No. 785,736. PATENTED MAR. 28, 1905.

W. H. JACOBS.

EXHIBITING MECHANISM.

APPLICATION FILED JAN. 18, 1904.

3 SHEETS—SHEET 1.

Fig. 2.

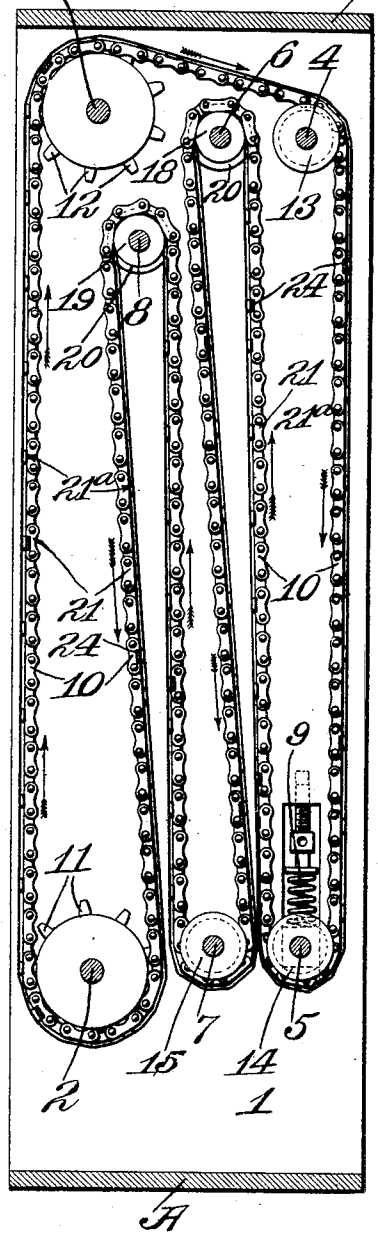


Fig. 1.

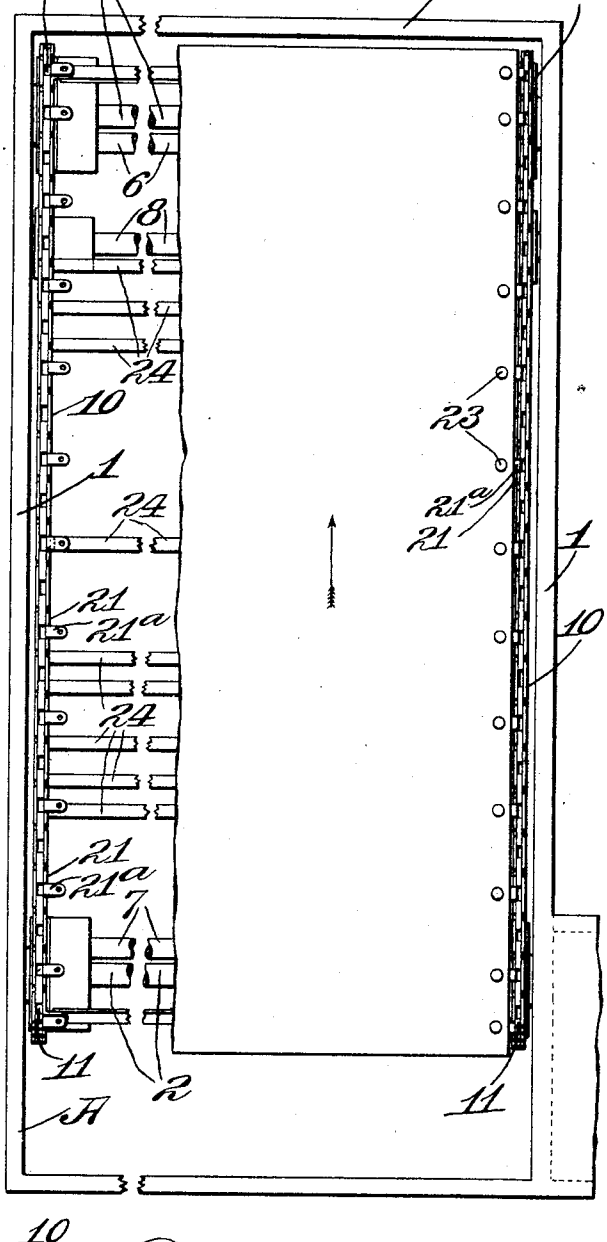


Fig. 3.

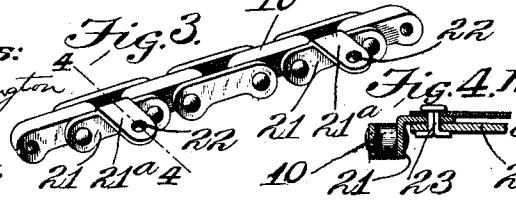


Fig. 4.

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3 SHEETS—SHEET 2.

Fig. 5.

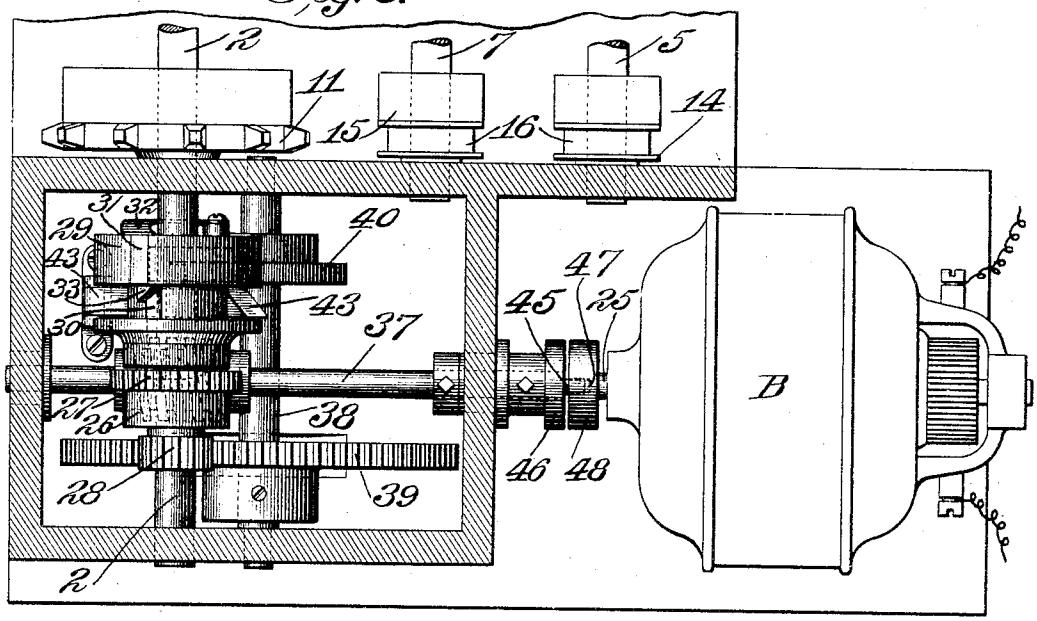
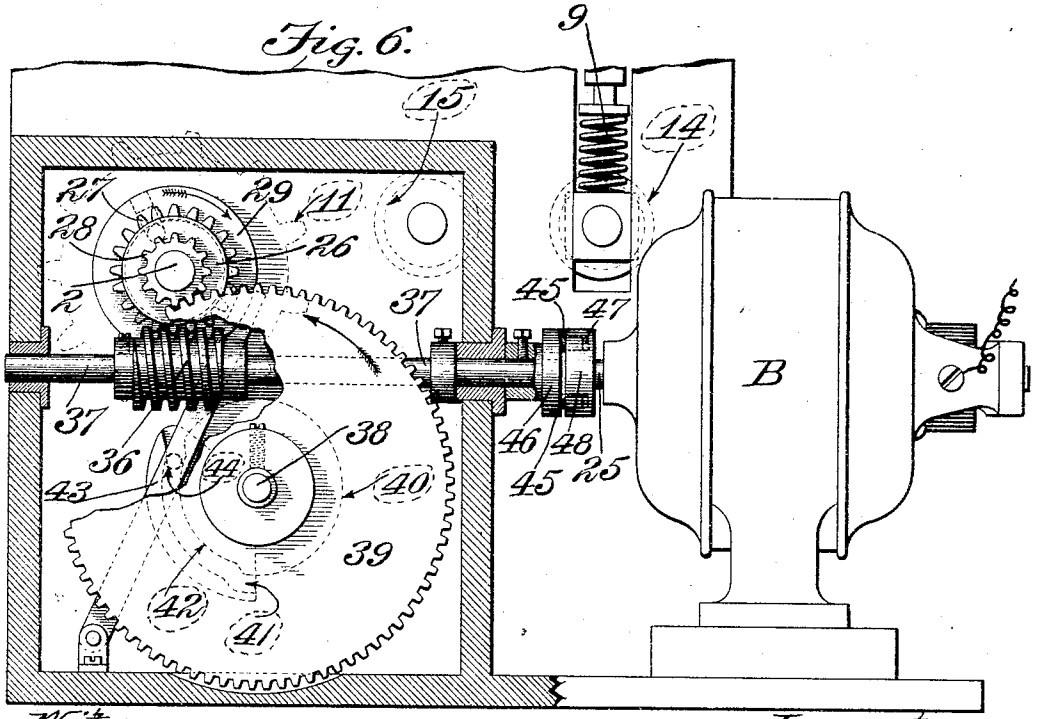


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 7.

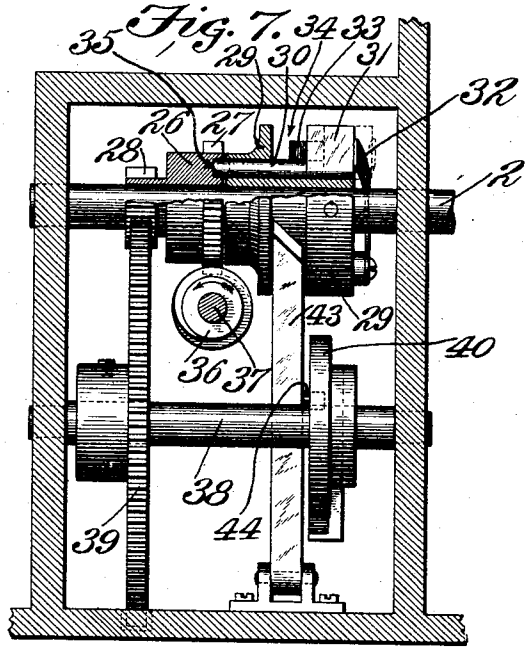


Fig. 8.

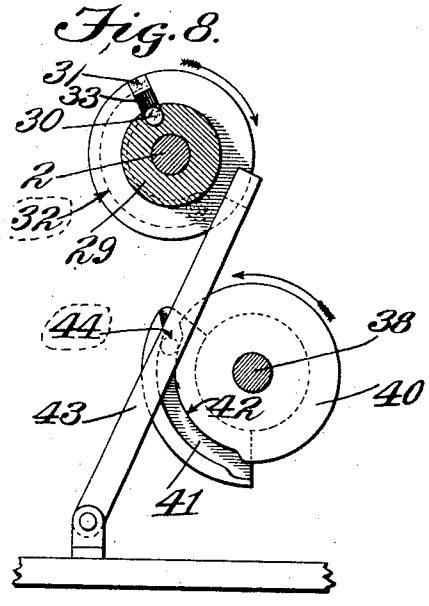


Fig. 11.

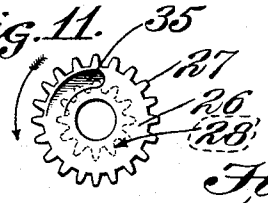


Fig. 9.

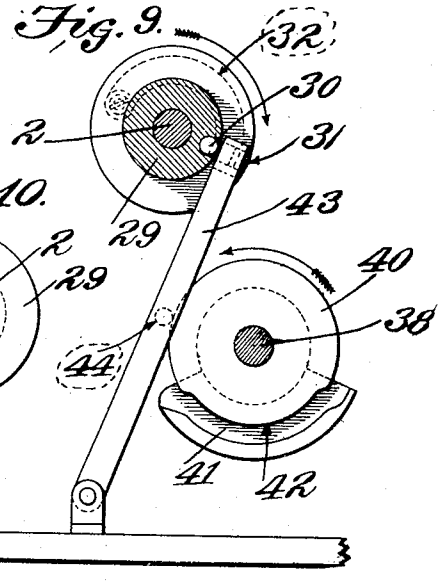


Fig. 10.

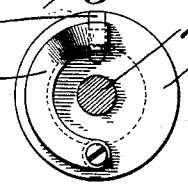
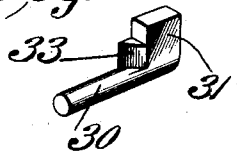


Fig. 12.



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UNITED STATES PATENT OFFICE.

WILLIAM H. JACOBS, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO JACOB RANZ, OF ST. LOUIS, MISSOURI.

EXHIBITING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 785,736, dated March 28, 1905.

Application filed January 18, 1904. Serial No. 189,605.

To all whom it may concern:

Be it known that I, WILLIAM H. JACOBS, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Exhibiting Mechanisms, 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, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation showing the sign-bearing web and its traveling supports, a portion of the web being broken away and a portion of the supporting structure being also broken away in order to economize space. Fig. 2 is a vertical sectional elevation taken through about the center of Fig. 1. Fig. 3 is a detail perspective view of a portion of the supporting-chain. Fig. 4 is a detail sectional elevation on about the line 4 4 of Fig. 3, a portion of the sign-bearing web being shown attached to its carrier. Fig. 5 is a top plan view illustrating particularly the driving mechanism, a portion of the supporting-casing being shown in section. Fig. 6 is a side elevation particularly illustrating the driving mechanism, a portion of the supporting-casing and of one of the collars being in section and a portion of one of the gears being broken away to more clearly illustrate other elements. Fig. 7 is a rear elevation illustrating the driving mechanism, a portion of the casing and of certain of the parts being in section. Fig. 8 is a detail side elevation illustrating certain portions of the driving mechanism in the positions which they occupy to permit the sign-bearing web to be driven. Fig. 9 is a side elevation of the same parts in the positions which they occupy to cause the sign-bearing web to rest. Fig. 10 is a rear face view of the block which is fixed to the main shaft. Fig. 11 is a rear face view of the gear which is loose on said main shaft, and Fig. 12 is a perspective view of the connecting-pin adapted to connect said fixed block and said gear.

This invention relates to improvements in exhibiting mechanisms, my primary object being to provide an efficient structure whereby the sign-bearing web can be intermittently driven, convenient means being provided for securing such web to its carrier.

To this end and also to improve generally upon mechanisms of the character indicated, the invention consists in the various matters hereinafter described and claimed.

Referring now more particularly to the drawings, A represents a casing which is open at its front in order to expose the sign-bearing web, and extending across said casing and suitably journaled in its side walls 1 is what may be termed the "main" shaft 2, this shaft being shown as located near the bottom and front of the casing. At the front of the casing near its top and also extending between and journaled in the side walls is what may be termed a "primary" idler-shaft 3. Other idler-shafts 4, 5, 6, 7, and 8 are also journaled in and extend between the sides 1, one of said shafts being preferably movable and controlled by a suitable tension device 9 for the purpose of holding the web-carriers taut in a well-understood manner. These web-carriers 10 are illustrated as endless sprocket-chains, and they pass over the idlers, as clearly illustrated in Fig. 2.

Fast upon the driving-shaft 2 are sprockets 11, whose teeth take into the links of the chains in a well-understood manner, and sprockets 12 are also mounted upon the shaft 3, the teeth of these sprockets 12 also taking into the chains. The idler-pulleys 13, 14, and 15, mounted, respectively, upon the shafts 4, 5, and 7, have what may be termed the "inner" faces of the chains in engagement with them, the outer web-bearing faces of the chains being out of engagement with said pulleys. The said pulleys are grooved, as shown at 16, Fig. 5, and the chains are received in these grooves. The outer face of each chain passes over idler-pulleys 18 and 19, so that the web is in engagement with the periphery of each of said last-mentioned pulleys. For this reason said pulleys 18 and 19 are not grooved, as are the pulleys 13, 14, and 15, but merely have flanges 20, which lie adjacent the outer sides of said chains, so that the chains are held in place; but the sign-bearing web is not indented, as would be apt to occur should the pulleys 18 and 19

be grooved, as are the pulleys 13, 14, and 15. Of course the sign-bearing web can be an endless one, as shown, or short webs can be independently attached to the carrying-chains, as the web can be attached to the chains in many ways. Preferably, however, one of the side plates 21 of appropriate links has a bent tongue 21^a, which is provided with a perforation 22, this tongue projecting inwardly—*i. e.*, toward the center of the web—and having the web connected thereto by a suitable fastener 23, extending through the web and through the said opening 22. Preferably distance-strips 24 extend between the side chains for the purpose of holding these chains properly spaced from each other throughout their lengths, and these distance pieces can be conveniently attached to the said tongues 21^a of appropriate links, being held in position by the same fastener 23 by which the web is secured.

It will be readily apparent that as the chains 10 are driven successive signs carried by these chains are brought into position to be exhibited through the open front of the frame, the opening in the frame being of course a sight-opening. The chains are so driven that they move upwardly between the sprockets 11 and 12. By reason of this fact, as a sign always reads from top to bottom, the sign is presented to an observer in an attractive manner even when the chains are moving, the upper or first portion of the sign first catching the observer's eye, and the remainder of the sign following in its natural order. In those cases in which a sign travels from top to bottom and across a sight-opening the sign is practically unintelligible until after the whole of the sign is displayed through the opening.

The present apparatus provides mechanism whereby the chains or sprockets are alternately driven to bring a new sign in line with the sight-opening and permit it to rest while such sign is exhibited through the sight-opening, so that each sign is exhibited at rest for a desirable period of time. The present mechanism for thus intermittently driving the sign-carriers is illustrated in Figs. 5 to 12. The motor is herein illustrated as an electric motor B of any suitable construction, this motor having its driving-shaft 25 constantly driven in the same direction.

The before-mentioned shaft 2, which carries the sprockets 11 for driving the chains, has loose thereon a gear-block 26, which is provided with the gears 27 and 28, while fast upon said shaft 2 to rotate therewith is a block 29, in which is seated a longitudinally-slidable connecting-pin 30, which is normally held in what may be termed "projected" position, with one end of the pin or connector projecting beyond the inner end of said block 29—*i. e.*, the end of said block adjacent the gear-block 26—so that said projecting end of the pin can engage in a suitable recess or opening in the inner face of said gear-block 26. The said pin 30 is preferably provided with a head 31, against which bears the free end of a plate-spring 32, whose other end is fastened upon the block 29 in any suitable manner, this spring 32 serving to yieldingly hold the pin in the projected position heretofore described. Upon the pin and preferably projecting from the said head thereof is a cam-faced projection 33, which when the pin is in its said projected position projects into the peripheral annular groove 34, formed in said block 29. Preferably the recess 35 in the gear-block 26, in which recess the projecting end of the pin 30 enters for the purpose of operatively connecting the block 29 with the gear-block 26, has an inclined face-wall, against which the inner end of the pin 30 bears, this face-wall gradually inclining backwardly from the plane, including the inner face of said gear-block 26, so that the pin 30 can gradually move into the socket or recess 35. The gear-block 26 is in constant connection with the driving-shaft 25 of the motor, this connection being here shown as effected by means of the worm-gear 36 meshing with the gear 27, this worm-gear being mounted upon the shaft 37, which is constantly in driving connection with said driving-shaft 25, and thus in itself becomes a driving-shaft. It will be readily apparent that, the motor B constantly operating and the shaft 37 thus being constantly driven, the gear-block 26 is constantly driven, and said gear-block, through the pin 30 and the block 29, serves to drive the main shaft 2 when said pin is operatively engaged in the recess 35 of said gear-block 26; but while the said pin 30 remains out of engagement with said gear-block 26 said gear-block merely idly rotates upon the shaft 2, and said shaft remains stationary. Of course the web-carriers or sprocket-chains 10 advance while the shaft 2 is rotating and remain at rest when said shaft 2 rests, a new sign being brought into exhibiting position during the rotation of the shaft 2, and such sign being exhibited in a position of rest while said shaft 2 is at rest. Of course the spring 32 is constantly tending to throw the pin 30 into position to operatively connect the gear-block 26 and the block 29, and the present mechanism includes means for periodically throwing the pin 30 out of connection with the said gear-block 26 and for maintaining said pin in its retracted position out of connection with the said gear-block. This means is now to be considered.

A suitably-journaled counter-shaft 38 has fixed thereto a gear 39, which meshes with the before-mentioned gear 28, and also fixed to said counter-shaft is a disk 40, provided with a cam-surface. This surface is here shown as including a portion of the periphery of the disk and the walls of a cam-slot 41, formed in one face of the disk and having its ends opening upon the before-mentioned por-

tion of the disk's periphery. The inner wall 42 of said groove 41 forms the low portion of the cam. Suitably pivotally mounted upon the casing or framing is a lever-arm 43, from which extends a pin 44, which coöperates with the cam-disk and is adapted to be received in the before-mentioned cam-groove 41. The free end of this lever-arm lies in the before-mentioned peripheral groove 34 of the block 29, and when in what may be termed its "inner" position—*i. e.*, in its position nearer the center of rotation of said block 29—this free end of the lever-arm is adapted to be engaged by the before-mentioned cam projection 33 upon the connecting-pin 30, the said free end of the lever-arm being preferably beveled, as shown. The gears 28 and 39 are preferably so proportioned that the shaft 38 rotates slowly with relation to the rate of rotation of the main shaft 2. As said shaft 38 is, through the gears 39, 28, and 27, in constant connection with the constantly-rotating worm-gear 36, said shaft 38 is constantly driven. We will assume that the motor B is operating and that the pin 44 upon the lever-arm 43 rests upon the high portion of the cam presented by the cam-disk 40, so that the free end of said lever-arm is in engagement with the cam projection 33 upon the pin 30, whereby the pin is in retracted position, as indicated by dotted lines in Fig. 7, and the driving connection between the gear-block 26 and the shaft 2 is thus broken, Fig. 9 showing the lever-arm 43 in the position which it occupies while holding the connecting-pin 30 in this retracted position. Under such conditions the gear-block 26 would be rotating upon the shaft 2, and this shaft would be at rest, so that a sign would be at rest in line with the sight-opening in the casing A. The shaft 38 would, however, be rotating, due to its connection with the constantly-rotating gear-block 26, and after a sufficient interval of time the portion of the cam-block 40 provided with the groove 41 is carried around so that the pin 44 is received in the said groove, and the outer wall of the groove engages the pin and forces the lever-arm 43 outwardly into the position shown in Fig. 8. The spring 32 thereupon immediately forces the pin 30 against the inner face of the gear-block 26, and when the rotating gear-block is brought into proper position the pin 30 enters the recess 35, and the continued rotation of the gear-block then causes the block 29 and the shaft 2 to rotate. During this rotation of the shaft 2 the sign-carriers 10 are advanced a step to bring a new sign into exhibiting position. At the time at which this new sign reaches exhibiting position the outer wall of the groove 41 of the rotating cam-disk 40 is carried out of operative engagement with the said pin 44, whereupon the high portion of the cam of said cam-disk acts upon said pin 44 and returns the lever-arm 43 to inner position with the free end of the lever-arm in the path of movement of the cam projection 33. When the rotating main shaft 2 brings this cam projection into proper engagement with said free end of the lever-arm 43, the pin 30 is again retracted and is held in retracted position by the free end of the lever-arm, so that the shaft 2 rests in order to exhibit the new sign in a position of rest.

As is well known, the driving-shafts of electric motors frequently have longitudinal reciprocatory motion which it is undesirable to transmit to the driven shaft. In order to permit the driving-shaft to have this movement and yet not transmit the same to the driven shaft 37, pins 45, extending from a suitable head 46 upon said shaft 37, loosely enter sockets 47, formed in a corresponding head 48 upon the end of the driving-shaft 25. Therefore the shaft 25 can have limited longitudinal movement without transmitting such movement to the shaft 37, and, furthermore, the shaft 25 can within certain limits get out of line with the shaft 37 without causing either shaft to bind in its bearings.

I am aware that minor changes in the construction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In an exhibiting mechanism, a sign-carrier, a main shaft in driving connection therewith, a constantly-rotating driving-shaft, driving connection between said shafts and including a movable clutch member provided with a projection, an arm movable into and out of the path of movement of said projection, and means controlled by said driving-shaft for so moving said arm; substantially as described.

2. In an exhibiting mechanism, a movable sign-carrier, a main shaft in driving connection therewith, a constantly-rotating driving-shaft, a gear-block rotatably mounted upon said main shaft, a pin slidably but non-rotatably mounted upon said main shaft and adapted to move into and out of connection with said gear-block, connection between said constantly-rotating shaft and said gear-block, a cam driven by said constantly-rotating shaft, and an arm controlled by said cam and adapted to move into and out of the path of movement of a part upon said pin for causing movement of the latter with relation to said gear-block; substantially as described.

3. In an exhibiting mechanism, a movable sign-carrier, a main shaft in driving connection therewith, a gear-block rotatably mounted upon said main shaft, a pin slidably but non-rotatably mounted upon said main shaft and adapted to be connected to and disconnected

from said gear-block, a constantly-rotating driving-shaft in driving connection with said gear-block, a counter-shaft, driving connection between said counter-shaft and said gear-block, an arm movable into and out of the path of movement of a projection upon said pin for moving said pin with relation to said gear-block, and a cam upon said counter-shaft and controlling said arm; substantially as described.

4. In an exhibiting mechanism, a movable sign-carrier, a main shaft in driving connection therewith, a constantly-rotating element, a peripherally-grooved block non-rotatably mounted upon said main shaft, a pin slidably mounted in said block and adapted to move into and out of connection with said constantly-rotating element, a projection upon said pin extending into the peripheral groove of said block, an arm received in said groove and movable into and out of the path of movement of said projection, and means for so moving said arm; substantially as described.

5. In an exhibiting mechanism, a movable sign-carrier, a driven shaft for imparting motion to the sign-carrier, a driving-shaft, gearing for imparting motion to the driven shaft from the driving-shaft, a clutch mechanism on the driven shaft comprising a reciprocating element having a head provided with a cam-face, and an independently-mounted arm having means for automatically engaging the cam-face of the reciprocating element to prevent rotation of the driven shaft by the driving-shaft; substantially as described.

6. In an exhibiting mechanism, a movable sign-carrier, a shaft in driving connection therewith, a constantly-rotating shaft, gears on the respective shafts and in mesh with each other, a clutch mechanism for intermittently causing the first-named shaft to rotate, said clutch mechanism coöperating with the constantly-driven shaft and comprising two members adjacent to each other, a reciprocating element having a head provided with a cam-face, and an independently-mounted arm having means for automatically engaging the cam-face of the reciprocating element to disconnect the clutch elements to prevent rotation of the driven shaft by the driving-shaft; substantially as described.

7. In an exhibiting mechanism, a movable sign-carrier, a main shaft in driving connection therewith, a constantly-rotating driving-shaft, a clutch mechanism on the main shaft including a transversely-movable element carried by one element of the clutch mechanism, and a pivoted arm having a cam-face coöperating with a similar face on the transversely-movable element of the clutch mechanism for automatically and intermittently preventing rotation of the driven shaft by the driving-shaft; substantially as described.

8. In an exhibiting mechanism, a sign-carrier, a main shaft in driving connection therewith, a constantly-rotating driven shaft, a clutch connection between said shafts, means for automatically and intermittently breaking said clutch connection and for maintaining the clutch in disconnected position, said clutch mechanism including a transversely-movable pin having a head, and an independently-mounted arm for intermittently contacting with the head to move the pin out of engagement with one of the clutch elements; substantially as described.

9. In an exhibiting mechanism, comprising a sign-carrier, a driving-shaft for imparting motion to the sign-carrier, a driven shaft, gearing for imparting motion to the driven shaft from the driving-shaft, a clutch mechanism on the driven shaft comprising a spring-pressed reciprocating element having a head provided with a cam-face, and an independently-mounted means for automatically engaging the cam-face of the reciprocating element to prevent rotation of the driven shaft by the driving-shaft; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 12th day of January, 1904.

WILLIAM H. JACOBS.

Witnesses:

GALES P. MOORE,

GEORGE BAKEWELL.