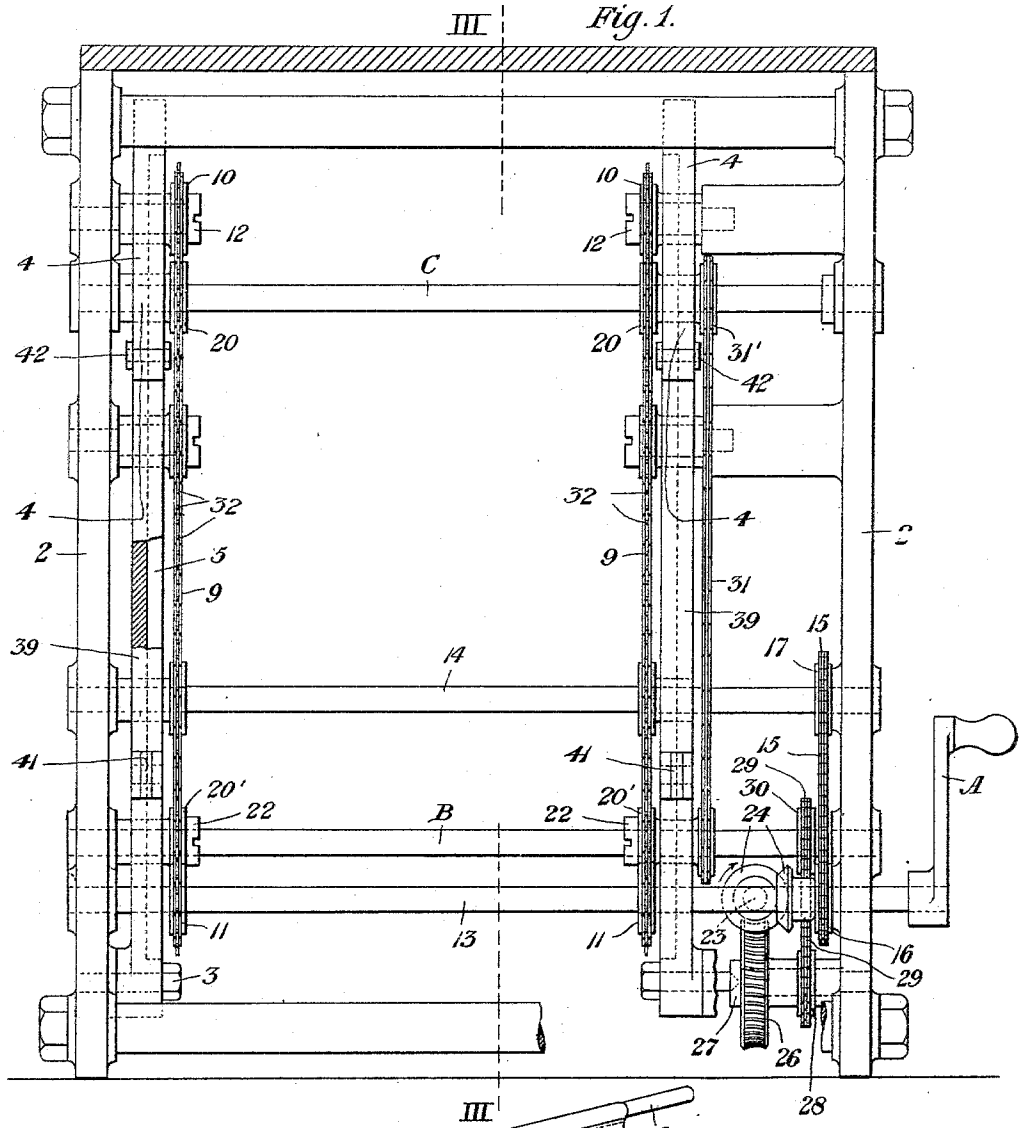
(No Model.) 2 Sheets—Sheet 1.

A. F. C. LOTZ.

DISPLAY MACHINE.

No. 603,109. Patented Apr. 26, 1898.

Fig. 1.



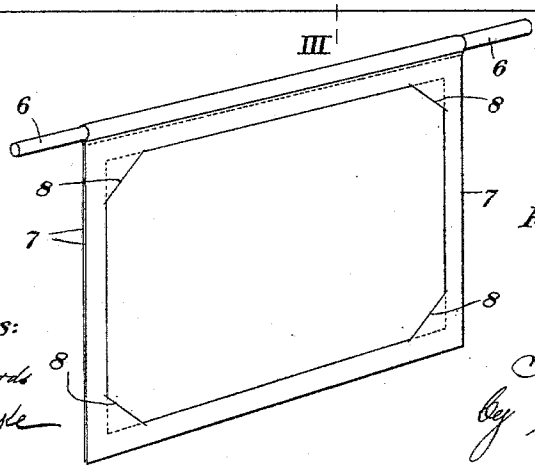


Fig. 2.

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Fig. 3.

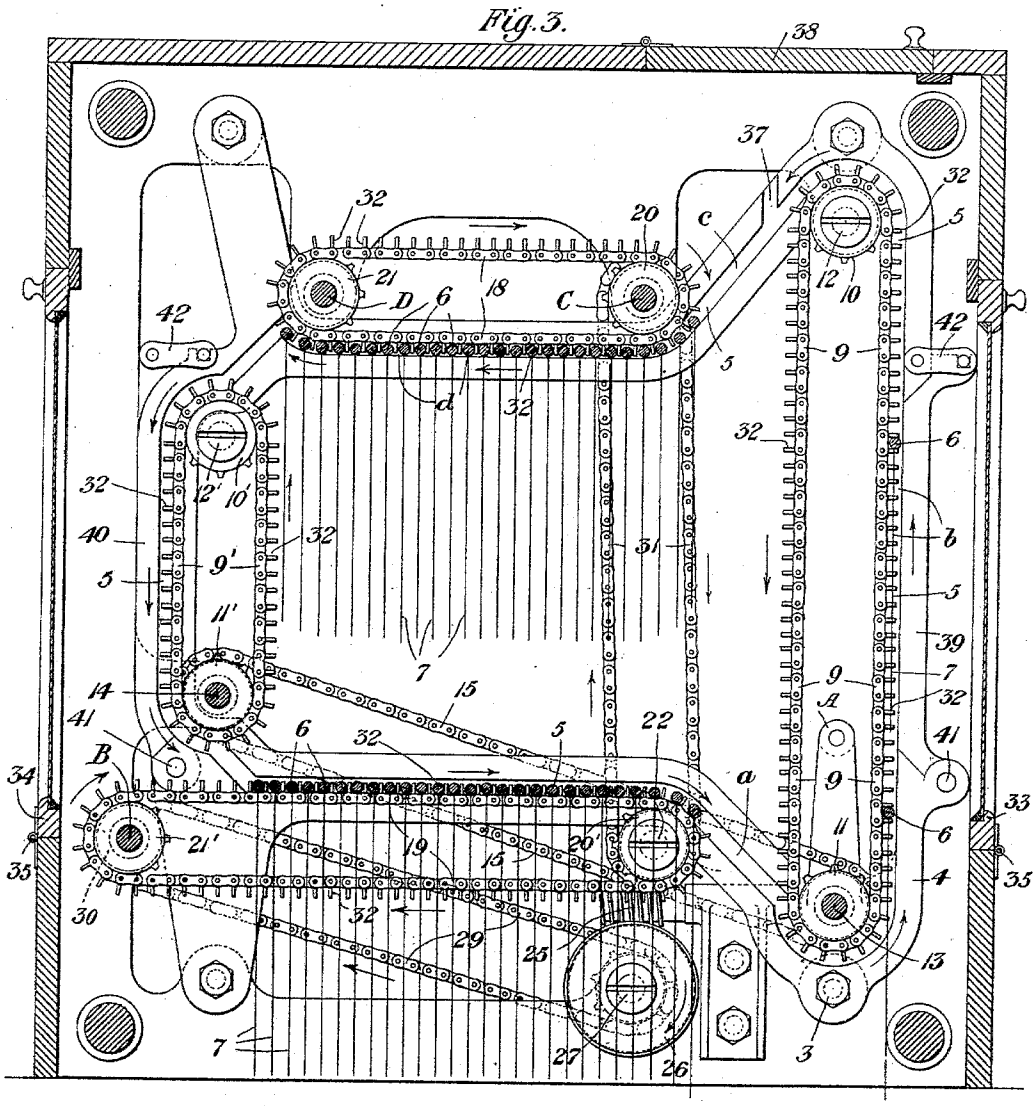
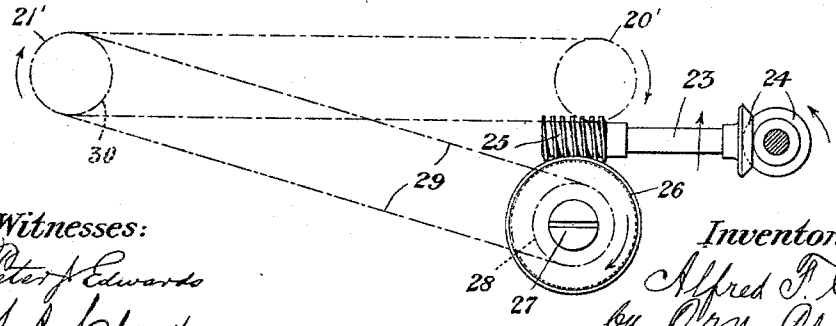


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALFRED F. C. LOTZ, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO GEORGE KURTZ, OF SAME PLACE.

DISPLAY-MACHINE.

SPECIFICATION forming part of Letters Patent No. 603,109, dated April 26, 1898.

Application filed January 26, 1897. Serial No. 620,839. (No model.)

To all whom it may concern:

Be it known that I, ALFRED F. C. LOTZ, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered a new and useful Improvement in Display-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this application, in which—

Figure 1 is a face view of my improved machine from the front, the groove-frame being partly in section. Fig. 2 is a detail view in perspective of one of the supporting rods and aprons. Fig. 3 is a vertical central section taken on the line III III of Fig. 1. Fig. 4 is a detail view detached of part of the driving mechanism.

My invention consists of an improved apparatus for displaying or exhibiting articles—such as photographs, engravings, etchings, &c.—in such a manner as to show a progressive series of such articles at a given point in succession; and it comprises means for storing a large number of suitable supports for such articles in a compact and orderly manner and for causing the supports to travel through the machine.

It further consists in means for removing from and replenishing the stock of the apparatus and for regulating and controlling the speed of the various moving parts, as will be hereinafter set forth.

Referring now to the drawings, 2 2 are the side frames of the machine, suitably braced and framed together, to the interior faces of which are secured by bolts 3 the groove-plates 4, furnished with a continuous guideway or groove 5.

The supporting device for photographs, &c. (shown in detail in Fig. 2) consists in a cross-rod 6, to which is attached a double apron 7, provided on either outer side with any suitable means for attaching the articles desired to be exhibited, such as clips; or the apron may be simply cut, as at 8. The ends of each cross-rod 6 rest in the groove 5, and they are advanced along through the machine, conforming to the guiding-groove, by the mechanism I shall now describe.

At each end of the machine are vertically hung sprocket-chains 9 9′, mounted on and in engagement with sprocket-wheels 10 11 above and below, the rear wheels being designated by the prime-mark. The upper wheels 10 are mounted on studs 12, so as to leave clearance between the wheels, the lower wheels 11 being mounted on shafts 13 14, the shaft 13 constituting the main power-shaft and supplied with a crank A′ or any other desirable means for applying power. Motion is transmitted to the rear chain 9′ by means of a driving-chain 15, leading from a wheel 16, secured to the power-shaft, back to a similar wheel 17, secured to the driven shaft 14, and by this means it will be seen that the forward and back vertical chains 9 9′ are driven at a uniform rate of speed. These chains I shall denominate as "display-chains." A second series of chains, which I shall denominate as "storage-chains" 18 19, are arranged horizontally in the upper and lower portions of the machine in alinement with the display-chains, mounted on sprocket-wheels 20 21 and 20′ 21′, the forward lower wheels 20′ being mounted on studs 22 for clearance and the back wheels 21′ on shaft B, the upper sprocket-wheels being mounted on shafts C D. These chains are driven at a relatively much slower speed than the display-chains, their function being to advance the carrying-rods 6 at slow speed and deliver them singly to the display-chains, the proportionate speed in the machine here shown being just twenty-four to one.

For the purpose of driving the storage-chains at such reduced speed a counter-shaft 23 is geared to the main shaft by a pair of miter-gears 24 and is provided at its other end with a worm 25, meshing into a worm-wheel 26, mounted on the end of a stud 27, and provided with a sprocket-wheel 28, from which a driving-chain 29 leads to a similar wheel 30, mounted on the shaft B, carrying the rear lower wheel 21′, by which means the lower storage-chain is moved at the reduced speed.

A branch driving-chain 31 leads to a wheel 31′, mounted on the front shaft C, supporting the upper storage-chain 18, whereby it is thus driven at a uniform rate of speed with the lower storage-chain 19, the wheels being of equal diameter.

The links of the display and storage chains are provided with outwardly-projecting pins 32, and the pitch of the chain is such that the pins will neatly embrace the rod 6. It is obvious that the pins 32 may be dispensed with except at the points in the chain where the rod is to be lifted up, although for ordinary purposes and in cases where the length of the chain varies it will be found most practicable to equip each link with the pins. It will be noticed that these chains aline and correspond with the groove 5 and that the pins project sufficiently far to engage the rods resting therein.

As shown in the drawings, the pins on the links of the storage-chains are in engagement throughout with a succession of rods, and the grooves and chains are so arranged in relation to each other that at their delivery end, as indicated by the arrows, the grooves lead downwardly, as at *a*, so that when released from the teeth of the chain the rod will slide down the grooves at *a* and will be taken up by the teeth of the display-chain and advanced at the increased speed through such part of the groove *b* as coincides with the display-chain. These chains at their delivery ends launch the rods into the inclined part *c* of the groove leading down toward their respective storage-chain links and into the horizontal portion *d* of the grooves, when they are again taken up by the pins of the storage-chain links.

It will be seen that the supporting-aprons 7 are moved rapidly by means of the display-chains and at a comparatively slow speed by the storage-chains, the purpose of which is to permit a large number of supporting-aprons to be accumulated, as in a magazine, and allowing for a great variety of exposures in succession. I have provided hinged gates 39 40 at front and back, pivoted at 41 and provided with securing-latches 42 at the top, and by this means one or more of the rods and suspended aprons may be taken out for removal or sale of its suspended photograph, when the aprons may be again filled.

At the top of the groove 5 is a short vertical groove 37, leading downwardly into the main groove, and through such groove the machine may be recharged, the rods falling down the incline *c* by gravity, when they will be again taken up and advanced by the links of the storage-chain.

When several of the rods have been removed, a corresponding number of vacancies will appear in the line of the storage-links; but when these are again recharged in the manner described they will pass around the machine in the same order and be taken up by the display-chain, which will discharge them at the top again into the inclined groove *c*, and the break will then be closed up and the continuity restored.

It will be observed that throughout their travel the aprons hang vertically, and the supported photograph or other article is thereby constantly maintained in a position free from danger of bending or breaking.

The machine is designed to display a large number or series of articles without the necessity of handling them, thus saving and preventing them from being soiled or damaged.

The machine is surrounded by a frame of wood and glass, having suitably-arranged doors 33 34 at the front and back, hinged at 35, and on top is a small door 38, by which the aprons may be removed from and replaced in the machine.

Various changes and modifications may be made in the construction and design of my machine, and it may be used in a series of several to advantage, placed one on top of the other, thereby greatly increasing the capacity, in which case all the machines or either may be operated from a single power-shaft.

Having described my invention and in what manner it operates, what I claim is—

1. In a display-machine having side frames provided with oppositely-located endless circulating-grooves disposed in vertical, horizontal and inclined planes, with branch grooves leading thereinto, and apron-supporting rods having their ends inserted in such grooves: conveying-chains provided with pins for engaging the rods disposed in positions conforming to the horizontal and vertical grooves, and means for actuating the conveying-chains, substantially as set forth.

2. In a display-machine, the combination of side frames provided with oppositely-located endless circulating-grooves disposed in vertical horizontal and inclined planes, apron-supporting rods having their ends in constant engagement with such grooves, conveying-chains disposed in positions conforming to the horizontal and vertical grooves provided with projecting pins adapted to engage the ends of the rods, supporting sprocket-wheels and means for actuating the wheels and chains, substantially as set forth.

3. In a display-machine, the combination of side frames provided with oppositely-located endless circulating-grooves disposed in vertical, horizontal and inclined planes, apron-supporting rods having their ends in constant engagement with such grooves, conveying-chains disposed in positions conforming to the horizontal and vertical grooves provided with projecting pins adapted to engage the ends of the rods, supporting sprocket-wheels and means for actuating the wheels and chains at varying speeds, substantially as set forth.

4. In a display-machine, the combination of side frames provided with oppositely-located endless circulating-grooves having approximately vertical and horizontal directions with intervening gravity-inclines and branch grooves leading thereinto, apron-supporting rods having their ends inserted in such grooves, vertically-arranged display-chains coinciding with the vertical grooves, and hori-

zontally-arranged storage-chains coinciding with the horizontal grooves provided with teeth for engaging the rods, and means for imparting motion to the chain at variable speeds, substantially as set forth.

5. In a display-machine, the combination of side frames provided with oppositely-located framework, endless circulating-grooves arranged therein disposed in vertical, horizontal and inclined planes, branch grooves leading thereinto, apron-supporting rods having their ends in engagement with the grooves, conveying-chains provided with projecting pins disposed in positions conforming to the horizontal and vertical grooves mounted on supporting sprocket-wheels and adapted to engage the rods by means of the pins and to advance them through the grooves, and a power-shaft with connecting gearing by which the vertical chains are driven at a given speed and gearing connected therewith by which motion is transmitted to the horizontal chains at a reduced speed, substantially as set forth.

In testimony whereof I have hereunto set my hand this 8th day of December, 1896.

ALFRED F. C. LOTZ.

Witnesses:
PETER J. EDWARDS,
C. M. CLARKE.