

Dec. 24, 1940.

W. F. KNEBUSCH ET AL

2,226,286

DRIP PAN

Filed May 3, 1938

2 Sheets-Sheet 1

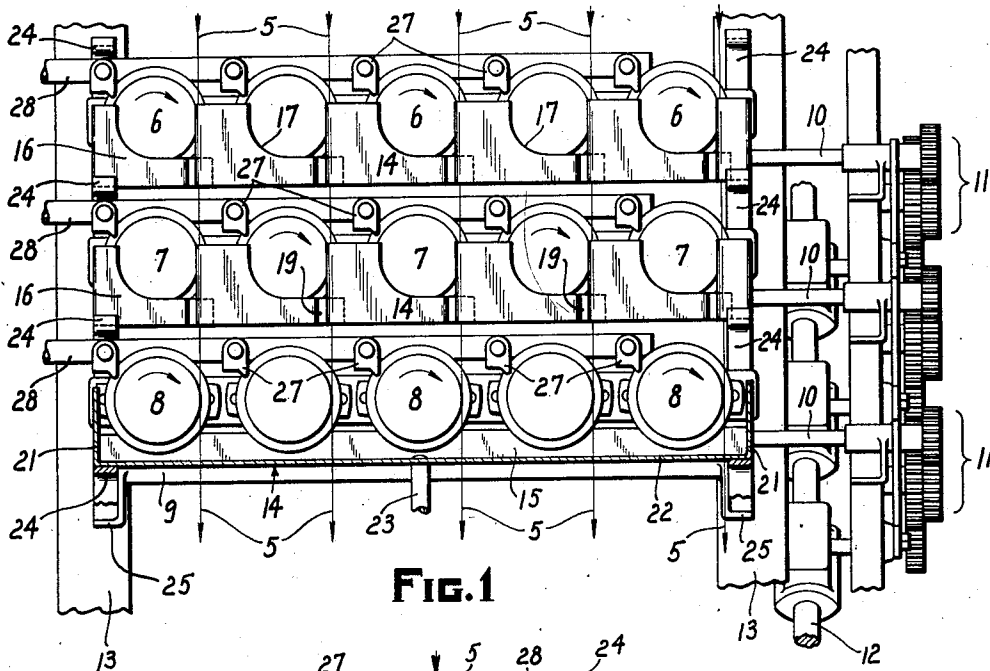


FIG. 1

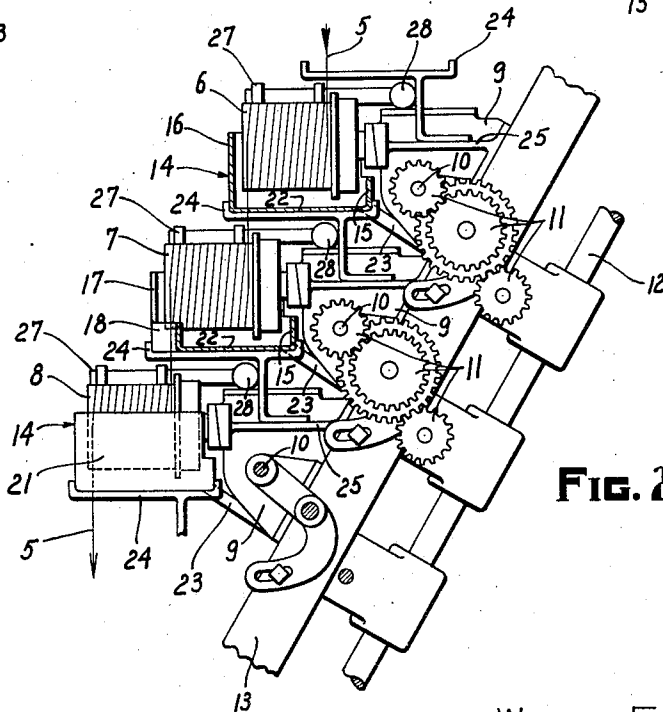


FIG. 2

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2 Sheets-Sheet 2

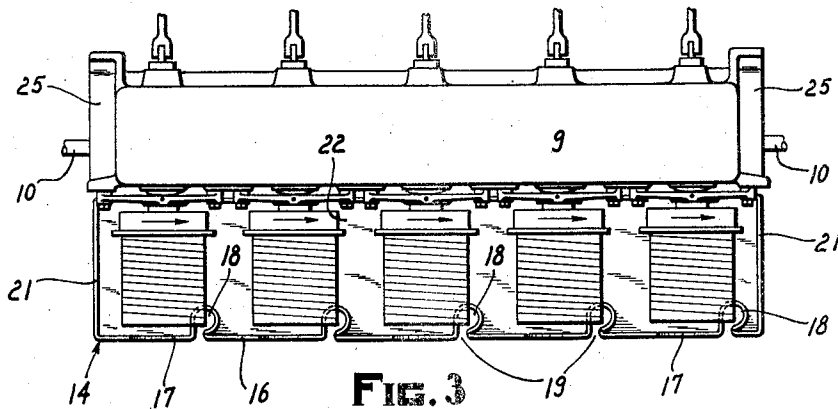


FIG. 3

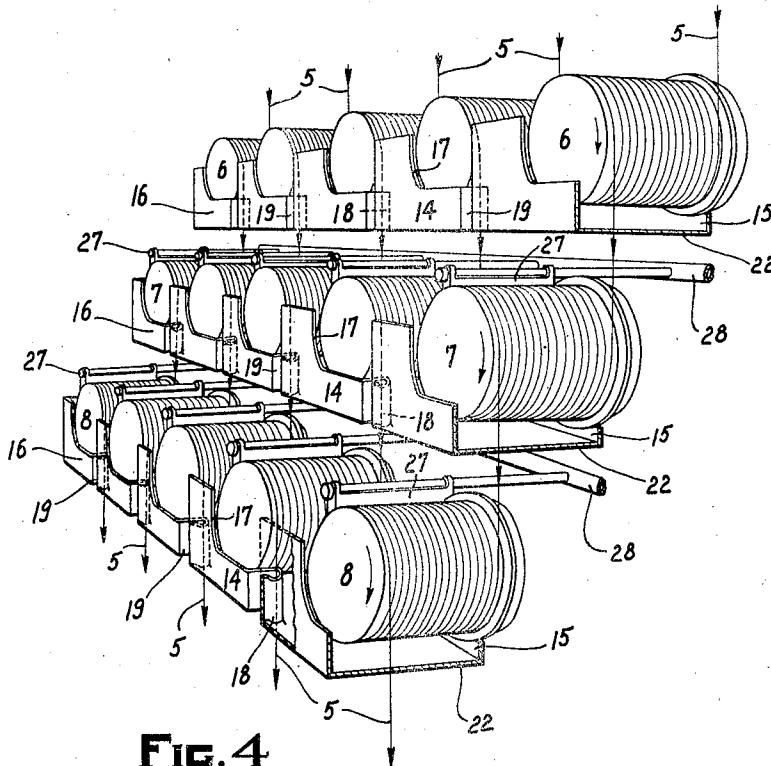


FIG. 4

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UNITED STATES PATENT OFFICE

2,226,286

DRIP PAN

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Application May 3, 1938, Serial No. 205,679

3 Claims. (Cl. 18—8)

The instant application, which is a division of application Serial No. 7,114, filed February 18, 1935, by Walter F. Knebusch and Alden H. Burkholder, pertains to apparatus for the processing of artificial silk thread.

The continuous processing of artificial silk thread produced according to any of the well-known methods; e. g., viscose, cellulose acetate, nitrocellulose and cuprammonium processes, necessitates subjecting the thread to a series of processing operations which are preferably performed upon said thread while it is continuously but temporarily stored upon suitable thread-advancing thread store devices. These operations involve exposing the thread to the action of a plurality of different processing liquids. To avoid contamination of the respective processing liquids, it is necessary to provide simple, effective means for collecting each processing liquid as it drains off the thread, this with a view to conducting it to the sewer or to a suitable storage reservoir for recirculation.

To this end was developed the collecting device disclosed but not claimed in the application referred to above, to which collecting device the instant application is particularly directed.

In apparatus for the manufacture of artificial silk thread according to the so-called continuous process, a plurality of parallel processing units are conveniently employed each of which consists of a descending series of thread-advancing thread store devices. The thread led from any suitable source, such as a coagulating bath, to one of said devices is continuously but temporarily stored thereon, being meanwhile subjected to the action of a suitable processing liquid. Any number of such treatments may be included in the series by providing a separate thread-advancing thread store device for each such step. A complete machine may have as many as eight or ten processing stages in each series cooperating to produce a single completely processed thread. If desired, as many as 100 of said thread processing units may be arranged parallel to each other in side-by-side relation.

In view of the large number of thread-advancing thread store devices used on each machine, it is apparent that a compact arrangement not only of the respective thread processing units but also of the thread-advancing thread store devices going to make up each thread processing unit is extremely desirable. In the preferred arrangement of the thread processing units above described, the same processing treatment may be applied to the threads on all corresponding thread-

advancing thread store devices in each horizontal tier running the length of the machine. Thus it is possible to provide collecting means which may be of any appropriate length and extend lengthwise of the machine, being disposed below and serving a plurality of thread-advancing thread store devices in the same horizontal series. Such an arrangement insures a compact, simple and effective means of collecting the respective processing liquids.

The thread-advancing thread store devices referred to may conveniently take the form of thread-advancing reels of the kind shown, described and claimed in application Serial No. 652,089, filed January 16, 1933, by Walter F. Knebusch, from which they differ principally in that they are of cantilever form.

For purposes of simplification, the embodiment of the invention herein described is of a kind adapted to employment in the manufacture of multiple filament artificial silk thread or the like according to the viscose process. It should, however, be understood that the invention is not limited thereto, but is equally applicable to the production and/or processing of artificial silk thread by any of the methods heretofore mentioned. As a matter of fact, the invention transcends the artificial silk thread industry in respect of usefulness, being capable of employment in the processing of thread and thread-like articles generally.

In the accompanying drawings, in which like reference characters refer to like parts throughout, Figure 1 is a fragmentary front elevation of a continuous processing apparatus for the manufacture of multiple filament viscose artificial silk thread showing three horizontal tiers of thread-advancing reels, together with associated apparatus including the collecting device of the present invention. Figure 2 is a corresponding fragmentary end elevation of the machine of Figure 1 with parts in section. Figure 3 is a plan of one tier of reels with parts omitted for the sake of clearness, the collecting device of the present invention being shown in place below the reels. Figure 4 is a perspective showing the relation between the horizontal series of reels and their respective collecting devices.

Referring first to Figures 1 and 2, thread 5 is led from any suitable source to the first of a plurality of thread-advancing reels 6, 7 and 8 disposed in stepped arrangement. By virtue of such stepped arrangement, each reel will accept at its supported end thread led thereto from above, advance it toward its unsupported end in the form

of a traveling helix, and discharge it at a point in apposite relation to the receiving end of the next succeeding reel, the thread being meanwhile subjected to any desired liquid processing treatment. This sequence of operations is repeated as necessary throughout the apparatus, the thread traveling from reel 6 to reel 7 to reel 8 and so on throughout the processing unit. In addition to simplifying the transfer of the thread from reel to reel, this arrangement facilitates the inspection and manipulation of the thread upon the reels.

The several reels in each thread processing unit are rotatably mounted in the elongated gear boxes 9. Each gear box 9 extends lengthwise of the machine and serves to support and drive by means of gearing housed therein a plurality of reels in each horizontal series. Shafts 10 extend through the several gear boxes longitudinally along each horizontal tier of the machine and are actuated by the gears 11 driven from the inclined drive shaft 12. Gear boxes 9 are carried upon the inclined frame members 13 to which they are secured.

Any number of parallel thread processing units may be disposed side by side along the working face of the machine, but it has been found convenient to group a limited number, say five, such series together in a section in order to simplify the construction of the apparatus. Therefore in the embodiment of the invention illustrated in the accompanying drawings each gear box 9 serves to support and drive the five reels in each section in the same tier. Disposed beneath the five reels in the same section is a collecting device taking the form of a drip pan 14. The construction of such drip pan appears most clearly from Figures 3 and 4.

Drip pan 14 may conveniently comprise an elongated, generally trough-like member the rear wall 15 of which is low as compared with the front wall 16. The front wall 16 immediately opposite the discharge ends of the reels is provided with cutout portions 17 which approximate a quadrant of a circle. These openings 17 in the front face provide access to the front ends of the reels to inspect or manipulate the thread stored thereon. In addition to the openings 17, the front wall is provided with re-entrant portions 18 located directly in line with the discharge points of the reels disposed thereabove, each of such re-entrant portions extending throughout the height of the wall 16, which, as shown, is lower at that point, to form a passage for the thread 5 in its travel to the succeeding reel in the next lower horizontal series.

As is apparent from Figures 3 and 4, this thread channel 18 is approximately cylindrical in shape, leaving only a comparatively narrow slot 19 in the front wall of the drip pan to permit entry of the thread.

The drip pan 14 may, if desired, be provided with division walls between the several reels, but in general this is not necessary. End walls 21 are provided on either end of the trough to retain the liquid and to aid in minimizing splashing. The bottom 22 of the collecting pan 14 may, if desired, be sloped slightly from either end toward the center and may likewise be sloped slightly from the front wall 16 toward the rear wall 15 in order to insure proper run-off of the liquid through the drain connection 23. Drain 23 may communicate by suitable piping either with the sewer for the disposal of the liquid or with suitable make-up reservoirs if the process-

ing liquor is of such nature as to make its re-use desirable.

Drip pan 14 may be supported at each end by brackets 24 which rest upon flanges 25 cast on either end of the housings of the gear boxes 9 of the preceding series of reels.

In the operation of the machine, the thread 5 is led from a suitable supply source in untreated or partially treated state to the first reel 6 of each processing unit. Thread 5 is caused to wind upon reel 6 at the supported end thereof and by reason of the construction of said reel is automatically advanced in a plurality of generally helical turns. During its advance lengthwise of the reel the thread 5 is subjected to the action of a processing liquid which may, for example, be a desulphurizing reagent applied by means of any suitable form of device such as distributor 27 which may be generally of the form described and claimed in Patent No. 2,054,087 for "Reagent distributor", issued September 15, 1936, to Walter F. Knebusch and Foster F. Hillix. The processing liquor applied on all of the reels in each horizontal series being the same, the distributors 27 may be advantageously suspended from and supplied by conduits 28 which extend lengthwise of the machine and serve a plurality of distributors disposed therealong.

Thread 5 as it is discharged from the free end of the reel 6 is threaded manually through the re-entrant portion 18 by passing it into the slot 19 in the front wall 16 of the drip pan 14 disposed below said reel. Thence it is directed to the thread-receiving end of the reel 7, on which it is wound and advanced to the free end thereof as before, meanwhile being subjected to another processing step such as washing by water supplied from suitable distributors 27 and associated conduits 28. Again the thread may be brought in like manner into contact with the succeeding reel 8 on which a bleaching treatment may be applied and so on, until all of the desired processing steps have been completed.

The drip pan illustrated in the accompanying drawings represents but one possible embodiment of the invention. It is apparent that it is susceptible of numerous changes which in no way affect the scope of the invention. Thus it may, for example, be fabricated of any desired material such that it may not be affected by the action of the various processing liquids. It may be made of metal and coated or painted with a corrosive-resistant substance or it may be molded of hard rubber, Bakelite or some kindred non-metallic composition.

It is intended that the patent shall cover, by suitable expression in the appended claims, whatever features of patentable novelty reside in the invention.

What is claimed is:

1. A drip pan comprising an elongated, generally trough-like member having two upwardly extending longitudinal walls one of which has formed therein a plurality of open-ended re-entrant portions each of which extends throughout the height of said wall.

2. A drip pan comprising an elongated, generally trough-like member having two upwardly extending longitudinal walls of which one is made up of alternate high and low portions, said wall having in each of said low portions an open-ended re-entrant portion extending throughout the height of said low portion.

3. Apparatus for the processing of thread or the like including a plurality of cantilever

5 thread-advancing thread store devices arranged in parallel, substantially horizontal relation and, disposed below said plurality of thread-advancing thread store devices, a common drip pan comprising an elongated member of generally trough-like formation having two upwardly extending longitudinal walls in one of which are formed

open-ended re-entrant portions corresponding in thread store devices disposed above said drip pan, each of said re-entrant portions extending throughout the height of said wall.

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ALDEN H. BURKHOLDER.

CERTIFICATE OF CORRECTION.

Patent No. 2,226,286.

December 24, 1940.

WALTER F. KNEBUSCH, ET AL.

It is hereby certified that error appears in the above numbered patent requiring correction as follows: In the heading to the printed specification, line 7, for "Application May 3, 1938, Serial No. 205,679" read --Original application February 18, 1935, Serial No. 7,114. Divided and this application May 3, 1938, Serial No. 205,679--; page 3, second column, line 1, claim 3, after the word "in" insert --number to the number of thread-advancing--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 11th day of February, A. D. 1941.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.