(No Model.) 2 Sheets—Sheet 1.

J. DYER & C. O. MALMGREN.

PRINTING PRESS.

No. 262,938. Patented Aug. 22, 1882.

Fig. 1

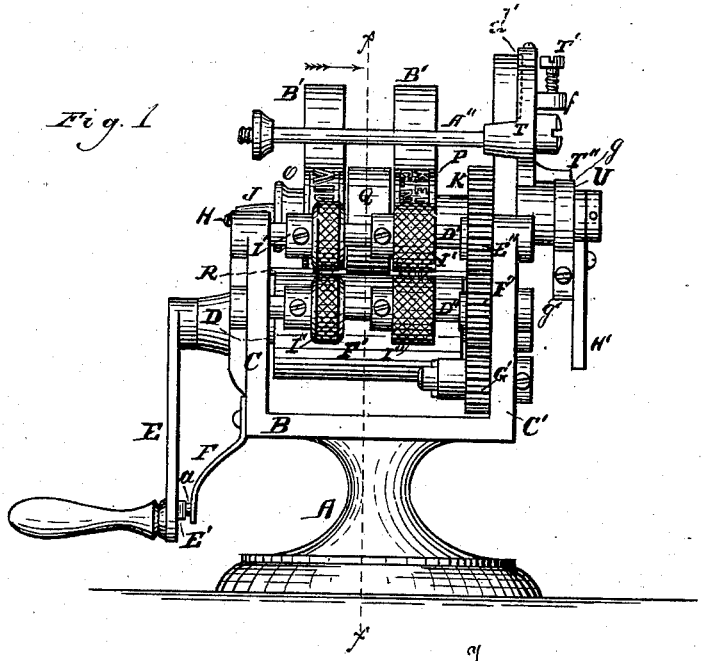
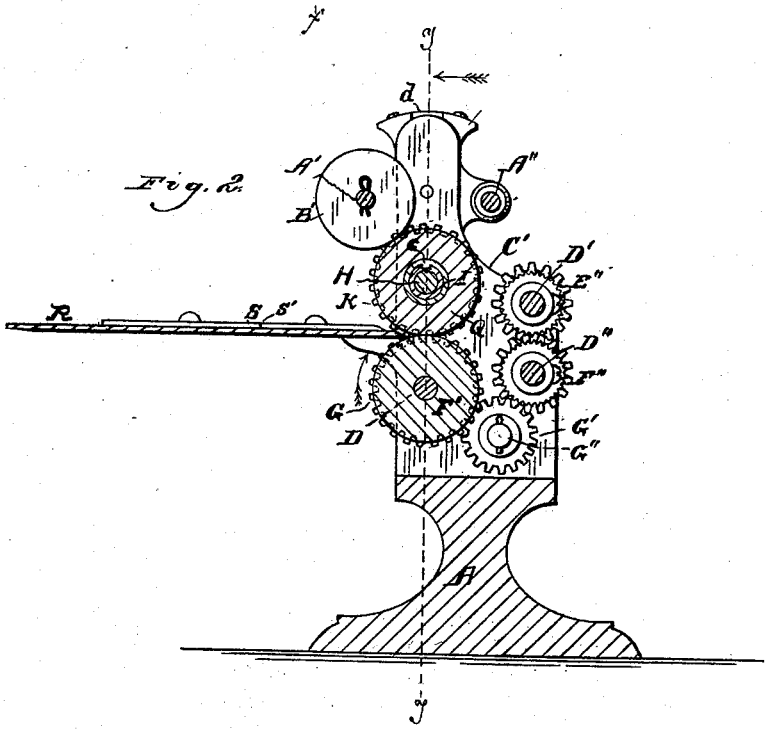


Fig. 2.



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their Attorneys.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

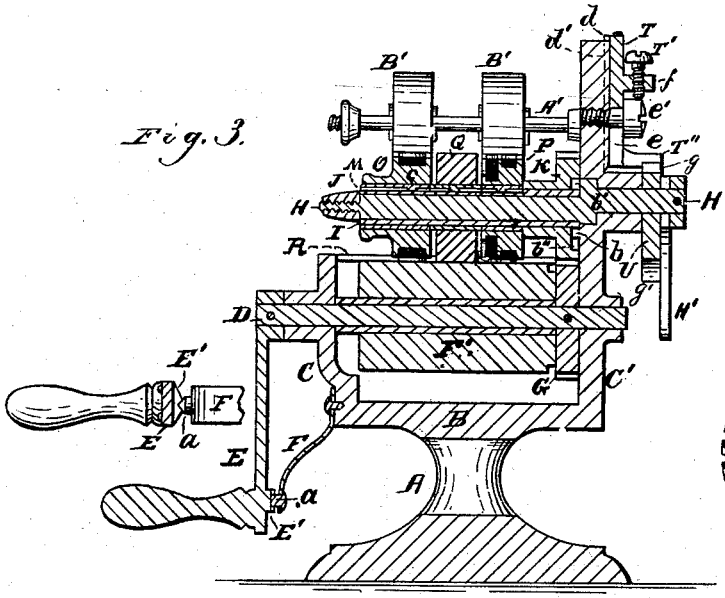


Fig. 8.

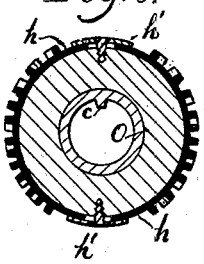


Fig. 4.

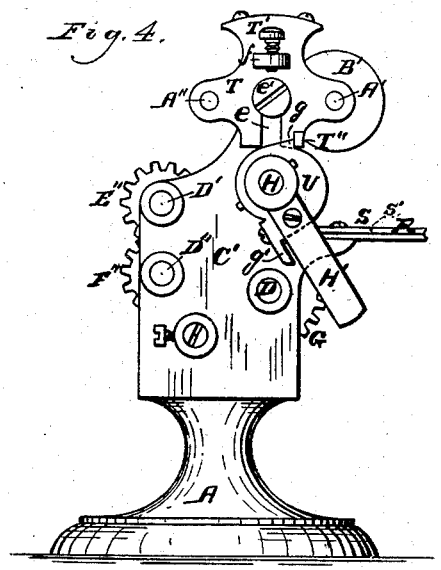


Fig. 5.

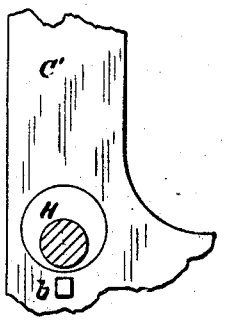


Fig. 6.

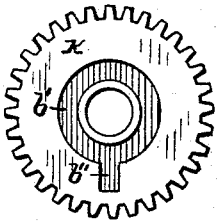
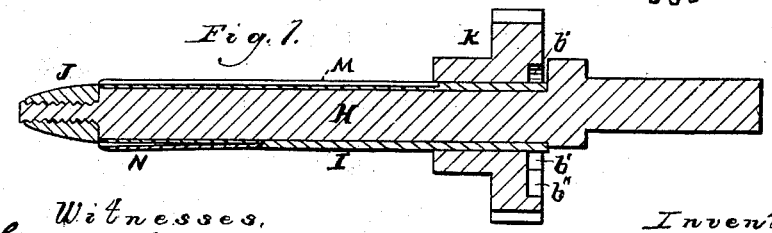


Fig. 7.



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per. Cridley & Co.
their Attorneys.

UNITED STATES PATENT OFFICE.

JOHN DYER AND CHARLES O. MALMGREN, OF CHICAGO, ILLINOIS; SAID MALMGREN ASSIGNOR TO SAID DYER.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 262,938, dated August 22, 1882.

Application filed March 6, 1882. (No model.)

To all whom it may concern:

Be it known that we, JOHN DYER and CHARLES O. MALMGREN, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Printing-Presses for Completing Railway-Tickets, of which the following, in connection with the accompanying drawings, is a specification.

In the drawings, Figure 1 is an elevation of that side of the machine from which the tickets are delivered. Fig. 2 is a section in the plane of the line *x x*, viewed in the direction indicated by the arrow there shown. Fig. 3 is a section in the plane of the line *y y*, viewed in the direction indicated by the arrow there shown. Fig. 4 is a side view of the press. Fig. 5 is a detail showing the relation of the eccentric-axle to the lock-projection. Fig. 6 is a side view of the wheel which directly co-operates with the lock-projection. Fig. 7 is a vertical central longitudinal section of the eccentric-axle and its sleeve, and Fig. 8 is a vertical section through one of the type-wheels.

Like letters of reference indicate like parts.

A represents a standard or support.

B is the horizontal part of the frame, and C and C′ are vertical parts thereof.

D is the driving-shaft, and E is a crank for rotating it.

E′ is a beveled and V-notched projection on the crank E; and F is a spring attached to the frame, and having thereon a V-shaped catch, *a*, adapted to enter the notch in the projection E′. The function of the catch *a* is to stop the crank at the end of each turn thereof, but not to lock it. For example, supposing that the catch *a* is in the notch in the projection E′, the operator, owing to the fact that these parts are V-shaped and that the catch is yielding, may turn the crank with facility, as the notch may be moved away from the catch, by exerting a little more than the force required to turn the crank when it is not so engaged. At the termination of one rotation or turn of the crank the catch, owing to the beveled form of the projection E′, will enter the V-notch again and tend to stop further movement of the crank. This tendency, however, will be slight, but sufficient to indicate to the operator that a complete turn has been made, and he can either let the crank rest or turn it another complete turn, as occasion may require.

F′ is a friction-roller, and G is a spur-wheel, both mounted on and turning with the shaft D.

H is an eccentric-shaft or crank axle or rod turning in the upright C′.

H′ is a crank or handle for turning the shaft H, and I is a loose sleeve on the axle H.

J is a conical nut run on the outer end of the shaft H, to retain the sleeve I thereon.

K is a spur-wheel, rigidly mounted on the inner end of the sleeve I and engaging the wheel G. On the inner face of the upright C′ is a horizontal pin, *b*, and in the adjacent side of the wheel K is an annular concentric groove, *b′*, into which the pin *b* projects, and meeting the groove *b′* is a socket, *b″*, also adapted to receive the pin *b*. When the shaft H is in its lowest position the pin *b* extends into the groove *b′*; but when this shaft is in its highest position the said pin enters the socket *b″* and prevents the rotation of the sleeve I on its shaft. In other words, when the wheel K is thus lifted from its engagement with the wheel G the pin *b* retains the former wheel in such position that it will register with the wheel G and catch *a* when the shaft H is lowered. The object of effecting this result will hereinafter more fully appear.

M is a longitudinal groove in the perimeter of the sleeve I, and N is an outwardly-pressing spring arranged in an opposite groove in the said sleeve.

O and P are type-wheels, and Q is an interposed friction-wheel, all mounted removably on the sleeve I. These type-wheels and the wheel Q each have on their inner circumference a key, *c*, which enters the groove M, thus permitting the said wheels to be drawn off the outer end of the sleeve, but causing them to be rotated therewith. The spring N prevents accidental movement of the wheels O, P, and Q on the sleeve. We deem it best to make the nut J small enough to permit the parts on the sleeve to be drawn off without removing the nut, as shown. The wheel O may be termed the "destination-wheel" and the wheel P the "date-wheel." The type in these wheels may be made and applied in any suitable or well-

known way. We make them, by preference, of soft vulcanized rubber or flexible electrotype plates, in one or more strips or sections, *h h*, which are held in place within a groove on the periphery of the type-wheels by means of one or more clamps, *h' h'*, lapping the ends of said strips or sections, and secured to said type-wheel by means of a screw or other equivalent fastening, substantially as indicated in Fig. 8, and so that said type may be readily applied and removed.

R is the feed-table, which is arranged horizontally in the plane of the top of the roller F'.

S is a gage arranged longitudinally on the table R.

T is a vertically-sliding frame on the upright C'. To permit the frame T to be moved vertically and prevent it from being tilted, we make in the back thereof a vertical groove, *d*, and on the upright C' we make a vertical rib, *d'*, which enters the groove *d*, as indicated in Figs. 1 and 3. We also slot the frame T vertically, as shown at *e*, Figs. 3 and 4, and pass a set-screw, *e'*, through this slot into the upright C'.

T' is a set-screw passing vertically through a shoulder, *f*, which extends laterally from the frame T and is arranged directly over the head of the screw *e'*.

T'' is an arm extending laterally from the frame T. U is a cam mounted rigidly on the concentric part of the shaft H, and *g* and *g'* are shoulders on the said cam. The arm T'' rests on that part of the cam U included between the shoulders *g* and *g'*.

A' and A'' are arms or rods carried by the frame T, and B' B' are inking-rollers mounted loosely on the rod A'. Like rollers may also be mounted on the rod A''. These rollers are arranged, as shown, to ink the wheels O and P, respectively, and any suitable or well-known inking-rollers may be employed for that purpose.

D' and D'' are shafts turning in bearings in the uprights C and C'.

E'' is a spur-wheel mounted rigidly on the shaft D', and F'' is a spur-wheel mounted rigidly on the shaft D''. The wheels E'' and F'' are arranged to engage each other.

G' is a loose pinion mounted on a short axle, G'', extending inwardly from the upright C'. This pinion engages the wheel G and the wheel F''.

I' I' are embossing-rollers mounted on the shaft D', and I'' I'' are embossing-rollers mounted on the shaft D''. The rollers I' and I'' are the fellows of each other—that is, the upper pair co-operates with the lower pair in embossing the tickets, as will hereinafter more fully appear.

The screw T' serves to regulate the extent of downward movement of the frame T, and the shoulders *g* and *g'* regulate the extent of the movement of the arm T''.

Before describing particularly the operation of this machine we desire to state in explanation that our intention is to supply with each press sent to a station a series of type-wheels containing the names respectively of the stations on the roads and connections to which tickets are to be sold at that station. All these stations are to be furnished with forms of tickets, a blank space being left for printing upon each the date of sale and the place of destination. The agent, upon selling a ticket, places on the sleeve I a printing-roller for printing the date of sale, and also a roller for printing the place of destination. The date of the day of sale must therefore be changed each day and of the year each year. The destination-roller, which, as already explained, is located and adapted to be removed and replaced with facility, must be changed every time a ticket is sold to a new destination. These are the only changes required. The tickets, being in other respects alike, may therefore all be fed into the machine in the same manner. In practice these tickets consist of stubs and coupons, and between the stub and the first coupon, as well as between the coupons, are either spaces or lines of separation. In order to determine the proper position of the tickets upon the feed-board, we make upon the gage S a gage-mark, S', and in feeding the tickets into the press we so arrange the ticket on the feed-board that this gage-mark will coincide with a space or space-line between the different parts of the ticket. By this means the end of the ticket will be brought in contact with the friction-roller F' and be compressed by it and the roller Q when the arm or handle H' is lowered, it being understood that the said handle should be raised while arranging the tickets upon the feed-board and lowered after they have been properly placed, in the manner described. The catch *a* should also stand in its notch when the tickets are placed for being printed.

To print the tickets, grasp the handle of the crank E and rotate the roller F' in the direction indicated by the arrow shown near it in Fig. 2. By this means all the gearing will be rotated, and the tickets will be carried between the friction-rollers, be impressed by the type-wheels, and embossed by the embossing-rollers, or wheels when embossing-wheels are employed. The embossing-wheels are not absolutely essential; but we deem it best to use them for the purpose of preventing alterations and forgeries. The temporary engagement of the catch *a* with the part E' indicates when the rotation should cease. To raise the printing-rollers, raise the lever H', by which means the inking-rollers will also be simultaneously raised, owing to the fact that the arm T'' rests on the cam U. A continued rotation will carry the ticket through the press, as it will still be engaged by the embossing-rollers. To print again, select and mount the proper destination-roller and proceed as before.

It will be perceived from the foregoing description and from reference to the drawings

that the tickets may not only all be in the same form, but that the machine for finishing the printing upon them is small and compact and comparatively simple in its construction and operation.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, substantially as specified, in a rotary ticket-printing press, of a yielding friction-catch for temporarily retarding the rotation of the driving-axle once during each rotation thereof, an adjustable type-wheel axle, the wheel K, moving with the type-wheel axle, and having therein the annular groove *b'* and socket *b''*, and the fixed pin *b*, for the purpose of causing the type-wheel to register with the said catch.

2. The combination, in a rotary ticket-printing press, of the type-wheel shaft, a removable rotary sleeve mounted on the said shaft, the nut J, run upon the end of the type-wheel shaft for retaining the said sleeve temporarily thereon, and removable type-wheels splined upon the said sleeve, substantially as and for the purposes specified.

3. The combination, in a rotary ticket-printing press, of the driving-shaft D, carrying the friction-roller F' and spur-wheel G, the eccentric axle H, the removable sleeve I, mounted on the axle H and carrying the wheel K, arranged for engaging the wheel G and the removable type-wheels O and P and friction-wheel Q, all splined to the sleeve I, substantially as and for the purposes specified.

4. The combination, with each other and the type-wheel shaft of a rotary ticket-printing press, of the rotary and removable sleeve I, having therein the groove M and spring N, the removable type-wheel O, mounted on the said sleeve and provided with the pin or key *c*, entering the said groove, and the nut J, run upon the type-wheel shaft, substantially as and for the purposes specified.

5. The combination, in a rotary ticket-printing press, of the eccentric type-wheel shaft H, having on its concentric part the lever or handle H' and the cam U, and the vertically-sliding inking-roller frame T, having thereon the arm T'', extending across the said cam, substantially as and for the purposes specified.

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