

(No Model.)

2 Sheets—Sheet 1.

L. T. FOSS & T. K. KEITH.
TYPE WRITING MACHINE.

No. 429,025.

Patented May 27, 1890.

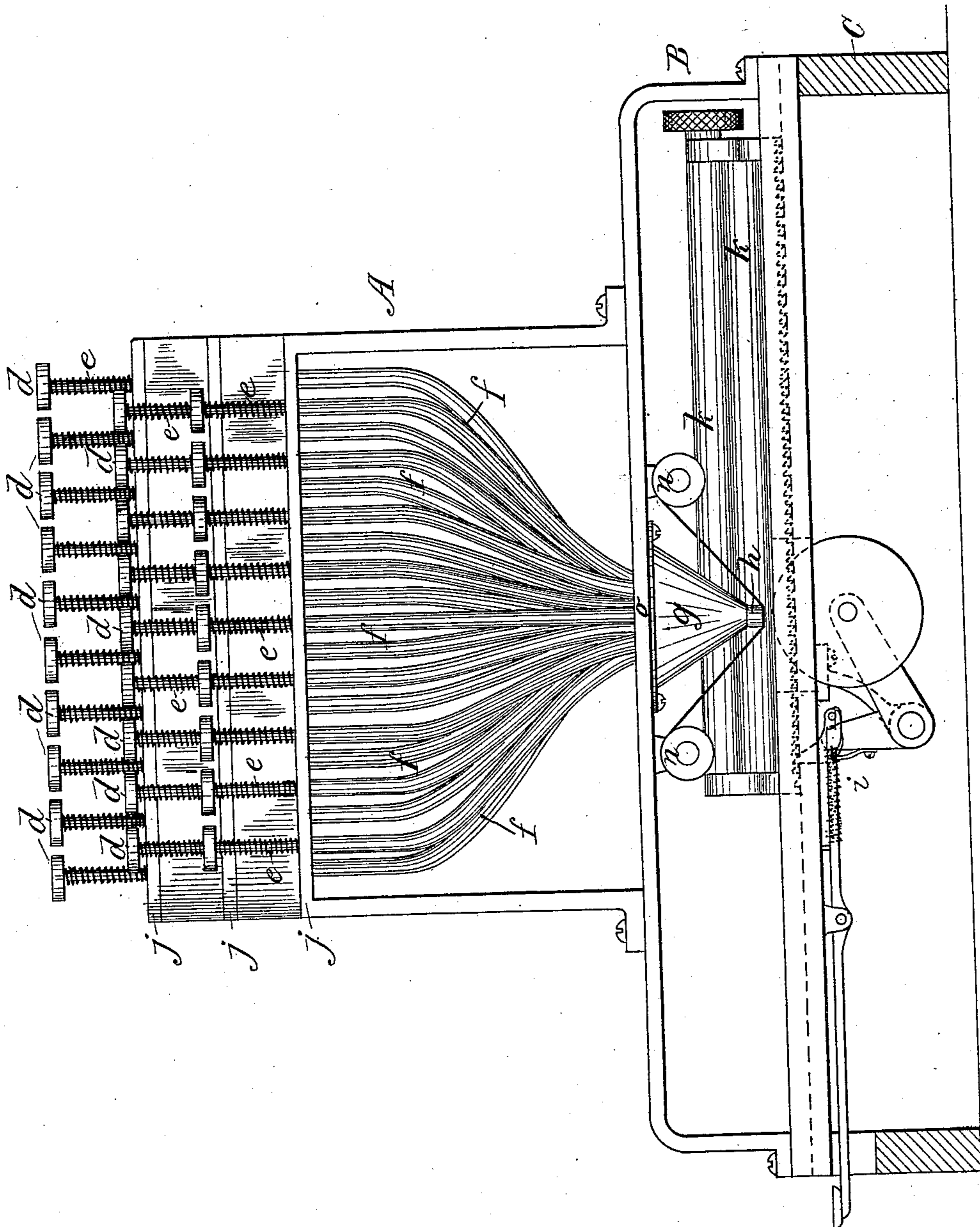


Fig. 1.

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att'y

(No Model.)

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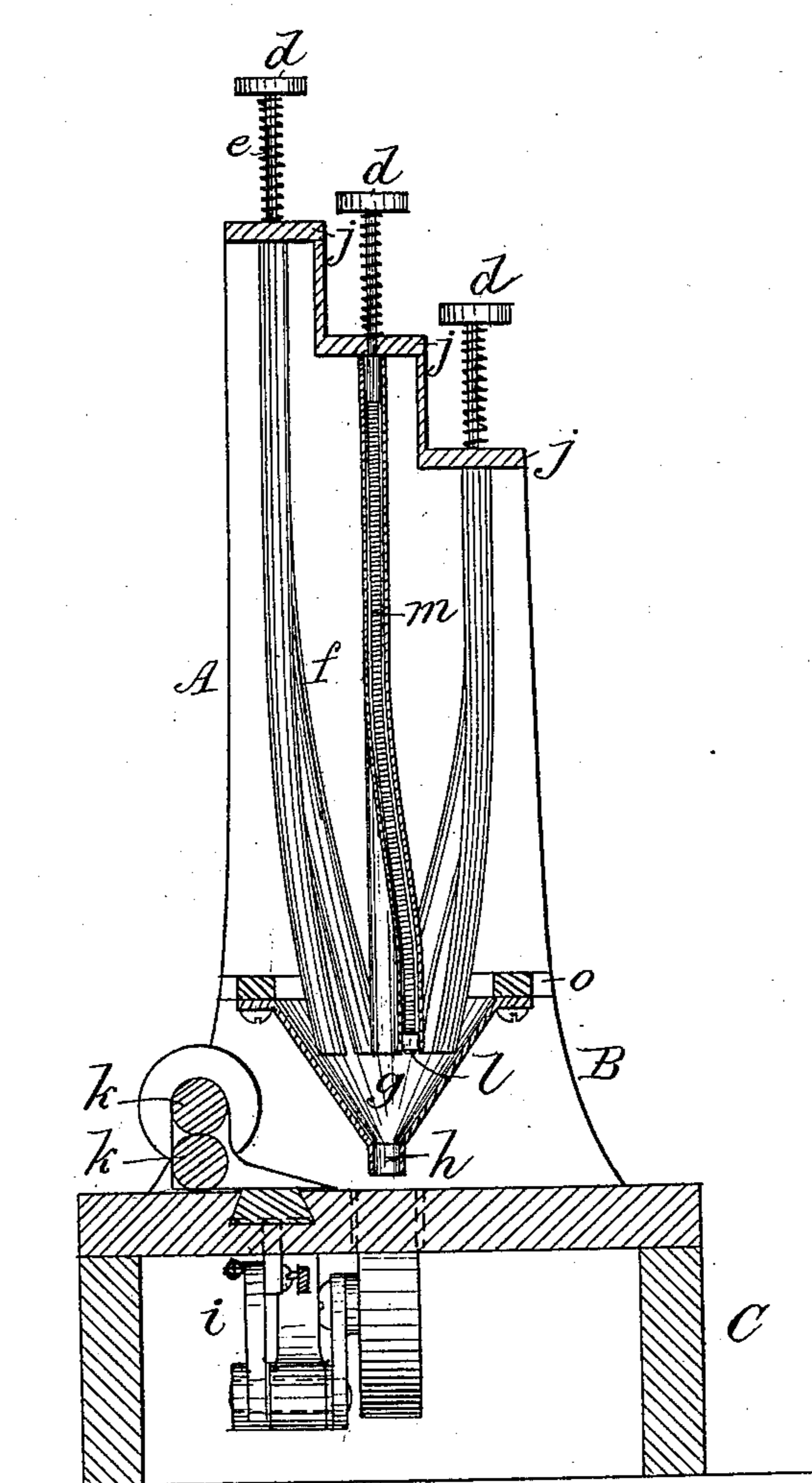


Fig 2.

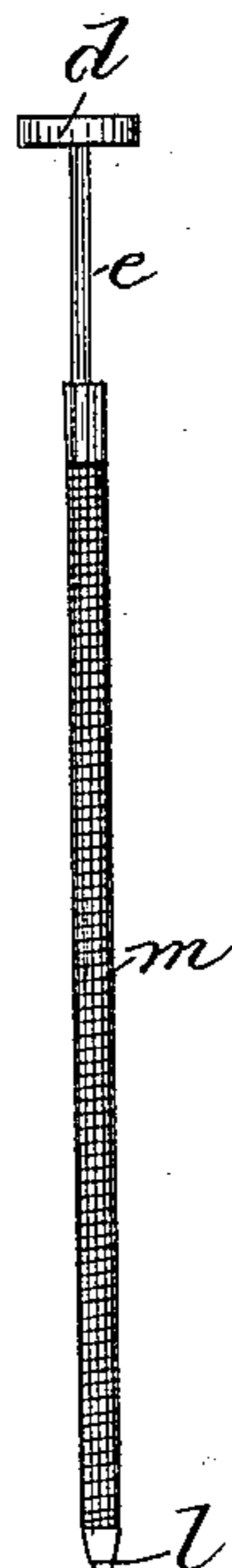


Fig. 4.

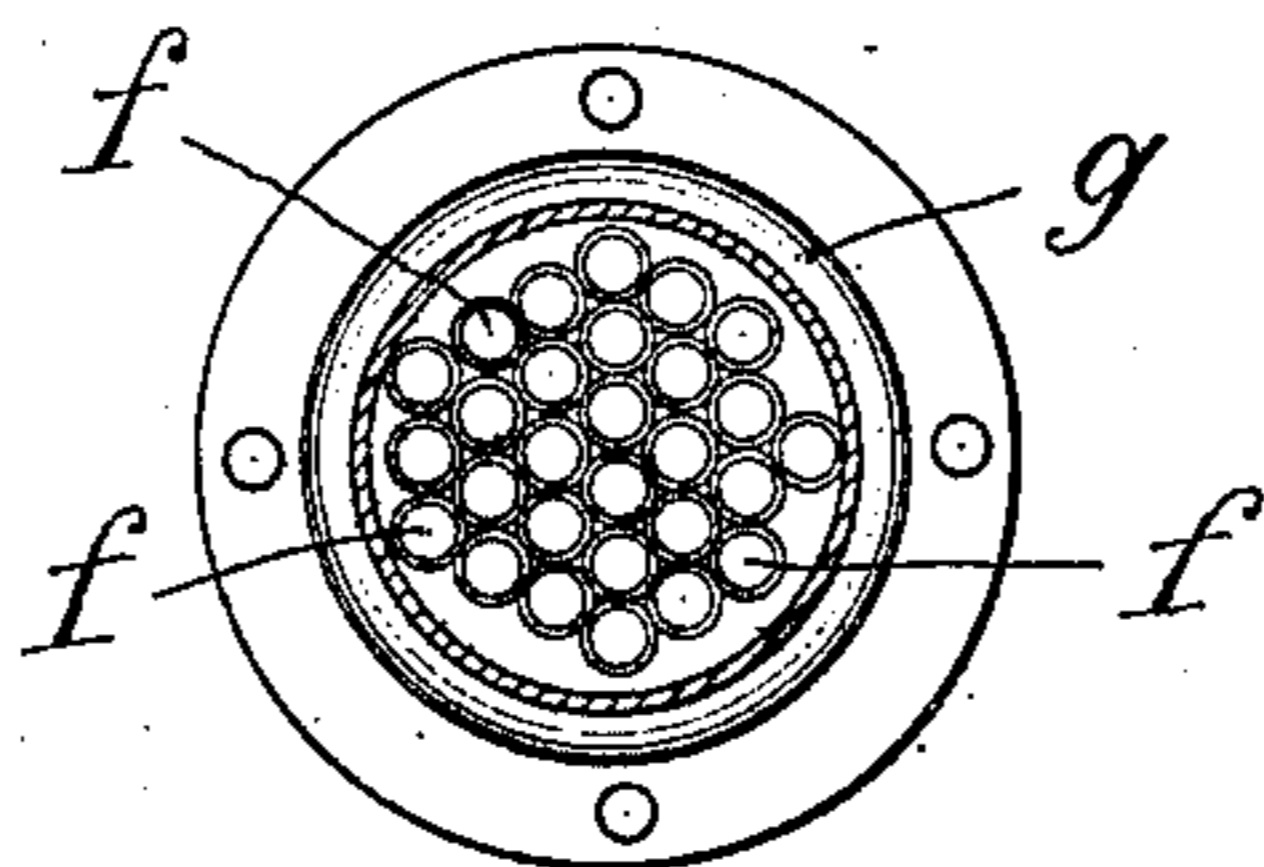


Fig. 5.

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UNITED STATES PATENT OFFICE.

LEWIS T. FOSS AND THOMAS K. KEITH, OF BOSTON, MASSACHUSETTS.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 429,025, dated May 27, 1890.

Application filed February 11, 1889. Serial No. 299,425. (No model.)

To all whom it may concern:

Be it known that we, LEWIS T. FOSS and THOMAS K. KEITH, both of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Type-Writing Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

Our invention relates to type-writers; and it consists of bent conduit-tubes, within which work in a general vertical direction elastic plungers, to the lower extremities of which are secured types, and a tunnel or funnel for directing the course of said type-tipped plungers.

The object of our invention is to provide a simple, cheap, and durable type-writer to be used as an educational toy or as a commercial type-writer.

With these ends in view our invention consists of a device, as shown in the accompanying drawings, forming part of this specification, referring to which—

Figure 1 shows a front view of our newly-invented type-writer. Fig. 2 shows a vertical sectional side view of the same. Fig. 3 shows a horizontal section of conduit-tubes as they enter the funnel. Fig. 4 shows a spiral elastic plunger with key on upper end and type on lower end.

Corresponding letters in the several figures of the drawings designate like parts, referring to which—

A is a metallic frame, having in its upper part a key-board consisting of three tiers or steps *j*.

B is a lower metallic frame, to which is fastened the frame A, and to the under side of which is secured the directing-tunnel *g* and the rollers *n* for the ink-ribbon.

C is a wooden stand supporting the frame B, and to which is secured the paper-rollers *k* and the device *i*, which moves the paper to be written upon laterally.

d represents the finger pieces or keys.

e is the upper part of the plungers, about which wind spiral springs, by means of which the plungers are raised into position ready for use after being depressed by the hand.

f represents curved metallic conduit-tubes, through which the elastic plungers operate,

and which direct said plungers into the funnel *g*.

g is the funnel, which receives the lower ends of the conduit-tubes *f* and which guides or directs the plunger when depressed into the vertical socket or collar *h*.

h is the lower part of the funnel *g* and is a vertical collar which receives the plunger when depressed and directs it vertically.

i is a mechanism consisting of a wheel, cam, ratchet, and lever-key for moving the paper to be written upon laterally.

j represents the horizontal planes or steps of the frame A, to which are secured the upper ends of the conduit-tubes *f* and through which pass the upper parts of plungers *e*.

k represents the rollers, which receive and hold the paper to be written upon.

l is the type secured to the lower extremity of the elastic plunger *m*.

m is an elastic plunger in the form of a spiral constructed of close-wound flat piano-wire, and having at its lower extremity secured to it a type *l* and at its upper end a smooth straight wire or bar *e*, surmounted by the key or finger-piece *d*.

n represents rollers, upon which is wound the ink-ribbon. The said ink-ribbon passes across the lower extremity of the collar *h* and is constantly between the type and the paper to be written upon.

o is the upper part of the frame B.

The conduit-tubes *f* are secured at their upper extremities to the planes or steps *j*, and are bent in such manner as all to pass through the frame-work B at *o* within the circumference of a circle, as shown in Fig. 3, and their lower extremities extend into the body of the funnel *g*, as shown in Fig. 2. The plunger *m* being constructed of elastic wire and in the form of a spiral is very elastic and readily takes the form of the conduit-tube *f*, through which it is thrust, and, being closely wound, it preserves its stiffness. The lower extremity of the plunger *m* having emerged from the lower extremity of the conduit-tube *f*, upon striking the inner inclined surface of the funnel *g* readily changes direction and, continuing, is conducted to and thrust into the vertical collar *h*, which vertical collar secures a vertical motion of the

type and consequently a square and even pressure of the type upon the ink-ribbon through which the impression is made upon the paper.

5 The above-described operation is brought about by a gentle continued downward pressure on the key *d*, and upon removing the pressure the spiral spring which is about *e* and which was contracted by said pressure
10 expands and raises the key, plunger, and type to its former position ready for use. The paper is held between the rollers *k*, which secure correct alignment, and the lateral motion is brought about by the mechanical contrivance *i*. The inner diameter of the vertical collar *h* is the same as the inner diameter of the conduit-tubes *f*, for which reason it is impossible to write more than one character at the same time, and should two or more
15 20 keys be pressed simultaneously through accident no impression would be made upon the paper, for which reason errors may be avoided.

Having thus explained and described our

invention, what we claim, and desire to secure by Letters Patent, is—

1. An elastic metallic plunger, constructed of flat elastic piano-wire or other suitable material made in the form of a close-wound spiral spring convenient for working within a metallic conduit-tube, and being tipped at one end with a hard metallic type and the other arranged conveniently to receive pressure from the hand. 25

2. The combination of an elastic spiral type-tipped plunger, a curved conduit to guide the same, and a funnel or guide, substantially as described. 35

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, on this 8th day of February, A. D. 1889. 40

LEWIS T. FOSS.

THOMAS K. KEITH.

Witnesses:

WILLIAM J. WALLACE,

JAS. L. FAIRBANKS.