July 23, 1963 E. MEINICKE 3,098,264

MULTIPLE SWIFT TEXTILE WASTE TEARING MACHINE

Filed June 23, 1961

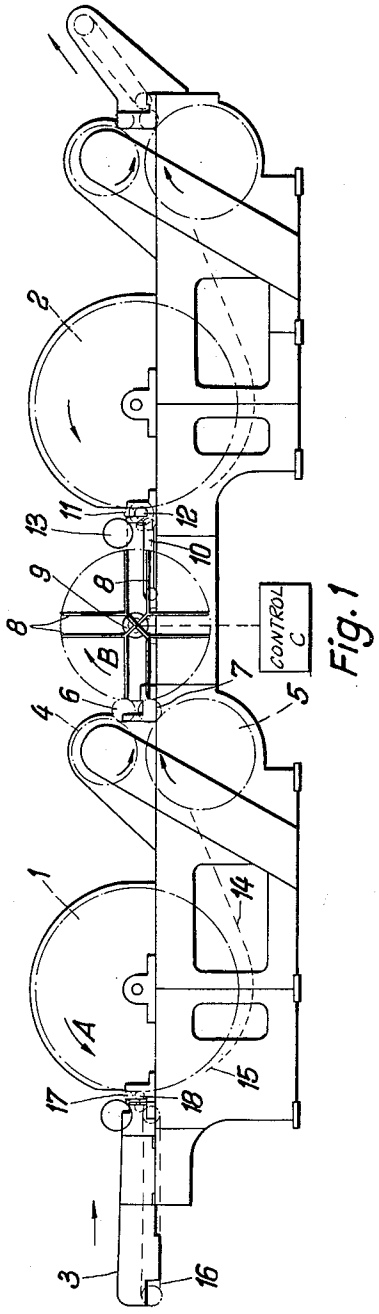


Fig. 1

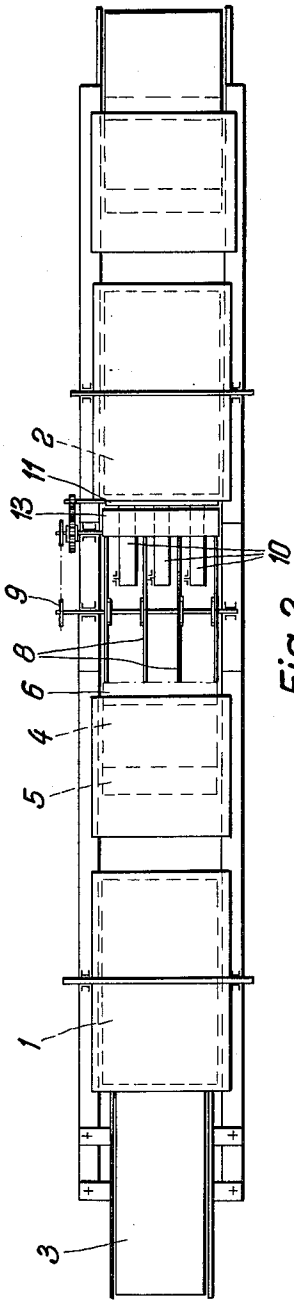


Fig. 2

United States Patent Office

3,098,264
Patented July 23, 1963

3,098,264

MULTIPLE SWIFT TEXTILE WASTE TEARING MACHINE

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Filed June 23, 1961, Ser. No. 120,467
Claims priority, application Germany June 25, 1960
4 Claims. (Cl. 19—82)

This invention relates to multiple-swift textile waste tearing machines.

For reducing textile wastes to fibrous form, machines are generally used in which the waste is submitted sequentially to the tearing action of several swifts. A channel or trunk which is usually completely or at least substantially closed carries the waste from swift to swift. The reduction to fibre of the textile waste in the waste treating machine generates considerable frictional heat and in machines comprising several consecutive swifts the temperatures may become sufficiently high to evaporate the deliquescent with which the waste has been previously treated to make it soft and more pliable. Consequently the fibres tend to dry out and to break or tear in the course of the treatment, the final product then having an undesirably high short-fibre content. Another troublesome consequence of the use of several consecutive swifts is that the cross section of the treated fibre web is not uniform, because pieces which have not been reduced collect on the underside of the web.

It is an object of the present invention to overcome these defects.

The multiple swift textile waste tearing machine according to the invention comprises means for turning the web delivered by one of the swifts before it is fed to the following swift. In a preferred form of construction this turn-over means may consist of a plurality of flat cages radiating from a rotatable central shaft, said cages being indexed by said shaft in intermittent steps in such manner that the web which enters consecutive cages is indexed through more than one step before being presented, upside down, to the following swift.

In order that the invention may be more readily understood reference will now be made to the accompanying drawings in which

FIG. 1 is a side elevational view of a two-swift textile-waste treating machine constructed according to one embodiment of the present invention, and

FIG. 2 is a plan view of the machine.

The illustrated machine comprises a first swift **1** and a second swift **2**. Preceding the first swift **1** is a feed table **3** and, following the first swift **1**, there is provided a pair of dust cages, an upper cage **4** and a lower cage **5**. Immediately following the pair of dust cages **4** and **5** is a pair of feed rollers **6** and **7** which deliver the web to a turn-over device comprising a plurality of pairs of fork members **8** secured to a central shaft **9** in the form of a cross.

Slightly below the level of shaft **9**, on the side of the turn-over device facing the second swift **2**, a short conveyor belt **10** is located between each pair of neighboring prongs **8** of the fork members, said conveyor belts delivering the web to a pair of feed rollers **11** and **12**. A pressure roller **13** is located above the conveyor belts **10**.

The shaft **9** may be rotated or indexed by control C which may be any conventional control operating according to a fixed time schedule and/or synchronized with the rest of the apparatus.

This mechanism functions as follows:

The textile waste which is to be reduced to fibrous form is presented from the feed table **3** (preferably by a pair of feed rollers) to the action of the first swift **1** which revolves in the direction of arrow A, and which with its teeth tears fibres out of the waste material presented to it, delivering such fibres into a channel **14**, whereas coarser pieces ride over the outside edge of a deflector **15** and are thus separated from the fibrous web. This web travels up channel **14** between the two dust cages **4** and **5** which extract dust by suction. The two feed rollers **6** and **7** now deliver the web between the prongs **8** of a pair of forks of the turn-over device. When the cage formed by the forks is substantially full, the turn-over device is indexed by shaft **9** through an angle of 90° in the direction of arrow B, thus permitting the following web to enter the cage formed by the next pair of forks. When the next cage has likewise been filled, shaft **9** again indexes through an angle of 90°, thus presenting the web contained in the first mentioned cage to the following swift **2**. The conveyor belts **10** take the web to the feed rollers **11** and **12**, and roller **13** prevents the web from expanding upwardly more than is desired. The feed rollers present the web to the action of swift **2**.

It will therefore be understood that the turn-over device **8**, **9** has the effect of turning the web upside down before delivering it to the second swift **2**. Consequently the action of swift **2** first treats the side which was previously the underside of the web, submitting the same to a more thorough pulling than the original top of the web which is now underneath and which had already been intensely worked by the first swift. The textile waste is therefore more uniformly reduced in such a machine which also treats the reduced fibre more gently than machines hitherto known to the art. The greater efficiency of its action permits the number of swifts to be lowered. Textile waste which formerly had to be passed through 6 swifts in succession can now be reduced by the operation of 4 to 5 swifts. This saves time and money, besides subjecting the fibre to less rigorous treatment.

Another advantage which results from the provision of the turn-over device is that between swift **1** and swift **2** the web is delayed for a sufficient period of time to permit it to cool. The incorporation of the turn-over device therefore eliminates the risk of evaporation of the deliquescent and of the fibres drying out. In order to provide a substantial cooling effect, the cages of the turn-over device which receive the web are formed by forks with only a few prongs, exposing the web to the surrounding air for the rapid dissipation of heat.

What I claim is:

1. A rag or textile-waste tearing machine comprising first and second sequentially disposed means for receiving and tearing fibres from said waste, web-forming means between said first and second means to receive the fibres from said first means and to form the fibres into a web, and inverting means between said web forming means and second means for receiving and inverting the web and delivering the inverted web to said second means for processing by the latter.

2. A machine as claimed in claim 1 wherein said in-

verting means comprises at least one pair of spaced and parallel members adapted for receiving the web and means to pivot said members about an axis to invert the web.

3. A machine as claimed in claim 1 wherein said inverting means comprises a shaft, pairs of parallel members spaced about said shaft and each adapted to be moved to a web receiving position to receive a portion of said web, and means to rotate said shaft to invert the associated web portion and advance the same towards said second means.

4. A machine as claimed in claim 3, wherein each member includes parts spaced axially relative to said shaft, comprising a conveyor belt between said shaft and second means and adapted for being bracketed by said parts to remove the associated web portion therefrom and transfer the said portion to said second means.

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