May 10, 1960 M. S. YOUNG, SR 2,935,806

OUTDOOR POSTER ADVERTISING APPARATUS

Filed April 22, 1958 7 Sheets-Sheet 1

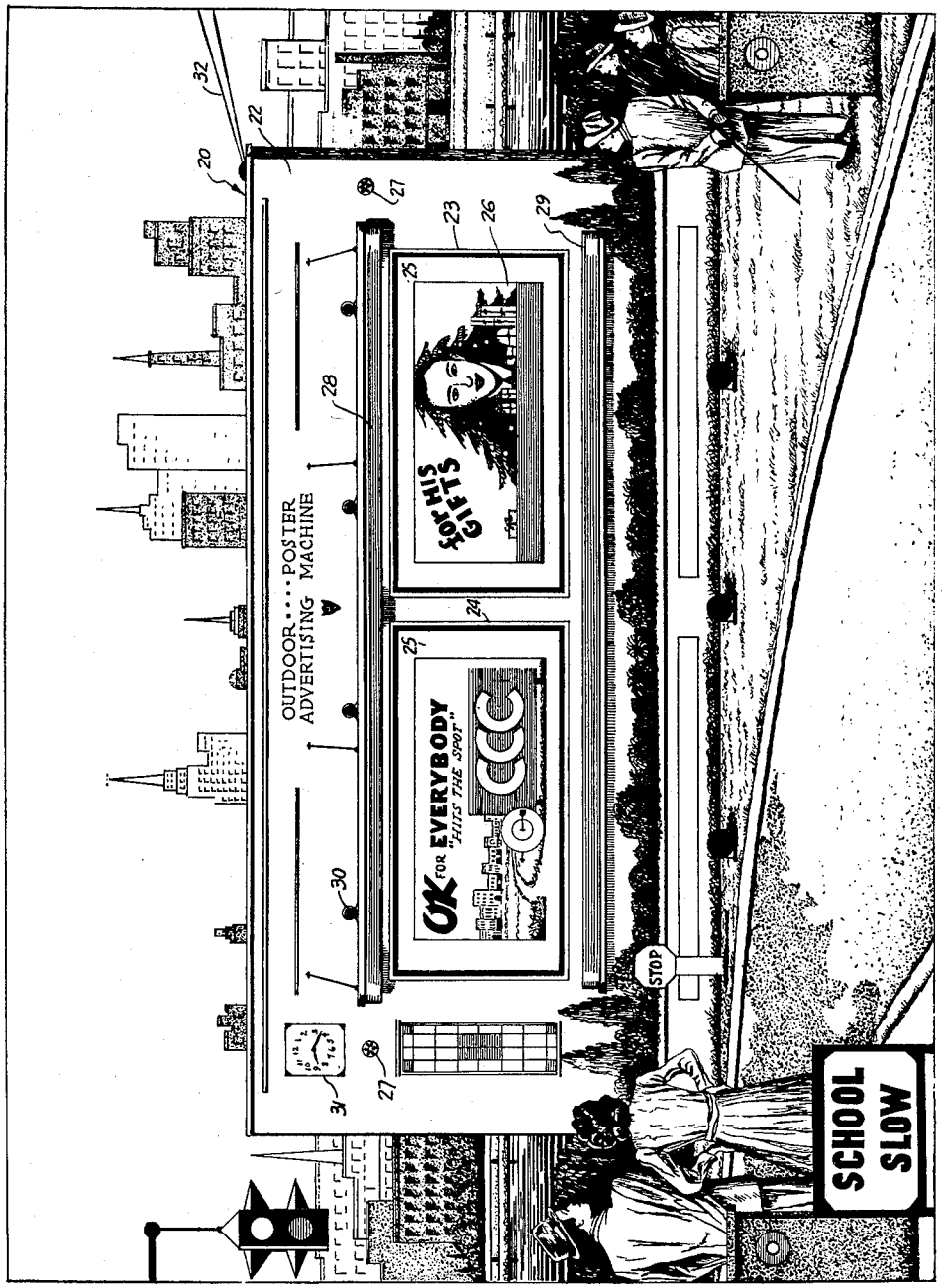


FIG. 1

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OUTDOOR POSTER ADVERTISING APPARATUS

Filed April 22, 1958 7 Sheets-Sheet 2

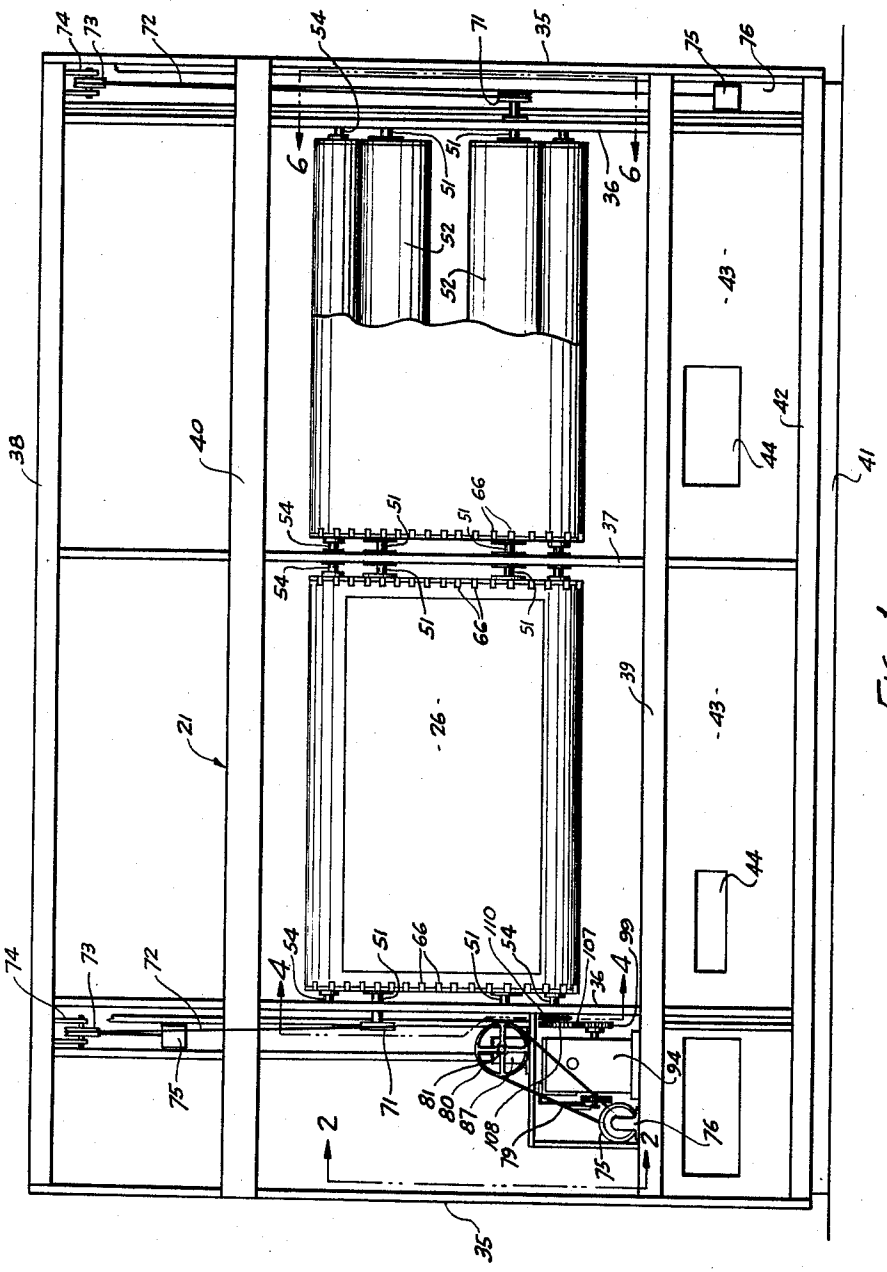


FIG. 1a

INVENTOR

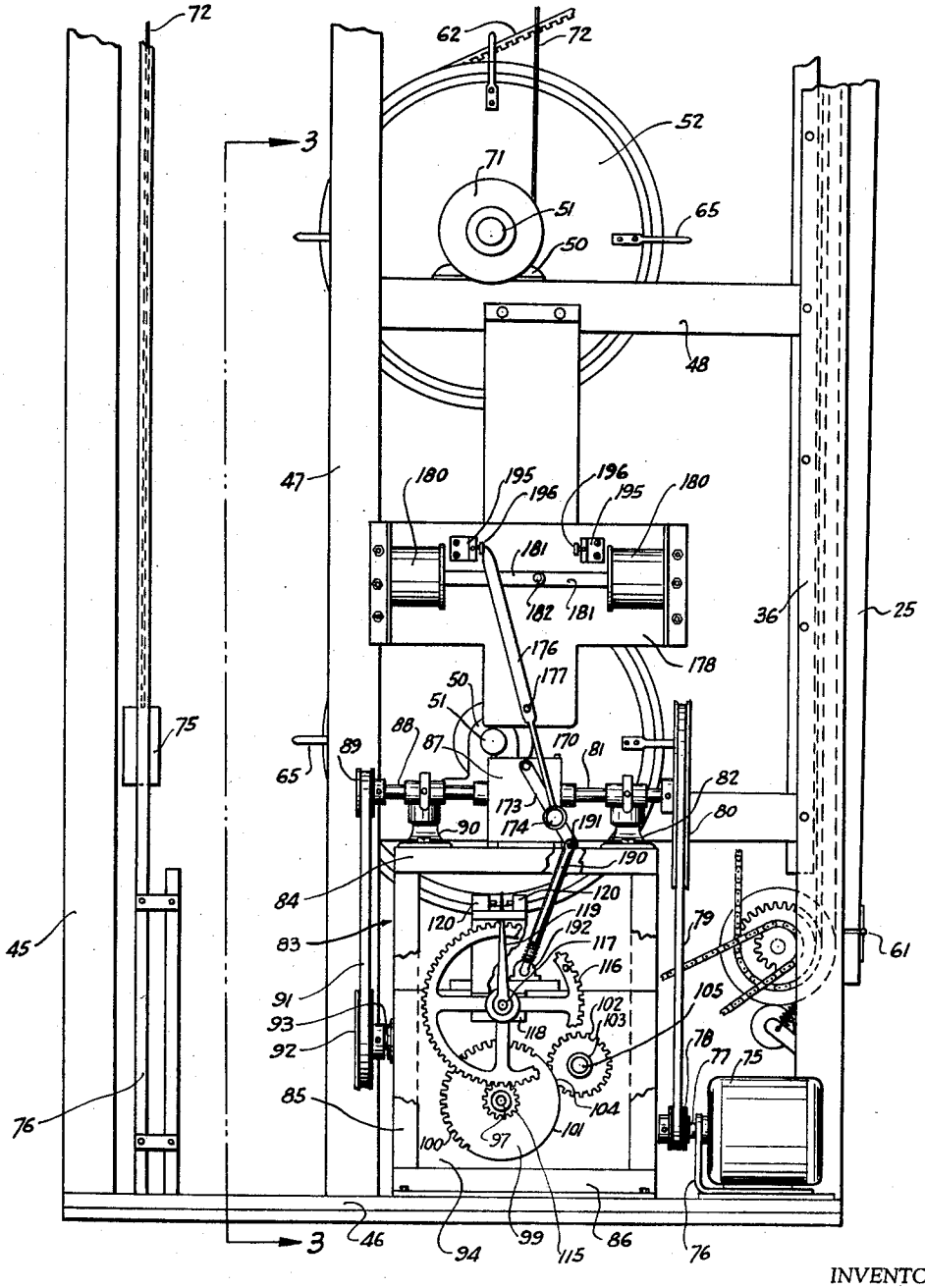
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OUTDOOR POSTER ADVERTISING APPARATUS

Filed April 22, 1958 7 Sheets-Sheet 3



INVENTOR

FIG. 2

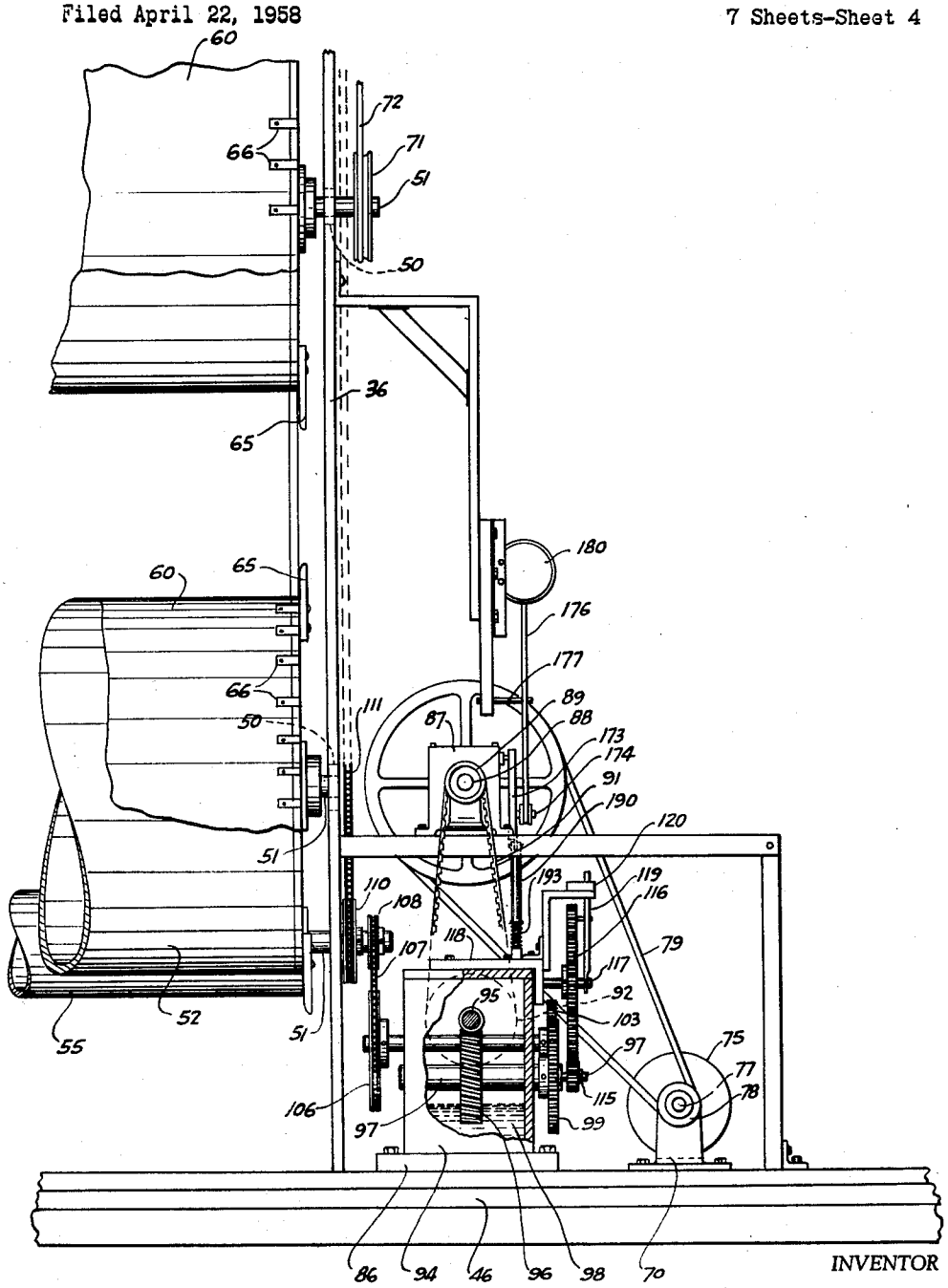
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OUTDOOR POSTER ADVERTISING APPARATUS

Filed April 22, 1958 7 Sheets-Sheet 4



INVENTOR

FIG. 3

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OUTDOOR POSTER ADVERTISING APPARATUS

Filed April 22, 1958 7 Sheets-Sheet 5

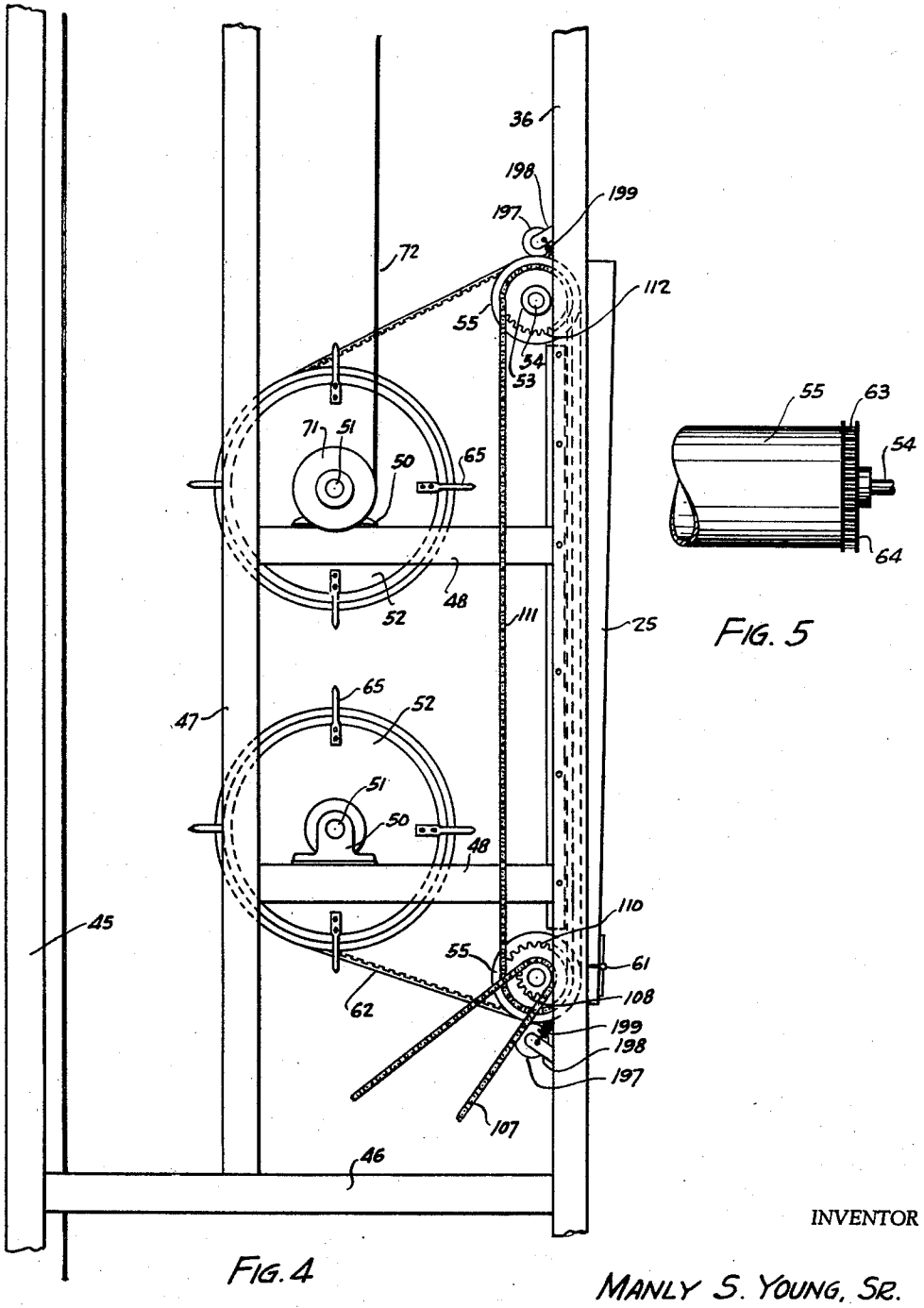


FIG. 4

FIG. 5

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OUTDOOR POSTER ADVERTISING APPARATUS

Filed April 22, 1958 7 Sheets-Sheet 6

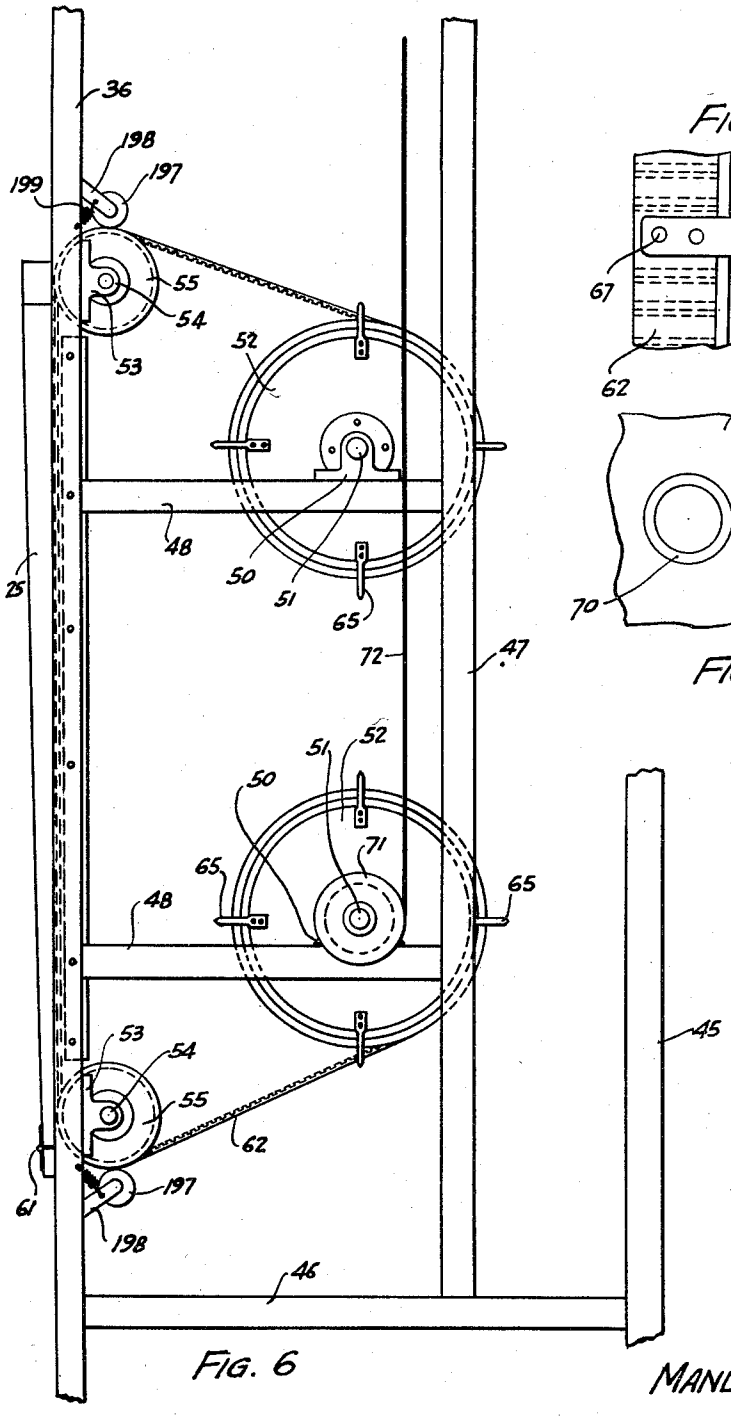
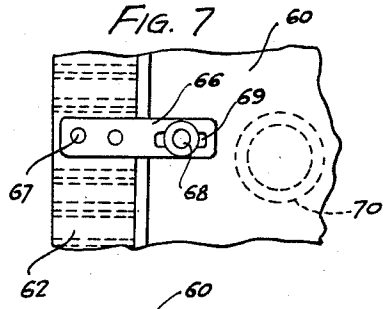


FIG. 6

FIG. 7



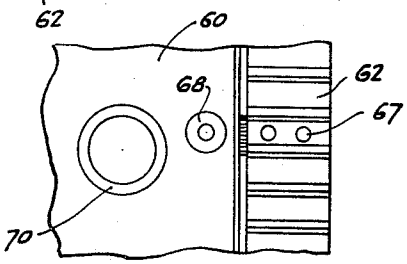


FIG. 8

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OUTDOOR POSTER ADVERTISING APPARATUS

Filed April 22, 1958 7 Sheets-Sheet 7

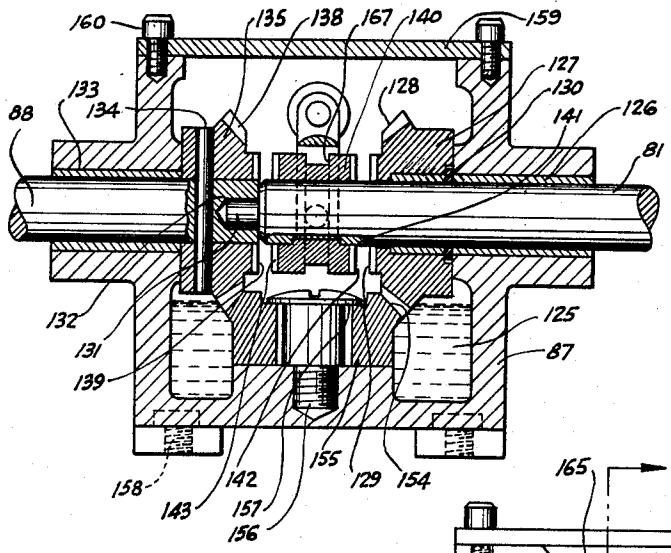


FIG. 10

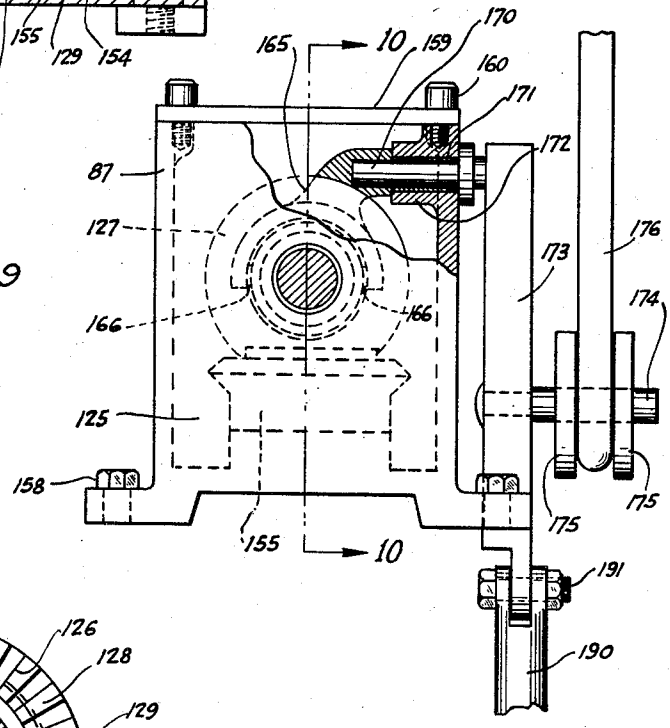


FIG. 9

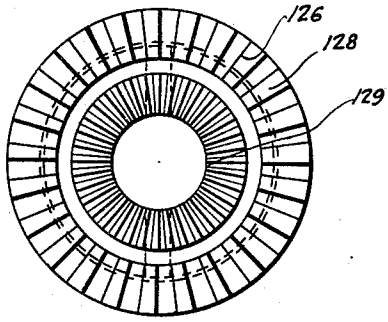


FIG. 11

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United States Patent Office 2,935,806 Patented May 10, 1960

2,935,806

OUTDOOR POSTER ADVERTISING APPARATUS

Manly S. Young, Sr., Fort Mill, S.C.

Application April 22, 1958, Serial No. 730,189

5 Claims. (Cl. 40—31)

This invention relates to an outdoor poster advertising device, and more particularly to such an apparatus in the form of a billboard adapted for showing by intermittent movement advertising media such as lithographed paper posters of a standard size.

A primary object of the invention is the provision of such a device provided with internal mechanism whereby the posters, which may be removably secured to relatively heavy movable bands are automatically interchanged at predetermined selected intervals.

An additional object of the invention is the provision of such a device provided with movable bands having means whereby the posters may be easily applied to or removed from said bands for replacement or renewal.

An additional object of the invention is the provision of such a device wherein two posters are simultaneously displayed for a predetermined period of time in an opening on the front of the device through which the advertising media is visible.

A further object of the invention is the provision of a device of this character encased in a housing which is waterproof, dustproof and substantially ratproof and bugproof, having a fully closed non-breakable glass plate for protecting the advertising means.

A more specific object of the invention is the provision of such an advertising apparatus provided with a protective marquee, and wherein the glass front for the posters is angularly inclined in a vertical plane to prevent the accumulation of dust and moisture, on the front of the glass, as well as to avoid an objectionable glare.

A further and more specific object of the invention is the provision of a casing for an apparatus of this character which is provided with ventilators, which may carry a clock, and suitable ventilating means, into which ready access may be had for the purpose of repair, readjustment, or the like.

A further important object of the invention is the provision of an apparatus of this sort wherein there are provided a pair of reels and a pair of drums, the strip or band carrying the posters being selectively rollable about one of the rollers, and means for automatically changing the direction of rotation of the rollers, when the band has reached its end.

An additional object of the invention is the provision of means comprising gears and chains for driving said bands, and means for securing the drive chains to the bands, in such manner that expansion or contraction of the bands will not effect the posters.

An additional object of the invention is the provision of weight means for the automatic aligning of the drums associated with the mechanism, in such manner that the bands carrying the posters are maintained substantially taut at all times.

Still another object of the invention is the provision of power means for actuating the driving drums and rollers, and the provision of interrupted gear means for automatically reversing the direction of the rotation of

the rollers while the power means continues to rotate at a predetermined speed in the same direction.

Still other objects reside in the combinations of elements, arrangements of parts, and features of construction, all as will be more fully pointed out hereinafter and shown in the accompanying drawings.

Still other objects will in part be obvious, and in part be pointed out hereinafter.

In the drawings:

Figure 1 is a front elevational view showing the apparatus of the instant invention complete with its associated casing, as it will appear when positioned for viewing.

Figure 1*a* is a front plan view of the framework of the apparatus, with the outer covering, and its associated elements being removed, parts being broken away for the sake of clarity.

Figure 2 is an enlarged sectional view taken substantially along the line 2—2 of Figure 1 as viewed in the direction indicated by the arrows.

Figure 3 is a sectional view taken substantially along the line 3—3 of Figure 2 as viewed in the direction indicated by the arrows.

Figure 4 is an enlarged sectional view taken substantially along the line 4—4 of Figure 1*a* as viewed in the direction indicated by the arrows.

Figure 5 is a fragmentary enlarged plan view of a constructional detail.

Figure 6 is a sectional view taken substantially along the line 6—6 of Figure 1*a* as viewed in the direction indicated by the arrows.

Figure 7 is an enlarged fragmentary plan view showing a detail of construction.

Figure 8 is an enlarged fragmentary plan view showing an additional detail of construction.

Figure 9 is an enlarged sectional view taken substantially along the line 9—9 of Figure 3, parts thereof being broken away.

Figure 10 is a sectional view taken substantially along the line 10—10 of Figure 9 as viewed in the direction indicated by the arrows.

Figure 11 is an enlarged plan view of one of the constructional elements as shown in Figure 10.

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

Having reference now to the drawings in detail, the advertising poster of the instant invention is generally indicated at **20**, and includes an internal frame generally indicated at **21** (see Fig. 1*a*), with an outer housing or covering **22**, which is preferably comprised of sheet metal, such as aluminum. As best shown in Figure 1, the display device includes two windows **23** and **24**, each covered by a glass pane **25**, and behind each pane there is positioned a series of advertising posters or pictures **26**, the mounting of which will be more fully described hereinafter.

The exterior of the housing may be suitably ornamented, and may be provided as desired with ventilators **27**, and an upper marquee **28**, which serves to protect the glass covered posters **25**, and and which may also serve as a suitable housing for neon lights or other illumination. A lower marquee **29** may also be provided for ornamental purposes, and the top of the upper marquee may carry additional illumination in the form of lights **30**. If desired a clock **31** may also be carried by the front of the housing, and suitable access doors (are preferably provided at the ends of the housing).

As shown in Figure 1 the advertising apparatus is adapted to be positioned in a suitable location, adjacent a road, where it will be readily visible.

The signs or posters **26** are adapted to be changed at predetermined intervals, in a manner to be more

fully described hereinafter, and electric power is provided to the interior of the housing 22 in any desired manner, as by means of conventional wiring 32.

Having reference now to Figure 1*a*, the frame 21 includes front end uprights 35, and intermediate front mounting uprights 36, as well as central front uprights 37. Transverse upper and lower supporting frame front frame members 38 and 39, are also provided as in an intermediate transverse front frame member 40, extending the full width of the device and between the uprights 35. A suitable base frame member 41, including a base transverse support 42 is also provided, and may be enclosed as by means of panels 43 having suitable access openings 44 therein.

As shown in Figures 4 and 6 the frame also includes rear vertical supporting members 45, at the extremities, and also align with the front members 36. Transverse supporting members 46 extend between the members 36 and 45, as well as between the vertical members 35 and and their rear counterparts. Additional transverse supporting members extend between the vertical intermediate supports 47 aligned between vertical supports 36 and 45, and horizontal supporting frame members 48 extend between each of members 36 and its associated rear member 47. Central vertical frame members 37 also has a rear counterpart and an intermediate vertical counterpart corresponding to the members 45 and 47, and horizontal supports extending rearwardly from the frame member 37 in horizontal alignment with the end members 48.

Each member 48 carries a journal 50, including the central horizontal members 48. The journals support the ends of axles 51, upon each of which is mounted a rotatable drum 52, there being a total of four drums, comprising a pair of vertically aligned drums on opposite sides of the central partition of the frame. Each front frame member 36, as well as the front frame member 37 carries a pair of vertically aligned upper and lower journals 53, spaced respectively above and below the adjacent members 48, and each journal 53 rotatably mounts an axle 54, upon which is mounted a roller 55, there being thus upper and lower rollers on each member 36, as well as on the members 37, to provide two pairs of rollers, the rollers of each pair being aligned vertically, and the upper rollers and lower rollers of the two pairs being aligned horizontally.

A band 60, of heavy duck or canvas, has one of its ends secured to each drum 52, and passes over each roller 55, as best shown in Figures 4 and 6. The band has secured thereto, as by special re-stick cement, the advertising posters 26, the arrangement being such that posters may be removed from and replaced on the bands as desired. This is normally effected by swinging outwardly the glass panes 25, which are hinged as at 61. It is to be noted that as best shown in Figures 4 and 6, the panes 25 are inclined on their outer faces towards the bottom, to prevent the accumulation of moisture and dust thereon, and also to prevent the direct refraction of the sun's rays, as would be the case if the panes were perfectly vertical.

Each band 60, there being one provided for each of the frames 23, has along its edge a toothed flexible chain 62, which may be comprised of any desired material, as, neopreme, and may if desired have steel wire embedded therein for improved strength. A chain is positioned on either side of each band, and is adapted to be engaged by teeth 63 in a gear 64, one being carried at each end of each roller 55. The portion of the band 60 adjacent the glass 25 passes immediately adjacent thereto, and for the full length thereof, and a backing plate 65' is provided in order to facilitate the changing of the posters on the band, without disturbance of the band itself.

Each drum 52 has a plurality of radially disposed fingers 65 on the opposite end plates thereof, for the purpose of permitting the band 60 and its associated chain 62 to wind thereon without disalignment. The chains are secured to the bands, as best shown in Figure 7 by means of a plurality of fingers 66, riveted as by means of rivets 67 to the neopreme chains 62, and secured by a headed stud 68 carried by the band 60 in an elongated slot 69 in each finger 66. As best shown in Figure 8, for better adherence of the band to its associated drums and rollers a plurality of rubber rings 70 are suitably secured, as by cementing to the underside of the band 60. This connection including the slot 69 permits expansion and contraction of the chain 62 in accordance with weather conditions, or the like, without displacement of the bands 60.

Means are provided for biasing both the upper and lower drums towards a position to wind the associated band thereon, and take the form of a pulley 71 mounted on one end of each of axles 51. The pulley has a cable 72 wound therearound, which cord extends over a suitable pulley 73, carried by brackets 74 depending from top member 38. Weights 75 are secured to the ends of each of cables 72, and extend downwardly into suitable wells 76 formed in the base of the frame. It is to be noted that each of axles 51 and 54 extends from a journal on one of the end members 48 through an aligned journal on the central member 48, so that each individual axle carries two drums or rollers in horizontal alignment.

The weights 75 are adapted to exert pressure on their respective drums in such manner as to maintain the bands 60 taut at all times.

It will now be seen that when the rollers 55 are rotated, in a manner to be more fully described hereinafter, that the band 60 is alternately wound on either of the drums 52, and upon reversal of the direction of rotation of the rollers 55 the movement of the band is reversed, whereby a selected poster 26 on each of the bands 60 is exposed in a window 25 for a predetermined period of time, and the band is then moved to expose the next poster.

Means are provided for driving the rollers 55 and their associated bands 60, and take the form of an electric motor 75 mounted on a suitable bracket 76 carried by the base member 46, and including a drive shaft 77 for rotating a pulley 78. The pulley 78 drives a belt 79, which in turn drives a relatively large pulley 80, which is fixedly mounted a shaft 81 carried by a mounting bracket 82, which in turn is mounted on a auxiliary frame 83 including a top plate 84. The frame 83 also includes vertical corner members 85 and base member 86 carried by the base 46. The shaft 81 extends into a reversing gear box 87, to be more fully described hereinafter, from which a second shaft 88 extends to a pulley 89, the shaft being carried by a mounting bracket 90 mounted on the members 84. The pulley 89 drives a belt 91, which in turn drives a pulley 92, mounted on a shaft 93 which extends into a reduction gear box generally indicated at 94.

The sprocket or pulley 92 drives a worm gear 95 inside the gear box 94, the gear 95 in turn driving an engaging gear 96, which is mounted on a shaft 97.

The gear 96 is also immersed in a body of oil 98, permanently carried within the reduction gear box 94. Affixed to the shaft 97 exteriorly of the gear box 94 is a gear 99, which is provided with a plurality of teeth 100 about a portion of its periphery but has an untoothed portion 101. The teeth 100 are adapted to engage with the teeth 102 of a gear 103, which also has an untoothed portion 104. The gear 103 is mounted on a shaft 105, which carries at its opposite ends a drive pulley 106, which drives a chain 107, which in turn drives a sprocket 108 carried by one end of one of the axles 51 for the rollers 55. This axle also carries a second sprocket 110, which is adapted to drive a chain 111. The chain 111 in turn drives a sprocket 112, mounted on the other of axles 54 mounting the top roller 55, as best shown in

Figure 4. It will thus be seen that the continuous rotation of the motor 75 in turn drives, through the arrangement previously described, the rollers 55 and hence the band 60 to display its associated posters. By virtue of the inner engagement of the blank or untoothed spaces 99 and 104, the band 55 is rotated a predetermined distance, determined in accordance with the comparative length of the poster to be displayed, and then the movement is interrupted for a predetermined period, as for example, fifteen seconds in order to display the two side by side posters for a period of time sufficient to permit their inspection.

The shaft 97 carries exteriorly of gear 99, a sprocket gear 115, which is adapted to mesh with the gear 116, mounted on a shaft 117 secured to a bracket 118 carried by the top of reduction gear housing 94. The shaft 117 also carries a contact pointer 119, which is positioned for movement between two oppositely disposed contacts 120. The arrangement is thus such that when the shaft 93 is driven in one direction by the pulley 89 of shaft 88, the arm 119 is biased into engagement with one of the contacts, and when the direction of rotation is reversed, in a manner to be described hereinafter, the pointer closes a circuit to the other of the contacts 120.

This reversal of direction occurs when the web or band 60 has reached the end of its travel in one direction, being completely wound on one of drums 52, and unwound from the other, and is effected within the housing 87. As best shown in Figures 9 and 10 the housing 87 includes a casing, having a recess 125 in its base, which is normally kept filled with oil, to provide lubrication. The shaft 81 enters an aperture in one side of the housing 87 and mounted for rotation in a bushing 126. The shaft has keyed thereto a gear 127, which is provided with a plurality of angularly inclined teeth 128 about the periphery thereof, and has on its inner face a plurality of additional teeth 129. The gear 127 is suitably keyed as at 130 to the shaft 81 and rotates constantly therewith in one direction. The end of the shaft 81 is provided with an extension 131, which is freely rotatable in the socket 132 carried by the inner end of a shaft 88, which extends outwardly through a bushing 133 in the opposite side of the casing 87. The shaft 88 has secured thereto as by means of a pin 134, a gear 135, which is substantially identical to the gear 127, on its face, and carries a plurality of teeth 138 angularly inclined about the periphery thereof, and a second set of teeth 139 on its face. A clutch member 140 is keyed as by means of a key 141 to the shaft 81, for rotation therewith, but is slidable therealong, in a manner to be more fully described hereinafter. The clutch member 140 has a set of teeth 142 on one face, and a similar set of teeth 143 on its opposite face. The teeth 142 are adapted to mesh with the teeth 129 of clutch member 127 when the gear 140 is moved in one direction, and with the teeth 139 of clutch member 135 when the gear 140 is moved in the opposite direction. The teeth 138 and 128 of gears 127 and 135 are adapted to engage the teeth 154 of a bevel gear 155 which is mounted in the recess 125 at the base of housing 87, and is secured therein as by means of a screw or bolt 156 having a head 157 loosely engaging the gear, whereby the gear 155 may be rotated by either of gears 127 or 138, the direction of rotation, being controlled by the position of clutch member 140, and consequently the direction of rotation of the shaft 88, and its associated mechanism as previously described. The housing 87 is suitably mounted as by means of bolts 158 on frame piece 84, and is provided with a removable top 159 secured in position as by means of bolts 160 to provide access to the interior thereof when desired.

The clutch member 140 is adapted to be moved by means of a fork 165, which is provided at its extremities with a pair of pins 166 engaging in a groove 167 extending peripherally about the center of the gear 140. The fork 165 is piovtally mounted on a pin 170, which extends through a suitable bushing 171 in an aperture in a boss 172 in the side wall of the housing 87. The fork is adapted to be moved by means of an arm 173, which is secured to the outer end of the pin 170, the arm 173 carrying a pin 174.

The pin 174 seats between two rings 175 carried by an arm 176, forming a pivotal connection therefor. The arm 176 is in turn pivoted on a pivot 177, which is mounted on a frame 178 which is secured to the adjacent upright 47, and the upper transverse frame member 48. The support 178 is in the form of a cross, and the horizontal arms thereof are provided with solenoid coils 180, each of which is provided with a solenoid core 181, the cores being connected as at 182. The arm 176 is connected to the core or core stems 181, and is adapted to be moved by the selective energization of the coils 180, which is in turn accomplished through any desired conventional electrical circuit by the engagement of the arm 119 with one of its associated contacts 120. The arrangement being such that as one contact 120 closes the circuits to one of the coils 180 is energized, and when the other contact 120 closes the circuit, the other of the coils 180 is energized. This through the arm 176 throws the gear 140 into engagement selectively with either the gear 127 or gear 135 to reverse the direction of rotation of shaft 88, and correspondingly through mechanism described previously to reverse the direction of rotation of the rollers 55, and hence of the band 55. A spring biased lever 190 is pivotally connected as by means of a pivot 191 to the end of arm 173, and pivotally secured at its other end to a bracket 192 carried by the bracket 118. A spring 193 serves to impart a snap action through the member 190 and the arm 173 to the fork 165, and hence to impart a sudden shifting to the clutch member 140 to reverse the direction of travel of the shaft 88. Suitable stop members 195 which include leather stop portions 196 are carried by the cross arms of the support 178, to limit the travel of the end of arm 176.

As best shown in Figures 4 and 6, rubber rollers 197 are mounted on pivoted arms 198 and biased by springs 199 into engagement with the sprockets 63, to insure the even movement of the chains 72 thereabout.

From the foregoing it will now be seen that there is herein provided an improved automatic advertising device which accomplishes all of the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiment herein before shown and described, it is to be under stood that all matter herein is to be interpreted merely as illustrative, and not in a limiting sense.

What is claimed is:

1. In an advertising device, the combination of a frame, a housing for said frame, a display window in said housing, a pair of vertically aligned horizontal drums in said housing, a flexible band having an end secured to each of said drums, a pair of drive rollers on said frame adjacent said window, a sprocket on each end of said drive rollers, said band passing between said window and said rollers, a yieldable chain connected to each longitudinal edge of said band to compensate for expansion and contraction of said band with respect to said chains, said chain operating over said sprockets, a motor mounted in said housing, a driving chain operated by said motor, and means interconnecting said driving chain and said second chain operating over said sprockets.

2. In an advertising device, the combination of a frame, a housing for said frame, a transparent window mounted on said frame, a backing strip mounted on said frame behind said window, a pair of vertically aligned horizontal drums in said housing, a flexible band having an end secured to each of said drums wound on said drums running over said rollers and operating between said window

and backing strip and spaced rubber rings secured to the reverse side of said band for engaging the contacting portions of said wound band, maintaining said band in a straight line visible through said window, a motor mounted in said housing, a driving chain operated by said motor, and means interconnecting said driving chains and said chain running over said sprockets.

3. In an advertising device, the combination of a frame, a housing for said frame, a transparent window in said housing, a pair of vertically aligned horizontal drums in said housing, rollers mounted on said frame above and below said window and having sprockets on their ends, a flexible band trained over said rollers and having an end secured to each of said drums and movable past said window while being wound from one drum to the other, and an operating chain running over said sprockets, a plurality of stationary fingers secured to said operating chain and extending laterally therefrom, rivets securing said fingers to said chain, said fingers having elongated openings overlapping the edge of said band, headed studs mounted on said band and extended through said elongated fingers, adjustably connecting said chains to said bands, a motor mounted in said housing, a driving chain operated by said motor, and means interconnecting said driving chain and said operating chain running over said sprockets.

4. In an advertising device, the combination of a frame, a housing for said frame, a transparent window pane, a backing plate mounted on the frame and spaced from said window, a pair of vertically aligned horizontal drums in said housing, a pair of rollers mounted in said housing, above and below said window and each having a sprocket at one end, a flexible band having an end secured to each of said drums trained over said rollers and adapted to be wound from one drum to the other, said flexible band providing a support for advertising media removably secured to said band, and constrained in movement by contact with the backing strip and window, a motor mounted in said housing, a driving chain operable by said motor, and rotatable means for operating the chain interconnecting the sprockets on said rollers for the driving chain.

5. In an advertising device, the combination of a frame, a housing for said frame, a window in said housing, rollers mounted on said frame behind said window above and below same and each having a sprocket on one end, a chain trained over said sprockets, drums mounted in said housing approximately aligned horizontally with the top and bottom of said window, a flexible band adapted to carry advertising media secured at its opposite ends to said drums trained over said rollers and positioned between the window and said rollers and adapted to be wound onto one of the drums and off the other, and vice versa, an electric motor in said housing, a transmission between said motor and the chain interconnecting the sprockets on said rollers including a reversible gear train having a shiftable arm for reversing the direction of the drive and a spur gear train including two meshing gears having mutilated sectors thereon and allowing the flexible band to remain temporarily stationary, a pair of solenoids having an armature connected to said shiftable arm for moving same in opposite directions, a pair of switches respectively connected to said solenoids, an arm selectively engageable with said switches, and a reduction gear train between the spur gear train of said transmission and said arm for moving same into contact with one of said switches at the end of a period of interrupted motion of the flexible band due to the gears of the spur gear train being one of mesh over their mutilated sectors.

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