

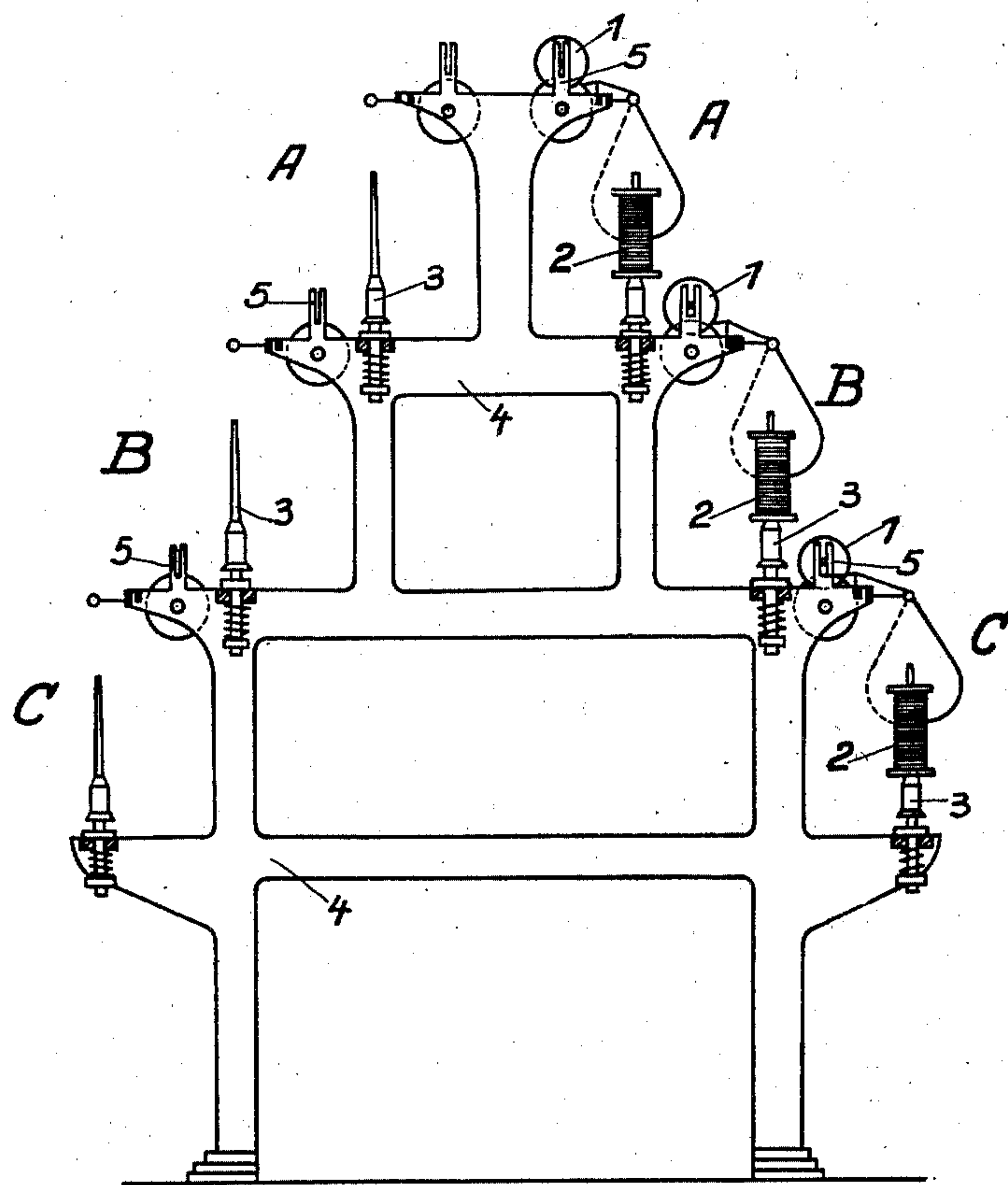
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MACHINE FOR SPINNING AND WINDING FILAMENTS

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## UNITED STATES PATENT OFFICE.

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## MACHINE FOR SPINNING AND WINDING FILAMENTS.

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My invention relates to machines used for spinning and winding filaments on spools and more particularly to a machine having a plurality of rows of spindles arranged in tiers stepwise that is one row above and behind the next preceding lower row.

In machines of this kind as hitherto constructed feeding spools or rollers are provided from which the filaments are delivered and guided to the spinning and winding spindles such as ring spindles and which are located on the top of the machine.

In contradistinction thereto in a machine constructed according to my invention, the spinning spindles are arranged to serve at the same time as delivery spindles and the winding-up spools co-operating with the spinning spindles of the corresponding individual row are located in front of the spinning spindles of the next upper row of spindles or the like.

A machine constructed as above indicated involves the advantage that the filament is caused to pass from the spinning spindle through a single guide only and on the shortest way to the winding-up spool, whereas in the known machines the filaments are caused to pass from feeding spools over and about delivery rollers, through or over a thread guide of the uppermost row of spindles, over and about a diverting roller and through or over another thread guide ere they are permitted to run, between the spindles of the upper row, down to the spindles of the next lower row.

In machines of the old art, therefore, the breakage of a thread of the lower row entails the danger of the depending end of the broken thread being engaged by and spun into the bellied portion of the thread of an upper spindle or, vice versa the depending end of a broken thread of an upper spindle being engaged by and spun into the thread of a lower spindle. Further in the old machines the threads are subjected to excessive wear due to the several guiding provisions and, furthermore, the machine in itself and the operations thereof are not easy to survey and the single operating parts thereof are not readily accessible.

The chief object of my invention is to remedy all of the stated defects and with this object in view I construct the machine and arrange the operating parts thereof in a manner that all and any feeding spools

are located immediately over and above the spinning spindles co-operating therewith, while the occurrence of filaments running in parallelism towards or to the individual spindles of the several rows is thoroughly avoided and a single guide only is required and provided for each filament, as will be explained more in detail hereinafter.

The inventive idea involved is capable of expression in a variety of mechanical forms one of which for the purpose of exemplification is shown in the accompanying drawings, but it is to be understood that said drawings are for the purpose of illustration only, and not for the purpose of defining the limits of my invention, reference being had to the claims for this purpose.

In the drawing forming a part of this specification a machine of the double type having on either side three parallel stepped tiers of spindles is diagrammatically shown in cross-section, the three tiers or rows on either side being designated at A, B and C. The reference figure 1 indicates the winding spools and 2 indicates the spinning spools, duly supported by suitable holders 5 of usual construction. The spools are shown on the right-hand side of the machine only, but it goes without saying that in a properly working machine all of the spindles 3 are equipped with spools 2. The spinning mechanism is of usual construction and arrangement and it is deemed unnecessary to describe the details thereof in order to not burden this specification with explanations of constructional parts universally known.

The three rows A, B and C of spindles on either side of the stepped frame 4 of the machine are located on or arranged in steps, the upper row being situated behind the lower row or rows and in different vertical and horizontal planes, that is, the several rows are superposed, but out of vertical alinement. The stepped arrangement is in itself known but in my improved machine the spindles of each row are spaced from those of the next following row, both in horizontal and in vertical relation, sufficiently or so far as to afford room and accommodation for the winding spools 1. Thus over and above or in front of each individual spindle 3 of any upper row the winding spool 1 of the corresponding spindle of the next lower row of spindles is located, so that the filament delivered



from any spindle 3 will be caused to pass immediately and on the shortest way to the co-operating winding spool.

It will be seen, that a machine constructed in accordance with my invention ensures not only the advantage inherent to the stepped arrangement of the rows of spindles, but also the further and more important advantages of providing a shortest possible, visible and accessible path for the filaments to run from the spinning spools to the co-operating winding spools, avoiding excessive wear, facilitating inspection and preventing broken filaments from being entangled with filaments of any other spools.

As hereinbefore stated I do not desire to be limited to the exact details of construction and arrangement shown and described. In particular I wish to have it understood that the three-tiers double machine shown is a preferred embodiment only and that my invention may be embodied just as well in or by a two-tiers machine or by a machine having more than three tiers or rows of spindles on either side or even by a machine having stepped tiers of spindles on one side merely, and I aim in the appended claims to embrace all modifications falling fairly within the scope of my invention.

What I claim is:—

1. A machine for spinning and winding

filaments, comprising stepped rows of spinning spindles and corresponding rows of winding spools located in front of the said spindles and arranged for co-operation with the corresponding spindles of the next lower row of spindles.

2. A machine for spinning and winding filaments, comprising a stepped frame, spinning spindles arranged in rows on each step, and winding spools located on said steps of the frame in front of said spindles for co-operation with the corresponding spindle of the next lower row of spindles.

3. A machine as claimed in claim 1, wherein a plurality of rows of spinning spindles are located behind each other in different vertical and horizontal planes and the holders supporting the winding spools are mounted partially in front of the said spindles with exception of the lowermost row of spindles, and partially over and above the uppermost row of spindles in a vertical plane in the rear of that of the last stated row of spindles, so that each individual spindle co-operates with a spool of the next upper row of spools.

In testimony whereof I have signed my name to this specification this 8th day of June, 1927.

KARL MEYER-GAUS.