

(No Model.)

2 Sheets—Sheet 1.

B. COHNEN.

APPARATUS FOR SIZING AND DRESSING HANK YARN.

No. 603,622.

Patented May 10, 1898.

FIG. 2.

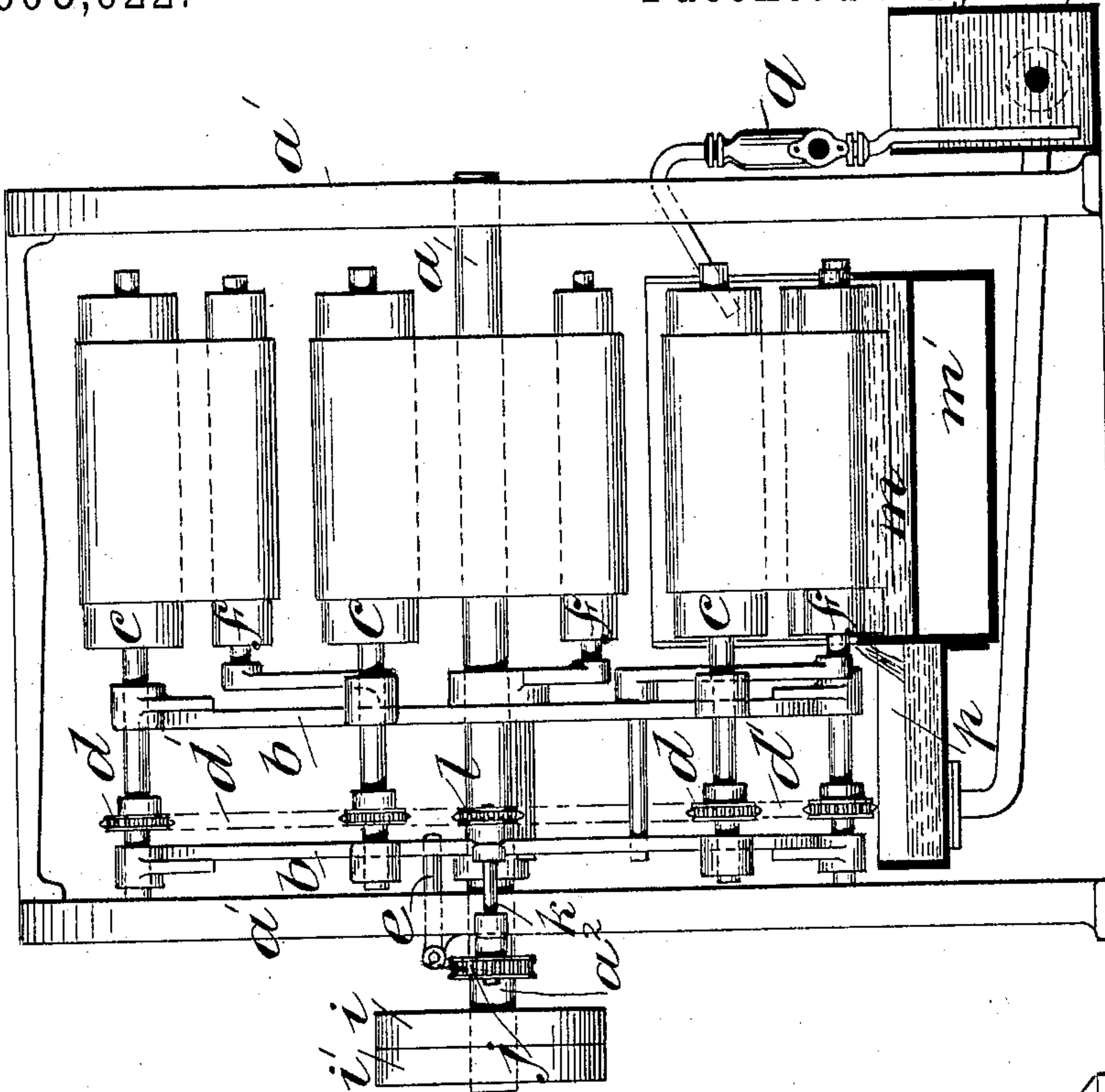
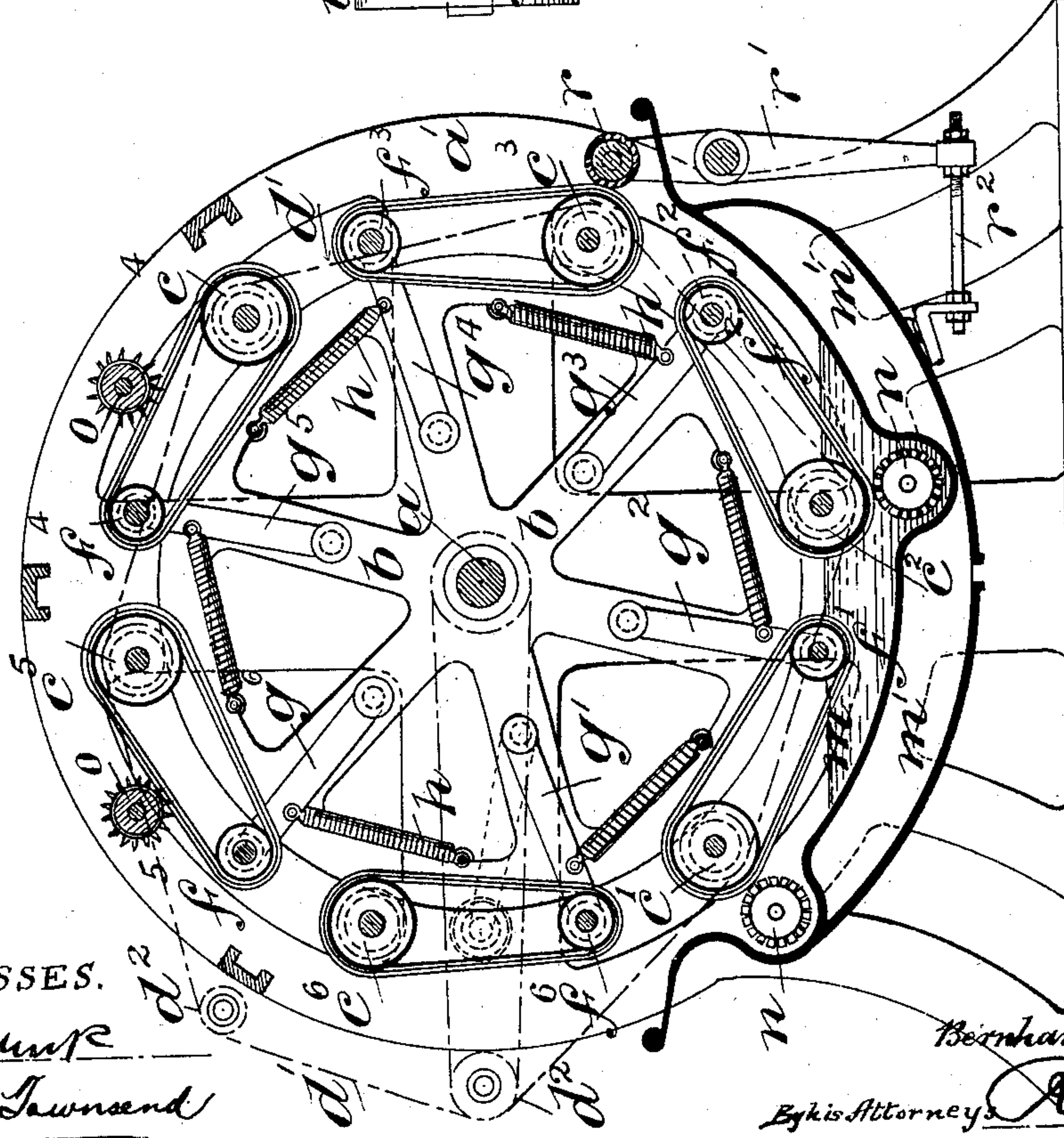


FIG. 1.



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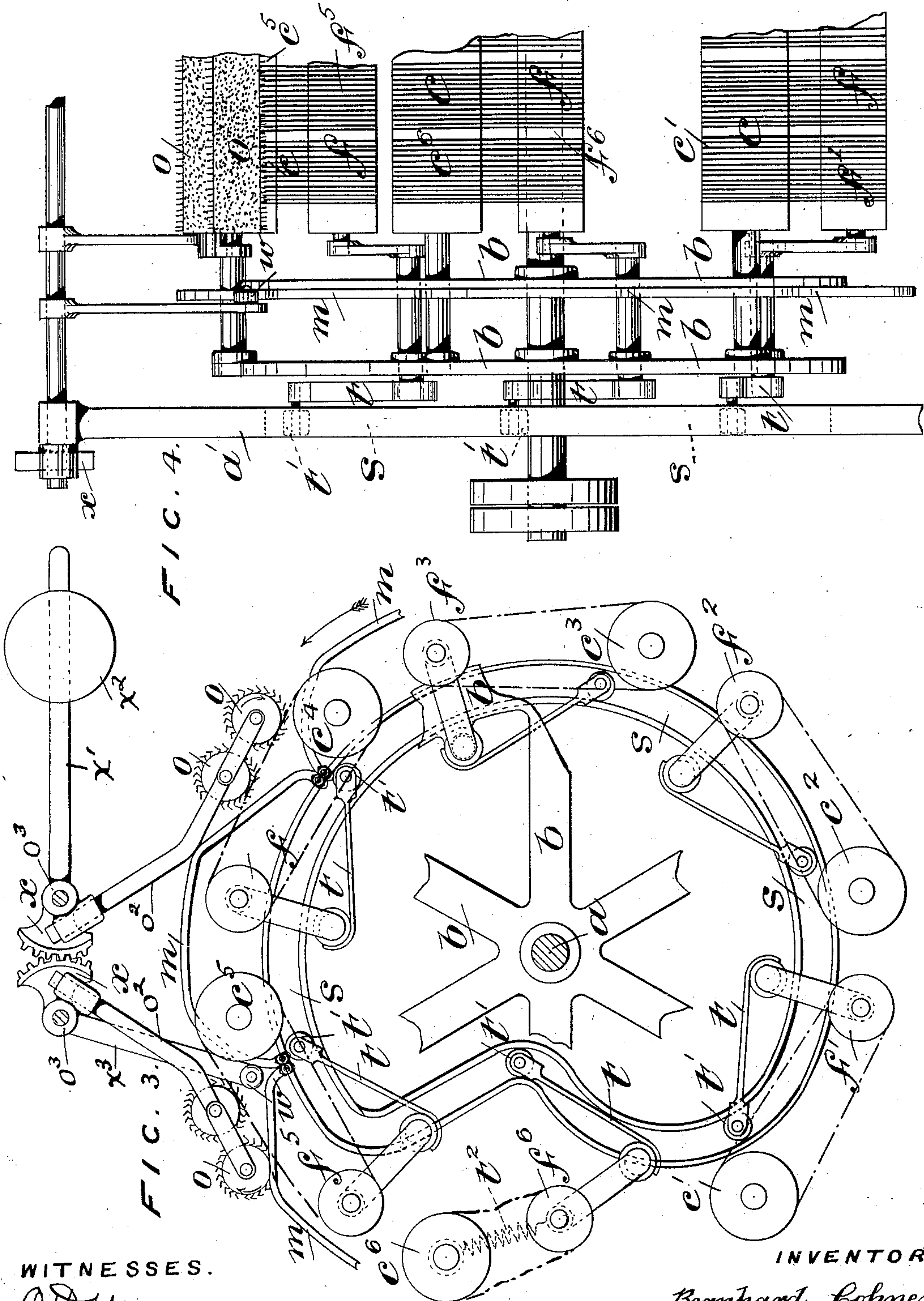
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UNITED STATES PATENT OFFICE.

BERNHARD COHNEN, OF GREVENBROICH, GERMANY.

APPARATUS FOR SIZING AND DRESSING HANK-YARN.

SPECIFICATION forming part of Letters Patent No. 603,622, dated May 10, 1898.

Application filed December 21, 1897. Serial No. 662,893. (No model.) Patented in Italy June 27, 1895, No. 275; in France September 21, 1895, No. 250,451; in Belgium September 26, 1895, No. 117,624; in Austria-Hungary November 2, 1895, No. 20,668 and No. 20,669; in Germany November 5, 1895, No. 86,794, and July 24, 1897, No. 92,427, and in England October 28, 1896, No. 23,993.

To all whom it may concern:

Be it known that I, BERNHARD COHNEN, a subject of the Emperor of Germany, and a resident of Grevenbroich, Rhenish Prussia, and Empire of Germany, have invented certain new and useful Improvements in Apparatus for Sizing and Dressing Yarn, of which the following is a specification, this invention having been patented to me in Germany, No. 86,794, dated November 5, 1895, and No. 92,427, dated July 24, 1897; in France, No. 250,451, dated September 21, 1895; in Belgium, No. 117,624, dated September 26, 1895; in Italy, R. A. 275, dated June 27, 1895; in Austria-Hungary, No. 20,668 and No. 20,669, dated November 2, 1895, and in Great Britain, No. 23,993, dated October 28, 1896.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 represents a sectional front elevation of my improved apparatus. Fig. 2 is an end view of the same. Fig. 3 shows a modification of one of the parts of my improved apparatus. Fig. 4 is an end view of Fig. 3.

Upon an axle *a*, carried in bearings in a suitable frame *a'*, are keyed two spider-wheels *b b*. The spider-wheels *b b* carry in fixed bearings a series of six rollers *c' c² c³ c⁴ c⁵ c⁶*. In connection with each roller is another roller *f' f² f³ f⁴ f⁵ f⁶*, which rollers are carried by and revolve in bearings formed in arms *g² g³ g⁴ g⁵ g⁶ g'*, loosely pivoted to the spider-wheels. These pairs of rollers *c* and *f* are preferably of seamless copper and carry the yarn to be sized. Any convenient number more or less than six such pairs of rollers may be employed. The rollers *f*, carried by the pivoted arms *g*, can be moved toward the rollers *c*. The hanks of yarn are laid on the pairs of rollers *c f*, springs *h*, located between the arms and adjacent portions of the spider-wheels, acting to stretch the yarn. The rollers *c* are provided with chain-wheels *d* and are driven by means of a chain *d'*. The chain *d'* also drives the spider-wheels *b b*, which carry the pairs of rollers *c f*. The chain *d'* is driven in the following manner: Upon the main axle *a* of the apparatus is mounted a sleeve *a²*, adapted to run loose upon the shaft *a*. The sleeve *a²*

carries a fast and a loose pulley *i i'* and is also provided with a chain-wheel communicating motion by means of a chain to the chain-wheel *j*. (See Fig. 2.) The chain-wheel *j* is carried by a short shaft *k*, revolving in suitable bearings in the frame of the machine. The other end of the short shaft *k* carries a chain-wheel *l*, meshing with the chain *d'*. Motion is thus communicated from the fast pulley *i* to the chain *d'*.

The action of the apparatus is as follows: The outer spider-wheel *b* is provided with six notches, more or less, corresponding to the number of pairs of rollers employed, with which a hinged bolt *e* is adapted to engage. Motion having been imparted to the fast pulley *i*, the attendant disengages the hinged bolt *e* from the notch. The chain *d'* then revolves the spider-wheels *b b* and with them the pairs of rollers *c f* until one-sixth of a revolution is effected, when the hinged bolt drops into the next notch, and the spider-wheels *b* are thus stopped. The chain, however, continues its motion and on the stoppage of the spider-wheels *b* revolves the rollers *c* upon their axes. As the yarn is stretched upon the rollers *c f* by the action of the spring *h* the revolution of the rollers *c* sets the yarn and also the rollers *f* in motion. From an inspection of Fig. 1 of the drawings it will be seen that during the stoppage of the spider-wheels *b b* the yarn on the pairs of rollers *c' f' c² f²* is being immersed in the size contained in the trough *m*. The size is pressed into the hanks by means of two fluted wooden squeezing-rollers *n n*, one of which is immersed in the size, while both work against the copper rollers. The yarn is thus perfectly saturated without being in any way disturbed or entangled. The yarn upon the rollers *c³ f³*, having been immersed in the size, is subjected to the squeezing action of a rubber-covered roller *r*, carried in bearings in levers *r'*, pivoted to the frame of the machine.

Adjusting-screws *r²* are provided to regulate the pressure of the roller *r* upon the yarn, and thus determine the amount of size to be left in the yarn.

Upon the pairs of rollers *c⁴ f⁴ c⁵ f⁵* the yarn

is brushed and opened out over the whole width of the rollers. This is effected by means of revolving combs or card-covered rollers *o o*, upon which is spirally arranged card-cloth-
 5 ing or other similarly - needle - pointed material, which acts upon the yarn after the manner of temple-rollers in a loom. The card-clothing or other needle-pointed material acting upon the yarn carried by the
 10 rollers *c⁵ f⁵* is arranged at an angle contrary to that operating upon the yarn on the rollers *c⁴ f⁴*. The rollers *o* are not positively driven, but are revolved by the passage of the yarn itself. The yarn upon the rollers *c⁶ f⁶*, hav-
 15 ing previously passed through these successive operations of sizing, squeezing, and brushing, is ready to be doffed from the rollers. To effect this in safety, it is essential that the rollers *c⁶ f⁶* should be at rest. At this part
 20 of the machine therefore the chain *d'* does not engage with the chain-wheel upon the roller *c⁶*, but is led over carrying-wheels *d²*. (Shown in dotted lines in Fig. 1.) The operator therefore by advancing the roller *f⁶* toward the
 25 roller *c⁶*, as shown in dotted lines, can quickly remove the sized and dressed yarn and replace it with another hank. The bolt *e* is then released and the spider-wheels *b b* are again revolved one-sixth of a revolution, and
 30 the cycle of operations is repeated.

As the chain *d'* is constantly driven, it will be seen that it alternately revolves the spider-wheels and the rollers *c*. For the purpose of maintaining the size in its proper condition
 35 and free from threads, lumps, and other foreign matter it is caused to circulate through a straining-tank *p* by means of a pump *q*, as indicated in Fig. 2.

The trough *m* is formed with a steam-heated
 40 chamber *m'* to maintain the size at any suitable temperature.

In Figs. 3 and 4 of the drawings I show a modification of the means for stretching the yarn upon the rollers and also automatic
 45 means of traversing the roller *f* toward and from the roller *c* when the sized and dressed hank is to be doffed and replaced by another hank. To effect this, I provide the frame of the machine with a cam-groove *s*. This cam-
 50 groove is shown in front view in Fig. 3, while Fig. 4 is an end view of Fig. 3. The rollers *f* are carried, as before, by arms provided with bearings in the spider-wheels *b b*, and in addition are provided with rigidly-connected
 55 arms *t*, forming with the arms carrying the rollers bell-crank levers. The lower ends of the rods *t* are provided with antifriction-bowls *t'*, running in the cam-groove *s*. For about three-quarters of the circumference of the
 60 cam-groove *s* the cam-groove is concentric and maintains the two rollers *c f* sufficiently apart to impart the desired tension to the yarn. As the rollers *c f* approach the doffing position in the machine the bowl *t'* on the end
 65 of the rod *t*, following the contour of the cam-groove, operates the roller *f*, so as to automatically bring the same nearer to the roller

c, as shown in the diagram Fig. 3. Instead of a rigid connecting-rod *t* I might use a flexible connection and bring the rollers together
 70 at the required times by means of a spring *t²*, as indicated in dotted lines.

On the stoppage of the machine the operator doffs the yarn, replaces it with a fresh hank and again starts the machine, when the
 75 cam-groove *s* operates to gradually stretch the yarn before the same is immersed in the sizing-trough.

In order to lift the card-rolls *O O* and prevent them from coming in contact with the
 80 yarn-carrying cylinders, cam-tracks *m* are provided, carried by one of the spiders, located as shown in Fig. 3.

The card-rolls are journaled in arms *O²*, carried by rock-shafts *O³*, journaled in the
 85 frame of the machine. These rock-shafts carry also gear-segments *X*, which mesh with each other, so that they are thus caused to move simultaneously. An arm *x'*, extending from one, carries a weight *x²*, which tends to
 90 hold the card-cylinder depressed, while an arm *x³*, secured to the other rock-shaft, carries a roller *w*, adapted to come in contact with the cam-tracks *m*, and thus raise the card-rolls out of the path of the cylinders *c f*.
 95

I declare that what I claim is—

1. In a hank-sizing machine comprising the tank, the rotary frame, the set of cylinders journaled in said frame, the second set of cyl-
 100 inders journaled in movable bearings and adapted to be moved toward and from the first set to permit the insertion and removal of the hanks, and means for intermittently rotating the frames and for rotating the cyl-
 105 inders when the frames are stationary, substantially as described.

2. In combination, the tank, the rotary frame, the set of cylinders journaled in said frame, the second set of cylinders journaled
 110 in bearings movable toward and from the first set of cylinders, means for intermittently rotating the frame, and for rotating the first set of cylinders during the period when the frames are stationary, and means for holding
 115 the movable cylinders away from the first set of cylinders during the major portion of the rotation of the frame and for bringing them into proximity to permit the removal of the sized hanks and the supplying of fresh ones to the cylinders, substantially as described.
 120

3. In combination, the tank, the rotary frame, the set of cylinders journaled therein, the sprocket-wheels carried by the shafts of said cylinders, the sprocket-chain passing
 125 over said wheels and over an idler-wheel serving to hold the chain removed at one point in the path of said sprockets as the frame rotates, the second set of cylinders movable toward and from the first set, means for driv-
 130 ing said sprocket-chain to rotate the frame, and means for holding the frame stationary while the movement of the chain continues whereby the cylinders are rotated, substantially as described.

4. In combination, the tank, the rotary frame, the set of cylinders journaled therein, the second set of cylinders journaled in bearings movable toward and from the first set, said first and second sets being arranged in pairs to carry the hanks to be sized, means for intermittingly rotating the frame and for rotating the cylinders when the frame is stationary, the carding-rolls arranged to lie normally in the path of the hanks, and means for automatically moving said carding-rolls out of said path as each cylinder approaches in the rotation of the frame, substantially as described.

5. In combination, the tank, the rotary frame, the set of cylinders journaled therein, the second set of cylinders journaled in bearings movable toward and from the first set, said first and second sets being arranged in pairs to carry the hanks to be sized, means for intermittingly rotating the frame and for rotating the cylinders when the frame is stationary, the rocking arms carrying carding-

rolls, quadrants carried by the shafts of said rocking arms to cause their simultaneous movement, an arm carried by one of said shafts, and cams carried by the rotary frame adapted to lift said arm to remove the carding-rolls from the path of the cylinders, substantially as described.

6. In combination, with the tank and the rotary frame carrying a series of cylinders arranged in pairs and adapted to receive the hanks to be treated, with means for rotating the frame and cylinders, a roller covered with spirally-arranged points or projections adapted to engage the material and be frictionally driven thereby, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

BERNHARD COHNEN.

Witnesses:

HERM. WINDRATH,
MAX ALZPODIN.