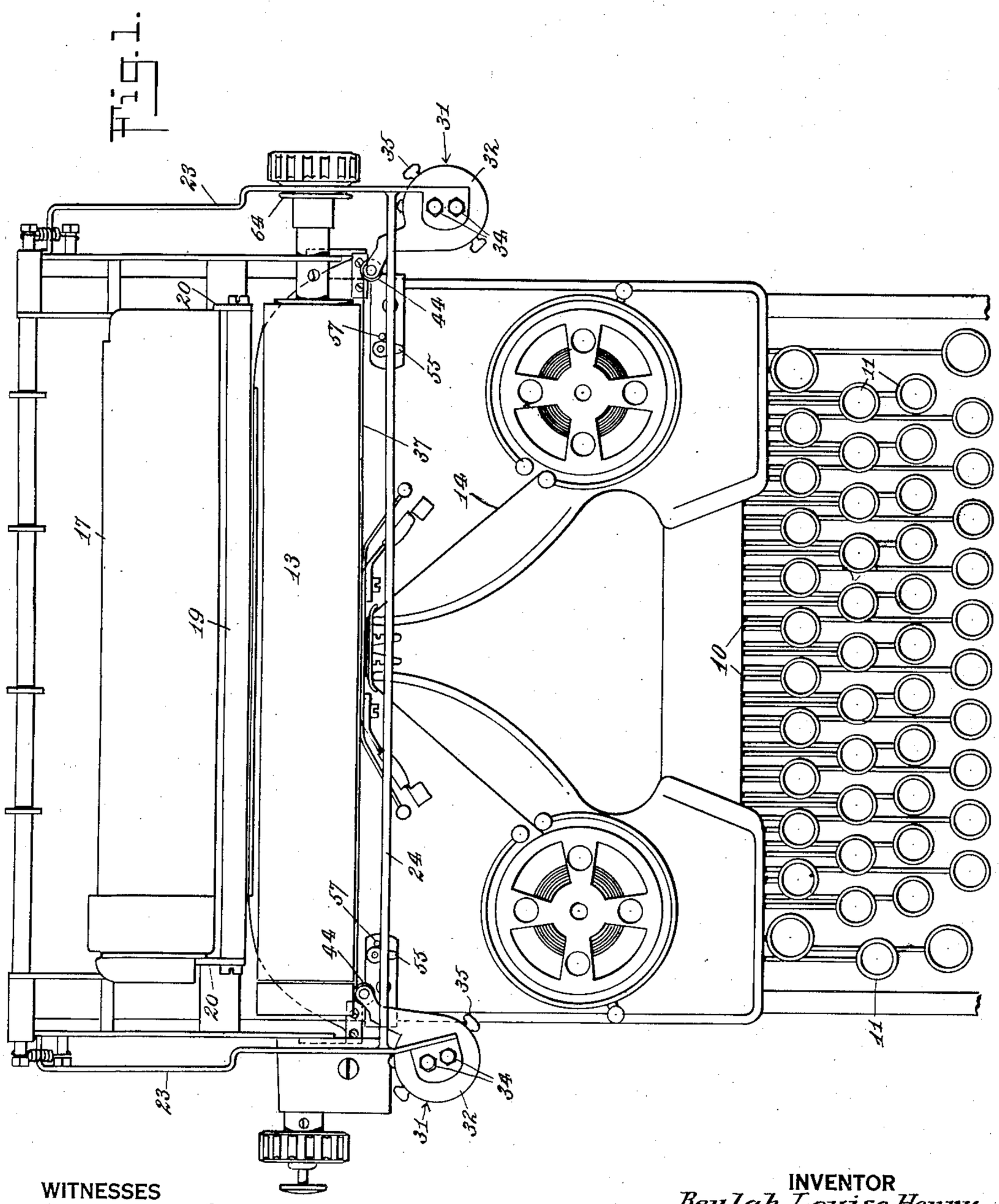
Aug. 30, 1932. B. L. HENRY 1,874,749

DUPLICATING ATTACHMENT FOR TYPEWRITERS

Filed Oct. 11, 1930 4 Sheets-Sheet 1

Fig. 1.



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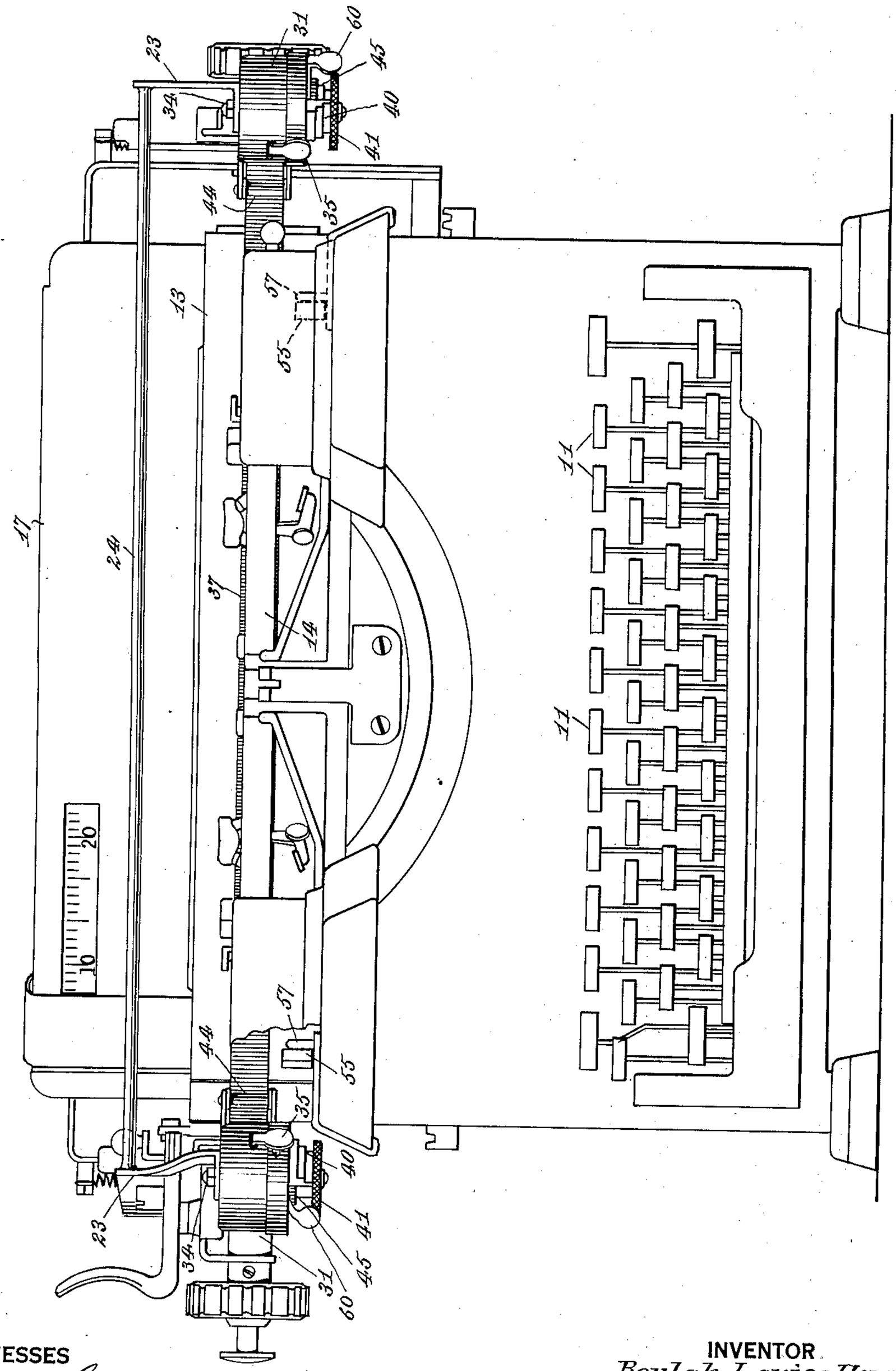
DUPLICATING ATTACHMENT FOR TYPEWRITERS

Filed Oct. 11, 1930 4 Sheets-Sheet 2

Fig. 2.



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DUPLICATING ATTACHMENT FOR TYPEWRITERS

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Fig. 3.

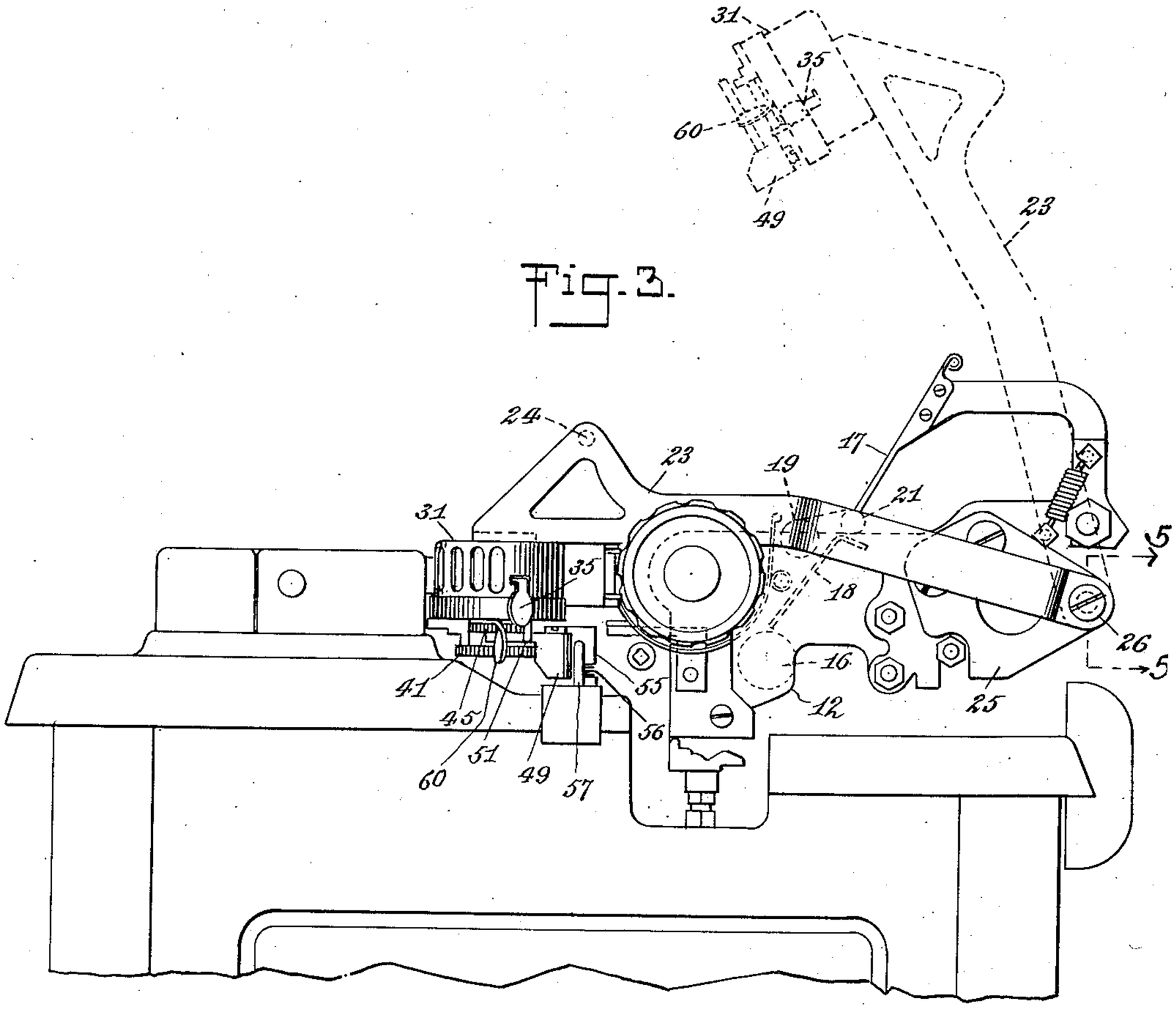


Fig. 4.

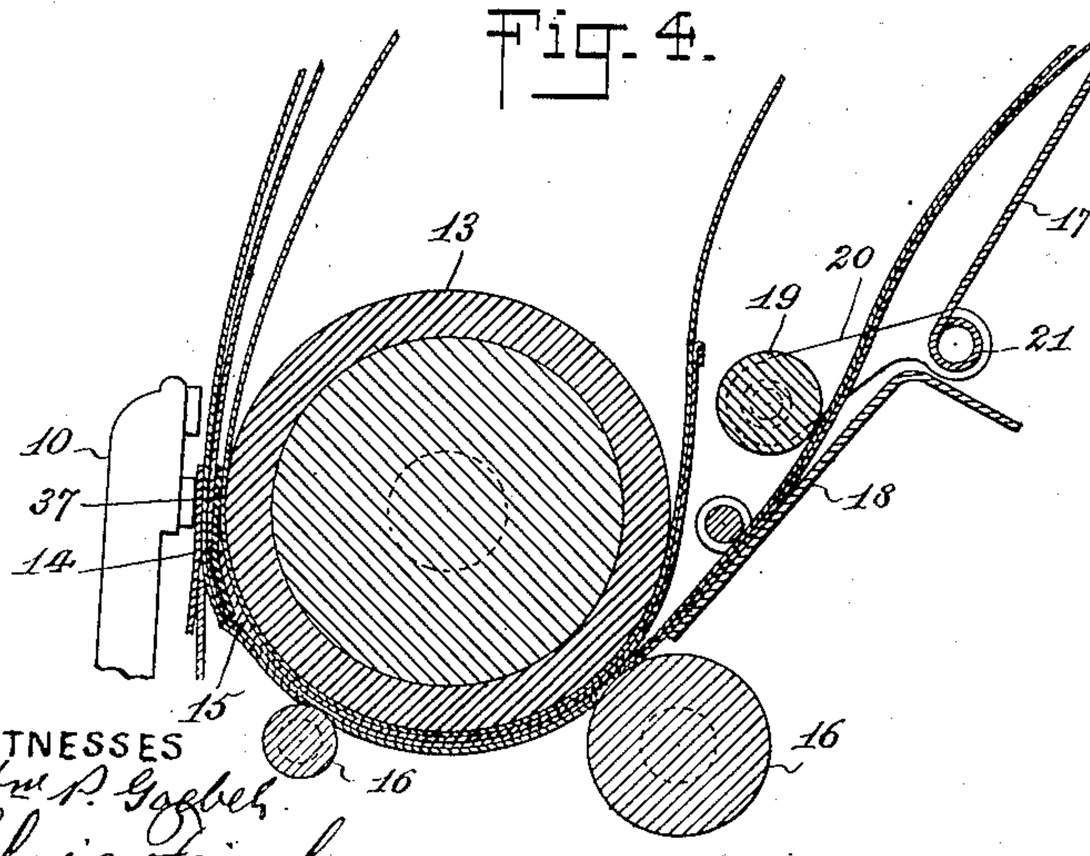


Fig. 5

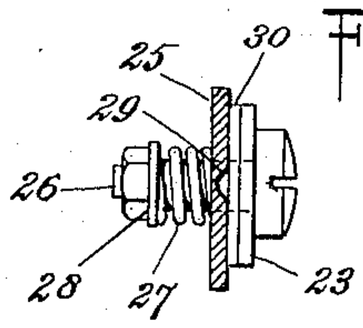
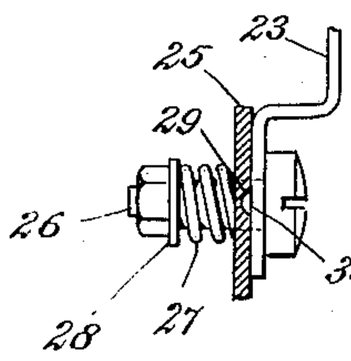


Fig. 6



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DUPLICATING ATTACHMENT FOR TYPEWRITERS

Filed Oct. 11, 1930 4 Sheets-Sheet 4

Fig. 7.

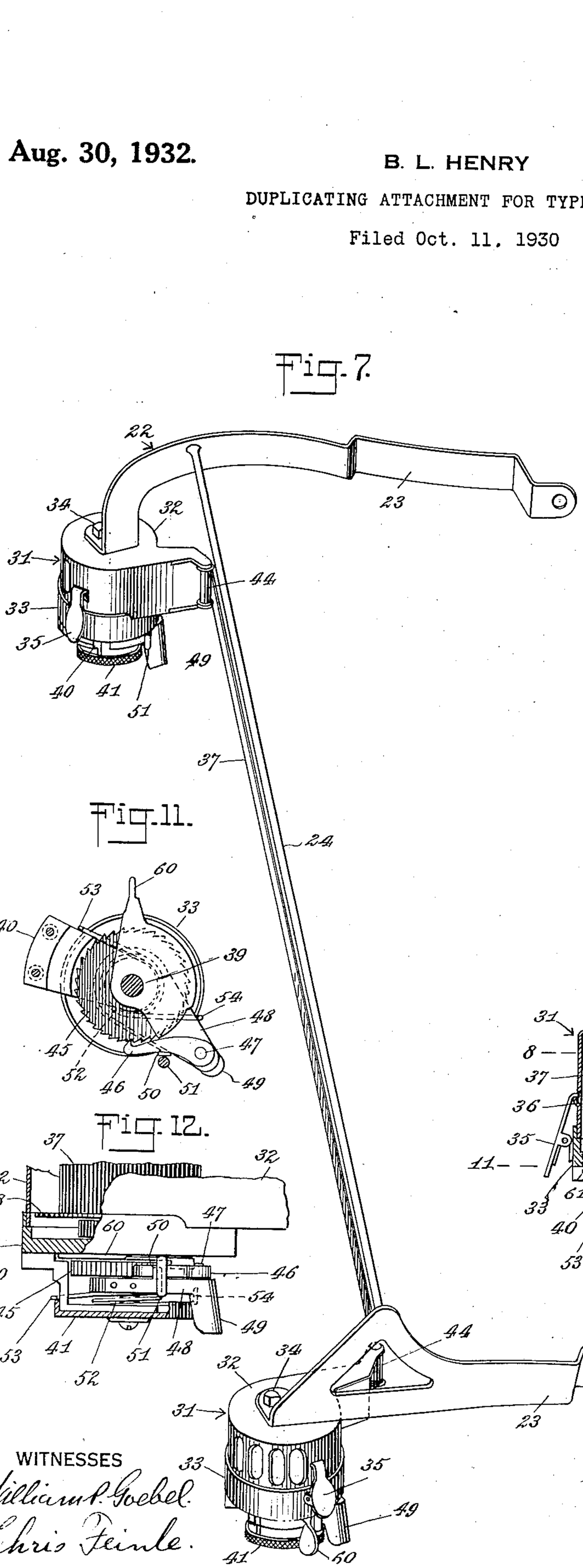

Fig. 8.

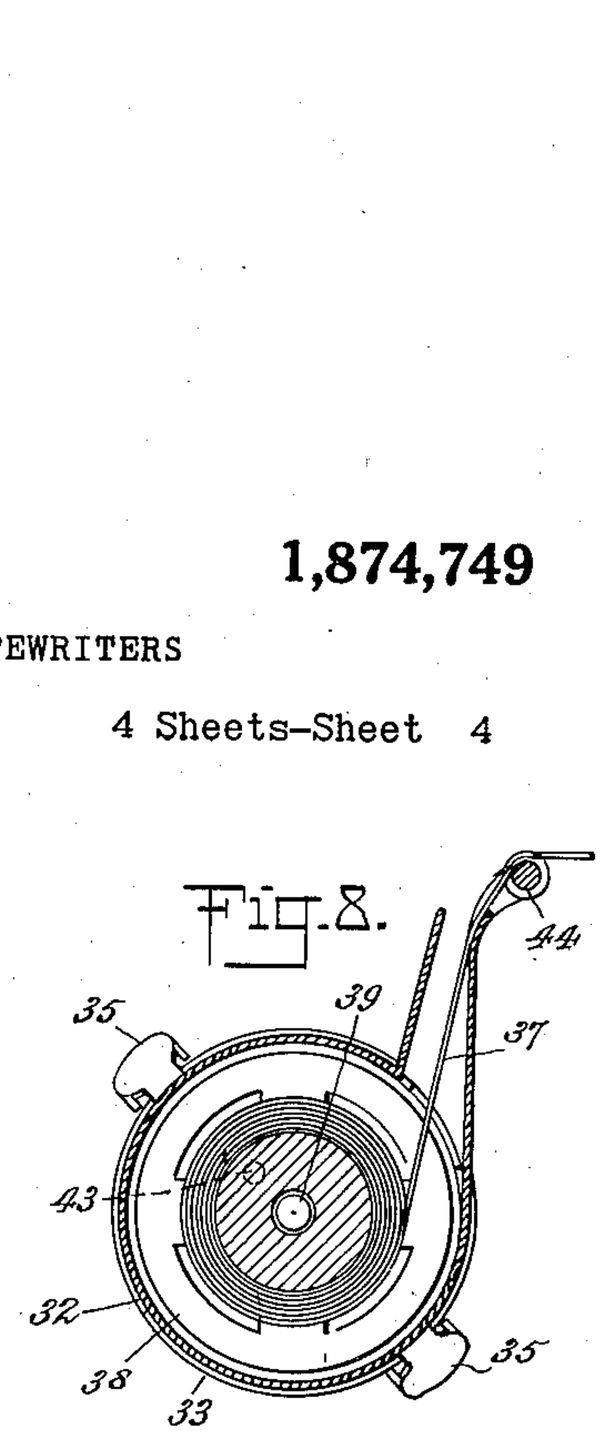

Fig. 9.

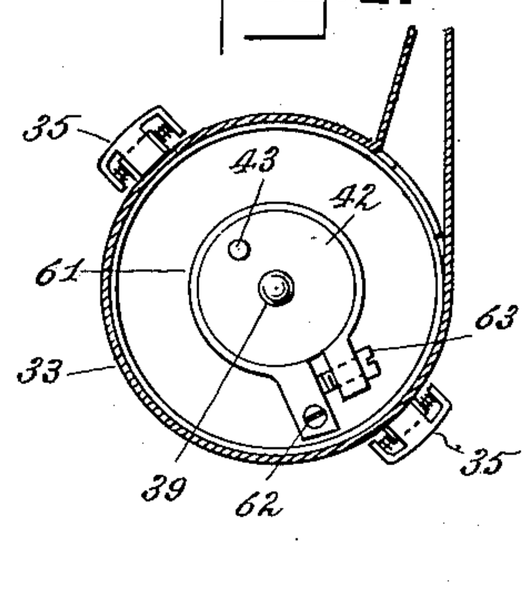

Fig. 11.

Fig. 10.

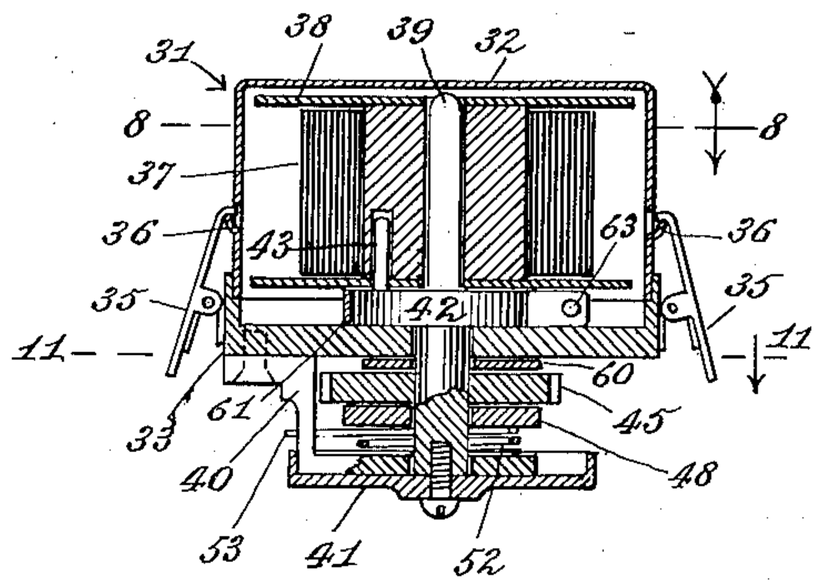

Fig. 12.

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UNITED STATES PATENT OFFICE

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DUPLICATING ATTACHMENT FOR TYPEWRITERS

Application filed October 11, 1930. Serial No. 488,074.

This invention relates to a duplicating attachment for typewriting machines which is designed and adapted to make two or more original typewritten copies simultaneously without the use of the usual carbon sheets.

One of the objects of the invention is to provide an improved form of attachment of the indicated character whereby an auxiliary or extra ink ribbon may be moved or swung into and out of registry with the typing or printing line of the platen longitudinally thereof for the stated purpose.

Another object of the invention is to provide an attachment of the indicated character embodying means of improved construction and operation for feeding an auxiliary or extra ink ribbon.

The invention further resides in the combinations, particular construction and operation of the parts hereinafter fully described and illustrated in the accompanying drawings, in which:

Figure 1 is a plan view of a typewriting machine with the attachment of the invention applied thereto in the writing position, the machine being shown conventionally.

Figure 2 is a front view.

Figure 3 is a side view of the upper part of the machine, the attachment being shown in the writing position in full lines and up out of the writing position in dotted lines.

Figure 4 is an enlarged transverse section showing the relation of the ink ribbons, three sheets of paper, the platen, paper guiding and feeding means, and illustrating the manner in which three original typewritten copies may be made simultaneously.

Figure 5 is a section on the line 5—5 of Fig. 3;

Figure 6 is a view similar to Fig. 5 but showing a change in the relation of certain parts.

Figure 7 is a perspective view of the main part of the attachment itself.

Figure 8 is a section on the line 8—8 of Figure 10.

Figure 9 is a view similar to Figure 8, with the ribbon spool removed.

Figure 10 is an axial section through one of the ribbon spool assemblies.

Figure 11 is a section on the line 11—11 of Figure 10.

Figure 12 is a fragmentary side view and section of the assembly shown in Figure 10.

The attachment of the present invention hereinafter to be fully described is applicable to a typewriting machine of standard construction and operation without alteration or modification to any of its parts.

The typewriting machine will include the usual typing mechanism, including type bars and key levers 10 and their keys 11; platen carriage 12; revoluble platen 13 on the carriage; the usual ink ribbon 14 with mechanism to feed said ribbon as the carriage is moved back and forth; and a line spacing mechanism which operates in conjunction with the platen 13 and sheet guiding and feeding mechanism. The last mentioned means includes a curved flexible metal plate 15 fastened at opposite ends to the carriage 12 in relation to the platen 13. The plate 15 has the usual openings therein to receive pressure rolls 16 mounted on the carriage 12, which rolls co-operate with the platen 13 to impart movement to the sheets of paper in the rotation of the platen. The particular guide plate 15 is disclosed in my copending application filed December 3, 1928, Serial No. 323,346. The sheet guiding and feeding means also includes the usual paper guide rests 17 and 18 on the carriage 12, and guide roll 19 supported by arms 20 pivotally connected as at 21 with the lower end of the rest plate 17.

The attachment of the present invention includes a frame 22 comprising arms 23 connected together by a cross rod 24. Use is made of attaching plates 25 which are adapted to be secured to the carriage 12 by fastening elements forming parts thereof. The plates 25 are arranged respectively on opposite ends of the carriage 12, and the rear ends of the arms 23 are pivotally connected respectively with said plates 25. Each arm 23 is connected with its plate 25 by a pivot bolt 26. A coil spring 27 surrounds the plate between a washer and nut 28 on the bolt 26 and the plate 25. The plate 25 has a groove 29 which receives a rib 30 on the arm 23. The spring

27 serves as a tension means to releasably retain the rib 30 in the groove 29 for the purpose of holding the frame 22 in its up position, as shown in dotted lines in Figure 3. The frame 22 may be readily swung down into writing position against the action of the springs 27 and the holding effect of the ribs 30. The arms 23 and the frame 22 will rest on parts of the machine while in the writing position. A casing 31 is secured to the front end of each one of the arms 23. The casing 31 consists of an upper section 32 and a lower section 33 complemental to the upper section 32. These casing sections are circular in cross section. The upper casing section is secured as at 34 to the related arm 23. The lower casing section 33 fits on the lower open end of the upper casing section 32 and is detachably secured thereto by suitable spring catches 35 arranged respectively on opposite sides of the lower casing section 33. The catches 35 are adapted to be manipulated by the thumb and forefinger of one hand for the purpose of associating the lower casing section with the upper casing section or for detaching the same therefrom. Each catch 35 engages a projection 36 on the casing section 32.

There is provided an auxiliary or extra ink ribbon 37 which is wound on spools 38, there being one spool 38 arranged within each casing 31. The lower section 33 of each casing 31 carries a spindle or arbor 39, the same being freely rotatable with respect thereto. The lower end of the spindle 39 is journaled in a bracket 40 secured to the under side of the casing section 33. The lower end of the spindle 39 has secured thereto a knurled disk 41 for manually rotating the spindle and also serves to prevent the upward axial movement of the spindle. The spindle 39 is provided with a brake disk 42 which rests in contact with the casing section 33. The disk 42 has an upstanding pin 43, receivable in a hole in the related spool 38 when the latter is arranged on the upper end of the spindle 39. Each spool 38 is therefore rotatable with its spindle 39 and may be readily removed therefrom when the casing section 33 is detached from the section 32.

Means is provided for guiding the ribbon 37 from the spools 38 lengthwise of the platen 13 in registry with the typing line of the platen, when the frame 22 is in the down or writing position; it being understood that the ribbon spools 38 as secured to the frame 22 will be located respectively near the opposite ends of the platen 13 when the frame 22 is in the writing position. The said ribbon guiding means consists of a guide roll 44 on each of the upper casing sections 32. When the frame 22 is in the down or writing position a portion of the auxiliary ribbon 37 will be disposed between the ink ribbon 14 and the platen 13 in spaced relation thereto.

In order to rotate each of the spindles 39 when the carriage 12 is moved back and forth, there is provided means presently to be described. A ratchet wheel 45 is secured to the spindle and a dog or pawl 46 coacts with the ratchet wheel 45. The pawl 46 is pivoted as at 47 to an arm or lever 48 loosely connected with the spindle 39. The lever 48 has a downwardly projecting lug 49, and an upwardly projecting guide member 50 which limits the pivotal movement of the pawl 46 away from the ratchet wheel 45. Turning movement of the lever 48 in a clockwise direction is limited by a downwardly projecting pin 51 on the casing section 33. The lever 48 is under the influence of a tension spring 52 surrounding the spindle 39 and having one end thereof connected with the bracket 40 as at 53 and its opposite end connected with the lever 48 as at 54. A trip 55 is provided for each lever 48 to operate the same as the carriage 12 is moved to the right at the completion of the writing on a single line. The trip 55 is pivotally mounted on the frame of the machine in the path of movement of the related lug 49 and is under the influence of a coil spring 56 which returns it to a normal position in contact with a stop pin 57 on the frame of the machine. As the lug 49 encounters the trip 55 as the carriage 12 is moved to the right, the spindle 39 will be turned causing its related spool 38 to turn with it, thereby causing the ribbon 37 to move one degree. When the carriage 12 moves to the left, the lug 49 will ride idly over the trip 55 which will yield against the action of the spring 56, the lever 48 thereby remaining inactive without causing movement of the ribbon 37. A reversing cam lever 60 is connected with each spindle 39 and serves to hold the pawl 46 out of engagement with the teeth of the related ratchet wheel 45. It will therefore be understood that means is provided for controlling the movement of the ribbon 37 to be wound on one or the other of the spools 38 by merely reversing the positions of the lever 60 to disengage one pawl 46 and to re-engage the other pawl 46.

In accordance with another feature of the invention there is provided a brake band 61 in conjunction with the disk 42 in each casing 31. One end of the band 61 is secured as at 62 to the lower section 33 of the casing, and its opposite end carries a set screw 63 which is in threading engagement with the secured end of the band to retain the band in frictional engagement with the disk 42. Thus provision is made for retaining the portion of the ribbon 37 between the spools 38 in a taut condition at all times.

In order to steady the frame 22 when it is in the down or writing position there is provided means in the form of a grooved ring 64 on the spindle of the platen 13. The right hand arm 23 of the frame is received in the groove of the ring 64 to steady the frame and

prevent any vibration or movement laterally in a horizontal direction.

From the foregoing it will be apparent that when it is desired to make three original typewritten copies simultaneously in the usual operation of the keys 11, the frame 22 may be swung to the down or writing position which will bring a portion of the ribbon 37 between the ribbon 14 and the cylindrical face of the platen 13 in registry with the printing line of the platen. Three sheets of paper are then arranged as follows, namely, two sheets are arranged between the roll 19 and the plate 18 and will be guided by the plates 17 and 18. By rotating the platen 13 in the usual manner these two sheets will be gripped between the platen and the first set of rolls 16. A third sheet of paper is then placed in front of the rear end of the plate 15 and the platen 13. The platen 13 is then rotated which will cause the three sheets of paper to follow around with the platen 13, and one sheet will be disposed between the ink ribbon 37 and the platen, and the other two sheets will be brought between the two ribbons 14 and 37. The machine may then be operated in the usual manner, and as a result three original typewritten copies will be produced simultaneously. The typewriting will occur on the front faces of the first and third sheets, and on the rear face of the middle sheet. It is to be understood that the middle sheet of paper is preferably transparent so that the typewriting thereon may be read through the paper. It will be understood that the frame 22 may be swung up out of the writing position to the position shown in dotted lines in Figure 3. The machine may then be operated to produce a single original copy, and, if desired, carbon copies may be produced by means of the usual ribbon 14.

What is claimed is:

1. In a typewriting machine, the combination with a platen and its carriage, of a swinging frame on said carriage, ribbon spools mounted on said frame so as to be disposed respectively near opposite ends of the platen when the frame is in a down position, means on the frame to guide a ribbon from said spools lengthwise of the platen in registry with the typing line thereof when said frame is in the down position, and a grooved ring on the spindle of the platen engageable by the frame to steady said frame while in its down position.

2. In a typewriting machine, the combination with a platen and its carriage, of a swingable ribbon-spool carrying frame on said carriage, coacting means on said carriage and frame to releasably hold the frame up out of a writing position, said frame being swingable into a down or writing position, and a grooved ring on the spindle of the platen engageable by the frame to steady said frame while in the writing position.

3. An attachment of the class described including a frame adapted to be swingably mounted, a ribbon-spool casing section secured to each end of said frame, and an assembly consisting of a second ribbon-spool casing section adapted to be associated with the first casing section, ribbon-spool rotating means on said second casing section, and means to detachably secure said second casing section to the first casing section.

4. An attachment of the class described including a frame, a ribbon-spool casing section secured to and depending from each end of the frame, and an assembly consisting of a second ribbon-spool casing section adapted to be associated with said first casing section, ribbon-spool rotating means on said second casing section, and means to detachably secure said second casing section to the first casing section.

5. An attachment of the class described including a frame, ribbon-spool casing section secured to and depending from each end of the frame, and an assembly consisting of a second ribbon-spool casing section adapted to be associated with said first casing section, ribbon-spool rotating means on said second casing section, and means to detachably secure said second casing section to the first casing section, said ribbon-spool rotating means including a spindle freely mounted for rotation on said second casing section.

6. An attachment of the class described including a frame, upper ribbon-spool casing sections respectively secured to and depending from the opposite ends of said frame, a lower ribbon-spool casing for each of said upper casing sections, means on each lower casing section adapted to be operated to cause a step by step rotation of a ribbon-spool applied to said means, and means to detachably secure each lower casing section to the upper casing section related thereto.

7. An attachment of the class described including a frame, upper ribbon-spool casing sections respectively secured to and depending from the opposite ends of said frame, a lower ribbon-spool casing for each of said upper casing sections, means on each lower casing section adapted to be operated to cause a step by step rotation of a ribbon-spool applied to said means, means to detachably secure each lower casing section to the upper casing section related thereto, and ribbon guiding means on each of said upper casing sections.

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