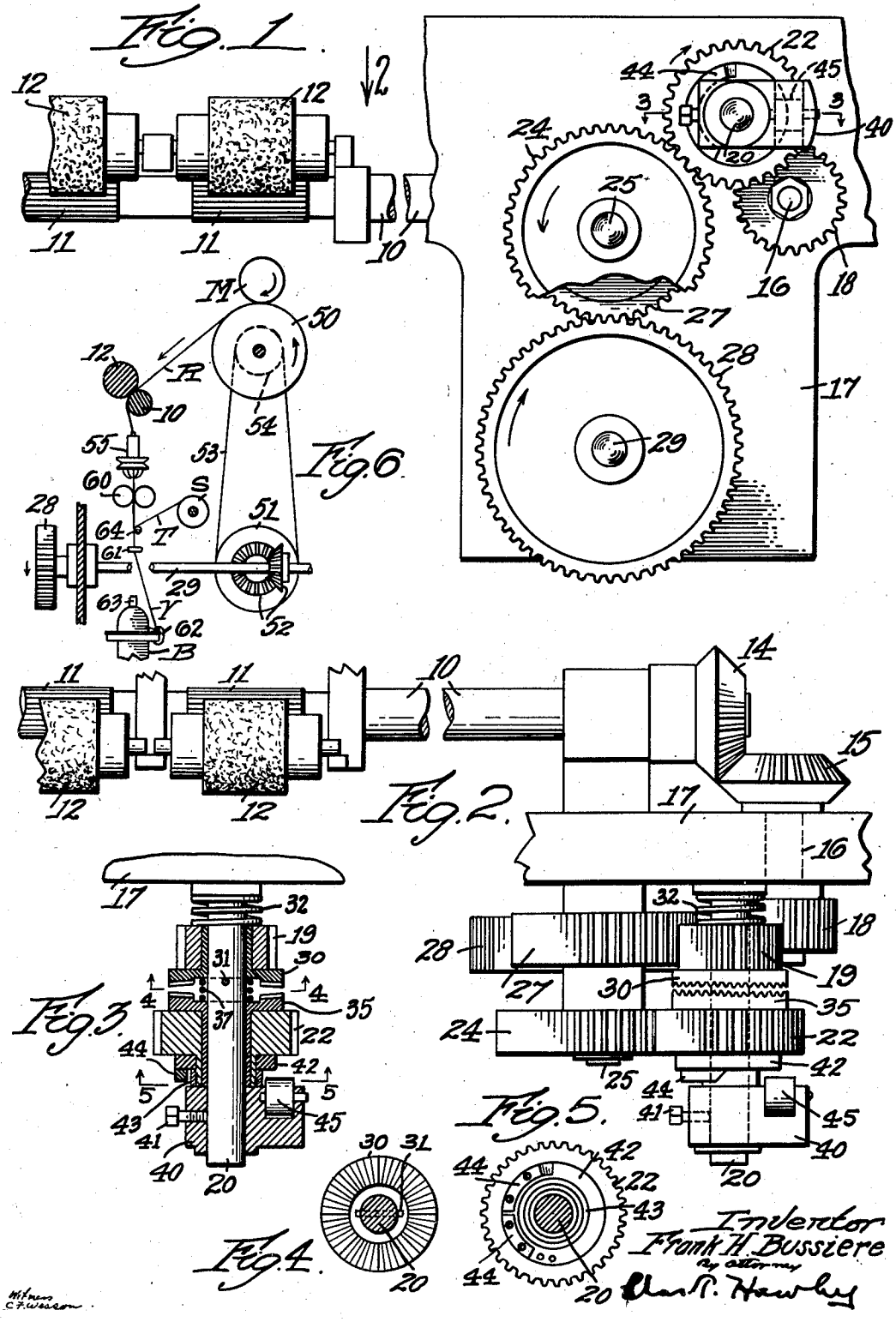
Feb. 13, 1940. F. H. BUSSIERE 2,189,938

MECHANISM FOR MAKING IRREGULAR YARN

Filed June 6, 1938



Patented Feb. 13, 1940 2,189,938

# UNITED STATES PATENT OFFICE

2,189,938

## MECHANISM FOR MAKING IRREGULAR YARN

Frank H. Bussiere, Millbury, Mass., assignor of one-half to Mayo Woolen Mills, Inc., Millbury, Mass., a corporation of Massachusetts

Application June 6, 1938, Serial No. 212,090

5 Claims. (Cl. 57—38)

This invention relates to the manufacture of irregular or bunch yarn in a drawing and spinning machine by use of an irregular or intermittent roving feed.

It is the general object of my invention to provide an improved and simplified mechanism for the purpose above defined by which very satisfactory results may be conveniently attained. I also provide means for combining a previously spun yarn with an irregular or bunch yarn.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawing, in which

Fig. 1 is a front elevation of my improved mechanism for intermittently advancing the roving feed rolls;

Fig. 2 is a plan view, looking in the direction of the arrow 2 in Fig. 1;

Fig. 3 is a partial sectional plan view, taken along the line 3—3 in Fig. 1;

Figs. 4 and 5 are detail sectional front elevations, taken along the lines 4—4 and 5—5 in Fig. 3; and

Fig. 6 is a diagrammatic side elevation, illustrating the operation of my invention.

I will first describe my improved intermittent feed mechanism and will then describe the operation thereof when in use.

Referring to Figs. 1 and 2, I have shown a roving feed roll 10 extending longitudinally of a drawing and spinning machine and having spaced fluted portions 11. A freely-rotating upper or pressor roll 12 is associated with each fluted portion 11 of the feed roll 10. The rolls 12 are commonly provided with a leather or cork surface.

The feed roll 10 is connected by bevel gears 14 and 15 to a short shaft 16 rotatably mounted in the frame 17 of the machine and provided with a gear 18 engaged by a pinion 19 freely rotatable and slidable on a fixed shaft 20.

A gear 22 is also freely rotatable and slidable on the shaft 20 and the gear 22 is continuously rotated by a gear 24, mounted to rotate on a fixed shaft 25. The gear 24 may be driven in any convenient manner. It is shown herein as provided with an associated gear 27 engaged by a larger gear 28 mounted on a shaft 29 which is driven from any suitable source of power.

The driving connections for the gear 22 are illustrative only and may be varied as the mechanism is embodied in different types of machines.

A toothed disc 30 is associated with the gear 19, and a pin 31 (Figs. 3 and 4) in the fixed shaft 20 limits outward sliding movement of the gear 19 and disc 30 under the influence of a coil spring 32. A second toothed disc 35 is associated with the gear 22 and faces the toothed disc 30 but is commonly held out of engagement therewith by a coil spring 37 mounted on the shaft 20 between the discs 30 and 35 as shown in Fig. 3. The spring 37 is of less strength than the spring 32.

Outward movement of the gear 22 and disc 35 is limited by engagement of the hub thereof with a collar or block 40, secured in fixed position on the end of the shaft 20 by a clamping screw 41.

An annular member 42 (Fig. 3) is mounted on the hub of the gear 22 and is retained in position by a locking nut 43. Cam plates 44 (Fig. 5) are mounted on the outer face of the member 42 in position for intermittent engagement with a cam roll 45, pivotally mounted in the fixed block 40.

Each time the gear 22 rotates, the cam plates 44 engage the roll 45. The gear 22 and toothed disc 35 are thereby forced rearward into engagement with the toothed disc 30, thus causing the gear 19 to be given a partial rotation, with corresponding intermittent forward movement of the feed roll 10.

The extent of such movement is determined by the cam plates 44, which may be of different lengths and may cover more or less of the periphery of the member 42. By changing cam plates, intermittent motions of any desired extent may be provided.

The axial movement of the gear 22 when the cam plate 44 engages the roll 45 is somewhat greater than the normal distance between the discs 30 and 35, thus insuring firm feeding contact of the discs, with the excess axial movement taken up in compressing the spring 32.

In Fig. 6 I have indicated the manner in which my intermittently actuated feed roll may be utilized to produce a satisfactory irregular or bunch yarn. In said figure, I have shown a roving R supplied to the feed roll 10 from a beam M supported in rolling contact with a drum 50. The drum 50 is preferably rotated continuously and at constant speed in any convenient manner, as by a sprocket 51 connected by bevel gears 52 to the constantly rotated shaft 29 previously described and connected by a chain 53 to a sprocket 54 on the drum 50. While the drum 50 is thus continuously rotated, the feed roll 10 is intermittently rotated as previously described.

The roving R, after passing through the usual twister head 55 and drawing rolls 60, is delivered through a thread guide 61 and traveler 62 to a bobbin B mounted on a spindle 63, all of these parts being of any usual construction.

An irregular single yarn Y of the desired draft and twist may thus be produced from a roving R and wound on a bobbin B as a single operation. Such a yarn is, however, somewhat deficient in strength at the bunches, and a stronger and more satisfactory yarn may be produced by feeding a previously spun thread T from a spool S over a guiderod 64 to the yarn Y as it leaves the drawing roll 60.

The thread T will be wound or twisted around the spun yarn Y as the yarn and thread are drawn downward to the traveler 62, and the thread will add substantial strength to the irregular single yarn produced direct from the roving R.

It is particularly desirable that provision be made for continuously rotating the beam M, as this beam is commonly of considerable weight and is not well adapted to duplicate the quick starts and stops of the feed roll 10.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. In a mechanism for making irregular yarn, in combination, a feed roll, a rotatable clutch member, driving connections between said clutch member and said feed roll, a second clutch member rotatable and slidable in alignment with said first clutch member, means to rotate said second clutch member continuously, a segmental cam mounted on said second clutch member, a fixed device mounted in position for engagement with said segmental cam and effective when thus engaged to move said second clutch member axially into driving engagement with said first clutch member, and means to normally and yieldingly separate said two clutch members.

2. In a mechanism for making irregular yarn, in combination, a feed roll, a fixed shaft, a clutch member rotatable on said shaft, driving connections between said clutch member and said feed roll, a second clutch member rotatable and slidable on said fixed shaft, means to rotate said second clutch member continuously, a segmental cam rotatable with said second clutch member, a device mounted on said fixed shaft in position for engagement with said segmental cam and effective when thus engaged to move said second clutch member axially into driving engagement with said first clutch member, and means to normally and yieldingly separate said two clutch members.

3. In a mechanism for making irregular yarn, in combination, a feed roll, a fixed shaft, a clutch member rotatable on said shaft, driving connections between said clutch member and said feed roll, a second clutch member rotatable and slidable on said fixed shaft, means to rotate said second clutch member continuously, a segmental cam associated with said second clutch member, a device mounted on said fixed shaft in position for engagement with said segmental cam and effective when thus engaged to move said second clutch member axially into driving engagement with said first clutch member, means to normally and yieldingly separate said two clutch members, and means to hold said first clutch member yieldingly in predetermined axial position for engagement by said second clutch member.

4. In a mechanism for making irregular yarn, drafting and spinning means, a roving beam, a feed roll, means to rotate said roving beam continuously to feed roving to said feed roll, and means to rotate said feed roll intermittently and with momentary starts and stops to feed roving in varying amounts to said drafting and spinning means.

5. In a mechanism for making irregular yarn, means to supply roving, means to feed said roving intermittently, means to draft and spin said roving to form irregular yarn, and means to supply a spun thread to said irregular yarn after the roving has passed entirely through the drafting means and during the spinning of yarn therefrom, said thread being wound about said irregular yarn as said yarn is being spun.

FRANK H. BUSSIERE.