

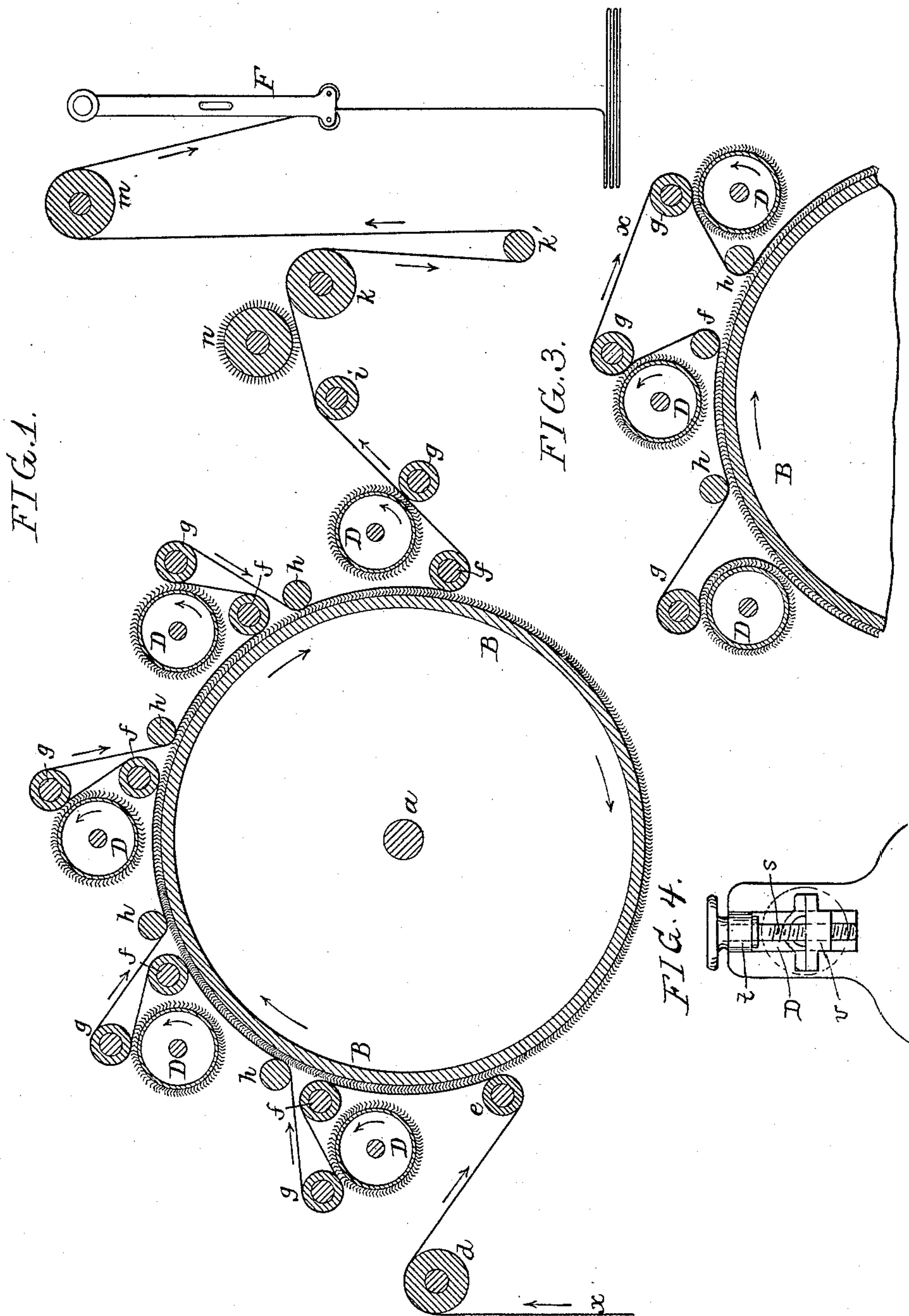
(No Model.)

2 Sheets—Sheet 1.

C. WOELFEL.
CLOTH NAPPING MACHINE.

No. 466,642.

Patented Jan. 5, 1892.



Witnesses:

R. Schleicher.

A. V. Groupé.

Inventor:
Christian Woelfel
by his Attorneys
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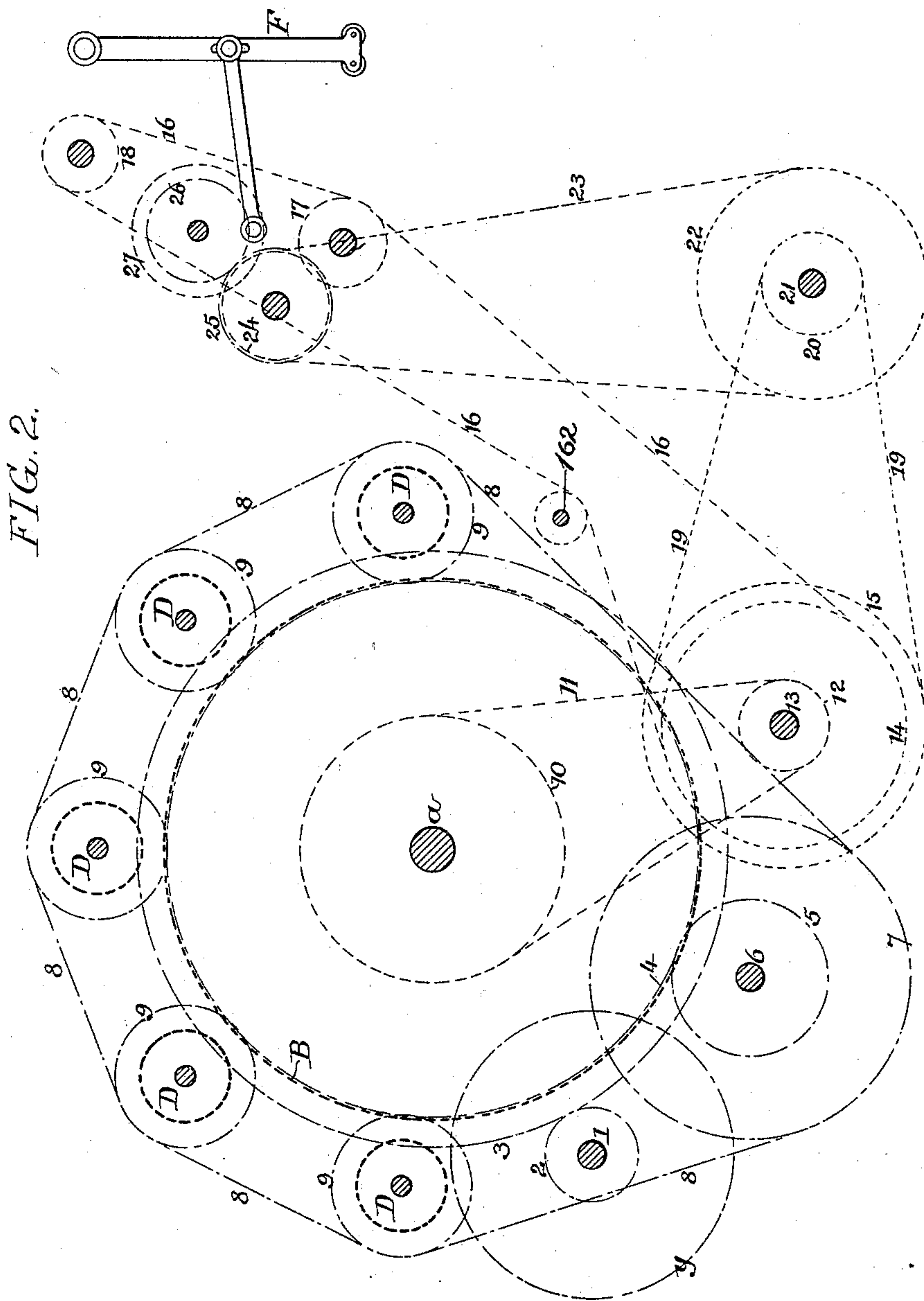
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UNITED STATES PATENT OFFICE.

CHRISTIAN WOELFEL, OF PHILADELPHIA, PENNSYLVANIA.

CLOTH-NAPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 466,642, dated January 5, 1892.

Application filed May 11, 1891. Serial No. 392,332. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN WOELFEL, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Cloth-Napping Machines, of which the following is a specification.

The object of my invention is to so construct a gigging or napping machine that the operation of gigging or napping will be performed more effectively and with less tearing or removal of the fiber of the fabric than in gigging-machines as ordinarily constructed, and this object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 represents a sectional diagram of a gigging or napping machine constructed in accordance with my invention. Fig. 2 is a diagram illustrating driving mechanism for the machine, and Fig. 3 is a diagram illustrating a special form of the machine. Fig. 4 is a diagram illustrating an adjusting device for the napping-cylinders.

The main frame of the machine should be provided with a bearing for the shaft *a* of a main cylinder B, the surface of which is by preference toothed in the same manner as the cylinder of an ordinary carding-machine. Arranged around the main cylinder B is a series of toothed napping or gigging cylinders D, preferably so mounted as to be adjustable from and toward the cylinder B, the latter and the gigging-cylinders being intended to run in the directions pointed out by the arrows in Fig. 1.

In Fig. 4 I have shown an adjusting device for the napping-cylinders, said device consisting of a set-screw *s*, having collars, whereby it is so confined to a lug *t* on the main frame as to be incapable of moving from and toward the center of the main cylinder, and this set-screw being adapted to a nut *v* on the bearing for the shaft of the napping-cylinder.

The fabric *x* to be treated is drawn over a roll *d* and passes thence around a roll *e*, located close to the surface of the cylinder B, so as to press the cloth upon said surface, which serves to carry the fabric through the machine. At each of the gigging-cylinders D, however, the fabric leaves the main cylin-

der B, passing around a roll *f* close to the cylinder, thence around a roll *g*, located close to the toothed surface of the gigging-cylinder, and thence around a roll *h* some distance in advance of the roll *f*, and in its passage from the roll *f* to the roll *g* the fabric is acted upon by the teeth of the napping-cylinder D, which is driven at a rate of speed but slightly greater than the speed of the fabric, so that the action of the teeth of this napping-roll upon the fabric is a gentle action, which will not tear or loosen the fibers of the fabric to such an extent as to detach them, the object being to raise the teeth slowly from the surface of the fabric after they have caught the fibers, so as to lift or raise the nap without detaching the threads, strands, or fibers from the fabric. This operation is, moreover, facilitated owing to the fact that the fabric may run comparatively loose between the rollers *f* and *g*, the tension upon the fabric depending upon the tightness with which it is drawn in the first instance. From the last napping-cylinder the fabric passes over a directing-roll *i*, thence around a take-up roll *k*, directing-roll *k'*, and take-up roll *m* to the usual reciprocating folder F, whereby it is laid upon the folding-board, the fabric in its passage from the roll *i* to the roll *k* being acted upon by a brush *n*, which removes any burrs, knots, or loose lint lying upon the face of the fabric. Where a more extended action of each of the napping-cylinders upon the fabric is desired, said cylinders may be adjusted so closely to the cylinder B that they will act upon the fabric where it passes between the two toothed cylinders before reaching the guide-roll *f*; or, if desired, the guide-roll *f* may be dispensed with and the fabric may pass from the cylinder B part way around each cylinder D until it reaches the roll *g*. The preferable plan, however, for increasing the gigging action is to carry the fabric from the roll *g* to a roll *g'*, located adjacent to the back of the gigging-cylinder in advance, so that both the front and back of each cylinder are operative. All of these different plans are illustrated in Fig. 3.

The means for driving the various parts of the machine may be modified in many different ways without departing from the essential feature of my invention; but in Fig. 2 of the drawings I have illustrated one method

of driving as an example, the various gear-wheels, rolls, &c., being represented by dotted circles, the cylinders by heavier dotted circles, and the belts by dotted lines.

5 The driving-shaft 1 has a belt-pulley *y* and a spur-pinion 2 meshing with a spur-wheel 3 on the shaft of the main cylinder B, and on said shaft is another spur-wheel 4, meshing with a pinion 5 on the shaft 6, which has a sprocket-wheel 7, this sprocket-wheel engaging with
10 a chain 8, which also engages with sprocket-wheels 9 on the shafts of the series of napping-rolls D. On the shaft of the main cylinder B is a pulley 10, to which is adapted a belt 11,
15 which drives a pulley 12 on the shaft 13, having a sprocket-wheel 14 and a pulley 15. To the sprocket-wheel 14 is adapted a chain 16, which passes around a suitable directing-roll 162, and engages with sprocket-wheels 17 and 18, se-
20 cured, respectively, to the shafts of the take-up rollers *k* and *m*. To the pulley 15 is adapted a belt 19, which drives a pulley 20 on a shaft 21, having another pulley 22, to which is adapted a belt 23, which drives a pulley 24
25 on the shaft of the brush *n*, and on this shaft is a spur-wheel 25, meshing with a spur-wheel 26 on the shaft of the crank-disk 27, which operates the vibrating folder F.

Having thus described my invention, I
30 claim and desire to secure by Letters Patent—

1. The combination, in a gigging or napping machine, of the central cylinder serving as a feed-drum for the fabric, a series of napping-cylinders arranged around said main
35 cylinder and having hooked teeth, directing-rolls whereby the fabric is withdrawn from the main cylinder and carried into contact with the teeth of the respective napping-cylinders, and means for driving said main cyl-
40 inder and napping-cylinders, substantially as specified.

2. The combination, in a gigging or napping machine, of the central cylinder having a toothed surface and serving as a feed-drum for the fabric, a series of napping-cylinders
45 arranged around the main cylinder and having hooked teeth, rolls for directing the fabric away from the main cylinder and onto the napping-cylinders, and driving mechanism for the cylinders, substantially as specified. 50

3. The combination, in a gigging or napping machine, of the central cylinder serving as a feed-drum, a series of napping-cylinders arranged around said main cylinder and hav-
55 ing hooked teeth, rolls for directing the fabric against the front of one napping-cylinder and against the back of the cylinder in advance, and driving mechanism for the cylinders, sub-
stantially as specified.

4. The combination, in a gigging or napping machine, of the central cylinder serving as a feed-drum for the fabric, a series of napping-cylinders arranged around said main
60 cylinder and having hooked teeth, a series of directing-rolls for each napping-cylinder, said series comprising a pair of rolls close to the surface of the main cylinder, and one or more intermediate rolls whereby the fabric
65 may be carried from the main cylinder first into contact with one or more of the napping-
70 cylinders and then back to the surface of the main cylinder, and means for operating the main cylinder and napping-cylinders, sub-
stantially as specified.

In testimony whereof I have signed my
75 name to this specification in the presence of two subscribing witnesses.

CHRISTIAN WOELFEL.

Witnesses:

EUGENE ELTERICH,
HARRY SMITH.