Nov 2, 1937. J. H. WILLIAMS 2,097,960

CHAIN FOR TENTER MACHINES

Filed July 31, 1935

Fig. 1.

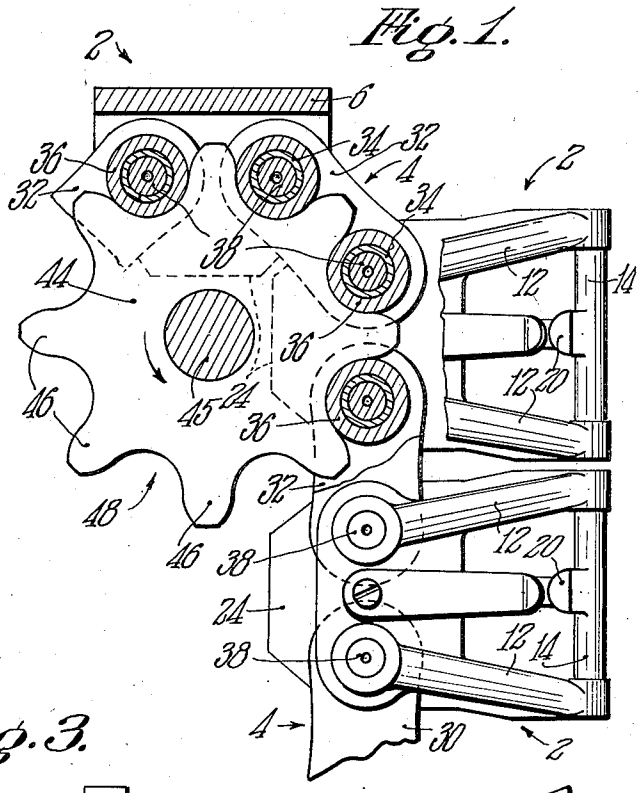


Fig. 4.

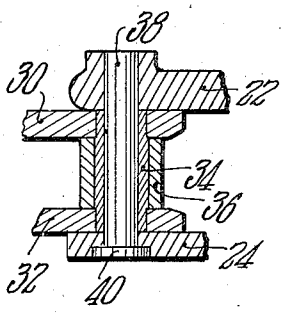


Fig. 3.

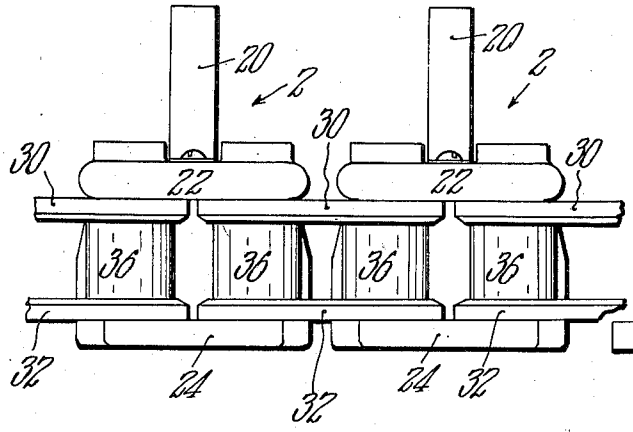
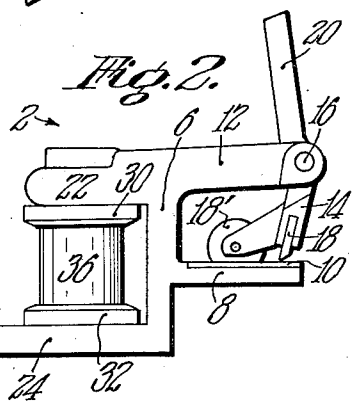


Fig. 2.



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CHAIN FOR TENTER MACHINES

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Application July 31, 1935, Serial No. 33,991

1 Claim. (Cl. 26—62)

This invention relates to improvements in tenter machines and is directed more particularly to improvements in chains for tenter machines.

The principal objects of the invention are directed to the provision of a tenter chain and sprocket therefor wherein adjacent tenter clips are pivotally or hingedly connected together by roller links arranged and constructed in such a way that the teeth of the sprocket enter between adjacent rolls which seat in the spaces between said teeth. This insures smoothness and quietness of operation contributing to the efficiency in operation.

As is well known a tenter machine includes endless chains made up of pivoted together tenter clips. Each chain is operatively associated with spaced sprockets at opposite ends of the machine. The inner runs of the chains are spaced apart so that a web of material may be engaged by the clips on the inner runs of the chains and carried thereby through the machine.

According to this invention the tenter chain comprises alternate clips and links which are pivoted together and constructed in a novel manner to make it possible to obtain not only quiet operation but extreme smoothness in operation which is very desirable and necessary with certain types of material and operations carried on by the use of a tenter machine. In a tenter machine it is desirable that the chains operate so that the inner runs carrying the fabric travel a straight path without jumping and vibrating such as is caused by the chain when it engages the sprockets. According to this invention the chain engages the sprocket without jumping or vibration to bring about the desired smoothness in operation.

By the means of the novel construction to be hereinafter described it is possible to employ relatively small sprockets so that not only may the sprockets be located close to one another to thereby shorten the machine, but the runs of the chain may be close together obviating the necessity of the extreme wide rails now commonly employed for supporting the runs of the chains.

Various novel features and advantages of the invention will be more fully hereinafter referred to in connection with the accompanying description of the preferred form of the invention, reference being had to the drawing wherein:

Fig. 1 is a partial plan view of a tenter chain and a sprocket in engagement therewith with parts broken away for clearness;

Fig. 2 is an end elevational view of the chain and tenter clip construction shown in Fig. 1;

Fig. 3 is a rear side elevational view of a portion of the tenter chain shown in Fig. 1; and

Fig. 4 is a sectional elevational view through a pivotal connection of a link and clip to show certain features of construction.

Referring now to the drawing more in detail the invention will be fully described.

The tenter chain of the invention consists of a plurality of alternate tenter clips 2 and link assemblies 4 pivoted or hinged together to form an endless chain. The clips 2 of the chains are preferably alike and the detail construction of one only need be described.

The clip has a body 6 provided with a horizontally disposed web supporting portion 8 carrying a plate 10. Spaced arms 12 extend forwardly over the plate 10. A gate 14 extends between the arms and is pivoted thereto as on a pivot member 16. A clamp plate 18 carried by the gate is arranged to bear on the selvedge of a web of fabric disposed on the plate 10 to grip the same. A controller 18′ is associated with the gate and may be engaged by the selvedge edge of the material to facilitate operation of the gate.

A lever arm 20 extends upwardly from the gate 14. This is operable by suitable cam means to move the gate to its open position relative to the plate 10, the said means being located to operate the gate as the clip arrives at a certain position as the chain is in operation.

Upper and lower flanges 22 and 24 are associated with the body in spaced apart relation to receive therebetween the links 4. Each link 4 has upper and lower pin link plates 30 and 32 and pin bushings such as 34 are preferably secured at opposite ends. The bushings 34 space the plates apart the desired distance and co-operate with the plates to form a rigid strong structure.

Rollers 36 are freely rotatable on the bushings 34. Pins 38 having lower flanges 40 extend through suitable openings in the flanges 22 and 24 of the tenter clips and on these pivots the bushings 34 of the links are journalled. The openings in the flanges 22 and 24 are disposed at either end thereof which receive the pins 38 on which the links 4 are journalled so that adjacent ends of adjacent clips 2 are pivotally connected by link assemblies such as 4.

The center to center distance between the pins 38 in the clips 2 are equal to the distance between the centers of the bushings of the links so that the rollers throughout a chain are spaced an equal distance apart.

A sprocket such as 44 which may be fixed to a shaft 45 has a plurality of teeth 46 between which

are tooth spaces or sockets such as 48. To insure the quiet, uniform and efficient operation, the teeth and sockets are machined accurately and uniformly and likewise the rollers 36 are formed to have uniform diameters and the spacing of the pins is very accurate. The teeth 46 of the sprocket enter between each pair of adjacent rollers and the rollers 36 enter the sockets 48 between the teeth 46.

There are two sprockets for each chain which are spaced apart and disposed at opposite ends of the tenter machine. One or both sprockets for each chain may be operated to drive the chain. In operation as the chain travels around the sprockets the teeth 46 enter between the rollers 36; that is, all the spaces between all the rollers, and all the rollers seat in the spaces between the teeth.

As before stated, the teeth and sockets as well as the rollers are accurately formed and spaced whereby the chain is engaged smoothly with the sprocket and snugly embraces the same, thus obviating jumping and vibrations which usually is the result of improperly spaced and non-uniformly machined parts.

It will be noted that the sprocket teeth and sockets do not engage with the parts of the clips but instead they do engage the links, all to the end that it is possible not only to bring about a quietness and smoothness of operation not heretofore obtainable, but the sprockets may be of small size so as to reduce the size of the machine.

While I have described the invention in great detail and with respect to a preferred form thereof, it is not desired to be limited thereto since many changes and modifications may be made therein without departing from the spirit and scope of the invention.

What it is desired to claim and secure by Letters Patent of the United States is:

The combination in a tenter apparatus of, a rotatable driving sprocket and a tenter chain adapted to pass therearound and be engaged thereby, the said chain including: a plurality of tenter clips each of which has a body provided with upper and lower horizontally-disposed spaced flanges connected together, a pair of spaced pins extending between the flanges of each clip adjacent opposite ends thereof, spaced connecting plates disposed adjacent the said spaced flanges extending between and connecting the pins at the adjacent ends of adjacent clips, bushings on each of said pins disposed between the said spaced plates, the center to center distance between the pair of pins of each clip being substantially equal to the center to center distance between the said pins at the adjacent ends of adjacent clips, the said sprocket having alternate teeth and sockets and the said teeth being so spaced that as the said chain passes around the sprocket the said teeth enter successively and one at a time the successive spaces between adjacent bushings and the said bushings are received successively and one at a time by the said sockets in the sprocket.

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