

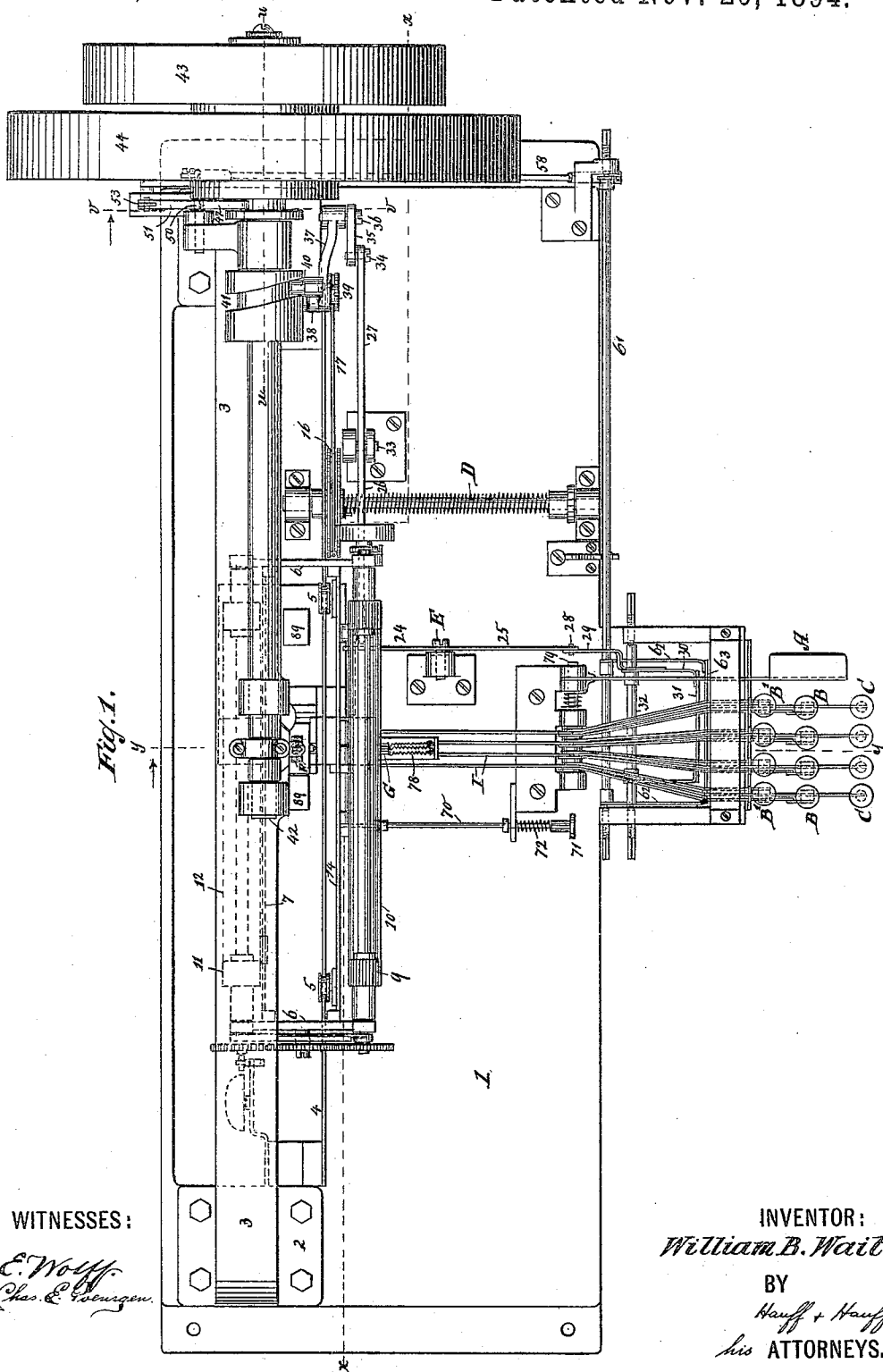
(No Model.)

4 Sheets—Sheet 1.

W. B. WAIT.
WRITING MACHINE.

No. 529,572.

Patented Nov. 20, 1894.



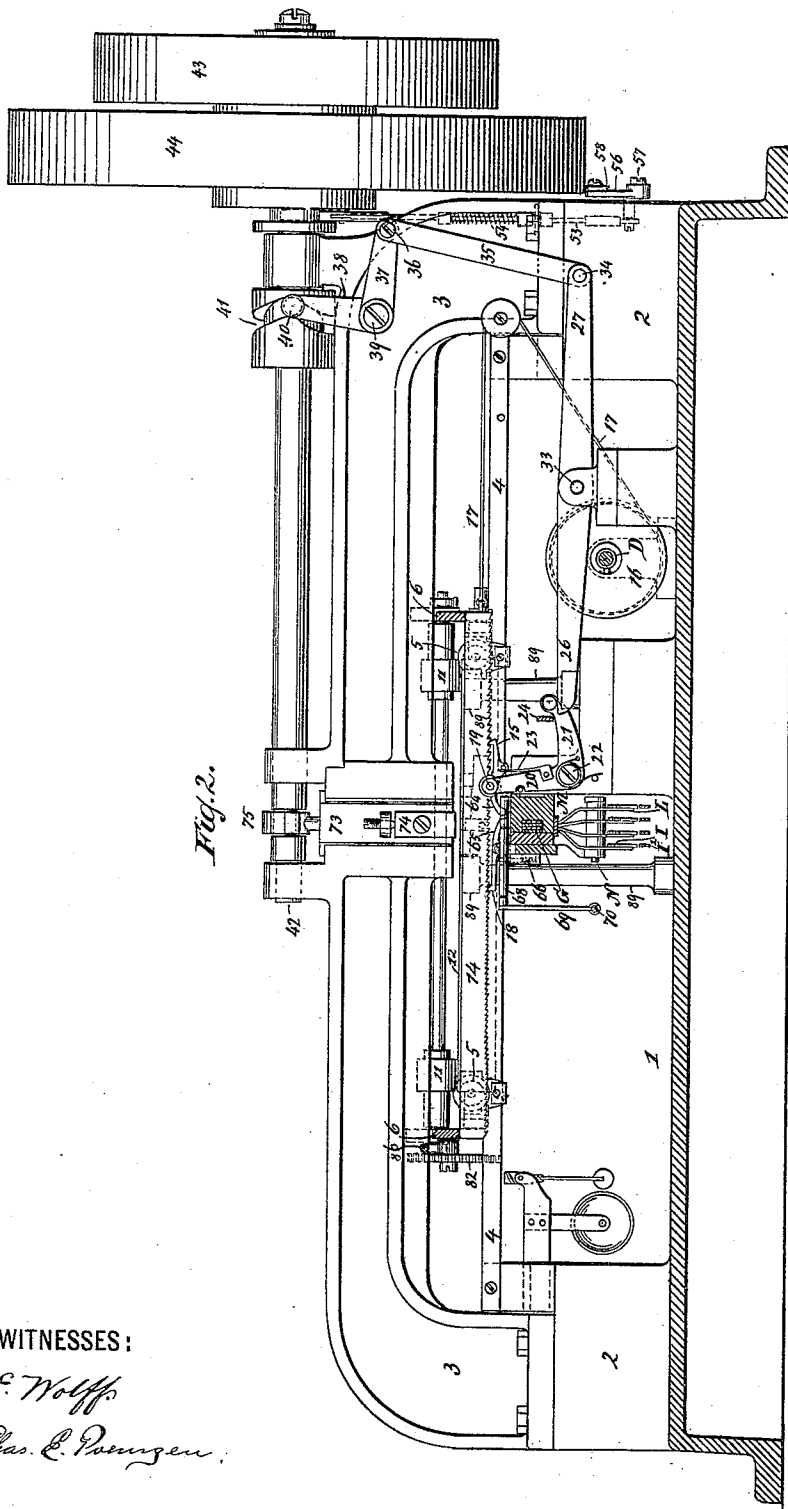
(No Model.)

4 Sheets—Sheet 2.

W. B. WAIT.
WRITING MACHINE.

No. 529,572.

Patented Nov. 20, 1894.



WITNESSES:

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INVENTOR:

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BY

Hauff + Hauff
his ATTORNEYS.

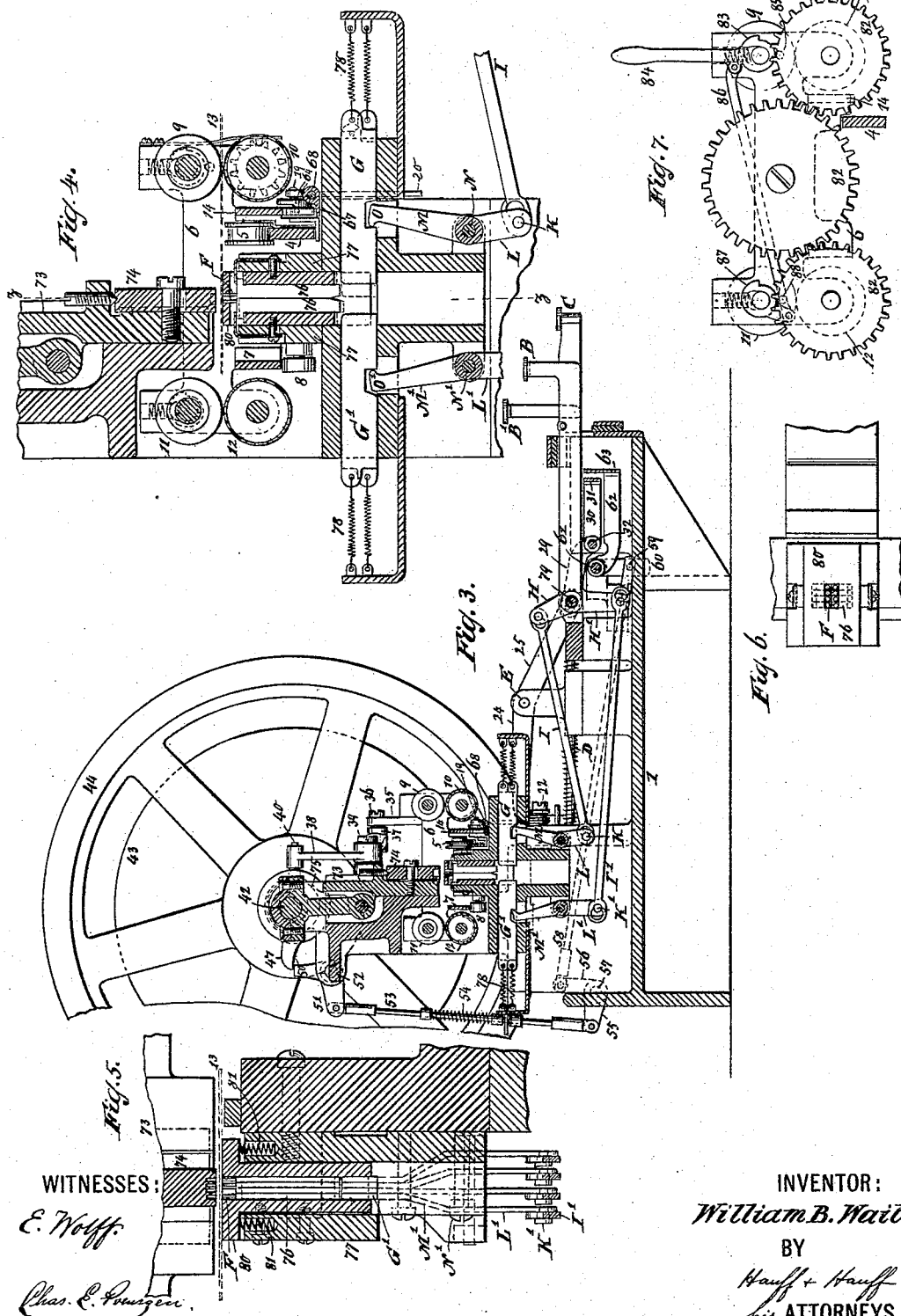
(No Model.)

4 Sheets—Sheet 3.

W. B. WAIT.
WRITING MACHINE.

No. 529,572.

Patented Nov. 20, 1894



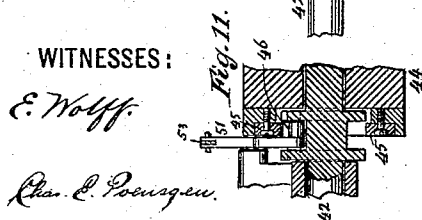
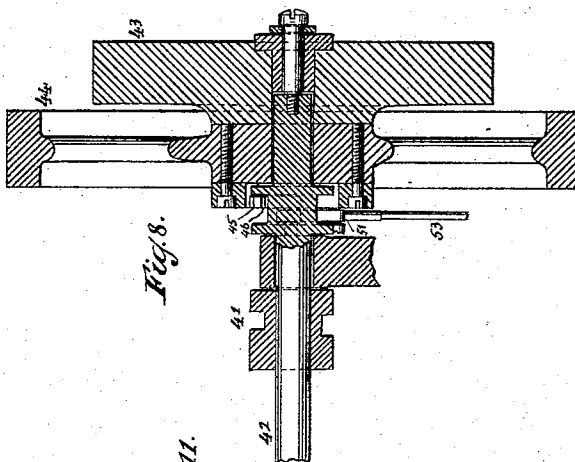
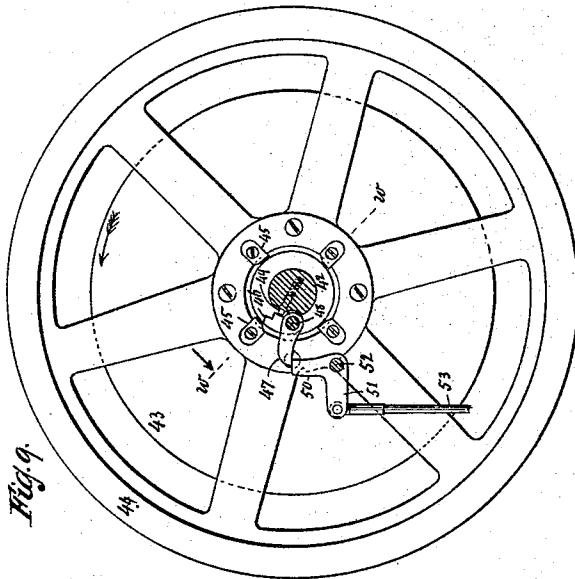
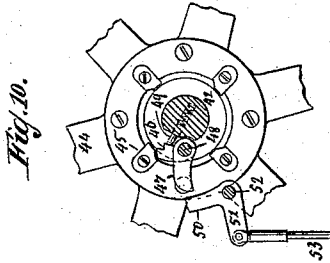
(No Model.)

4 Sheets—Sheet 4.

W. B. WAIT.
WRITING MACHINE.

No. 529,572.

Patented Nov. 20, 1894.



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UNITED STATES PATENT OFFICE.

WILLIAM B. WAIT, OF NEW YORK, N. Y.

WRITING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 529,572, dated November 20, 1894.

Application filed June 7, 1894. Serial No. 513,802. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. WAIT, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Writing-Machines, of which the following is a specification.

This invention relates to an improvement in writing machines by which the machine is enabled to do heavy work or to accomplish its work with but little exertion on the part of the operator's hands and the invention resides in the novel features of construction and claims and illustrated in the annexed drawings in which is shown a machine for executing embossed writing for the blind although the invention is not necessarily confined to such writing.

In the drawings Figure 1 is a plan view of the writing machine. Fig. 2 is a section along *xx* Fig. 1. Fig. 3 is a section along *yy* Fig. 1. Fig. 4 is a detail sectional view similar to Fig. 3 enlarged. Fig. 5 is a section along *zz* Fig. 4. Fig. 6 is a plan view of styluses or type bars. Fig. 7 is a side elevation of feed rollers for the paper carriage. Fig. 8 is a section along *uu* Fig. 1. Fig. 9 is a section along *vv* Fig. 1, showing the clutch out of action. Fig. 10 is a section like Fig. 9 the clutch being in action. Fig. 11 is a section along *ww* Fig. 9.

The base or plate 1 of the machine supports blocks 2 on which is an arch or cross piece 3. The track 4 supports the wheels 5 of the paper or sheet carriage 6 which has fixed to its rear a bar 7 traveling on a roller 8 mounted on any suitable fixed part of the machine. The carriage has at its front feed rollers 9 and 10 and at its rear feed rollers 11 and 12 for moving the sheet 13 along as the lines are filled or written, and said sheet has also a transverse movement in consequence of the feed of the carriage effected by its feed rack 14. The feed of the carriage is from right to left of the spectator looking at Fig. 2 and said feed is effected by the feed pawl 15 which when moving from left to right moves over the teeth of rack 14 without moving the carriage, but when said pawl 15 returns to the left said pawl carries with it the rack 14 and carriage 6 against the action of the restoring spring D coiled about the shaft of pulley 16

and connected by cord or connection 17 with the carriage. While the feed pawl 15 moves to the right the carriage is held at rest against the action of the spring D by means of the stop pawl 18.

The feed pawl 15 is fulcrumed at 19 to arm 20 of the lever 20, 21, fulcrumed at 22. A suitably applied spring 23 on lever arm 20 presses the pawl 15 toward rack 14. The lever 20 and 21 is actuated in one direction by lever 24 and 25 and in the opposite direction by lever 26 and 27 so that the alternate movement of these levers 24, 25 and 26, 27 will cause the lever 20, 21 to oscillate so that the pawl 15 will move back and forth.

The lever 24, 25 is fulcrumed at E (Fig. 1) and is jointed or connected at 28 to an arm 29 extending from swinging yoke 30 and 31 fulcrumed at 32. The depression of space key A or of any of the writing keys B B' or their yoke keys C will depress the bar 31 of yoke 30, 31, the arm 29 with lever arm 25 being thereby swung upward and lever arm 24 depressed so as to depress lever arm 21 and swing lever arm 20 with pawl 15 to the right.

The lever 26, 27 is fulcrumed at 33 (Fig. 2) and is jointed or connected at 34 to a link 35 jointed at 36 to an arm of lever 37, 38 fulcrumed at 39 and having a stud or roller 40 entering a cam or groove 41. This cam 41 is mounted on shaft 42 having drive pulley and fly wheel 43 and 44 and by a suitable clutch presently described the shaft 42 with cam 41 is rotated at suitable intervals so as to oscillate levers 38, 37 and 27, 26 so that lever arm 26 will raise lever arm 21 and move lever arm 20 with feed pawl 15 to the left or in other words to give feed motion to the pawl.

The clutch mechanism comprises lugs 45 (Figs. 9 to 11) on the rotating wheel 44 which lugs project into the axle or shaft opening of the wheel hub into which shaft opening projects the shaft 42. A lever 46, 47 fulcrumed at 48 to the shaft 42 has its arm 46 in contact with the spring pressed stud 49 in shaft 42, which stud when free to act presses lever arm 46 outward so as to be engaged or struck by a lug 45 on the rotating wheel whereupon shaft 42 partakes of the rotation of the wheel 44. When the lever arm 47 rests firmly on arm 50 said lever 47, 46 has its arm 46 pressed inward against the resistance of the spring

pressed stud 49 so that the lugs 45 rotating with wheel 44 now clear the arm 46 and the wheel 44 rotates without affecting the shaft 42.

The arm 50 forms part of lever 50, 51 fulcrumed at 52 to a fixed part of the machine and jointed to a rod 53 pressed by spring 54 (Fig. 3) which has a tendency to throw arm 50 toward arm 47. The rod 53 is jointed to a lever 55, 56 fulcrumed at 57 to a fixed part of the machine and connected to rod 58 which is jointed at 59 to an arm 60 depending from the shaft 61 to which is fixed or keyed a yoke 62, 63, the bar 63 of which lies under the keys A B B' C. A depression of a key thus not only actuates yoke 30, 31 as already noticed to move lever arm 24 but also actuates yoke 62, 63 so as to turn fulcrum rod 61 and move arm 60, rod 58, lever 56, 55 and rod 53 for withdrawing arm 50 from under arm 47 when as already noticed the arm 46 is pressed into clutching position by spring stud 49. The shaft 42 with cam 41 now rotates so as to oscillate lever arm 26.

The carriage 6 can move or be set back to the right by moving the pawls 15, 18 out of engagement with rack 14. These pawls have tails 64, 65 (Fig. 2) which are normally held away from the rack 14 as the pawl 15 is pressed toward the rack by spring 23 and the pawl 18 is pressed toward the rack by the spring or spring pressed stud 66. These tails 64, 65 rest over a plate or arm 67 (Fig. 4) secured to rock shaft 68 to which is secured an arm 69 engaged by slide 70 (Figs. 1 and 2) having a finger button 71 within easy reach and when the slide 70 is pushed in against the action of its restoring spring 72 the rock shaft 68 is turned so as to swing plate 67 upward and raise the tails 64, 65 at the same time moving the pawls 15 and 18 downward or out of gear with rack 14 so that the carriage 6 is free to move back or to the right under the influence of spring D.

The anvil or block for printing is shown at 73 provided with a suitable die or printing face 74 and reciprocated by a crank or eccentric 75 on shaft 42. When the shaft 42 is rotated the anvil 73 is moved or reciprocated so as to print on the sheet 13 passing between said anvil and between the type bars or styluses F.

The styluses F have their feet or lower portions 76 adapted to slide in a suitable guide or well 77 so that on the descent of the anvil the styluses will yield and no impression is produced unless one or more of the styluses are held against the pressure of the anvil. Each stylus can be held or locked against movement by a lock or slide G or G' (Fig. 4) the locks G being for the front row of styluses and the locks G' being for the rear row of styluses, and said locks are usually held in unlocking position by restoring springs 78. Each key B (Fig. 3) has an upwardly extending arm H which when a key B is depressed will draw a link I forward, said links being jointed at K to arms L of levers L M fulcrumed at N (Fig. 4) and having noses O engaging into re-

cesses in locks G. The forward throw of a link I and lever arm L will cause a backward throw of a lever arm M so that the corresponding lock G will be slid under the corresponding stylus. Each key B' has a downwardly extending arm H' which on the depression of a key B' will move back a link I' jointed at K' to a lever arm L' so that a lever L' M' fulcrumed at N' and having its nose O' engaging into a recess in a slide G' will move such slide under the stylus corresponding to the actuated key. A simultaneous depression of a key B and B' either by using two fingers or by means of a suitable yoke key C adapted to actuate two keys B B' at once will actuate two locks G G' simultaneously so that two styluses are locked. By actuating more than two keys B B' more than two styluses will be locked so as to print when sheet 13 is pressed by anvil 73 toward the styluses.

The keys A B B' C are fulcrumed at 79 (Fig. 1) and can be provided with restoring springs as well known in this class of machines.

The styluses F when at rest have their upper faces or type ends flush with the upper face of a plate or table 80 (Fig. 5) resting on springs 81 so that on the descent of the anvil the free styluses and table 80 yield together to the pressure of the anvil, and the sheet 13 lies smoothly on table 80 except at the places where a locked stylus or styluses produce an impression.

The feed rollers 9, 10, 11, 12 of the carriage are connected by suitable gears 82. The feed roller 9 can be raised off roller 10 by a cam or eccentric on shaft of roller 9 and adapted to be turned by handle 84 so as to bring the high part of the eccentric 83 against stud 85 and raise roller 9 away from roller 10 so that a sheet can be readily passed between the rollers 9 and 10. From handle 84 extends a link 86 to cam 87 on shaft of roller 11 so that the actuation of handle 84 will move the high part of cam 87 to or from stud 88 and move roller 11 from or toward roller 12. The actuation of handle 84 can thus be made to move rollers 9 and 11 toward and from rollers 10 and 12 either simultaneously or alternately as desired, by obvious arrangement of the eccentrics 83, 81. The rollers 9 and 11 are held by the well known yielding or spring pressure toward rollers 10 and 12.

The type bars or styluses with the anvil may be arranged to print letters or characters or to emboss the sheet 13 as usual in point writing for the blind. As the anvil effects the impression of the sheet, the latter may be very thick or heavy, or of substantial material such as sheet metal, and the anvil when properly driven will produce clear impressions on such sheet, while at the same time the keys requiring but little force for their actuation will not tire the fingers of the operator.

The feed rollers 9, 10, 11 and 12 on the paper or sheet carriage can be rotated by hand

or by any suitable appliance well known in connection with traveling carriages in writing machines and the spring D can be adjusted or coiled to required tension by any suitable well known winding or setting mechanism.

As well known in point writing machines the feed of the carriage must be varied according as one or more styluses or sets of styluses are actuated so as to obtain the proper uniform spacing and this varying feed as well known can be obtained by providing the yoke 30, 31 with step shaped or variously elevated portions, putting for example the lowest part of this yoke under spacer key A so that this key will not actuate the yoke until near the end of the downward throw of key A, the consequent small actuation of yoke 30, 31 and levers 25, 24 and 21, 20 being sufficient to move feed pawl 15 over the space between two adjacent teeth on track 14, while a higher part of the yoke being placed under two adjacent writing keys the depression of either or both of said writing keys will effect a throw of feed pawl 15 over the space between three adjacent teeth of rack 14. The feed of the carriage can thus be varied so that the sheet will always present a clear or unwritten face for the next succeeding impression no matter whether one or more or all of the writing keys B B' have been actuated simultaneously.

Supposing a wrong impression has been made on a sheet such wrong impression can be erased or effaced by flattening the wrong impression out of the sheet, and to readily effect such flattening I place at a suitable part of the machine what may be called an erasing post or erasing anvil 89 (Figs. 1 and 2) the upper flat face of which can be made to support the part of the sheet having the wrong impression, while such wrong impression is flattened or hammered out of the sheet by a flat faced hammer or suitable tool. In the drawings are shown two erasing posts 89 but this number can manifestly be varied.

What I claim as new, and desire to secure by Letters Patent, is—

1. A sheet carriage provided with a feed rack, combined with feed and stop pawls, a movable arm or support for the feed pawl, a lever and key for moving the support in one direction, and a second lever and cam movement actuated independently of the key for returning the support said levers being made to directly engage the support for positively moving the latter in both directions, substantially as described.

2. A sheet carriage provided with a feed rack, combined with feed and stop pawls, a movable arm or support for the feed pawl, a lever and key for moving the support in one direction, a second lever for returning the support, an actuating cam for the second lever, a driving wheel, and a clutch actuated by the key for causing the wheel to actuate the cam substantially as described.

3. A sheet carriage and feed mechanism substantially as described therefor, combined with a movable block or anvil for acting on the sheet or paper carried by the carriage, a type bar or stylus made movable in the direction of motion of the anvil so as to be normally moved to its inoperative position by said anvil and a lock for securing the type bar against motion by the anvil substantially as described.

4. A sheet carriage and feeding mechanism substantially as described therefor, combined with a suitably actuated movable block or anvil for acting on the sheet or paper carried by the carriage, a movable type bar or stylus, a movable or yielding plate or table for the sheet, and a lock for securing the type bar against motion by the anvil substantially as described.

5. A sheet carriage and feeding mechanism substantially as described therefor, combined with a movable block or anvil, a driving mechanism substantially as described for said anvil and provided with a clutch, a movable type bar or stylus against which the anvil acts, a lock for said stylus, and a key for actuating said lock and for bringing the clutch into action for imparting motion to the anvil substantially as described.

6. A sheet carriage and feeding mechanism substantially as described therefor, combined with a movable block or anvil for acting on the sheet or paper carried by the carriage, movable type bars or styluses, and locks for securing the type bars against motion by the anvil, said locks consisting of oppositely placed slides adapted to engage the styluses substantially as described.

7. A sheet carriage and feeding mechanism substantially as described therefor, combined with a movable block or anvil for acting on the sheet or paper carried by the carriage, movable type bars or styluses, locks consisting of oppositely placed slides adapted to engage the styluses, and keys respectively provided with oppositely extending arms H H' connected respectively to oppositely located locking slides substantially as described.

8. A sheet carriage and feeding mechanism substantially as described therefor, combined with a movable block or anvil for acting on the sheet or paper carried by the carriage, a movable type bar or stylus, a lock for securing the type bar against motion by the anvil, said lock consisting of a slide provided with a recess, and a key provided with an arm and a link connected to said arm, and a lever actuated by said link, and provided with a nose made to engage into the recess in the slide for actuating the latter substantially as described.

9. A sheet carriage provided with a feed rack combined with a feed and a stop pawl for the rack, levers 24, 25 and 26, 27 for actuating the feed pawl, a stylus or type bar, an anvil for acting against the type bar, a driving wheel, a clutch for conveying motion from the driving wheel to the anvil and to

one of the feed pawl actuating levers, and a key for bringing the clutch into action and for actuating the other feed pawl actuating lever substantially as described.

5 10. A sheet carriage provided with a feed rack combined with a feed and a stop pawl for the rack, levers 24, 25 and 26, 27, for actuating the feed pawl, a stylus or type bar, an anvil for acting against the type bar, a driving
10 wheel, a clutch for conveying motion from the driving wheel to the anvil and to one of the feed pawl actuating levers, a key for bringing the clutch into action, and a yoke actuated by the key and provided with an
15 arm 29 connected to the other feed pawl actuating lever substantially as described.

11. A sheet carriage provided with a feed rack combined with a feed and a stop pawl for the rack, levers 24, 25, and 26, 27, for actuating the feed pawl, a movable stylus or
20 type bar, a lock for said type bar, an anvil for acting against the type bar, a driving wheel, a clutch for conveying motion from the driving wheel to the anvil and to one of
25 the feed pawl actuating levers, a key, a yoke actuated by the key and provided with an arm 60 and connections for releasing the

clutch and a second yoke provided with an arm 29 connected to the other feed pawl actuating lever, said key being provided with an
30 arm connected to the type bar lock for actuating the latter, substantially as described.

12. A sheet carriage comprising a frame and two pairs of feed rollers located respectively at the front and rear of the frame, each
35 pair being adapted to grasp and feed a sheet, said frame being provided with fixed bearings for the shaft of one roller of each pair, a movable or slotted bearing for the shaft of the other roller of each pair, springs for forcing
40 the movable rollers toward the fixed rollers, studs fixed to the frame, cams or eccentrics mounted on the shafts of the movable rollers and adapted to act against the studs for moving said last named shafts, and a link
45 for uniting the cams, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM B. WAIT.

Witnesses:

WM. C. HAUFF,

E. F. KASTENHUBER.