

A. DOM.
MAP EXHIBITOR.

No. 301,102.

Patented July 1, 1884.

Fig. 1.

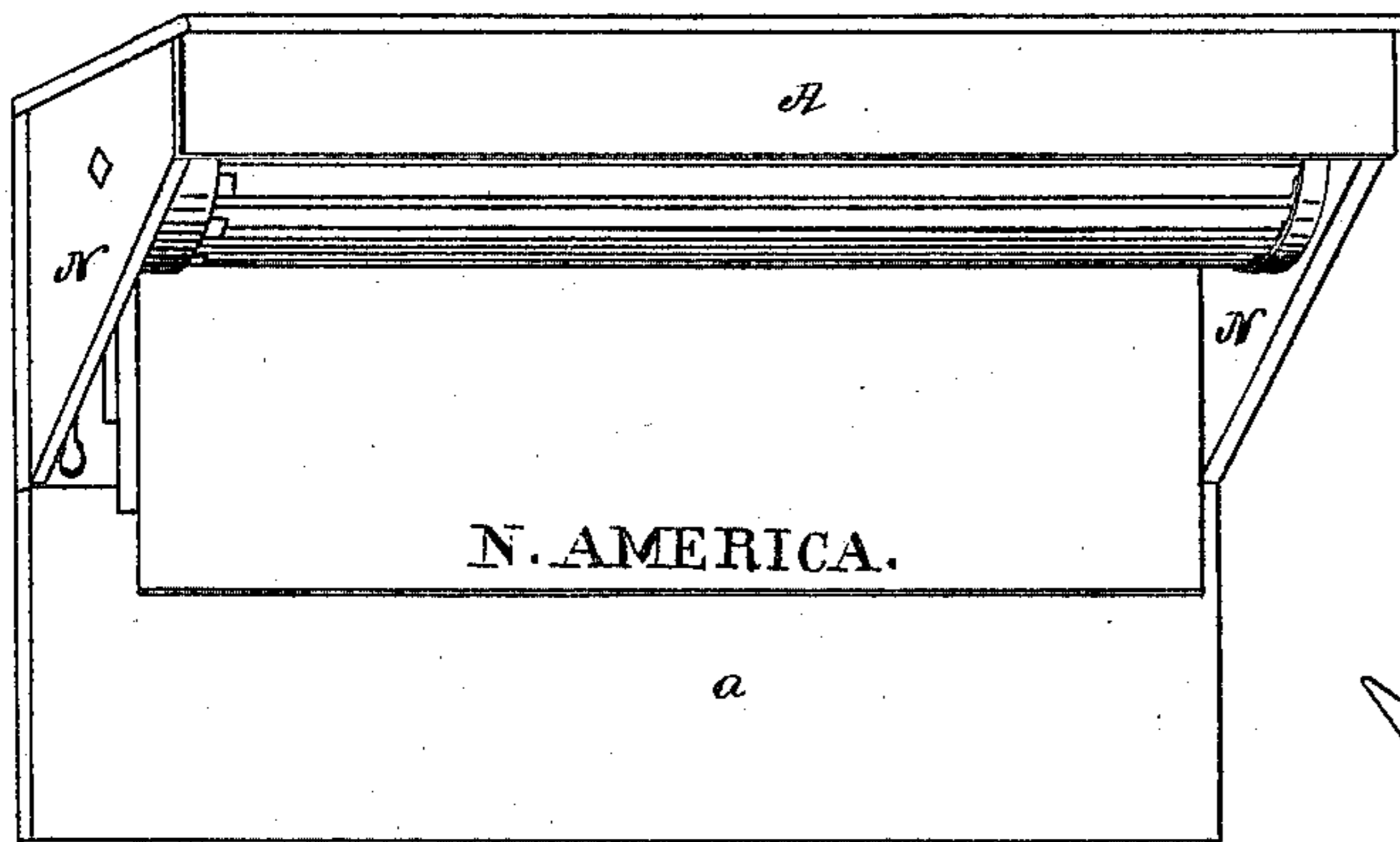


Fig. 2.

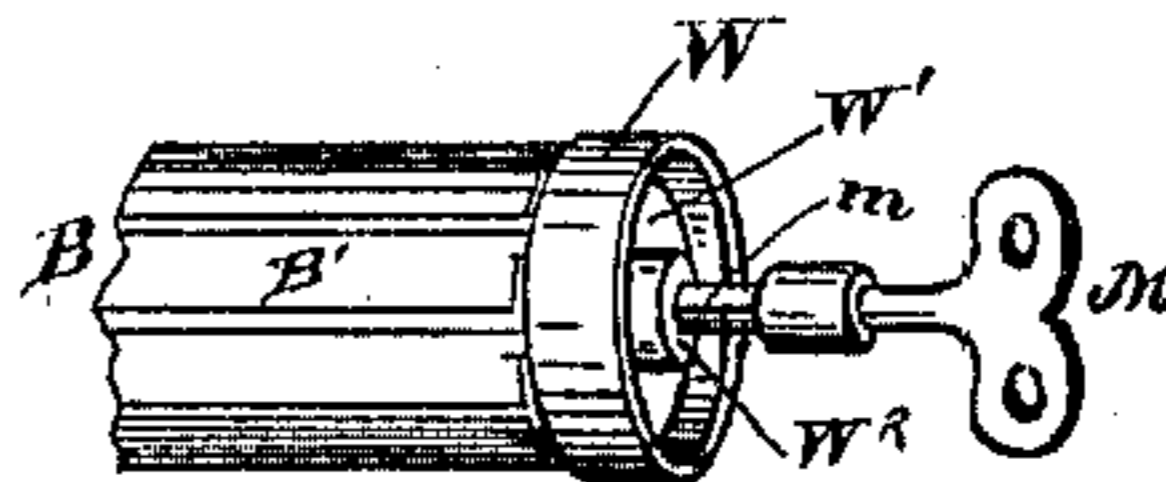


Fig. 3.

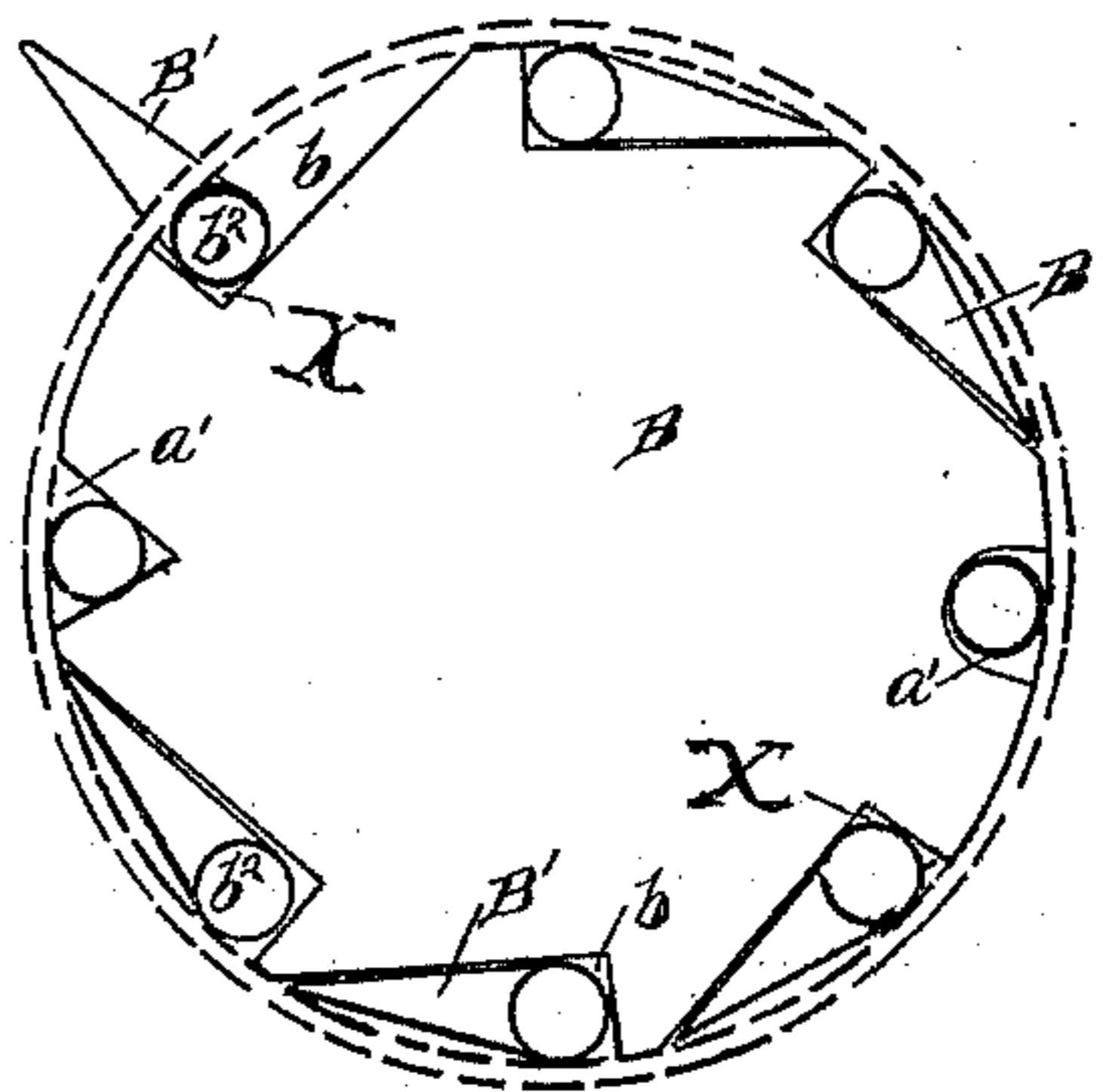


Fig. 4.

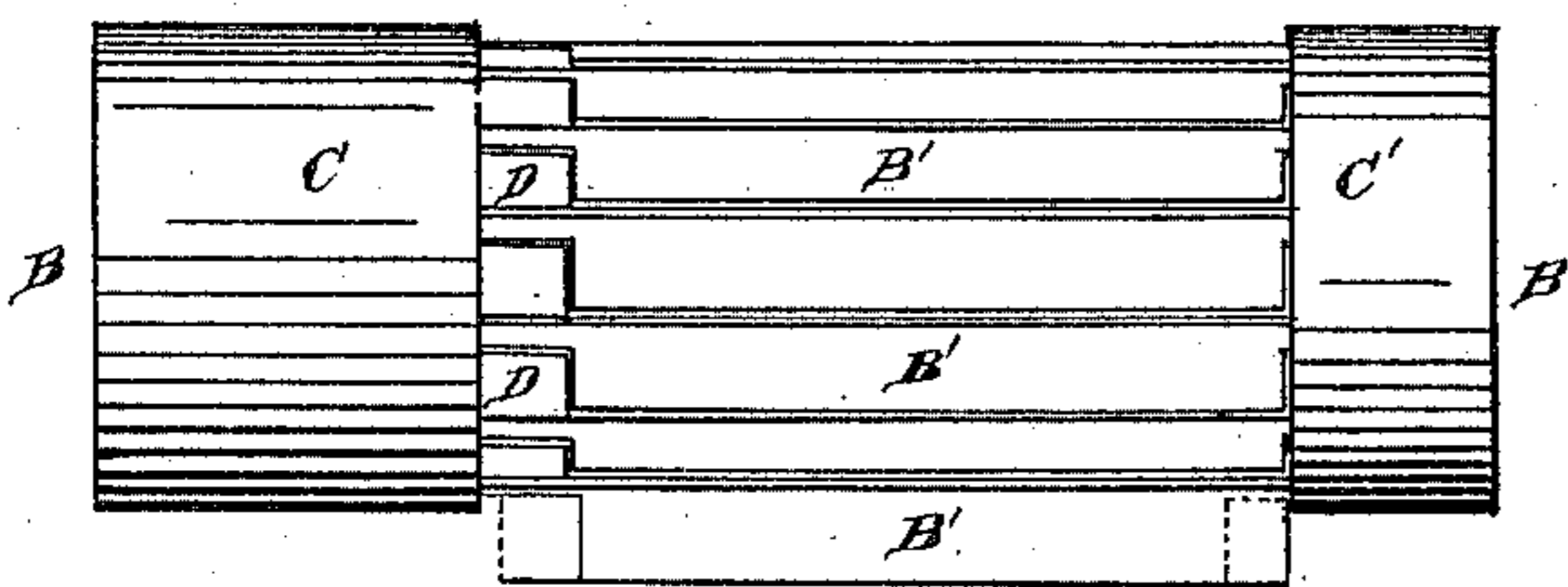


Fig. 5.

Fig. 6.

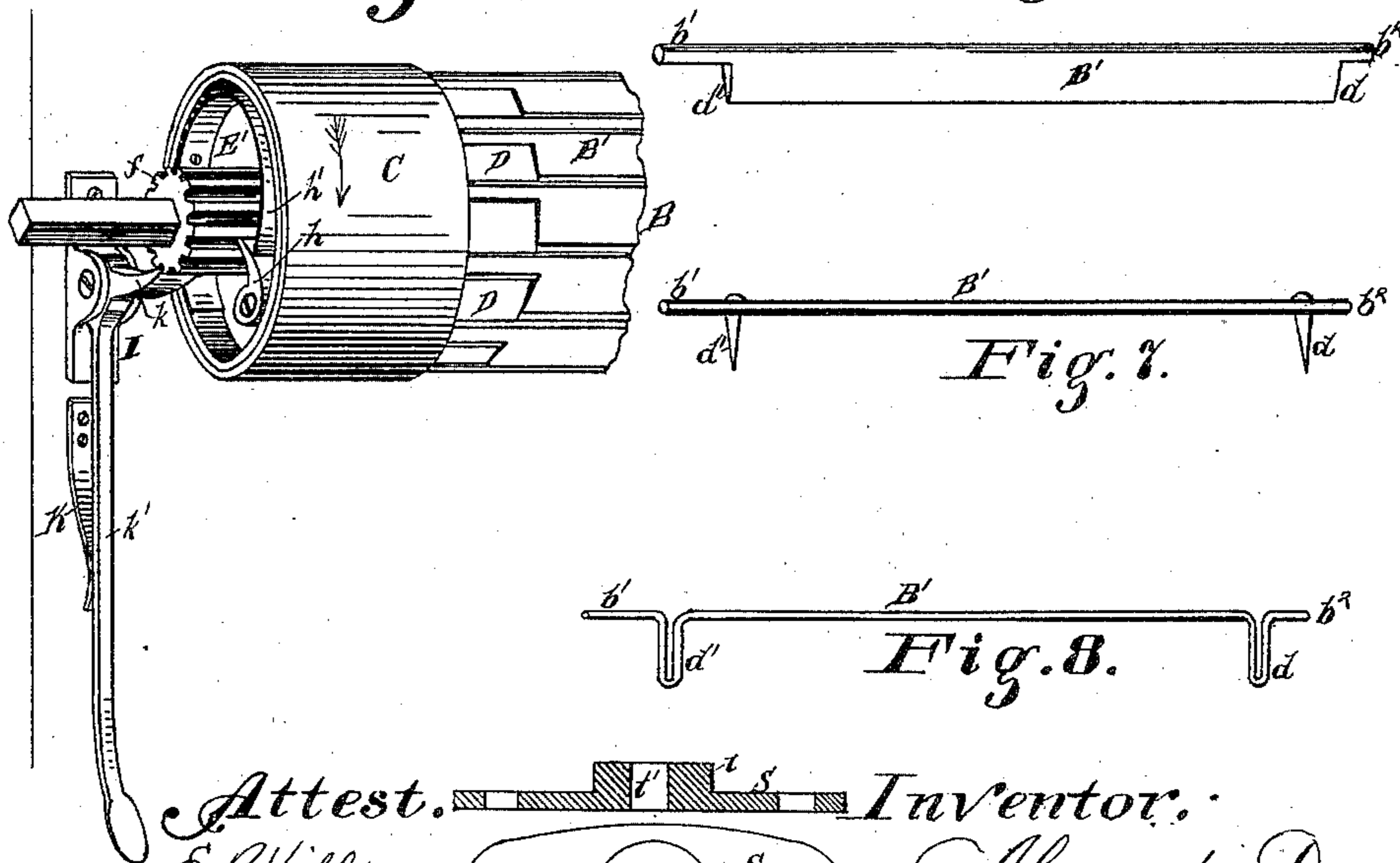


Fig. 7.

Fig. 8.

Attest. *E. Hill.* *J. W. Struble.* *Alexander Dom*
per Wm. Hubbell Fisher,
Atty.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 9.

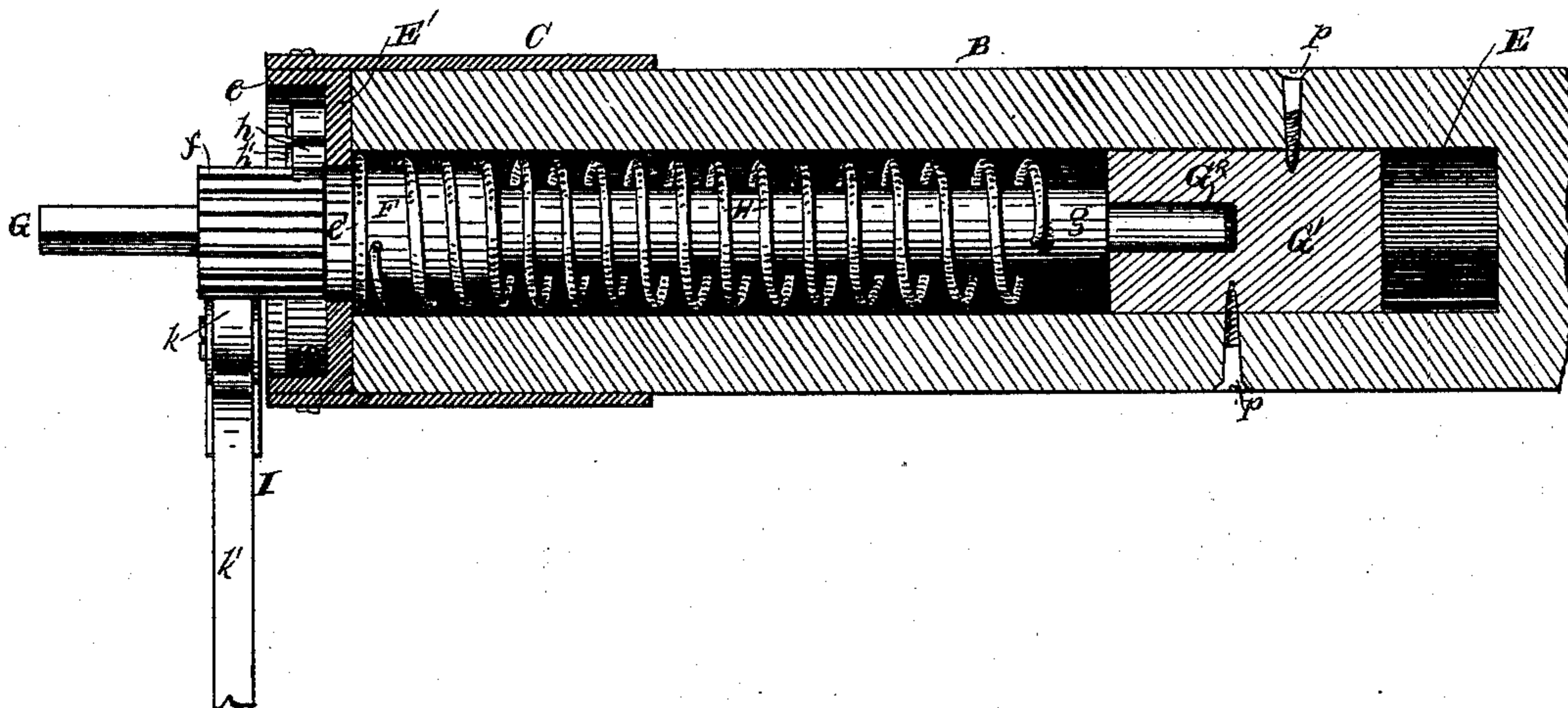
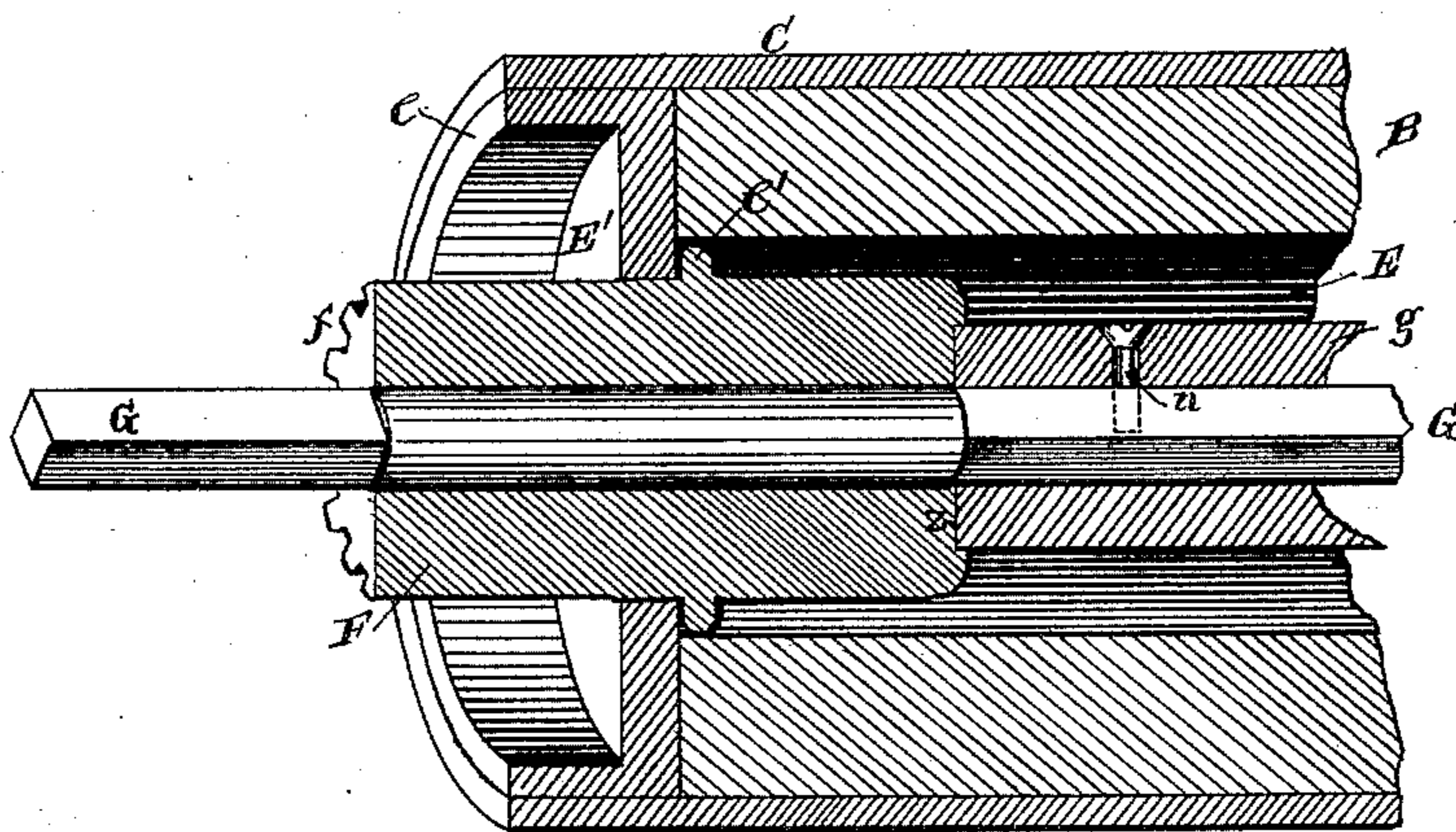


Fig. 10.



Attest.

E. R. Hill,

J. W. Strehli

Inventor.

Alexander Dorn
per Wm. Hubbell Fisher,
Att'y

UNITED STATES PATENT OFFICE.

ALEXANDER DOM, OF MOUNT HEALTHY, OHIO.

MAP-EXHIBITOR.

SPECIFICATION forming part of Letters Patent No. 301,102, dated July 1, 1884.

Application filed February 6, 1883. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER DOM, a resident of Mount Healthy, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Map-Exhibitors, of which the following is a specification.

The various features of my invention and the advantages resulting from the employment of any one or more of them will be fully apparent from the following specification and claims.

Referring to the drawings forming part of this specification, Figure 1 is a perspective view of a map-case in which my improved roller is employed. Fig. 2 is a perspective view of one end of the roller. Fig. 3 is an enlarged end view of the roller. Fig. 4 is an elevation of the roller. Fig. 5 is a perspective view showing the ratchet-and-pawl mechanism for controlling the rotation of the roller. Fig. 6 is a view of the preferred form of device by which the sheets are connected to the roller. Figs. 7 and 8 represent modifications of the strip shown in Fig. 6. Fig. 9 is a longitudinal section of the roller showing the internal spring mechanism. Fig. 10 is a longitudinal sectional perspective view of one end of the roller, and Fig. 11 is a perspective view of a preferred device for seating one end of shaft C (viz., one end of the roller) in the end of the case.

A represents a case in which the roller is contained, which case is to be secured to the wall or to an appropriate frame or support. The lower front side, *a*, of this case forms the lid or door, which, when the case is open, hangs down, as shown in Fig. 1, against the wall or other support. One end of the roller B is rigidly fixed in one end N of this frame, and the other end of this roller B is journaled in the other end of the frame. This roller may be constructed of any suitable material. To this roller are connected various sheets, maps, charts, or other illustrations, and one or more sheets, maps, charts, or illustrations may be attached together. The connections between the sheets or maps, &c., is one which enables the sheet or maps, &c., to be connected to the roller or removed therefrom at will. A preferred mode of construction for thus ena-

bling the sheets or maps, &c., to be connected to or detached from the roller is as follows, viz: In the periphery of this roller are preferably, as shown, a number of longitudinal channels or grooves, *b*, the number corresponding to the number of rods or slats which the exhibitor may at any time desire should be connected to the roller. At the ends of the roller B are the collars or sleeves C C', surrounding the ends of the roller, the groove or recess *b* and the sleeve C forming the recess or opening *x*. In each of the grooves *b* is located a slat or rod, B', to which the top of the map is connected. The preferable form of this rod or slat B' is that shown in Fig. 6, the grooves *b* in the rollers being of such a shape that when the slats lie flat in the grooves they will not project beyond the periphery of the roller. At the ends of each slat B' are the extensions *b'* *b*², the extensions *b'* being somewhat longer than the extension *b*², as shown in Fig. 6.

The various maps or sheets are attached to the various slats B', one sheet being attached to each slat, and when the slat is to be connected to the roller the long extension *b'* of the slat is placed in one of the grooves *b* of the roller and slipped under the sleeve C until the end of the extension *b*² at the other end of the slat passes the edge of the sleeve C', permitting the slat to drop into the groove, when the slat is slipped in the direction to cause the extension *b*² to pass under the sleeve C' until the end or shoulder *d* of the slat comes in contact with the edge of the sleeve C'. The extension *b'*, being longer than the extension *b*², is still under the sleeve C, and the slat is thus held in position with reference to the roller. The extensions *b'* *b*² being cylindrical, the thin edge of the slat is free to turn out away from the face of the roller, as shown in Figs. 3 and 4, and this is the position which must be occupied by the slat when it is to be removed from the roller. In the ends of the grooves *b*, next to sleeve C, are the stops D, which extend into the grooves beyond the edge of the sleeve C a distance equal to the length of the short extension *b*² of the slats, so that when the slats have been connected to the roller, as above described, and turned down flat in the grooves *b*, the end or shoulder *d* of each slat will rest

against the end of the stop D in its particular groove, as shown in Figs. 4 and 5, preventing any longitudinal movement of the slats while they lie flat in the grooves. The top of each map or sheet is preferably provided with a blank margin, equal or nearly equal to the circumference of the roller, so that it will not be necessary to draw the map or sheet down to such an extent as to cause the thin edge of the slat to be turned away from the roller until it is desired to remove said slat from the roller. Consequently the various slats are held flat in the grooves by the maps or sheets which are wrapped around the roller at all times, except when it is desired to remove any given one from the roller, and when they are so held against the face of the roller they cannot, as before stated, move longitudinally, on account of the shoulder or stop d' coming in contact with the stop D. When these last-mentioned devices are employed, the grooves or channels in the roller may be shaped as shown at a' in Fig. 3, instead of as at b , a notch being made.

As before stated, the preferred form of rod or slat to be used for attachment of the maps is that shown in Fig. 6; but, if preferred, either of the forms shown in Figs. 7 or 8 may be employed, a shoulder or stop, d' , being connected thereto, as shown in Fig. 7, or formed therewith, as in Fig. 8, which shoulder or stop will rest against the stop D, as above described.

Various devices may be employed for causing and controlling the rotation of the roller; but I prefer that form of mechanism shown in Figs. 5, 9, and 10. The roller B contains a cylindrical cavity, E, which latter may, when desired, extend the entire length of the cylinder. The end of the roller is covered by a rotatable roller-plate, E' , having an annular flange, e , which fits into the end of the sleeve C, and to which it is secured by screws or rivets. When preferred, this plate E' and sleeve C may be made in one piece. This plate is provided with a central opening, through which passes a sleeve, F, provided with a surrounding flange, e' . When the sleeve is in position, this flange rests against the inner face of the plate E' and prevents the sleeve from passing entirely through the plate, and is connected to a stationary shaft, g , in the manner hereinafter mentioned. The outer end of the shaft G is square, and fits closely in a square hole or recess in or at the end N of the case A, and this shaft is thereby prevented from turning when the roller is turned.

A durable means for seating the end of shaft G in the end N is shown in Fig. 11, and consists of a metallic plate, S, having a central boss, t , provided with a square hole, t' . This plate is suitably secured to the left-hand end of the case by screws u , passing through holes in the plate. Into the square hole t' the outer end of shaft G is inserted. The inner end of this shaft G is suitably connected to the shaft g , around which the spring is usually coiled. This shaft g may be of any suitable material,

but is preferably of wood, and the preferable mode of connecting the shaft G to shaft g is by tightly inserting a small end portion of the former in the latter and securing them together by a bolt, screw, or rivet, n , as shown in Fig. 10. The portion of the shaft G which passes through the sleeve F is round, as shown, so that this sleeve may, when desired, turn on the shaft. In or to that end of the shaft g which is at the right hand in Fig. 9 is rigidly secured a round journal pin or piece, G^2 , which latter rests in a suitable bearing, a preferred form of which is the bearing-piece G' , which may be constructed and then introduced into the roller B, and then suitably secured rigidly in place, as by screws, &c., p , and thus forming a conveniently-adjustable bearing. When preferred, shaft G and bearing-piece G' may be in one piece; but for facility of manufacture I prefer to make them separately, as above specified.

To the end of the shaft g , near the block G' , is secured one end of a spiral spring, H, the other end of which is secured to that portion of the sleeve F which is within the cavity of the roller, the spring being coiled between these points around the sleeve F and shaft g . That portion of the sleeve F which projects beyond the outer face of the plate E' is provided with a ratchet-gear, f .

To the outer face of the plate E' is pivoted one end of the pawl h , the free end of which engages with the ratchet-gear f , the free end of said pawl being directed as shown in Fig. 5. A spring, h' , presses against this pawl h , causing it at all times to remain in contact with the ratchet-gear f .

An L-shaped lever, I, is pivoted to the back of the case A, as shown in Fig. 5, the arm k of this lever engaging with the ratchet-gear f , a spring, K, pressing against the other arm k' of the lever, which tends to constantly keep the end of the arm k against the ratchet-gear. The end of the roller B which is opposite to the ratchet-gear f is journaled in the end N of the case A, where a feature of my invention now to be described is employed. The journal m (see Fig. 2) extends beyond the end of the case, and is made square to receive a key, M, by which the roller B may be turned. The preferred mode of constructing this end of the roller B, and connecting it to the main portion of the roller, consists in constructing a sleeve, w , having a central disk or web, w' , provided with a central portion, w^2 , having a left-handed female screw. Into this portion w' is screwed the journal m . The roller B, having no direct connection to the spring H, is free to be turned in the direction indicated by the arrow in Fig. 5 without in any way interfering with the spring, the pawl h slipping around the ratchet-gear f , the latter being prevented from rotating by the lever I. This construction permits the roller to be turned by the key M to wind the maps on the roller, and also to bring the end of the desired

map into view, the ends of the various maps or sheets alternately dropping forward as the roller is turned. When the end of the sheet which it is desired to exhibit falls forward, it is grasped and pulled down; and as it is so pulled down the roller is revolved in an opposite direction to that indicated by the arrow in Fig. 5, and the pawl *h* engages with the ratchet-gear *f*, which causes the sleeve *F* to turn, and this causes the spiral spring *H* to be wound or coiled tighter around the shaft *g* or sleeve *F*, or both, according to the respective lengths of the same. While drawing down the map it is usually desirable to press down lever *I*, to release pawl *h* from contact with gear *f*, and thus to prevent its making a rattling sound against the teeth of said gear, care being taken to release the pressure on lever *I* before letting go of the map. When the map or sheet has been drawn down as far as desired, the lever *I*, engaging with the ratchet-gear *f*, prevents the roller from turning backward, and the maps thus hang from the roller. When it is desired to wind the map up again, pressure is made on the end of the lever *k'*, and this moves the end of the arm *k* away from the ratchet-gear *f*, and the strain of the spring *H*, which was tightened when the map was drawn down, causes the roller, through the agency of the sleeve *F* and pawl *h*, to revolve in the direction indicated by the arrow in Fig. 5, and thus wind the maps on the roller. Thus it is that every time a map or sheet is drawn down to properly exhibit it the spring is tightened to such an extent as to cause the map to be again wound up when the spring is released.

In unrolling the maps it often happens that the spring becomes more or less unwound through the frequent turning of the roller and its maps, &c., in the direction of the arrow shown in Fig. 5. In such event the key becomes useful in assisting in winding up the spring, as follows, viz: A map is drawn down, which to a certain extent winds up the spring, and the map is then wound up, not by allowing the spring to wind or assist in winding it up, but by rotating the roller *B* in the direction of the said arrow, and this rotation is best accomplished by applying the key to the square end of bearing *m*. This operation of drawing down the map and winding it up is to be repeated till the spring is sufficiently wound up. For the purpose of preventing the spring when wound up from getting between the shaft *g* and the sleeve *F*, the end of the shaft enters a recess, *z*, in the end of the sleeve.

In connection with the roller *B* as constructed, or with a roller of any other construction, and employed for the exhibition of maps, charts, or other illustration, there may be employed the following feature of my invention, viz: that which relates to means for enabling the maps, charts, or other illustrations to be readily connected to or removed from the roller.

When it is desired to remove any particular map or sheet to substitute another, or for removal to another room, or for any other purpose, it is drawn down until the free edge of the rod or slat *B'*, to which it is secured, is turned away from the roller, so that the shoulder *d'* will be free from the stop *D*, when the rod may be moved until the end of the extension *b'* passes from under the sleeve *C'*, and the extension *b'* may then be removed from under the sleeve *C*, and the map is then free from the roller without disturbing or removing the remainder of the roller or its end portions.

By this construction different sets of maps or illustrations may be connected to the same roller at different times, and any one of such maps or illustrations may be removed at pleasure, and when the map, sheet, or illustration is to be connected to the roller the above-mentioned operation is reversed.

As before hinted at, one rod or slat, *B'*, may carry any desired number of sheets or maps, &c.

One stop *d*, instead of two, may be employed upon the rod or slat *B'*, this stop engaging a single stop combined with the roller.

When desired, the rod or slat may be connected to the roller by hooks or catches, or the sheet or sheets or map, &c., may be directly hooked to the roller without the intervention of a slat; but I prefer the means heretofore described.

One great advantage secured by the various features relating to the novel construction of the roller is cheapness of construction, and an important advantage consists in the fact that the roller can be easily and quickly put together, and quickly taken to pieces for repair or for other obvious purposes, some of which have been heretofore mentioned.

While the case *A* is desirable, it is not at all necessary, and may be dispensed with, and any suitable brackets or suitable supports be substituted for the ends *N*, and lever *I* & *k'*, when present, be secured to the wall or other suitable support.

While the various features of my invention are preferably used together, one or more of them may be employed together or separately, and, when desired, in connection with other devices than those here shown and described.

When desired, the sleeve and shaft *G* may be prevented from sliding toward the left-hand end of the roller by a stop other than the flange *e'*. One mode of constructing such a stop would be as follows: The journal *G*² would be provided at middle or near its free end with a boss working in a groove in the bearing *G'*, or the journal *G*² might extend through the bearing *G'*, and be provided at its free end with a flange or enlargement arranged to the end of bearing *G*².

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. In combination, the roller *B* and detachable rods or slats provided with stops *d'*, the

roller B being provided at each end with a sleeve, under which the adjacent end of the slat or rod may be slipped without removing any part of the roller, and the stops D (when the map is not unrolled and displayed) preventing such longitudinal movement of the rod or slat as would allow the latter to escape from said supports, substantially as and for the purposes specified.

2. The roller B, having at one end the sleeve C, and at the other end the sleeve C', and provided with the longitudinal groove *b*, in combination with the slats or rods B', substantially as and for the purposes specified.

3. The roller B, having the longitudinal grooves *b*, provided at one end with the stops D, and the ends of said roller being surrounded by the sleeves C C', in combination with the slats or rods B', provided with shoulders or stops *d'*, substantially as and for the purposes specified.

4. The roller B, having at one end the sleeve C, and at the other end the sleeve C', and being provided with the grooves *b* and stops D, in combination with the slats B', having the extensions *b' b''*, and shoulders *d d'*, substantially as and for the purposes specified.

5. The roller B, constructed substantially as described, and provided with the interior spiral spring, H, in combination with stationary shaft *g*, provided at one end with the shaft G and at the other end with bearing-piece G', the sleeve F being capable of turning on the shaft G and forming a bearing for the rotatable roller plate or end E', to turn thereon, one end of the spring H, being connected to the shaft *g* and the other end to sleeve F, and ratchet-and-pawl mechanism for causing the sleeve F to turn with the roller or remain stationary, substantially as and for the purposes specified.

6. The roller B, having cavity E, and surrounded at one end by a sleeve, C, and having an end plate, E', in combination with the sleeve F, having a surrounding flange or collar, *e'*, resting against the inner face of the plate E', and a ratchet-gear, *f*, extending outwardly beyond said plate, and the pawl *h*, engaging with said ratchet-gear, and the spiral spring H, located

in the cavity E, substantially as and for the purposes specified.

7. The roller B, having the sleeve F and spring H, constructed and connected substantially as described, in combination with the spring-pawl *h*, and lever I, consisting of the arms *k* and *k'*, substantially as and for the purposes specified.

8. The end brackets, N, and the roller B, constructed substantially as described, and having the interior spring, H, shaft G, and sleeve F, the end of the shaft G, which is connected to one of the end supports, being square, in combination with the spring-pawl *h*, and pivoted L-shaped lever I, one arm *k* of said lever engaging with the ratchet-gear *f* on the sleeve F, and held in contact therewith by means of a spring, K, pressing against the arm *k'* of said lever, substantially as and for the purposes specified.

9. In combination with the shaft G, the sleeve F, provided with recess Z, and forming a bearing for the roller-plate or end E' to turn thereon, and the shaft *g* entering said recess, substantially as and for the purposes specified.

10. In combination with the roller B, shaft G, sleeve F, capable of turning on shaft G, engaging gear-pawl *h*, and shaft *g*, bearing G', and spring H, substantially as and for the purposes specified.

11. In combination with the roller B, shaft G, sleeve F, engaging gear-pawl *h*, and shaft *g*, bearing G', and spring H, and stop *e'*, substantially as and for the purposes specified.

12. The roller B, capable of turning on shaft G, and provided with sleeve C and head E', having flange *e*, in combination with the sleeve F and shaft G, and spring-pawl *h*, substantially as and for the purposes set forth.

13. In combination with the roller having the sleeve C and head E', the sleeve F, shaft *g*, provided with journal G², and removable bearing G', substantially as and for the purposes specified.

ALEXANDER DOM.

Witnesses:

D. H. POTTENGER,
P. N. WRIGHT.