F. R. TAISEY.

ASSORTING DEVICE FOR CARRIERS.

APPLICATION FILED APR. 14, 1916.

1,218,910.

Patented Mar. 13, 1917.

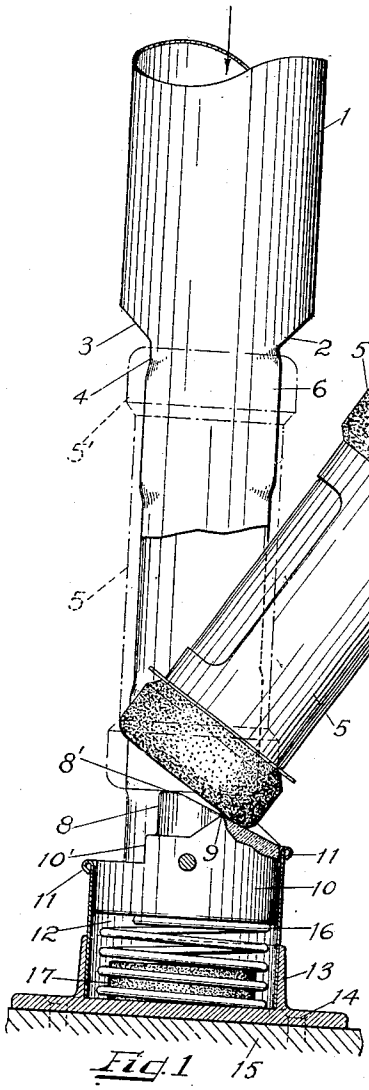


Fig. 1

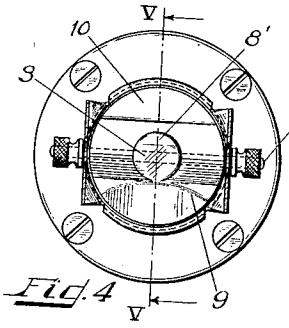


Fig. 4

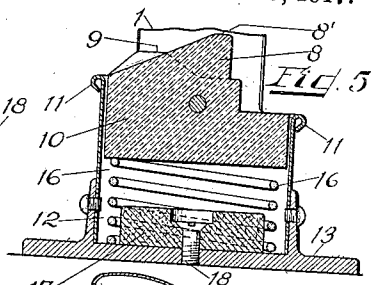


Fig. 5

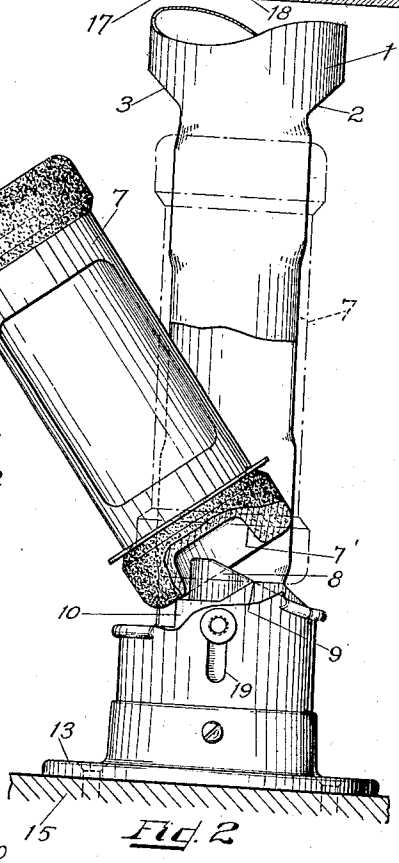


Fig. 2

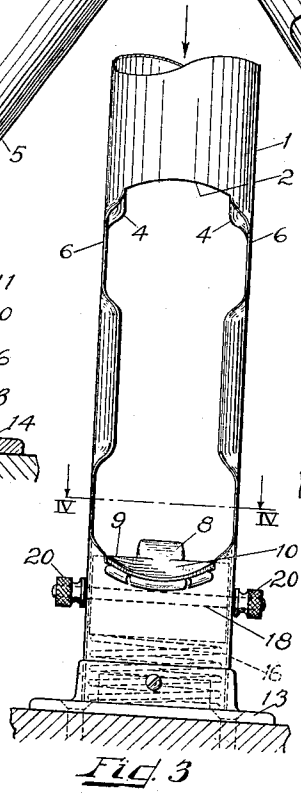


Fig. 3

Witnesses.

Charles O. Lawin

R. L. Fiske

Inventor.

Fred R. Taisey.

By Chas. P. Gibbons

Attorney.

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

UNITED STATES PATENT OFFICE.

FRED R. TAISEY, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO THE LAMSON COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF NEW JERSEY.

ASSORTING DEVICE FOR CARRIERS.

1,218,910. Specification of Letters Patent. Patented Mar. 13, 1917.

Application filed April 14, 1916. Serial No. 91,202.

To all whom it may concern:

Be it known that I, FRED R. TAISEY, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Assorting Devices for Carriers, of which the following is a specification.

This invention relates to pneumatic despatch tube apparatus, and more particularly to an assorting device for pneumatic carriers.

A distinction is to be drawn between such a device, in which, in its preferred form, gravity may, even alone and unaided, effect the assorting,—and carrier switches or the like. In for example, my Patent No. 729,448, dated May 26, 1903, I disclosed an automatic switch for carriers in which, as in switches for railways or for other purposes, there is a tongue which is adjustable into one position or another to guide a carrier while the latter is in motion, along one or another of a plurality of paths. In the patent to Albert W. Pearsall, No. 1,102,225, dated June 30, 1914, there is shown what has been termed a carrier separator, and this device, which is today in extensive use in the art, is thus termed in practice. My present invention, is more in the nature of a carrier separator than a switch and has for its principal object the provision of an improved and greatly simplified device of this description.

In its preferred form it has no switching tongue or like element along which a carrier may slidingly travel, nor can any carrier continue on in substantially the same line as it previously traveled, as is the case with carriers of one class in the said Pearsall construction; but rather it includes a receiver having a device which brings all carriers momentarily to rest or substantially to rest, and then effects a sorting apart of the carriers according to classes by causing a gravitational movement of said carriers which may be aided by their momentum to topple them over sidewise with respect to their previous line of travel; carriers of one class being thus moved in one direction while carriers of another class are toppled out in another direction. The invention, in its preferred form, therefore aims at effecting a veritable assorting of carriers entering the receiver, to one or another side thereof; in contradistinction to any switching action previously used in this or analogous arts.

These and other objects of said invention will be hereinafter referred to and novel combinations of means and elements whereby said objects may be attained will be more particularly pointed out in the claims appended hereto.

In the drawings which form parts hereof and in which like reference characters designate like parts throughout the several views, I have shown a preferred embodiment of my invention; but as I am aware of various changes and modifications which may be made herein without departing from the spirit of my invention, I desire to be limited only by the scope of said claims.

Referring to the drawings:—

Figure 1 is a front elevation of a carrier assorting device constructed in accordance with the principles of my invention; the lower portion of said device being broken away to better illustrate the action of the device upon a carrier having a solid felt head.

Fig. 2 is a similar view, with, however, less of the casing broken away; and showing a carrier in the act of being ejected toward the opposite side of said device; said carrier being one provided with recessed head.

Fig. 3 is a side elevation of the assorting device as viewed from the right-hand side of Fig. 2.

Fig. 4 is a detail section, taken on line IV—IV of Fig. 3; and

Fig. 5 is a partial or detail section taken on line V—V of Fig. 4.

The tubular upper section 1 may if desired be directly connected to, and in fact may form a part of a pneumatic tube through which carriers are propelled; and in any case, it is disposed with respect to the transmission tube to receive carriers emerging or about to emerge therefrom.

The casing or chamber 1 is preferably irrotationally mounted and is cut away at opposite sides thereof, as at 2 and 3. I prefer to so form these cuts and to shape the edges thereof, as to favor the emerging of carriers of one class through one of these openings, while impeding the inadvertent emergence of carriers of a second class through the opening last aforesaid. Thus,

as will be seen from Figs. 1 and 3, a carrier of the solid head class, for example, cannot readily fall out of the device toward the left, as viewed in Fig. 1; because of the inwardly extending portions 4 of the tubular wall, which portions lie in the path of the upper portion of the felt head 5′, of the carrier 5.

On the other hand, however, this upper head of a solid headed carrier can freely emerge through the opening or cut away portion 2; since the chamber wall is flared or flanged out as at 6, so that the width between the flanges 6, as viewed in Fig. 3, is substantially equal to the inner diameter of the tube 1.

The carriers having solid heads, 5, may be the same length as those having recessed heads, of which, one designated 7, is shown in Fig. 2. The solid headed carriers cannot, however, drop quite as far down into the receiving element as can those which are provided with recesses 7′ in the heads thereof; on account of an upstanding lug or projection 8, which is sufficiently narrow and also sufficiently near the center line or axis of the device, to permit of the entry of said lug into the recess 7′ of a carrier 7. Hence, while a carrier 5 comes to rest, so to speak, upon the apex of the lug 8, as shown in dash and dot lines in Fig. 1, a carrier 7 comes momentarily to rest, or substantially so, in the position indicated by dot and dash lines in Fig. 2, with the bottom of said carrier in contact with a ridge 9, or the equivalent thereof which for convenience in manufacturing may be slightly arcuate, as indicated in Figs. 4 and 5.

This ridge affords a reasonably extended abutment against which the felt head of a carrier 7 may impinge, as is to be preferred; since while a point of contact or abutment would suffice, it would in time tend to form undesired recesses in the heads of carriers repeatedly striking the same. Similarly, to afford as much corresponding abutment surface for the carriers 5, as possible, I prefer to flatten off the top of the lug 8, as at 8′.

The lug 8 and ridge 9, aforesaid, may be and in fact preferably are, integrally united; being simply projections upon the upper face of a block 10.

The latter may conveniently be made of fiber or the like, which may be pressed, molded or cut to the desired form; being preferably cut away, or molded, as shown at, for example, 10′, to afford proper clearance for the emerging carriers and to allow them to pass freely out of the receiver.

The lower edges of the receptacle, at the openings 2 and 3 therein, may be curled over as at 11, to prevent any cutting action of said edges upon the felt heads of the carrier; and the block 10 is preferably mounted directly in this lower end of the receiver.

I have also found it to be advantageous, although of course by no means essential, to fit said block 10 quite closely to the wall of the tubular receiver, to permit it to slide up and down therein somewhat like a piston. Indeed, it preferably acts as a piston, and when driven down by the impact of a carrier thereagainst, it momentarily compresses the air in the cylinder-like space 12, therebelow.

In the construction given by way of exemplification, this lower end of the receiver is socketed into a base 13, which may be screwed, as at 14, directly to the counter 15, or other suitable support, to firmly anchor the device.

Where the block 10 or an operating portion thereof is thus made movable directly up and down, it may be held in its upper position by a spring 16; said spring being preferably of resilient wire, although I do not desire to be limited, where a spring is used, to one of this particular description; nor do I desire to be limited to this particular movement of the operating abutments; although it is desirable that one at least of them should have a component of its movement in the direction of the axis of the device.

The spring 16 yields under the impact of a carrier, when the latter strikes against either lug 8 or ridge 9, as the case may be,—and in effect, acts as a resilient cushion; the air in the chamber 12, compressed by the descending piston-like block 10, co-acting with said spring 16 to gradually check the carrier.

To further co-act with the spring 16 and said air cushion, to this end, I also may, and in fact prefer to provide a body of felt 17, which may be held in place in the chamber 12 by means of a screw 18′, threaded into the base 13. This felt is preferably of relatively open texture to give it a spring-like character. It comes into play, principally, when carriers which are rather heavily loaded are delivered to the receiver, or when, from the nature of the transmission line at its delivery end, carriers are delivered to said receiver with considerable force. It is also of value when two carriers happen to enter the receiver together, one directly behind the other and substantially in contact.

The air chamber 12, in addition to serving as a part of the cushioning means, performs a further function; in that when the piston-like block 10 is driven down thereinto, while the air below is compressed, since the piston does not fit closely in its cylinder, much of this air escapes with moderate rapidity, with the result that after the momentum of the carrier has been absorbed and the spring 16 is returning the block 10 to its upper position, a partial vacuum tends to form below the block which checks the

speed of its upward movement during the last portion of the stroke and, in effect, acts upon the block 10 somewhat in the fashion that what are termed "snubbers" act upon the chassis and springs of an automobile.

To use an apt expression therefore, which has now come into extensive use in the automobile art,—the carriers delivered into the apparatus shown, may be said to be snubberized. In other words, the block 10 yields downwardly with sufficient freedom to properly absorb the momentum of the carrier and is thereafter returned to its upper position with but little tendency to bounce the carrier upward therefrom. This action is one of considerable value in that it materially aids in a proper and prompt assortment of the carriers in the manner now to be described.

Referring first to Fig. 1, and assuming that the solid headed carrier 5 be simply stood upon the lug 8 in the position indicated by dash and dot lines. The center of gravity of this carrier will normally be substantially in the axis of said carrier and under the circumstances, this axis will correspond with the axis of the receiver. It will be observed that said carrier when so disposed, is not, however, supported by the lug 8 directly beneath its center of gravity, but rather as far to the left, as viewed in Fig. 1, as the radius of the recess 7′ of the carrier 7 will permit of the lateral displacement of the surface 8′ of said lug eccentrically with respect to the axis of the receiver. There is hence by the action of gravity alone upon a carrier 5, a tendency for said carrier to topple over toward the right, as viewed in Fig. 1, and the upper right-hand surface of the block 10 is sloped or cut away to favor the emerging of said carrier upon this side of the receiver.

When said carrier travels down toward the block 10 through the receiver, under momentum, which of course is normally the case; then the action of gravity is supplemented by the percussive action of the carrier upon the surface 8′, since the center of percussion will also lie in this major axis of the carrier and the momentum of the carrier will act through a lever arm substantially equal to the distance from this axis, to, let us say, the center of the surface 8′. We have, hence, two forces, namely gravity and momentum, conjointly acting with about the same leverage, to hurtle or topple said carrier out of the receiver toward the right, and in practice this combined ejecting action on said carrier throws it out of the receiver very promptly; said carrier dropping into or upon a suitable repository, such for example, as the counter 15 at the right-hand side of the receiver, as viewed in said Fig. 1.

The ridge or abutment 9 correspondingly co-acts with gravity and with the momentum of a carrier 7, and as the point or line of engagement of this latter abutment is upon the other side of the receiver axis at even a slightly greater distance therefrom than is the abutment or carrier engaging surface 8′ aforesaid, all carriers which can so encounter said ridge, are hurtled or toppled out of the receiver toward the left, as shown in Fig. 2.

It will be understood from the foregoing, that the lug 8 exerts practically no rotative effort upon carriers of the class designated 7; since said lug is simply idly received into the recess 7′ in the lower head of such a carrier. Correspondingly, the abutment 9, which co-acts with said carrier 7, exerts practically no rotative effort upon carriers of the class designated 5.

The upward movement of the block 10 is limited by the engagement of a pin 18, the extremities of which ride in slots 19 in the walls of the receiver; said pin 18, which of course passes through the block 10 in the preferred construction shown, also serving to prevent inadvertent rotation of the block 10 around the receiver axis.

The pin 18 may be held in place by knurled nuts 20, at the extremities thereof, either of which may be unscrewed to permit of the withdrawal of said pin; after which the block 10 may be removed and the device otherwise disassembled.

For convenience, in certain of the appended claims, and in order to more comprehensively cover carriers of different classes, whether distinguished by felt heads shaped as shown by way of exemplification, or by equivalent distinguishing forms or provisions, I have referred to said carriers respectively as carriers of class A and as those of class B.

In conclusion and with further reference to the action of the off-set abutments upon the carriers of said different classes,—not only is there a rotary effort exerted upon a carrier, in one direction or the other according to its class, during the downward movement of the block 10; but further, even the subsequent ascending motion of said block continues to exert said effort. The described motion of a given abutment, or any equivalent motion thereof, is of value in aiding in the proper assortment of carriers according to classes, even when carriers very closely follow each other into the receiver; it being probable, although by no means certain owing to the rapidity of the action, that the succeeding carrier, which of course is held against lateral movement in the upper tubular portion of said receiver, is driven upwardly by the return movement of the block 10, sufficiently to slightly clear the carrier therebelow

which is being acted upon by one of the abutments of said block; whereby to enable the device to properly function.

However this may be, I do not desire to be limited by said theory, as the device operates very successfully and the provision of means to permit of a yielding action of the abutment, greatly favors the proper assortment of carriers under substantially all conditions which are likely to be encountered in practice.

Having thus described my invention what I claim is:

1. In a pneumatic despatch tube apparatus, the combination of carriers of different classes having ends of different formations to determine the classes of said carriers, with a transmission tube through which said carriers are transmitted irrespective of the classes to which they pertain, and abutment acting means in the path of said carriers for directly engaging the forward end of each carrier delivered thereto, to one or the other side of the center of gravity of said carrier, according to the class of said carrier and unstably supporting the latter momentarily to cause the so supported carrier to topple over toward one side or another thereof, according to its class.

2. In a pneumatic despatch tube apparatus, the combination of different classes of carriers having ends of different formation to determine the classes of said carriers, with a transmission tube through which said carriers are transmitted irrespective of the classes to which they pertain, and a receiver to which said carriers are delivered, said receiver being open at determined sides thereof to permit of the egress of all carriers laterally therefrom but in different ways according to said classes, and said receiver having means to normally prevent a carrier of one class from emerging from said receiver in the way in which carriers of another class emerge therefrom, and means to cause all of said carriers to emerge from said receiver through the side openings of the latter, laterally with respect to the path of travel of said carriers as they enter said receiver and in said different ways according to the classes thereof.

3. In a pneumatic despatch tube apparatus, the combination of elongated carriers of two different classes A and B, having ends of different formations to determine the classes of said carriers, the forward traveling end of each of the carriers in said class A having a portion thereof disposed at a different distance away from a transverse plane which bisects the major axis of said carrier, than is another portion of said end, a transmission tube through which said carriers travel, and carrier sorting means comprising a resisting abutment disposed directly in the path of travel of the class A carriers for engaging said first mentioned portion of the forward end of each carrier in said class upon its arrival at a determined point in said path, to one side of said axis, to impart to said carrier a tendency to topple over toward the opposite side, with respect to said axis and to said sorting means, and a resisting abutment for engaging a portion of the end of each carrier of class B, laterally with respect to its major axis and toward said opposite side of said sorting means, to correspondingly impart to these latter carriers a tendency to topple over in a different direction to that in which the class A carriers move.

4. In a pneumatic despatch tube apparatus, the combination of elongated carriers of two different classes A and B, having ends of different formations to determine the classes of said carriers, the forward traveling end of each of the carriers in said class A having a portion thereof disposed at a different distance away from a transverse plane which bisects the major axis of said carrier, than is another portion of said end, a transmission tube through which said carriers travel, and carrier sorting means comprising an abutment disposed in the path of travel of the class A carriers for engaging said first mentioned portion of the forward end of each carrier in said class upon its arrival at a determined point in said path, to one side of said axis, to impart to said carrier a tendency to topple over toward the opposite side, with respect to said axis and to said sorting means, and an abutment for engaging a portion of the end of each carrier of class B, laterally with respect to its major axis and toward said opposite side of said sorting means, to correspondingly impart to these latter carriers a tendency to topple over in a reverse direction to that in which the class A carriers tend to fall.

5. In a pneumatic despatch tube apparatus, the combination of carriers of two different classes A and B, having ends of different formations to determine the classes of said carriers, a transmission tube for said carriers having a substantially fixed receiving element to which said carriers are delivered, means for causing carriers of class A as they arrive at said substantially fixed element, to topple over toward one side of said element, out of the path of any succeeding carrier about to engage said means, and means for causing the carriers of class B, as they arrive, to topple over out of said path toward another side of said element.

6. In a pneumatic despatch tube apparatus, the combination of carriers of two different classes A and B, having abutment engaging parts differently disposed on said carriers to determine the classes of said carriers, a transmission tube for said carriers having a substantially fixed receiving ele-

ment to which said carriers are delivered, abutment acting means to engage said parts of carriers of class A as they arrive at said receiving element, to topple said carriers of class A over toward one side of said element, out of the path of any succeeding carrier about to engage said means, and means to engage said parts of carriers of class B, as they arrive, to correspondingly topple said carriers of class B over toward another side of said element.

7. In a pneumatic despatch tube apparatus, the combination of carriers of two different classes A and B, having ends of different formations to determine the classes of said carriers, a transmission tube for said carriers having a receiver in the path of said carriers always in position to receive them, means for causing carriers of class A as they arrive at said receiver, to topple out of said path toward one side of said receiver, and means for causing carriers of class B as they arrive at said receiver, to topple out of said path toward another side of said receiver.

8. In a pneumatic despatch tube apparatus, the combination of carriers of two different classes A and B, having abutment engaging parts differently disposed on said carriers to determine the classes of said carriers, a transmission tube for said carriers having a receiver for said carriers, abutment acting means to engage said parts of carriers of class A to topple said class A carriers completely out of a side of said receiver, and abutment acting means to engage said parts of carriers of class B to topple said class B carriers completely out of another side of said receiver, to assort said carriers according to classes.

9. In a pneumatic despatch tube apparatus, the combination of carriers of two different classes A and B, said carriers having structural provisions differing according to and determining said classes, a transmission tube for said carriers having a substantially fixed receiving chamber for said carriers, means to co-act with the structural provisions of carriers of class A to cause the class A carriers to each topple over out of their previous line of travel in one determined manner after they have entered said chamber, means to similarly cause carriers of class B to topple over out of said line of travel in another determined manner, to effect a separation of said carriers according to classes, and means to yieldingly support the respective means aforesaid.

10. In a pneumatic despatch tube apparatus, the combination of different classes of carriers, said carriers having structural provisions differing according to and determining said classes, with a transmission tube through which said carriers are transmitted, and an irrotationally mounted carrier cushioning chamber to which said carriers are delivered, said chamber having devices to co-act with said class determining provisions to cause each of said carriers when in said chamber, to topple over out of said chamber laterally with respect to the path of travel of said carriers as they enter said chamber but in different ways according to the classes thereof.

11. In a pneumatic despatch tube apparatus, the combination of different classes of carriers, said carriers having structural provisions differing according to and determining said classes, with a transmission tube through which said carriers are transmitted, and a receiving chamber to which said carriers are delivered and in which said carriers irrespective of classes, are at least momentarily brought to rest, and carrier separating means having parts to co-act with said class determining provisions to cause all of the arrested carriers to then emerge side-wise from said chamber and laterally one way or another with respect to the path of travel of said carriers as they enter said chamber, according to the classes thereof.

12. In a pneumatic despatch tube apparatus, the combination of different classes of carriers, said carriers having structural provisions differing according to and determining said classes, with a transmission tube through which said carriers are transmitted, and an irrotationally mounted snubberizing receiver to which said carriers are delivered and in which said carriers irrespective of classes, are at least momentarily brought to rest, and carrier separating means having parts to co-act with said class determining provisions to cause all of the arrested carriers to then emerge side-wise from said receiver and laterally one way or another with respect to the path of travel of said carriers as they enter said receiver, according to the classes thereof.

13. In a pneumatic despatch tube apparatus, the combination of different classes of carriers, said carriers having structural provisions differing according to and determining said classes, with a transmission tube through which said carriers are transmitted, and a receiver to which said carriers are delivered and in which said carriers irrespective of classes, are at least momentarily brought to rest, said receiver having a pneumatic snubberizing device for absorbing the momentum of the carriers arriving at said receiver and acting to prevent interference between successive carriers when the latter are being assorted, and carrier assorting means to co-act with said snubberizing device and having parts to co-act with said class determining provisions to cause all of the arrested carriers to topple side-wise from said receiver and laterally to one side or

another with respect to the path of travel of said carriers as they arrive at said receiver, according to the classes thereof.

14. In a pneumatic despatch tube apparatus, the combination of different classes of carriers, said carriers having structural provisions differing according to and determining said classes, with a transmission tube through which said carriers are transmitted, and an irrotationally mounted receiver to which said carriers are delivered and at which said carriers irrespective of classes, are at least momentarily brought to rest, said receiver having abutments to co-act with said class determining provisions to cause all of the arrested carriers to topple sidewise from said receiver and laterally one way or another with respect to the path of travel of said carriers as they arrive at said receiver, according to the classes thereof.

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

FRED R. TAISEY.

Witnesses:
R. E. FISK,
CHARLES O. LAURIN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."