

J. DYER.

Ticket Printing and Registering Apparatus.

No. 134,042.

Patented Dec. 17, 1872.

Fig. 1.

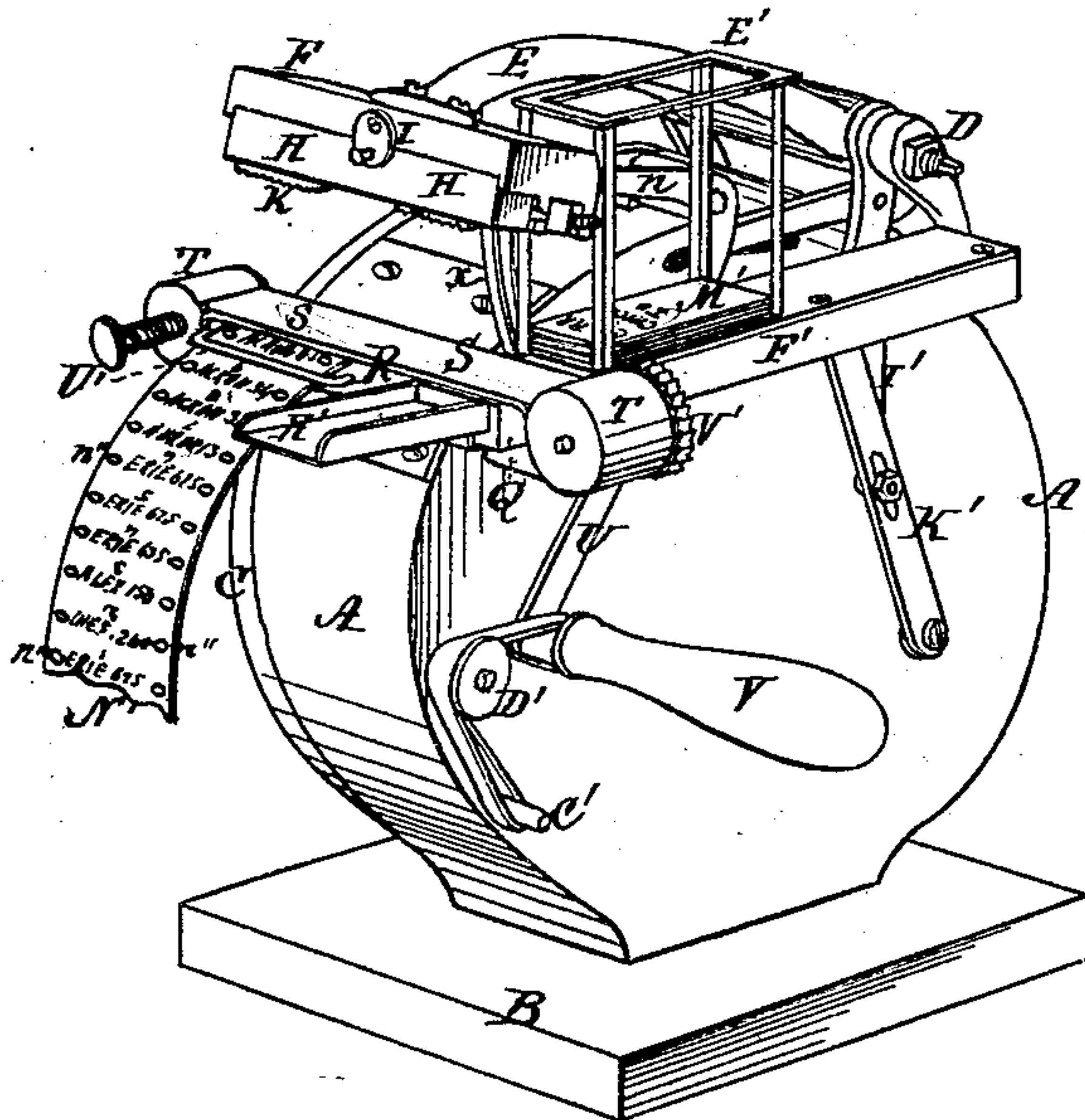


Fig. 2.

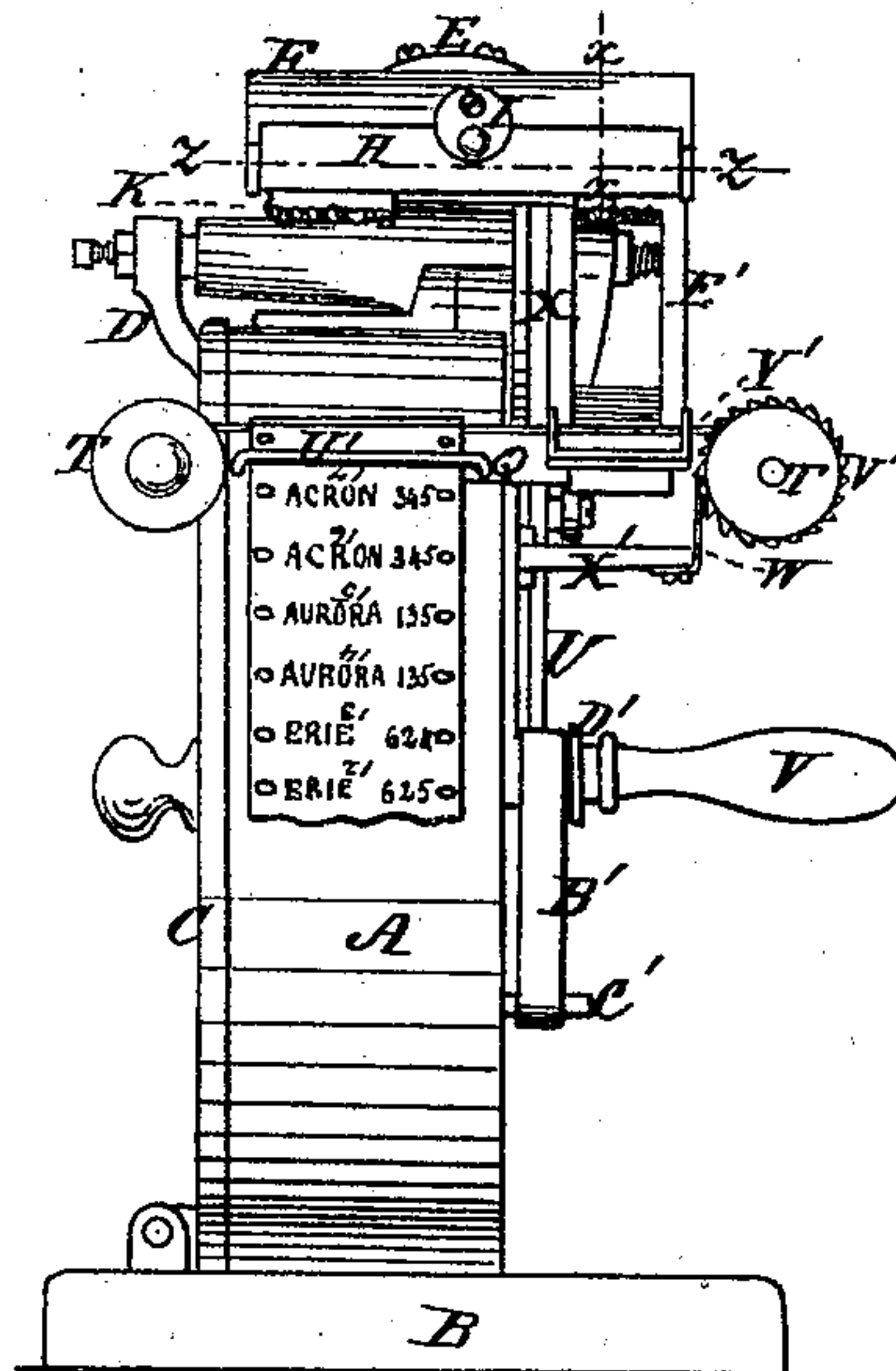
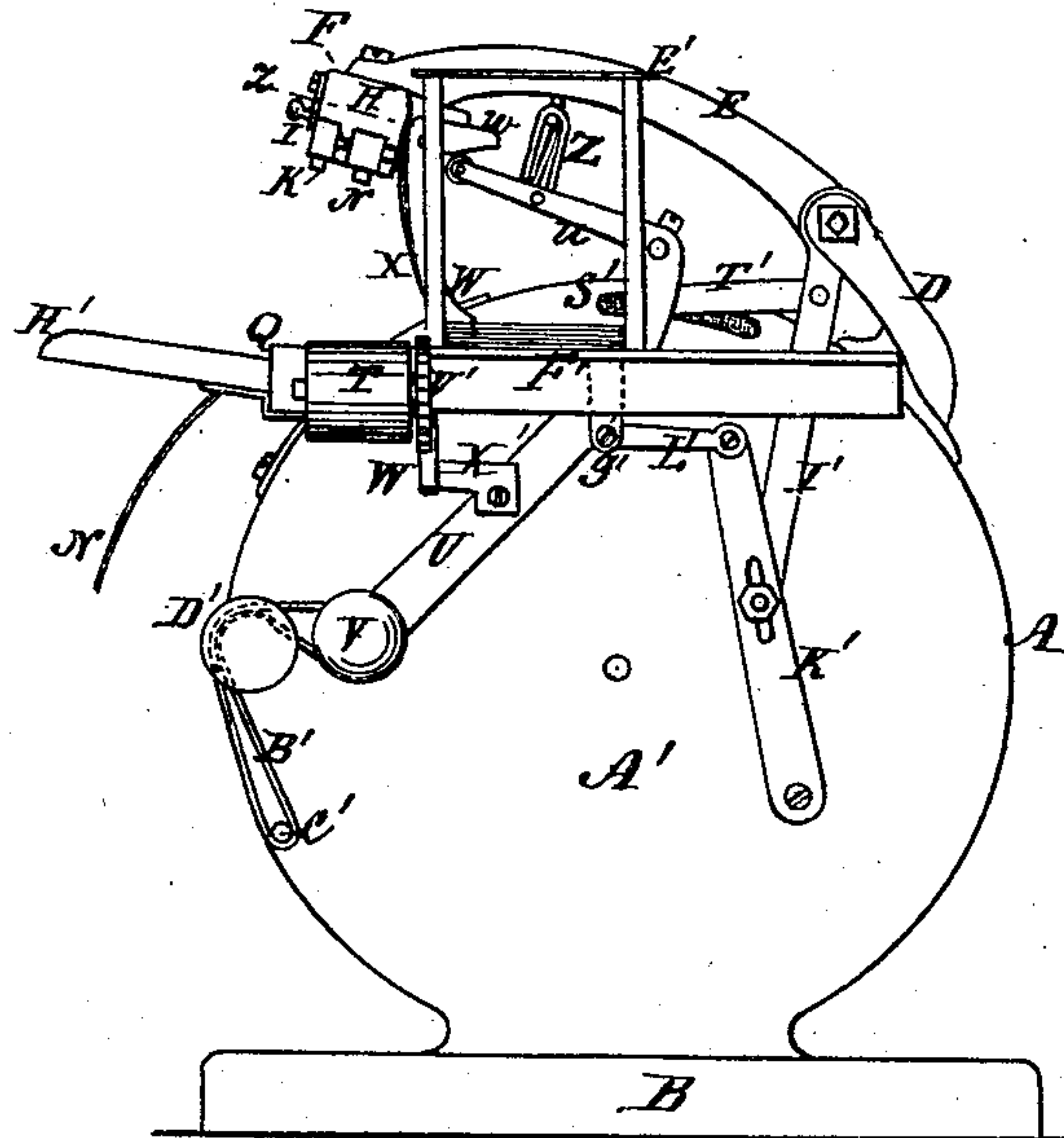


Fig. 3.



Witnesses  
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Jas. Dyer, by  
Prindle and Co., his Attys

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Fig. 4

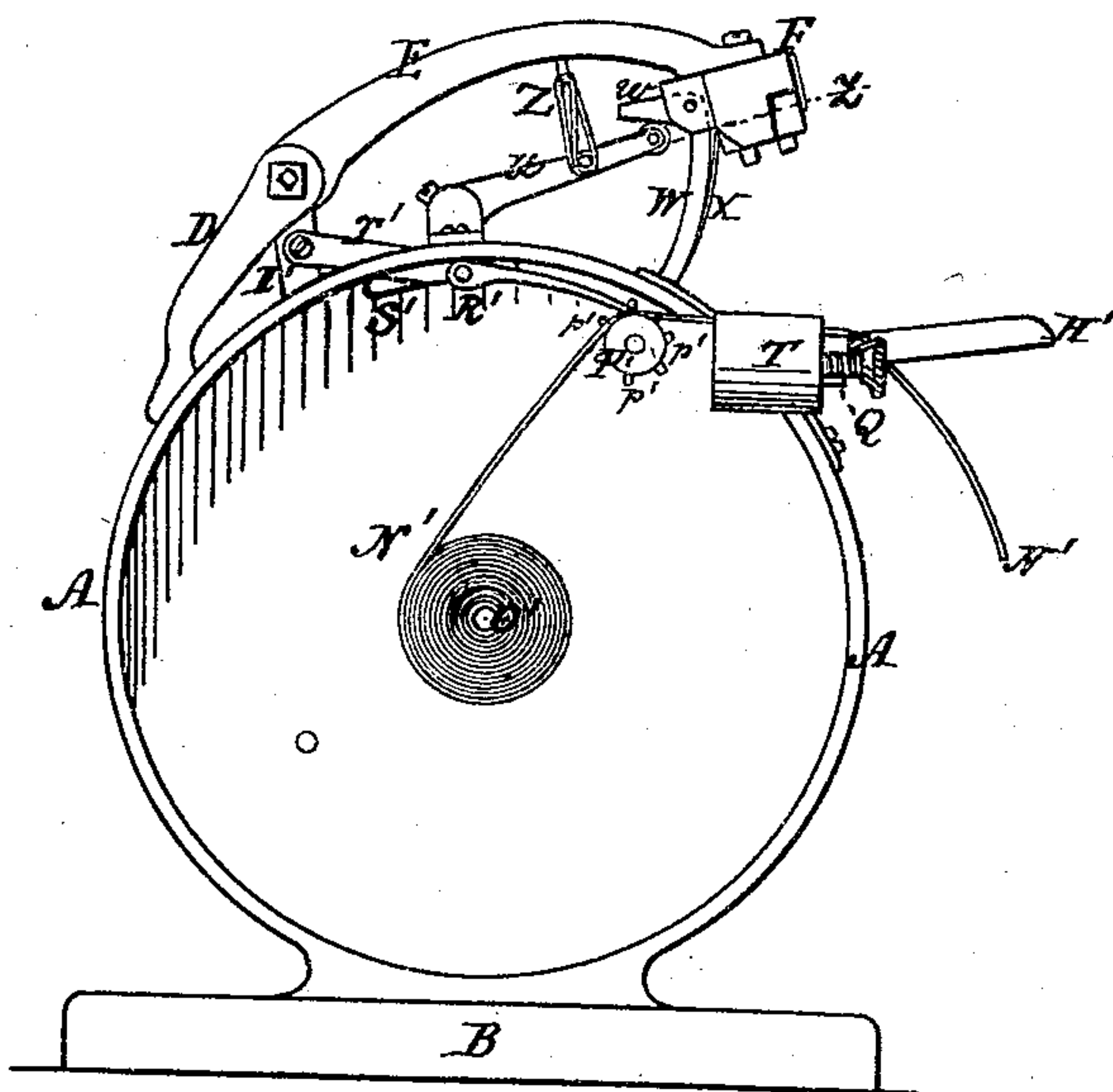


Fig. 5.

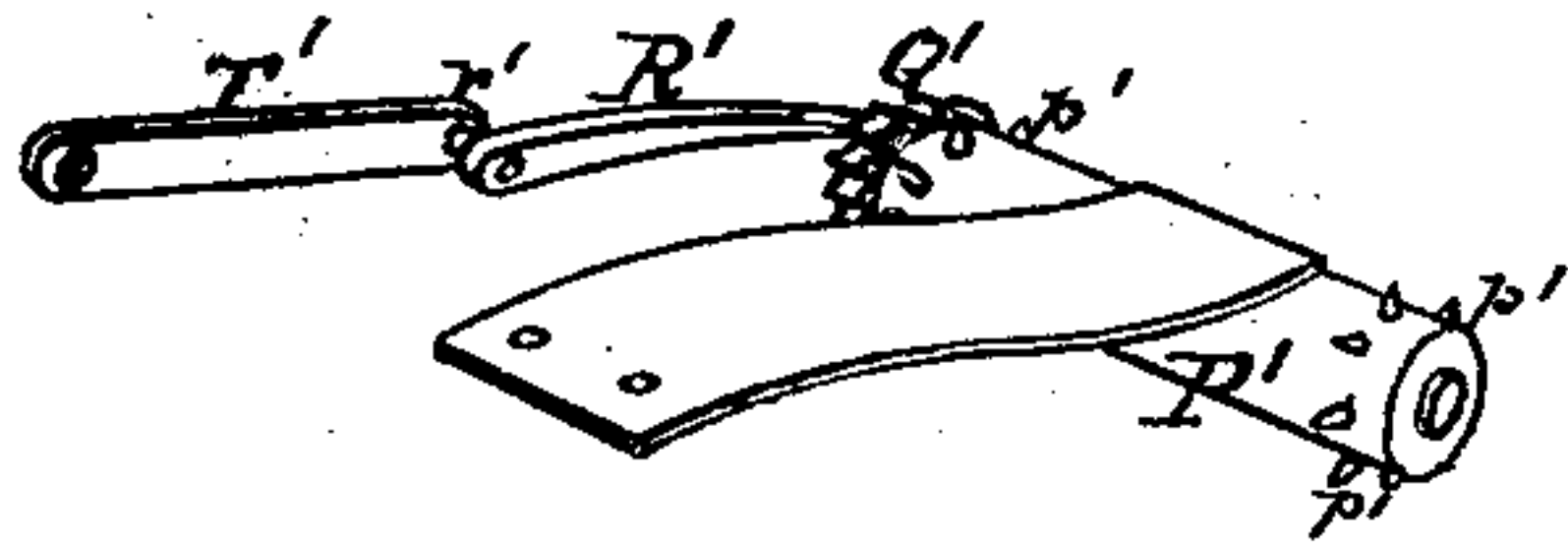


Fig. 6



Fig. 7.

|       |      |       |      |        |      |        |      |       |      |       |      |       |      |       |      |
|-------|------|-------|------|--------|------|--------|------|-------|------|-------|------|-------|------|-------|------|
| 6 1/2 | 8    | 4 1/2 | 6.50 | 4 1/2  | 4.60 | 5 1/2  | 2.25 | 4 1/2 | 1.35 | 5 1/2 | 6.50 | 4 1/2 | 1.35 | 4 1/2 | 6.50 |
| ERIE  | ERIE | ACRON | TROY | AURORA | ERIE | AURORA | ERIE |       |      |       |      |       |      |       |      |

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Fig. 8.

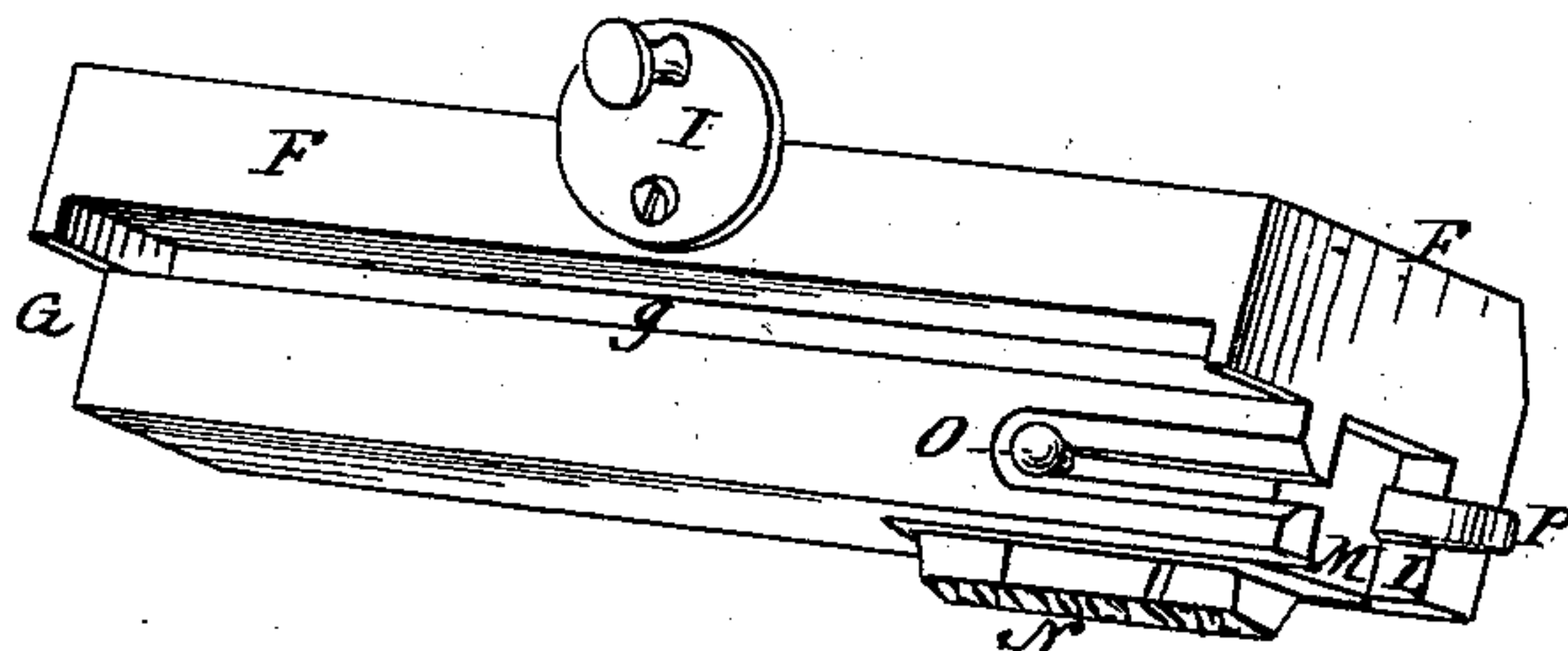


Fig. 9.

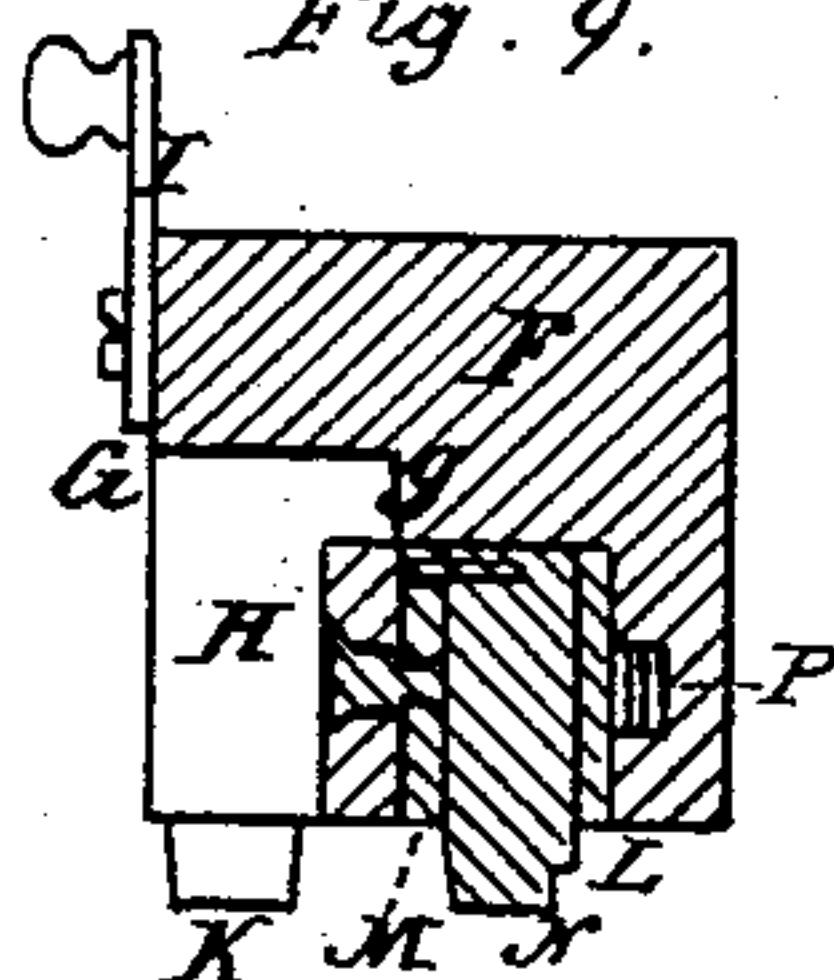


Fig. 10.

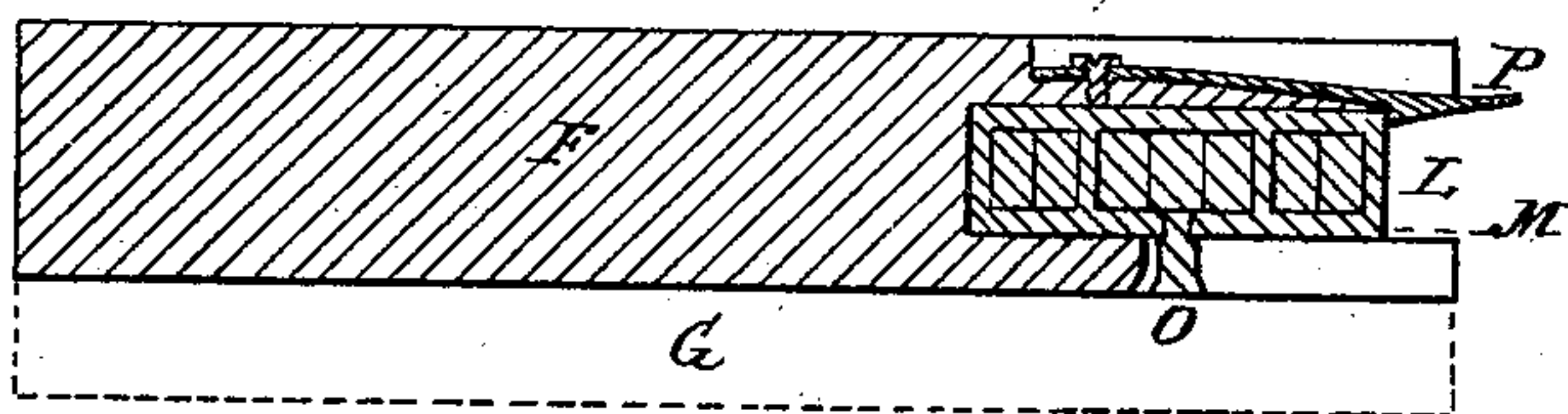
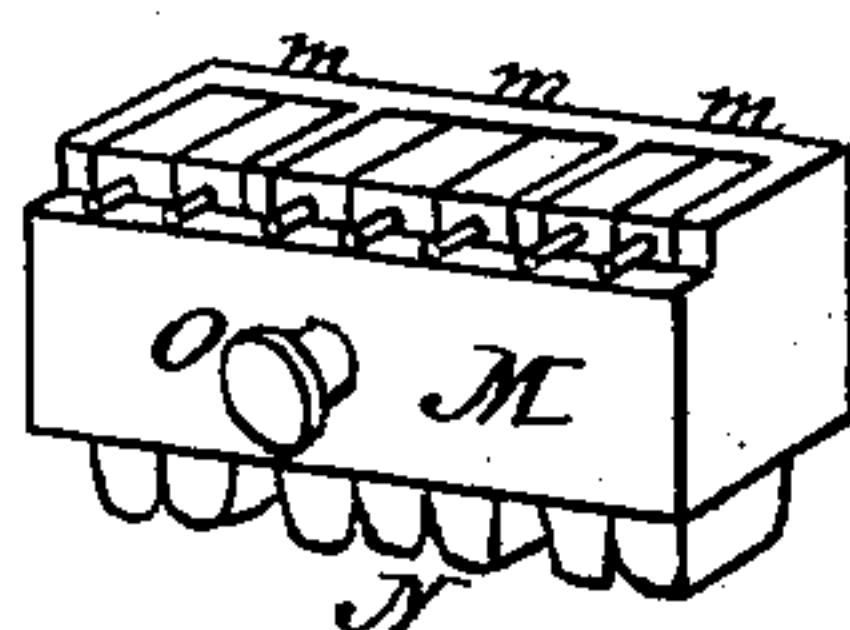


Fig. 11.



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# UNITED STATES PATENT OFFICE.

JOHN DYER, OF CHICAGO, ILLINOIS.

## IMPROVEMENT IN TICKET-PRINTING-AND-REGISTERING APPARATUS.

Specification forming part of Letters Patent No. 134,042, dated December 17, 1872.

*To all whom it may concern:*

Be it known that I, JOHN DYER, of Chicago, in the county of Cook and in the State of Illinois, have invented certain new and useful Improvements in Ticket-Printing-and-Registering Machines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a perspective view of my improved device; Figs. 2 and 3 are, respectively, a front and a side elevation of the same; Fig. 4 is an elevation of the side opposite to that shown in Fig. 3, with the side of the register-casing removed; Fig. 5 is a perspective view of the devices used for feeding forward the register-strip; Fig. 6 is a like view of the device employed for feeding the tickets beneath the dies; Fig. 7 is a plan view of the register-strip attached; Fig. 8 is a perspective view of the die-holder with its dies removed; Fig. 9 is a cross-section of the die-holder on line *xx* of Fig. 2; Fig. 10 is a longitudinal section of the same on line *zz* of Figs. 2, 3, and 4; and Fig. 11 is a perspective view of the dating-die detached from the main holder.

Letters of like name and kind refer to like parts in each of the figures.

The usual equipment furnished to a station-agent upon a railroad consists of a dating-stamp and a case suitably divided into compartments that correspond in number to and contain tickets for each station upon the road, which tickets, being each prepared for fares to one especial station, cannot be used for other stations, so that when a supply of any one kind runs out it can only be made good by application to the principal office. As the tickets thus used are completed at a printing-office, with the exception of the date, it is in the power of printers to flood the country with counterfeit tickets, which, being perfect facsimiles of the genuine, are difficult to detect.

In making up reports of sales the agent is obliged to count each kind of tickets remaining on hand in order to know the number disposed of, and, as at large stations, it frequently occurs that opportunities for such count do not occur for several days, and as agents' reports are required daily, it will be seen that

much difficulty will exist in verifying the correctness of their cash balances and of knowing how their accounts stand. Another objection to the system arises from the trouble and expense attendant upon the use of so large a number of tickets, the interest upon the money invested in the stock necessary being no small item, while in the event of a change in the style of tickets a considerable loss results from the large quantity of dead stock remaining. To remedy these and other objections is the design of my invention, which consists, principally, in the method of printing and registering fare-tickets, substantially as and for the purpose hereinafter specified. It consists, further, in a machine for printing or completing partially-printed fare-tickets, with which is combined the means for simultaneously printing upon a moving report or register blank the words impressed upon each ticket, substantially as and for the purpose hereinafter shown. It consists, further, in a machine for printing or completing partially-printed fare-tickets, and for registering the same, in which, by means of adjustable dies or stamps, but one form of ticket is required for each station, substantially as and for the purpose hereinafter set forth. It consists, further, in a machine for printing or for completing partially-printed fare-tickets, in which, by suitable mechanism, a report or registering blank is moved forward beneath the dies at each stroke of the latter, substantially as and for the purpose hereinafter specified. It consists, further, in a report or registering blank provided with one or more series of small openings arranged longitudinally thereon, and combined with a feed wheel or roller provided with studs which correspond in position to and are combined with said openings, so as to give to said blanks a uniform positive motion in one direction, substantially as and for the purpose hereinafter shown. It consists, further, in the construction and operation of the die-holder, substantially as and for the purpose hereinafter set forth. It consists, further, in the means employed for releasing the die or stamp holder, substantially as and for the purpose hereinafter shown and described. It consists, further, in the construction of the station-dies and their combination with their holder, substantially as and for the purpose



hereinafter specified. It consists, further, in the means employed for combining the dating-stamp or die with the main die-holder, substantially as and for the purpose hereinafter shown. It consists, further, in the means employed for imparting motion to the feeding-slide, substantially as and for the purpose hereinafter specified. It consists, finally, in the device as a whole, when its several parts are constructed and combined substantially as and for the purpose hereinafter set forth.

In the application of my method various styles of mechanism may be employed, but, as the principle involved would be the same in each, a description of one style or construction will afford a clear understanding of the manner of operation.

In the annexed drawing, A represents a casing constructed of metal, which rests upon and is secured to a suitable base, B, and forms a frame for the operating mechanism, which is placed upon and within the same. The casing A has the form of a short cylinder, is permanently inclosed at one end, A', and at its opposite end is provided with a removable cover, C, which is preferably hinged at its lower edge. Pivoted to and between a suitable forked standard, D, that is attached to the rear upper side of the casing A is a lever, E, which extends upward and forward in a curve, and has secured to or upon its forward end a metal bar, F, for containing the dies used for printing. As seen in Figs. 8, 9, and 10, the holder F is provided upon or within its front and lower sides with a right-angled rabbet, G, that extends longitudinally and horizontally along the same, while at the rear upper corner of said rabbet is provided a narrow groove, *g*, as shown, the ends of the latter being inclosed, instead, as in case of said rabbet, of extending outward to the ends of the holder. Within the rabbet and groove thus formed is fitted a corresponding metal bar, H, which, when in place, fills said spaces and just completes the original exterior lines of the holder. The inclosed ends of the groove *g* insure the longitudinal position of the bar H, while its lateral position is secured by means of a metal disk, I, which is pivoted eccentrically to or upon the upper edge and front side of the holder, so as to be capable of turning downward to the position shown in Figs. 1 and 2. The bar or block H serves as a support for the fixed or permanent dies K, which are secured to or upon the lower face of the same. Extending from the right-hand end of the holder F, in rear of the rabbet G, longitudinally inward, is a right-angled groove, L, open at its lower side, within which is fitted a correspondingly-shaped block, M, that is provided with three vertical slots, *m*, for containing the dating-type N, the outer slots being preferably used for the figures designating the day of the month and the year, while the center slot contains the letters employed for designating the month. A stud, O, extending forward from the center of the block M, and fitting into a corresponding slot in the holder

F, insures the vertical position of said block, while its longitudinal is secured by means of a spring-catch, P, which, resting within a suitable groove formed in the rear side of said holder, engages with the outer end of said block. By pressing the outer end of said catch rearward said block may be removed and the type changed. Upon the front side of the casing A, directly beneath the die-holder, is secured a bed, Q, for supporting the tickets and report-blank while being printed, said bed having any desired width and being covered with suitable elastic material, so as to "cushion" the type and prevent injury to the same. A strip, R, of sheet metal is placed over the bed Q and provided within its lower face with suitable grooves for the passage, between the same and said bed, of the tickets and report-blank, while openings for the passage of the dies are formed in and through the upper side of the same. Ink for the dies is provided by means of an ordinary ribbon, S, which, passing across the upper side of the strip R, has its ends wound around suitable rollers and contained within casings T in the usual manner.

The die-holder and its lever are operated by the following-described mechanism: A lever, U, provided with an arm, *u*, that extends forward from its upper end at about a right angle, is pivoted at said end to or upon the upper side of the casing A, and, extending downward, is provided at its opposite end with a handle, V. The outer end of the arm *u* engages with and raises the lever E when the handle V is moved forward, but when said handle is moved rearward said lever and the dies are permitted to drop downward, so as to cause the latter to impinge upon the bed. In order that the full effect of the downward movement of the dies may be obtained, it is necessary that their lever should, when released, drop instantly and without obstruction, and as such movement would be more rapid than the motion imparted to the handle by the hand of the operator, it is found desirable to lock said die-lever in position until just before said handle and its lever reach the backward limit of their stroke. This result is accomplished by means of a detent, W, which is pivoted at one end to or upon the rear side of the die-holder F, and from thence extends downward and slightly rearward in a curve, and at its lower end rests upon a suitable support placed in rear of and upon a line with the die-bed Q. The curve of the detent is substantially the same as the circle traversed by the outer end of the arm *u*, except near its lower end, where said detent extends sharply to the rear, so that said arm when nearing the limit of its downward stroke shall impinge against said detent, and, pressing it forward, release its lower end from engagement with its support, and permit the dies and their lever to fall. A spring, X, attached to the rear side of the die-holder F, and bearing against the forward side of the detent, holds the latter firmly against its support, and, when sufficiently elevated, causes said detent



to engage with said support. An arm, *w*, extending rearward from the upper end of the detent *W*, receives the end of the lever-arm *u* upon the upward stroke of the latter, and not only enables said lever-arm to raise the die-holder and its lever, but also assists the operation of the spring *X*. Should the weight of the dies and their operating mechanism prove insufficient to produce a good impression upon the tickets, the downward force of the blow of said dies may be increased by means of a rubber or other suitable spring, *Z*, which is attached to and extends between the lever *E* and arm *u*, so that, as the latter moves downward, a constantly increasing pressure is thrown upon said lever until, at the moment of its release, it has the full force of said spring added to its own weight to draw it downward. By increasing or diminishing the strength of the spring, the force of the blow given by the dies will be correspondingly varied. The lever *U* is returned to the position shown by means of a rubber band, *B'*, which passes from and around the inner end of the handle *V* to and around a stud, *C'*, attached to the lower front portion of the casing, and over a roller, *D'*, pivoted upon the side of said casing in front of and upon a line with said handle.

The tickets used are placed within an open frame, *E'*, which is attached to and extends upward from a metal plate, *F'*, that is secured upon the side of the casing *A*, and extends horizontally rearward from and upon a line with the upper side of the bed *Q*, said frame *E'* being of such dimensions as to loosely confine said tickets in lateral or horizontal position while leaving them free to move vertically. The tickets are fed forward automatically by means of a slide, *G'*, which moves longitudinally within the plate *F'*, and at each stroke engages with the rear side of the lower ticket, and moves it forward beneath the die, said ticket thus moved forward serving as a means for throwing the ticket just printed forward into a suitable receptacle or holder, *H'*, which is attached to the front side of the die-bed. Motion is imparted to the slide *G'* by means of an arm, *I'*, which is secured to the lever *E*, and, extending downward, has its end loosely pivoted to the longitudinal center of a bar, *K'*, that in turn is pivoted at its lower end to or upon the side of the casing *A*. The upper end of the bar *K'* is connected to or with a lug, *g'*, that extends downward from the slide *G'*, by means of a rod, *L'*, which is pivoted at its ends to or upon said lug and bar. As thus arranged, a downward movement of the lever *E* will cause the lower end of the arm *I'* to swing rearward and carry with it the bar *K'*, rod *L'*, and slide *G'*. Upon the upward movement of the lever *E* the positions and movements of said parts are reversed, a fresh ticket pushed beneath the dies, and the ticket just printed pressed outward. As shown in Fig. 1, the ticket-blanks *M'* are, preferably, provided with such printed words

as are common to all, viz., the name of the railroad, the class of passage, and the name of the station at which said tickets are sold—as, for instance, "C. B. & Q. R. R." "One First Class." "Chicago to —." "C. B. & Q. R. R." "One First Class." "Aurora to —," &c.—and, in addition to such printing, said blanks are consecutively numbered from 1 upward to any desired number, and are so arranged as to pass beneath their dies in their regular order. The register or report blank *N'* is formed of a strip of paper having a sufficient width to receive in one line all the data necessary to be printed thereon, and is provided with a series of numbers, *n'*, arranged consecutively along the center of its face, the spaces between said numbers being of such width as to properly separate the same. Upon or within the edges of the blank *N'* are provided small round openings *n''*, which correspond in number and position to the corresponding features of the numbers *n'*, and are for use in feeding said blank forward. The report-blank thus formed is coiled around a central stud, *O'*, placed within the casing *A*, and its end containing the lowest number passed outward through a suitable opening in said casing into the space between the die-bed *Q* and covering-strip *R*, in which position, upon each downward stroke of the die, such words as are contained upon the portion directly over said report-blank are impressed upon the same at the instant that a ticket is completed. In order that the report-blank may be moved forward at each stroke of the dies, a feed-roller, *P'*, is pivoted within the upper forward side of the casing *A* and provided with two series of studs, *p'*, which extend radially outward from equidistant points upon its periphery, and correspond in size and relative position to the openings *n'* of said blank, so that as the latter passes over said roller said openings engage with said studs. Upon the inner end of the roller *P'* is affixed a ratchet-wheel, *Q'*, which is provided with angular teeth that correspond in number and relative position to the like features of the studs *p'*. A pawl, *R'*, engaging with the ratchet-wheel *Q'*, is pivoted at one end upon the end of a stud, *r*, which, passing through a slot, *S'*, cut within the end of the casing *A*, has its outer end connected to or with a bar, *T'*, which bar, at its rear end, is pivoted upon the inner side of the arm *I'*, so that as the latter moves with the lever *E* and the dies said bar and pawl will be correspondingly moved. The arrangement of the parts is such as to cause the report-blank to be fed forward at the same time with the ticket-blank. As the end of the report-blank issues from beneath the covering-strip *R* it is turned downward by means of a guide-rod, *U'*, which is secured upon the bed *Q*, and from thence extends outward and across, as shown. The inking-ribbon is moved automatically beneath the dies by means of a ratchet-wheel, *V'*, which is secured upon one of the shafts around which said ribbon is



rolled, and engages with a spring-pawl, W', that is secured upon the end of an arm, X', which extends outward from the lever U. As said lever is moved in one direction said pawl passes out of engagement with the teeth of said ratchet-wheel, but when moved in an opposite direction said pawl is thrown into engagement with and moves said ratchet-wheel, its shaft, and the inking-ribbon. A detent, Y', secured upon the upper side of the covering-strip R, and engaging with the ratchet-wheel V' so as to prevent the same from moving in but one direction, completes the device, the operation of which is as follows:

The station-agent is provided with a set of dies, which correspond in number with and contain the names of all stations upon the line to which he is required to sell tickets, each die being provided with a duplicate of the station-name so as to impress the same upon the report-blank at the same time that said name is printed upon a ticket. With the name of the station is also printed upon the report-blank the price of the ticket or fare represented thereby, and in addition thereto any other information deemed necessary for said report. The dies being conveniently arranged within a casing, the agent takes from thence the die that represents the particular station to which a passage is desired, inserts said die within its holder, and then moves the handle rearward and releases it, by which operation the ticket-blank beneath the ribbon is completed by having printed thereon the name of the station desired and the date of issue, and after such completion is pushed forward so as to be readily grasped. At the same time that the ticket is being completed, the name of the station to which the ticket has been sold, and the amount of fare charged for the same, are stamped upon the report-blank, and the latter then moved forward for the next record of sale, the operations described being repeated as other tickets are called for.

When the sales are closed for the train or for the day, the agent cuts off the portion of the report-blank outside of the covering-strip, and by footing up the values stamped upon such dis severed portion has a correct statement of the cash received. The blank is then inclosed in an envelope and sent to the general office and furnishes an accurate report of the number of tickets, the names of the stations to which passages were sold, and the amount received for the same.

Report-blanks having a capacity for registering the sale of ten thousand tickets, together with a like number of correspondingly-numbered tickets, are to be furnished to each agent, and, as the consecutive numbers upon said tickets must correspond with those upon said report-blank, each day's sales are effectually checked, so that the accounts of each agent may be closed up as often as the report is received.

When sales have closed and the report has been cut off and forwarded, the agent re-

moves the die from the holder, replaces it within its case, and locks the same within his safe, the remaining tickets, having no value until completed in the usual manner, being left in the machine ready for use when sales are to be again made.

When the agent commences the sale of the last one thousand tickets, he notifies the general office, and a new report-blank and corresponding tickets are sent him. It is intended that the casing shall be locked so as to prevent access to the report-blank or its feeding mechanism, in which event it may be found desirable to have extra machines which may be prepared at the general office and sent out to take the place of those whose report-blanks have been expended.

The advantages obtained by the use of my method and mechanism are: First, the agents are enabled to report the exact sales for each train or day as soon as the same are completed, so as, thereby, to furnish the general office with accurate information as to the business of the line and the amounts due for fares; second, by simplifying the duties of ticket-agents and reducing the amount of labor required in the performance of the same a lower grade of ability is made available, and at the larger stations a smaller force is required; third, as but one kind of ticket-blank is required for each station, and as no waste can occur in the use of such blanks, a material saving is effected both in the cost of the stock and in the time and labor necessary in order to prepare and supply stations with the large number of special tickets required; fourth, the blanks have no value until completed by the agent at the time of sale, so that no loss can occur if any should be stolen, while under the present system stolen tickets cannot only be used, but it is possible for printers to flood the country with counterfeits which cannot be distinguished from the genuine; fifth, by the use of consecutively-numbered ticket-blanks which correspond with the numbers upon the report-blank, it is impracticable for an agent and conductor, by collusion, to sell and resell tickets and defraud the railroad company out of the proceeds; sixth, as each ticket is completed in full view of the passenger, it is impracticable for an agent and conductor, by collusion, to sell and resell tickets, and thereby defraud the railroad company out of the proceeds; seventh, as the amount of paper used for reporting sales is in exact proportion to the number of tickets sold, and as the addition of new stations will not necessitate a change in the style or size of the report-blank, an important saving is effected in the first cost of the same, while all waste is avoided; eighth, as but one series of numbered tickets are employed, an agent can get out of blanks only by gross carelessness or negligence; ninth, where (as is the case at most large stations) there are two or more ticket-salesmen, the accounts of each are kept separate from the other and their competency and integrity readily de-



terminated; tenth, a great saving in time, labor, and detail is effected at the principal or general ticket-office, as my method does away with the necessity for keeping an extensive system of accounts with each station of the various kinds of tickets, their numbers, quantity, time of sending, &c., as is requisite under the present system.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. The hereinbefore-described method of printing and registering fare-tickets, substantially as and for the purpose specified.

2. A machine for printing or for completing partially-printed fare-tickets, with which is combined the means for simultaneously printing upon a moving report or register-blank the words impressed upon each ticket, substantially as and for the purpose shown.

3. A machine for printing or for completing partially-printed fare-tickets and for registering the same, in which, by means of adjustable dies or stamps, but one form of ticket is required for each station, substantially as and for the purpose set forth.

4. A machine for printing or for completing partially-printed fare-tickets, in which, by means of suitable mechanism, a report or register blank is automatically moved forward beneath the dies at each stroke of the latter, substantially as and for the purpose specified.

5. A report or register blank provided with one or more series of small openings arranged longitudinally therein, and combined with a feed-roller provided with studs, which correspond in position to and are combined with said openings so as to give to said blank a uniform positive motion in one direction, substantially as and for the purpose shown.

6. The die-holder F secured upon the pivoted lever E and operated by means of the lever U provided with the arm *u* and handle V and the detent W, substantially as and for the purpose set forth.

7. In combination with the die-holder F, the pivoted lever E, the lever U, and the arm *u*, the detent W pivoted upon said die-holder and engaging with the bed Q, substantially as and for the purpose shown and described.

8. In combination with the levers E and U, the adjustable rubber band Z extending one or more times between said parts, substantially as and for the purpose specified.

9. The combination and relative arrangement of the lever U, the rubber spring B', the roller D', and the stud C' attached to or upon the casing A, substantially as and for the purpose shown.

10. The station-die K secured to or upon the block H, in combination with the holder F, provided with the rabbet G and groove *g*, substantially as and for the purpose set forth.

11. The block M containing the type N and provided with the stud O, in combination with the holder F provided with the groove L and spring-catch P, substantially as and for the purpose shown and described.

12. In combination with the lever E and with the feed-roller P', provided with the ratchet-wheel Q', the pawl R', the stud *r*, the bar T', and the arm I', substantially as and for the purpose specified.

13. In combination with the slide G' and lug *g'*, the arm I', bar K', rod L', and lever E, substantially as and for the purpose shown and described.

14. The hereinbefore-described device as a whole, when its several parts are constructed and combined to operate substantially as and for the purpose shown.

In testimony that I claim the foregoing I have hereunto set my hand this 28th day of October, 1872.

JOHN DYER.

Witnesses:

GEO. S. PRINDLE,  
EDM. F. BROWN.