Aug. 2, 1960 L. D. BARRY 2,947,101

ADJUSTABLE SIGN

Filed Jan. 26, 1955

Fig. 1

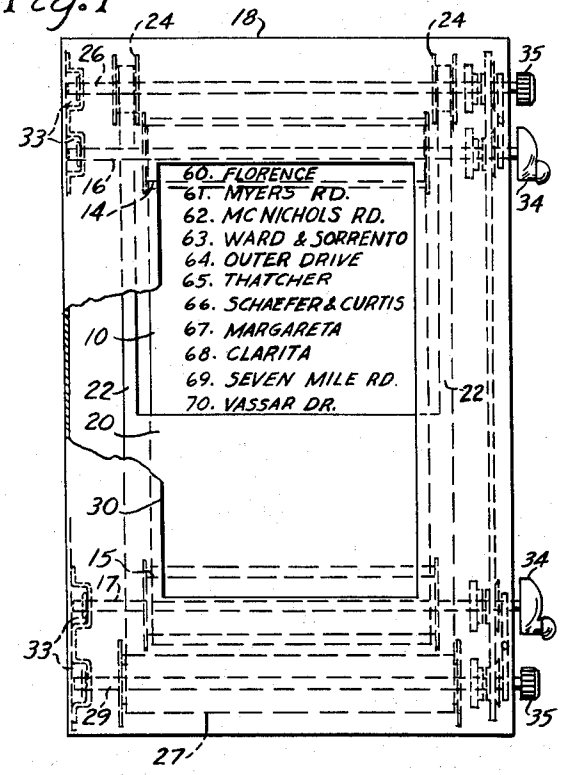
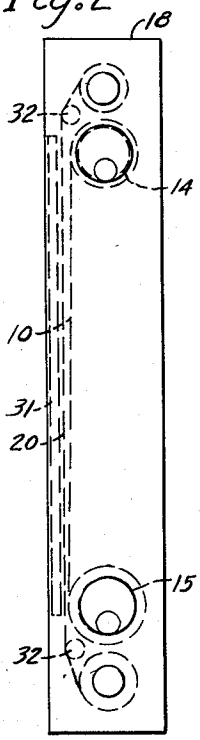



Fig. 2



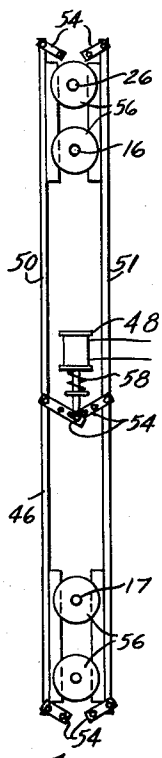


Fig. 4

Fig. 3

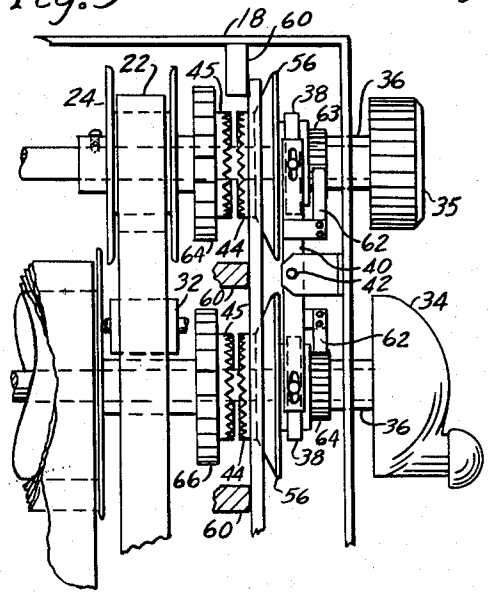


Fig. 5

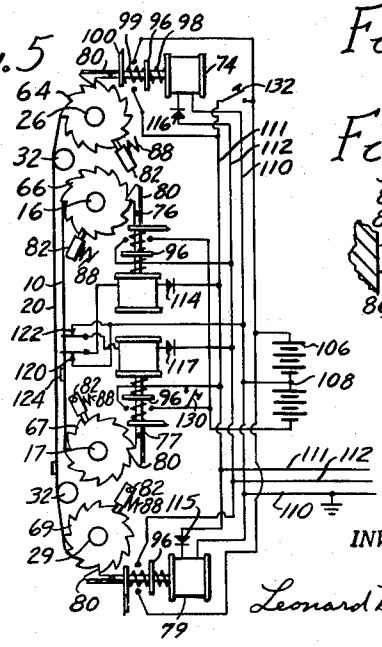
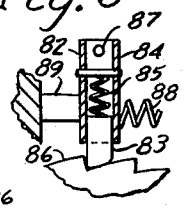


Fig. 6



INVENTOR.

Leonard D. Barry

United States Patent Office 2,947,101
Patented Aug. 2, 1960



2,947,101

# ADJUSTABLE SIGN

Leonard D. Barry, 19300 Pennington Drive, Detroit 21, Mich.

Filed Jan. 26, 1955, Ser. No. 484,283

13 Claims. (Cl. 40—53)

This invention relates to adjustable signs and in particular to a sign for listing stops to be made by a vehicle of transportation.

My signs have particular utility in the cars for service as described in my pending application Ser. No. 564,511. It is an object of this invention to provide an adjustable sign for listing stops to be made by vehicles which are to be detached from a train to provide local, transfer, or branch-line service so that passengers desiring to get off at these stops can select the proper vehicle to make their stop.

If cars are added to the front of a train and uncoupled from the rear, the signs are placed in each car to be set by the operator when the car is coupled to the train, the operator setting the sign to display the stops to be made by that car when later uncoupled from the end of the train for another local, transfer, or branch line run. Passengers on the car when coupled to the train can walk through the train and select by reading these signs the car that will make their stop or transfer.

If cars are added to and dropped from the rear or side of a train, these signs can be placed in each car of the train and automatically changed as herein disclosed to display only stops to be made by the next car or cars which leave the train so that passengers will know when to go to the car or cars about to be uncoupled by reference to this visual listing of stops and connections to be made by these cars.

If it is desired to list train stops in each car of a train or display portions of lists or other information on a plurality of signs or rolls a feature of this invention provides an arrangement whereby the setting of any sign can set all other signs with a relatively simple mechanism and hookup.

Information such as dining car menu or places of interest could be displayed in each car or compartment on the same signs that list train stops. This visual means is preferred to a loud-speaker system, since only those desiring the information need look at the sign and the information displayed can remain in view as long as it is pertinent.

This sign in simple and preferred form, comprises briefly a sign roll listing along its length in consecutive order the stops on one or more transit runs, an enclosure or frame for holding the roll for viewing a portion of the roll long enough to include the maximum number of stops which might be made on a single local run, a shield or cover roll arranged to cover over the sign roll to display only the stops made on a particular run, these rolls being conveniently arranged for the operator to set by turning knobs or hand wheels. The cover roll is also useful in covering over the sign while it is being turned.

Other objects of this invention are to provide an adjustable sign suited for displaying a variable number of train stops from a long list, one which has an easily adjustable cover for covering information not then to be displayed, one which can be adjusted easily, one simple in construction, one not easily subject to being tampered with, one which can be remotely controlled, and further one which can be either manually or remotely adjusted according to manual adjustment of a similar sign.



These, other, and further objects which should become apparent from this disclosure are combined in the preferred embodiment of this invention described herein with reference to the accompanying drawing wherein:

Figure 1 is a front view of the sign with a portion thereof broken away to clarify details.

Figure 2 is a right side view of the sign shown in Figure 1.

Figure 3 is a front view of the upper right hand corner of the sign with cover removed to show details of the reeling mechanism.

Figure 4 is a side view of the sign showing only the knob lockout mechanism, which prevents passengers from turning the sign.

Figure 5 is a diagrammatic view of the remote control operating ratchets and electrical circuits associated therewith.

Figure 6 is a sectional view of a ratchet wheel holding tongue.

Referring to the drawing and in particular to Figures 1, 2, and 3, sign roll **10** having stations or stops listed thereon is reeled as a scroll on drum or reel **14** at the top and **15** at the bottom. Drums **14** and **15** are respectively secured on shafts **16** and **17** supported to revolve in an enclosure or box **18** which houses the sign. Each drum is preferably flanged. A cover roll **20** is arranged to cover over sign roll **10** to obscure stops from view which are not to be made. The cover roll is carried at the top on ribbons **22** (cords or chains can be substituted for **22**). One ribbon supports each side of the cover roll. Each ribbon is fastened and wrapped on a reel **24**, which is secured on shaft **26**, which is rotatably mounted in box **18** above shaft **16**. The cover roll is wound on drum **27**, which is fastened on shaft **29**, which is rotatably mounted in box **18** below shaft **17**. All rolls are secured to the drums on which they are wrapped to prevent slip. Box **18** has an opening **30** in its cover face for viewing the portion of sign reel not covered over by the cover reel. The opening **30** has a glass cover **31** secured in a usual way. Rollers **32** are arranged and secured to box **18** to prevent cover roll **20** from rubbing sign roll **10**. Roller **32** can be omitted if the diameter of the cover rolls and spools is enlarged or their shafts located forward sufficiently relative to the shafts of the sign roll. Shafts **26**, **16**, **17**, and **29** are axially held in enclosure **18** by any suitable means such as a washer flange on each shaft engaging a pocket **33** fastened in box **18**.

A feature of this invention is the arrangement for turning the reels from hand wheels **34** or knobs **35**. Hand wheels **34** or knobs **35** are each secured on a tube **36** which rotatably fits over the end of a shaft. Preferably the sign reel has wheels **34** on its shafts and the cover reel has the smaller knobs **35**, the equivalent of wheels **34**. A slip collar **38** is axially secured to rotate on each knob tube **36** a short distance within box **18**. The two slip collars on the upper shafts **26** and **16**, and similarly the two slip collars on the lower shafts **17** and **29**, are connected together by a double yoke arm **40** pivotally secured in the middle by pin **42** to box **18**. The yoke **40** engages a pin on each of the two adjacent collars to axially move the collars and knob tubes whereby when one knob is pressed in the adjacent knob comes out. On the inner end of each knob tube **36** is a toothed clutch face **44** arranged to engage a toothed clutch face **45** secured on the shaft whereby when a knob is pushed in the clutch **44** thereon engages so that the shaft with reel can be turned by the knob, the clutch **44** on the adjacent knob being disengaged from its shaft. This rocker arm arrangement of the yokes insures that only one roll in the sign can be

turned at a time in a given direction, thus enabling both the sign and cover rolls to be remotely adjusted (as described later herein) using only two wires and a ground return between signs.

A locking linkage arrangement **46**, shown in Figures 3 and 4, wedges all four clutch faces **44** from faces **45** so that the knobs cannot turn the rolls **10** and **20**, and the reels **14**, **15**, **24**, and **27** are free to be electrically rotated. Solenoid **48** is arranged to open this locking arrangement whenever the operator desires to set the sign. Relay **48** is energized through control current either by a key turned switch not shown or from the head-end car while the controller is energized, or through a switch inaccessible to the passengers; whereby the operator, conductor, or the like alone can set the sign.

The locking mechanism shown comprises two parallel linkage bars **50** and **51** running the length of the sign diametrically opposite the knob tubes **36**. The bars are pivotally mounted on arms **54** providing a parallelogram movement for each bar. Bars **50** and **51** are arranged to engage opposite sides of tapered flange rims **56** on the back of clutch faces **44** and wedge all the clutch faces **44** from **45** under pressure of spring **58**. Bars **50** and **51** are held from bending when the knobs are pressed by portions **60** of enclosure **18**. Solenoid **48** has the end of its plunger linked to an arm **54** on each bar and arranged to spread bars **50** and **51** apart when energized, releasing the knobs for in and out movement whereby the operator can change the sign.

A ratchet **62** engages a ratchet wheel portion **63** of each knob sleeve **36** so that sign roll **10** and cover roll **20** cannot be unrolled slack from the rolls by turning a knob in the wrong direction. The ratchets **62** are secured to the rocker-yoke arms **40** to travel in and out with the sleeves **36**.

When it is desired that the sign be remotely controlled the arrangement shown in Figure 5 is preferred. About each shaft **26**, **16**, **17**, and **29**; either at the left hand end of the sign where there is more space available or (as shown in Figure 3) at the right side toward the center from the clutches; ratchet wheels **64**, **66**, **67**, and **69** are respectively secured. The upper two wheels **64** and **66** are arranged to be turned clockwise by electromagnetic ratchets **74** and **76**. The lower two wheels **67** and **69** are arranged to be turned counterclockwise by electromagnetic ratchets **77** and **79** respectively. Each electromagnetic ratchet has a ratchet or driving pawl **80** having the usual spring arrangement which permits it to return with little back force on the ratchet wheel. Each ratchet wheel has a pivoted tongue **82** (Figure 6) comprising a catch **83** held outward in sleeve **84** by spring **85** against the teeth **86** of the ratchet wheel and pivoted at **87** to box **18** and arranged by spring **88** to hold catch **83** against stop **89** as the driving pawl **80** returns but arranged to recede out of the way to permit the ratchet wheel to be turned in ratching direction and swing out of the way when the wheel is turned in the other direction without excessive force as the sign or cover roll is pulled or a knob turned. The electromagnetic ratchets are preferably of the solenoid type shown with the ratchet pawl **80** pivotally secured to the end of the solenoid plunger. A flange **96** is secured about the plunger of each solenoid. A compression spring **98** on the solenoid side of each flange holds the plunger extended, and a compression spring **99** between the other side of the flange and plate **100** secured to box **18** opposes outward movement of the plunger, whereby the ratchet can be pulled in by the solenoid or pushed out by the turning of the ratchet wheel until the ratchet skips a ratchet wheel tooth. The ratchets turn their ratchet wheels in the same direction as each knob turns the ratchet wheel on the same shaft. Each electromagnetic ratchet is shown deenergized in spring centered neutral position. Each ratchet has contacts closed by flange contactor **96** before the ratchet skips a tooth. Electrical circuits are arranged to be connected by the contacts of the ratchet whose roll is being unrolled to energize the solenoids of the ratchets at the end being hand turned whereby other similar signs are turned by ratchet whenever one sign on the circuit is turned by hand.

The ratchet solenoids are operated from battery **106** having a center tap neutral **108** connecting train line **110** which is grounded. The positive of battery **106** is connected to train line **111** through flange **96** on ratchet **74** and to train line **112** through flange **96** on ratchet **79**. The negative of battery **106** is connected to train line **111** through flange **96** on ratchet **77** and to train line **112** through flange **96** on ratchet **76**. Across train lines **110** and **111** are connected solenoids of ratchets **76** and **79** respectively in series with rectifier **114**, arranged to pass current from line **110** to **111**, and rectifier **115** arranged to pass current from line **111** to **110**. Across train lines **110** and **112** are connected solenoids of ratchets **74** and **77** respectively in series with rectifier **116**, arranged to pass current from line **112** to line **110**, and rectifier **117** arranged to pass current from line **110** to line **112**.

When ratchet wheel **66** is turned clockwise by the hand wheel **34**, ratchet **77** jumps teeth closing its contacts once for each tooth jumped, connecting the negative of battery **106** to train line **111**, operating ratchets **76** in all signs of the train connected, turning them together. When ratchet wheel **67** is turned counterclockwise by its hand wheel **34**, ratchet **76** jumps teeth and closes its contacts once for each tooth jumped, connecting negative of battery **106** to line **112**, operating ratchets **77** in all signs connected. Likewise it can be seen that ratchets **74** and **79** each close the positive of battery **106** to the same two train lines to each operate the other in all signs connected. It should be recalled that adjacent knobs or hand wheels cannot simultaneously be engaged to turn the rolls, therefore the same two train lines can be used for operating both the sign roll and the cover roll. The sign roll can be operated in one direction simultaneously as the cover roll is operated in the reverse direction, since each is then operated from a different train line.

End-of-the-roll stop switches **120** and **122** are preferably added as shown for the sign roll **10**. Switch **120** opened by finger **124** on the end of roll **10** opens the circuit to ratchet **76** stopping the unreeling. Switch **122** opened by a similar finger at the beginning of roll **10** opens the circuit to ratchet **77** stopping the rereeling. By this arrangement the rolls are protected from tearing off the ends of the rollers and can be ratched to the beginning (or end) of travel by means such as switch **130** connected across contacts of ratchet **77** to return sign roll **10** to the beginning and switch **132** connected across contacts of ratchet **74** to return the cover to the top. Switches **130** and **132** are worked by hand or otherwise long enough to insure that the rolls have reached the top. End of the roll stop switches would be similarly connected as for the sign roll to open the circuits to the solenoids of ratchets **74** and **79** to limit movement of the cover roll, but are not shown for the sake of simplicity of drawing.

The same sign is used for both directions of traffic; for one direction it is read top to bottom, for the other from bottom to top. The operator sets the first or last stop (according to the direction of travel) to appear first at the top of the sign and then adjusts the cover roll to cover over the stops at the bottom of the list which are not to be made. If stops within the list are not to be made they can be covered over by stiff strips of paper across the sign roll clipped at the ends to the edges of the sign roll. After each stop on the list is made, the sign could be turned to cover over that stop, so that passengers can see at a glance what is the next stop. The sign roll could be paper, cloth, or plastic and can be illuminated from the front or rear as desired.

Having thus described one embodiment of my invention it is understood that various changes can be made

within the spirit and scope of this invention as defined in the accompanying claims.

I claim:

1. A ratchet wheel arranged to revolve in either direction having a ratchet pawl engaged with said wheel and actuating to turn said wheel in a given direction, said ratchet having resilient means permitting the pawl of said ratchet to extend in the opposite direction from ratcheting to skip teeth when said wheel is forced in the opposite direction from ratcheting and retractable and pivoted tongue holding said wheel so that said ratchet pawl can return to engage successive teeth during ratcheting and comprising a pin, a guide piece having a hole in which said pin rides, a spring forcing said pin outward of said hole and radially against a tooth of said wheel, supporting means pivotally holding said guide piece so as to swing said pin in the direction of movement of the tooth with which said pin is engaged, stop means preventing movement of said pin in the direction of ratcheting said wheel, and resilient means permitting movement of said pin about said pivot on said support in the opposite direction to enable said wheel to be revolved against the direction of ratcheting said ratchet and yet hold said wheel during the return of said pawl during ratcheting.

2. In combination, a ratchet including a toothed wheel and pawl, means resiliently centering said pawl tangentially relative to said wheel and enabling sufficient movement of said pawl to skip teeth when sufficient force is applied to revolve said wheel in the opposite direction to ratcheting, and electrical contacts arranged to be closed by movement of said pawl so as to operate when said ratchet is about to skip a tooth.

3. A combination as claimed in claim 2 and a solenoid ratchet, electrical power means and circuit means connecting said power means to said solenoid ratchet through said electrical contacts to ratchet said solenoid ratchet one tooth each tooth skipped by said first mentioned ratchet.

4. In a system for simultaneously turning a plurality of display tape reels, a plurality of tapes, reeling spools, each end of each said tape being wrapped on a said reeling spool, means supporting in relative position said reeling spools on which are wrapped ends of the same tape, ratchet wheels each arranged to turn with a said spool, solenoid operated ratchets each engaging a said ratchet wheel and arranged to turn a said spool in such a direction as to reel on the tape wrapped thereon, an electrical circuit in which is connected the solenoids of the ratchets of similar ends of the tapes, and contact means associated with the spool for the other end of a said tape, said contact means being arranged to close by the reeling out movement of the spool therewith associated once for each ratchet tooth pitch movement of the reeling on ratchet whereby the turning of one sign similarly rotates the other signs.

5. A system for reversible operation of similar adjustable sign rolls in step and comprising in combination a plurality of adjustable signs each having a sign roll, two rollers each supporting and secured to an end of said roll, first solenoid ratchets, each said roller having a ratchet wheel of a said ratchet associated therewith to hold and turn the roller in such a direction as to reel up the end of said roll secured thereon, the pawls of said ratchets being resiliently centered and said wheels resiliently latched against backward movement to permit said pawl to engage the next tooth during ratcheting and yet permit said ratchet wheel to be revolved in the opposite direction to its ratcheting direction, a first electrical circuit including a power source and contacts connected to energize the solenoids of the said ratchets at similar ends of said signs to ratchet once for each cycle of opening and closing of said contacts to turn said signs in step, and a second electrical circuit having contacts connected to energize intermittently the solenoids of the other said ratchets to rewind said signs in step to any desired position.

6. In a system as claimed in claim 5, a cover roll on each said sign, a transparent opening in said cover roll for adjustably exposing said sign roll, a cover roller supporting each end of said cover roll, a second solenoid ratchet associated with each said cover roller to drive that roller to reel said cover roll on that roller, and electrical circuit means connected to each said second ratchet and similarly arranged to drive said cover roll as said first mentioned ratchets and electrical circuits are to drive said sign rolls, each said circuit having one side in common and the other side of each being opposite in polarity, and polarizing means arranged in said circuits to permit operation of said cover rolls or to permit operation of said sign rolls according to the polarity of the voltage applied to the circuits through a said ratchet.

7. In a system as claimed in claim 5, a first limit switch in said first circuit, a second limit switch in said second circuit, means associated with said roll to open said first limit switch when said roll reaches its end, means associated with said roll to open said second switch when said roll reaches its start position.

8. An adjustable sign for designating stops to be made by a railway car when uncoupled from a train, comprising a sign vertically listing in consecutive order stops to be made by vehicles leaving said train, a cover arranged to cover a portion of the face of said sign, an enclosure having an opening through which said sign and cover appear, said enclosure having at said opening a substantially horizontal edge, means for adjusting and holding said sign selectively in any of a number of vertical positions relative to said enclosure so that said edge can fall between any desired lines of said list, said cover having a substantially horizontal edge lying across said opening and spaced a plurality of lines from said first mentioned edge so as to expose to view a plurality of lines of print on said sign between said edges, and means for vertically adjusting and holding said cover so that its said edge can fall between lines of said list to display a variable number of said lines.

9. A system for reversible operation of adjustable signs in step and comprising in combination; a plurality of adjustable signs each having: a sign roll; a roller supporting each end of said sign roll, said sign roll being rolled and secured thereon; ratchet wheels each associated with a said roller to turn the roller and electrically controlled pawls each arranged to drive a said wheel in such a direction as to reel up the end of the roll thereby driven; said pawls being resiliently centered to permit said ratchet wheel therewith engaged to be revolved in the reverse direction from ratcheting; electrical circuit means including a power source, first electrical contacts for on-off cycling to control said ratchet pawls at one end of each said sign roll to turn said signs, and second contacts to be on-off cycled to control the other said ratchets for rewinding said signs to any desired position; and means for separately operating said first and said second contacts.

10. A system for solenoid operation of similar adjustable roll signs in step, each sign comprising in combination a sign roll, supporting roller assemblies, each end of each said roll being supported by a said roller assembly, ratchets including ratchet wheels each connected to drive a said roller assembly, and pawls each engaged to drive a said wheel, and resiliently supported tangentially with respect to the wheel to permit the wheel to be revolved in reverse from ratcheting, each said roll being secured and wound in such direction on its two said assemblies as to roll between these assemblies by the ratcheting of one roll while revolving the other roll in reverse from ratcheting, contacts associated with each said ratchet to be operated when the pawl of that ratchet is pulled sufficiently far in reverse from ratcheting, and circuit means for energizing the solenoid of each said

ratchet said circuit means being connected through the said contacts associated with the ratchet for the opposite said roller once each tooth skipped, circuit means connecting each said ratchet and each of said contacts in parallel with the equivalent on each said sign so that the closing of contacts on one sign ratchets all said signs, and means to reel a said sign.

11. In a sign having a plurality of rolls where one roll passes over the face of another, a shaft and reeling means separately supporting each end of said rolls, a ratchet wheel on and secured to turn each said shaft, electromagnetic ratchets each arranged to drive a said ratchet wheel, said ratchet wheels being arranged to drive opposite ends of the same roll in opposite directions, manual means for turning said ratchet wheels, each said ratchet being spring centered to drive or be driven by its said ratchet wheel, an electrical circuit and contacts therein closed by the said ratchet which drives the other end of the roll, said contacts being closed once for each tooth of the reversely driven ratchet wheel skipped whereby similar signs having similar ratchets electrically connected can be driven in step when any ratchet is manually turned.

12. On an adjustable sign comprising a sign roll and a cover roll, a reel at each end of each said roll, an actuating mechanism therefore comprising, a ratchet wheel associated with each said reel to turn that reel; four ratchet relays each having a ratchet engaging a said ratchet wheel; each said ratchet being free to be moved by its ratchet wheel so as to jump back a tooth at a time as the wheel is turned against the ratchet and each said ratchet being arranged to turn its wheel in the opposite direction a tooth each time the coil of the said relay is energized, and current source, circuit, and switch means arranged to successively energize and deenergize each said relay whereby said medium is reeled in a first direction by one said ratchet relay and wheel as the other ratchet jumps teeth and alternately reeled in the opposite direction by the ratchet which jumped teeth in the first direction of reeling.

13. On a sign comprising, two rolls, a medium supported on both rollers arranged to be reeled from one roller to the other and back; an actuating mechanism comprising, two ratchet wheels, two ratchets each engaging a said wheel, each said wheel being associated with a said roll to turn with the said roll to reel said medium on that roll when turned by the said ratchet engaging that wheel, each said ratchet being free to be moved by its ratchet wheel so as to jump teeth as the wheel is turned against the ratchet, means arranged to actuate either said ratchet whereby the medium is moved in either direction and spring positioned pawls each engaging a said ratchet wheel and arranged to retract radially when the ratchet wheel is ratcheted and to yield tangentially when the wheel is turned against the ratchet to skip teeth.

References Cited in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 98,773 | Jeffers | Jan. 11, 1870 |
| 120,072 | Jeffers | Oct. 17, 1871 |
| 503,389 | Sheppman | Aug. 15, 1893 |
| 887,579 | Billings | May 12, 1908 |
| 1,415,712 | Rontey | May 9, 1922 |
| 1,690,244 | Periale | Nov. 6, 1928 |
| 1,706,876 | Dunn | Mar. 26, 1929 |
| 2,192,257 | Champion et al. | Mar. 5, 1940 |
| 2,455,210 | Anderson | Nov. 30, 1948 |
| 2,627,755 | Hooker | Feb. 10, 1953 |
| 2,765,552 | Schlafly | Oct. 9, 1956 |

FOREIGN PATENTS

| | | |
|---|---|---|
| 9,962 | Great Britain | Apr. 22, 1914 |
| 408,227 | Great Britain | Apr. 3, 1934 |