

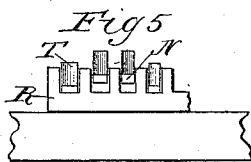
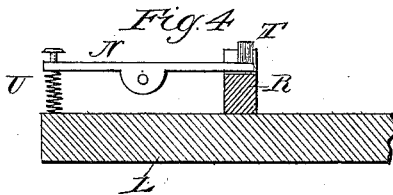
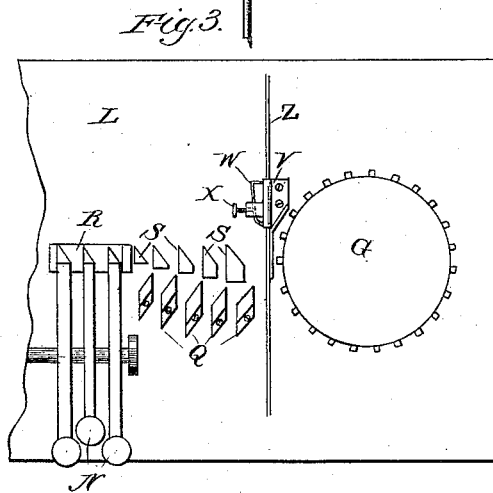
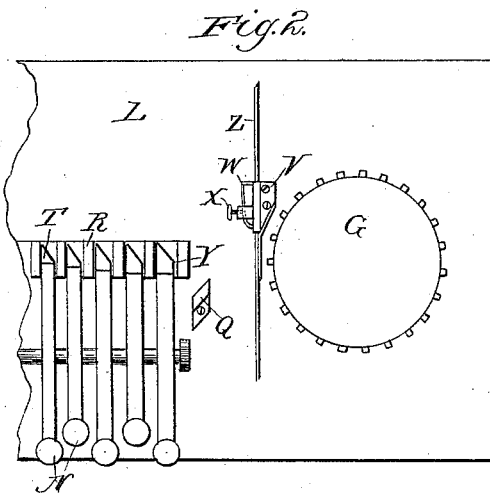
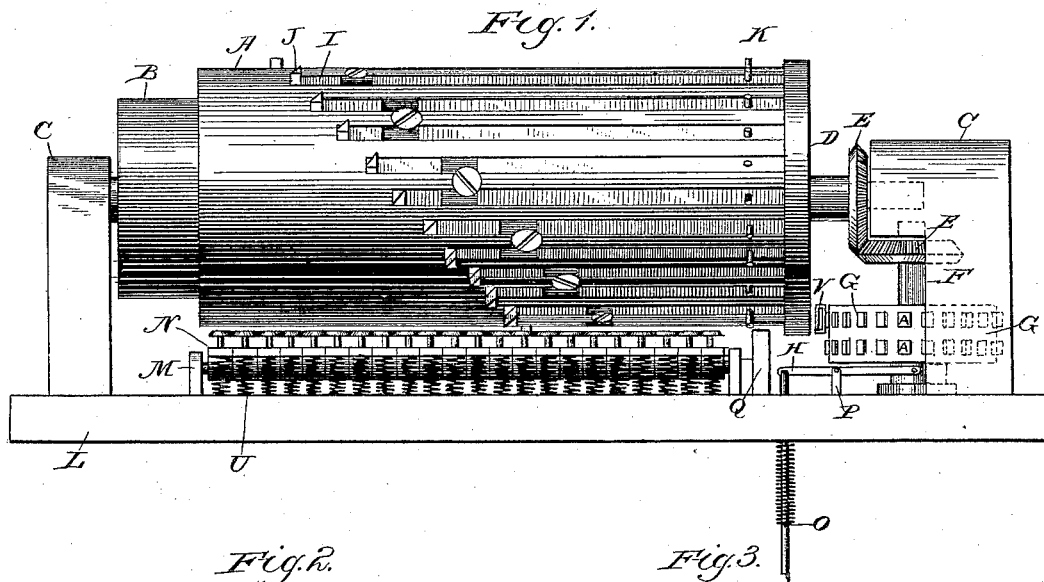
(No Model.)

M. H. DEMENT & A. W. GRANVILLE.

TYPE WRITING MACHINE.

No. 307,445.

Patented Nov. 4, 1884.



Witnesses.

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UNITED STATES PATENT OFFICE.

MERRITT H. DEMENT AND AUSTYN W. GRANVILLE, OF CHICAGO, ILLINOIS.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 307,445, dated November 4, 1884.

Application filed October 10, 1883. (No model.)

To all whom it may concern:

Be it known that we, MERRITT H. DEMENT and AUSTYN W. GRANVILLE, both of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Type-Writing Machines, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings, which form a part hereof.

Our invention relates to the art of printing; and it consists of an improved machine for making type indentations in papier-maché or other suitable material.

The machine consists, mainly, of a revolving cylinder and type-wheel, keys, rods, and cams, as shown in the drawings and hereinafter described. The cylinder A is placed horizontally upon the shaft D, running in hangers C C, secured to the table or base-plate L, and provided with the pulley B at one end, by means of which power may be applied. Any desired number of longitudinal grooves are cut in the cylinder, in which are placed a series of bars or rods, I, secured by a band at one end and screws at the other, and made capable of sliding in the grooves, so that the ends will protrude from the end of the cylinder. The type-ring G is placed upon a vertical shaft, F, the upper end of which is journaled in one of the cylinder-hangers and the lower end in the base-plate, and connected with the main shaft by bevel gear-wheels E E, and so arranged as to make the same number of revolutions as the cylinder. The type-ring G may be provided with one or more rows of type set radially in the ring. The ring is made capable, by means of a lever, H, and pedal attachment O, of moving up and down upon the shaft, so as to bring any desired row of type in position at the printing-point. The type-ring and cylinder revolve in unison, and are so arranged that each particular rod in the cylinder arrives at the printing-point in conjunction with a particular type. The sliding rods I are each provided with cam-pins J at the inner ends, upon which the keys N operate. A key-board consisting of the same number of keys as there are rods is placed beneath the cylinder. The keys are pivoted near their centers upon a rod which rests in the supports M, so that by depressing one

end the other will be pressed against the cylinder, the spring U operating to return the key to its resting position when the pressure is removed. Each key is provided with a cam-surface, T, which operates, when the key is actuated, upon the cam-pin J of a particular rod, and causes the rod, when the cam-pin strikes the cam-surface, to slide in the groove, so that the end will protrude from the end of the cylinder. Each bar, when protruded, covers the particular type designated by the key which has been operated. The inner ends of the keys move up and down in the grooved plate R, the sides of the groove serving to give rigidity to the cams on the keys while the rods are passing and being pressed upon the paper. Between the type-ring and the point where the rod ends are protruded from the cylinder is placed a grooved plate, V, through which is passed a strip of papier-maché or other suitable material in such a position that the rod ends will press it upon the type. A forked spring is placed on the side of the strip next the type-ring, and so arranged that as the paper is pressed upon the type the type will strike the paper between the prongs of the spring, the spring acting to throw the paper from the type when the rod is released. The tension-spring W, in connection with the screw X, operates to overcome the momentum of the strip and prevent its being pulled too far. The cams T upon the keys N, as shown in Fig. 2, serve not only to cause the rods I to protrude from the cylinder, but also by the same act to cause them to press the paper upon the type, so as to embed the type-heads in the paper, and as the paper is thus held between the rod and the type it is pulled along in the groove until released.

To cause the paper to be pulled the proper distance to give each type its proper space the keys are provided immediately after the cams with faces Y of different lengths, so that after the rods are pressed upon the types by the cams they will be held in that position a sufficient time to pull the paper the proper distance.

To remove the rods from the paper at the proper time, a returning-cam, Q, is placed in position to the right of the keys. In connection with this cam, each rod is provided with a second cam-pin, K, placed near the print-

ing end, which will strike the returning-cam Q, and by this means the rod will be withdrawn from the paper and returned to the cylinder. These cam-pins K require to be of different widths, and so arranged as that each will strike the returning-cam at the instant the cam-pin J on the same rod shall have passed the face Y of the key-bar; or, there may be a returning-cam placed by the side of each key, in which case the cam-pin J may be made to perform the function of the cam-pin K in addition to its own.

A modification of our machine, as shown in Fig. 3, consists in using the cams on the keys to slide the rods a short distance, so that the cam-pins K will pass upon other and fixed cams, S S, which operate to slide the rods farther, and also to press them upon the paper. These fixed cams are provided with faces of different widths corresponding to the widths of the types, and operate substantially the same as the cams T and faces Y on the keys operate. The advantage of this arrangement consists in making it possible to have the key-board more condensed, and to have a shorter cylinder.

Inasmuch as there are only about five different sizes of type in the capital and lower case alphabets, five cams, or even a less number, may be made to answer the purpose of a cam for each rod, the five cams having faces of different widths, and being placed near the printing end of the cylinder, as shown in Fig. 3. In connection with such cams the cam-pins K should be arranged upon the different rods at different distances from the ends thereof, so that those upon the rods which operate upon the widest types will pass upon the widest cam, and those upon the rods operating upon the narrowest types will pass upon the cam having the shortest face, the pins upon the rods which operate upon the intermediate-sized types operating upon the intermediate-sized cams. By these means the pressure upon the rods is brought nearer the printing-point, except in the case of the shorter rods, than when the cams T upon the keys accomplish both the actuating and the printing; or but one fixed cam may be used, and the different spacing given to the letters by making the cams K of different widths corresponding to the different widths of the types.

The mechanism may be also used to print with ink, instead of making indentations, by using a suitable inking apparatus (not shown) and putting at the sides of each type pins or milling, (not shown,) which serve to penetrate and grasp the paper when it is pressed upon the type by the rods, and thus cause the paper to feed during the time it is held by the rod and milling or pins.

In the drawings hereto annexed, Figure 1 is a side view of the improved machine with the pedal omitted. Fig. 2 is a plan view of a portion of the base-plate, showing arrangement of keys, also the type-wheel in outline, and the paper-guide N, with tension-spring

W, operated by screw X to press upon the paper strip Z, to overcome the momentum of the strip while the machine is printing and prevent the paper going too far. Fig. 3 is a similar view of modification, showing the fixed cams and returning-cams Q. In this figure the plate R is not shown grooved, as the cams S S operate, instead of the cam-bars, to press the rods upon the paper. Fig. 4 is a sectional view of key-board, showing a key with spring and the grooved plate R. Fig. 5 is a back view of a portion of grooved plate R, showing two keys dormant and two in operating position.

We are aware that there are now in use type writing or printing machines containing revolving cylinders with sliding rods, in combination with a cam or cams for pressing the rods upon the material operated upon, the operation being performed by first causing the rod to slide in its groove, and then pressing it laterally upon the paper.

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

1. The combination of a series of rods in a continuously-revolving holder with cams, by means of which the rods are pressed endwise upon the material operated upon, substantially as shown and described.

2. The combination of a series of rods in a revolving holder with a series of cams of different lengths or widths operating directly upon the rods, by means of which the rods are pressed for different lengths of time upon the material operated upon, substantially as shown and described.

3. The combination of a series of rods in a revolving holder with the series of cam-bars T, by which the rods are actuated and pressed upon the material operated upon, substantially as shown and described.

4. A series of rods in a revolving holder and a series of cam-bars, by means of which the rods are actuated and pressed upon the material operated upon, in combination with the grooved plate R, for supporting the cam-bars, substantially as shown and described.

5. The cylinder and rods, in combination with a series of cam-bars provided with faces of different lengths, by which the rods are actuated and pressed upon the material operated upon for different lengths of time, substantially as shown and described.

6. The combination of a series of rods in a revolving holder, and means, substantially as described, for actuating the rods with the series of returning-cams Q Q, substantially as shown and described.

In witness whereof we have hereunto affixed our hands this 24th day of September, 1883.

MERRITT H. DEMENT.
AUSTYN W. GRANVILLE.

Witnesses:

F. J. GRIDLEY,
L. E. DALTON.