

(No Model.)

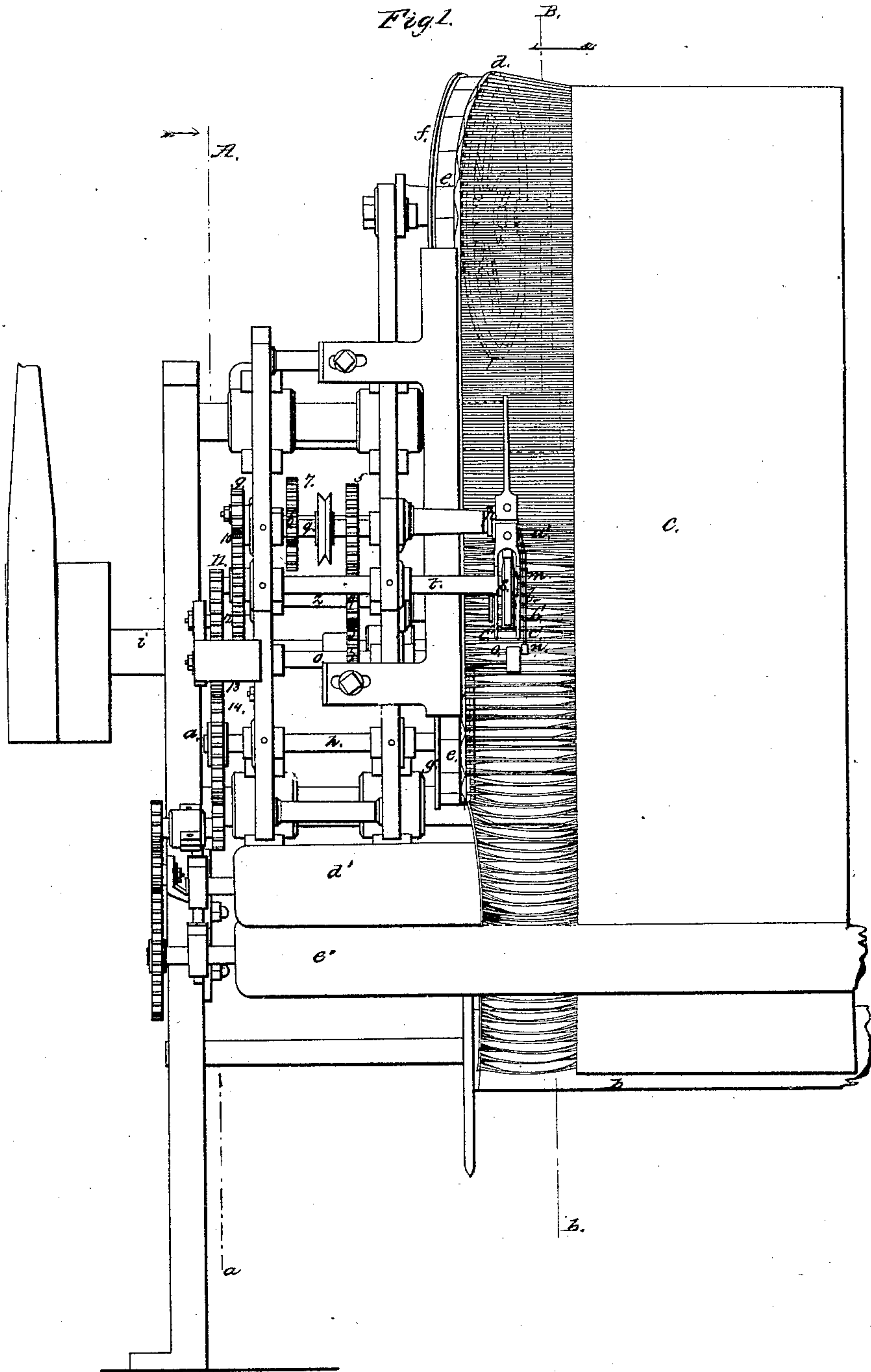
3 Sheets—Sheet 1.

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MACHINE FOR TWISTING FRINGES OF SHAWLS, &c.

No. 8,424.

Patented Oct. 14, 1851.



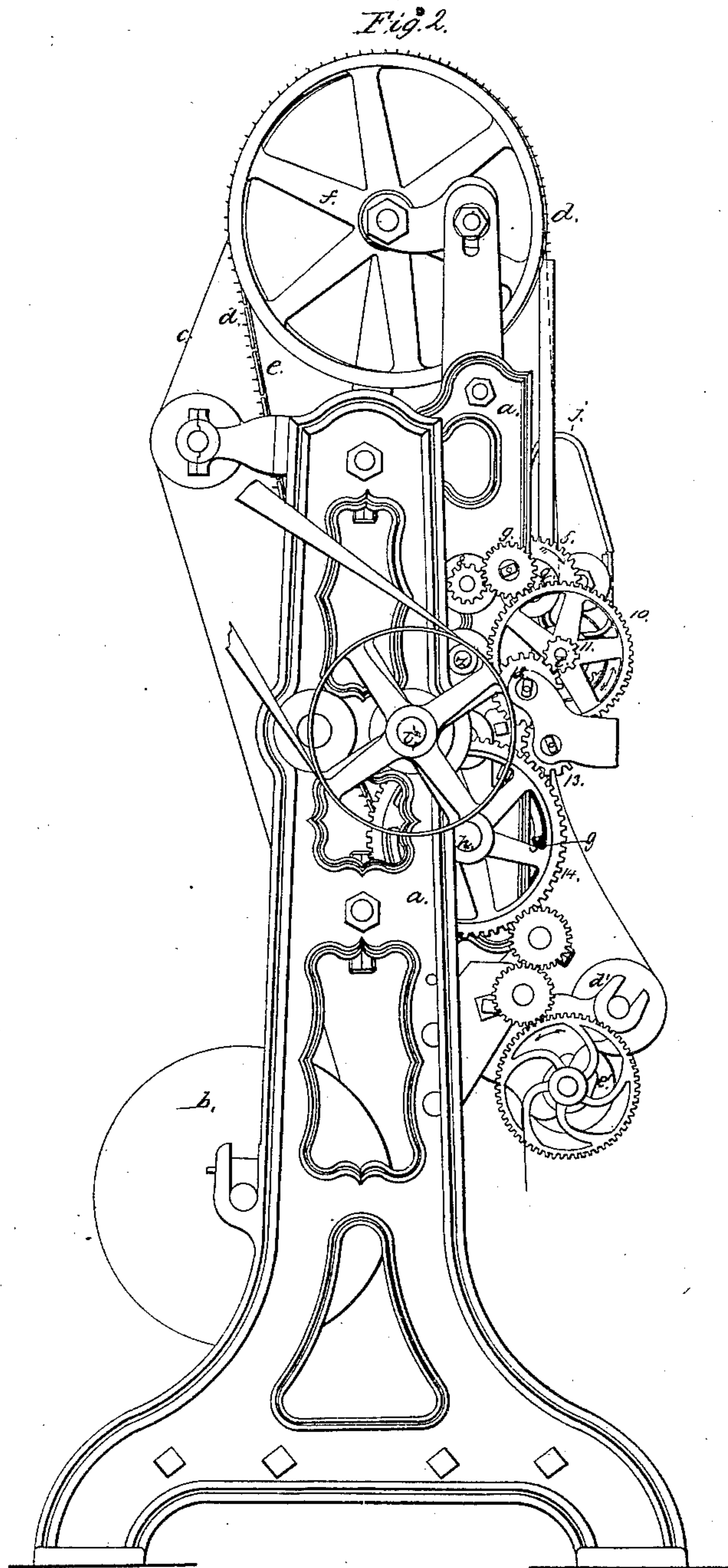
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Fig. 3. A.A.

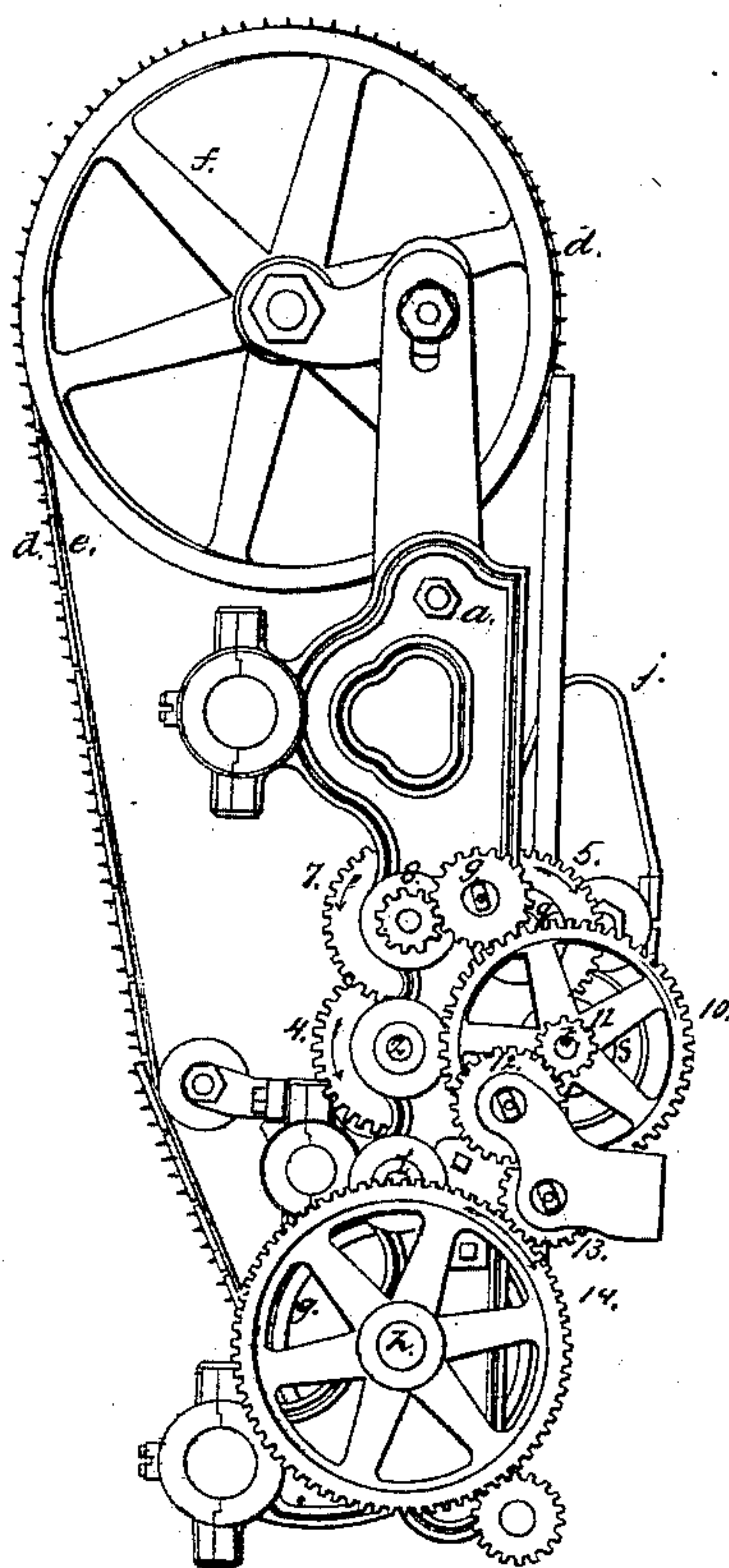
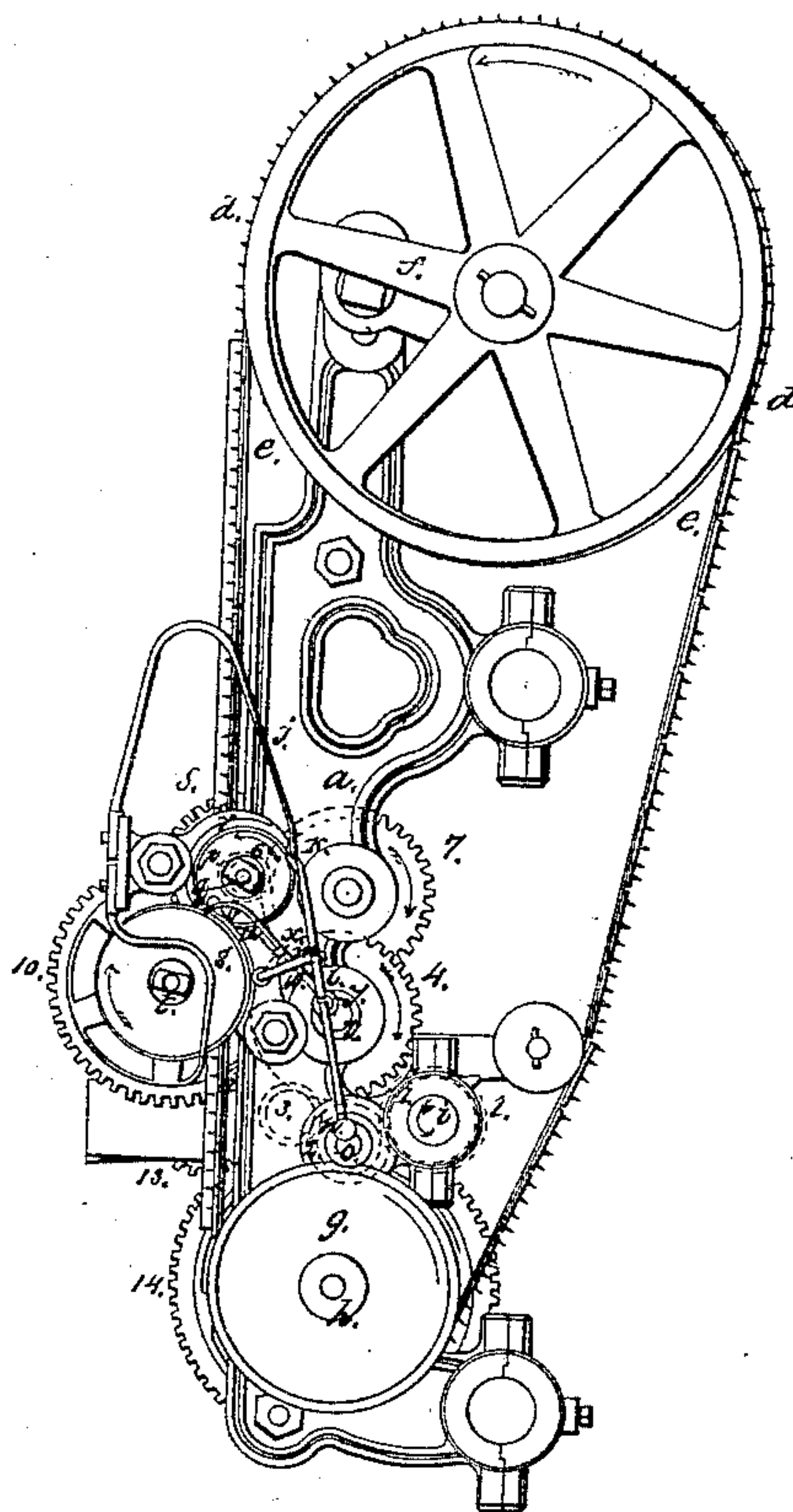


Fig. 4. B.B.



UNITED STATES PATENT OFFICE.

JNO. NESMITH, OF LOWELL, AND WESLEY SAWYER, OF DRACUT, MASSACHUSETTS.

MACHINE FOR TWISTING FRINGES OF SHAWLS, &c.

Specification of Letters Patent No. 8,424, dated October 14, 1851.

To all whom it may concern:

Be it known that we, JOHN NESMITH, of Lowell, in the county of Middlesex and State of Massachusetts, and WESLEY SAWYER, of Dracut, in the same county and State, have invented a new and useful Machine for Twisting the Fringes of Shawls and other Fabrics, and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a back elevation; Fig. 2, an elevation of the right hand side of the machine; Fig. 3, a cross vertical section taken at the line A *a* of Fig. 1; and Fig. 4 a like section taken at the line B, *b*, of the same figure, but looking in the reverse direction.

The same letters indicate like parts in all the figures.

In this machine the shawl or other fabric, the loose threads of which at the selvage are to be selected and brought together to be formed into fringe, is passed over a drum with the selvage of the fringe before cutting, held by pins or teeth, on the edge of an endless chain or belt that passes around two pulleys, one at top, the other at bottom. The fringe and shawl are carried down by the motion of the endless chain or belt and the drum, and, as they descend, the middle part of the fringe is deflected by a guard or guide and carried to the periphery of a twisting wheel partly surrounded by a shell. The motion of the wheel carries the fringe between its periphery and the shell, but, as it approaches the edge of the shell, the threads of the fringe are separated by means of a reciprocating finger to form the separate strands which are twisted by being rolled between the wheel and shell. As the twisted single strands pass out of the rear end of the shell onto another twisting wheel, two or more strands are drawn together by reciprocating fingers, and, as they are thus drawn together, they enter between the second twisting wheel and a second shell and are twisted in the reverse direction.

In view of this mode of operation, the nature of the first part of our invention consists in selecting or separating from the mass the threads which are to form the separate strands, by means of a reciprocating or vibratory finger, when this is combined with a twisting wheel and surrounding shell by which the threads selected and separated are

twisted into separate strands. And the second part of our invention consists in combining with the first twisting wheel and shell a second twisting wheel and shell by which two or more strands are twisted together in the reverse direction to complete the fringe, there being also combined with the second twister a reciprocating or vibratory finger or fingers, for drawing together such of the strands as are to be united in completing the fringe.

In practice two machines are employed, one for each edge of the shawl, but, as the two are duplicates simply reversed, it is deemed unnecessary to describe and represent more than one of them.

In the accompanying drawings (*a*) represents a frame adapted to the purpose, but which may be varied at pleasure. At the top of the frame there is a drum turning freely, over which passes the shawl C represented in Fig. 2 by red lines as coming from a beam *b*. The selvage of the shawl is held by pins *d* on the edge of an endless belt or chain *e* that runs in the groove of a loose pulley *f*, the axis of which is slightly inclined to the axis of the drum over which the shawl passes, for the purpose of giving a slight stretch to the fringe; and this chain is moved by passing around another pulley *g* below; on the end of a shaft *h* that receives a slow rotary motion from the driving shaft *z* by means of three trains of pinions and cog-wheels (1, 2, 3, 4 and 5) (6 and 7,) 8, 9, 10, 11, 12, 13 and 14,)—pinions 1, 2, 3, and 6, are shown in dotted lines in Fig. 4. As the shawl and fringe descend, the middle of the fringe comes in contact with a curved guard or guide *j* by which it is bent forward, and, as it reaches the lower end of this guide, the threads to form each separate strand are separated from the mass by the point of a finger *k* on the ends of a rod *l* the upper end of which slides freely in a guide *m*, the other end being jointed to a crank-pin *n* on the end of the shaft *o* of the pinion 2 of the first train of wheels. By this arrangement a motion is given to the point of the finger, by which as it rises it moves toward the fringe to enter between the threads to make the selection and then descends to separate them from the mass, and hence the downward motion of the finger must be a little faster than the motion of the fringe. The range and velocity of the motion of the finger rel-

atively to the motion of the shawl and the quality of the fabric will determine the number of threads to be selected at each operation. As the finger descends, the selected
 5 threads are brought against the periphery of a wheel *p* in the end of the shaft *q* of a wheel which is covered with leather or india rubber, and, as this wheel turns in a direction the reverse of the downward mo-
 10 tion of the finger, the selected threads are taken from the fingers which liberate them, and carried up between the periphery of the wheel and a shell *r* which partly surrounds the wheel, the front edge of this shell being
 15 on a line, and in contact with the guard *j*. The rubbing surfaces of the wheel and shell may be of leather or india-rubber, or, one of them may have a steel or other metal, file-cut rubbing surface.

20 In practice we have used, and found to answer well, india-rubber for the wheel, and a steel, file-cut lining for the shell.

The space between the two should be sufficient to permit the motion of the wheel to
 25 roll the threads and give the required twist to form the strands. Toward the rear end the space between the shell and the wheel is slightly enlarged, and, as the strands are brought to that part of the shell, the num-
 30 ber of strands required to form a fringe are selected and drawn together on to the periphery of another wheel *s* on the shaft *t* of wheel 10. This second twisting wheel *s* is of a greater diameter than the first, and
 35 also surrounded in part by a second shell *u*, with the rubbing surfaces also of leather, india-rubber or file-cut metal, and the space between this wheel and shell should be a little greater than the first in the proportion
 40 of the difference between the thickness of the strands and the completed fringe. The strands are selected and drawn together on to the periphery of the second twisting wheel by two fingers *v*, one on each side of
 45 the wheel (only one seen in the drawings) which fingers are attached to the end of a carrier *w*, one end of which slides in a guide *x* and the other operated by a crank *y* on the shaft *z* of wheel 2 by which the fingers
 50 receive a motion like that imparted to the first finger for forming the strands, but slower. As the fingers *v* select and draw the strands into the wheel *s* they are drawn in under the shell *u* and there twisted in

the reverse direction, to form the fringe. 55
 The strands, as they are being twisted by the first twisting wheel are shown at *a'* and the fingers *b'*. As the fingers leave the shell *u* they are guided to clear the wheel *s* by means of guide pieces *c' c'*. 60

It will be seen by inspection of the drawings that all the motions required are communicated by the trains of wheels above pointed out. As the shawl leaves the last twisting-wheel it passes over a roller *d'* and
 65 is wound on to a beam *e'* receiving motion from wheel 7 by a train of wheels or in any other desired manner.

It will be readily understood that this invention is equally applicable to the twist- 70
 ing of fringe on any other kind of fabric as well as on shawls; and it will be equally clear that by applying another machine similar to the one described but reversed for the other edge of the shawl or other fabric, 75
 that the fringes on the two edges can be formed and twisted at the same time.

We do not wish to limit ourselves to the special construction and arrangement of parts herein specified, as these may be va- 80
 riously modified within the range of our invention by the mere substitution of mechanical equivalents. But

What we claim as our invention and desire to secure by Letters Patent is— 85

The method of selecting from the mass, the threads which are to be twisted into separate strands, by means of reciprocating or vibratory finger, or the equivalent thereof substantially as described, in combination 90
 with the first shell and wheel or their equivalents substantially as described, for giving the twist to the strands as described. We also claim in combination with the first twister, the employment of the finger or fin- 95
 gers, or the equivalent thereof for selecting and drawing together the strands which are to be twisted together to form the fringe as described, and, in combination therewith we also claim the second twisting wheel and 100
 shell or their equivalent substantially as described.

JOHN NESMITH.
 WESLEY SAWYER.

Witnesses:

H. D. PHELPS,
 STEPHEN F. ASLIN.