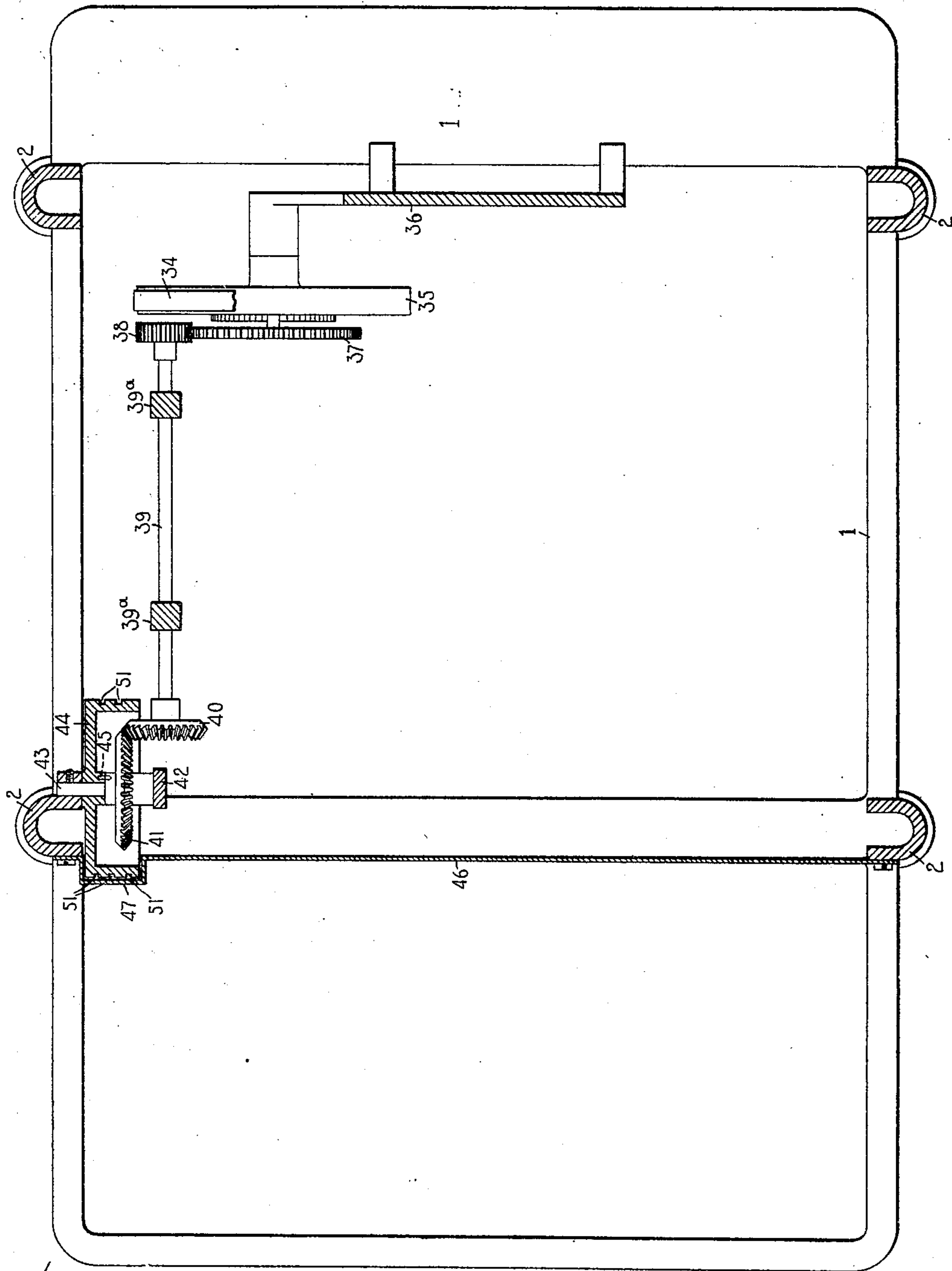


No. 808,875.

PATENTED JAN. 2, 1906.

C. H. SHEPARD.
TYPE WRITING MACHINE.
APPLICATION FILED OCT. 1, 1903.

3 SHEETS—SHEET 2.



WITNESSES:

K. V. Konovani.

Charles Smith

20

INVENTOR:

Charles H. Shepard
by Jacob Feld
HIS ATTORNEY

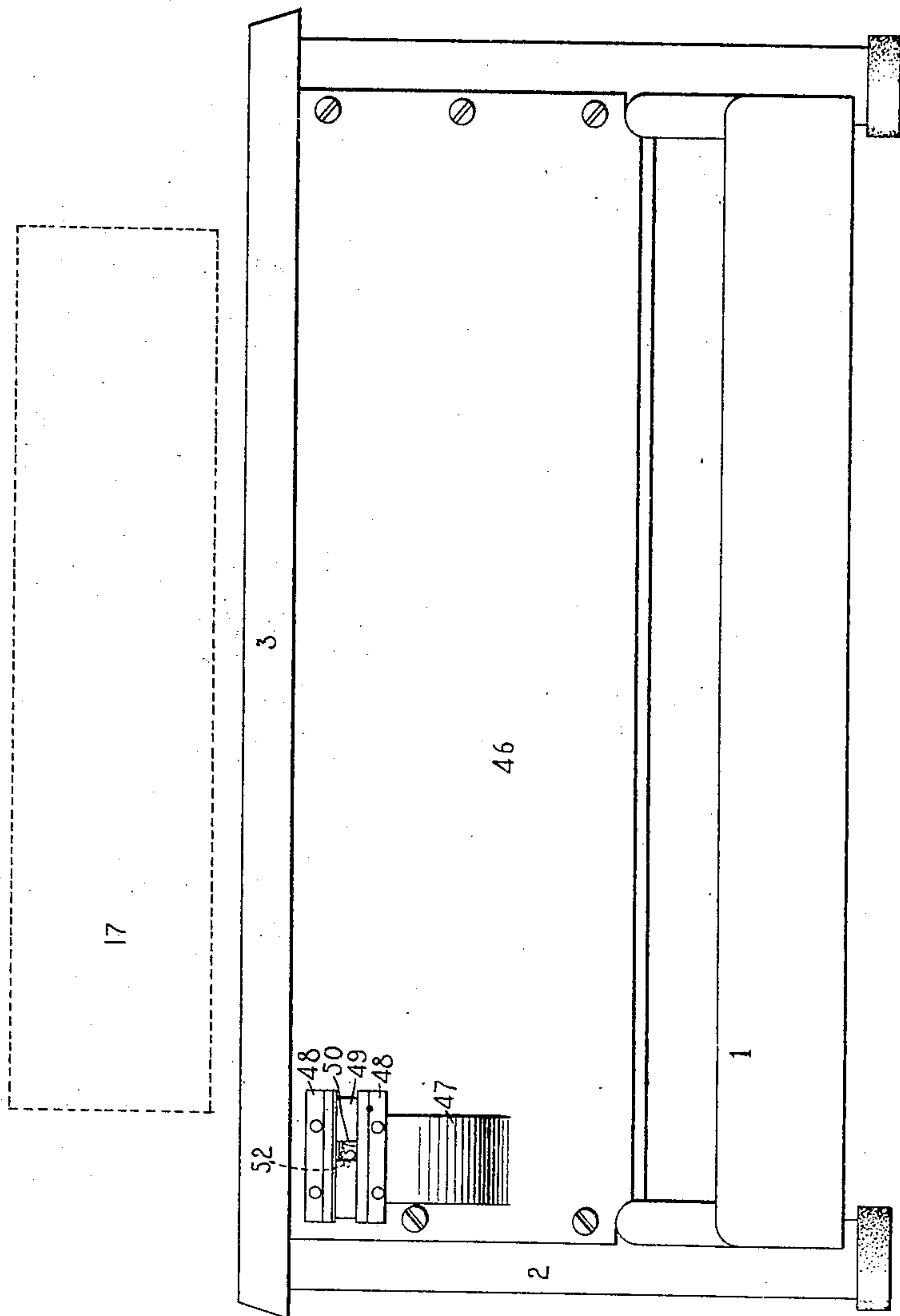
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FIG. 3.



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UNITED STATES PATENT OFFICE.

CHARLES H. SHEPARD, OF NEW YORK, N. Y., ASSIGNOR TO WYCKOFF, SEAMANS & BENEDICT, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

No. 808,875.

Specification of Letters Patent.

Patented Jan. 2, 1906.

Application filed October 1, 1903. Serial No. 175,270.

To all whom it may concern:

Be it known that I, CHARLES H. SHEPARD, a citizen of the United States, and a resident of the borough of Brooklyn, city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to type-writing machines, and more particularly to carriage index mechanism; and the invention is in the nature of an improvement on the construction shown in the patents granted to Jacob Felbel October 30, 1900, No. 660,988, and to Carl Gabrielson November 5, 1901, No. 686,220.

The main object of the invention is to provide a simple and efficient carriage index mechanism wherein comparatively large indices or index-numerals, that can be easily read, may be employed and wherein the mechanism can be embodied in compact form and a determination of the position of the carriage may at all times be readily determined by the operator.

To the above and other ends, which will hereinafter appear, my invention consists in the features of construction, arrangements of parts, and combinations of devices to be hereinafter described and claimed.

In the accompanying drawings, wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a vertical front-to-rear sectional view of one form of type-writing machine embodying my invention. Fig. 2 is a horizontal sectional view of the same with parts omitted, the section being taken on the line *x x* of Fig. 1 and looking in the direction of the arrow in said figure. Fig. 3 is a detail front elevation of the machine with parts omitted. Fig. 4 is a fragmentary front elevation with parts omitted and parts in section, the view illustrating an index drum or wheel in front elevation.

I have illustrated my invention as applied to a "Monarch" type-writing machine, such as shown in the Gabrielson patent above referred to, though it should be understood that the invention may be applied to various types of writing-machines.

The framing 1 of the machine is provided with corner-posts 2 and a top plate 3. Key-

levers 4 are pivoted in the base of the frame at 5, and each key-lever has the usual finger-key 6 and a restoring-spring 7. Sublevers 8 are pivoted to the key-levers at 9, and each sub-lever is slotted at the lower portion thereof, as indicated at 10, for coöperation with a fixed fulcrum-bar 11, which extends from side to side of the machine beneath the key-levers. The upper end of each sublever is pivoted at 12 to a forwardly-extending link 13, the forward end of which is pivoted at 14 to a type-bar 15. The type-bars are segmentally arranged and pivoted in a segment 16 to strike upwardly and rearwardly and impact against the front face of the platen 17. Extending forwardly from the type-bar segment 16 are arms 18, which support a type-bar pad 19, said pad supporting the free or forward ends of the type-bars. Pivoted on the fulcrum-bar 11 are rearwardly-extending arms 20, which carry a contact-roller 21, with which the various key-levers are adapted to coöperate. The arms 20 and their connecting cross-bar 22 constitute a frame from which extends a rearwardly-projecting arm 23. This arm has pivoted thereto at 24 an upwardly-extending link 25, that is connected to a forwardly-projecting arm 26, that extends from the rock-shaft 27 of the feed-dog rocker. A rocker-arm 28 extends upwardly from the shaft 27 and carries the usual feed-dogs 29, which coöperate with an escapement-wheel 30, operatively connected to a feed-pinion 31, which meshes with a feed-rack 32, carried by the platen-carriage 33. The platen-carriage is connected to one end of a band 34 in the usual manner and has its opposite end secured to a spring-drum 35, mounted on a bracket-plate 36, which is secured to the framing of the machine. A gear 37 is secured to rotate with the spring-drum, and this gear meshes with a pinion 38, fixed on a shaft 39, which projects fore and aft of the machine, and is mounted in bearings 39^a, that depend from the top plate. The forward end of the shaft 39 carries a bevel-pinion 40, which is secured thereto and meshes with a bevel-gear 41, that is fixed against axial movement by a bracket-arm 42 and by one of the corner-posts 2. This corner-post carries a fixed spindle 43, on which the bevel-gear 41 rotates. The spindle likewise constitutes a bearing for the in-

dex-wheel 44, and a dowel-pin 45 connects the bevel-gear and index wheel or drum to rotate together.

From the foregoing description it will be seen that the travel of the carriage will cause a rotation of the index wheel or drum through the intermediate gear connections between the index-wheel and spring-drum.

A front cover-plate 46 is provided with a housing 47, that covers the front of the index-wheel and excludes an observation of the numerals thereon, except as hereinafter described. This housing is provided with ways 48 for the reception of a transversely-movable apertured slide or shield 49, the aperture 50 therein registering with the various indices or index-numerals on the index-wheel 44. The index-numerals extend progressively more than once around the face of the index wheel or drum and are spirally arranged, as indicated in Fig. 4. From an examination of this figure it will likewise be seen that a spiral groove 51 extends around the face of the drum and is arranged in accordance with the spiral arrangement of the index-numerals, and a rearwardly-projecting pin 52 projects from the rear side of the slide or plate 49 and extends into the spiral groove, so that a rotation of the index-wheel effects a sliding movement of the apertured plate in the general direction of the axis of the indicating-wheel, and the back-and-forth travel of the carriage will cause the slide to be moved back and forth in its ways during the rotation of the index-wheel, and the effect of this movement is to successively expose the index-numerals, which are in different vertical planes, at the aperture 50 in the plate 49 to indicate the position of the carriage at any point in the travel thereof.

By means of the described gearing between the spring-drum and the index-wheel the wheel is given a complete revolution during about one-half of the travel of the carriage in either direction. In other words, about thirty-seven step-by-step letter-space movements of the carriage cause a complete revolution of the index-wheel. The index-numerals are so spaced that the successive step-by-step feed movements of the index-wheel, brought about at the successive step-by-step feed movements of the carriage, will bring successive numbers opposite the sight-opening in the shield or slide, and the pitch of the groove 51 being substantially the same as the spirally-arranged index-numerals will cause the column of figures to always register laterally with the aperture or sight-opening.

It will be understood that the gear 37 makes about one complete revolution during the writing of a line and that the diameter of the pinion 38 is about one-third that of the gear-wheel 39, so that the bevel-pinion 40 revolves three times at each revolution of the gear 37. The bevel-gear 41, however, is of

larger diameter than the bevel-pinion 40, so that the rotative speed of the index-wheel is but twice that of the gear 37. The diameter of the index-wheel is considerably more than one-half the diameter of the spring-barrel, and the movement of the periphery or number-bearing portion of the index-wheel is hence considerably in excess of the corresponding movement of the carriage. I employ the described motion-multiplying gearing between the carriage and index-wheel for the purpose of enabling large figures to be used upon the latter, so that they may be easily read. The bevel-gears 40 and 41 may be made of equal diameter, if desired, and the column of numbers extended thrice around the index-wheel, the spiral groove or worm 51 being lengthened accordingly.

It will be observed that the back-and-forth movements of the shield or slide 49 correspond with and are governed by the travel of the carriage in opposite directions and that said shield or slide is controlled by the same step-by-step-feeding devices as the carriage. It will also be noted that I have provided a drum with a column or series of numbers arranged spirally thereon in numerical or consecutive order and corresponding with the paper-feed movements of the carriage—that is to say, the first number denoted on the said wheel is "0," to agree with the normal position of the carriage, and the last number denoted thereon thereby is, say, "76," to agree with the extreme left-hand position of the carriage.

From the foregoing description it will be understood that at each operation of a key-lever a letter-space movement of the carriage is afforded, and that a corresponding movement is transmitted to the index-wheel and slide in order to expose the index-numeral at the sight-opening in the shield which corresponds to the position of the carriage, and that the position of the carriage will at all times be accurately registered and may be readily determined by the operator by merely inspecting the numeral exposed at the sight-opening.

Various changes may be made without departing from the spirit of my invention.

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

1. In a type-writing machine, the combination of a carriage, a wheel having indicating-marks thereon and which is automatically rotated during the travel of the carriage, a co-operating shield, and means for moving said shield during the travel of the carriage back and forth.

2. In a type-writing machine, the combination of a carriage, a wheel connected to be rotated by the travel of the carriage, indicating-marks arranged in different planes on said wheel, a shield that is adapted to expose said marks one at a time, and means

for moving said shield during the travel of the carriage back and forth.

3. In a type-writing machine, the combination of a carriage, a wheel connected to be
5 rotated by the travel of the carriage back and forth, spirally-arranged indicating-marks on said wheel, a shield that is adapted to expose said marks one at a time, and means for automatically moving said shield as the wheel is
10 rotated in opposite directions by the back-and-forth travel of the carriage.

4. In a type-writing machine, the combination of a carriage, a wheel connected to be
15 rotated in opposite directions by the travel of the carriage back and forth and which is fixed against axial movement, a series of indicating-marks arranged around said wheel and in different transverse planes thereon, a shield that is adapted to expose said marks
20 one at a time, and means for moving said shield back and forth in the general direction of the axis of said wheel.

5. In a type-writing machine, the combination of a carriage, a wheel connected to be
25 rotated by the travel of the carriage back and forth and which is fixed against axial movement, a series of indicating-marks spirally arranged around said wheel, a shield that is adapted to expose said marks one at a
30 time, and means for automatically moving said shield back and forth in the general direction of the axis of said wheel as the wheel is rotated.

6. In a type-writing machine, the combination of a carriage, a wheel or drum connected to be rotated in opposite directions as
35 the carriage travels back and forth, a series of spirally-arranged indices that extend more than once around said wheel or drum, an apertured shield that exposes but one index at a time on said wheel, and means for
40 automatically effecting a movement of the shield back and forth in the general direction of the axis of the wheel or drum as the latter is rotated in opposite directions.

7. In a type-writing machine, the combination of a carriage, a wheel or drum connected to be rotated in opposite directions as the
45 carriage travels back and forth and having a spiral groove therein, a series of spirally-arranged indices on said wheel or drum, a shield having a sight-opening therein, and means cooperating with said spiral groove
50 and shield to automatically move the shield back and forth as the drum or wheel is rotated in opposite directions.

8. In a type-writing machine, the combination of a carriage, a wheel or drum geared to the carriage to be rotated in opposite
60 directions thereby during the back-and-forth travel of the carriage and having a spiral groove therein, a series of spirally-arranged indices that extend more than once around said wheel or drum, a shield having a sight-
65 opening therein that successively exposes the

indices on the wheel or drum as it is rotated, and means cooperating with said spiral groove and shield to automatically move the shield back and forth as the drum or wheel is rotated in opposite directions.

9. In a type-writing machine, the combination of a carriage, means for affording a
70 step-by-step letter-space movement of the carriage, a wheel, a series of spirally-arranged index-numbers extending around said wheel, one number for each letter-space movement
75 of the carriage, means for causing the wheel to rotate in opposite directions during the back-and-forth travel of the carriage, a shield having a sight-opening therein, and means
80 for automatically moving said shield back and forth as the wheel is rotated in opposite directions, to afford a successive reading of the spirally-arranged index-number at the
85 sight-opening in the shield, and to at all times indicate the printing-point at the sight-opening whether the carriage be moving in the direction of its feed or in an opposite direction.

10. In a type-writing machine, the combination of a carriage, a wheel or drum that
90 rotates in opposite directions as the carriage travels back and forth and which has a spiral groove therein, a series of spirally-arranged index-numerals that extend around said
95 drum and conform substantially to the spiral arrangement of said index-numerals, a shield that cooperates with the wheel or drum to expose the index-numerals thereon one at a time, and means cooperating with the spiral
100 groove in said wheel or drum and with said shield to move the shield back and forth in the general direction of the axis of the wheel or drum as the latter is rotated in opposite directions.

11. In a type-writing machine, the combination of a carriage, carriage-feed mechanism for affording a step-by-step feed movement of the carriage, a letter-space-indicating wheel which is carried by the frame of
110 the machine and which is operatively connected to rotate in opposite directions as the carriage travels back and forth and which has a spirally-arranged groove therein, a series of spirally-arranged index-numerals on
115 said wheel, a cooperating shield that has a sight-opening therein and is mounted to move back and forth in the general direction of the axis of said indicating-wheel as the wheel is rotated in opposite directions, and a
120 pin that extends from said wheel and takes into said spiral groove.

12. In a type-writing machine, the combination of a carriage, a spring-drum for moving said carriage in the direction of its
125 feed, escapement mechanism for affording a step-by-step feed movement of the carriage, a carriage index-wheel that is fixed against movement in an axial direction, intermediate gear connections between said wheel
130

and spring-drum to turn the wheel in opposite directions as the carriage travels back and forth, a series of index-numerals located in different transverse planes on said wheel,
 5 a shield that is mounted to move in the general direction of the axis of said wheel, and means for automatically moving the shield back and forth when the said wheel is rotated in opposite directions.

10 13. In a type-writing machine, the combination of a carriage, a spring-drum for moving said carriage in the direction of its feed, escapement mechanism for affording a step-by-step feed movement of the carriage,
 15 a carriage index-wheel that is fixed against movement in an axial direction and has a spiral groove therein, intermediate gear connections between said wheel and spring-drum for effecting a rotation of the wheel as
 20 the carriage travels back and forth, a series of spirally-arranged index-numerals on said wheel, the spiral arrangement of the numerals corresponding substantially to the spiral groove, a shield that has a sight-opening
 25 therein and is mounted to move in the general direction of the axis of said wheel, and a projection extending from said shield into said spiral groove for automatically moving the shield back and forth when the said wheel
 30 is rotated in opposite directions.

14. In a type-writing machine, the combination of a carriage, means for affording a step-by-step letter-space feed movement of said carriage, a carriage index-wheel oper-
 35 atively connected to rotate in opposite directions as the carriage travels back and forth, a series of index-numerals extending more than once around said wheel, one number for each letter-space movement of the
 40 carriage, a movable shield, and means for automatically effecting a back-and-forth movement of the shield as the wheel rotates in opposite directions.

15. In a type-writing machine, the combination of a carriage, feed mechanism for affording a step-by-step feed movement of the carriage, a carriage index-wheel that rotates in opposite directions as the carriage
 45 travels back and forth, a series of index-numerals on said wheel and arranged at differ-

ent points transversely thereof and the height of each index-numeral exceeding the distance covered by the carriage at its corresponding step-by-step feed movement, operative connections between the said wheel
 55 and carriage, a movable shield coöperating with said wheel, and means for automatically effecting a back-and-forth movement of the shield when the shield is rotated in opposite directions.

16. In a type-writing machine, the combination of a carriage, means for affording step-by-step feed movements of the carriage, a carriage index-wheel operatively connected
 65 to said carriage to travel at a greater rate of speed than the carriage as the latter travels back and forth, a series of index-numerals on said wheel, a shield having a sight-opening therein, and means for automatically
 70 moving the shield back and forth as the index-wheel is rotated in opposite directions.

17. In a type-writing machine, the combination of a carriage index-wheel that is operatively connected to rotate in opposite directions as the carriage travels back and
 75 forth, a shield having a sight-opening therein, and means for causing a coincident back-and-forth movement of the shield when the wheel is rotated, so as to bring the index-numerals successively into register with the
 80 sight-opening.

18. In a type-writing machine, the combination of a carriage, a carriage index-wheel controlled by the back-and-forth movement of the carriage, a casing that covers said
 85 wheel from observation, a shield that has a sight-opening therein and which is mounted to slide on the said casing, and means for automatically moving the shield back and forth when the wheel is rotated in opposite direc-
 90 tions.

Signed at borough of Manhattan, city of New York, in the county of New York and State of New York, this 29th day of September, A. D. 1903.

CHARLES H. SHEPARD.

Witnesses:

K. V. DONOVAN,
 E. M. WELLS.