L. O. TRIVETT & F. RANDALL.

CHENILLE SPOTTING MACHINE.

APPLICATION FILED JAN. 17, 1907.

900,616.

Patented Oct. 6, 1908.

3 SHEETS—SHEET 1.

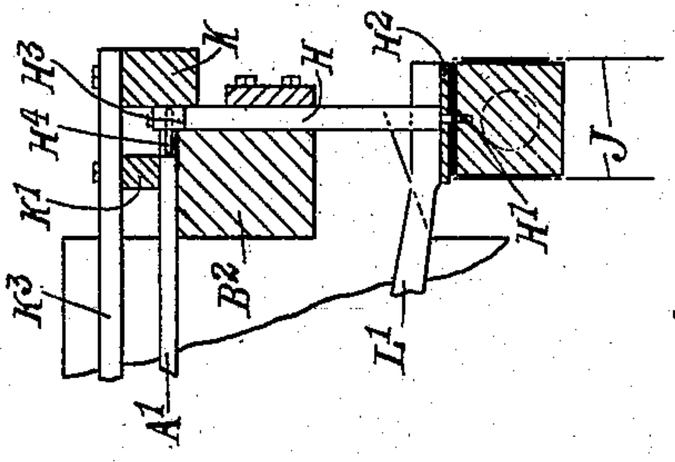

Fig. 2.

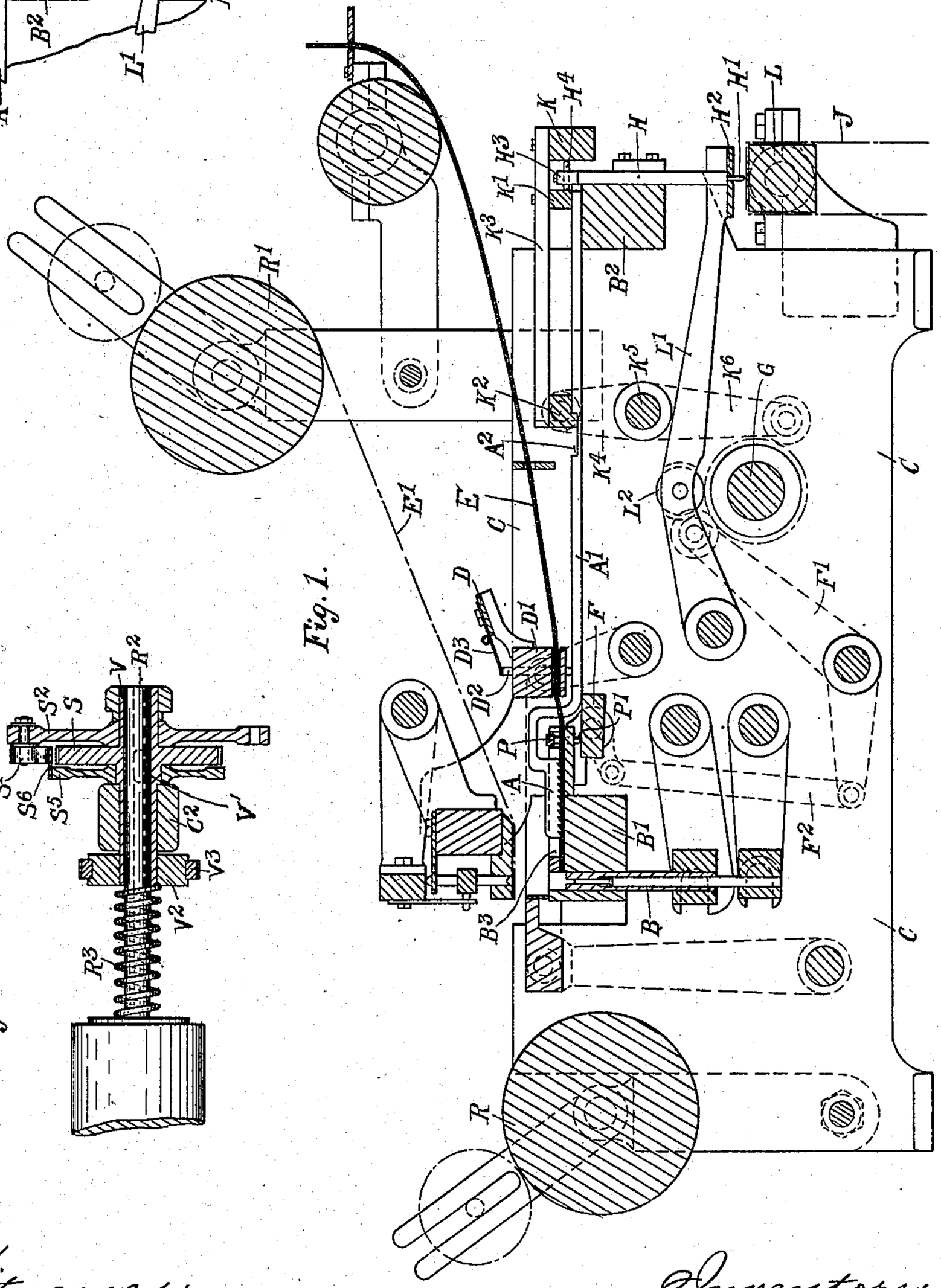

Fig. 1.

Fig. 5.

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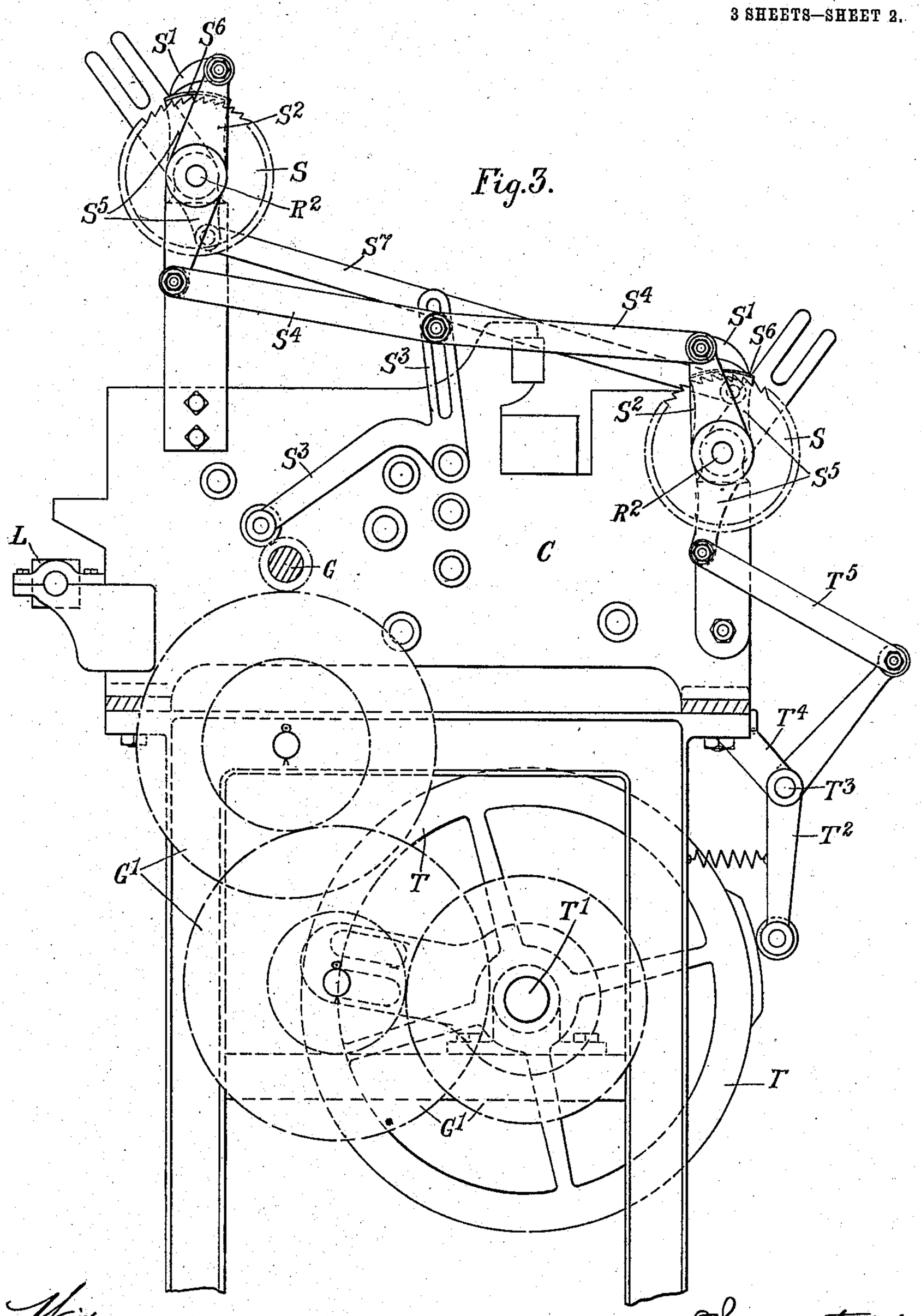
Fig. 3.



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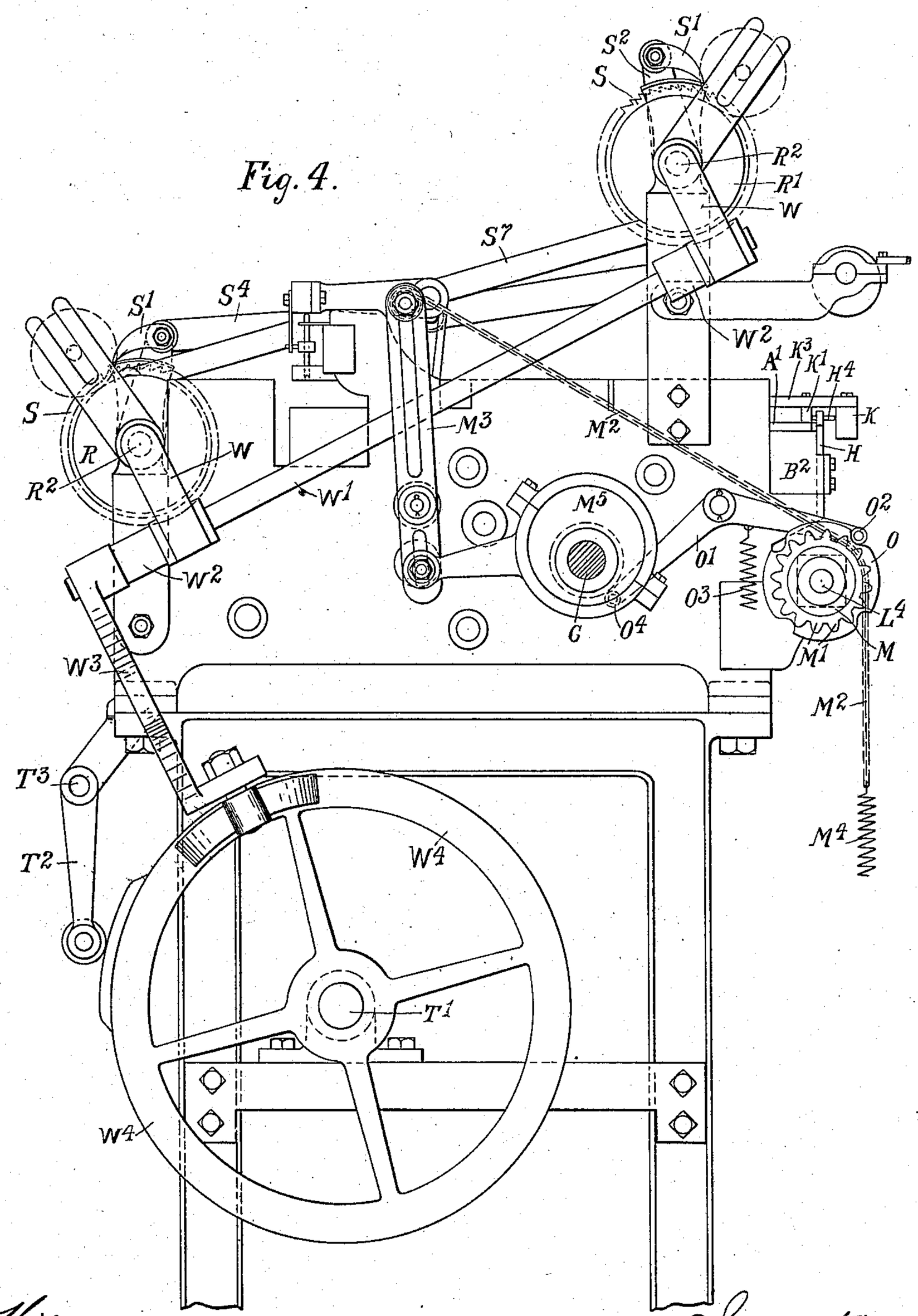
3 SHEETS—SHEET 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

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CHENILLE-SPOTTING MACHINE.

No. 900,616. Specification of Letters Patent. Patented Oct. 6, 1908.

Application filed January 17, 1907. Serial No. 352,798.

To all whom it may concern:

Be it known that we, LOUIS ORAM TRIVETT, a subject of the King of Great Britain, and resident of Nottingham, England, and FRED RANDALL, a subject of the King of Great Britain, and resident of Beeston, Nottinghamshire, England, have invented certain new and useful Improvements in Chenille-Spotting Machines, of which the following is a specification.

This invention relates to improvements in chenille spotting machines such as described in the specification of Letters Patent No. 709587 dated 24th October 1900, and the present invention refers to improved means for automatically controlling the spotting devices, and the movement of the fabric feed rollers, whereby ornamental designs of great variety may be provided in chenille spots on a fabric.

Referring to the drawings, Figure 1, is a vertical cross section of a chenille spotting machine constructed according to our invention. Fig. 2. is a cross section illustrating the action of the chenille feed controlling mechanism. Fig. 3. is an end elevation of the left hand end of the machine showing the mechanism for feeding the fabric rollers forward. Fig. 4. is an end elevation of the right hand end of the machine showing the mechanism for moving the fabric rollers longitudinally. Fig. 5. is a section of the pattern cam controlled ratchet wheel and pawl mechanism for advancing the fabric rollers. Figs. 1 and 2 are drawn to a larger scale than Figs. 3 to 5.

Like letters indicate like parts throughout the drawings.

According to this invention the toothed chenille feeding devices A (see Fig. 1.) which are employed for feeding the chenille E to the spotting rams B, as described in the specification cited, are in the present arrangement, each carried or formed on the front end of a separate and distinct feeder bar A^1 extending transversely from the front to the back of the machine, and are herefore each quite independent of the remainder. These feeder bars A^1 are arranged parallel to each other, and their rear ends are carried in recesses formed in the upper face of a longitudinal supporting bar B^2, attached to the end standards C of the machine.

In order to control the supply of chenille E to the rams B and thus render any of the latter operative or inoperative as required to produce a design, only those feeder bars A^1 which correspond to those spotting rams B which are for the time being to form and affix a spot to the fabric, receive a longitudinal forward or feeding movement, the remainder remaining in the position in which they are shown in Fig. 1. To obtain this result a vertical slide or dropper H is employed in connection with each feeder bar A^1, said droppers being arranged in a single row at the rear end of the feeder bars A^1. The said droppers H are carried in recesses formed in the rear face of the longitudinal bar B^2 previously mentioned, while their lower ends are provided with pins H^1 which pass through holes in a plate H^2 and are adapted to enter corresponding holes in the pattern cards J, carried by the square card prism L. The upper end of each dropper is provided with a head H^3 in which is a horizontal cross pin H^4 sliding in a transverse opening in the said head H^3. These pins H^4 may be prevented from falling out of the head or moving accidentally by a frictional device such as a spring in the head bearing on the pin.

Normally the heads of the droppers H are situated above the ends of the feeder bars A^1 as shown in Fig. 1, and the pins H^4 are situated between a reciprocating driving bar K, and a locker bar K^1 connected to the driving bar K, both of which receive a constant reciprocatory motion. In this position the droppers H are inoperative, the sliding pins H^4 in the dropper heads being merely moved in one direction by the driving bar K and then returned again by the locker bar K^1. When however a hole occurs in the pattern card J and a dropper H is permitted to fall into its lower position, it brings the pin H^4 in said droppers opposite to the end of the corresponding feeder bar A^1 as shown in Fig. 2. and that feeder bar A^1 is then pushed in the direction of its length through the intermediary of the pin H^4 and driving bar K, and the corresponding chenille feeding device A is therefore pushed forward carrying the

chenille E to the corresponding ram B. Any feeder bar A^1 so actuated is returned to its normal position again as shown in Fig. 1. by a second locker bar K^2 which engages in recesses A^2 formed in or with abutments on the feeder bars A^1. The pins H^4 in those droppers H which are held in their raised positions are at the same time returned to their normal positions by the locker bar K^1.

The driving bar K and locker bars K^1 K^2 are all connected together and operated simultaneously by the same means. One bar K^2 is carried by arms K^4 secured on a rocking shaft K^5 mounted in bearings in the end standards C, and said shaft is actuated through the intermediary of an arm K^6 thereon and a cam on the main shaft G. The bars K^1 K^2 are connected to the bar K by links or straps K^3, and are retained in position by the bar K^1 bearing on the upper face of the fixed longitudinal bar B^2.

In addition to the feeding movement described, the chenille feeding devices A are alternately raised from and lowered down on to the chenille E, which latter is carried through the same recesses B^3 in the bed B^1 in which the feeding devices A work, by the following means. Above the front end of the feeder bars A^1 described, is a longitudinal spring bar D, and a second bar D^1 with vertical openings to admit vertical sliding pins D^2. Springs D^3 on the spring bar D act on the upper ends of the sliding pins D^2, and the lower ends of the latter bear on the respective feeder bars A^1. On the forward feeding movement of the feeder bars A^1, the springs D^3 hold the toothed feeding devices A down on the chenille E, so that the latter is gripped and fed forward to the ram B.

A reverse lifting action is given to the transverse feeder bars A^1 by a longitudinal rocking bar F situated on the underside of the front ends of said bars A^1. This rocking bar F is journaled in bearings in the end standards C, and when rocked, its rear edge engages with and raises the whole of the feeder bars A^1 against the action of the springs D^3. This action raises the feeding devices A clear of the chenille E at the time they are making their return movement.

The rocking bar F described receives a constant rocking motion from a cam on the main shaft G through the intermediary of a cam lever F^1 and link F^2, so that the whole of the feeder bars A^1 are lowered at the time they are moved forward to push the chenille E to the rams B, and raised clear of the same again for their return movement.

At the time the chenille feeding devices A are making their return movement, all the lengths of chenille are gripped by a bar P (see Fig. 1.) situated in a recess at the back of the bed B^1, said bar being depressed down on to the chenille by a suitable spring or springs. In order to raise said bar P and release the chenille when the feeders are moving forward, the vertical pins P^1 which carry said bar P are carried through openings in the bed plate B^1, and their lower ends rest on the rocking bar F used for raising the feeder bars A^1. The pins P in this case rest on the reverse side of the rocking bar F to the feeder bars A^1, so that as the latter are raised to lift the feeders A out of action, the bar P is lowered to grip the chenille, by the action of one and the same rocking bar F.

The pattern card prism L is situated under the dropper supporting plate H^2, and this card prism may be raised and lowered in the usual way, or it may be carried in fixed bearings attached to the end standards C as shown. In the latter case the droppers H are raised by lifting the plate H^2 each time the card prism L is advanced, and again lowering it on to the pattern card J which is resting on its upper face, on the conclusion of each movement. For this purpose the lifting plate H^2 is carried by levers L^1 provided with anti-friction rollers L^2 engaging cams on the main shaft G.

The pattern card prism L may be advanced so as to bring the cards into operation in succession, by any well known device, or if carried in fixed bearings as shown, the following arrangement may be employed.

A sprocket wheel M (see Fig. 4.) provided with external sprocket teeth M^1, is connected to the card prism axle L^4 by means of a one way clutch of any suitable construction, and a chain M^2 adapted to engage with its teeth M^1 is carried over the sprocket wheel M. One end of this chain M^2 is attached to the upper end of a lever M^3 while its other end is weighted, or is as shown connected to a spring M^4. The lower end of the lever M^3 is connected to an eccentric M^5 on the cam shaft G, and receives an oscillatory motion from the same.

The oscillating movement of the lever M^3 communicates through the intermediary of the chain M^2 a reciprocatory motion to the sprocket wheel M, and the action of the one way clutch intermittently advances the card prism L.

In order to register the card prism in the correct position, a notched wheel O is situated at the side of the sprocket wheel M, and a spring actuated lever O^1 is provided with a stud or anti-friction roller O^2, to engage in the notches in said wheel. The stud or roller O^2 on the lever is moved into said notches by the action of the spring O^3 acting on the lever, and it is raised out of said notches by a cam on the main shaft G acting on the other end O^4 of the lever O^1, so as to release the prism L before the one way clutch comes into action.

In order to determine the position of each

spot or row of spots on the fabric, the rotation of the rollers R R^1 which carry the fabric E^1 is automatically controlled, and said rollers are further moved in the direction of their length at the required intervals, so as to bring different points in the width of the fabric E^1 over the spotting rams B.

In order to control the feed rollers R R^1 as described, each is advanced by means of a ratchet wheel S on its axle R^2, (see Figs. 3 and 5) and a pawl S^1 carried by arms or levers S^2 at the sides of the respective wheels S, said arms or levers S^2 being connected to each other and to a cam actuated lever S^3, by links S^4 (see Fig. 3.). At the opposite side of each ratchet wheel S to the pawl lever S^2, is a lever S^5 which carries a shield S^6 extending over the ratchet wheel S, so that it may be interposed between said wheel and the pawl S^1. By angularly adjusting these shields S^6, the pawls S^1 may be put out of action altogether, or the number of teeth in the wheels S taken by the said pawls may be from time to time increased or reduced, although they receive a constant motion from the cam lever S^3.

In order to simultaneously adjust the shield carrying levers S^5 described, they are one connected to the other by a link S^7, (see Fig. 3.) and both are angularly adjusted by means of a pattern cam wheel T. This pattern wheel T is carried on a shaft T^1, and cam projections on its periphery engage with the lower end of a lever T^2 pivoted at T^3 to a bracket T^4 secured to the framing, while the upper end of the said lever is connected to the shield lever S^5 of the front roller R, by means of a link T^5. The shaft T^1 is carried in bearings secured to the framing, and is connected to the cam shaft G by change gearing G^1, suitably arranged to give the required ratio between the shafts G and T^1.

In order that the rollers R R^1 may be moved longitudinally in their bearings independently of the ratchet wheels S, the latter are not connected directly to the roller axles R^2, but are secured to or formed with a sleeve V (see Fig. 5.) each of which is connected to the axle R^2 by means of a key V^1 in the wheel and a keyway in the axle R^2. The sleeve V described carries the shield lever S^5 and pawl lever S^2, and is itself carried through the axle bearing C^2 at this point and provided at its inner end with a brake wheel V^2, to which is applied a brake band V^3 to prevent the fabric rollers from running back on the return movement of the pawls S^1.

The fabric rollers R R^1 are as previously described moved in the direction of their length by traversing their axles R^2 in their respective bearings. This is effected by arms W (see Fig. 4.) on a rocking shaft W^1 carried in bearings W^2 at the end of the machine. The rocking shaft W^1 is controlled by means of a pattern cam wheel W^4 on the shaft T^1 previously described, acting on the lower end of an arm W^3 secured on the said shaft W^1.

The arms W engage with the ends of the roller axles R^2, and push the rollers R R^1 endwise in their axle bearings against the action of springs R^3, (see Fig. 5.) which are placed on the axle R^2 between the ends of the roller and the brake wheels V^2 carried by the sleeves V as shown, and said springs act so as to move the rollers in the reverse direction to the cam wheel W^4.

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

1. In a chenille spotting machine the combination of the spotting devices, an independent chenille feeding device in connection with each, jacquard mechanism for imparting a feeding movement to the same, means for controlling the angular movement of the fabric rollers, and means for moving the said rollers longitudinally, substantially as described.

2. In a chenille spotting machine, the combination with the spotting devices, of chenille feeding devices each carried by a separate and distinct bar, and jacquard mechanism for imparting a feeding movement to the same, comprising a driving bar, and droppers provided with parts which are interposed between the said driving bar and the ends of the feeder bars, substantially as described.

3. In a chenille spotting machine, the combination with the spotting devices, of toothed chenille feeding devices, a bar for carrying each of the same mounted in guide-ways so as to be movable in the direction of their length, a rocking bar for lifting the feeders, droppers each provided with a sliding pin, a reciprocating driving bar, locker bars for returning the several parts to their normal positions again, and a card prism for the pattern cards, substantially as described.

4. In a chenille spotting machine, the combination with the ratchet wheels and pawls for advancing the fabric rollers, of adjustable shields which may be interposed between the respective pawls and ratchet wheels, and pattern cam mechanism for adjusting the position of said shields as the work proceeds, substantially as described.

5. In a chenille spotting machine, the combination with the fabric rollers, of means for moving said rollers longitudinally comprising a rocking shaft provided with arms acting on the ends of the roller axles and pattern cam mechanism controlling the same, substantially as described.

6. In a chenille spotting machine, the com-

bination with the card prism, of a sprocket wheel connected to its axle by means of a one way clutch, an oscillating lever, and a chain carried over the sprocket wheel having one end connected to the oscillating lever, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

L. O. TRIVETT.
F. RANDALL.

Witnesses:
J. B. JAMSON,
E. H. LEAVERS.