

K. KOIKE.
 DISPLAY APPARATUS.
 APPLICATION FILED FEB. 8, 1911.

1,031,126.

Patented July 2, 1912.

2 SHEETS—SHEET 1.

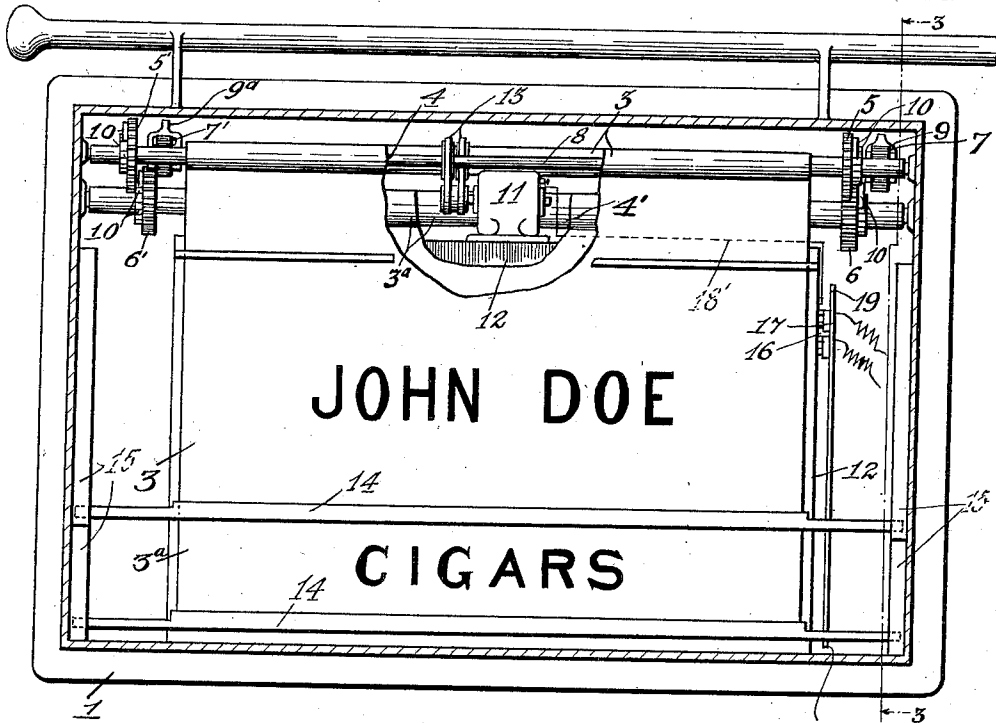


Fig. 1.

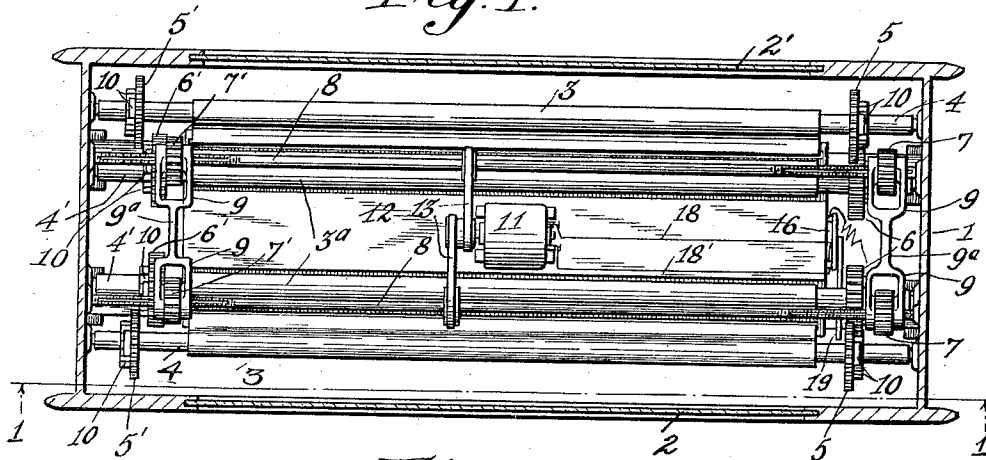


Fig. 2.

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Witnesses

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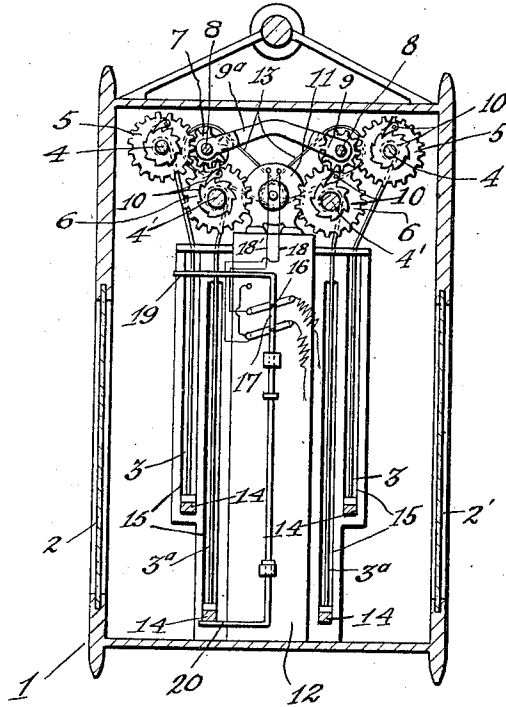


Fig. 3.

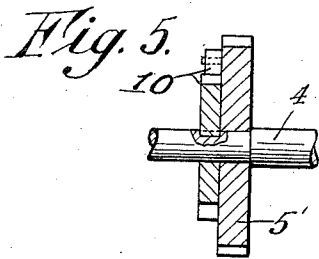


Fig. 5.

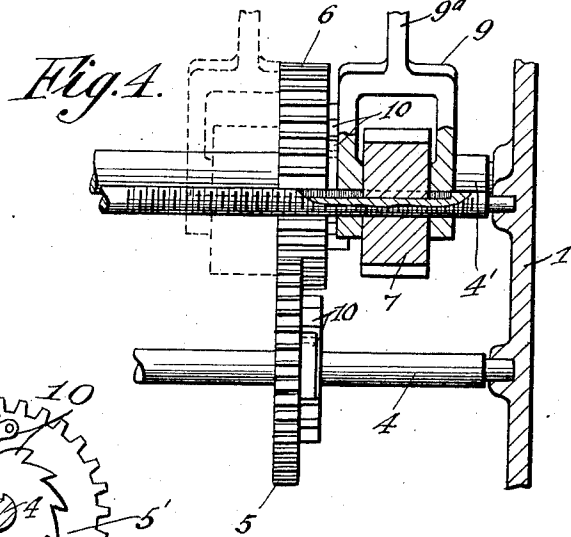


Fig. 4.

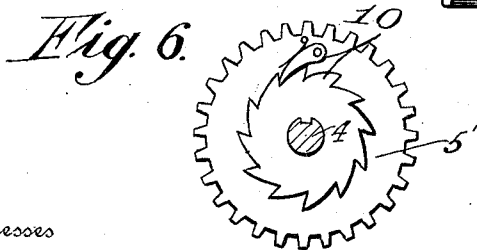


Fig. 6.

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UNITED STATES PATENT OFFICE.

KIHEI KOIKE, OF SEATTLE, WASHINGTON.

DISPLAY APPARATUS.

1,031,126.

Specification of Letters Patent.

Patented July 2, 1912.

Application filed February 8, 1911. Serial No. 607,419.

To all whom it may concern:

Be it known that I, KIHEI KOIKE, a citizen of Japan, and a resident of the city of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Display Apparatus, of which the following is a specification.

My invention relates to apparatus of the above type and has for a primary object the provision of a construction wherein a plurality of adjustable sections forming a display face are controlled by mechanism for movement in a successive manner to the position of display, and subsequently removed as a unit.

A further object consists in the provision of novel mechanism for alternately moving a plurality of aprons for projection of one beyond the other.

Other objects will be set forth as my description progresses and those features of construction, arrangements and combinations of parts on which I desire protection, succinctly defined in my annexed claims.

Referring to the accompanying drawings wherein like numerals of reference indicate like parts throughout: Figure 1 is a longitudinal section of an apparatus, constructed in accordance with my invention, as taken on line 1—1 of Fig. 2, parts being broken away. Fig. 2 is a horizontal section taken through the upper portion of the casing. Fig. 3 is a section taken on line 3—3 of Fig. 1. Fig. 4 is a fragmentary section, illustrating more particularly one of the adjustable driving connections and its shifting device, and Figs. 5 and 6 are sectional views illustrating more particularly the releasable connections provided for the gears on the apron rollers.

I have herein illustrated my invention combined with a duplicate display device comprising a casing 1, the said casing being provided in its opposite side walls with display openings 2, 2', with each of which is associated a respective display face conveniently consisting of a pair of aprons 3, 3^a, the displaying portions of the latter or inner aprons normally projecting below the former and thereby combined as extensions thereof, as clearly shown in Figs. 1 and 3. Each pair of aprons is operated to be successively advanced and simultaneously retracted by novel mechanisms which being

identical in construction, a description of one will suffice.

Aprons 3, 3^a are secured at their upper end portions to respective rollers 4, 4', one of which is spaced forwardly of the other and provided with gears 5, 5' and 6, 6' respectively, the first named pair of said gears being loosely mounted on respective end portions of roller 4. Gears 6, 6' are of greater width than gears 5, 5', and rollers 4' of greater diameter than rollers 4, to thereby obtain the increased travel of apron 3^a with respect to apron 3. In this connection however, it will be observed that the increasing of the diameter of rollers 4' can be avoided by merely adding to the width of gears 6, 6'. Gears 6, 6' are loosely mounted on the end portions of roller 4' with the former thereof in alinement with gear 5, to be simultaneously engaged by a pinion 7, forming an adjustable driving connection therebetween, and the latter arranged at the inner side of gear 5' in the path of a pinion 7' which latter upon being shifted axially, as herein-after set forth, engages said gears 5', 6' to transmit motion thereto alternately. Pinions 7, 7' are splined on respective end portions of a screw shaft 8, feathers on the bores of said pinions engaging in respective longitudinal grooves of the shaft, (see Fig. 4), whereby said pinions are held for simultaneous rotary movement with the shaft while being free for lengthwise movement thereon.

Reference numeral 9 indicates shifters rotatably receiving pinions 7, 7', and having threaded engagement with shafts 8. Gears 5, 6, 5' and 6' have releasable connection with their respective rollers, such connection being conveniently effected through the medium of pawl and ratchet devices 10, the ratchet wheels of which are fixed to the rollers while the pawls are carried by the loose gears, (see Figs. 5 and 6), and these pawl and ratchet devices are set so that those of gears 5', 6' drive in the reverse direction to those of gears 5 and 6. Thus pinion 7' when moving inwardly on shaft 8 will successively engage gears 5', 6' to thereby alternately advance or lower aprons 3, 3^a. During this movement pinion 7 in meshing with its gears 5 and 6 fails to have its rotary movement transmitted to the rollers 4, 4', said gears 5 and 6, through their pawl

ratchet devices 10, at such time turning idly. Reversal of the direction of rotation of shaft 8 causes pinion 7 to simultaneously engage gears 5 and 6 and thereby move aprons 3, 3^a as a unit from the field of display.

Reference numeral 11 indicates a reversible motor mounted on a suitable support 12 and connected by belts 13 to shafts 8 for transmitting power thereto.

Inasmuch as shafts 8 are simultaneously rotated, I prefer to connect the shifters 9 of one shaft with those of the other and this is effected by suitably fixing the adjacent shifters to an intermediate rigid connector 9^a.

Reference numeral 14 indicates weights which are provided on the free lower end portions of aprons 3, 3^a, said weights consisting of bars having extended end portions engaged in guide ways 15 of casing 1.

For reversing the direction of rotation of motor 11, I have shown a reversing switch 16, of a well known type, the same consisting of a pair of pivoted arms connected by a bar 17 of insulating material, the said arms when switched moving alternately into engagement with contacts of respective leads 18, 18' of the motor, as shown.

For controlling switch 16, I have provided strike parts 19 and 20, these comprising angular extensions of switch bar 17 and each lying in the path of the projecting end portion of the weight bar 14 of a respective apron of one pair, the strike part 20 projecting into the path of apron 3^a adjacent the lower end portion thereof while strike part 19 projects into the upper portion of the path of apron 3.

Having thus described my invention what I claim as new, and desire to secure by Letters Patent of the United States of America, is:

1. In display apparatus, a display face composed of a plurality of sections, means supporting said sections for projection one beyond the other, and means for automatically advancing said sections successively with an increased travel of one over the other and retracting the same simultaneously.

2. In display apparatus, a display face composed of a plurality of aprons normally projecting one beyond the other, rollers to

which said aprons are secured, and operating means for said rollers controlled for rotating the same successively in one direction and simultaneously in the reverse direction.

3. In display apparatus, a pair of rollers, aprons secured to said rollers for projection of one beyond the other, a pair of rotatable drivers supported for rotary and axial movements, and cooperating driven members on said rollers arranged in the path of said drivers to alternately connect said drivers with said rollers.

4. In display apparatus, a pair of rollers, a pair of gears on each roller releasably connected therewith, each gear of a roller being connected for transmitting movement to its roller in a respective direction and free for independent movement in the reverse direction, a screw shaft, drive pinions splined to said shaft and each mounted for movement thereon into and out of mesh with adjacent gears of said rollers, means for rotating said shaft, means for shifting said pinions axially on said shaft, and means for reversing the direction of rotation of said shaft.

5. In display apparatus, a pair of rollers, a pair of gears on each roller having a pawl and ratchet connection therewith, the connection of one gear of a roller being relatively reverse to that of the other gear, whereby each gear of a roller has connection therewith for driving the same in a respective direction, one gear of a roller being arranged opposite to one of the gears of the other roller, whereby they can receive power simultaneously, the other gears of said rollers being offset relatively to one another, a screw shaft, means for rotating said shaft, a pair of pinions splined to said shaft, shifters having threaded engagement with said shaft for moving said pinions thereon simultaneously in a longitudinal direction, each of said pinions being arranged for movement into driving connection with respective adjacent gears of said rollers, and means for reversing the direction of rotation of said shaft.

Signed at Seattle, Washington, this 24th day of January 1911.

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Witnesses:

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