CARRIER-SUPPORT FOR CAN-MACHINES.

To all whom it may concern:

Be it known that I, CHARLES W. GRAHAM, residing in Rome, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Carrier-Supports for Can-Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

One of the objects thereof is to provide means of supporting a member in such manner as to permit the passage of an article between said member and said supporting means.

Another object is to provide means of the above type in which power is economized and friction substantially eliminated.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the mechanism hereinafter set forth and the scope of the application of which will be indicated in the claims at the end of this description.

In the accompanying drawings, wherein is shown one of various possible embodiments of my invention, Figure 1 is a side elevation of the same. Fig. 2 is a plan of the same. Fig. 3 is an end elevation of the parts shown in Fig. 1. Fig. 4 is a diagrammatic view of certain parts shown in Fig. 1, the same appearing in a slightly different position. Fig. 5 is a similar view showing the parts at a later stage. Fig. 6 is an end view of a cam. Fig. 7 is a side elevation of the same. Fig. 8 is a detail perspective of a slide used in the above embodiment.

Similar reference characters refer to similar parts throughout the several views.

In order to render clearer the general nature of my invention, it may here be noted that it is in some cases desirable firmly to support the end of a member and yet provide a free passage between this member and the supporting means. This is particularly true in case the article to pass between these parts entirely surrounds the former, as in the case of can-bodies upon a carrier in certain forms of can-making machinery. It is also highly desirable to provide means of this type which shall permit a ready passage of the can-body or other article in such manner as not to injure the surface thereof.

The above and other advantageous features are attained in constructions of the nature of that hereinafter described.

Referring now to Fig. 1 of the drawings, there is shown at 1 a supporting member or carrier, along which a succession of can-bodies are adapted to travel. Positioned adjacent carrier 1 and preferably below the same is a driving-shaft 2, having fixed thereon a spiral gear 3, coacting with a similar gear 4 upon the vertical shaft 5. At the upper end of shaft 5 are sprocket-wheels 6 and 7, upon the former of which is mounted a sprocket-chain 8, having outwardly-projecting arms 9 affixed thereto or formed thereon. These arms are adapted to engage the rear edge of the can-bodies and force the same in the direction indicated by the arrow in Fig. 2. Carrier 1 being formed so as to permit the arms to extend beyond the edge of the can. Sprocket 7, which is of the greater size, being preferably twice the diameter of sprocket 6, supports a sprocket-chain 10 in a position adjacent the end portion of the carrier. Chain 10 bears outwardly-projecting arms 11 similar in character and function to arms 9, above described, but different in that their rate of travel is considerably greater, due to the larger size of sprocket 7.

Driving-shaft 2 has fixed thereon cams 12 and 13, each being provided with a cam-groove 14 of substantially the form shown in Fig. 6 of the drawings. Respectively held in engagement with cams 12 and 13, as by means of collars 15, are slides 16 and 17, each provided with a slot 18, through which shaft 2 passes, and a pin or roller 19, adapted to fit into the cam-groove of the coacting cam. Secured to the upper ends of slides 16 and 17 are rods 20 and 21, respectively terminating at their upper ends in supports or cradles 22 and 23, adapted to engage and support the free end of carrier 1. It may here be noted that by the term "engagement" as used throughout the following claims is meant such relative position of the support and supported member that the support is in
operative position and bearing a considerable portion of the weight of the supported member.

The operation of the above-described embodiment of my invention is as follows: Assuming a succession of can-bodies to be propelled along the carrier, as shown in Fig. 1 of the drawings, it will be seen that upon these bodies reaching a point substantially opposite the shaft 5 the speed thereof will be materially increased, and in the case of the embodiment shown it will be doubled. The cans 12 and 13 are fixed upon shaft 2 at an angular displacement of substantially one half of ninety degrees with reference to another, and the grooves 14 are so formed as to hold each of the slides 16 and 17 in their uppermost position during at least one-half of a revolution of shaft 2. As shown in Fig. 1, the can 24 is about to be thrown from the end of the carrier, whereas the rear edge of can 25 has just passed the shaft 5 and is moving at an accelerated speed due to the engagement therewith of the arms 11 upon the chain 10. As can 25 approaches the supporting-cradle 22 the same is withdrawn by means of cam 12, so as to permit a free passage therebetween, the cam 13 meanwhile firmly supporting the carrier by means of holding cradle 23 in its uppermost position. During the next half-revolution of the driving-shaft 2 the can 24 is thrown from the end of the carrier and can 25 is propelled past the supporting-cradle 22 and the latter raised into supporting position. This condition of the mechanism is indicated in Fig. 4 of the drawings. Upon the cradle 22 reaching its uppermost position and engaging the lower surface of carrier 1 the cradle 23 is immediately depressed by cam 13, thus permitting the continuous passage of can 25 to the end of the carrier. This position is shown in Fig. 5 of the drawings, in which a complete revolution of revolving shaft 2 has taken place with reference to the position shown in Fig. 1, and can-body 25 has now reached the position occupied by can-body 24, as shown in that figure. In order to insure the complete passage of the supporting means by the can-body 26 and 27 before the following can-body 26 has been brought opposite the same, the parts are preferably so proportioned as to propel the can-bodies driven by chain 8 throughout the length of one can and the intervening space between the cans during one revolution of the driving-shaft, and consequently to force those driven by chain 10 throughout substantially twice that distance. In this manner the cradles at a distance apart equal to that of the spaces between the bodies shown at the left of Fig. 1 a can upon reaching the supporting means will be so accelerated in speed as entirely to pass both supporting-cradles 22 and 23 before the following body has reached the first of the same.

It may here be noted that although only two supporting members, which are alternately in supporting and depressed position, are herein shown, nevertheless any desired number may be used, it being essential only that each supporting member is automatically depressed as a can-body is passed between the same and the carrier. It may also be noted that although rigid and substantially vertical supporting members are herein shown, nevertheless the carrier may be held by supporting means extending in any desired direction. There are certain advantages, however, peculiar to the form of supporting means herein specifically described.

It will thus be seen that I have provided means for supporting the free end of a member in such manner as rigidly to hold the same in its proper position at all times and yet permit a ready passage between this member and the supporting means. It will also be seen that in the mechanism herein described there is no objectionable friction and waste of power which would be attendant upon forcing an article between the carrier and a fixed supporting member even though rollers were employed on the latter. Moreover, with the mechanism herein shown there is no likelihood of scratching or deforming the can-bodies by contact with the supporting member. It will also be noted that the carrier is always firmly supported and yet is never crowded out of alinement, as by means of forcing an article between the same and a fixed rigid support. The construction of the herein-described embodiment of my invention, moreover, is simple and durable and the action thereof positive.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention could be made without departing from the scope thereof, I intend that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. I desire also to be understood that the language used in the following claims is intended as an extension of the generic and specific features of the invention herein described and all statements of the scope of the invention which as a matter of language might be said to fall therebetween.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the class described, in combination, a supporting member, a plurality of supports for the same, and means adapted to withdraw said supports from engagement therewith said means being adapted to maintain one of said supports at all
times in engagement with said supporting member.

2. In a machine of the class described, in combination, a supporting member, two supports for the same, and means adapted alternately to withdraw said supports from engagement therewith said means being adapted to maintain one of said supports at all times in engagement with said supporting member.

3. In a machine of the class described, in combination, a supporting member, two supports for the same, and means adapted alternately to withdraw said supports from engagement therewith.

4. In a machine of the class described, in combination, a supporting member, two supports adapted to engage the same, and means adapted to replace each of said supports before each withdrawal of the other thereof.

5. In a machine of the class described, in combination, means adapted to support and guide a can-body, a plurality of members adapted to support the end thereof, means adapted to propel said can-body along said first-mentioned means, and means adapted consecutively to withdraw said supports from engagement therewith upon said can-bodies reaching a position opposite the same.

6. In a machine of the class described, in combination, means adapted to support and guide a can-body, a plurality of members adapted to support the end thereof, means adapted to propel said can-body along said first-mentioned means, and positively-acting means adapted consecutively to withdraw said supporting members upon said can-body reaching a position opposite the same.

7. In a machine of the class described, in combination, means adapted to support and guide a can-body, a plurality of members adapted to support the end thereof, means adapted to propel said can-body along said first-mentioned means, and positively-acting means adapted consecutively to withdraw said supporting members upon said can-body reaching a position opposite the same, said propelling means and withdrawing means being driven from a single source of power.

8. In a machine of the class described, in combination, a horizontal supporting member, two vertical supports for the same, and means adapted alternately to withdraw said supports from engagement therewith said horizontal supporting member adjacent said vertical supports being free from engagement with fixed supporting means at all times.

9. In a machine of the class described, in combination, a horizontal member adapted to support and guide a can-body, a plurality of members adapted to support the end thereof, and means adapted to propel the can-body along said first-mentioned member, and means adapted consecutively to withdraw said second-mentioned members from operative position upon said can reaching a position opposite thereto.

10. In a machine of the class described, in combination, a supporting member, a driving-shaft, a plurality of members extending from said driving-shaft and adapted to support the end of said first-mentioned member, and a plurality of angularly-displaced positively-acting cams upon said driving-shaft having a connection with said second-mentioned members and adapted consecutively to withdraw the same from engagement with said first-mentioned member.

11. In a machine of the class described, in combination, a member adapted to support and guide a can-body, means adapted to propel the can-body upon the same, a plurality of supporting members adapted to support the end of said first-mentioned means, and a plurality of cams angularly displaced with reference to another adapted consecutively to withdraw said supporting members upon said cans reaching a position opposite thereto.

12. In a machine of the class described, in combination, a carrier, means adapted to propel a can-body along the same, a driving-shaft, two supporting members extending from said driving-shaft and adapted to support the end of said carrier, and means adapted to propel said can-body along said driving-shaft and adapted to support the end of said carrier and means adapted to propel said can-body upon said shaft having an angular displacement with reference one to another and adapted alternately to withdraw said supports from engagement with the end of said carrier.

13. In a machine of the class described, in combination, a carrier, means adapted to propel a can-body along the same, a driving-shaft, two supporting members extending from said driving-shaft and adapted to support the end of said carrier, and means adapted to propel said can-body along said driving-shaft and adapted to support the end of said carrier and means adapted to propel said can-body upon said shaft having an angular displacement with reference one to another and adapted alternately to withdraw said supports from engagement with the end of said carrier.

14. In a machine of the class described, in combination, a carrier, means adapted to support one end thereof, and means adapted to propel a can-body along said supporting member at a uniform rate of speed throughout a portion thereof and at a greater rate of speed throughout another portion thereof, said second-mentioned portion including that opposite said supporting means.

15. In a machine of the class described, in combination, a carrier, means adapted to support one end thereof, a chain adapted to prop...
A can-body along said carrier at a uniform rate of speed throughout a portion thereof, and a second chain adapted to propel the same at a greater rate of speed throughout another portion thereof, said second-mentioned portion including that opposite said supporting means and said chains being driven from a common source of power.

16. In a machine of the class described, in combination, a carrier, means adapted to support one end thereof, a shaft, two sprocket-chains of different diameters fixed upon said shaft, a sprocket-chain upon the larger of said sprockets running substantially parallel with the portion of said carrier opposite said supporting means, a sprocket-chain upon the smaller of said sprockets running substantially parallel to the remainder of said carrier, and arms upon said sprocket-chains adapted to engage and propel can-bodies upon said carrier.

17. In a machine of the class described, in combination, a supporting member, a plurality of supports for the same, means adapted consecutively to withdraw said supports from engagement therewith, and means adapted to propel a can-body along said supporting member at a uniform rate of speed throughout a portion thereof and at a greater rate of speed throughout another portion thereof, said second-mentioned portion including that opposite said supporting members.

18. In a machine of the class described, in combination, a carrier, a plurality of supporting members adapted to support one end thereof, means adapted consecutively to withdraw said supporting members from engagement therewith, a chain adapted to propel a can-body along said supporting member at a uniform rate of speed throughout a portion thereof, and a chain adapted to propel said can-body at a greater rate of speed throughout another portion thereof, said second-mentioned portion including that opposite said supporting members.

19. In a machine of the class described, in combination, a carrier, two supporting members adapted to support the end thereof, means adapted alternately to withdraw and replace said supporting members, a chain adapted to propel a can-body along said carrier at a uniform rate of speed throughout a portion thereof, and a chain adapted to propel said can-body along the remainder of said carrier at a greater rate of speed, said second-mentioned portion including that opposite said supporting members.

20. In a machine of the class described, in combination, a horizontal carrier, a pair of supporting members adapted to support one end thereof, positively-acting means adapted alternately to withdraw said supporting members from engagement with said carrier, a propelling-chain adapted to drive said can-bodies at a uniform speed throughout a portion of the length of said carrier, and a chain adapted to propel said can-bodies at a greater speed throughout another portion of said carrier, said second-mentioned portion including that opposite said supporting members and said chains being driven from a common source of power.

21. In a machine of the class described, in combination, a carrier, a plurality of supporting members adapted to support one end thereof, a driving-shaft, a plurality of cams fixed upon said driving-shaft and having an angular displacement with reference one to another, a connection between said cams and said supporting members whereby said cams are adapted to withdraw said supporting members consecutively from engagement with said carrier, a sprocket-chain adapted to propel a can-body along said carrier at a uniform rate of speed throughout a portion thereof, and a second chain adapted to propel said can-body at a greater rate of speed throughout another portion of said carrier, said second-mentioned portion including that opposite said supporting members.

22. In a machine of the class described, in combination, a carrier, a plurality of supporting members adapted to support one end thereof, a driving-shaft, a plurality of cams fixed upon said driving-shaft and having an angular displacement with reference one to another, a connection between said cams and said supporting members whereby said cams are adapted to withdraw said supporting members consecutively from engagement with said carrier, a sprocket-chain adapted to propel a can-body along said carrier at a uniform rate of speed throughout a portion thereof, and a second chain adapted to propel said can-body at a greater rate of speed throughout another portion of said carrier, said second-mentioned portion including that opposite said supporting members and said chains being driven from sprocket-wheels of different diameters fixed upon a single shaft.

23. In a machine of the class described, in combination, a horizontal carrier, a pair of supporting members adapted to support the end thereof, a driving-shaft, a pair of cans upon said driving-shaft having an angular displacement with reference one to another and connected respectively to said supporting members, said cans being adapted alternately to withdraw and replace said supporting members from engagement with said carrier, a second shaft, a connection whereby said second shaft is driven from said driving-shaft, a pair of sprockets of different diameters upon said second shaft, a sprocket-chain upon the smaller of said sprockets extending substantially parallel to said carrier and adapted to propel a can-body thereupon.
on throughout a portion of its length, and a sprocket-chain upon the larger of said sprocket-wheels adapted to propel said cabin body thereon throughout another portion of said carrier, said second-mentioned portion including that opposite said supporting means.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES W. GRAHAM.

Witnesses:
W. O. FORD,
Ed. H. CARTER.