

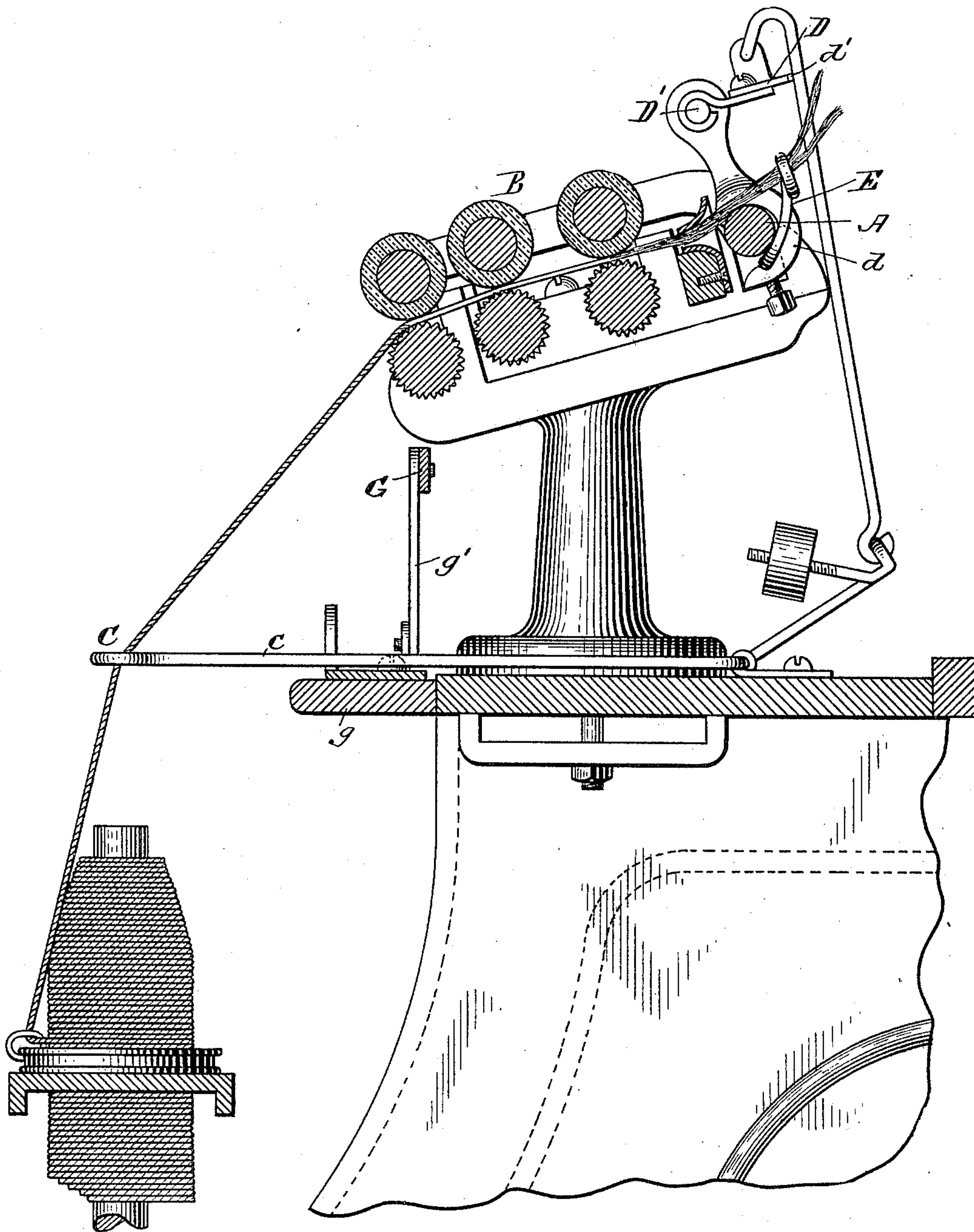
(No Model.)

4 Sheets—Sheet 1.

H. D. MARTIN & J. P. TOLMAN.
SPINNING AND TWISTING FRAME.

No. 581,745.

Patented May 4, 1897.



WITNESSES

J. M. Dolan
H. T. Butler.

Fig. 1

INVENTORS

Henry D. Martin
James P. Tolman
by their attys
Clarke & Raymond

(No Model.)

4 Sheets—Sheet 2.

H. D. MARTIN & J. P. TOLMAN.
SPINNING AND TWISTING FRAME.

No. 581,745.

Patented May 4, 1897.

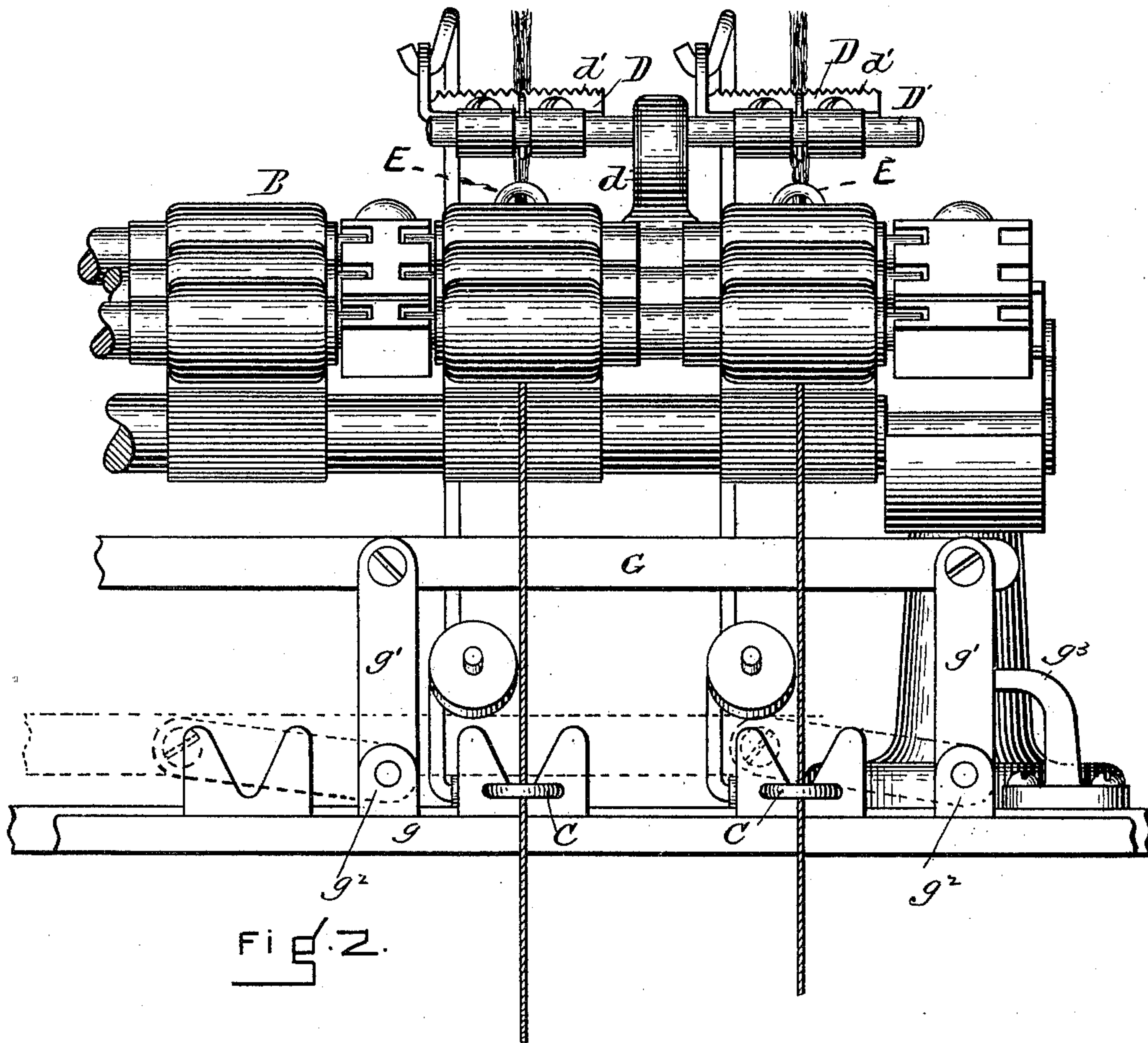


FIG. 2.

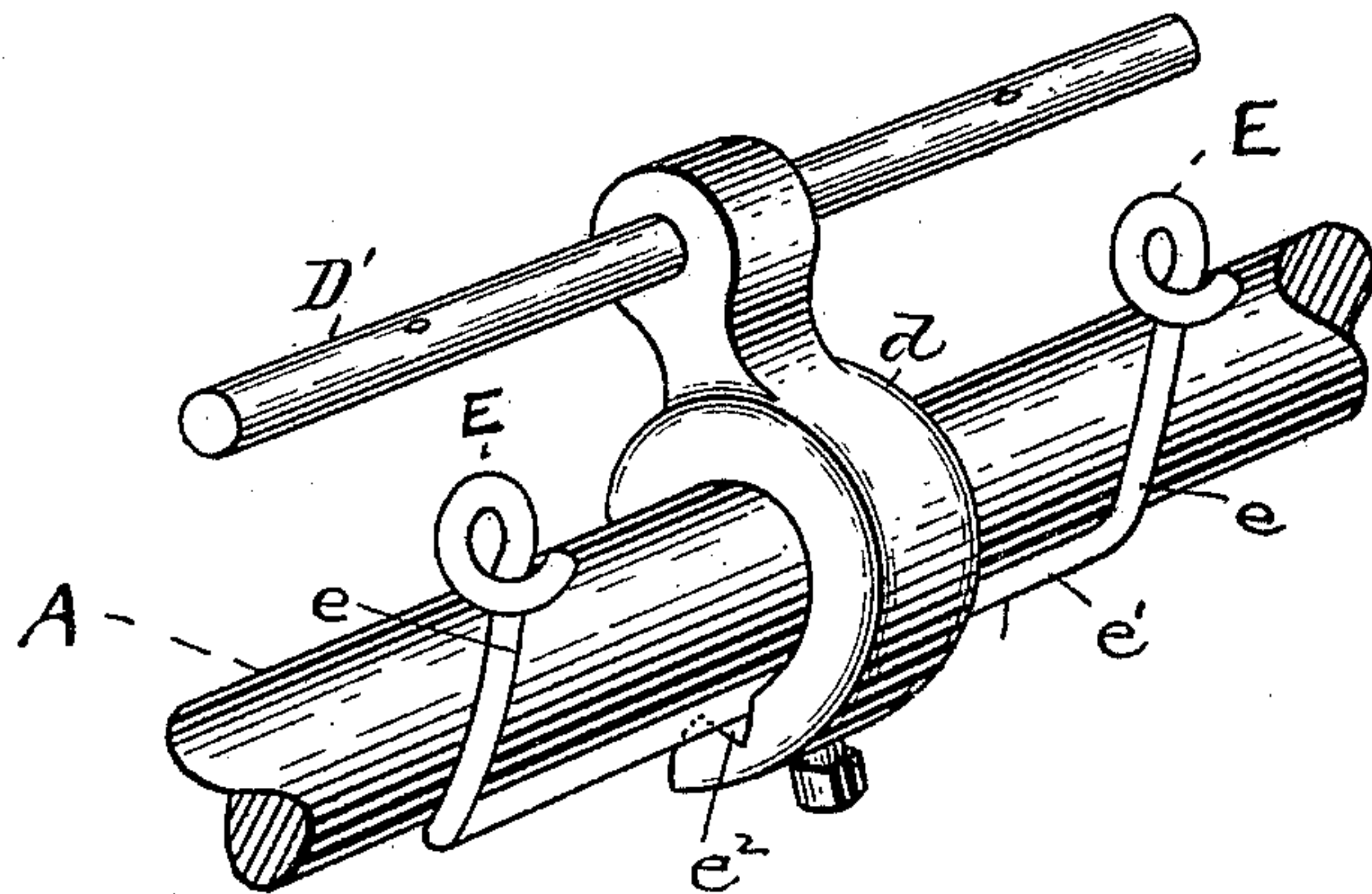


FIG. 3.

WITNESSES.

J. W. Dolan.
K. T. Butler.

INVENTORS
Henry D. Martin
James P. Tolman
by their attys
Charles & Raymond

(No Model.)

4 Sheets—Sheet 3.

H. D. MARTIN & J. P. TOLMAN.
SPINNING AND TWISTING FRAME.

No. 581,745.

Patented May 4, 1897.

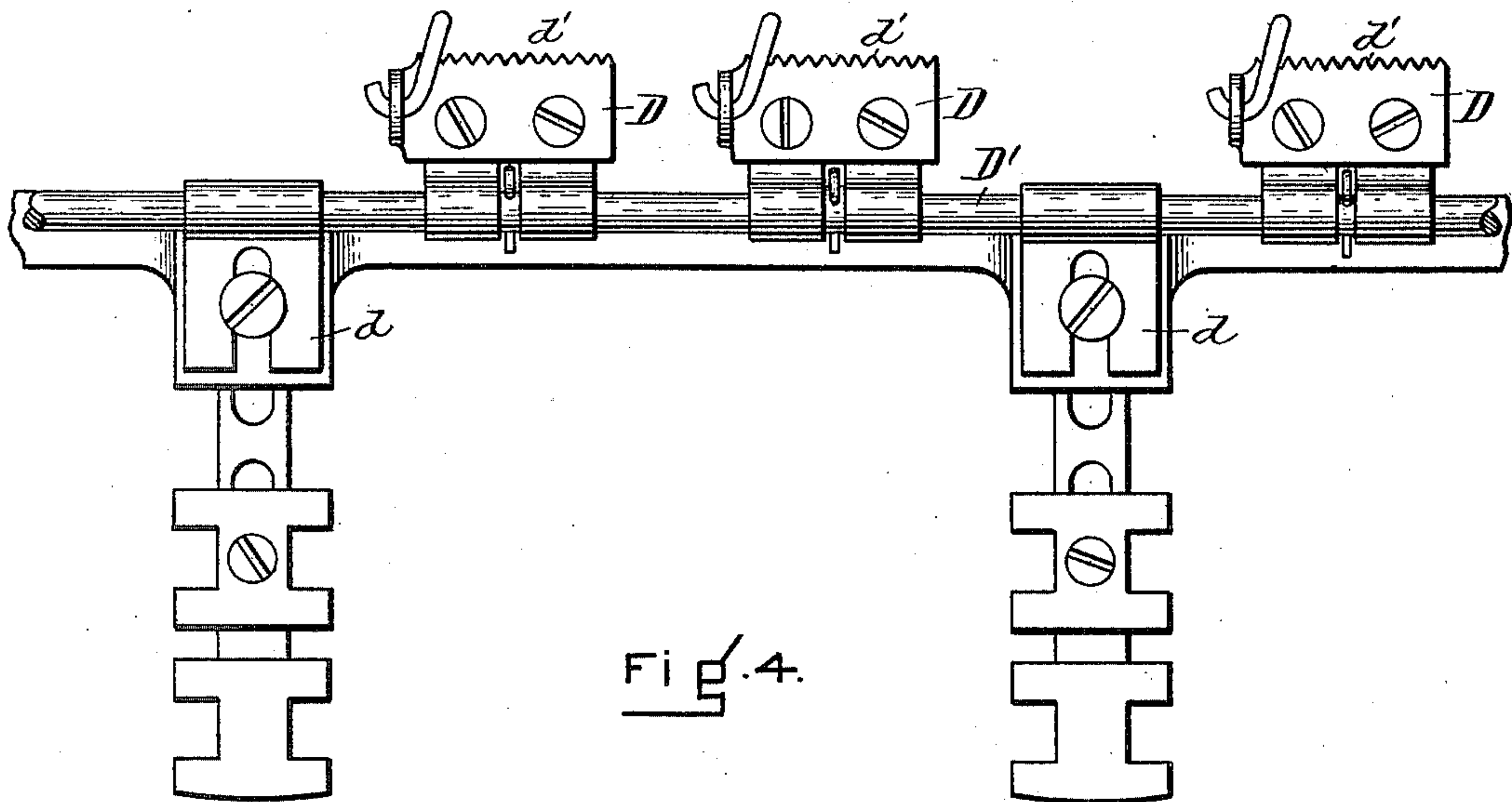


Fig. 4.

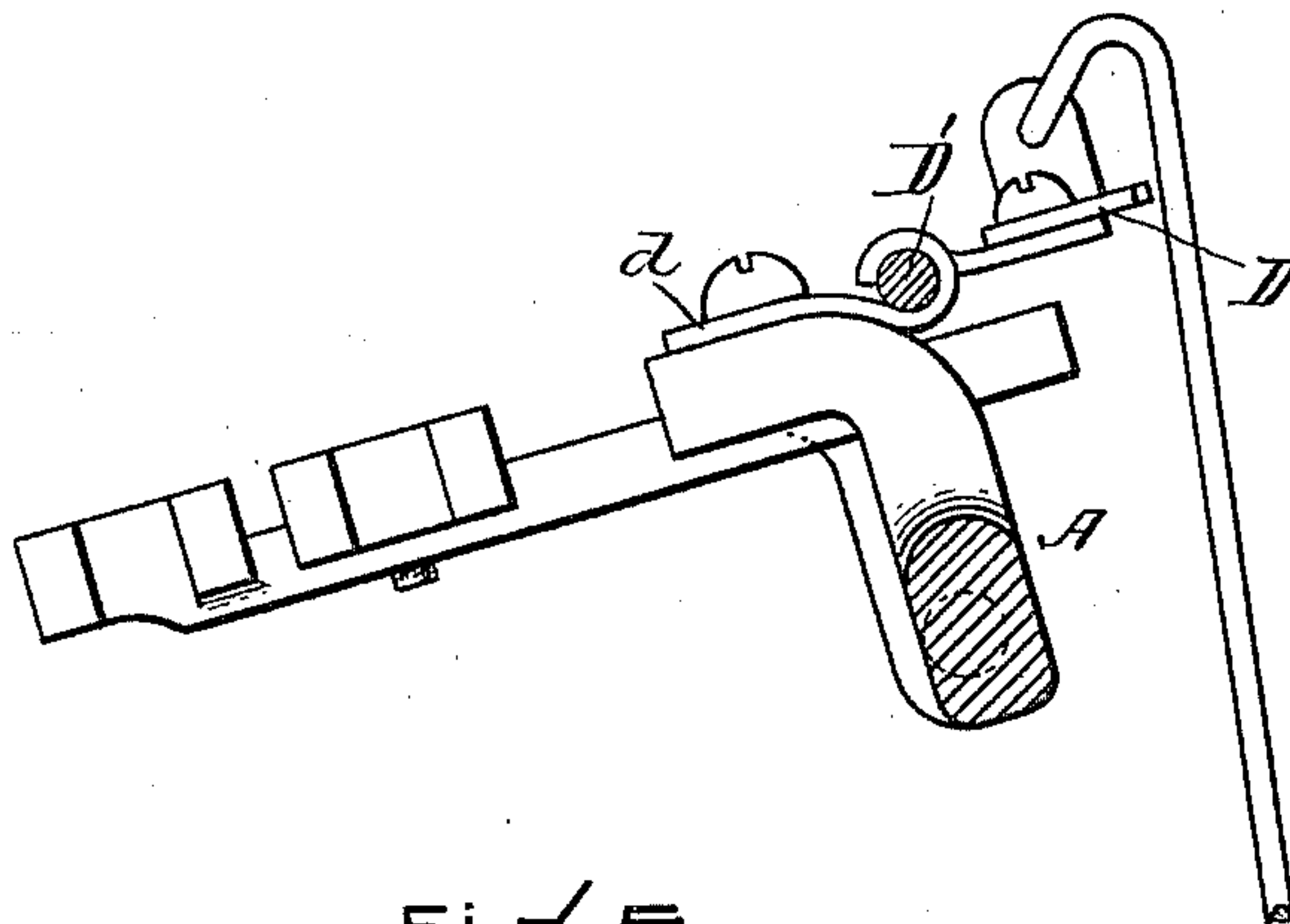


Fig. 5.

WITNESSES

J. M. Dolan.
K. T. Butler.

INVENTORS

Henry D. Martin
James P. Tolman
by their attys
Clarke & Raymond

(No Model.)

4 Sheets—Sheet 4.

H. D. MARTIN & J. P. TOLMAN.
SPINNING AND TWISTING FRAME.

No. 581,745.

Patented May 4, 1897.

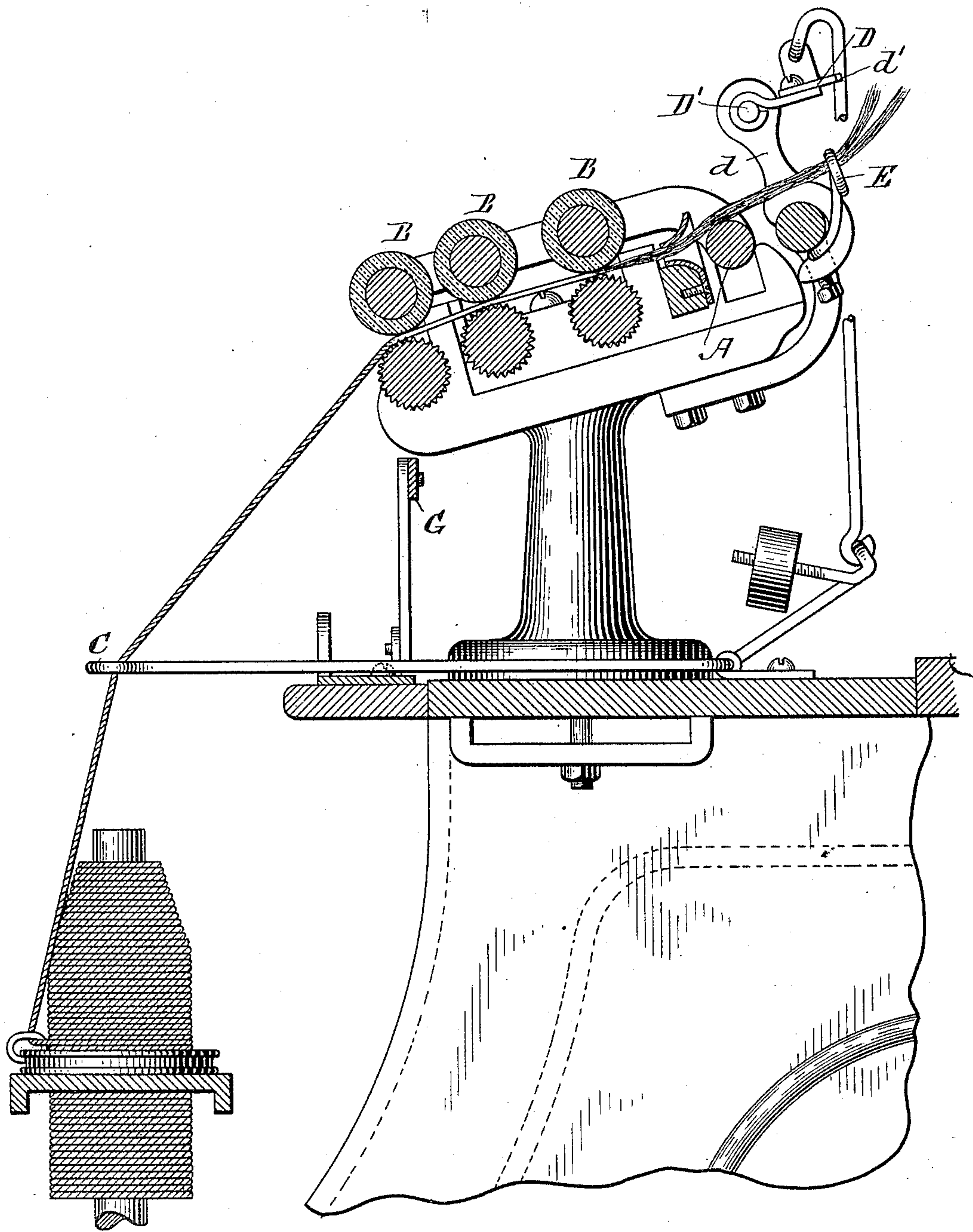


FIG. 6.

WITNESSES:
J. W. Dolan
L. A. Walsh.

INVENTORS:
Henry D. Martin
James P. Tolman
by their atty
Charles H. Raymond

UNITED STATES PATENT OFFICE.

HENRY D. MARTIN, OF SHIRLEY, AND JAMES P. TOLMAN, OF NEWTON,
MASSACHUSETTS, ASSIGNORS TO THE SAMSON CORDAGE WORKS, OF
BOSTON, MASSACHUSETTS.

SPINNING AND TWISTING FRAME.

SPECIFICATION forming part of Letters Patent No. 581,745, dated May 4, 1897.

Application filed July 8, 1896. Serial No. 598,388. (No model.)

To all whom it may concern:

Be it known that we, HENRY D. MARTIN,
residing at Shirley, and JAMES P. TOLMAN,
residing at Newton, in the county of Middle-
sex and State of Massachusetts, citizens of the
5 United States, have invented a new and use-
ful Improvement in Spinning and Twisting
Frames, of which the following is a full, clear,
and exact description, reference being had to
10 the accompanying drawings, forming a part
of this specification, in explaining its nature.

The invention is an improvement upon that
described in our joint application for Letters
Patent, filed July 15, 1895, Serial No. 555,968;
15 and it relates especially to an improvement
in the breaker, whereby two strands of yarn
or roving, varying in diameter, passing un-
der a breaker common to both may be simul-
taneously arrested by the closing of said
20 breaker thereon.

The invention also relates to devices where-
by the yarns or roving are maintained in line
with the working edge of the breakers while
they are feeding from the bobbins to the
25 drawing-rolls; also, to a breaker hold down
bar or depressor attached to the bed or other
part of the machine and adapted to simul-
taneously move down and hold down tempo-
rarily any desired number of breaker-operat-
30 ing levers.

In the drawings accompanying this speci-
fication, Figure 1 is a view, partly in vertical
cross-section and partly in elevation, of a spin-
ning-frame having the device of our inven-
35 tion. Fig. 2 is a view in front elevation of a
section thereof. Fig. 3 is a detail view, en-
larged, to represent the manner of forming
the guides used in connection with the break-
ers and of attaching them to the machine.
40 Fig. 4 is a view representing a slight modifi-
cation in the manner of attaching the break-
ers to the cap-bar stand-rod, to which refer-
ence will hereinafter be made. Fig. 5 is a
detail view, in vertical section and side eleva-
45 tion, to show the cap-bar stand-rod, one of the
lugs which extends therefrom, and one of the
finger-bars supported by said lug, the said
view also showing a breaker attached to said
lug. Fig. 6 represents a modification in which
50 the breaker is represented as attached to a

rod practically parallel with the cap-bar
stand-rod, instead of to the cap-bar stand-rod.

The yarn or roving breakers, with the ex-
ception hereinafter noted, the manner of sup-
porting, attaching, and adjusting them, the 55
thread-guides, and the connections between
them and the breakers are fully described in
our said application and need only general
mention here.

The bobbins or spools, from which the 60
strands of yarn or roving are delivered to the
drawing or feeding rolls B, are not shown, but
are of the usual type.

C represents the thread-guides, one at the
forward end of each of the breaker-levers c, 65
and said levers are pivoted to the bed of the
machine and connected with their individual
breakers D, as described in the said applica-
tion. Each breaker is in two parts and is
pivoted to or hung upon the pivot-rod D', 70
which may be sectional, as represented in
Figs. 1, 2, and 3, or continuous, as shown in
Fig. 4.

A is the part known as the "cap-bar stand-
rod," and to which the breaker pivot-rod is 75
attached by the brackets d, as represented
in Figs. 1, 2, and 3, or as represented in Fig.
4. It will be understood that the cap-bar
stand-rod, whether of the shape represented
in Figs. 1, 2, and 3, which is like that of our 80
said application, or whether of the shape
represented in Fig. 4, is sectional—that is, is
not continuous throughout the length of the
frame—has lugs extending from it at regular
85 intervals, which support the finger-bars car-
rying the upper rolls. The sections may be
of any desired length and carry any desired
number of finger-bars or breakers. It will
also be understood that instead of attaching
the brackets to the sections of the bar between 90
the lugs, as represented in Figs. 1, 2, and 3,
they may be attached to the lugs where said
lugs are favorably located to receive them,
and in Fig. 4 we have represented the brack-
95 ets as attached to the lugs of the cap-bar
stand-rod instead of to the sections of the
rod between them, and when this construc-
tion is followed the bracket need not be pro-
vided with a clamp or jaw to bite the rod,
but may be shaped as represented in Fig. 4 100

and attached by a screw to the lug, and the pivot-rod to which the breakers are hung may then be made continuous for the length of a section of the cap-bar stand-rod instead of in short lengths, as described in said application and shown in Figs. 1, 2, and 3. The sections of the cap-bar stand-rod between the lugs cooperate with the breakers and serve as sections or parts of the breaking device, as described in our said application. By thus utilizing the cap-bar stand-rod as a support for the breakers two important results are obtained. First, the breakers are located close to the entrance to the tunnels, and being narrow and vertical rather than wide they require very little, if any, more space than is used by the cap-bar stand-rod and permit the close setting of the roving or yarn bobbins or spools in relation to the tunnels and spinning-frame, which is desirable for the purpose of economizing space. Second, they are so constructed, shaped, and located in relation to the tunnel that the leading or feeding of the strands of yarn or roving under them to the tunnels and feeding-rolls is not impeded. While we prefer that the breakers be attached to the cap-bar stand-rod, yet a rod running lengthwise the frame immediately back of the cap-bar stand-rod may be used for supporting the breaker-pivots and breakers, (see Fig. 6, and this for the purpose mentioned we consider the mechanical equivalent for the cap-bar stand-rod,) and while the breakers as thus applied would not be quite so conveniently located in respect to the tunnels, yet we would not be understood as not including this variation in the scope of our invention.

Another advantage arising from the construction and which applies to either the cap-bar stand-rod or an auxiliary rod is its cheapness and the facility or readiness with which spinning-frames now in use may be supplied with the invention, as well as new machines, the cap-bar stand-rod or other rod forming a ready means not only for supporting a number of breakers, but also forming a part of each breaker, cooperating therewith not only as a support for the pivot or pivots, but also as a bed for each breaker.

The lower or working edge of each breaker, instead of being continuous, as described in said application, is for certain uses divided into a series of sharp projections or teeth d' . These preferably are arranged closely together, and they act in connection with the surface of the cap-bar stand-rod toward which they close to hold strands of yarn or roving varying in size, and this for certain uses is of material consequence, as it permits the breaker to operate upon the yarn or roving of smaller size, as well as the yarn or roving of the larger, while the breaker with the straight or unbroken edge often arrests the yarn or roving of a larger size, while it permits that of a smaller size still to be drawn. These teeth d' may be formed in the lower

edge of the breaker in any desired way and may be of any required shape.

We also use in connection with the breakers a yarn or roving guide E, arranged immediately back of said cap-bar stand-rod and slightly above its upper surface. We prefer to form it of wire and to attach it to the said cap-bar stand-rod when the structure represented in Figs. 1, 2, and 3 is used by the brackets therein shown, which attaches the breaker thereto. (See Fig. 3.) The guides are therefore formed at the upper end of each section e of the wire, the said sections being connected by the horizontal section e' , with which they are also integral. They are secured to the cap-bar stand-rod or rod the equivalent for the cap-bar stand-rod (shown in Fig. 6) by the said breaker-bracket, the bracket being prepared to receive the connecting-section e' by having formed upon the inner face of its clamping-jaw a recess e^2 , adapted to receive the said section, the clamping-screw being arranged to screw into said recess and against the said section e' , binding it against the side of the rod. Two breakers and their individual guides are thus fastened to the said rod by one bracket and the clamping-screw.

G represents the hold down-bar or depressor for moving downward the levers which lift the breakers and for holding them in their depressed position. It is attached to the bed g or other support by the links g' , which are pivoted to ears or lugs g^2 , extending from plates fastened to said beds. The links are also pivoted at their upper ends to the said bar. The bar extends lengthwise the bed or support over any desired number of the said breaker-levers, which are also the thread-guide levers. An endwise movement given it in one direction will cause it to be moved downward upon said levers and to move them down if they are elevated, and its weight will hold them depressed. An endwise movement in the reverse direction will cause the bar to be lifted, thereby releasing the said levers and providing space beneath the same in which they may freely and independently move, and the bar is held in its lifted position by means of the links and a stop against which the bar or a link may be brought into contact after the pivots have become perpendicular or slightly beyond a perpendicular line, and in Fig. 2 we have represented a stop g^3 , against which a link is moved into contact when slightly by its center. The end of the frame of the machine or any other stationary part thereof with which the link or the bar may be brought in contact when elevated will answer as well.

In Fig. 2 the hold down-bar or depressor is represented in full lines as in its elevated position and in dotted lines as in its depressed or lowest position or that which it occupies when it temporarily holds down the breaker-levers and thread-guides and holds open the breakers. The hold down-bar is used to hold

open the breakers and depress the thread-guides whenever it is desired to employ any other means than the tension of the roving or yarn or thread upon the breaker-levers and thread-eyes in holding the breakers open temporarily. Such an occasion exists during the first few moments of operating the frame, when the empty bobbins have replaced the filled bobbins after the operation of doffing, also when it is desired to lift and throw back the finger-bars for the process of scouring or cleaning the rolls of the frame.

Having thus fully described our invention, we claim and desire to secure by Letters Patent of the United States—

1. In a spinning or twisting frame a breaker adapted to simultaneously break two or more yarns or strands, the same comprising a stationary jaw and a movable jaw having a serrated edge which is adapted upon the breaking of the partially-twisted yarns or strands in front of the breaker to close upon the separate strands and by the yielding thereof to the serrations form a breaking-contact with each of them and a breaking connection with the jaw, whereby the two or more strands even if varying in diameter are simultaneously broken.

2. In a spinning or twisting frame, the combination of the cap-bar stand-rod, the finger-bar lugs thereon, brackets attached to said finger-bar lugs supporting a breaker pivot-rod, said breaker pivot-rod and breakers carried by said pivot-rod to coöperate with the surface of the said cap-bar stand-rod, as and for the purposes set forth.

3. In a spinning or twisting frame, the combination of the cap-bar stand-rod or other similar rod, the breakers carried by the said rod and coöperating with the surface thereof as specified, yarn or roving breaker-guides back of the breakers, as and for the purposes set forth.

4. The combination, in a spinning or twisting frame, of the cap-bar stand-rod, a bracket carrying a yarn or roving breaker attached to said rod and a yarn or roving guide back of the said breaker secured to the said rod by the said bracket, as and for the purposes described.

5. In a spinning or twisting frame the combination of a pair of breakers with a pair of stationary yarn or roving guides formed by eyes upon the ends of a single wire or piece

of metal as described, and which wire or piece of metal is rigidly attached to a support to bring the guides in line with and immediately back of the breakers, as and for the purposes described.

6. In a spinning or twisting frame, the combination of a cap-bar stand-rod or other similar support and a pair of yarn or roving guides formed from a single wire or piece of metal having the upwardly-extending sections *e*, the outer end of each of which forms an eye and the connecting-bar or section *e'* of which is fastened to said cap-bar stand, substantially as described.

7. The combination in a spinning or twisting frame of the breakers, the breaker-actuating levers having thread-guides at their forward ends, a movable bar extending lengthwise the frame in operative relation to said levers, and disconnected links *g'* pivoted at their inner ends to suitable supports and at their free ends to said bar, the said pivotal connections being at a right angle to said bar, and whereby the links and bar are adapted to be moved lengthwise the frame together, and the bar thereby moved against the breaker-levers to depress their outer ends from their highest position and to bear against them to hold them depressed, and whereby said bar is also adapted to be removed from said position, all substantially as described.

8. In a spinning or twisting frame the combination of the breakers, the breaker-operating levers and a breaker-lever holddown comprising the bar *G* extending lengthwise the frame supported by the links *g'* pivoted at their upper ends to the bar and at their lower ends to a suitable support, and the upper ends of which are vertically movable upon an arc to change the level of the said bar and thereby permit it to depress and hold depressed the said breaker-levers and also to be moved away from the same and held out of operative relation therewith, as and for the purposes described.

HENRY D. MARTIN.
JAMES P. TOLMAN.

Witnesses to Henry D. Martin:

J. M. DOLAN,
JAMES A. LOWELL.

Witnesses to J. P. Tolman:

F. F. RAYMOND, 2d,
J. M. DOLAN.