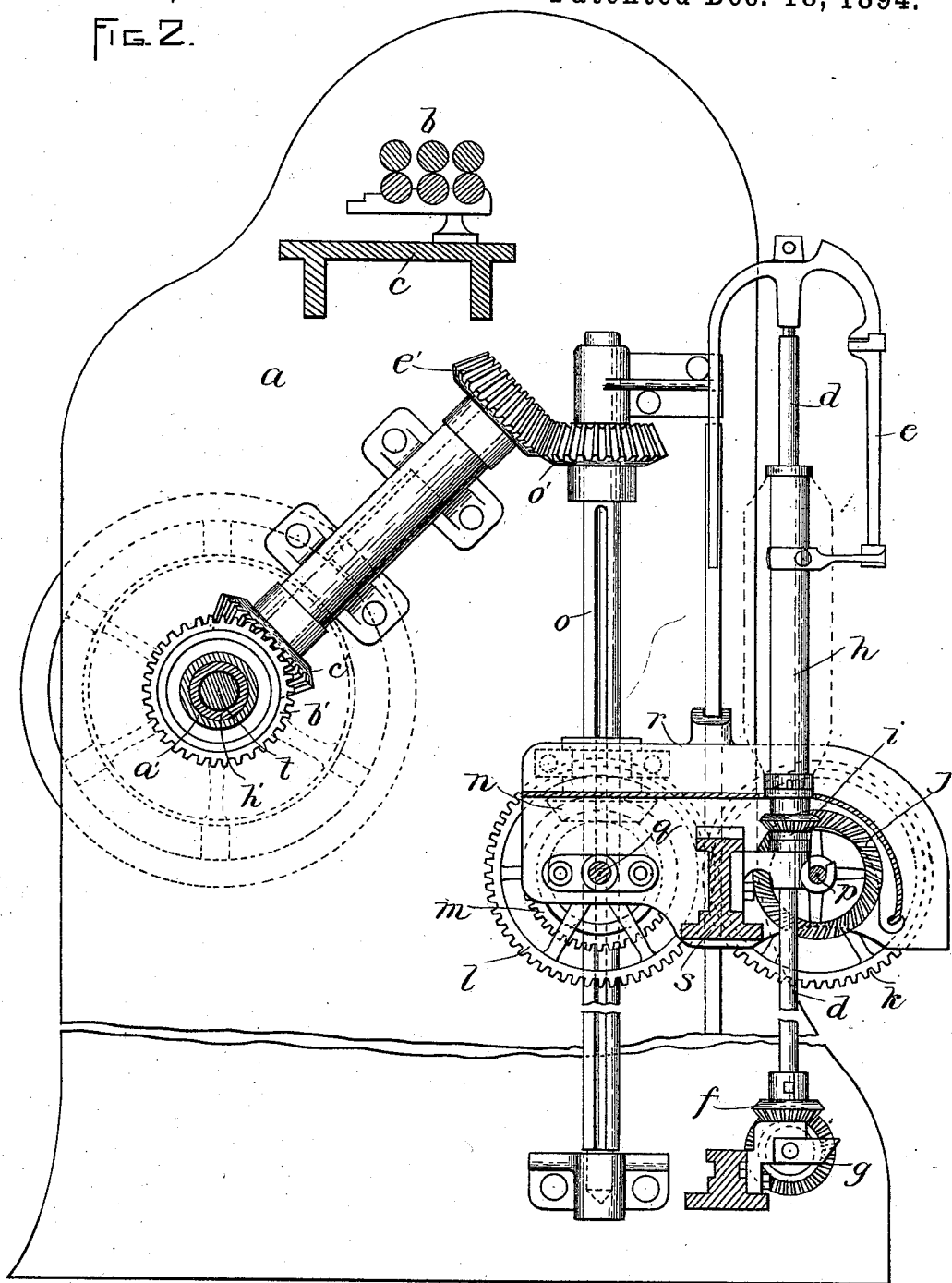
3 Sheets—Sheet 2.

M. CAMPBELL.
ROVING FRAME.

No. 531,156.

Patented Dec. 18, 1894.

FIG. 2.



WITNESSES:

A. D. Hanson.

W. J. McLeod

INVENTOR

M. Campbell
by Knight Brown Crossley
Atty.

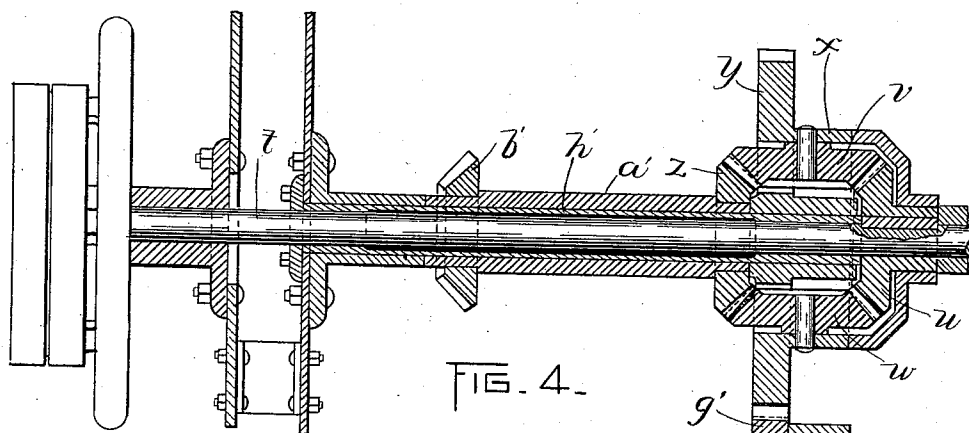
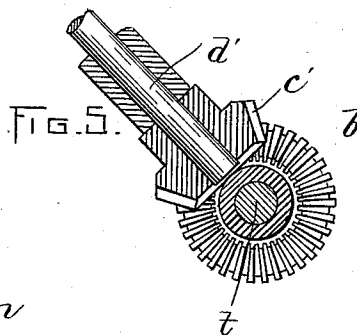
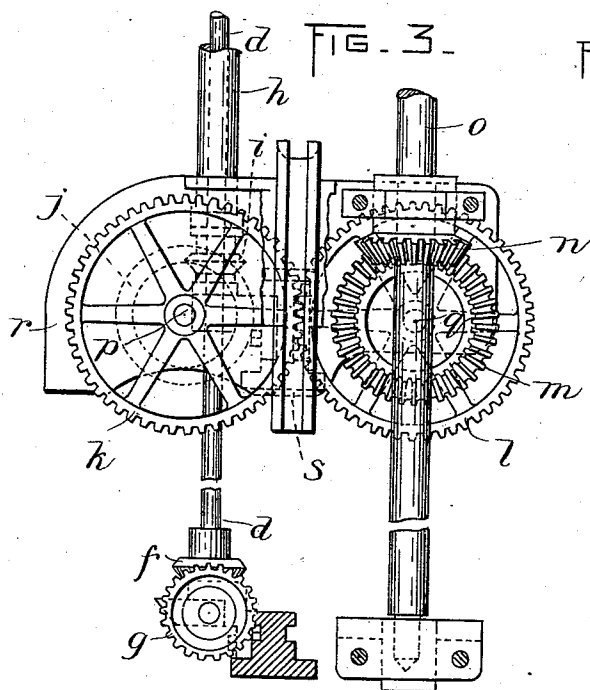
(No Model.)

M. CAMPBELL.
ROVING FRAME.

3 Sheets—Sheet 3.

No. 531,156.

Patented Dec. 18, 1894.



WITNESSES.

A. S. Harrison.
W. J. M. Lord

INVENTOR.

M. Campbell
by Wright Brown & Co.
Attys.

UNITED STATES PATENT OFFICE.

MALCOLM CAMPBELL, OF WOONSOCKET, RHODE ISLAND.

ROVING-FRAME.

SPECIFICATION forming part of Letters Patent No. 531,156, dated December 18, 1894.

Application filed June 24, 1893. Serial No. 478,765. (No model.)

To all whom it may concern:

Be it known that I, MALCOLM CAMPBELL, of Woonsocket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Roving-Frames, of which the following is a specification.

This invention has relation to that class of machines employed in the treatment of textile fabrics, commonly known as "roving frames," in which the "drawings" from the drawing-frame are drawn out to a state of still greater attenuation and a slight twist is given to it to form a loose kind of thread or spongy cord, so that it may be given sufficient cohesive strength to hold together and enable it to be wound upon the bobbin. In winding the roving upon the bobbin, so that it can be conveniently and practically transferred to the spinning machine, it is necessary to traverse the bobbin rail; and since in roving frames as commonly constructed the connections between the bobbin and rail are such that in the traverse of the latter in one direction it moves against the motion of the bobbin-operating means, while in its traverse in the opposite direction it moves with the motion of the said means, it results that the speed at which the bobbin is revolved to wind on the roving is made to vary, and a variable strain is put upon the roving to the injury of the latter.

It is the object of this invention to provide improvements whereby the bobbin may be rotated at a speed entirely unaffected by the traverse of the bobbin rail, so that the roving may be wound on the bobbins under uniform tension.

To these ends the invention consists of the improvements which I will now proceed to describe and claim.

Of the drawings, Figure 1 is a rear view of so much of a roving frame or slubber as is necessary to show in order to explain my improvement. Fig. 2 is a vertical cross-sectional view of the same. Fig. 3 is a sectional view of parts shown in Fig. 2, looking at the same from the opposite side from that seen in said Fig. 2. Fig. 4 is a sectional view through parts supporting and surrounding the driving shaft, and supported and carried thereby. Fig. 5 represents a section on line 5—5 of Fig. 1.

In the drawings, *a* designates the frame of the machine.

b designates the drawing rolls supported upon the roll-stand *c*.

d is the spindle carrying the flier *e* which spindle is driven by a bevel gear *f* thereon, engaged and driven by a bevel gear *g* in the usual way.

h is the bobbin surrounding the flier spindle and adapted to be reciprocated thereon. The said bobbin is seated upon a hub or support connected with the miter gear *i* which is engaged and driven by a skew bevel gear *j* compounded with a toothed gear *k* which in turn is engaged and driven by a like gear *l*, which has compounded with it a bevel gear *m* which is engaged and driven by a bevel gear *n* splined on the vertical shaft *o* so as to be reciprocated thereon but to turn therewith.

The gears *j k* and the shaft *p* upon which they are secured and the gears *l m* and their shaft *q* as also the gear *n* are carried by the vertically reciprocating head *c* supported by the traversing bobbin rail *s* so that they move with it.

t is the center or driving shaft to which there is keyed a miter gear *u*, Fig. 4, which meshes with miter gears *v w*, turning on studs having their bearings in the hub housing *x* forming part of the gear *y* supported loosely on the hub of gear *u* and revolving loosely around the gears *v w*.

The gears *v w* mesh with the miter gear *z* secured to one end of a sleeve *a'* upon which there is secured a miter gear *b'* which meshes with a miter gear *c'* on the lower end of an inclined shaft *d'*, on the upper end of which there is a miter gear *e'* engaging a miter gear *o'* on the upper end of the shaft *o*.

The gear *y* is engaged and driven by the spur gear *g'* which is connected with and controlled by the well known cone pulleys (not shown) imparting the necessary differential motion to secure the proper winding on of the roving on the bobbin.

A sleeve *h'* is extended through the sleeve *a'*, and the gears *y z*, and is made removable, so that by taking it out the several parts shown in Fig. 4 as supported by the center shaft may be readily removed.

By this construction and arrangement of

parts it will be seen that the bobbins *h* may have the desired motion communicated to them through the shaft *o* without being affected in any degree by the traverse or position of the bobbin rail.

5 Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it
10 may be made or all of the modes of its use, it is declared that what is claimed is—

15 A roving machine comprising in its construction a rotary bobbin support, a vertically reciprocating bobbin-rail, a head (*r*) supported by said rail, gearing carried by said head for operating said bobbin support at one end of the train, a vertically arranged rotary shaft

and a gear splined on said shaft and supported by said head in mesh with the other end of said train of gearing, a main shaft, a sleeve 20 (*a'*) thereon provided with gears (*z*) and (*b'*), gearing connecting the main shaft with the gear (*z*), and an inclined shaft (*d'*) provided with gears (*c'*) and (*e'*) connecting the gear (*b'*) with a gear (*o'*) on said vertical shaft, substantially as and for the purpose described. 25

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 16th day of June, A. D. 1893.

MALCOLM CAMPBELL.

Witnesses:

C. F. BROWN,
A. D. HARRISON.