

No. 876,454.

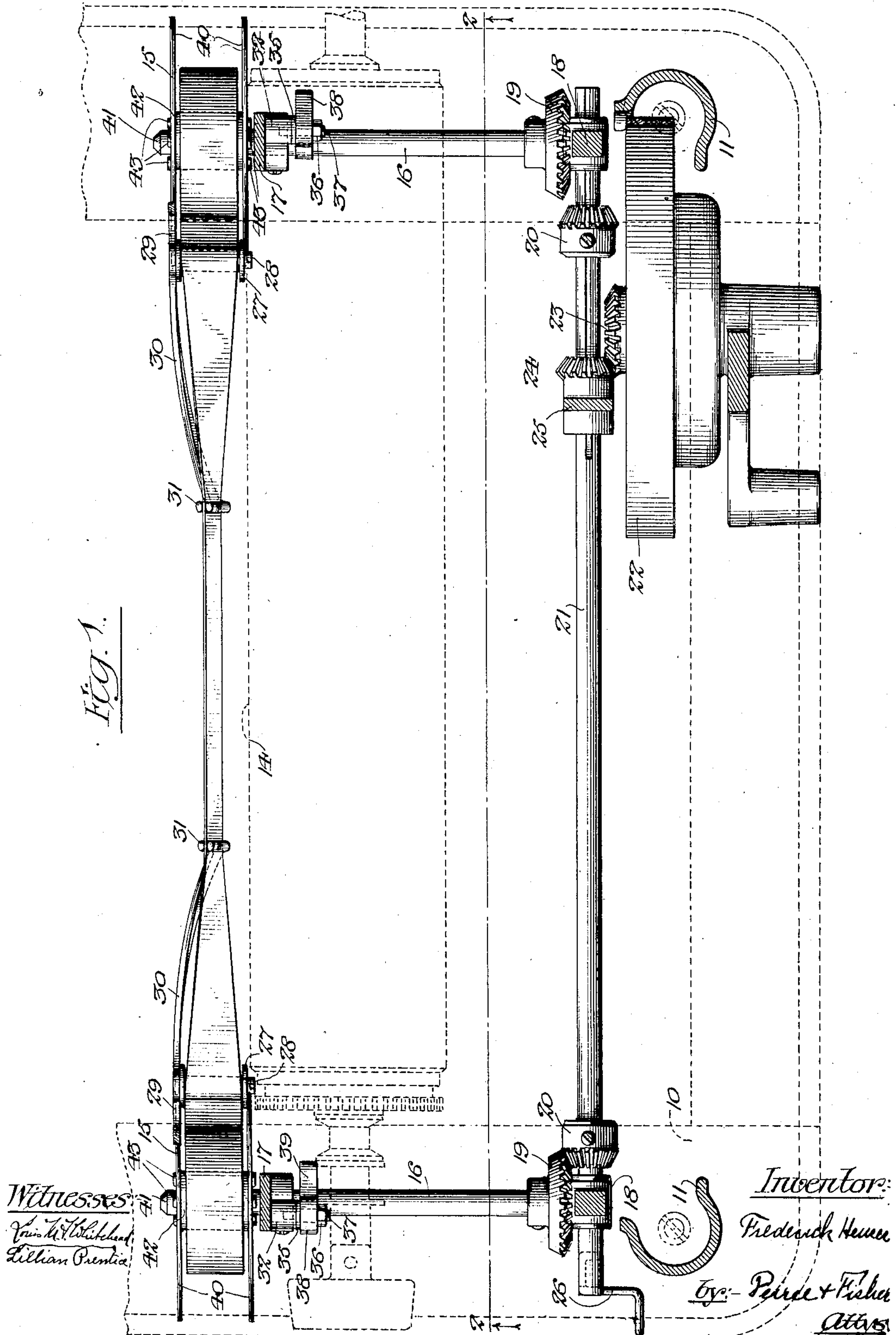
PATENTED JAN. 14, 1908.

F. HEUSER.

RIBBON MECHANISM FOR TYPE WRITING MACHINES.

APPLICATION FILED JAN. 5, 1906.

3 SHEETS—SHEET 1.



No. 876,454.

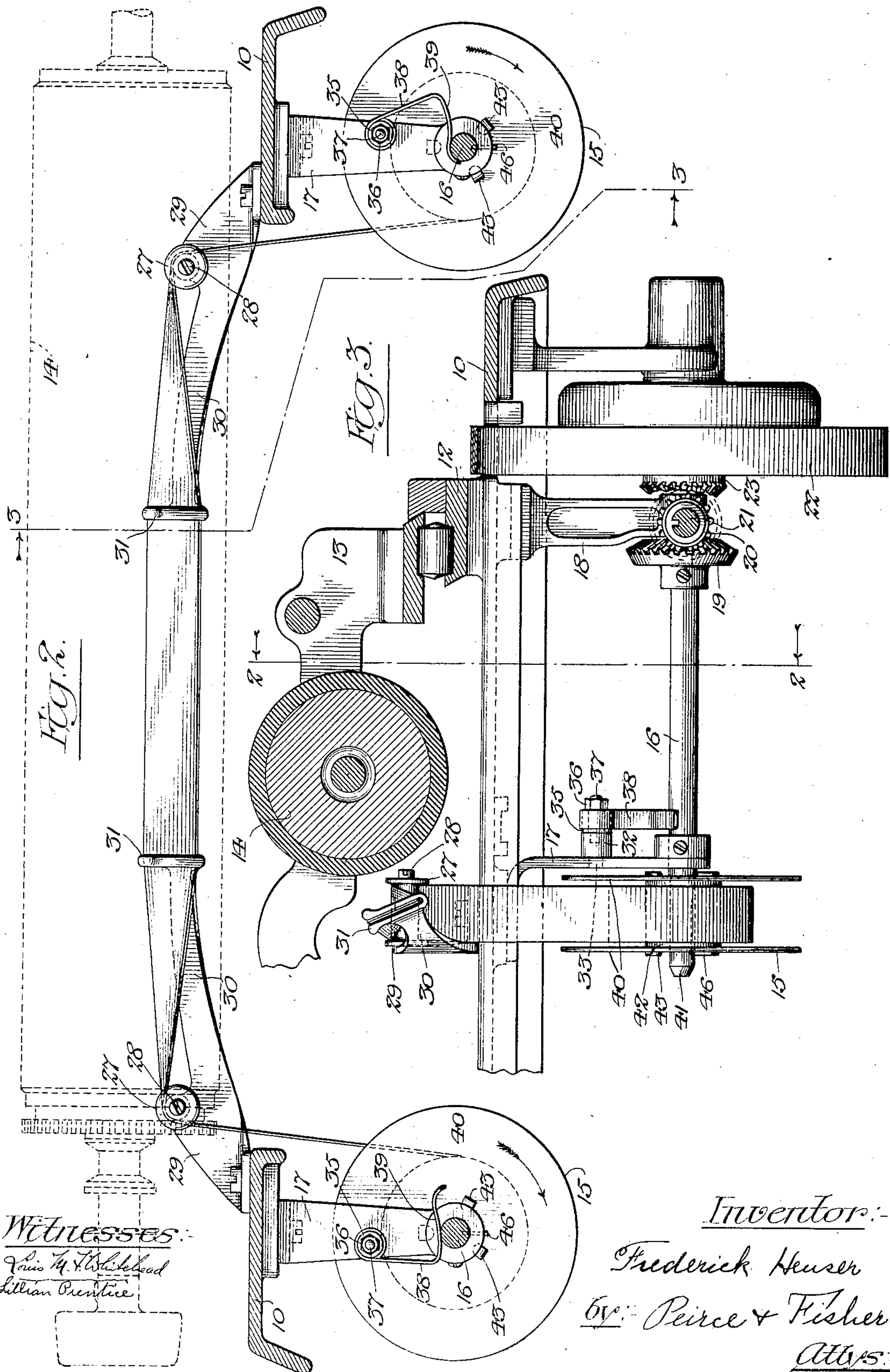
PATENTED JAN. 14, 1908.

F. HEUSER.

RIBBON MECHANISM FOR TYPE WRITING MACHINES.

APPLICATION FILED JAN. 5, 1906.

3 SHEETS—SHEET 2.



Witnesses:

John H. Whithead
William Brewster

Inventor:-

Frederick Heuser

By: Peirce & Fisher

Attys.

No. 876,454.

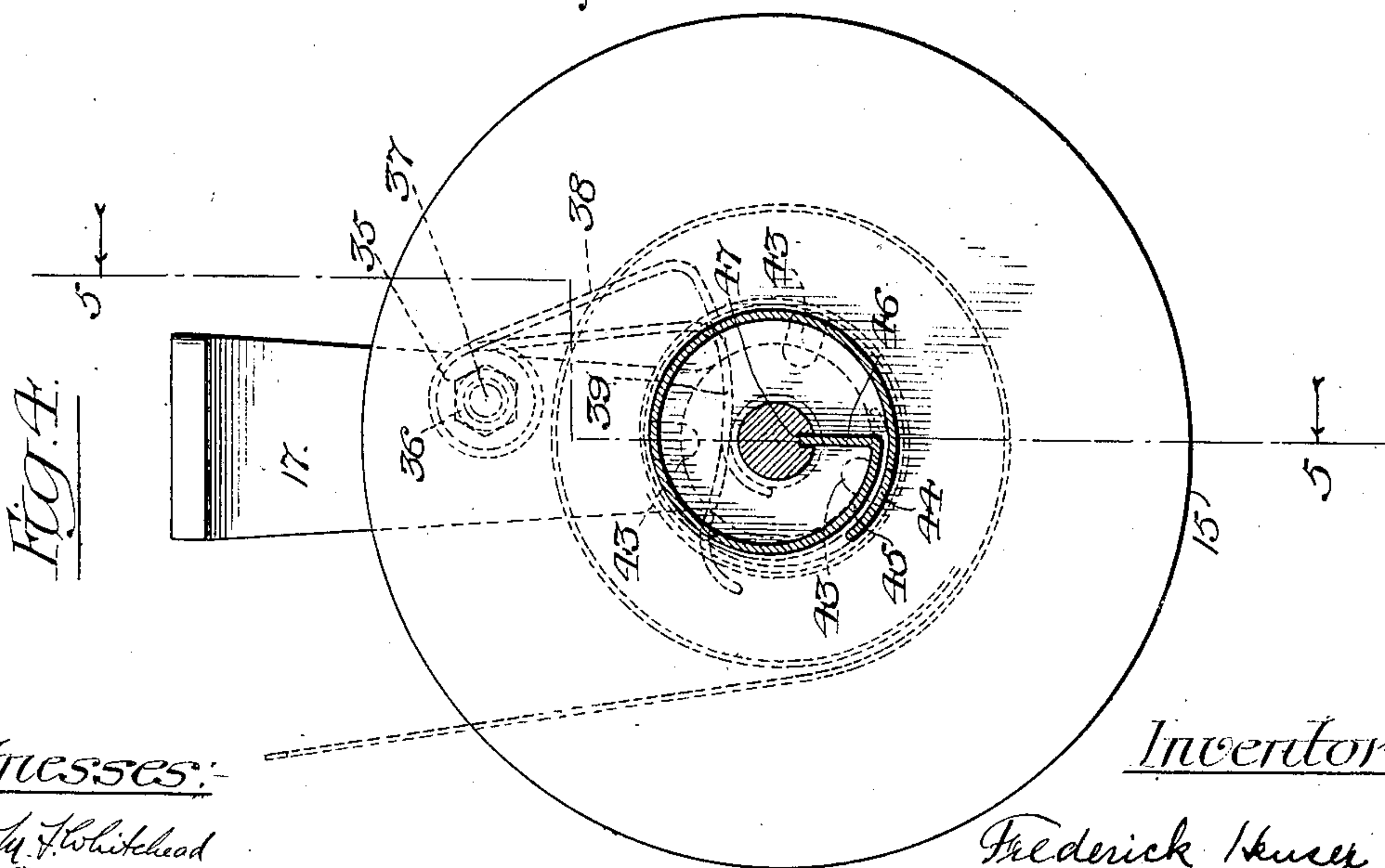
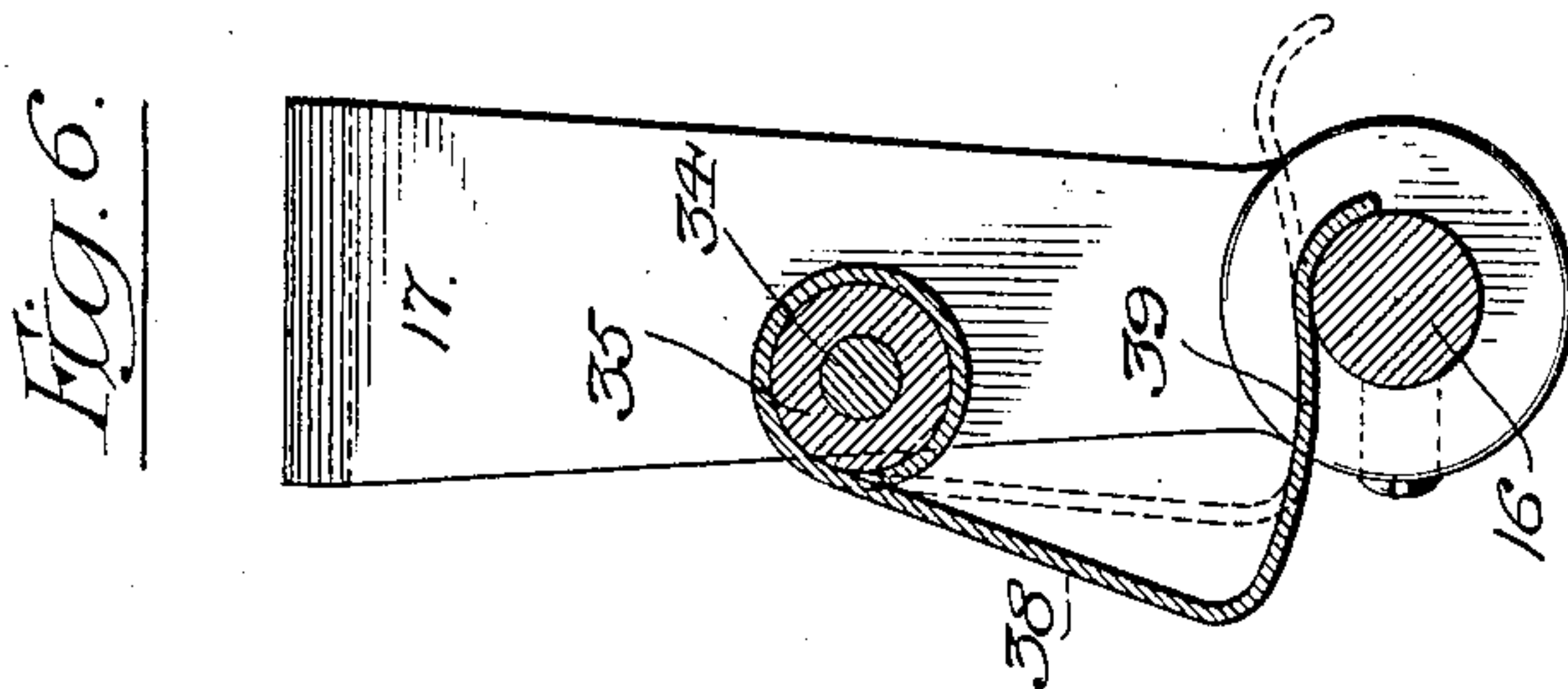
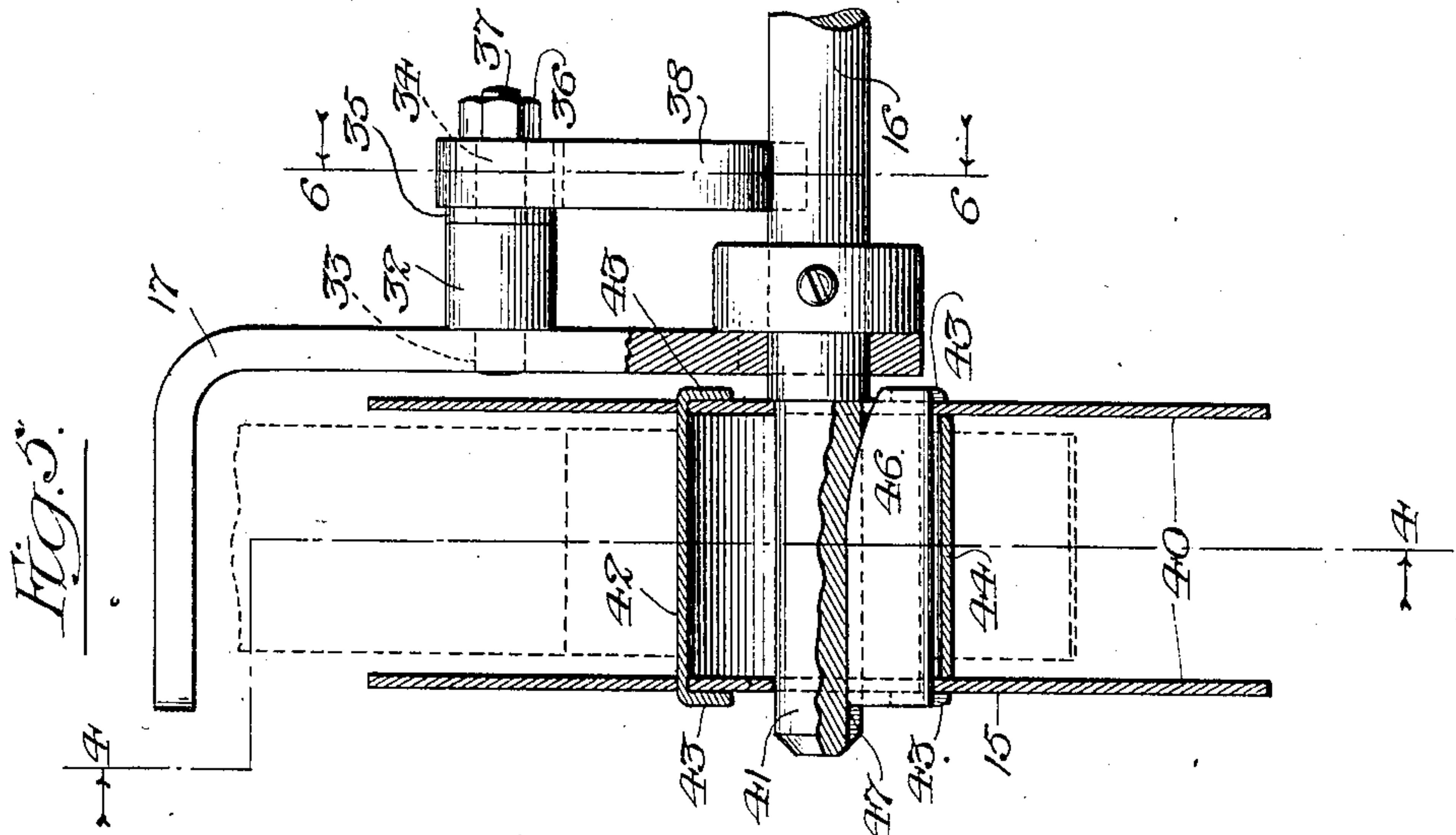
F. HEUSER.

PATENTED JAN. 14, 1908.

RIBBON MECHANISM FOR TYPE WRITING MACHINES.

APPLICATION FILED JAN. 5, 1906.

3 SHEETS—SHEET 3.



Witnesses:

Louis M. Whithead
Lillian Prentice

Inventor:

Frederick Heuser

by: Peirce & Fisher
Attys.

UNITED STATES PATENT OFFICE.

FREDERICK HEUSER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE ARITHMOGRAPH COMPANY,
OF CHICAGO, ILLINOIS, A CORPORATION.

RIBBON MECHANISM FOR TYPE-WRITING MACHINES.

No. 876,454.

Specification of Letters Patent.

Patented Jan. 14, 1908.

Application filed January 5, 1906. Serial No. 294,710.

To all whom it may concern:

Be it known that I, FREDERICK HEUSER, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Ribbon Mechanism for Type-Writing Machines, of which the following is declared to be a full, clear, and exact description.

The invention relates to ribbon mechanism for typewriting machines and seeks to provide an improved form of spool with which the ribbon may be readily connected and disconnected.

A further object of the invention is to provide, in connection with the mechanism for driving either of the ribbon spools, a simple form of braking device that will be automatically applied to the loose spool so that all slack in the ribbon will be taken up.

With these objects in view the invention consists in the features of construction, combinations and arrangements of parts hereinafter set forth, illustrated in the accompanying drawings and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a plan view of the improved ribbon mechanism with parts of the machine shown in section and in dotted lines. Fig. 2 is a view in section on lines 2—2 of Figs. 1 and 3. Fig. 3 is a section on line 3—3 of Fig. 2. Fig. 4 is a sectional view of the improved ribbon spool taken on line 4—4 of Fig. 5. Fig. 5 is a sectional view of the spool taken on line 5—5 of Fig. 4. Fig. 6 is a detail section on line 6—6 of Fig. 5.

While the improved ribbon mechanism may be applied to many styles of typewriters, it is particularly applicable and is shown as applied to the form of front strike typewriter set forth in the application of C. N. Fay, Serial No. 250,944, filed March 20, 1905, in which the type are arranged to strike the front of the platen at a point below the center and in which a portion of the ribbon is held in inclined position in front of and parallel to a tangent through the printing point. With this arrangement, the line of print is visible without necessitating the use of a ribbon shifter, as in most front strike typewriters.

The top plate 10 is mounted upon the

usual corner posts 11 and carries the rails 12 for the carriage 13. The platen 14 is journaled to the side bars of the carriage. For the sake of clearness, many of the parts thus far described are shown in dotted lines in Figs. 1 and 2.

The ribbon spools 15 are preferably arranged in vertical position below the top plate and slightly in advance of a vertical line tangent to the front of the platen. These spools are carried upon the forward end of horizontal shafts 16 that are journaled in brackets 17 and 18 fixed to and depending from the side portions of the top plate 10. At their rear ends the spool shafts 16 are provided with beveled gears 19 that are arranged to mesh with beveled pinions 20 upon the main drive shaft 21. This shaft is longitudinally shiftable through suitable bearings in the brackets 18 and the pinions 20 are so arranged that when one is in engagement with its corresponding gear 19, the other is out of engagement. The pinions 20 are also arranged to drive the corresponding spool shafts in opposite directions so that when the ribbon is unwound from one spool, its direction of travel may be reversed to unwind it from the other spool. The main shaft 21 is operated from the carriage driving drum 22 in the usual manner through the medium of the beveled gears 23 and 24. Gear 23 is connected to the inner face of the drum and gear 24 is mounted upon the shaft 21, but is suitably held against longitudinal movement therewith by a bracket 25 depending from the top plate of the machine. At one end the shaft 21 is provided with a handle 26 by which the ribbon may be wound by hand. Other mechanism may be employed for driving either of the ribbon spools without departure from the essentials of the invention.

The ribbon passes upwardly from the spools over a pair of horizontal guide rollers 27 that are mounted upon pins 28 fixed to brackets 29, that are mounted upon the side portions of the top plate 10. The brackets 29 are extended inwardly toward each other to form guide fingers 30, the inner ends of which are provided with U-shaped clips 31 which engage the portion of the ribbon between the guide spools 27 and twist the same into a plane parallel

to a tangent through the printing point. Other means may be employed for guiding the ribbon adjacent the printing point without departure from the scope of the invention.

To the inner face of each of the depending brackets 17 is fixed a stud 32 having on its forward end a reduced portion 33 by which it is secured to the bracket 17. At its rear end the stud 32 is provided with a reduced portion 34 upon which is mounted a collar 35 that is held in place thereon by a nut 36 mounted upon a still further reduced portion 37 of the stud. By this arrangement, the collars 35 are freely rotatable upon the reduced portions 34 of the studs 32.

To each of the collars 35 is fixed a braking device that is preferably in the form of a finger or strip 38 of spring metal, the upper end of which is bent around and secured to the collar 35. At their lower ends the brake fingers 38 are bent inwardly to form the offset curved portions 39 that engage or rest upon the spool shafts 16. As stated, these fingers are each bent inwardly so that they are oppositely disposed, as indicated in Fig. 2, and the curved portions 39 thereof are substantially concentric with the pivot studs 32, except that the distance between the pivots and the free ends of the curved portions 39 of the springs, when unconfined, is greater than the distance between the pivots and the outer ends of these curved portions. By this arrangement, when one of the spring fingers is in position indicated in full lines in Fig. 6, with its free end against the spool shaft, it will press upon the shaft whereas, when it is in the position indicated in dotted lines it will merely rest upon the shafts with little or no pressure. These springs are arranged to be shifted through their frictional engagement with the spool shafts and by the movement of such shafts from one to the other position so that they will be automatically thrown out of operation with the driven spool shaft and into operative relation with the loose shaft. In Fig. 1 the driving mechanism is shown in position to drive the left hand spool and shaft, while the spool and shaft at the right of the figures are loose or free from the driving mechanism. The direction of movement of the spools in this position of the driving mechanism is indicated by arrows in Fig. 2 and it is apparent that the rotation of the driven spool shaft 16 at the left will shift the brake finger inwardly into the position shown, so that it will bear with little or no pressure upon the shaft. But the loose shaft 16 at the right will move the spring finger outwardly into the position shown, so that it will press upon the shaft and act as a brake upon the loose spool to take up all slack and place a slight tension upon the

portion of the ribbon between the spools. When the direction of the movement of the spool shaft is reversed, the brake fingers will be automatically shifted by the change of movement of the spool shafts, so that the pressure on the driven shaft is diminished and that on the loose shaft increased. By this arrangement, the desired frictional or braking pressure is automatically placed upon the loose spool whether the ribbon is moved in one direction or the other. It should be noted that the spring fingers are pivoted to swing easily and freely upon the studs 32 so that they may be readily shifted by the movement of the spool shafts through the frictional engagement therewith. The ends of the curved portions 39 of the spring fingers are curved or bent downwardly so that they cannot be shifted by the movement of the loose spool shaft out of engagement therewith, and so that this curved portion will more snugly bear upon the loose spool shaft as indicated at the right in Fig. 2 and in full lines in Fig. 6.

It is obvious that the details set forth of this improved brake mechanism may be widely varied and that it may be applied to different spool mechanisms without departure from the essentials of the invention.

The improved spool construction comprises the circular ends or plates 40 that are preferably formed of sheet metal and provided with central openings adapted to fit over the forward reduced ends 41 of the spool shafts 16. The end plates are connected by the hub 42 that is formed of a cylindrical strip preferably of spring metal. The edges of this strip are provided with ears 43 that extend through openings in the end plates 40 and are bent over into engagement with the outer faces thereof to securely hold these plates against the ends of the hub.

The strip forming the hub 42 is preferably wound somewhat in spiral form, so that its end portions 44 and 45 overlap and are arranged to grip the end of the ribbon between them. One pair of the fastening ears 43, are secured to the outer end portion 44, so that it is fixed in position between the end plates 40 of the spool. The ears 43, however, that are nearest the inner end portion 45, are located (see Fig. 4) some distance from the end of the strip, so that the inner end portion 45 is free to spring outwardly to grip the end of the ribbon between it and the fixed end portion 44, or to yield inwardly to release the ribbon.

The inner end portion 45 is provided with an offset adapted to bear upon the spool shaft; so that it is pressed outwardly toward the fixed end portion 44 to grip the ribbon. This offset 46 is preferably formed by bending the extreme inner end of the metal strip from which the hub is formed inwardly in radial direction. The offset end portion as shown in Figs. 4 and 5 is adapted to engage a

key-way 47 in the reduced end 41 of the spool shaft, so that the spool is secured to the shaft to rotate therewith.

As shown in Figs. 3 and 5, the reduced forward ends 41 of the spool shafts 16 extend in front of the supporting brackets 17, so that the spools may readily be placed in position or removed from the shafts. The inner portion of the edge of offset 46 is curved or cam-shaped, as clearly shown in Fig. 5, so that it will readily engage the key-way 47 of the shaft. The inner end of the key-way is correspondingly shaped, so that when the spool is thrust into position on the shaft against the shoulder 48 thereof, the yielding inner end portion 45 of the hub will be pressed outwardly to firmly grip the end of the ribbon or the end of the strip to which the ribbon is attached. The ends of the offset 46 project through slots in the ends 40 of the spools so that it may be readily gripped when the spool is removed from the shaft to shift the yielding end portion 45 of the hub inwardly to insert the end of the ribbon or strip to which the ribbon is connected, or to release the ribbon that is already in place. The ribbon is thus readily connected and disconnected from the improved spool, and when the spool is in position the ribbon will be securely gripped and cannot be detached from the spool. The construction is simple and inexpensive and the offset end portion 46 of the hub forms a key to compel the spool to rotate with the shaft. It is obvious that numerous changes may be made in the details of structure set forth without departing from the essentials of the invention.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In ribbon mechanism for typewriting machines, the combination of the pair of ribbon spools, reversible mechanism for driving either of said spools and friction braking devices associated with said spools and arranged to be automatically thrown into operation with the loose spool and out of operation with the driven spool, substantially as described.

2. In ribbon mechanism for typewriting machines, the combination of the pair of ribbon spools, reversible mechanism for driving either of said spools and a pair of movable, spring brake fingers associated with said spools arranged to be automatically shifted by the movement of said spools into operative relation with the loose spool and out of operative relation with the driven spool, substantially as described.

3. In ribbon mechanism for typewriting machines, the combination with the ribbon spools, ribbon guides and spool shafts, and with mechanism for driving either of said shafts, of a pair of brake fingers respectively engaging said shafts, arranged to be shifted

by the reversal of said driving mechanism, to bear with increased tension on the loose shaft and with diminished tension on the driven shaft, substantially as described.

4. In ribbon mechanism for typewriting machines, the combination with the ribbon spools, ribbon guides and spool shafts, and with mechanism for driving either of said shafts, of a pair of freely pivoted spring brake fingers, having curved portions bearing on said shafts and arranged to be automatically shifted by their frictional engagement with said shafts to bear with increased tension the loose shaft and with diminished tension on the driven shaft, substantially as described.

5. In ribbon mechanism for typewriting machines, the combination with the ribbon spools, ribbon guides and spool shafts, and with mechanism for driving either of said shafts, of a pair of friction brake-fingers pivoted to swing freely and having offset curved portions respectively engaging said shafts and arranged to be automatically shifted by the reversal in movement of said shafts, and through their frictional engagement therewith to bear with increased pressure on the loose shaft and with diminished pressure on the driven shaft, said fingers having bent end portions to prevent the disengagement thereof from said shafts, substantially as described.

6. In ribbon mechanism for typewriting machines, the combination with the vertical ribbon spools and ribbon guides, horizontal shafts wherein the spools are mounted, and mechanism for driving either of said shafts, of studs fixed to the machine frame above said shafts, collars loosely pivoted on said studs, spring brake-fingers fixed to said collars and having curved portions respectively resting on said shafts and arranged to be shifted by the frictional engagement therewith to bear with increased pressure on the loose shaft and with diminished pressure on the driven shaft, substantially as described.

7. A typewriter ribbon spool comprising end portions and a connecting hub formed of a metal strip having overlapping ends in yielding engagement and arranged to receive the end of the ribbon between them and means for pressing said overlapping ends together to securely grip the ribbon, substantially as described.

8. A typewriter ribbon spool comprising end portions and a connecting hub formed of a substantially cylindrical strip of spring metal having overlapping end portions, one of which end portions is held in yielding engagement with the other and means for securely holding said end portions together to grip the end of the ribbon between them, substantially as described.

9. A typewriter ribbon spool comprising flat ends and a connecting hub formed of a substantially cylindrical strip of spring

metal, one of the end portions of which extends within and presses yieldingly toward the other end portion to hold the end of the ribbon, said yielding end portion having an offset arranged to engage the ribbon shaft, whereby it will be pressed outwardly when in operative position to securely grip the ribbon, substantially as described.

10. A typewriter ribbon spool comprising flat ends and a connecting hub formed of a substantially cylindrical strip of spring metal, one of the end portions of which extends within and presses yieldingly toward the other end portion to hold the end of the ribbon, said yielding end portion having a radially extending offset arranged to engage a key-way in the spool shaft, substantially as described.

11. A typewriter ribbon spool comprising flat ends and a connecting hub formed of a substantially cylindrical strip of spring metal, one of the end portions of which extends within and presses yieldingly toward the other end portion to hold the end of the ribbon, said yielding end portion having a radially extending offset arranged to engage a key-way in the spool shaft, said offset having end portions projecting through the ends of the spool, substantially as described.

12. A ribbon spool for typewriters comprising end plates and a connecting hub portion formed of a spring metal strip connected to said end plates throughout the greater por-

tion of its length, but having one end portion overlapping the other and movable or yielding to grip the end of the ribbon, substantially as described.

13. A ribbon spool for typewriters comprising end plates and a connecting hub portion formed of a spring metal strip connected to said end plates throughout the greater portion of its length by bent ears extending through openings therein, said hub having its inner end portion extending within the outer end portion and movable or yielding to grip the end of the ribbon and said yielding end portion having a radial offset arranged to engage the key-way of the spool shaft, substantially as described.

14. In typewriting machine, the combination with the spool shaft, of a ribbon spool freely removable over the end of said shaft and comprising end plates and a connecting hub formed of a spring metal strip having overlapping end portions to engage the end of the ribbon, the inner end portion being movable or yielding and having an offset arranged to engage the key-way of the shaft and arranged to be pressed outwardly when in position on the shaft to securely grip the ribbon, substantially as described.

FREDERICK HEUSER.

Witnesses:

LILLIAN PRENTICE,
KATHARINE GERLACH.