No. 676,445. Patented June 18, 1901.

A. PETERSON.

AUTOMATIC MYRIOSCOPE.

(Application filed Nov. 7, 1900.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1.

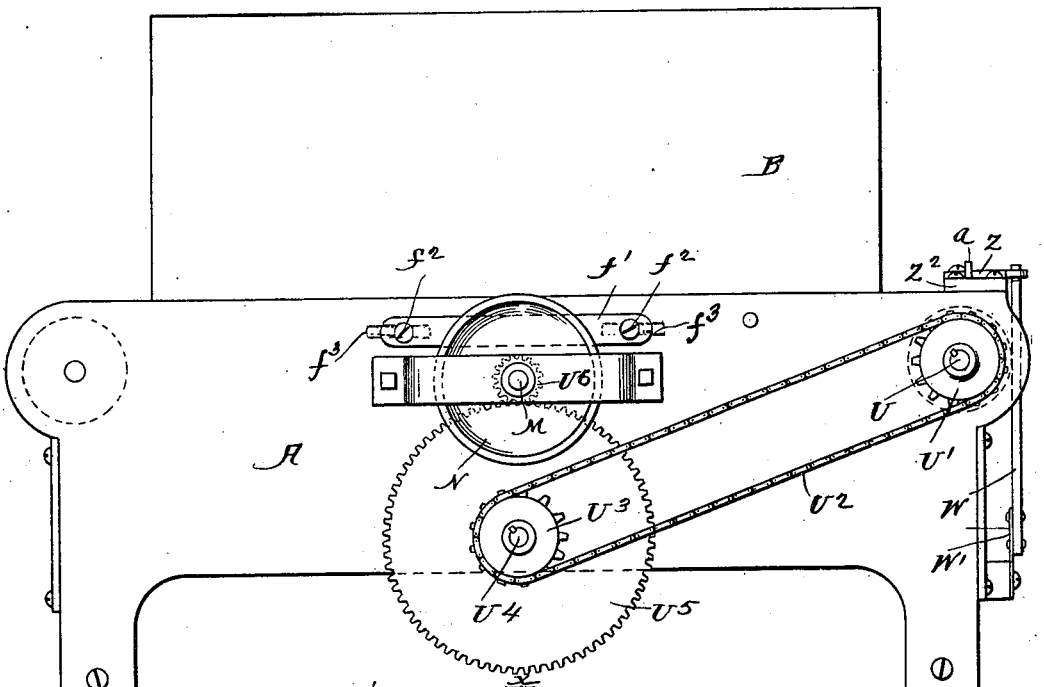
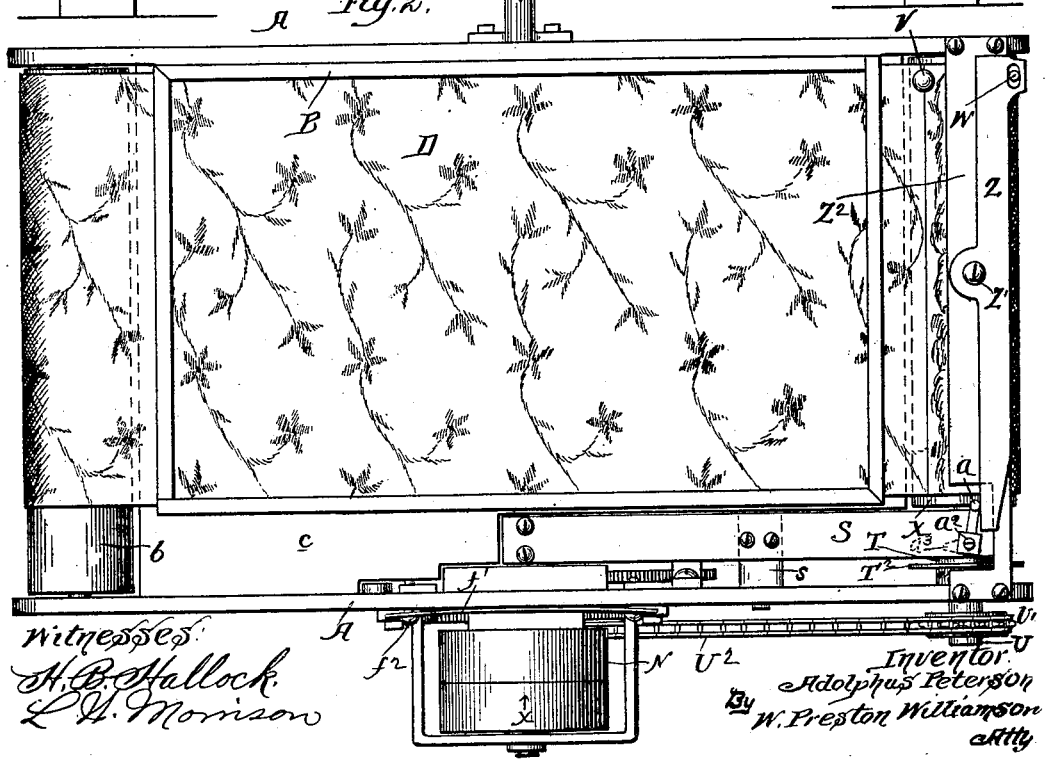


Fig. 2.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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(No Model.) 4 Sheets—Sheet 2.

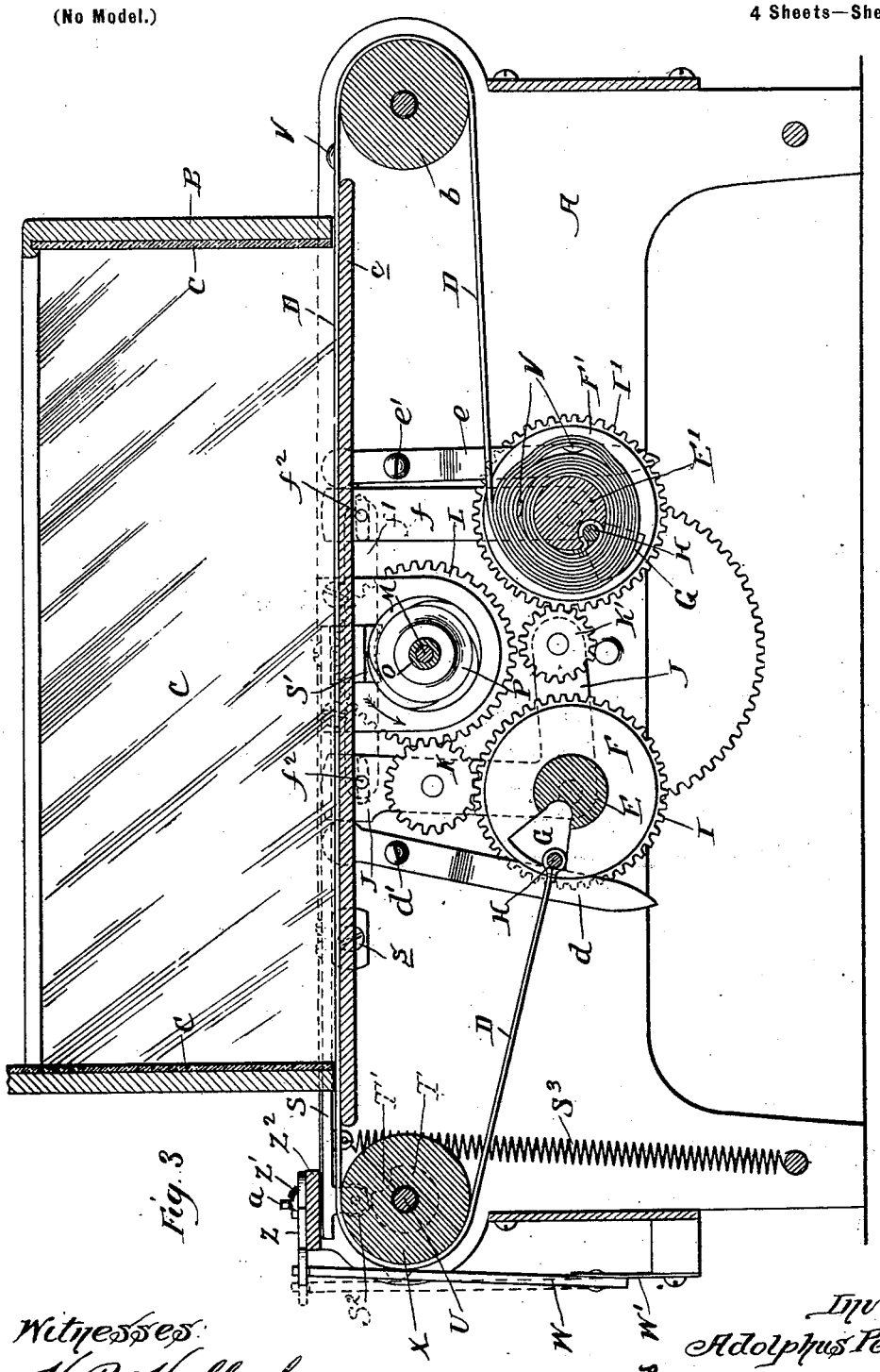

Fig. 3

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(No Model.) 4 Sheets—Sheet 3.

Fig. 4.

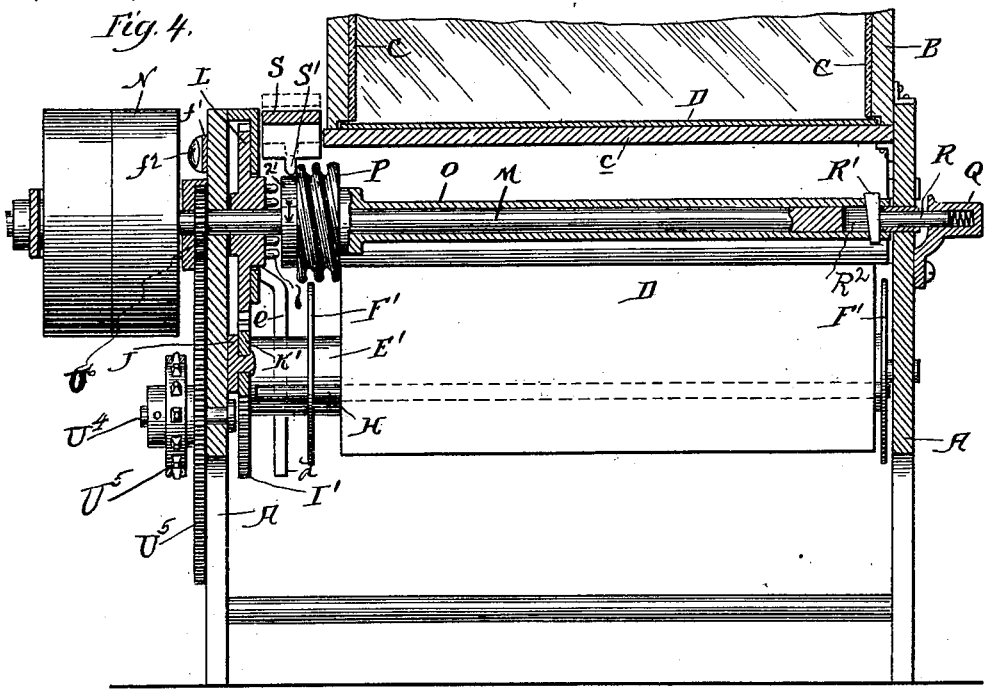


Fig. 5.

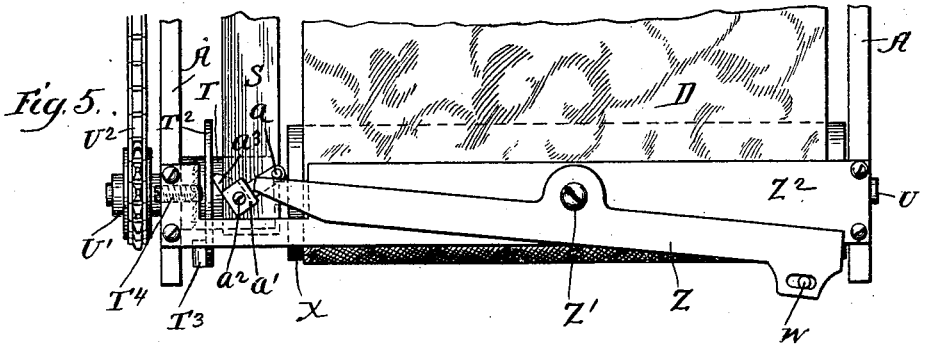
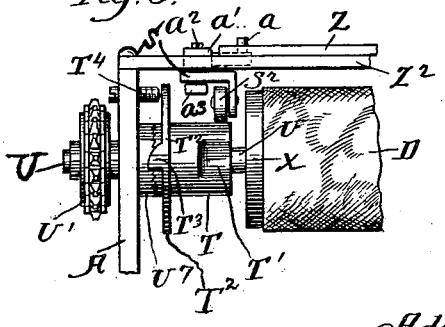


Fig. 6.



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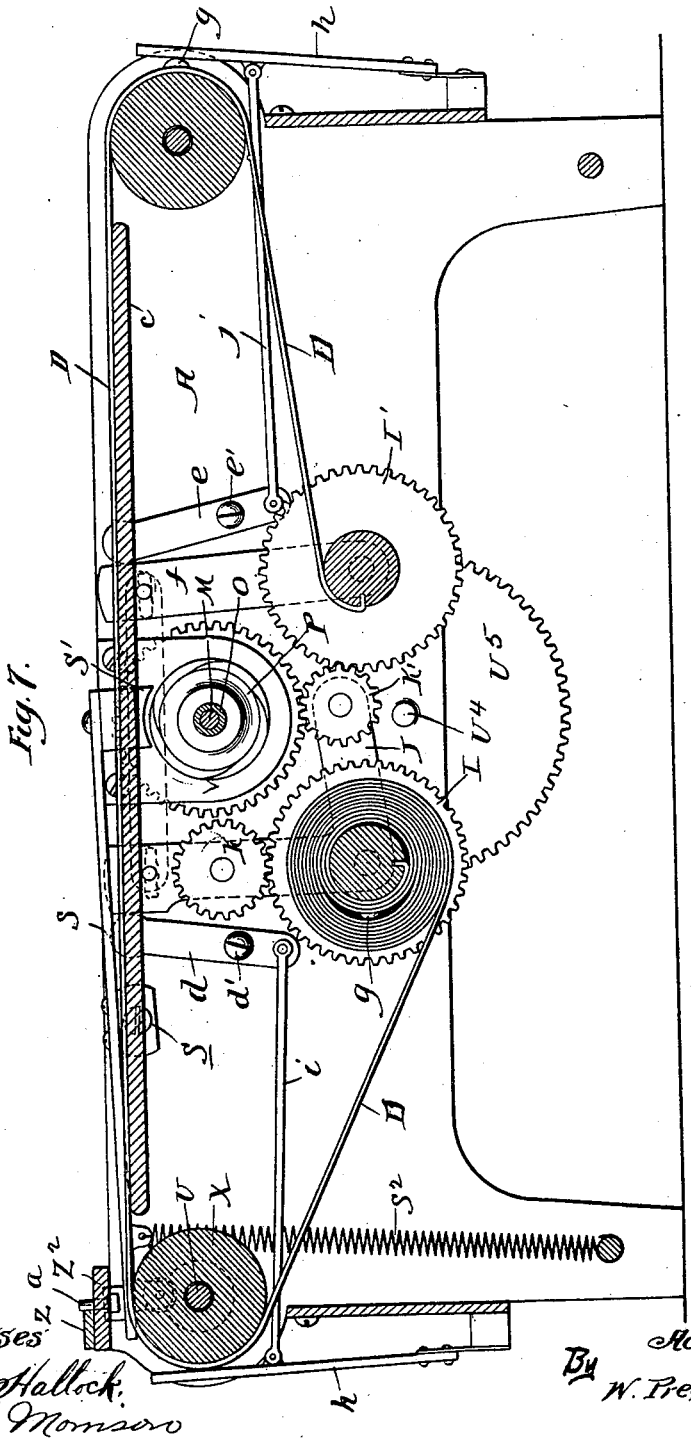

Fig. 1.

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UNITED STATES PATENT OFFICE.

ADOLPHUS PETERSON, OF LANSDOWNE, PENNSYLVANIA.

AUTOMATIC MYRIOSCOPE.

SPECIFICATION forming part of Letters Patent No. 676,445, dated June 18, 1901.

Application filed November 7, 1900. Serial No. 35,727. (No model.)

To all whom it may concern:

Be it known that I, ADOLPHUS PETERSON, a citizen of the United States, residing at Lansdowne, county of Delaware, and State of Pennsylvania, have invented a certain new and useful Improvement in Automatic Myrioscopes, of which the following is a specification.

My present invention relates to a new and useful improvement in automatic exhibitors for carpet, wall-paper, and the like, and is what I prefer to term an "automatic myrioscope," and has for its object to improve upon the construction shown in United States Patents Nos. 606,236 and 607,073, granted to me June 28, 1898, and July 12, 1898, respectively.

With these ends in view this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of a machine made in accordance with my present improvement; Fig. 2, a plan view thereof; Fig. 3, an enlarged longitudinal section showing the mechanism for feeding the material to be displayed looking from the side opposite to that shown in Fig. 1; Fig. 4, a section at the line *x x* of Fig. 2; Fig. 5, a plan view of one end of the machine, showing the trip mechanism for stopping the feeding of the material, so as to permit the samples to dwell for observation; Fig. 6, a detail view showing the clutch and cam mechanism for bringing about the automatic movements of the machine; and Fig. 7, an enlarged longitudinal section similar to Fig. 2, showing a slightly-modified form of mechanism for reversing the travel of the sample-belt.

In carrying out my invention as here embodied, A represents the framework of the machine, which may be of any convenient design for supporting the various parts, and on this frame is supported the display-box B, which latter is rectangular, its inner walls being composed of suitable mirrors C. This display-box is so arranged that the traveling sample-belt D passes thereunder, and when said belt dwells, as hereinafter described, the samples will be in a position to be reflected and multiplied in the mirrors C, thus giving a realistic appearance of a surface of indefinite extent covered with a material of the sample. Two feed-rolls E and E′ are journaled in the frame and are provided with the flanges F and F′, respectively, said flanges having slots or openings G cut therein, in which the rods H are set, so as to move to and fro, and to these rods are secured the ends of the display-belt D for the purpose hereinafter set forth. Gear-wheels I and I′ are secured to these rolls and alternately receive motion from the actuating mechanism, as follows: The right-angle lever J is pivoted concentric with the roll E and has a pinion K journaled upon one arm thereof, so as to always remain in mesh with the gear-wheel I, while the opposite arm of this right-angle lever has journaled thereon the pinion K′, which always meshes with the gear-wheel I′, so that to transmit motion to one or the other gear-wheels it is only necessary to carry one or the other of the pinions K or K′ into engagement with the driving-gear L, which is accomplished by swinging the right-angle lever for that purpose in the manner hereinafter set forth.

The driving-gear L is journaled loosely upon the power-shaft M, and this shaft in turn receives its motion from suitable pulleys N, secured upon its outer end and adapted to receive the belt, leading from a suitable source of power.

A hollow shaft O is mounted upon the driving-shaft M and carries a spiral cam P, which is free to slide longitudinally of the power-shaft within certain limits and is normally held in one direction by the spring Q, inclosed in a suitable housing and bearing upon the outer end of the pin R, which in turn bears against the key R′, set in the hollow shaft and sliding in the groove R^2 in the power-shaft.

The driving-gear L has the pins *l* upon its inner face, which constitutes one member of a clutch. The cam P has upon its outer face holes 2′, corresponding to the pins *l*, and these represent the other member of the clutch.

S is a lever which is located upon one side of the machine and is pivoted at the point *s* to the frame of the machine. The inner end of this lever carries a tooth S′, and this tooth is directly over and adapted to come into engagement with the cam-wheel P. The outer end of the lever S carries a small roller S^2. This roller S^2 bears downward against the hub T, which is journaled loosely upon the counter-shaft U. This hub T has upon its periphery a depression T′. A spring S^3 is connected near the outer end of the lever S, and the other end of the spring being connected to some portion of the frame of the machine furnishes the means of always holding the outer end of the lever S against the hub T. The counter-shaft U is adapted to constantly revolve and receives its motion through the sprocket-wheel U′, which is secured to the outer end of this counter-shaft and the chain U^2, which passes around a sprocket-wheel U^3, this sprocket-wheel U^3 being journaled upon a shaft U^4.

U^5 is a large gear-wheel secured to the shaft U^4, and this gear-wheel U^5 meshes with a small gear-wheel U^6, which is secured to the power-shaft M. Thus by reason of the difference in the relative sizes of the gears U^6 and U^5 the counter-shaft U will receive a correspondingly slow motion.

U^7 is one member of a clutch secured to the counter-shaft U and adapted to constantly revolve therewith. The hub T has upon its outer face teeth to correspond with the teeth on the clutch U^7, and thus constitutes the second member of the clutch. The hub T has formed with it the flange T^2. This flange has upon its outer face the cam projection T^3, while the hub is in engagement with the clutch member U^7 and is revolved therewith. The cam projection T^3 is adapted to come in engagement with the screw T^4, which is secured in the frame of the machine, and thus will throw the hub T out of engagement with the clutch member U^7. The depression T′ in the hub T is placed so that the roller S^2 will drop within this depression at the same moment as the hub T is thrown out of engagement with the clutch member U^7. When this roller drops within the depression T′, the tooth S′ upon the other end of the lever will be raised above the surface of the cam-wheel P, and this will allow the cam-wheel to slide longitudinally by reason of the pressure of the spring Q, and thus will bring it into engagement with the driving-gear L. This driving-gear L will then be caused to revolve and will in turn revolve either the gear-wheels K or K′, whichever happens to be thrown into engagement with the driving-gear L at the time, and thus transmit motion to either of the rolls E or E′. At the junction of the samples upon the belt are placed projections V. These projections may be in the form of round-head buttons or any other form desired. These buttons are placed on the edge of the belt opposite to the mechanism before described. W is a lever which is pivoted or, as I have shown it, secured to a spring W′, this spring being in turn secured rigidly to the frame of the machine. This lever is so placed that it will bear against the sample-belt as it passes over the idle roll X, which is journaled loosely upon the shaft U, and this lever W is directly in the path of travel of the projections V, so that when one of these projections V strikes the lever it will press it outward, as shown in dotted lines in Fig. 2. The upper end of this lever W passes through the outer end of a horizontal lever Z, and this lever is pivoted at the point Z′ to the cross-bar Z^2, which extends across from and is secured to the two side frames of the machine. This lever Z is shown in its normal position in Fig. 2, and when the lever W is pressed outward by one of the projections V it will communicate the motion to the lever Z, which will then assume the position shown in Fig. 5. The other end of this lever Z bears against a pin *a*, which is secured in the lever *a*′, and this lever is pivoted at the point a^2 to the top of the outer end of the lever S. This pivot a^2 passes through the lever S and has secured to it underneath the small cam a^3. When the lever Z is forced into the position shown in Fig. 5 by means of the projections V, it will cause the lever *a* and cam a^3 to assume the position shown in Fig. 5, and the point of this cam a^3 bears against the inner face of the flange T^2 upon the hub T, and thus will force the hub into engagement with the other member of the clutch U^7. When this occurs, the hub T will be caused to revolve with the shaft U, and this will force the small roller S^2 upward out of the depression T′ and cause it to travel around the periphery of the hub. When this end of the lever is so raised, the tooth S′ upon its other end will drop within one of the threads of the cam or worm wheel P, and this worm, traveling in the direction of the arrow shown in Fig. 4, will force itself out of engagement with the pins *l* upon the driving-gear L, and thus break the connection between the train of gears which drives the belt. The belt will then be stationary, so as to be viewed, until the hub T has made a full revolution and the cam projection T^3 again comes in contact with the screw T^4 and forces the said hub out of engagement with the clutch U^7, when the roller will drop in the depression, as before described, and raise the tooth S′, so as to allow the cam-wheel P to engage the driving-gear L. Thus the length of time that the belt of samples is stationary and exposed to view will depend upon the relative size of the gears U^6 and U^5 and the chain-wheels U′ and U^3.

b is an idle roll journaled at the opposite end of the machine to the idle roller X, and the belt is adapted to pass over the roller *b*, over the table *c* and under the mirror-box, and over the idle roller X to the roller E.

When the belt of samples is entirely wound

upon one of the rolls, I desire to reverse the mechanism automatically, and this I accomplish as follows: In Fig. 3 I have shown the belt of samples wound entirely upon the roll E′, and the machine in operating will continue to wind the belt upon the roll E′, and thus pull the rod H to the outer end of the slots G in the flange F of the roll E. This rod H extends through the flange and in revolving will come into engagement with the lever *d*. This lever *d* is pivoted at the point *d′* to the frame of the machine. The upper end of this lever is adapted to come in contact with the upper end of the upright member of the bell-crank lever J. This will rock the bell-crank lever J and force the gear-wheel K into engagement with the driving-gear L and disengage the gear-wheel K′ from the gear L. This will then reverse the movements by communicating the motion to the gear-wheel I of the roll E and render the roll E′ simply an idle roll. When the belt is entirely wound upon the roll E, this operation will be reversed by the rod H being drawn to the outer end of its slot in the flange F′ and coming in contact with the lever *e*, which is pivoted at *e′* to the main frame, and the upper end of this lever *e* bears against and is adapted to rock the lever *f*. This lever *f* is pivoted concentric with the roll E′. This lever *f* is connected to the upper end or upright member of the bell-crank lever J by means of the spring-link *f′* upon the outside of the side frame of the machine. This link is connected to the two levers by means of the screws f^2, which pass through slots f^3 in the frame of the machine and are secured in the two levers. This link *f′* is of spring metal and is adapted to bear against the frame of the machine, so as to cause a certain amount of friction therebetween, which will tend to hold the levers in whichever position they are forced. This will make the machine entirely automatic, for when the belt has reached its limit in one direction it will reverse the mechanism and cause the belt to travel in the opposite direction, and so on as long as it is desired to operate the machine.

The operation of the intermediate motion for displaying the samples is as follows: We will begin and suppose that the sample-belt D is stationary and a sample is being displayed. Then roller S^2 will be resting upon the periphery of the hub T and the tooth S′ will be holding the cam-wheel P out of engagement with the driving-gear L, so that the rolls are stationary. The hub T will at this time be in engagement with the clutch member U^7, and thus will be rotating therewith. This will hold the lever S in the position shown in Fig. 6 until the shaft T has made a full revolution, when the cam projection T^3 will strike the screw T^4 and disengage the hub T from the clutch U^7, and at the same time the roller S^2 will drop within the recess T′ in the hub T, which will cause the lever S to assume the position shown in Fig. 7. This will raise the tooth S′ from engagement with the cam-wheel P and allow this cam-wheel P to spring into engagement with the pins *l* on the driving-gear L, and as the cam-wheel P is constantly revolving this will cause the driving-gear L to revolve therewith and communicate to the gear K, and therethrough to the gear I, which has secured to it the roll E—that is, when the gears are in the position shown in Fig. 3. When they are in the position shown in Fig. 7, the motion will be communicated to the gear K′ and therethrough to the gear I′, which has the roll E′ secured thereto. This will cause either one or the other roll which is being operated upon to wind the belt thereupon, and this winding will continue until another sample is brought beneath the mirror-box C, and then one of the projections V will pass underneath the lever W and force the same outward, and by doing so will communicate the motion to the horizontal lever Z, which will cause it to assume the position shown in Fig. 5, and this will cause the cam a^3 to bear against the flange T^2 upon the hub T and press the teeth upon the outer face of the hub T into engagement with the teeth upon the clutch member U^7, and this clutch member being constantly revolved will communicate motion to the hub T and cause it to revolve therewith, which will force the roll S^2 upward out of the recess T′ and cause the lever S to again assume the position shown in Fig. 3, and the tooth S′ will thus be forced within the threads of the cam-wheel P, and this cam-wheel being revolved and being of the nature of a worm will force itself out of engagement with the pins *l* upon the driving-gear L, and thus the movement of the gear will be arrested and the sample-belt will be caused to remain stationary until the shaft T has again made a revolution and forced itself out of engagement with the clutch member U^7 and the roller S^2 has again dropped within the recess T′, when movement would be again commenced, as before described.

In Fig. 7 I have shown a slight modification of the manner of reversing the movement of the sample-belt. Upon the opposite edge of the sample-belt from that whereon is fastened the projections V, I secure at each end of the sample-belt a projection *g*, and upon each side of the machine and in the line of travel of these projections I secure the levers *h*. These levers are similar to the lever W, which I use for arresting the movement of the sample-belt. One of these levers is connected to the lever *d* by means of the link *i*, and the other lever *h* is connected to the lever *e* by means of the link *j*. Thus when one of the projections *g* passes behind the lever *h*, as shown in Fig. 7, it will cause the lever *e* to be rocked, and thus rock the lever *f* and cause the gear K′ to mesh with the driving-gear L, as before described, and when the projection *g* comes behind the other lever *h* it will cause the lever *d* to be rocked, and thus force the gear K into mesh with the

driving-gear L, and thus again reverse the movement. As will be observed, in the first-described method of reversing the sample-belt the sample-belt could not be reversed until it had been entirely wound or unwound from either of the rollers; but in the method last described the projections *g* could be set at any place upon the belt, and whenever they strike the levers *h* the belt will be reversed. This would be very convenient, as at times certain samples upon the belt might be soiled, so as not to be presentable, or for other reasons it might not be desirable to show them. These two methods that I have described for reversing the sample-belt might be used in a machine which was not automatic as to the stopping and starting of the belt—that is to say, a machine that is adapted to be turned by hand and the belt stopped and started at will.

The belt which would be wound upon the rollers would be one continuous strip, and the samples would be secured to this belt by being buttoned upon the same or in any other similar manner, so that they could be conveniently removed and others substituted.

Of course this machine need not necessarily be horizontal, as it could be used in any position, either horizontal, oblique, or perpendicular, without causing any change at all in the mechanical construction.

Of course I do not wish to be limited to the exact construction here shown, as slight modifications could be made without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful is—

1. In combination, a mirror-box, a table upon which said mirror-box is adapted to rest, a belt adapted to travel over said table and beneath said mirror-box, two reels upon which the belt is wound and unwound alternately, a power-shaft and gears adapted to communicate motion to said belt, projections secured upon the belt, a lever actuated by the projections on the belt, means operated by the lever for arresting the movement of the belt, means for causing said belt to travel after having remained stationary a predetermined time and means for reversing the movement of the belt whenever said belt has been entirely unwound from either of the reels, substantially as described.

2. In combination, a mirror-box, a base therefor, a belt adapted to travel over said base, two reels upon which the belt is adapted to be wound and unwound therefrom, a constantly-revolving counter-shaft, a power-shaft, suitable means for communicating motion from the power-shaft to the counter-shaft, a driving-gear journaled loosely upon the power-shaft, a clutch, one member of which is formed with or secured to said driving-gear, the second member of said clutch adapted to revolve with the power-shaft and also adapted to slide longitudinally thereon, a cam formed on the periphery of the second member of said clutch, a train of gears adapted to communicate motion from the driving-gear to one or the other of the reels, a lever pivoted intermediate of its two ends, a tooth secured to the inner end of said lever and adapted to engage the cam-surface formed upon the periphery of the second member of the clutch, a spring adapted to force the second or slidable member of the clutch into engagement with the other member, a hub journaled loosely upon the counter-shaft and adapted to slide longitudinally thereof, a clutch, one member formed with or secured to said hub, the other member being secured to and adapted to revolve with the counter-shaft, a recess formed in said hub into which the outer end of the lever is adapted to descend at certain intervals for the purpose of tilting the lever and disengaging the tooth upon the inner end of said lever from the cam formed on the power-shaft clutch, means for disengaging the two clutch members on the counter-shaft simultaneously with the descent of the outer end of said lever into the recess, means for forcing the outer end of said lever downward in said recess, projections secured to the sample-belt, means adapted to be operated by said projections for causing the two members of the clutch upon the counter-shaft to be forced into engagement with one another, attachments secured to the sample-belt, means adapted to be actuated by said attachments for the purpose of reversing the movement of said belt, substantially as and for the purpose described.

3. In combination, a mirror-box, a base therefor, a belt adapted to travel over said base, suitable framework for supporting the base and the operating parts, two reels upon which the belts are adapted to be wound and unwound, a constantly-revolving power-shaft, a constantly-revolving counter-shaft, suitable means for communicating power from said power-shaft to said counter-shaft, a constantly-revolving cam or worm-wheel adapted to revolve with the power-shaft and also adapted to slide longitudinally of said power-shaft, a driving-gear journaled loosely upon the power-shaft, the inner face of this driving-gear constituting one member of the clutch, and the outer face of the worm or cam constituting the second member of the clutch, gears secured to the reels, two intermediate gears, a bell-crank lever on the members of which the intermediate gears are journaled, these intermediate gears adapted to communicate motion from the driving-gear to the gears upon one or the other of the reels, a hub journaled loosely upon the counter-shaft, teeth on the outer face of the hub forming one member of the clutch, a collar secured to the counter-shaft and adapted to constantly rotate therewith, teeth formed upon the inner face of this collar and constituting the second member of the clutch, a lever pivoted to the framework intermediate of its length, a tooth upon the inner end of said

lever adapted to engage the worm or cam wheel upon the power-shaft, a roller upon the outer end of said lever adapted to rest upon the hub of the counter-shaft, a recess formed in said hub into which the roller is adapted to drop, means for causing said roller to enter said recess, a flange formed upon said hub, a cam formed upon said flange, a projection extending inward from the frame-work of the machine adapted to engage the cam and force the said clutch members apart, a cam pivoted upon the outer end of the aforesaid lever adapted to engage the flange and cause the two clutch members to come into engagement again, projections formed upon the belt, a movable lever adapted to bear against the belt in the path of travel of the projections, a system of levers for communicating motion from this lever to the pivoted cam for the purpose of throwing the clutch upon the counter-shaft into engagement, bars secured to each end of the belt, slots arranged in the flange of the reel and adapted to allow a limited movement to said bars, a system of levers adapted to be operated by either one of these bars when said bars are pulled to the outer end of said slots for the purpose of disengaging one reel from the driving-gear and engaging the other reel therewith for the purpose of reversing the belt through the agency of the gears carried by the bell-crank lever, substantially as and for the purpose specified.

4. In an apparatus for exhibiting carpets, wall-paper and the like, a mirror-box adapted to rest upon a suitable base, a belt adapted to pass over said base and underneath said mirror-box, two reels upon which the belt is adapted to be wound and unwound alternately, a power-shaft, a driving-gear adapted to revolve with said power-shaft, gears secured to said reels, two intermediate gears journaled one upon each arm of a bell-crank lever, said bell-crank lever pivoted so that one of the intermediate gears will always be in mesh with the gear upon one of the reels, and the other intermediate gear will be always in mesh with the gear upon the other reel, and one of said intermediate gears will always be in mesh with the driving-gear and the other one out of mesh, bars secured to the end of the belts, slots formed in flanges upon each side of the reels through which the said bars pass, pivoted levers adapted to be engaged by said bars when said bars are pulled to the outer end of the slots, said levers adapted to bear against the bell-crank lever so as to rock it in one or the other direction for the purpose of throwing one or the other of the intermediate gears into connection with the driving-gear for the purpose of reversing the belts, substantially as described.

5. In combination, a mirror-box, a table upon which said mirror-box is adapted to rest, a belt adapted to travel over said table and beneath said mirror-box, two reels upon which the belt is wound and unwound alternately, a power-shaft and gears adapted to communicate motion to said belt, projections secured upon the belt, a lever actuated by the projections on the belt, a clutch operated through the action of the lever and means operated by the clutch for arresting the movement of the belt, means for causing said belt to travel after having remained stationary a predetermined time and means for automatically reversing the movement of the belt when unwound from either of the reels, substantially as described.

6. In combination, a mirror-box, a table upon which said mirror-box is adapted to rest, a belt adapted to travel over said table and beneath said mirror-box, two reels upon which the belt is wound and unwound alternately, a power-shaft and gears adapted to communicate motion to said belt, projections secured upon the belt, a lever actuated by the projections on the belt, a clutch actuated by the lever for causing the clutch to act, a lever having its end elevated as the clutch rotates, means connected with the lever for arresting the movement of the belt and means for reversing the movement of the belt when unwound from either reel.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

ADOLPHUS PETERSON.

Witnesses:
MARY E. HAMER,
L. W. MORRISON.