No. 808,337. PATENTED DEC. 26, 1905.

L. BRANDT.

CHENILLE TWISTING AND RECEIVING MACHINE.

APPLICATION FILED MAY 31, 1905.

4 SHEETS—SHEET 1.

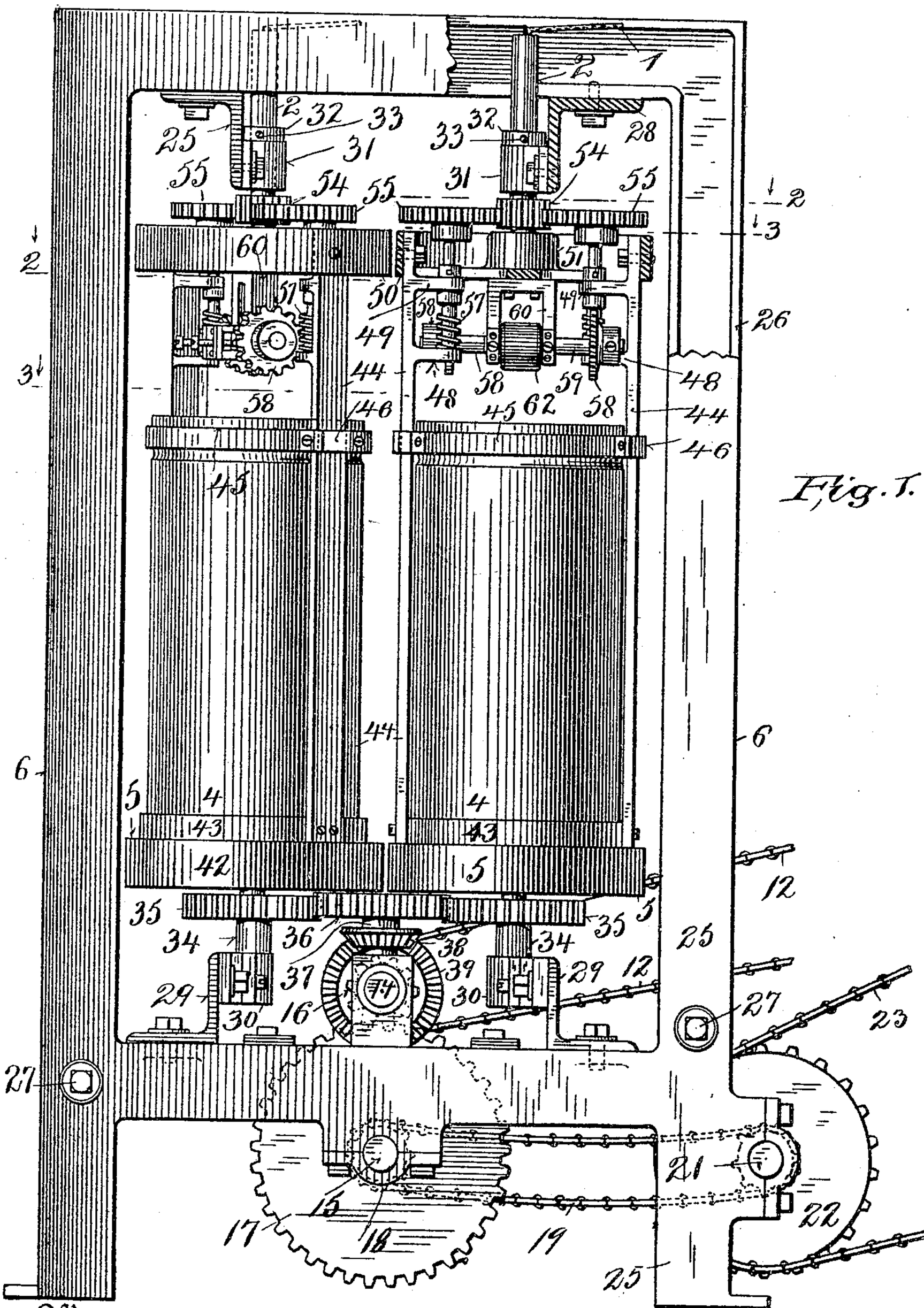

Fig. 1.

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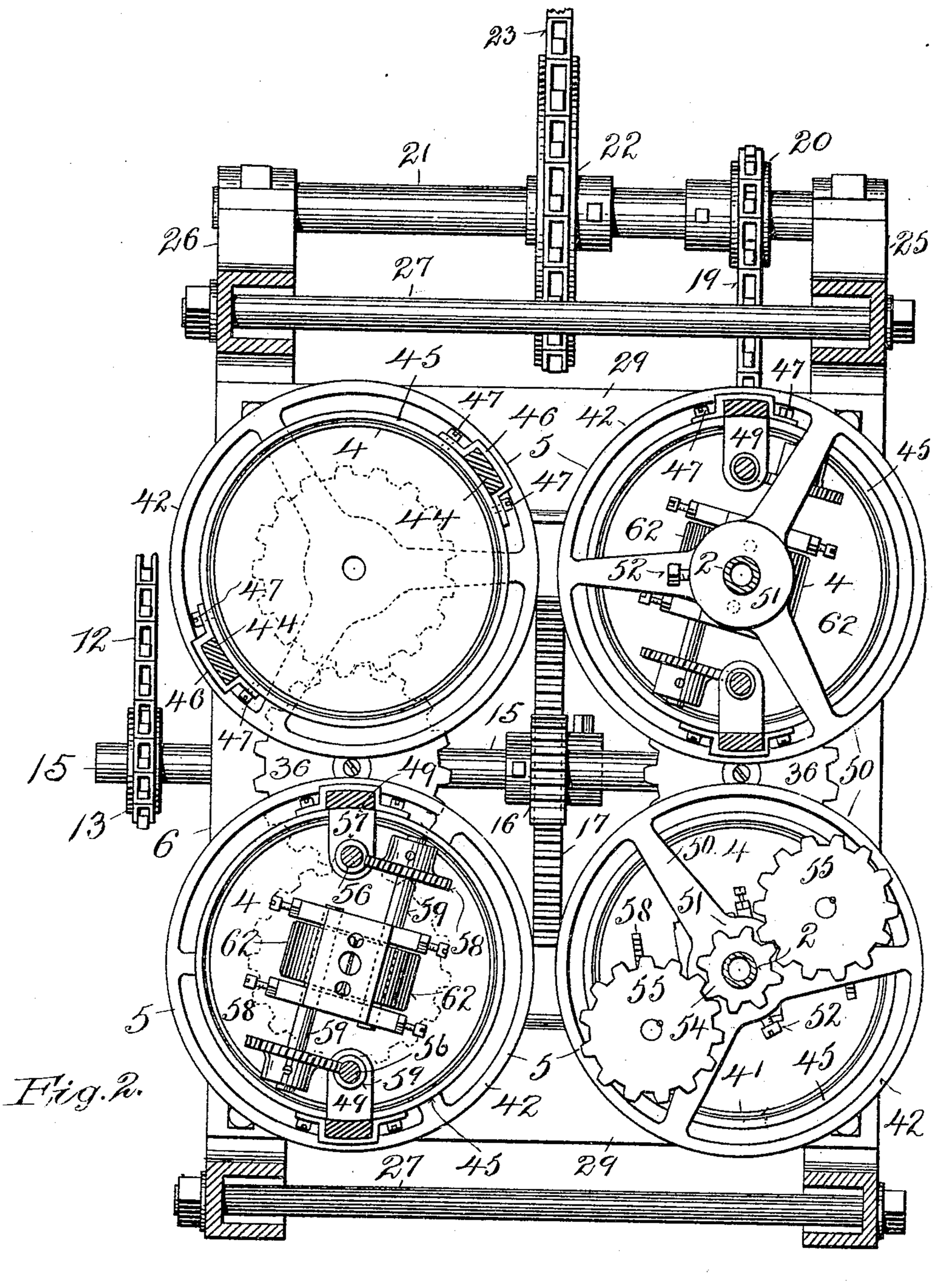

Fig. 2.

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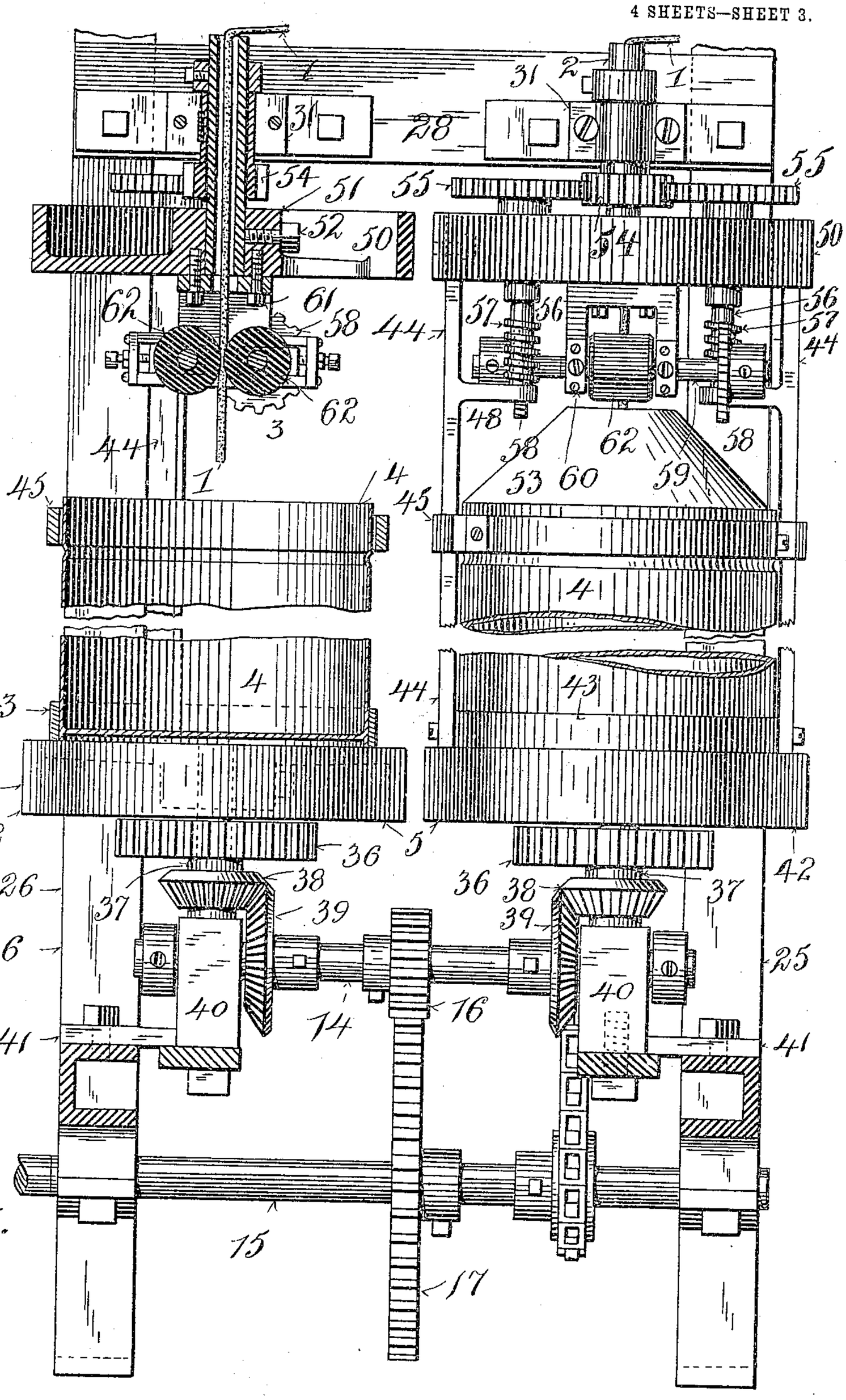

Fig. 3.

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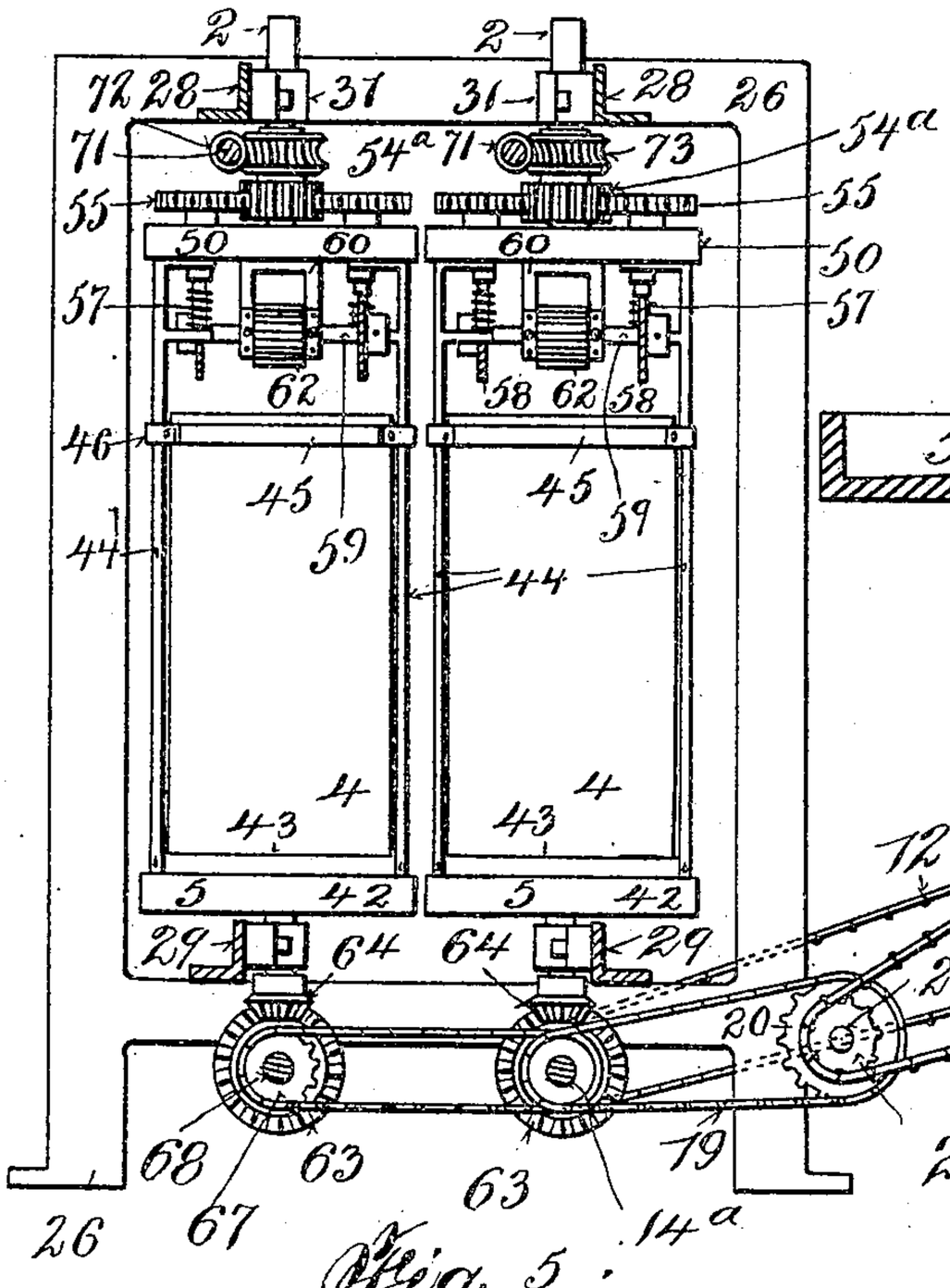

Fig. 5.

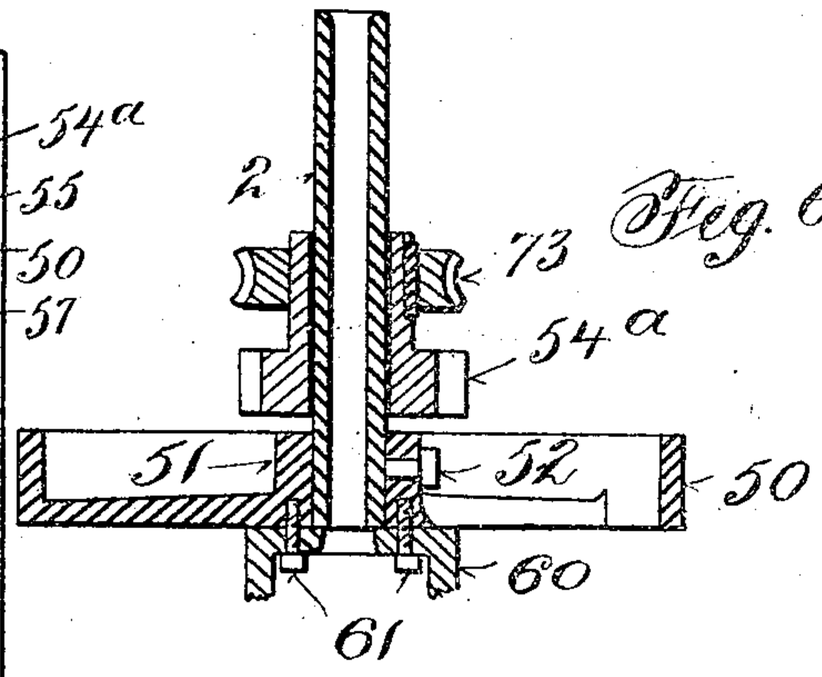

Fig. 6.

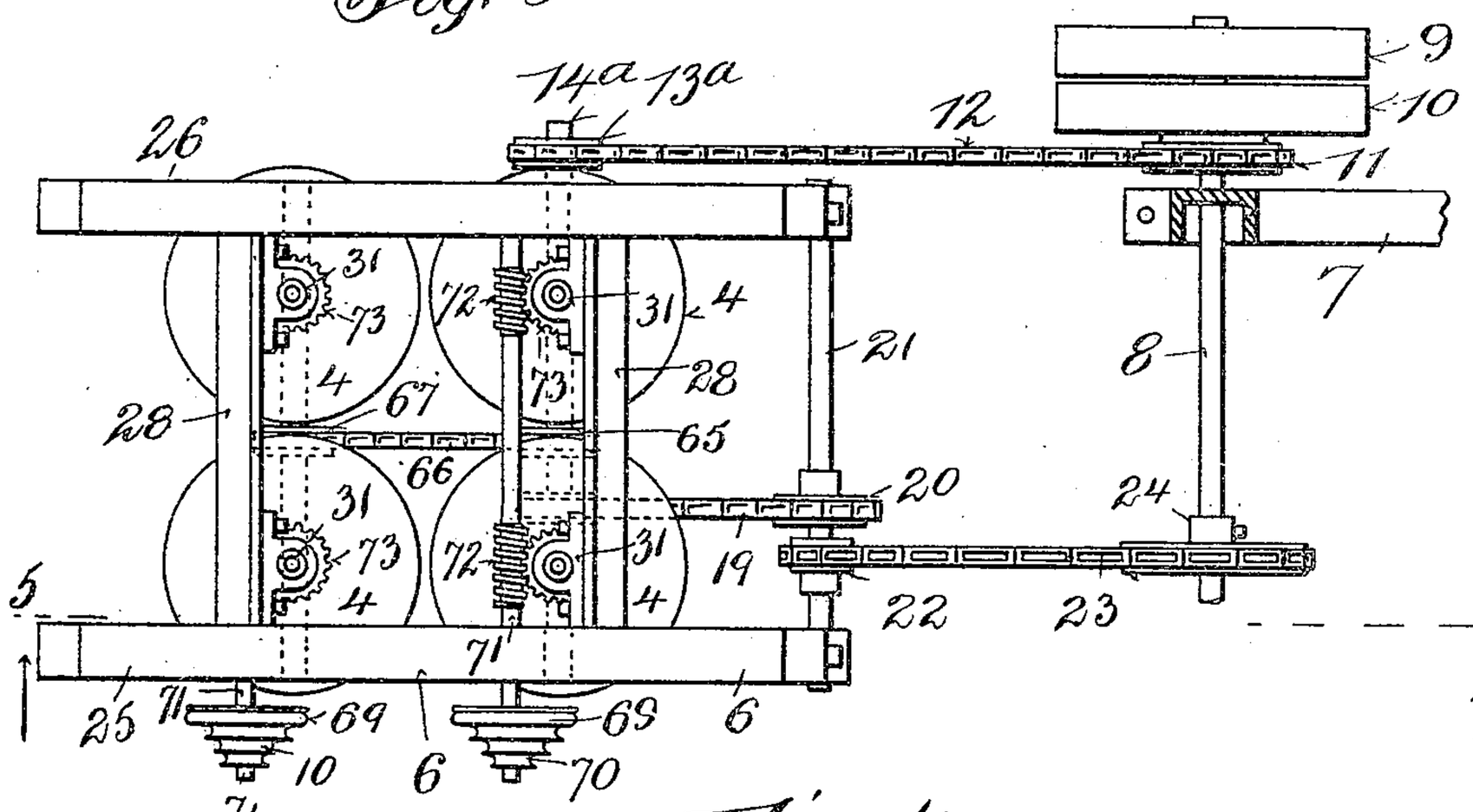

Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

LOUIS BRANDT, OF NEW YORK, N. Y.

CHENILLE TWISTING AND RECEIVING MACHINE.

No. 808,337. Specification of Letters Patent. Patented Dec. 26, 1905.

Application filed May 31, 1905. Serial No. 262,971.

To all whom it may concern:

Be it known that I, LOUIS BRANDT, a citizen of the United States, and a resident of the borough of Manhattan, city, county, and State of New York, have invented a new and useful Improvement in Chenille Twisting and Receiving Machines, of which the following is a specification.

The object of my invention is to provide a machine of this class which will twist and receive chenille and accumulate the finished product until it is convenient for the operator to remove it from the machine. This object is accomplished by my invention, some embodiments of which are hereinafter set forth, which accomplish this result in such a manner that the chenille is in no way injured, distorted, compressed, or disfigured, although allowed to accumulate in great lengths.

For a more particular description of my invention reference is to be had to the accompanying drawings, forming a part hereof, in which—

Figure 1 is a side elevation of that part of the machine to which my improvement is more particularly related, parts being cut away to more clearly indicate the structure. Fig. 2 is a sectional plan view taken on lines 2 2 and 3 3 of Fig. 1 looking in the direction of the arrows, the two lower cylinders being shown on the line 2 2 and the two upper on the line 3 3. Fig. 3 is an end elevation of my improved machine, portions being shown in section. Fig. 4 is a plan view of a modified form of my invention. Fig. 5 is a sectional view taken on the line 5 5 of Fig. 4 looking in the direction of the arrows. Fig. 6 is a sectional view showing a hollow spindle and a peculiar loose gear mounted on the same.

Throughout the various views of the drawings similar reference characters designate similar parts.

The chenille 1 passes from the place of its origin to the hollow and rotating spindle 2, through the feed-rollers 3, to the storage can or vessel 4, where it is allowed to accumulate. The spindle 2, rollers 3, and can 4 are mounted on a revolving frame 5, which is rotated by any suitable mechanism, as will more particularly appear below, and is held in its correct position in a stationary frame 6. The frame 5 has a vertical axis about which it rotates.

The frame 6 may be made to support as many rotary frames 5 as desired—either one or more. For convenience only four are shown, although it is obvious that any number may be employed.

The apparatus above described in a general way is necessarily used either next to or as a part of the machine in which the chenille is partially formed, because these two machines, if they are separated, or the single machine, if they are united, must have all parts work perfectly together, so as to avoid injuring the delicate fabric which is manufactured.

In Figs. 4 and 5 are shown portions of the frame and power-receiving mechanism of the machine in which the chenille is first partially formed. Only enough of this machine is shown to make the operation of the other part sufficiently clear. For convenience the chenille-making mechanism will hereinafter be considered as consisting of two distinct and cooperating machines, although it is understood that both may be made in one frame and so constitute only one machine, if such a construction is desired.

The machine where the chenille is first partially formed is for convenience designated as the "originating-machine" and may be made of any suitable type. Except for the improvement described below this machine forms no part of my invention, so that a detailed illustration and description of it is altogether unnecessary. This originating-machine is provided with a frame 7 of any suitable kind and a horizontally-disposed shaft 8 at the lower end of the frame, and on this (the shaft 8) are two loose pulleys 9 and 10, respectively. The pulley 9 is a mere idle pulley on which the belt from a suitable countershaft is thrown when the machines are not in operation. The loose pulley 10 is fixed to a sprocket-wheel 11, on which rests a chain 12, which engages a second sprocket 13 on a shaft 15 in the central lower portion of the frame 6. Above the shaft 15 is a similar parallel shaft 14, which is driven by the shaft 15 through the agency of two spur-gears 16 and 17, the gear 16 being much smaller than the gear 17 and located on the shaft 14. On the shaft 15 is fixedly mounted a sprocket 18, on which rests a sprocket-chain 19, which meshes with a fourth sprocket 20 on a shaft 21, which is parallel to the shafts 8, 14, and 15. A fifth sprocket 22 is mounted on the shaft 21 and carries an intermeshing chain 23, which engages a sixth sprocket 24, which is fixed to

the shaft 8 and drives it. I have found by repeated experiments that this roundabout driving of the shaft 8 is rendered necessary because if the shaft 8 is directly driven from the pulley 10, as I first attempted, an enormous amount of power is consumed which is greatly in excess of the amount necessary to do the same work when the machines are driven as above described.

The fixed frame 6 is provided with suitable bearings for the shafts 15, 21, and 14, as appears above. It has two side frames 25 and 26, which are held together by tie-bolts 27 and upper angle-iron braces 28 and lower angle-irons 29, which are secured to the side frames 25 and 26 by rivets or cap-screws, as may be preferred.

In the construction shown in Figs. 1 to 3, inclusive, the rotary frames 5 are mounted at their lower ends in bearings 30, fixed to the irons 29, and at their upper ends these frames 5 are fixed to the spindles 2, which pass through bearings 31, which are fixed to the angle-irons 28. A collar 32 on the spindle 2 is fixed in position by set-screw 33 and holds the spindle against vertical movement in a downward direction. Shafts 34 form the part of the frame 5 in the bearings 30, and these shafts 34 are provided with pinions 35, which intermesh with the pinions 36 on stud-shafts 37, on which are also bevel-gears 38, which mesh with corresponding bevel-gears 39, which are fixed to the shaft 14 on each side of the pinion 16. The stud-shafts 37 are journaled at their lower ends in bearings 40, which are supported by the frame 6 in any suitable manner, as by cross-bars 41, which bearings 40 also support the shaft 14. Immediately above the gears 35 and fixed to the vertical shafts 30 are wheels 42, which wheels are preferably formed in the usual way and provided with concentric rings 43, which rest on the spokes of the wheels 42 and are fixed thereto. Vertical arms 44 stand upwardly from the rings 43 to a ring 45, which is fixed on the uprights 44 by means of clamps 46. The clamps 46 are held in place by screws 47, so that they may be loosened sufficiently to enable the rings 45 to be raised on the uprights 44 for a purpose that will appear below. The uprights 44 are extended above the ring 45 and are provided with perforated and horizontally-disposed lugs 48 and 49, as indicated in Fig. 1, and above the lugs 49 the arms 44 are united by a second wheel 50. The hub 51 of this wheel 50 is fixed to the spindle 2 by means of a set-screw 52.

The can 4 is held in the frame 5 between the uprights 44 and the rings 43 and 45. This can 4 may be removed from the machine by loosening the screws 47 and raising ring 45, after which the can is free to be taken out. The can 4 is preferably covered by a flared cover 53, which protects the contents of the can. The precise shape of this cover is immaterial as long as it performs its function. This function is best performed when it is placed so as to fit as near the feeding mechanism as possible.

Immediately above the wheel 50 the spindle 2 is provided with a spur-gear 54, which is loosely mounted on this spindle and held fixedly with regard to the frame 6 by the bearing 31. Gears 55 mesh with the gear 54 and rotate round the same and also round their axes, thereby getting a double rotation. The gears 55 are each mounted on vertically-disposed shafts 56, journaled in the lugs 48 and 49, and the shafts run parallel to the axis of the frame 5. Between the lugs 48 and 49 the shafts 56 are each provided with worms 57, which engage corresponding worm-gears 58, fixed to shafts 59, that are supported by depending arms 60, which are fixed to the hub 51 by means of cap-screws 61. The shafts 59 are also provided with cushion-rollers 62. While it is preferable that both rollers should be provided with this cushion periphery, it is not essential that they should be, as one cushion is sufficient.

As the frames 5 and the mechanism fixedly carried thereby rotate at a very high velocity, it is desirable that all parts be accurately made and perfectly balanced, so as to avoid all undue stress from centrifugal forces.

The speed of rotation of the frame 5 and its attendant parts is always proportioned to the speed of the originating-machine, so that a proper amount of twist will be given to the chenille between the time it emerges from the cutters of the originating-machine and its entry into the spindle 2. In the mechanism just described this speed of rotation can only be changed by changing the gears. If it is desired to make a machine which may be adjusted so as to be adapted to all forms of chenille and give any desired twist, the modification shown in Figs. 4 to 6, inclusive, may be employed. In this embodiment of my invention the sprocket-chain 12 runs to a sprocket 13^a, which in turn is fixed to a shaft 14^a. The shaft 14^a is provided with bevel-gears 63, which mesh with similar gears 64 on the frames 5. The shaft 14^a is also provided with a sprocket-wheel 65, which carries a sprocket-chain 66, which in turn meshes with another sprocket 67 on a shaft 68. This shaft is also provided with bevel-gears 63, which mesh with corresponding bevel-gears 64, precisely as above described. The shaft 14^a is also provided with a sprocket which engages with a chain 19, precisely in the manner described above. The ends of the shafts 14^a and 68 are provided with cone-pulleys, over which pass belts 69, which rotate cone-pulleys 70 on shafts 71, which are suitably journaled in the frame 6. These shafts 71 are provided with worms 72, which mesh with worm-gears 73, which are fixed to pinions 54^a in the manner indicated in Fig. 6. This gives these pinions 54^a a movement which is inde-

pendent of the spindle 2, so that by rotating this pinion 54ª in the direction of rotation of the frame 5 the speed of rotation of the pinions 55, which mesh with pinions 54ª, is reduced, thereby reducing the speed of rotation of the feed-rollers 62. If, on the other hand, the gear 54ª is rotated in direction opposite that of the frame 5, the speed of rotation of the gears 55 is accelerated, so that the speed of the feed-rollers is increased. This means may be termed a "differential" feed.

In view of the foregoing my device will be readily understood. The chenille is fed through the spindle 2, which rotates with the frame 5 at any desired speed, and the feed-rollers 62 also have any desired speed, so that the chenille 1 is fed with the proper movement into the can 4, where it accumulates without being in any way distorted or untwisted, as it would be if it were wound on anything tight, as a spool, or left in a vessel which did not rotate in unison with the frame 5 and the rollers 62. By adjusting the mechanism as above described any desired amount of twist may be given to the chenille.

Having thus described my invention, what I claim is—

1. In a machine of the class described, means for twisting chenille, means for feeding chenille, means for receiving and accumulating chenille without distortion.

2. In a machine of the class described, means for twisting chenille, means for feeding chenille, and rotary means for holding and accumulating the chenille without distortion.

3. In a machine of the class described, a rotary hollow spindle for twisting chenille, means for feeding the chenille, and means for receiving and holding the chenille without distortion.

4. In a machine of the class described, means for twisting chenille, cushion-rollers for feeding the chenille and means for operating said rollers and means for receiving and holding the chenille without distortion.

5. In a machine of the class described, a hollow spindle rotatably mounted to twist chenille, means for feeding the chenille through said spindle, and rotary means for holding the chenille without distortion.

6. In a machine of the class described, a hollow rotary spindle for twisting chenille, cushion-rollers for feeding the chenille, and means for actuating said rollers, and means for receiving and holding the chenille without distortion.

7. In a machine of the class described, means for twisting chenille, cushion-rollers for feeding the chenille, and means for actuating said rollers, and a rotatably-mounted vessel for receiving and holding the chenille after leaving said rollers.

8. In a machine of the class described, means for twisting chenille, means for feeding the chenille, and a rotatably-mounted vessel adapted to rotate in unison with said feeding means, and receive chenille from the same.

9. In a machine of the class described, means for twisting chenille, means for feeding the chenille, and a rotatably-mounted vessel rotating in unison with said feeding means, and a cover extending from said feeding means and over said rotating vessel.

10. In a machine of the class described, means for twisting chenille, means for feeding the chenille and means for rotating said feeding means, and a vessel adapted to receive the chenille from said feeding means and fixed to the same rotating mechanism as said feeding means, so as to rotate in unision with said feeding means.

11. In a machine of the class described, a plurality of means for twisting a number of strings of chenille simultaneously, means for feeding each of said strings of chenille and a plurality of vessels, means for rotating said plurality of vessels, so that each will receive a different string of chenille from the feed mechanism, and means for causing the feed mechanism of each string to rotate in unison with the vessel into which the chenille is fed.

12. In a machine of the class described, means for twisting chenille, comprising a rotary spindle, a gear loosely mounted on said spindle, spur-gears meshing with said loosely-mounted gear, and feeding means connected with said spur-gears and adapted to feed chenille through the same, and a rotatably-mounted vessel into which the chenille is fed from said feeding means.

13. In a machine of the class described, a rotatably-mounted hollow spindle adapted to receive the chenille, and a gear loosely mounted on said spindle, spur-gears engaging said loosely-mounted gear, each adapted to rotate round the axis of said spindle, as well as round its individual axis, cushion-rollers actuated by said spur-gears, and adapted to move in unison with the spindle, and a vessel adapted to receive the chenille from said rollers.

14. In a machine of the class described, a hollow and rotatably-mounted spindle adapted to receive the chenille and twist the same, a gear loosely mounted on said spindle, two oppositely-disposed spur-gears engaging said loosely-mounted gear, means fixed to said spindle for holding said spur-gears and said loosely-mounted gear in engagement, so that the axes of the spur-gears are substantially parallel to the spindle, shafts fixed to said spur-gears, worms on said shafts, gears engaging said worms and rollers fixed to the said shafts of gears, and means for supporting said shafts and gears, so that each of said rollers rotates round its axis and also round the axis of the spindle, and a rotating vessel moving in unison with said spindle, and means for rotating the vessel and spindle.

15. In a machine of the class described, a rotatably-mounted and hollow spindle adapted

to receive chenille, a gear loosely mounted on said spindle, spur-gears meshing with said loosely-mounted gear, and means for supporting said spur-gears and causing them to engage the loosely-mounted gear, feeding mechanism connected with said spur-gears, and adapted to rotate in unison with said spindle, means for rotating said loosely-mounted gear and means for rotating said spindle, and means for receiving and supporting without distortion or injury, the chenille after it has been passed through said feeding mechanism.

16. In a machine of the class described, a rotatably-mounted hollow spindle for twisting chenille, gears loosely mounted on said spindle, one of which is a worm-gear, spur-gears engaging one of said gears, and means for supporting said spur-gears, which supporting means is fixed rigidly to said spindle, feed mechanism connected to said spur-gears, and supported by means fixed to the spindle, means for receiving and supporting the chenille after it passes through feeding mechanism, and a worm adapted to engage said worm-gear and means for supporting and actuating said worm.

17. In a machine of the class described, a shaft having two loose pulleys mounted thereon, and a sprocket fixed to one of said pulleys, a second shaft having a sprocket fixed thereto and a chain connecting said sprockets, means for twisting, feeding and receiving the chenille driven by said second shaft, and means for driving the first shaft from the second shaft.

Signed at the city of New York, county and State of New York, this 29th day of May, 1905.

LOUIS BRANDT.

Witnesses:
O. E. Edwards, Jur.,
J. H. Derwin.