W. BACH.

CONTROLLING MEANS FOR ELECTRIC SIGNS.

APPLICATION FILED DEC. 30, 1915.

1,189,419.

Patented July 4, 1916.

2 SHEETS—SHEET 1.

Fig. 1

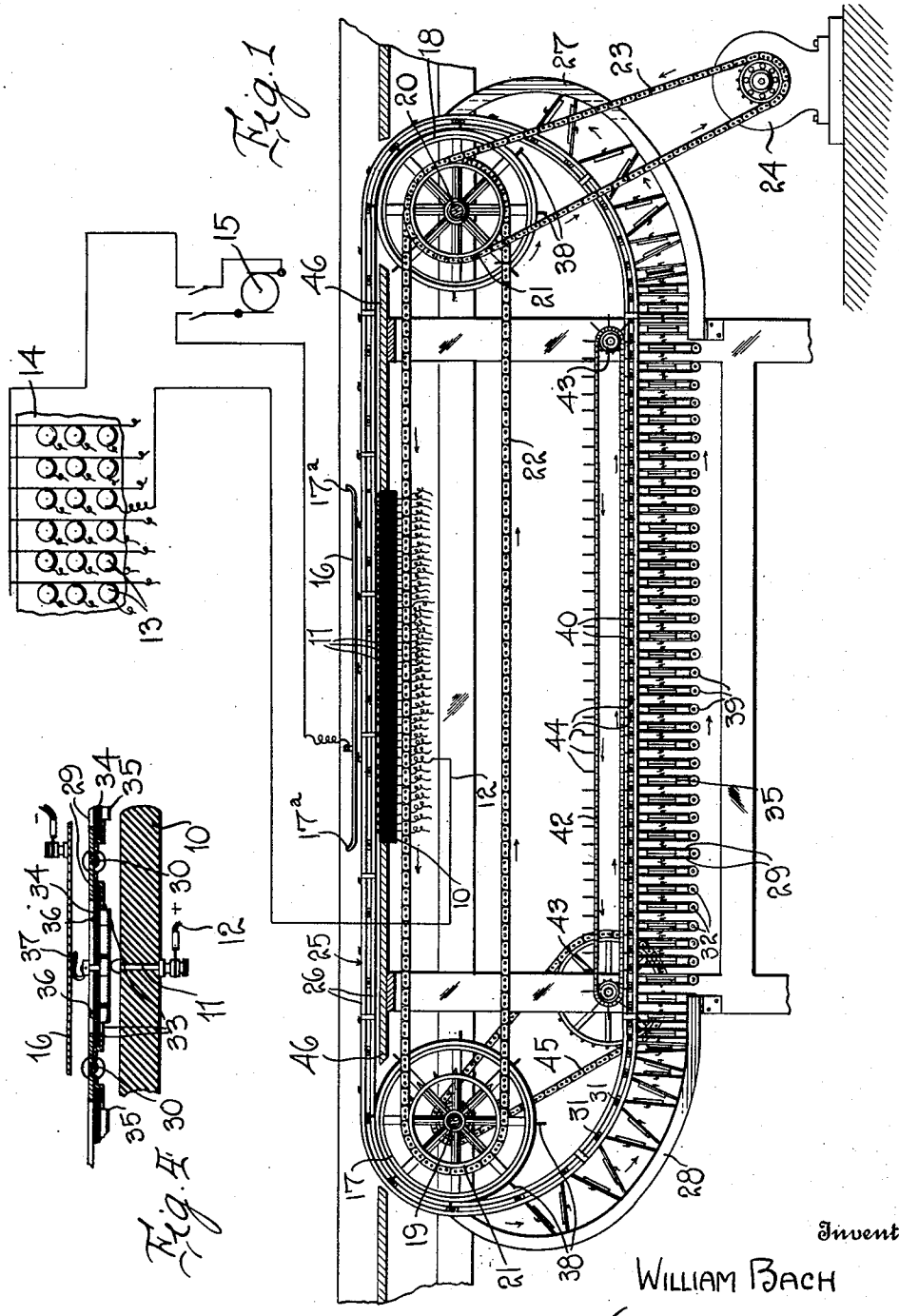


Fig. 4

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2 SHEETS—SHEET 2.

Fig. 2

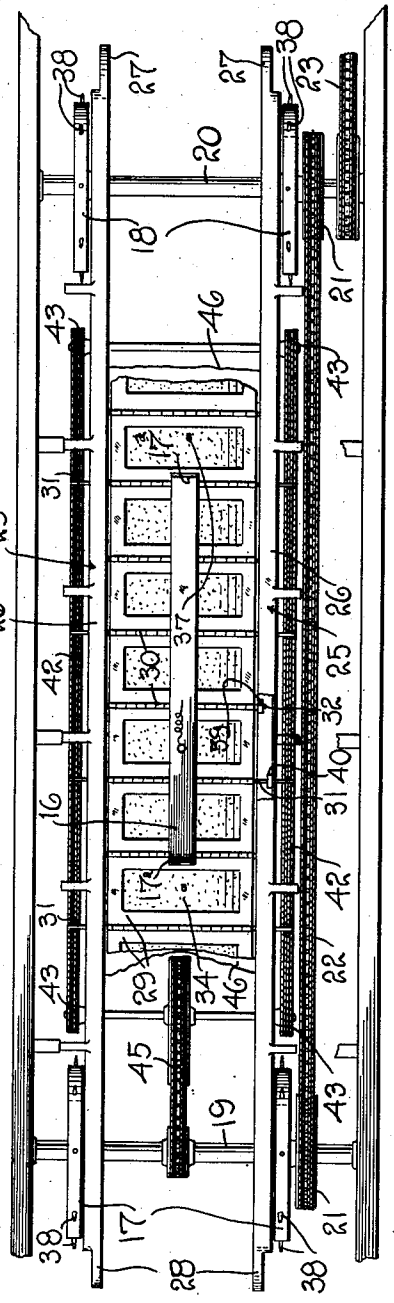


Fig. 6

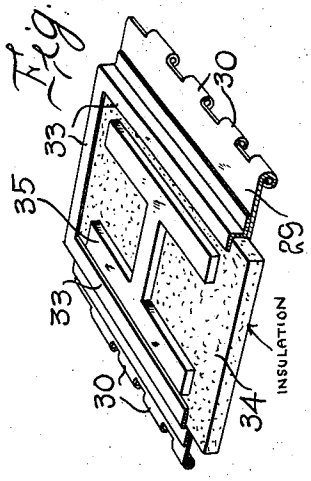


Fig. 3

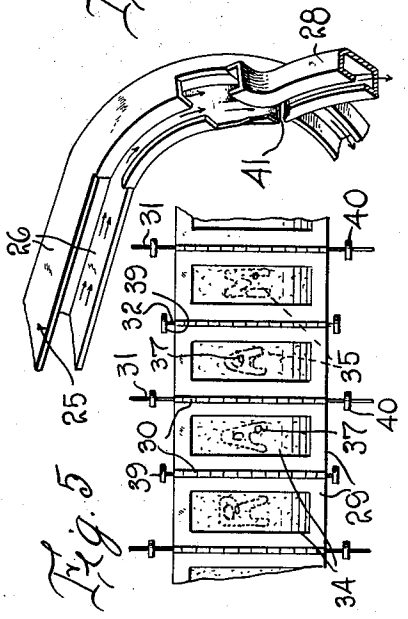


Fig. 5

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UNITED STATES PATENT OFFICE.

WILLIAM BACH, OF ATLANTIC CITY, NEW JERSEY, ASSIGNOR TO THE R. C. MAXWELL CO., OF TRENTON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CONTROLLING MEANS FOR ELECTRIC SIGNS.

1,189,419. Specification of Letters Patent. Patented July 4, 1916.

Application filed December 30, 1915. Serial No. 69,509.

To all whom it may concern:

Be it known that I, WILLIAM BACH, a citizen of the United States, residing at Atlantic City, in the county of Atlantic and State of New Jersey, have invented certain new and useful Improvements in Controlling Means for Electric Signs, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to apparatus for controlling the energizing of lamps on electric signs, and particularly to that class of apparatus wherein an endless ribbon of paper or like material having stencil-like figures cut therein is moved continuously between a base having thereon a plurality of contacts, one for each lamp of the sign, and a return conductor whereby the reading matter in the sign is caused to move consecutively across the face of the sign from one end to the other.

The general object of the invention is to improve upon the construction heretofore designed for this purpose by doing away with the paper strip or ribbon and substituting therefor a flexibly connected series of letter frames, each frame being relatively rigid, whereby to obviate the tendency of the paper ribbon tearing or folding upon itself which is one of the chief objections to signs of this character.

Still another object is to provide for increasing or decreasing the length of the series of connected letter frames whereby additional matter may be inserted into the series of letter frames to thereby increase the length of the advertising matter displayed or whereby certain advertising matter may be withdrawn by withdrawing certain letter frames.

Still another object is to provide for supporting the letter frames when not in use, that is, when not moving over the base or table, in a depending or hanging position so as to thereby economize space and permit a relatively long actuating element composed of these frames to be used with only a relatively short table or base.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevation of the principal parts of a machine constructed in accordance with my invention; Fig. 2 is a top plan view thereof; Fig. 3 is a perspective view of a fragment of the track; Fig. 4 is a longitudinal section through the table or base; Fig. 5 is a top plan view of a portion of the letter-carrying element; Fig. 6 is a perspective view of one of the frames.

Referring to these figures it will be seen that my invention includes a table or base, as it may be termed, designated 10, and extending any suitable distance and made of slate or like-conducting material. For a sign wherein the light supporting frame is one-hundred feet long this table will be approximately four feet long and approximately fourteen inches wide. The dimension of this table, of course, may be varied to suit any desired circumstances of operation. As before remarked, this table is of slate, and projecting through it are a plurality of contact members or studs designated 11, each of which is connected by a wire 12 to one of the lamps 13 which is supported in the advertising frame 14, this advertising frame being simply indicated diagrammatically in Fig. 1 and being of any ordinary or suitable construction. Each wire 12 connects with one of the terminals of the corresponding lamp 13 and the other terminal is connected with a source of power 15 and with a return circuit bar 16. This return bar 16 has a length approximately that of the table and is disposed above the table in suitably spaced relation thereto. The ends of the bar 16 are preferably upwardly curved as at 17ª. The details of the electrical connections from the lamp, contacts and return bar 16 will be later stated.

Mounted below the base 10 are the sprocket wheels 17 and 18 which are mounted upon shafts 19 and 20, these shafts being driven from each other by means of the sprocket wheels 21 and the chain 22, one of the sprocket wheels 21 being driven from any suitable motor as by means of the sprocket chain 23 connected to the motor 24. Any suitable means may be used for driving the sprocket wheels 17 and 18 in unison and I do not wish to be limited to the use of the sprocket wheels 17 and 18 as drums might be used for the same purpose.

Disposed on each side of the case 10 and extending parallel thereto and slightly above the base are the parallel tracks 25. These tracks at their ends curve downward concentrically to the sprocket wheels 17 and

18 and then extend in a lower stretch parallel to the upper stretch of the track in the manner clearly shown in Fig. 1. These tracks 25 are composed of separated rails, as they may be termed, 26, spaced from each other along their entire extent for a purpose to be later stated. Extending from these tracks 25 about opposite the shafts upon which the sprocket wheels 21 are mounted are the tracks 27 and 28 which tracks as illustrated in Fig. 3 are approximately U-shaped in cross section. The detailed construction of the tracks 25 and 28 is illustrated most clearly in Fig. 3.

Designed to move over the base 10 and be guided by the tracks 25 and 28 is an endless flexible element composed of a plurality of frames, each of these frames being designated 29, these frames being flexibly connected to each other. The frames are formed on their forward and rear margins with hinge beads or knuckles 30, and the frames are connected by pintles 31 and 32. The pintles 32 project beyond the side edges of the frame and the pintles 31 project beyond the pintles 32. The reason for using these different pintles 31 and 32 will be later stated. Each frame is composed of a rectangular piece of metal having inwardly bent flanges 33 on three sides, one end of the frame not having a flange and being thereby open for the insertion therein of a plate or sheet 34 of non-conducting material having mounted thereon a metallic letter, figure, or symbol 35. This metallic letter is held to the sheet of non-conducting material by means of bolts 36 which project upward through the sheet, the metallic letter being on the under side of the sheet and carry at their upper ends contact members in the form of small resilient strips designated 37. One or more of these fastening devices are so disposed as to bear against the return bar or member 16. This return bar or member may have a width equal to that of the frame, or may have a less width. In Fig. 2 it is shown as of a less width in order not to obstruct the letter frames themselves.

It will be seen that the letter plates or sheets 34 may be readily inserted within the frames or readily removed therefrom and that as these plates or sheets are mounted in frames as the frames move along over the base 10 the metallic letters carried upon the plates will wipe against the upwardly projecting contacts 11 and close the circuit through these contacts to the lamps with which the contacts are connected, the source of energy, the return bar 16, and so through the contact members 37 to the letter. The sprocket wheels 17 and 18 are formed with outwardly projecting teeth 38 which are adapted to engage the pintles.

With the mechanism so far described the endless member formed of the hinged letter frames will be caused to travel in a closed path across or over the face of the base 10 and down beneath the base. In order, however, to provide for supporting these letter frames each in a depending or approximately vertical position to thereby economize in space, I have provided the two tracks 25 and 28. The tracks 25 are adapted to engage and support the elongated pintles 31 while the tracks 28 are adapted to engage and support the relatively short pintles 32 when the endless element has reached the position opposite the axis of the sprocket wheel 17, assuming that the endless element is moving in the direction of the arrow (Fig. 1). As will be seen in Fig. 3, the inside face of the track 28 is flush with the inside face of the track 25. The track 25, however, is deeper than the track 28. As a consequence the long pintles will travel in the track 25 while when the short pintles come to the track 28 they will continue to travel on the track 28. The short pintles are provided with rollers at their ends, designated 39, and the long pintles 31 are also provided with rollers 40. The bottom of the track 25 just in front of the commencement of the track 28 is transversely slotted, as at 41, this slot being large enough to receive the pintles 31 but not large enough to receive the roller 39. The rear end of the slot is large enough to accommodate the roller 40 on the pintle 31. As any particular letter frame reaches the point where the track 28 intersects the track 25 the roller 39 will pass over the slot 41 and being deflected onto track 28 while the roller 40 when it reaches this point will be deflected downward by the track 25, its pintle passing through the slot 41. Thus the interlinked hinged letter plates will begin to fold upon themselves or take an angular relation to each other as illustrated clearly in Fig. 1, until when these plates arrive at the lower end of the track 28 they will be folded into a parallel relation so that as they move along the lower stretch of the track 25 they will be supported in nearly parallel relation and nearly flat against each other.

For the purpose of positively shifting the folded letter plates from the beginning of the lower stretch of the track 25 to the end thereof, I provide an endless belt or other element, designated 42, which is operatively supported upon a suitable band or sprocket wheels 43. The lower stretch of the endless element extends parallel to the lower stretch of the track 25, this endless element being provided with fingers or pins 44 which engage with the pintles 31 and cause the endless element composed of the interlinked frames to travel in the direction of the arrow along the lower stretch of the tracks 25 so as to take all strain off from the sprocket wheel 18 and to assist in shifting the end-

less element longitudinally upon the tracks. The member 42 may be driven in any suitable manner, and I have illustrated one of the sprocket wheels 43 as being driven by means of a belt 45 from the shaft 19. This belt 42 is to be driven relatively slowly but of course in time with the feed of the machine. The track 27 is precisely like the track 28 and its function is to gradually unfold the frame from a position of parallelism into a divergent position so that when the frames enter the upper stretch of the track 25 they may be disposed in a horizontal plane and be disposed in succession to each other.

Preferably there is a table or support 46 disposed at either end of the base 10 and extending therefrom any suitable distance, as for instance, a distance of six feet over which table, platform or support the endless element composed of the linked frames travels. During the time that this endless element is traveling over this table it is a relatively easy matter for an operator to withdraw the letters composing any certain advertisement and substitute therefor other letters so as to change the reading of the advertisement or change the figures, symbols or other characters displayed by the advertisement. Thus it is possible for the reading matter displayed to be continuously changing. Thus it is possible with this construction for the electric sign to display reading matter the words of which are completely changed throughout the entire night with no duplication, or it is obvious that the matter may be repeated constantly and in successive order.

By using metallic frames for supporting letter sheets or plates, I provide a construction which will stand wear and tear, whereas where perforated strips of paper or other fabric are used, and particularly where letters or figures are cut into the fabric the strain on the strip or ribbon is very liable to tear the paper strip, the openings of the strip are very liable to tear out or become enlarged or otherwise de-formed with consequent loss of effectiveness both as regards the operation of the machine and the advertisement displayed. Furthermore, the paper strip is not capable of being fed regularly and truly because of its flexibility, and the strip, because of the varying strains upon it, is likely to become crinkled or folded in places so that the letters will not be evenly spaced nor distinct and clear in outline.

It has been proposed to use metallic letters for paper strips but this does not do away with the difficulties above referred to and adds to the difficulties in some respects inasmuch as the weight of the metallic letters or figures is liable to cause the tearing out of the paper upon which they are mounted. With my invention no strain comes upon the plate or sheet upon which the metallic letters are mounted as each one is enclosed within itself on the frame. The strain is only upon the frame and inasmuch as this frame is made of metal the strain will not harm it and it will not buckle or fold. Again it is possible by forming the endless element of hinged frames or sections to fold the frames upon each other in the manner shown at the lower portion of Fig. 1 so as to very greatly reduce the space occupied by the machine. It is true that a paper strip or ribbon may be folded but these folds can never be accurate and the paper is very liable to become torn, twisted or rumpled in so doing.

Having described my invention, what I claim is:

1. A controller for electric lamps comprising an endless element of interlinked metallic frames, plates of insulating material removably carried in the frames, and metallic characters having relatively wide flat surfaces attached to said plates.

2. A controller for electric lamps including an endless element of interlinked metallic frames hingedly connected to each other, plates of insulating material removably disposed in said frames, metallic characters attached to said plates, each of said characters having studs extending through the plate to the opposite side thereof.

3. Means for controlling electric lamps including a bank of contacts and a current return member disposed above the contacts, an endless element composed of hingedly connected frames moving between the current return member and said bank of contacts, plates of insulating material removably disposed in said frames and carrying metallic characters adapted to electrically engage with the contacts and having metallic studs extending through the plate and electrically engaging with the circuit return member, and means for shifting said endless element across the face of the bank of contacts.

4. Means for controlling electric lamps including a base having thereon a bank of contacts, a current return member disposed over said base, an endless element moving between the base and the current return member and composed of hingedly connected frames, the frames being connected by pintles projecting laterally of the frames, plates of insulating material disposed in said frames and carrying metallic characters adapted to electrically engage with the contacts and having metallic studs extending through the plates and contacting with the return member, means for shifting said endless element across the face of the bank of contacts on the base, and tracks extending longitudinally on each side of said bank of contacts and beneath said base with which

tracks the pintles of the several frames engage and by which they are guided.

5. Means for controlling electric lamps including a horizontally disposed base having a bank of contacts and a return member disposed over the contacts, each contact being connected in circuit with a lamp, a source of power and said return member, an endless element composed of hingedly connected frames, the alternating joints of the frames being provided with relatively long pintles and the alternate joints with relatively short pintles, plates of insulating material insertible into said frames and carrying metallic characters adapted to electrically engage with said contacts and having metallic studs extending through the plates and contacting with the circuit return member, means for shifting said endless element across the face of the bank of contacts, endless tracks extending longitudinally on each side of said bank of contacts and beneath the banks and with the upper stretch of which both sets of pintles are adapted to engage and be guided, auxiliary tracks extending outward and downward from the first-named tracks and beneath the first-named tracks with which the relatively short pintles are adapted to engage and whereby said pintles are displaced relative to the first-named tracks to thus cause the plates to be disposed in parallel depending relation and supported upon the first-named pintles, and means for shifting said endless element along the lower stretch of the first-named tracks.

6. Means for controlling electric lamps including a bank of contacts arranged in a horizontal plane, and a current return member, each of said contacts being connected in circuit with a lamp, a source of power and said current return member, tracks disposed in each side of said bank of contacts and extending longitudinally thereof to form an upper horizontal stretch, said tracks extending downward at each end and then extending beneath and parallel to the upper stretch, an endless element composed of hingedly connected frames, said frames being connected by pintles engaging the tracks, plates of insulating material insertible into said frames and carrying metallic characters adapted to electrically engage with the contacts and have electrical engagement with the circuit return member, means for shifting said endless element across the face of the bank of contacts and around said track in one direction, and means for causing the hinged frames to become folded upon each other into approximately parallel relation as they move downward at one end of said track and to cause the said frames to move from a parallel position into approximately the same plane as they move up onto the upper flight of the tracks.

7. Means for controlling electric lamps including a base having a bank of contacts arranged in a horizontal plane, a current return member disposed adjacent to the contacts in spaced relation thereto, each of said contacts being connected in circuit with a source of power, a lamp and said current return member, an endless element for controlling said lamps composed of hingedly connected frames, plates of insulating material inserted in said frames and carrying metallic characters adapted to electrically engage with the contacts and with said return circuit member, means for continuously shifting said endless element longitudinally in one direction over the face of said base and longitudinally beneath the base in the opposite direction, and means for engaging the lower flight of said endless element and shifting it longitudinally including a belt having a flight extending parallel to the path of movement of the endless element and having fingers engaging said element, said belt being continuously driven.

8. A controller for electric lamps including an endless element of interlinked frames hingedly connected to each other, plates of insulating material removably disposed in said frames, and metallic characters attached to said plates, each of said characters having contact members extending therefrom and adapted to engage with a current return contact member.

9. Means for controlling electric lamps including a bank of contacts and a current return member, an endless element composed of hingedly connected frames moving over said bank of contacts, plates of insulating material disposed in said frames and carrying metallic characters adapted to electrically engage with the contacts and having means for electrically engaging with the current return member, and means for shifting said endless element across the face of the bank contacts.

10. Means for controlling electric lamps including a bank of said lamps, a bank of contacts equal in number to the lamps and connected in an interrupted circuit therewith, said circuit including a common return member, an endless element composed of interlinked members, metallic characters mounted upon and insulated from said interlinked members, the characters being adapted to slide over the faces of said contacts and have at all times electrical engagement with the common return member, and means for driving said endless element in one direction over the contacts.

11. In a mechanism of the character described, a horizontally disposed table, an endless element composed of hingedly connected members having its upper flight traveling over said table, means for driving the endless element in one direction over

the table, and means for causing the members to fold into an approximately parallel, vertical relation as they travel beneath said table and through the lower flight of the endless element.

12. In a mechanism of the character described, a horizontally disposed table, an endless element composed of hingedly connected members having its upper flight traveling over said table, means for driving the endless element in one direction over the table, means for causing the members to fold into an approximately parallel, vertical relation as they travel beneath said table and through the lower flight of the endless element, and power operated means for engaging said members when so folded and shifting them in the direction of travel.

13. In a mechanism of the character described, a horizontal table, an endless element composed of hingedly connected members, the members being connected by pintles, alternate pintles projecting laterally beyond the other pintles, oppositely disposed tracks extending along the table with which all of the pintles engage whereby the members are held in the same plane as they pass over the upper face of the table and along the upper flight of the endless element, and tracks disposed beneath the first-named tracks extending along the lower flight of the endless element and merging into the upper tracks at opposite ends, said last-named tracks being spaced to engage the long pintles but being spaced a greater distance apart than the length of the short pintles whereby said hinged members will be disposed in approximately parallel, vertical relation as they move along the lower flight of the endless element.

14. In a mechanism of the character described, a horizontal table, an endless element traveling thereover composed of hingedly connected members, the members being connected by alternately long and short pintles, parallel tracks extending along the table with which all of the pintles engage whereby the members are held in the same plane as they pass over the upper face of the table, a pair of tracks extending beneath the table and merging into the upper tracks at opposite ends and spaced to engage the long pintles but being spaced from each other a greater distance than the short pintles and a pair of tracks disposed below the second-named tracks and merging into the second-named tracks at the beginning and end of the lower flight of the endless element, said last-named tracks being spaced from each other a distance to receive the pintles whereby said short and long pintles will be engaged by the two pairs of lower tracks to thereby dispose the hinged members in approximately vertical, parallel relation as they move along the lower flight of the endless element.

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

WILLIAM BACH.

Witnesses:
FRANK CORDERY,
FRANK CARMEN.