

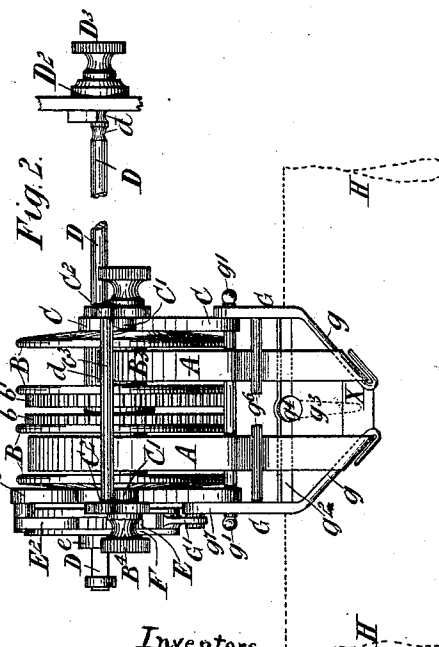
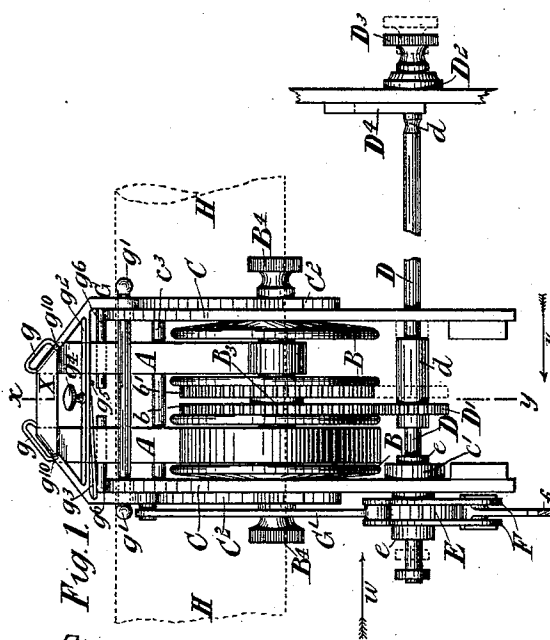
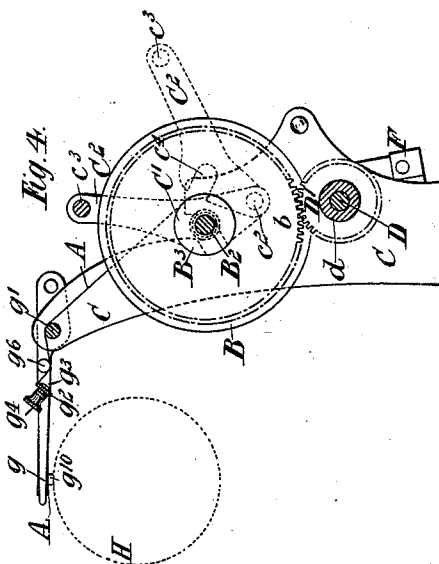
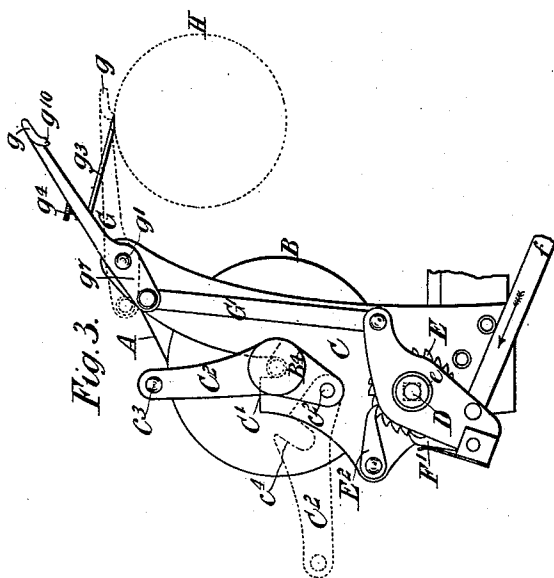
(No Model.)

2 Sheets—Sheet 1.

E. S. HIGGINS & H. C. JENKINS.
INKING DEVICE FOR TYPE WRITING MACHINES.

No. 472,999.

Patented Apr. 19, 1892.



Attest
H. S. McArthur
Allen H. Dobson

Inventors
E. S. Higgins
H. C. Jenkins
Fasten Freeman
attys

UNITED STATES PATENT OFFICE.

EDWARD SMITH HIGGINS AND HENRY CHARLES JENKINS, OF LONDON,
ENGLAND.

INKING DEVICE FOR TYPE-WRITING MACHINES.

SPECIFICATION forming part of Letters Patent No. 472,999, dated April 19, 1892.

Application filed October 16, 1891. Serial No. 408,932. (No model.) Patented in England November 1, 1889, No. 17,351, and in Germany May 10, 1890, No. 56,637.

To all whom it may concern:

Be it known that we, EDWARD SMITH HIGGINS and HENRY CHARLES JENKINS, both subjects of the Queen of England, residing at London, England, have invented certain new and useful Improvements in or Relating to Inking Devices for Type-Writing Machines, (for which we have obtained Letters Patent in Great Britain, No. 17,351, dated November 1, 1889, and in Germany, No. 56,637, dated May 10, 1890,) of which the following is a specification.

This invention may be described as follows: The ink is supplied, as is commonly the case in type-writers, upon a ribbon, which may be wound upon two spools. Each of these spools is provided with a toothed wheel and they are preferably arranged side by side and centered upon the same axial line. With either of these wheels gears a driving-wheel so arranged that it can either slide upon the arbor which carries it, so as to engage alternately with either of the toothed wheels, or, being fast upon its arbor, the said arbor may be moved longitudinally, so as to cause the wheel to gear with either of the spool-wheels, as may be required. The movement may be imparted to the driving-wheel by a ratchet-wheel and pawl operated from any suitable part of the machine, which will impart the necessary intermittent movement to the spools and ribbon. The ratchet-wheel is preferably provided with a fixed pawl or detent to prevent return motion. Any suitable means may be employed for retaining the driving-wheel in gear with the respective spool-wheel with which it is engaged. For example, where the arbor is adapted to be moved two grooves may be formed in it, and a catch, preferably a spring-catch, adapted to engage with either of these grooves. Where the wheel slides upon the arbor, similar means may be employed to engage with the boss of the wheel, or a suitable clutch-lever may be used to move and retain the wheel in its proper position. Other means, however, may be used for this purpose. The ribbon passing from the first of these spools extends to a pivoted device passing around a bent wire or portion of the device in such manner that the

central portion of the ribbon, which is adapted to lie flat upon the paper as the blow is delivered, will be underneath the type-head. After passing this pivoted device, the other end of the ribbon passes to the second spool on which it is wound, so that the ribbon may be drawn backward and forward according to whichever spool is operated.

The pivoted device above referred to consists, preferably, of a plate, platform, or frame pivoted in the frame which carries the spools and other mechanism and so provided with a spring or springs and heel or equivalent that it normally remains in what we will call the "raised" position. The plate or platform is provided with a notch or recess, with which the type-head or a portion of the type-bar engages as the blow is delivered, the result being that as the type-bar descends it strikes and moves toward the paper the pivoted device, the type-face, as already explained, falling upon the straight portion of the ribbon. The type-bar being pivoted at a much greater distance from the point at which the imprint is made than is the pivoted device, it naturally follows that a forward movement of the pivoted device relatively to the type-head takes place, with the result that as the device is depressed the plate extends forward and the notch engages with the type-head or type-bar, thus affording the locking device for the type-head.

If desired, the pivoted device above described may be locked down in its working position.

The spools are removable, any suitable means of securing them in the frame being provided.

In the accompanying drawings, Figures 1 and 2 are respectively a front elevation and a plan of an inking device constructed according to this invention and of which Fig. 3 is a side elevation observed in the direction of the arrow *w*, Fig. 1; and Fig. 4, a vertical section on the line *x y* of Fig. 1, looking in the direction of the arrow *z*. Fig. 5 is a section showing the manner of operating the ratchet-wheel and pinion-shaft. Fig. 6 is a section through the ribbon-spools, showing the ar-

15 rangement on their shaft. Fig. 7 is a plan of the pivoted plate or platform whereby the locking of the type-head is effected; and Fig. 8 is a side view of such plate or platform and a type-lever, showing the manner in which the type-head is locked.

Like letters indicate like parts throughout the drawings.

10 A is the ink-ribbon, which is wound on the two spools B, each free to rotate on a sleeve B', through both of which passes the shaft B². The spools may advantageously be formed of vulcanite or equivalent material and have the sleeves B', which may be of brass, vulcanized in them.

15 B³ are collars or flanges formed one on each of the sleeves B' for maintaining the spool B at a proper distance apart. On each reduced and screwed end of the shaft is secured a 20 milled head B⁴, and between the inner face of each such head and the adjacent end of each of the sleeves B' is a short sleeve B⁵ of smaller external diameter than the sleeves B'. Each spool is formed with a gear-wheel *b b'*, 25 with either of which, as hereinafter described, the pinion D' may be engaged, according onto which of the spools it is required to wind the ribbon A. The spool-shaft B² is supported by the sleeves B⁵ on the shaft, resting in 30 open bearings or recesses C' in the stationary frame C, as shown in full lines in Fig. 2 and in dotted lines in Figs. 3 and 4. The frame C is secured to a suitable fixed part of the type-writing machine, to which the inking 35 device is applied.

C² are two hooks pivoted at *c*² to the frame C and coupled together by the rod *c*³, so that they will always move together. The recesses *c*⁴ of hooks C² are adapted to fit over the 40 sleeves B⁵ of the shaft B² when the hooks are in the position represented in full lines in Figs. 3 and 4, so as to retain the spools B in their proper working position; but when it is desired to remove the spools from the machine, in order to supply them with new ribbon or for other purposes, this may be effected 45 by moving the hooks C² into the position in which they are represented in dotted lines in Figs. 3 and 4, when the said spools, together with their shaft B², may be lifted out of the 50 bearings C'. Lateral displacement of the spools B may be prevented by the combined thickness of the frame C and hook C² at each side, being sufficient to about fill in the space between the opposing faces of one of the heads B⁴ and the spool adjacent thereto.

D is a shaft supported and free to be rotated and moved longitudinally in bearings formed in the frame C.

60 D' is a pinion rigidly secured on the shaft D and capable of being engaged with either the wheel *b* or *b'* when the shaft D is moved longitudinally for that purpose. This shaft, which with its direct connections is shown in 65 detail in Fig. 5, extends beyond the frame C and at one end is additionally supported in a

bearing D², which may form part of the framing of the type-writing machine, and beyond this bearing the projecting end of the shaft D is provided with a milled head or equivalent D³. At the inner side of the bearing D² is provided a spring-controlled catch D⁴, which is pressed into engagement with one or other of the two circular-faced annular recesses *d* 70 in shaft D, according to whether the pinion is in gear with *b* or *b'*, but not so as to prevent the shaft being freely rotated, but only with sufficient pressure to prevent any accidental longitudinal motion of the shaft. The catch D⁴ yields when the operator applies 80 force for moving the shaft D longitudinally in one direction or the other. The inner side of the head D³, by abutting against the adjacent side of bearing D², serves to limit the longitudinal movement of the shaft D when 85 moved, so as to engage the pinion D' with *b*, and the end of the elongated boss *d*² of the pinion D', by abutting against the inner adjacent face of the frame C, as shown in Fig. 5, may serve to limit the movement of the 90 shaft D when it is moved for gearing the pinion D' with *b'*.

E is a ratchet-wheel, a reduced portion of whose boss *e* is journaled in the adjacent side of the frame C, so that it may be freely rotated 95 therein; but the shoulder of the boss on the one side and a collar or equivalent *e'*, secured on the boss on the other side of said part of frame, prevent it from being moved longitudinally therein. 100

The part of the shaft D which passes through the boss *e* may be square, as indicated in the drawings, or it may be provided with a feather or other means which will not admit of it rotating in the boss *e*, but will allow said shaft 105 to slide longitudinally through the boss.

If desired, the pinion D' may be mounted on the shaft D, so that it may be moved longitudinally but not rotated thereon, in which case the shaft D need not be longitudinally 110 movable, as it will only be necessary to move the pinion into gear with *b* or *b'* to change the direction of the ribbon's travel.

F is a rocking frame, which may be oscillated on the boss *e* by means of a pivoted link 115 *f*, attached to any such suitable part of the type-writing machine as will at each operation of any type-operating key-lever make a backward and forward or reciprocating action. The frame F carries a spring-controlled pawl 120 F', Fig. 3, which at each oscillation of the frame moves the ratchet E onward to the extent of one or more teeth, and a gravity or spring pawl or detent E², pivoted to the frame C, prevents any retrograde movement of 125 shaft D.

G is a frame, which consists, partly, of two angularly-projecting bent wires or equivalent 130 *g*, over which the ribbon A is passed in the manner hereinafter described.

We prefer to arrange the frame G so that it may be positively operated (lowered and

raised) by each depression of a type-lever, and for this purpose we may connect its backward-extending arm g^7 by a link G' to the before-described rocking frame F , as shown in Figs. 1 and 3.

On a transverse bar g^2 of the reciprocating frame G is pivoted a finger or index g^3 , which may be moved by a milled head g^4 or equivalent to a position in which it will lie approximately beneath the bar g^2 , as in Figs. 1 and 4, when not required for use, or to a position in which it will project forward approximately at right angles to the bar g^2 and downward from the frame G , as in Figs. 2 and 3, so that when the frame G is elevated, as in full lines in Fig. 3, the end of the said finger when in its last-described position will indicate on the paper on the roller (indicated in dotted lines at H) the precise spot at which the next letter will be struck or printed, while the frame G and ribbon A , being then in their raised position, will enable the paper to be adjusted with precision.

g^5 , Fig. 1, is one of two stops (the other of which may be constituted by the side of the reciprocating frame G) which may be provided for preventing the finger g^3 being moved beyond its necessary positions.

The free ends of the wires g are doubled back, so as to form hooks for preventing the ribbon A from slipping out of position, and the extreme ends g^{10} are bent down so as to rest on the paper-roller when the frame G is in its lowered position, as shown in dotted lines in Fig. 3 and in full lines in Fig. 4.

g^6 are two pins projecting inward from the sides of the frame G for applying tension to the ribbon A . In threading the ribbon through the inking device it may be passed from one of the spools B over the pivot-rod g' , under one of the tension-pins g^6 , over bar g^2 , and forward over one of the wires g , from whose under side it is passed sideways across the operating-field X to the other wire g , from which, in the reverse order of bar g^2 , second tension-pin g^6 , and pivot-rod g' , it is passed to the second of the spools B , to both of which the ribbon may be connected in any desired manner.

Figs. 7 and 8 represent the manner of constructing the frame G when it is to be used for locking the type-head. In these figures g^8 is a plate or platform secured in any convenient manner to the frame G , so that it will project forward over the operating field X of the ribbon A , as shown in Fig. 7.

g^9 is a preferably wedge-shaped notch in the front edge of the plate g^8 for receiving a projection j' , Fig. 8, formed on each of the type-heads j or upon each of the type-levers J . The pivot j^2 of the type-lever is at a distance from that of the reciprocating frame G , so that when both the type-lever and the frame are simultaneously moved downward the paths of the wedge j' and notch g^9 , as indicated in dotted lines in Fig. 8, will converge,

so that the wedge when at the end of its stroke will be received in the notch g^9 , as shown in full lines in Fig. 8.

The operation of the before-described inking device is as follows: When the operator depresses one of the key-levers, the rocking frame F , through the link f , is moved, so that the pawl F' will slip over one or more teeth of the ratchet-wheel E , and the detent E^2 will meanwhile prevent the said ratchet-wheel from moving backward and will retain the ribbon A in the position to which it was last moved, and through the link G' the front end of the reciprocating frame G will be lowered onto the paper, as shown in dotted lines in Fig. 3, and so that when the simultaneously-descending type-head j reaches the ribbon the said head will strike upon it and cause the type-letter to be imprinted on the paper below said ribbon, as will be well understood. When the key-lever is released by the operator, the paper-carriage will move onward in the usual manner, and in returning to its normal position the said key-lever, either directly or indirectly, will push the link f in the direction of the arrow, Fig. 3, and thus move the rocking frame F on its pivot, so that the pawl F' will engage the ratchet-wheel E and move it and the shaft D and pinion D' around, and consequently the said pinion, being in gear with one of the wheels b b' , this action will partly rotate one of the spools B and wind onto it a portion of the ribbon A and draw a corresponding length of ribbon off the other spool. Simultaneously with this operation the rocking frame F , through the link G' , will raise the operative end of the ribbon-frame G from off the paper, so that the operator will have an uninterrupted view of the printing last effected. The exact spot at which the next letter will be printed on the paper may be ascertained by turning the finger or index g^3 from the position shown in Fig. 1 to that shown in Figs. 2 and 3, so that the indicating end of said finger will point directly to or touch the spot whereon the next operated type-head will strike. This will be found specially advantageous for making corrections.

Although that which is hereinbefore described is the preferred means of causing the ink-ribbon A to approach and recede from the roller H , we wish it understood that we may use other means of operating it without departing from the spirit of the invention.

We claim—

1. In a type-writer, the combination, with the spools arranged side by side upon a common axis and the ribbon and ribbon-feeding devices, of the swinging frame G , having the angular inwardly-converging ribbon-guides g , and connections for swinging said frame to carry the ribbon to and from the printing-point when the key-lever is operated, substantially as described.

2. In a type-writer, the combination, with the ribbon and the swinging frame arranged

to carry the ribbon to and from the printing-point, of the pointer pivoted to the swinging frame and having its free end adapted to swing to and from the printing-point, substantially as described.

3. In a type-writer, the combination, with the swinging ribbon-supporting frame, of the pointer pivoted at one end to said frame, and stops to limit the motion of the pointer, substantially as described.

4. In a type-writer, the combination of the swinging ribbon-supporting frame, the type-guide connected to said frame, and means for swinging the frame to bring the ribbon and guide to the printing-point when a key-lever is operated, substantially as described.

5. In a type-writer, the combination, with the spools arranged side by side and mounted in a fixed frame, of the swinging ribbon-supporting frame pivoted to said fixed frame, a

type-guide upon said swinging frame, and a pointer arranged to swing to and from the printing-point, substantially as described.

6. In a type-writer, the combination, with the spools arranged side by side in a fixed frame, of a swinging frame connected to the fixed frame by a rod g' and having angular inwardly-converging arms bent at their outer ends to form ribbon-guides, and a ribbon arranged to pass over the rod g' and through said guides, substantially as described.

In testimony whereof we have hereto set our hands in the presence of the two subscribing witnesses.

EDWARD SMITH HIGGINS.
HENRY CHARLES JENKINS.

Witnesses:

ALFRED J. BOULT,
HARRY B. BRIDGE