

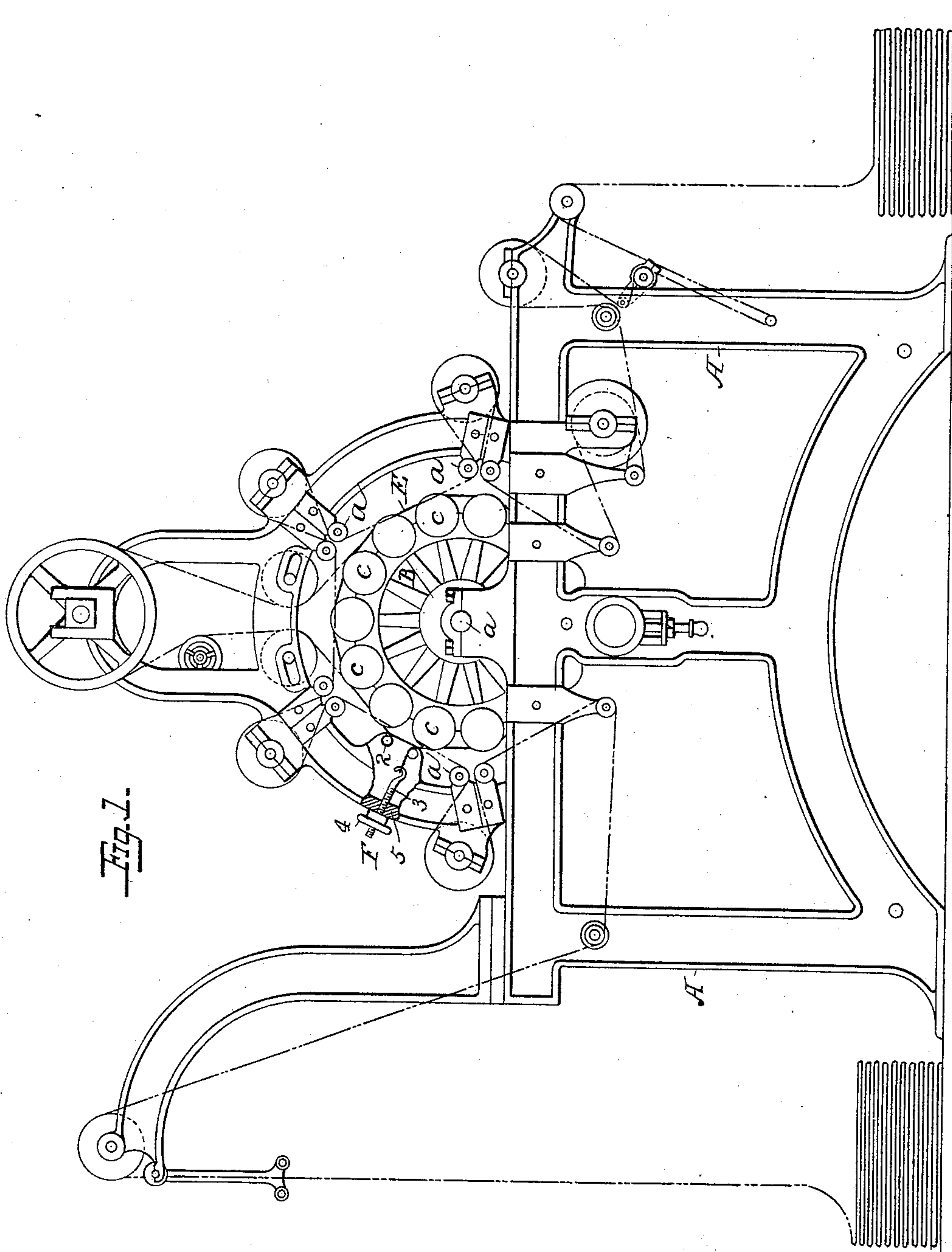
(No Model.)

2 Sheets—Sheet 1.

H. N. GROSSELIN.  
MACHINE FOR NAPPING CLOTH.

No. 459,521.

Patented Sept. 15, 1891.



WITNESSES  
*Jul. G. Hunkel*  
*Ch. S. McArthur*

INVENTOR  
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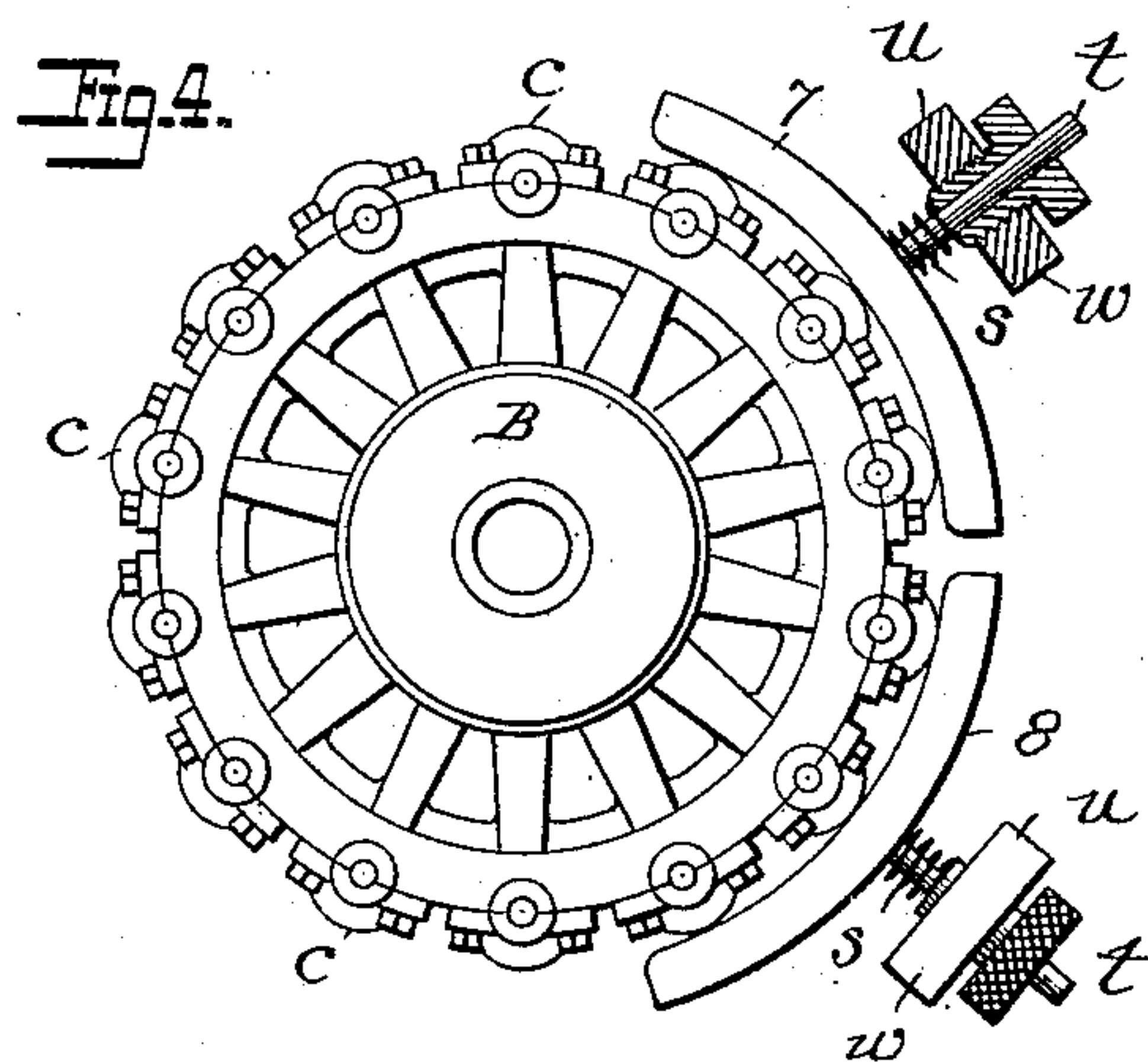
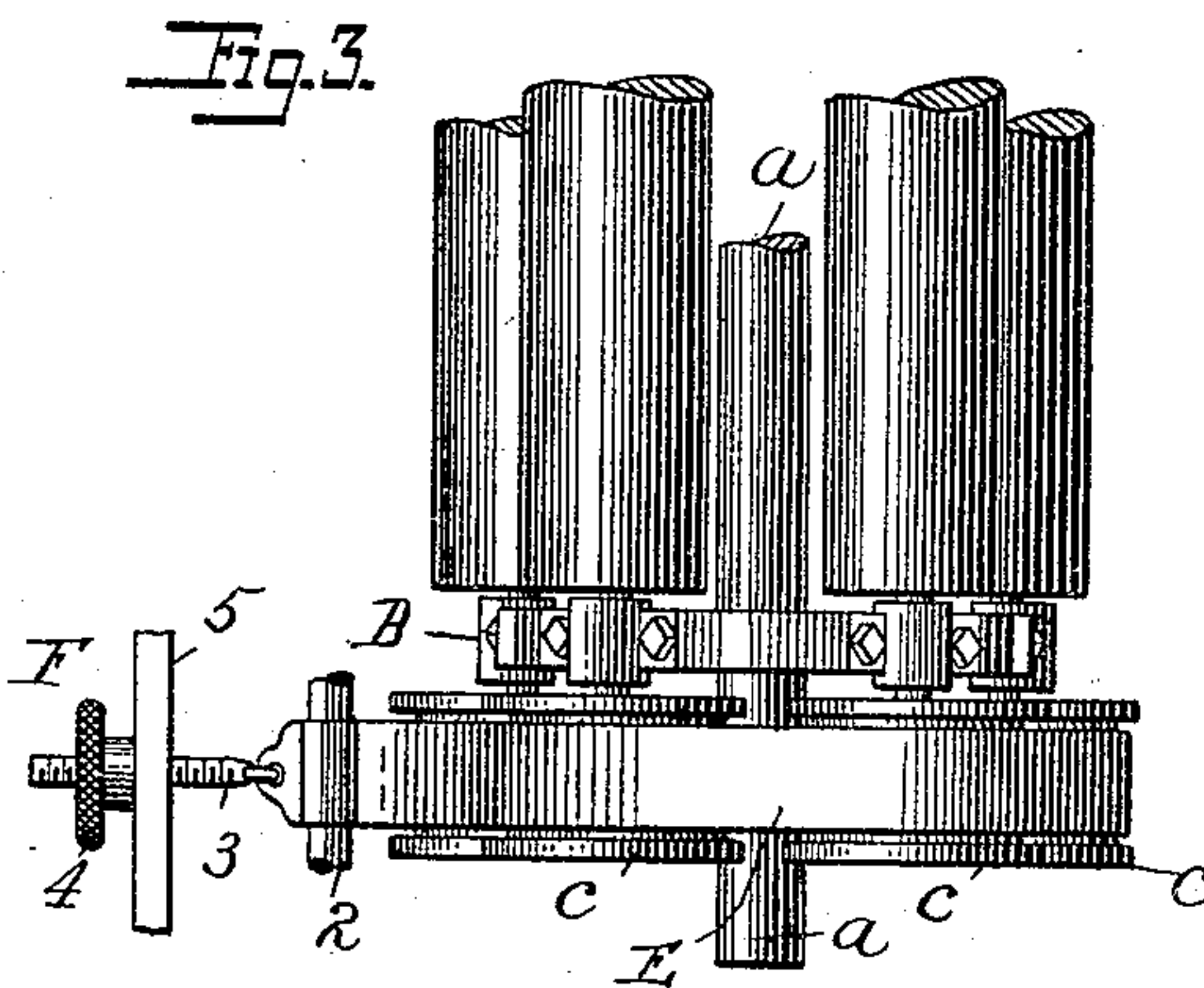
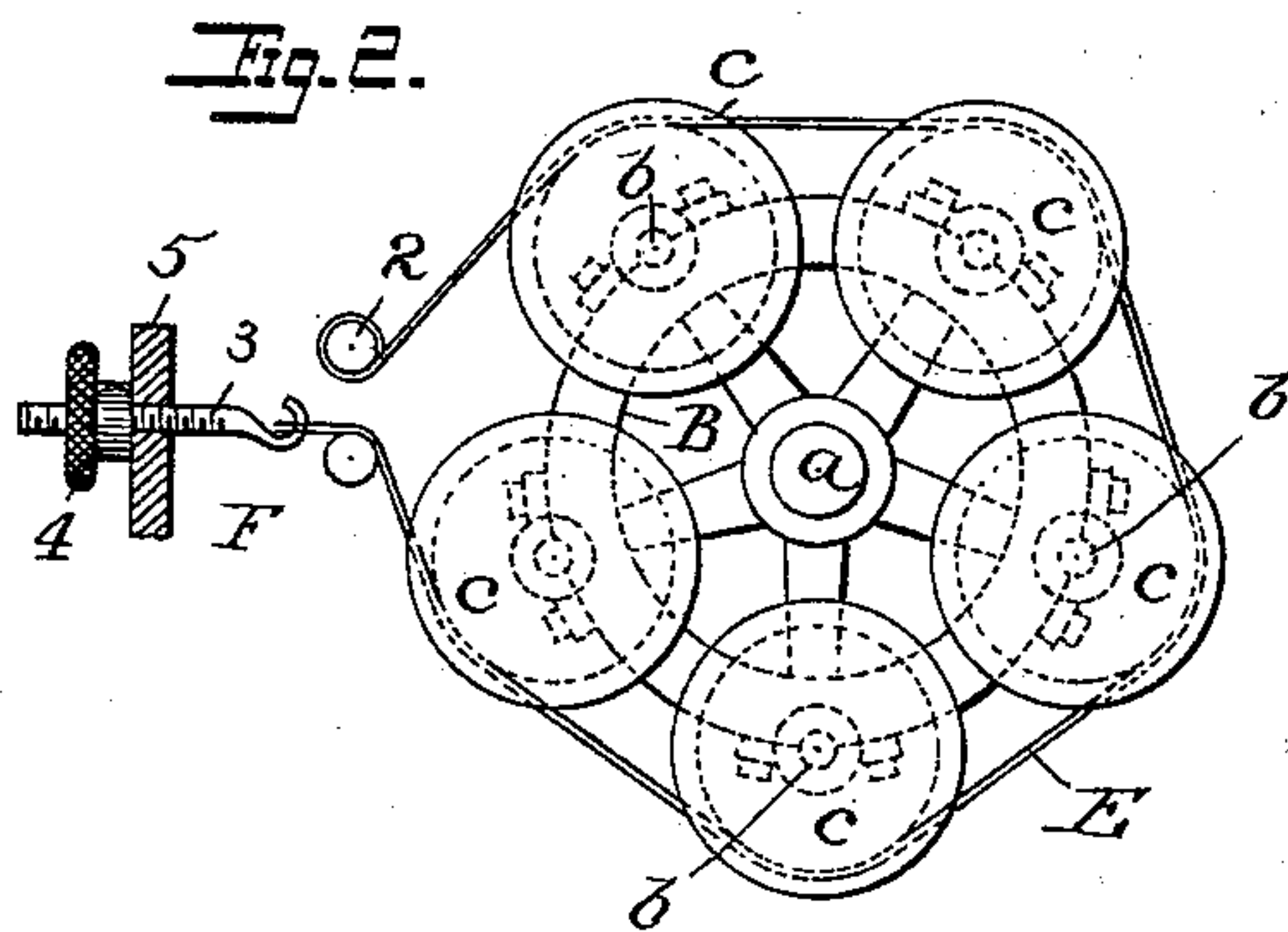
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WITNESSES

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# UNITED STATES PATENT OFFICE.

HENRY NICOLAS GROSSELIN, OF SEDAN, FRANCE, ASSIGNOR TO CHARLES HEAP, OF ROCHDALE, ENGLAND.

## MACHINE FOR NAPPING CLOTH.

SPECIFICATION forming part of Letters Patent No. 459,521, dated September 15, 1891.

Application filed July 17, 1890. Serial No. 359,014. (No model.) Patented in France October 1, 1878, No. 126,632; in Belgium March 15, 1879, No. 47,668; in Germany May 7, 1879, No. 8,360, and in England July 25, 1879, No. 3,028, and December 9, 1885, No. 15,125.

*To all whom it may concern:*

Be it known that I, HENRY NICOLAS GROSSELIN, a citizen of the Republic of France, residing at Sedan, France, have invented certain new and useful Improvements in Machines for Napping Cloth, (for which I have obtained the following patents: England, No. 15,125, dated December 9, 1885, and No. 3,028, dated July 25, 1879; Belgium, No. 47,668, dated March 15, 1879; France, No. 126,632, dated October 1, 1878, and Germany, No. 8,360, dated May 7, 1879,) of which the following is a specification.

In that class of machines for napping cloth illustrated in Letters Patent No. 377,151, granted to me January 31, 1888, a rotary drum carries a set of teasinging-rolls, to each of which a rotary motion is imparted by means of a band which is driven in contact with pulleys upon the rollers, either in one direction or the other, or is temporarily held stationary.

While the construction set forth in said Letters Patent is an excellent one and well adapted for many purposes, it involves the expense of counter-shafts and driving-belts and necessitates a heavier and more complicated machine than is necessary in many instances, and in order to avoid these and other objections I have devised the construction hereinafter fully set forth, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a part of a napping-machine embodying my invention. Fig. 2 is a detached view showing the rotary drum, teasinging-rollers, and actuating means of a five-roll machine. Fig. 3 is a part plan of Fig. 2. Fig. 4 is a view representing a modification.

The frame A of the machine is of any suitable construction, and is provided with bearings for the shaft *a* of a drum B of any suitable construction to support a series of parallel teasinging-rollers arranged in a circle around the drum and carried thereby, the journals *b* of said rollers extending through their bearings and each carrying, either at one end or both ends of the drum, a pulley *c*.

The cloth is carried by suitable guide-rolls

*a*, Fig. 1, and in a path (shown in dotted lines, Fig. 1) to make contact with the peripheries of the teasinging-rolls, which are carried round with the drum, and in order to impart to each teasinging-roll a further movement—that is, a rotation around its own axis—I provide a substantially circular track, preferably flexible, upon which the pulleys *c* at one or both ends of the drum may travel in such frictional contact as will insure their revolution and the corresponding revolution of the shaft of the teasinging-roller. Such circular track may be in the form of a ring secured in a stationary position upon the frame; but I prefer to make use of a band having a certain amount of flexibility encircling the pulleys *c* and constituting the track E, as best shown in Fig. 2; and I further prefer to secure said band to a fixed stud or projection 2 at one end and to a tightening device F at the other end, said tightening device being shown in the form of a screw-rod 3, extending through a bearing and provided with a nut 4, whereby the rod may be drawn out to tighten the band against the pulleys or allowed to move in to loosen the band and decrease the friction. When the pulleys *c* are carried around with the drum in either direction, they travel upon the surrounding-track or bearing E and are caused to rotate, carrying with them the teasinging-rollers.

By altering the tension upon the band when a flexible track or bearing is used the energy of the cards or teasels will be increased or diminished. Thus when the tension upon the band is increased to the maximum the pulleys will revolve without any slip and the cards or teasels will operate with their greatest energy; but by slackening the band to a greater or less extent more or less slip between the pulleys and their bearings is permitted and the energy of the teasels is correspondingly diminished.

It will be evident that by the use of an adjustable track or bearing surrounding the pulleys I am enabled to increase or diminish the energy of the teasinging action without the use of the complicated expensive appliances



requisite in connection with a traveling driving belt or belts for operating the pulleys.

Instead of making use of a flexible track bearing or band, the same may consist of 5 jointed rigid or elastic segments 7 8, two of which are shown in Fig. 4, with devices for forcing them with greater or less pressure against the edges of the pulleys. The springs 10 s constitute the said devices in the construction shown, said springs being coiled around rods *t*, and hollow screw-nuts *u*, passing through stationary cross-bars *w* on the frame, serving to compress the springs to any desired extent.

15 I am aware that the napping-rolls have been provided with teeth or pulleys for engaging angular racks on rigid tracks, which serve to effect the desired operation when but one kind of effect is to be produced; but in nearly 20 all machines it is desirable to vary the effect from time to time, either to compensate for inequalities in the cloth or to operate differently upon different qualities or produce different effects upon the same cloth. For this 25 reason I provide means whereby different amounts of slip may take place, so as to vary the action of the teasinging-rollers accordingly, and to these ends I use pulleys on the ends of the shafts and provide means for varying 30 the pressure between the pulleys and the track, whether the same be rigid or flexible, as shown.

Without limiting myself to the precise con-

struction and arrangement of parts shown and described, I claim— 35

1. The combination of a drum carrying a series of teasinging-rolls, pulleys upon the shafts of said rolls, a stationary track or bearing extending around said pulleys, and means for causing said track or bearing to bear with 40 greater or less pressure upon said pulleys, substantially as set forth.

2. The combination, with the drum carrying a series of teasinging-rolls, of pulleys upon the shafts of said rolls and a flexible bearing 45 extending around said pulleys, and means for tightening and loosening said bearing, substantially as set forth.

3. The combination, with a drum carrying a series of teasinging-rolls and pulleys, of a flexible 50 bearing extending around said pulleys connected to a fixed stud at one end and to a tightening device at the opposite end, for the purpose specified.

4. The combination of a revolving drum 55 having a series of napping-rolls, each with a pulley and a band arranged to make contact with said pulleys and secured at the ends to suitable supports, substantially as set forth.

In testimony whereof I have signed my 60 name to this specification in the presence of two subscribing witnesses.

HENRY NICOLAS GROSSELIN.

Witnesses:

L. LAMOUEURS,  
O. GROTTIN.