

(No Model.)

3 Sheets—Sheet 1.

E. R. THURMAN.

STATION INDICATOR.

No. 350,784.

Patented Oct. 12, 1886.

Fig. 1.

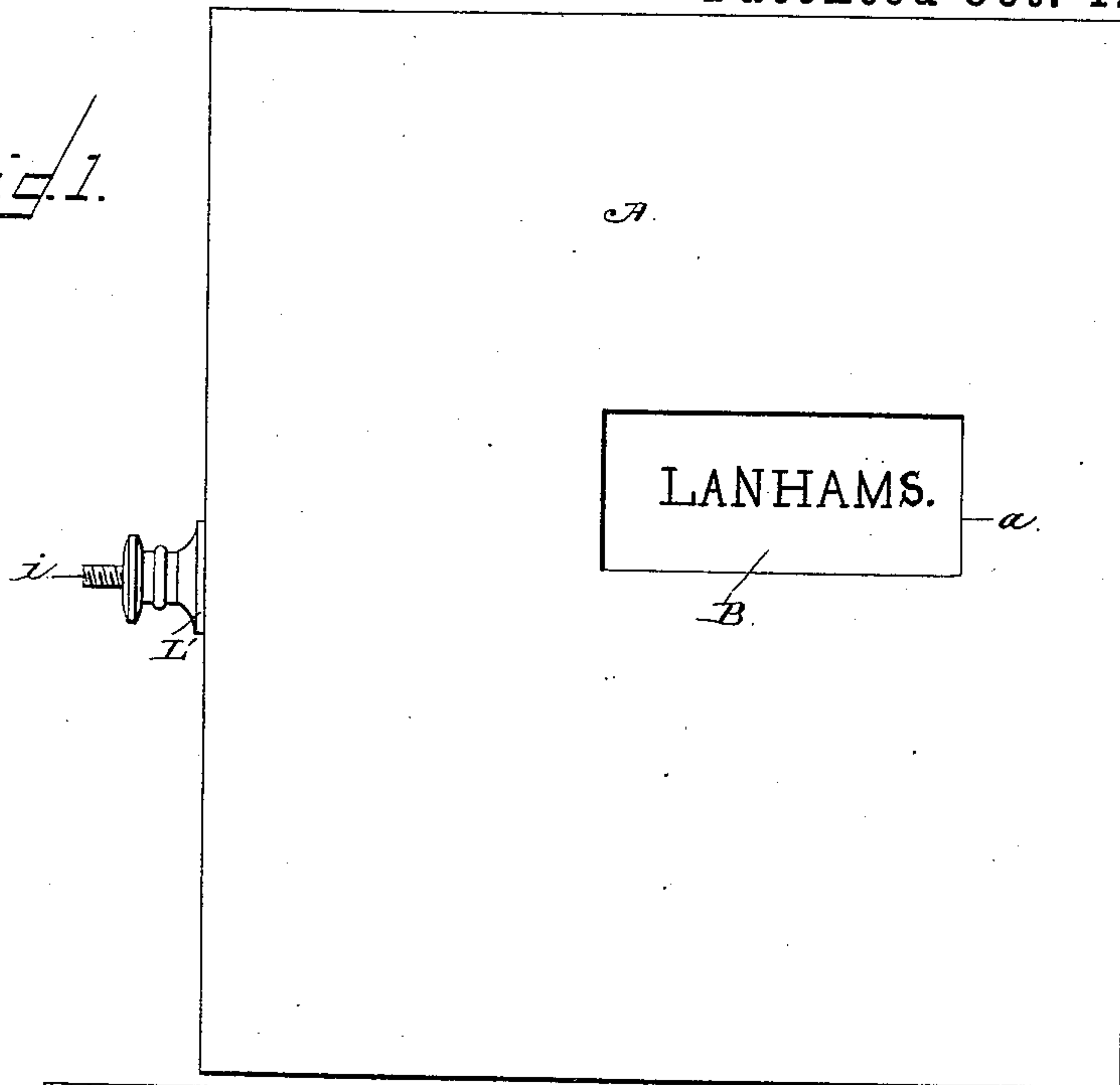
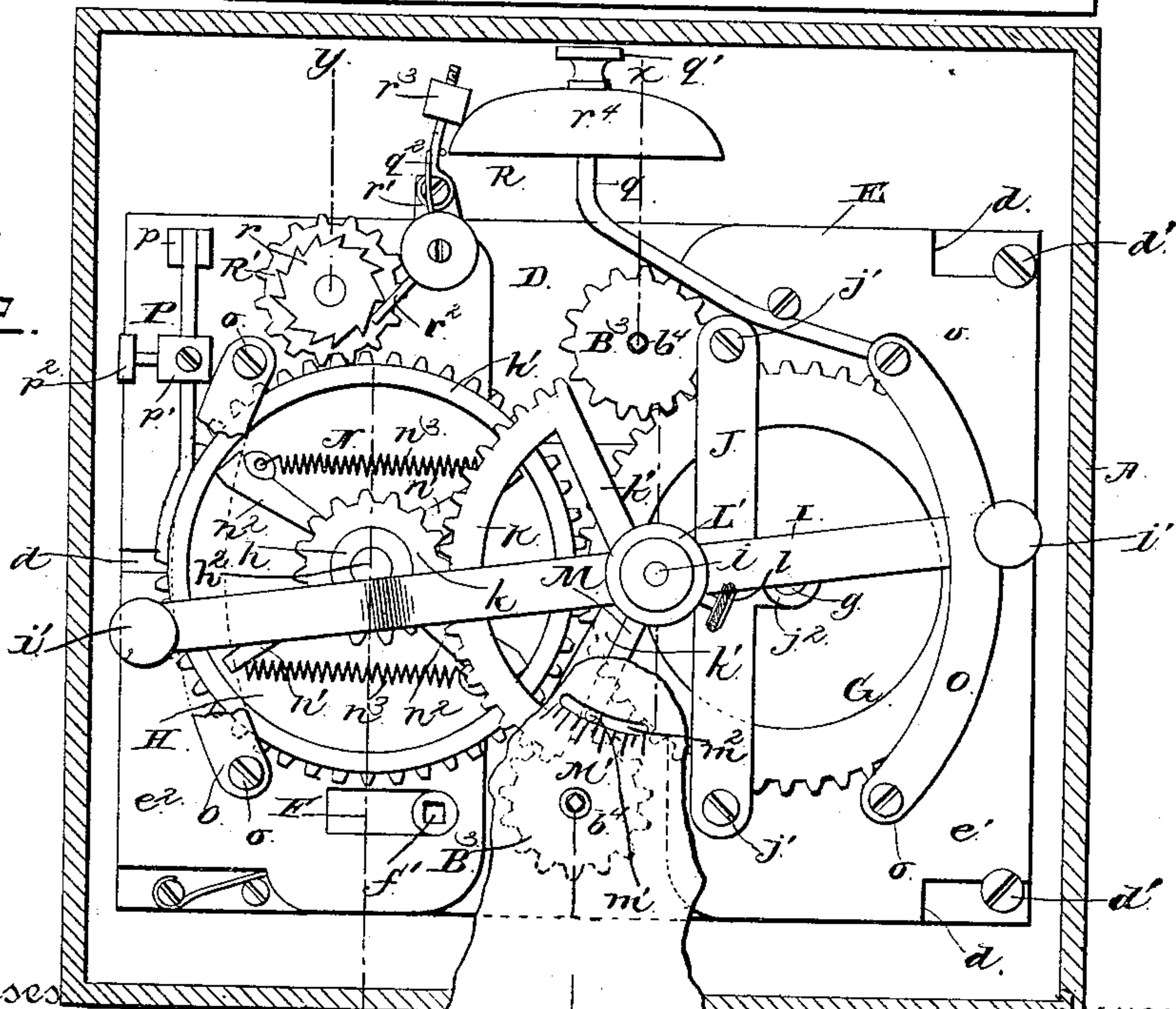


Fig. 2.



Witnesses

M. G. Fowler
H. F. Perukoff

Inventor

E. R. Thurman
By *Lie* Attorneys
C. A. Snowdon

(No Model.)

3 Sheets—Sheet 2.

E. R. THURMAN.

STATION INDICATOR.

No. 350,784.

Patented Oct. 12, 1886.

Fig. 3.

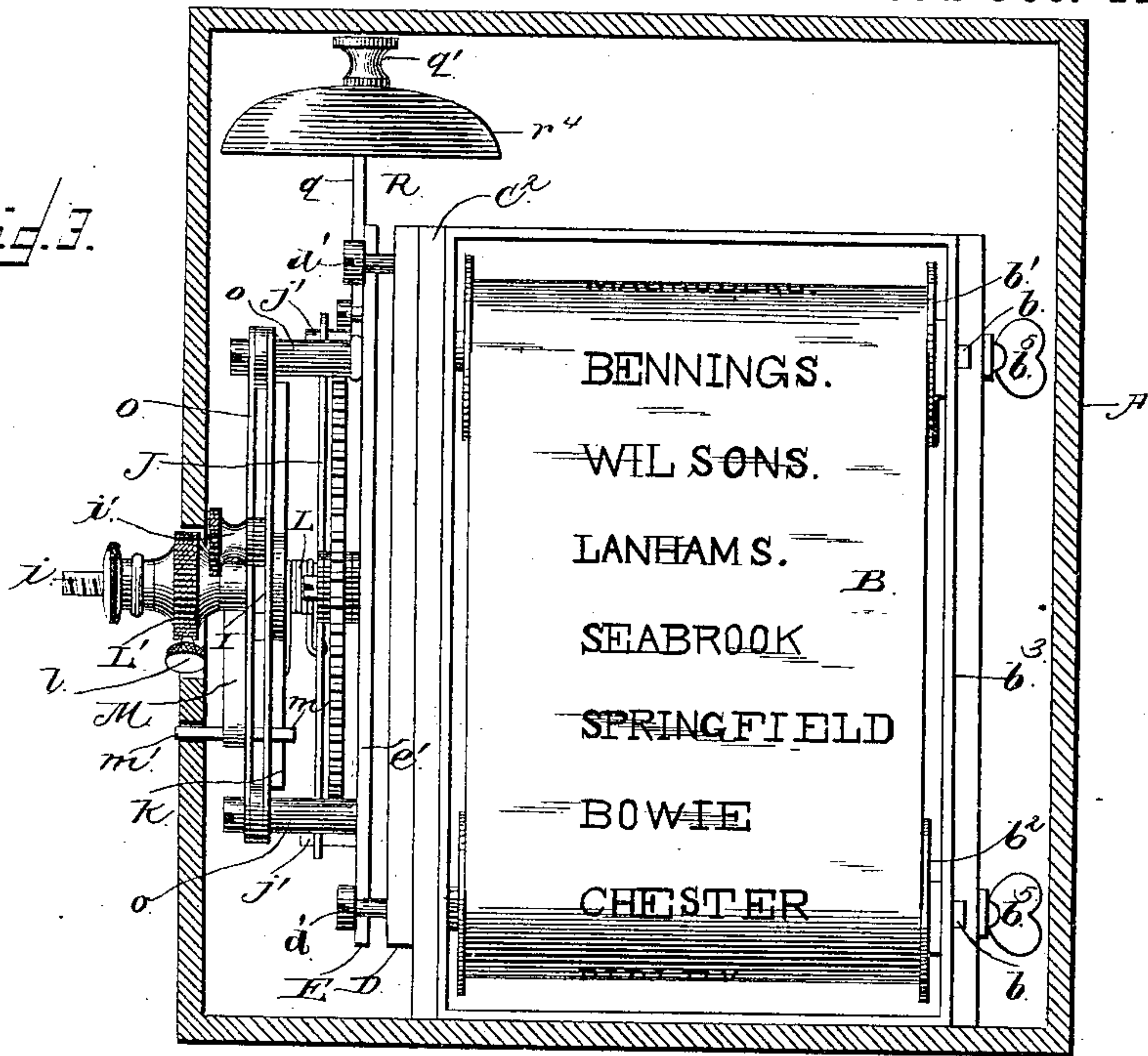
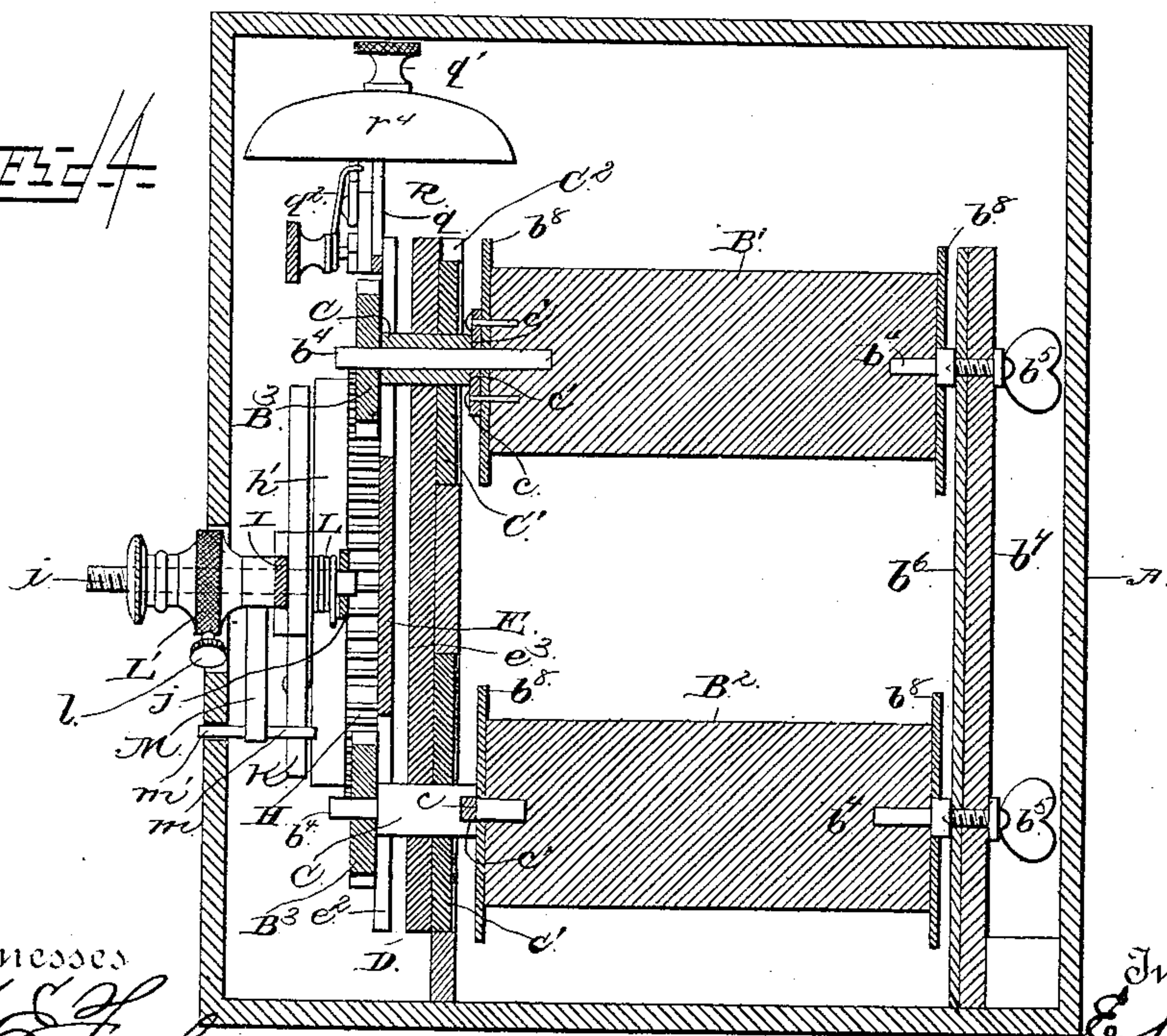


Fig. 4.



Witnesses

M. S. Fowler

H. F. Perichard

Inventor

E. R. Thurman

By his Attorneys

C. A. Howells

(No Model.)

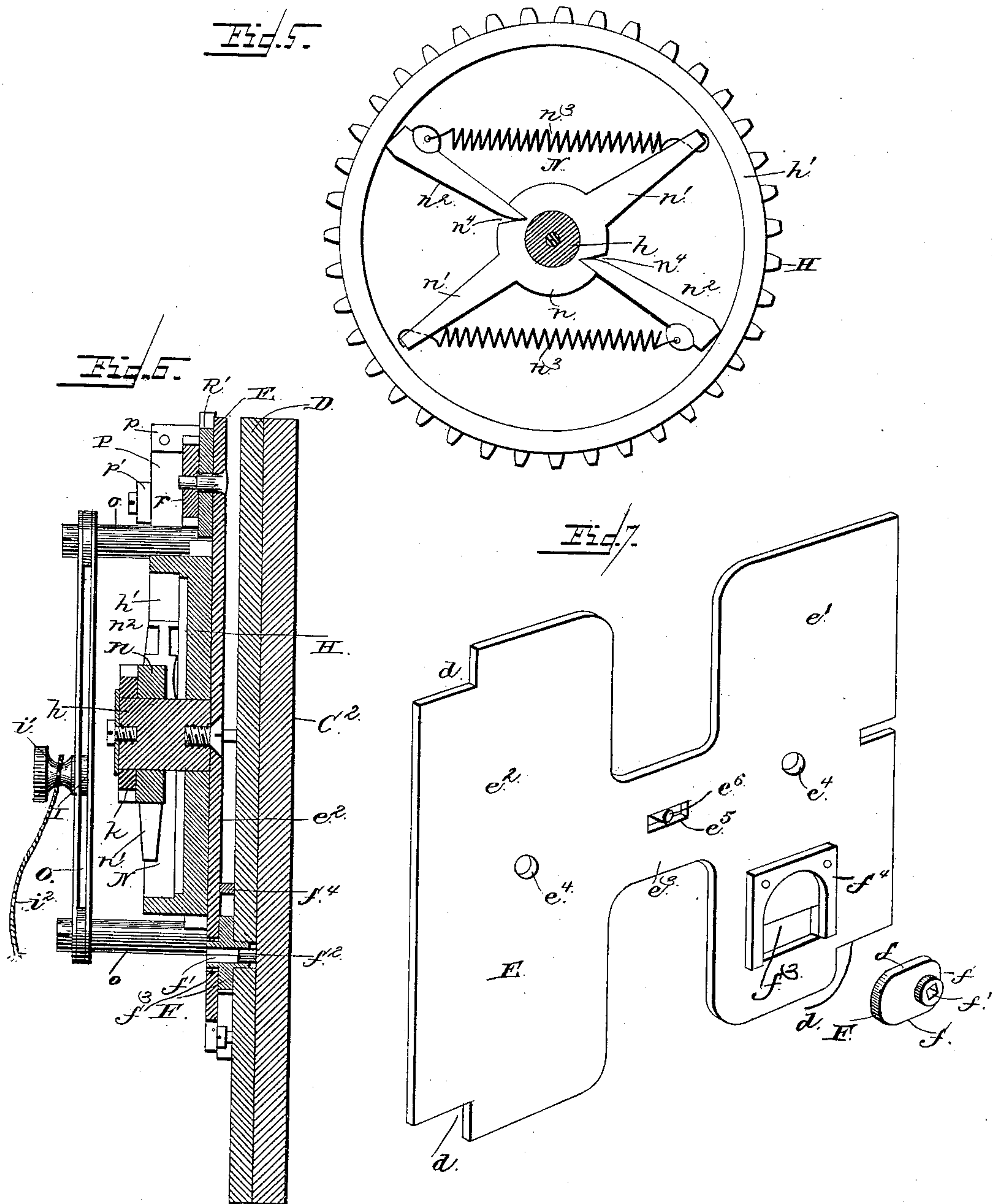
E. R. THURMAN.

3 Sheets—Sheet 3.

STATION INDICATOR.

No. 350,784.

Patented Oct. 12, 1886.



Witnesses

M. E. Fowler

H. F. Peruch

Inventor

E. R. Thurman

By his Attorneys

C. A. Snowdon

UNITED STATES PATENT OFFICE.

EDWIN R. THURMAN, OF NASHVILLE, TENNESSEE.

STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 350,784, dated October 12, 1886.

Application filed July 26, 1886. Serial No. 209,128. (No model.)

To all whom it may concern:

Be it known that I, EDWIN R. THURMAN, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented a new and useful Improvement in Station-Indicators, of which the following is a specification.

My invention relates to improvements in station-indicators; and it consists of the peculiar combination and novel construction and arrangement of the various parts for service, substantially as hereinafter fully set forth, and specifically pointed out in the claims.

The primary object of my invention is to provide an improved station-indicator which will inform passengers of the train of the name of the station which the train is approaching, and simultaneously sound an alarm to call or direct the attention of the passengers to the apparatus and the name of the station, thereby avoiding the necessity of having the brakeman or conductor call out the name of the station as the train approaches it.

A further object of my invention is to provide an improved indicator with means whereby the indicator-ribbon can be moved or fed in either a forward or reverse direction, so that the apparatus can be adapted to inform passengers of their destination, whether the train be running either forward or backward.

A further object of my invention is to provide the indicator with improved clutch-and-lever mechanism which will be automatically released from the driving-gear and returned to their normal positions when the strain or pull on the operating-cord is released, so that the apparatus is in condition for instant use at all times; and, finally, the object of my present improvements is to provide an improved indicator which will possess superior advantages over all others of its class that have preceded it in points of simplicity, strength and durability of construction, cheapness of manufacture, and reliability and efficiency of operation.

In the accompanying drawings, which illustrate a station-indicator embodying my present improvements, Figure 1 is a front elevation. Fig. 2 is a side elevation with the inclosing-case broken away. Fig. 3 is an end view of the device as shown in Fig. 2. Fig. 4 is a vertical sectional view on the line $x x$ of Fig. 2. Fig. 5 is an enlarged detail view of the clutch mechanism. Fig. 6 is a vertical

transverse sectional view on the line $y y$ of Fig. 2. Fig. 7 is a detail view of the sliding carrying-plate and the cam or tumbler for actuating the same.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates the inclosing-case of my improved station-indicator. This case may be of any approved form and material, and at its front it is provided with a viewing-opening, a , which is covered by a plate of glass or other transparent substance, so that the names of the stations on the traveling ribbon B can be very easily and readily seen through the said opening by the passengers to inform them of their destination or of the names of the stations which the train is approaching. This ribbon B is of any approved material—canvas or other suitable substance—and the names of the stations of the railroad through or by which the train passes are suitably inscribed or stamped on the ribbon, preferably transversely across the face thereof.

B' B^2 designate the feeding rolls, which are arranged one above the other and in rear of the supporting-rollers b' b^2 , which are arranged one above the other in like manner as the feeding-rollers. These supporting-rollers b' b^2 are loosely journaled on suitable shafts, b , which are fitted or supported in a suitable frame, b^3 , that is rigidly affixed within the inclosing-case A, and the said rollers are arranged one above the other and immediately in rear of the viewing-opening in the inclosing-case A, so that the indicator traveling ribbon is exposed to view, and the names thereon can be easily discerned by the passengers seated in the cars. The roller b' is arranged in line with the feed roller, drum, or spool B' , and the roller b^2 is arranged in like manner with the other drum or spool, B^2 , and the ends of the traveling ribbon are secured or affixed to the said feeding drums or spools in any suitable manner; or it may be an endless ribbon. The feed drums or spools B' B^2 are fitted on suitable shafts or pins, b^4 , each of the said feed drums or spools being provided at its ends with enlarged metallic heads b^5 , one of which has a hub or projection that is provided with a central countersunk portion, in which is fitted the conical point of a binding-screw, b^5 , which is provided with an enlarged finger-piece, and works in a threaded opening that

is formed in a metallic plate, b^6 , which is rigidly affixed to a vertical support or standard, b^7 , within the case A. One end of each of the spools or drums is supported by the binding-screw, and the speed or rapidity with which the drum rotates can be governed or regulated by tightening or releasing the said screw. The heads b^8 at the opposite end of the drums or spools are provided with transverse ribs c , each of which is fitted in a groove or channel, c' , that is formed in a hollow sleeve or hub, C, which is journaled so as to rotate freely in a suitable opening in a vertically-disposed bearing-plate, C' . This bearing-plate C' is affixed very rigidly or securely by means of screws or other suitable fastening devices to a vertical wall or partition, C^2 , within the case A, and the sleeve or hub C is extended through the bearing-plate, so as to provide an extended bearing-surface for the spindle or shaft b^4 of the drum or spool, and thus render the operation of the drum or spool very steady. One of these hubs and bearing-plates is provided for each of the spools or drums, and the spindle or shaft of the drums is extended through the hub or sleeve and made square in cross-section, as at b^4 in Fig. 2 of the drawings, so that the ribbon can be moved in either direction by rotating the drums or spools, this operation being effected independently of the mechanism for automatically feeding the ribbon when the train approaches or passes a station.

To the vertical wall or partition C^2 of the case, which separates the feed and supporting rolls and the ribbon from the driving mechanism, is rigidly affixed a base, D, which comprises a flat metallic plate, which is provided with suitable openings for the passage of the screws or bolts which secure the base to the partition, as will be very readily understood.

E designates the shifting or sliding plate, that is supported upon the base D in any suitable manner and arranged a short distance in front of the same, so as to be out of contact therewith, to permit it to slide very freely and easily upon its supports. This shifting plate is designed to carry the operative devices or driving mechanism, and is provided for the purpose of changing the relative position of the driving-gearing to the feed drums or spools, to actuate either one or the other, and thus move the traveling ribbon in either forward or reverse direction. The shifting plate is provided with recesses or slots d at its corners or any other suitable place, through which are passed headed pins or studs d' , that are rigidly affixed in the base D, and by means of these headed pins the shifting plate is supported on the base-plate, while it is permitted to have the requisite free movement back and forth thereon for the purpose above explained.

F designates a rotary cam or tumbler, which is arranged at or near the lower side of the base and the shifting plate, and this cam is provided with three straight faces, f , which serve to throw or move the driving-gearing

on the shifting plate in or out of gear with either one of the feeding drums or spools. This cam is provided with an angular opening, f' , into which the squared end of a key or other suitable implement can be fitted, to rotate the said cam in either direction, and this cam is fitted on a pin or shaft, f^2 , that is supported in the base D, a suitable slot or opening, f^3 , being provided in the shifting plate, so that the key or other suitable implement in the hands of the brakeman can be passed therethrough and fitted in the cam to actuate the latter. The cam is thus arranged in rear of and concealed from view by the shifting plate, and its angular faces f act upon a rib or flange, f^4 , that is arranged on the rear face of the sliding or shifting plate in such proximity to the cam that the latter will act upon them very effectively.

The shifting plate E is formed near its upper and lower sides with recesses or cut outs, which divide the plate into two portions, e' e^2 , which are connected by a cross-bar, e^3 , and in these recesses are arranged the spindles or shafts of the feed drums or spools, and of the pinions B^3 , that are rigidly secured on the shafts of the said drums in any suitable manner. This shifting plate is further provided with transverse openings or apertures e^4 , in which are journaled the shafts of the driving gear-wheels, hereinafter described, and the plate has a longitudinal slot, e^5 , at the middle of the connecting-bar, through which passes a stop-pin, e^6 , as shown in Fig. 7, to assist in limiting the movement of the said shifting plate, the said stop-pin being secured to the base D.

G and H designate the driving gear-wheels, which are journaled on suitable pins or shafts, g , which enter the openings e^4 in the shifting plate and are secured thereto, and the said wheels are arranged in a vertical position on the shifting plate E, said wheels being of any suitable diameter, and they mesh or gear with one another, so that both are rotated simultaneously. The gear wheel G is arranged on the portion e' of the shifting plate and carried by the same, and through the center of this wheel passes a shaft or pin, g , that is affixed rigidly in the shifting plate, the wheel being held on the shaft out of contact with the shifting plate, so that it will rotate very freely. This gear-wheel G is designed to be thrown into gear with the pinion B^3 on the shaft of the upper feed drum or spool, B' , to rotate the latter and the traveling ribbon in one direction, and the gear-wheel H is designed to be thrown into mesh or gear with the pinion B^3 on the shaft of the feed drum or spool B^2 at the lower side of the apparatus, to rotate or feed the latter and the ribbon in the other or reverse direction, the cam F being rotated to move the shifting plate backward and forward, in order to throw the driving gear-wheels in or out of mesh with their respective pinions. The driving-wheel H is provided at its center with an enlarged hub, h , which projects outwardly beyond one of the vertical faces of the wheel,

for a purpose presently described, and through this hub passes a shaft or pin, h^2 , which is secured in one of the openings e^4 of the shifting plate, the wheel H being arranged out of contact with the plate, or substantially so, whereby it will rotate very freely and easily on its shaft. This driving-wheel is further provided with a rim or flange, h' , which projects laterally therefrom and incloses the hub of the same, and this rim or flange is arranged concentric with the axis of the wheel and at the periphery of the latter, so that the swinging arms of the clutch mechanism, hereinafter described, will be free to act on the said peripheral rim.

I designates a swinging lever, which is pivoted at or near its middle upon a suitable post or arm, i , that is arranged in a horizontal position and extends outwardly from the shifting plate, and to the ends of this swinging lever are secured knobs or finger-pieces i' , which are to be grasped by the hand of the brakeman, or to which a pull-cord, hereinafter described, is connected to operate the said lever. The inner end of this post is rigidly affixed to the horizontal arm j of a vertical plate, J, which is arranged immediately over the drive-wheel G, and arranged out of contact therewith by means of suitable posts, j' , that are affixed to the base D, the said vertical plate being provided on its side opposite to the arm j with another arm, j'' , which is secured by the same screw or shaft, g , that supports the driving-wheel G, whereby the vertical plate is very rigidly and firmly secured or held in place.

The swinging lever I is free to move in a vertical line at its ends, and to the lever is affixed a segment, K, which is also supported on the shaft which forms the center thereof, and when the lever I is moved or oscillated this segment is also moved by the lever, so as to actuate a gear-wheel or pinion, k , that is journaled on the hub of the drive-wheel H, so as to rotate loosely on the hub, as will be readily understood. The segment K is provided with the arms k' , which serve to support the toothed rim, and the inner ends of the arms k' are formed into a hub, which is fitted on the shaft or post of the lever I, and the lever and segment are normally forced away from the drive-wheels and held in proper position relative thereto, and returned to their normal position, when pull on the operating cord is released, by means of a coiled spring, L, and a fixed nut, L', the former of which is interposed between the segment and the plate J, and the latter is screwed on the exteriorly-threaded end of the post i of the lever I, against the hub of the arm M, said nut L' having a binding-screw, l , which works in a suitable threaded opening therein and binds on the post i , to more securely hold the nut in place.

M designates an arm which is fitted on the post and arranged exteriorly to the swinging lever. This arm normally depends from the post in an inclined line or position, and at its lower end it is provided with lateral pins m and m' , the former of which serves to limit the

downward movement or play of the segment K and the lever I by one of the arms k' of the segment coming in contact with the said pin, m , while the latter pin, m' , projects through a slot, m^2 , in the case, and serves to indicate the position of the arm on a scale, M', on one of the sides of the inclosing-case A. The arm M is fitted tightly on the post i , and it can be turned thereon by pressure of the hand, so that the arm and its stop-pin can be adjusted around the post, and the length of the stroke or movement of the lever and its segment can be varied to feed the ribbon to a greater or less extent, as may be desired. It will be seen that when one end of the swinging lever I is depressed the opposite end thereof will be elevated, and as the segment is affixed to the lever it will be actuated simultaneously therewith to rotate the pinion of the clutch mechanism, and thus move the drive-wheels and the pinion of one of the drum-shafts; and upon the release of the pull or tension of the operating-cord on the lever the spiral spring L, which is connected at one end to the segment, will return the segment to its normal position and raise the lever I, so that the apparatus is in condition for instant operation again.

N designates the clutch mechanism, which is arranged or inclosed within the peripheral rim or flange of the drive-wheel H, which it is designed to actuate, and this clutch mechanism consists of an oscillating disk or plate, n , the radial integral arms n' , the swinging arms n'' , which are loosely fitted at their inner ends in notches or recesses n^4 in the edge of the central disk or plate, n , and arranged between the rigid arms and the retracting-springs n^3 , intermediate of the rigid and swinging arms. The central disk or plate, n , is provided with a suitable opening, through which is passed the hub h of the drive-wheel H, and the swinging arms n'' are beveled or inclined in opposite directions at their outer ends, so that one of the edges thereof can come in contact with the inside periphery of the rim or flange to rotate the latter, as presently described, while the rigid arms terminate a short distance within the rim or flange, so that they are out of contact therewith and do not affect the operation of the same. The central disk or plate is fitted loosely on the hub of the drive-wheel, so as to rotate independently of the same, and the said disk is connected with the pinion k in any suitable manner, so as to oscillate or move simultaneously therewith when the latter is actuated by the segment and lever. The free ends of the swinging lever I are fitted between guides O, which are carried by the shifting plate. These guides are arranged at the ends of the swinging lever, and comprise segmental plates or bars, which are arranged parallel with each other, (see Fig. 6,) and between which the lever is arranged, and the extremities of these segmental guide-plates are affixed to posts o , which are secured upon the shifting plate to support the guide-plates out of contact with the driving-wheels. The swing-

ing-lever is provided at its ends with hooks, eyes, or other equivalent devices, i' , to which one end of an operating-cord, i^2 , (see Fig. 6,) is connected, which leads to a suitable point in the car or coach within convenient reach of the brakeman or conductor, who is to operate the apparatus by pulling upon the cord.

P designates a brake, which comprises a curved piece or plate of metal that bears against the outside of the peripheral flange of the drive-wheel H, and one end of this brake is fitted between brackets or posts p and p' , which are secured upon the shifting plate and arranged a short distance apart, one of the said brackets having a binding-screw, p^2 , which bears against the brake to hold it very securely in place.

R designates the alarm mechanism, which is also carried by the shifting plate and adapted to be operated by one of the driving-wheels, preferably the wheel H. This alarm mechanism consists of a small gear-wheel or pinion, R' , that is journaled on a suitable shaft or spindle that is secured in the shifting plate, a ratchet, r , affixed to the gear-wheel and rotating therewith, an oscillating block, r' , which is journaled on a pin that is affixed in the shifting plate, and provided with an arm, r^2 , which is adapted to be actuated by the ratchet to oscillate the block, and a bell-hammer, r^3 , and a bell, r^4 , that is fitted on the upper threaded end of a standard, q , and held thereon by means of clamping-nuts q' . The gear-wheel R' meshes with the driving-wheel H, and when the latter is rotated the gear-wheel R' is likewise actuated, and the ratchet impinges upon the arm r^2 of the oscillating block to move the bell-hammer backward and forward and cause it to strike the bell, and thus give an alarm to attract the attention of the passengers to the apparatus and notify them of the name of the station. The bell-hammer is normally impelled forward and in contact with the bell by means of a coiled spring, q^2 , which is coiled around the pin on which the block is journaled, and when the ratchet is rotated it merely withdraws the hammer from the bell, and as each tooth of the ratchet releases the hammer the spring impels it forward against the bell to alarm.

This being the construction of my improved station-indicator, the operation thereof is as follows: The traveling ribbon is first wound upon one of the spools or drums by fitting a suitable key or implement to the shaft or spindle thereof and turning the said drum until the name of the first station is exposed to view through the inclosing-case, through the viewing-opening therein, care having been first taken that the driving-wheels G H are out of gear with the pinions on the drum-shafts by moving the shifting plate a very slight distance. This operation is performed by the brakeman before the train starts on its trip, and after the apparatus has been adjusted the shifting plate is moved so that one of the gear-wheels, G or H, meshes with one of the pin-

ions of one of the feeding drums or spools. As the train approaches a station the brakeman or conductor pulls upon the cord to depress one end of the swinging lever I and move the segment, which in turn actuates the clutch mechanism to feed the drum H, and also the drum G, whereby the pinion and the drum in gear with one of the driving-wheels will be rotated a limited distance. The downward movement of one end of the swinging lever is limited by one end thereof coming in contact with one of the posts of the segmental guides or segment K, fast to the lever, coming in contact with the pins m' of the stop-arm M, and simultaneously with the feeding of the traveling ribbon the alarm mechanism is actuated to attract or draw the attention of the travelers to the apparatus. When the strain or pull on the cord is released, the lever and segment are returned to their normal positions by the retracting-spring L, and the clutch is released from the drive-wheel and also returned to its normal position by the segment K, actuating the gear pinion k , which is fast on the hub of the clutch wheel or disk n , so that the apparatus is again in condition for instant operation. These operations are continued each time a train approaches or passes a station, and upon the return-trip of the train the brakeman shifts or moves the shifting plate so that the other drive-wheel will actuate the spool or drum that has been thrown out of use before, and when the cord is pulled the ribbon is drawn or pulled in the reverse direction, to expose the names on the ribbon in reverse order to that in which they were displayed on the previous trip of the train.

My invention can also be adapted to street and other cars, and the names or numerals of the streets instead of stations can be inscribed on the ribbon.

Various slight changes in the form and proportion of parts and details of construction can be made without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a station-indicator, the combination of the drums or spools, a shifting plate arranged to one side of the drums, the driving-wheels geared together and alternately engaged with or geared to one of the feed-drums, a swinging lever carried by the plate, and clutch mechanism connected with and actuated by the swinging lever for feeding the driving-wheels, substantially as described, for the purpose set forth.

2. In a station-indicator, the combination of the drums or spools, a traveling ribbon supported thereon, a shifting plate arranged to one side of the drums, the driving-wheels carried by the plate and geared together, a swinging lever supported on the shifting plate and arranged out of line with the drive-wheels, mechanism intermediate of the lever and one of the driving-wheels for operating the latter,

and alarm mechanism actuated simultaneously with the driving-wheels, substantially as described.

3. In a station-indicator, the combination 5 of the drums or spools, a traveling ribbon supported thereon, a drive-wheel geared to one of the drums, a swinging lever arranged to one side of the drive-wheel, a toothed segment connected with the swinging lever and actuated thereby, and clutch mechanism geared to the segment for rotating the drive-wheel, substantially as described, for the purpose set forth.

4. In a station-indicator, the combination 15 of the drums or spools, a traveling ribbon, a driving-wheel geared to one of the drums, a swinging lever arranged to one side of the drive-wheel, a toothed segment connected to the lever and actuated simultaneously therewith, clutch mechanism geared to the segment for actuating the drive-wheel, a spring for returning the lever and segment to their normal position and releasing the clutch mechanism from the drive-wheel, and the alarm mechanism actuated by the drive-wheel, substantially as described, for the purpose set forth.

5. In a station-indicator, the combination 30 of the drums or spools, a drive-wheel geared to one of the drums, a swinging lever, a segment connected to the lever, arranged to one side of the drive-wheel and actuated thereby, clutch mechanism geared to and controlled by the segment and adapted to rotate the drive-wheel, alarm mechanism geared to the drive-wheel, a spring connected with the lever for returning the same and the segment to their normal positions and simultaneously release the clutch mechanism, and a fixed arm, M, having the stop-pin arranged in the path of the segment for limiting the movement thereof, substantially as described.

6. In a station-indicator, the combination 15 of the drums or spools, a traveling ribbon thereon, a shifting plate arranged to one side of the drums and ribbon, the geared driving-wheels carried by the plate and geared alternately with one of the said feed-drums, alarm mechanism actuated by one of the drive-wheels simultaneously with the feeding of the traveling ribbon, a swinging lever, and clutch mechanism intermediate of the lever and one of the driving-wheels, substantially as described, for the purpose set forth.

7. In a station-indicator, the combination 55 of a swinging lever, a segment actuated simultaneously therewith, a spring for returning the lever and segment to their normal conditions when a pull upon the lever is released, clutch mechanism geared with the segment and actuated thereby, a drive-wheel rotated by the clutch mechanism, the drums, and a ribbon, substantially as described, for the purpose set forth.

8. In a station-indicator, the combination 55 of the drums, a drive-wheel geared to one of the drums, a traveling ribbon, a swinging lever arranged out of line with the drive-wheel,

a segment actuated simultaneously with the lever, and clutch mechanism geared to the segment and arranged to engage the drive-wheel, and comprising the central disk, the rigid arms, the swinging arms, and the spring, substantially as described, for the purpose set forth.

9. In a station-indicator, the combination 75 of the drums or spools, a traveling ribbon, a shifting plate, the geared drive-wheels carried by the plate arranged to one side of drums and ribbon, a swinging lever, a segment actuated simultaneously with the lever, a spring for returning the lever and segment to their normal conditions, and clutch mechanism geared to the segment and having the spring-actuated swinging arms adapted to bind against one of the drive-wheels when the segment is actuated to feed the said driving-wheel, and released therefrom upon the retrograde movement of the segment, substantially as described, for the purpose set forth.

10. In a station-indicator, the combination 90 of the drums, the traveling ribbon, a shifting plate arranged to one side of the drums and ribbon, the driving-wheels carried thereby and geared together, a swinging lever, a segment actuated simultaneously therewith, an adjustable arm for limiting and varying the stroke of the segment and lever, clutch mechanism intermediate of the segment and one of the drive-wheels, and alarm mechanism actuated simultaneously with the movement of the ribbon, substantially as described, for the purpose set forth.

11. In a station indicator, the combination 105 of the drums, a traveling ribbon thereon, the shifting plate, the driving-wheels carried thereby, a rotary cam or tumbler bearing against the shifting plate arranged to one side of the drums and ribbon, for moving the latter, a swinging lever pivoted on the plate, the segmental guides for the lever, and clutch mechanism intermediate of the lever and one of the drive-wheels for rotating the latter, substantially as described, for the purpose set forth.

12. In a station-indicator, the combination 115 of the drums, a traveling ribbon thereon, the shifting plate, a swinging lever carried thereby, the driving-wheels geared together and carried by the plate arranged to one side of the drums and ribbon, clutch mechanism intermediate of the lever and one of the drive-wheels, and alarm mechanism comprising the gear-wheel having a ratchet, an oscillating block having an arm and the bell-hammer, and a bell supported on a standard, substantially as described, for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

EDWIN R. THURMAN.

Witnesses:

WM. N. MOORE,
H. T. BERNHARD.