June 6, 1939. N. A. BATCHELDER 2,161,664

FEED SUPPLY FOR DRAFTING FRAMES

Filed Nov. 13, 1937 3 Sheets-Sheet 1

Fig. 1.

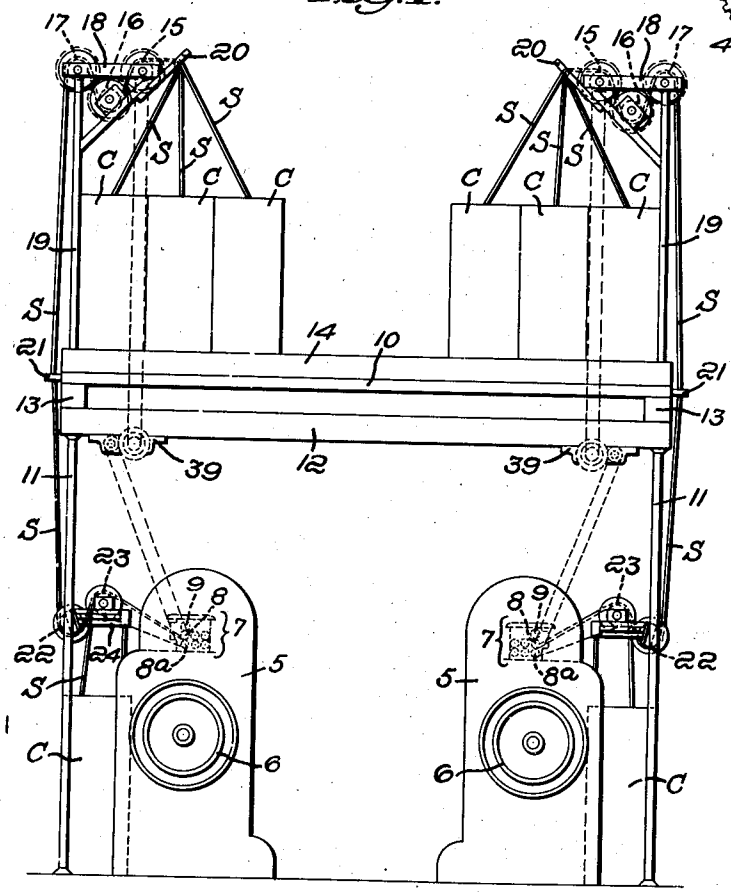
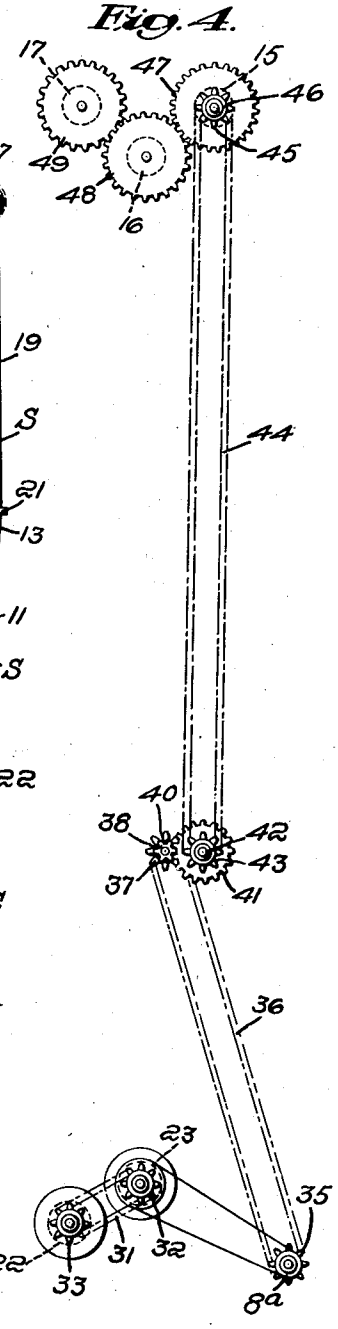


Fig. 4.



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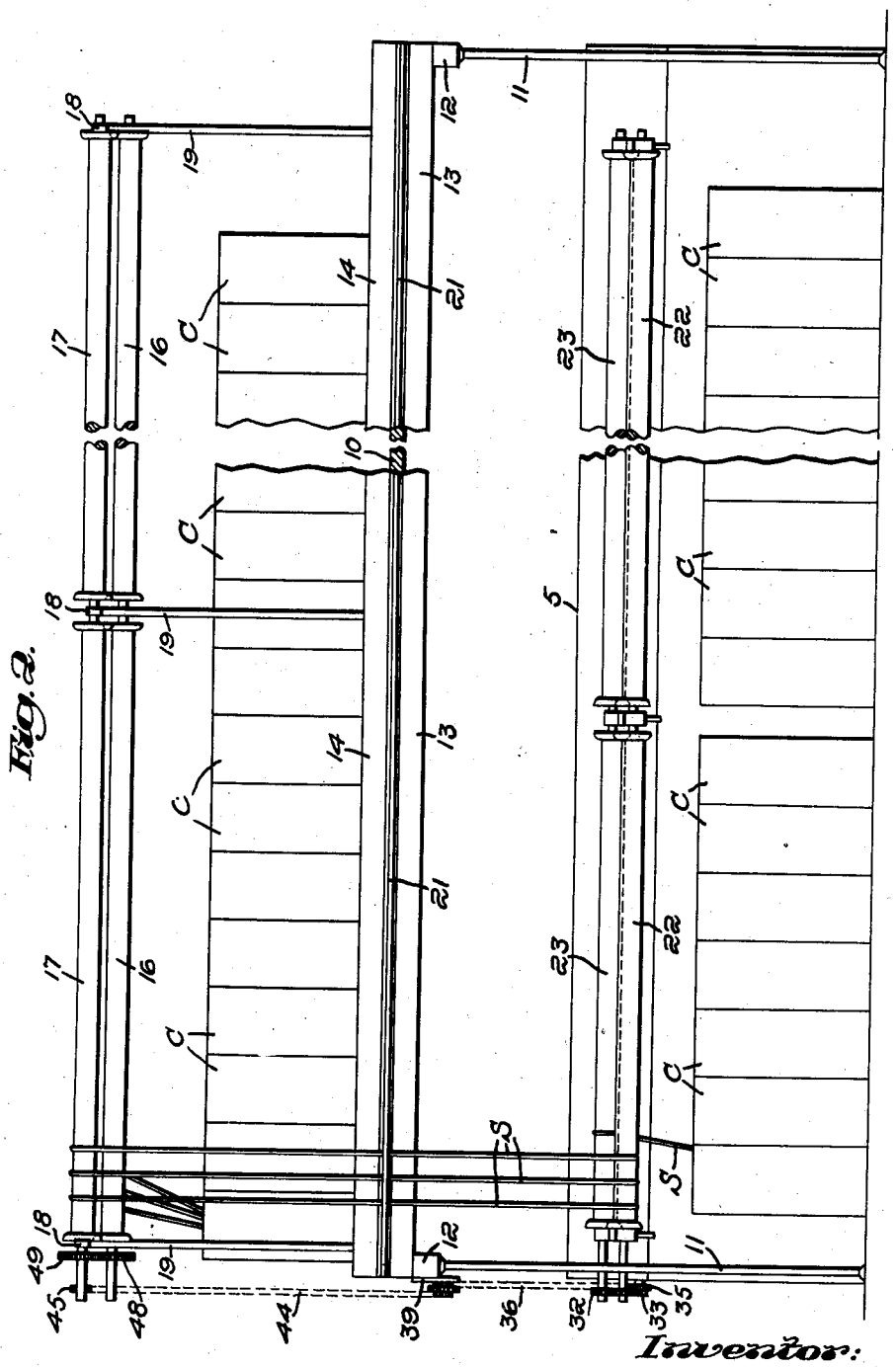


Fig. 2.

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Filed Nov. 13, 1937 3 Sheets-Sheet 3

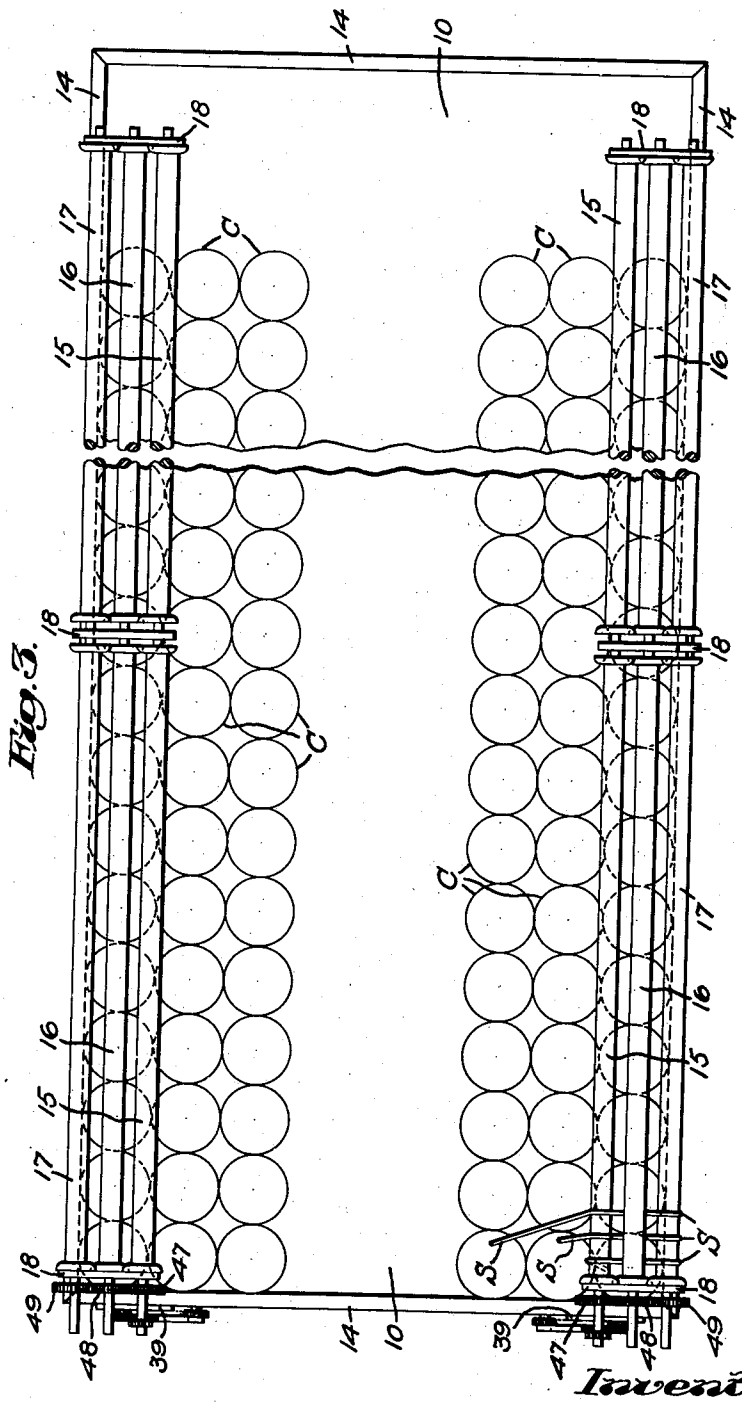


Fig. 3.

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UNITED STATES PATENT OFFICE

2,161,664

FEED SUPPLY FOR DRAFTING FRAMES

Nelson Allen Batchelder, West Barrington, R. I.

Application November 13, 1937, Serial No. 174,389

6 Claims. (Cl. 19—130)

My present invention relates to the drafting of cotton and other textile fibers, and more particularly aims to provide apparatus for that purpose with improved facilities for supplying and feeding the material to be drafted.

In the textile industry, efforts are continuously being made to speed up production in the weave room, as by the use of modern high-speed looms and weaving equipment, and through improvements in present weaving apparatus. For example, in a copending application I have disclosed methods and means whereby the production in substantially any present weave room may be increased up to approximately 25 per cent, economically and with a maintained or improved quality of the fabric. Such increased fabric production calls for a proportionately larger supply of yarn during a given period. This in turn requires additional drafting and spinning equipment, for which there may not be room in the given mill, or else forces the mill to obtain an additional yarn supply elsewhere.

One answer to this problem of increased yarn supply lies in improved methods and means for drafting and spinning, involving the use of multi-pointed or Rooney drafting rolls as disclosed in the Rooney Patents 1,933,222 and 2,023,032, and in the reorganization of previous drafting and spinning equipment including various novel combinations and arrangements of such Rooney rolls, whereby it is possible to employ roving comparable to that ordinarily obtained from a slubbing frame and to produce spun yarns directly from it in the one frame. In some instances it is possible to go even further and to draft and spin yarns directly from a sliver such as usually produced on a drawing frame. Such procedure dispenses with various frames generally used ahead of the spinning frame, such as intermediate, roving and fine frames, and, in the instances referred to, even the slubbing frames. The space previously utilized by these preliminary frames is accordingly made available for the installation of additional high-draft spinning frames.

To supply the requirements in connection with such increased facilities for spinning, an increased sliver supply is essential. My present invention accordingly contemplates feed and supply apparatus, particularly in connection with drawing and slubbing frames but useful for any frame operating on sliver material supplied in cans, such that a greater number of frames may be operated in a given mill and may be given an adequate supply of sliver consistently with existing mill space.

In the drawings illustrating by way of example one embodiment of the invention,

Fig. 1 is an end view of a duplex installation of slubbing frames having in combination therewith feed and supply means in accordance with one form of the invention;

Fig. 2 is a side elevation of the apparatus of Fig. 1;

Fig. 3 is a top plan of the same; and

Fig. 4 is an enlarged vertical sectional view of certain drive mechanism for the feed means.

Referring to the drawings in more detail, the duplex apparatus seen in end view in Fig. 1 comprises two frame units each indicated as a whole by the numeral **5**. The frames in this instance are of the slubber type, wherein sliver S coming from cans C is drafted through the frames and onto bobbins (not shown) upon which it is wound in the form of roving. It will be understood, however, as previously noted, that my invention is applicable to any frame performing a drafting operation and in which the material drafted is supplied from cans.

The frame units **5** are oppositely disposed, with their spindles facing each other, leaving an aisle for the operative between the two units. The units may be of either hand, as to drive, and as illustrated are righthand and lefthand respectively, as determined by the end on which the drive is located as seen by a person facing the spindles. The main drive elements or pulleys for the two frame units are herein indicated at **6**. Each unit has a set of drafting rolls **7**, including, in the illustrated example, upper and lower front, intermediate and back rolls. The upper back roll **8** in each unit is shown as of the multi-pointed or Rooney type previously referred to, inasmuch as the supply and feed means of my present invention is particularly useful in combination with frames so equipped, it being understood, however, that the invention is not limited in this respect. The lower back roll paired with the pointed roll **8**, and the lower back roll shaft are designated by the numeral **8***a*. The frames desirably also are provided with rotary clearer means **9** for said upper back rolls, as more fully disclosed and claimed in my copending application, Serial No. 161,060.

To accommodate an adequate number of cans C containing the sliver supply and operatively to position them with a minimum consumption of floor space, my invention contemplates an overhead station for some or all of the cans and preferably at least a major portion of them. Accordingly I provide at a level above the frame units

5 and overlying them a platform 10 extending across both said units and for their full length or substantially so. The platform is at a sufficient height above the frames to give ample head space, so that an operative may comfortably pass along between the frames in attending them. The platform is firmly supported in any convenient manner as by means of the uprights or posts 11 at the outer sides of the frames and distributed along the latter at suitable points adjacent the frames. The supporting structure of the platform may includes cross members such as girders, beams or the like as indicated at 12 and longitudinal beams or girders 13. As illustrated the platform has a low guard rail 14 about its edge, aiding in positioning the cans.

The cans C for the sliver supply for the respective units 5 are located at the opposite sides of the platform 10, arranged along the latter in one or more rows, three of which are indicated in the drawings. In this manner an aisle is provided lengthwise the platform, between the two groups of cans, for trucking fresh cans into position and removing empty ones. It will be understood in this connection that the platforms of adjacent duplex or other installations in the same room may be connected by bridges or extensions of the respective platforms and that access to the platforms, for the can trucks, is afforded by ramps or otherwise at convenient locations.

The individual slivers S from the groups of overhead cans are conducted to the sets of drafting rolls 7 of the corresponding frames 5 by rotary guide means operated in timed relation with the back rolls of said sets. For this purpose I have herein provided a plurality or upper set of rotary guide rolls, three of which are shown in this instance in association with the group of cans for each frame 5, said upper guide rolls being numbered 15, 16 and 17. They are rotatably mounted as on a bracket or framing 18 carried by uprights 19 extending upwardly from the platform 10.

The several slivers S at each side of the apparatus are taken upwardly from their respective cans, through suitable guide formations such as eyes or slots in a guide 20 on the bracket 18, from which they pass over the inner guide roll 15, down around the intermediate roll 16 and up over the outer guide roll 17. From the latter the slivers lead downwardly, at each side of the apparatus, herein through confining guides 21 on the platform structure, to the outer rolls 22 of lower sets, one for each frame unit 5, and which each include a second and final guide roll 23. These lower sets of guide rolls are rotatably supported as on brackets 24 on the main frames of the units 5 or on some other convenient fixed part. From the inner guide roll 23 of each lower set the slivers feed directly to the set of drafting rolls 7 of the corresponding frame unit.

Both the upper and the lower sets of sliver guiding rolls are driven in such timed relation with the back rolls 8, 8a of the drafting roll set 7 for the corresponding frame unit as to afford an even continuous advancing movement for the sliver. The drive connections for one side of the apparatus are shown separately, on a larger scale, in Fig. 4. As best seen in said figure the inner guide roll 23 of the lower set is operated by a belt 30 passing about pulleys on the shaft of said roll and on the lower back roll shaft 8a of the set of drafting rolls 7. The outer guide roll 22 in turn is driven from the inner one as by the chain 31 passing about sprockets 32 and 33 on the shafts of the inner and outer lower guide rolls 23 and 22 respectively. The described drive connections may be located at either or both ends of the roll frames, and at intermediate points if desired, as in connection with specially long frames.

For operating the upper set of guide rolls 15, 16, 17 said lower drafting roll shaft 8a is provided with a sprocket 35 receiving a chain 36. The latter extends upwardly about an intermediate sprocket 37 on a short shaft 38 journaled in a hanger 39 on the platform structure, as upon one of the cross members 12; Figs. 1 to 3. Said shaft 38 has fixed on it a pinion 40 meshing with a gear 41 on a second shaft 42 also journaled in the hanger 39. On said shaft 42 is a sprocket 43 engaging a chain 44 which extends upwardly around a sprocket 45 fixed on the shaft 46 of the inner guide roll 15 of the upper set. The three upper guide rolls 15, 16, 17 are drivingly interconnected for rotation in unison as by the train of gears 47, 48 and 49 on the shafts of the respective guide rolls.

One or more rows of cans C may be set on the floor behind the roll frame units 5, preferably close to and generally partly within the confines of the end frames of said units. In the example shown there is a single row of such cans C along the back or outer face of the roll frames. The slivers S from these floor cans are delivered to the drafting rolls by being passed upwardly over the inner guide rolls 23 of the lower sets. It will be noted that these lower cans C stand within the horizontal area of the apparatus as a whole and consequently do not add to the floor space required. As stated, in some instances more than a single row of cans may be stationed at the lower level. In any case, however, some of the cans and generally a majority of them, or all of them, are disposed in out-of-the-way position at the upper level as illustrated, thereby freeing the floor space otherwise required and making it available for additional roll frames or other purposes.

My invention is not limited to the particular embodiment thereof illustrated and described herein, and I set forth its scope in my following claims:

1. In apparatus for drafting fibrous textile material supplied in sliver form, in combination with a roll frame having a set of drafting rolls including a plurality of upper and lower rolls in paired relation, a platform overlying the frame at a level affording standing room for operatives beneath it and adapted to support one or more rows of sliver supply cans lengthwise the roll frame, a plurality of guide rolls rotatably mounted above the platform in position to take the individual slivers from cans on the platform and to direct them downwardly, other guide rolls adjacent the roll frame and adapted to receive and forward the slivers to the drafting rolls, and drive means for all said guide rolls for rotating them in timed relation with the back pair of drafting rolls.

2. Drafting apparatus for operating on textile material in sliver form, comprising, in combination, a roll frame, sliver drafting devices thereon including a plurality of pairs of cooperating upper and lower rolls disposed in tandem, at least one upper roll rearwardly of the front rolls having a sliver engaging formation comprising a multiplicity of radial points, drive means for the rolls an elevated deck at a level above said frame for supporting sliver supply cans, upper and lower rotary guide and feeding means intermediate the can position and the drafting

devices, including a plurality of upper guide rolls and a plurality of lower guide rolls for cooperation with each sliver and actuating mechanism associated with the roll drive means and coordinating the latter with the guide and feeding means.

3. Apparatus for drafting fibrous textile material supplied in sliver form, comprising, in combination, a plurality of roll frames in laterally spaced relation providing an aisle between them, each frame having a set of upper and lower drafting rolls in paired relation, a platform overlying said frames and aisle at a level affording standing room for operatives beneath it and adapted to support one or more longitudinal rows of sliver supply cans for each roll frame, and, for each frame, a plurality of guide rolls rotatably mounted above the platform in position to take the individual slivers from the cans for the corresponding frame and to direct them downwardly to the latter, other guide rolls adjacent the respective frames and adapted to receive and forward the slivers to the drafting rolls of the corresponding frame, and drive means for rotating the guide rolls for each frame in timed relation with the back pair of drafting rolls of that frame.

4. In combination, in a frame having a set of rolls for performing a drafting operation, an elevated deck for positioning a plurality of sliver cans, a plurality of upper guide rolls on parallel axes lengthwise the frame and at a level above the cans on said deck, guide means to direct the sliver from each can to and about said plurality of rolls, other guide rolls for the sliver from said cans at a lower level adjacent that of the drafting rolls, positive drive connections between a driven back roll of the drafting roll set and said lower guide rolls, and other positive drive connections between said back roll and the upper guide rolls.

5. In combination, in a frame having a set of rolls for performing a drafting operation, an elevated deck for positioning a plurality of sliver cans, a plurality of upper guide rolls on parallel axes lengthwise the frame and at a level above the cans on said deck, other guide rolls for the sliver from said cans at a lower level adjacent that of the drafting rolls, drive connections between a driven back roll of the drafting roll set and said lower guide rolls, and other drive connections between said back roll and the upper guide rolls, one or more of said lower guide rolls being arranged to conduct sliver from a can supply supported adjacent the base of the frame.

6. In combination, in a frame having a set of rolls for performing a drafting operation, an elevated deck for positioning a plurality of sliver cans, a plurality of upper guide rolls on parallel axes lengthwise the frame and at a level above the cans on said deck, toothed gearing interconnecting said guide rolls, other guide rolls for the sliver from said cans at a lower level adjacent that of the drafting rolls, and separate chain and sprocket means respectively for actuating the upper and the lower guide rolls in coordinated relation with a driven back roll of the drafting roll set, one or more of said lower guide rolls being arranged to conduct sliver from a can supply supported adjacent the base of the frame.

NELSON ALLEN BATCHELDER.