

No. 833,840.

PATENTED OCT. 23, 1906.

E. F. KUNATH.  
TYPE WRITING MACHINE.

APPLICATION FILED AUG. 18, 1905.

2 SHEETS—SHEET 1.

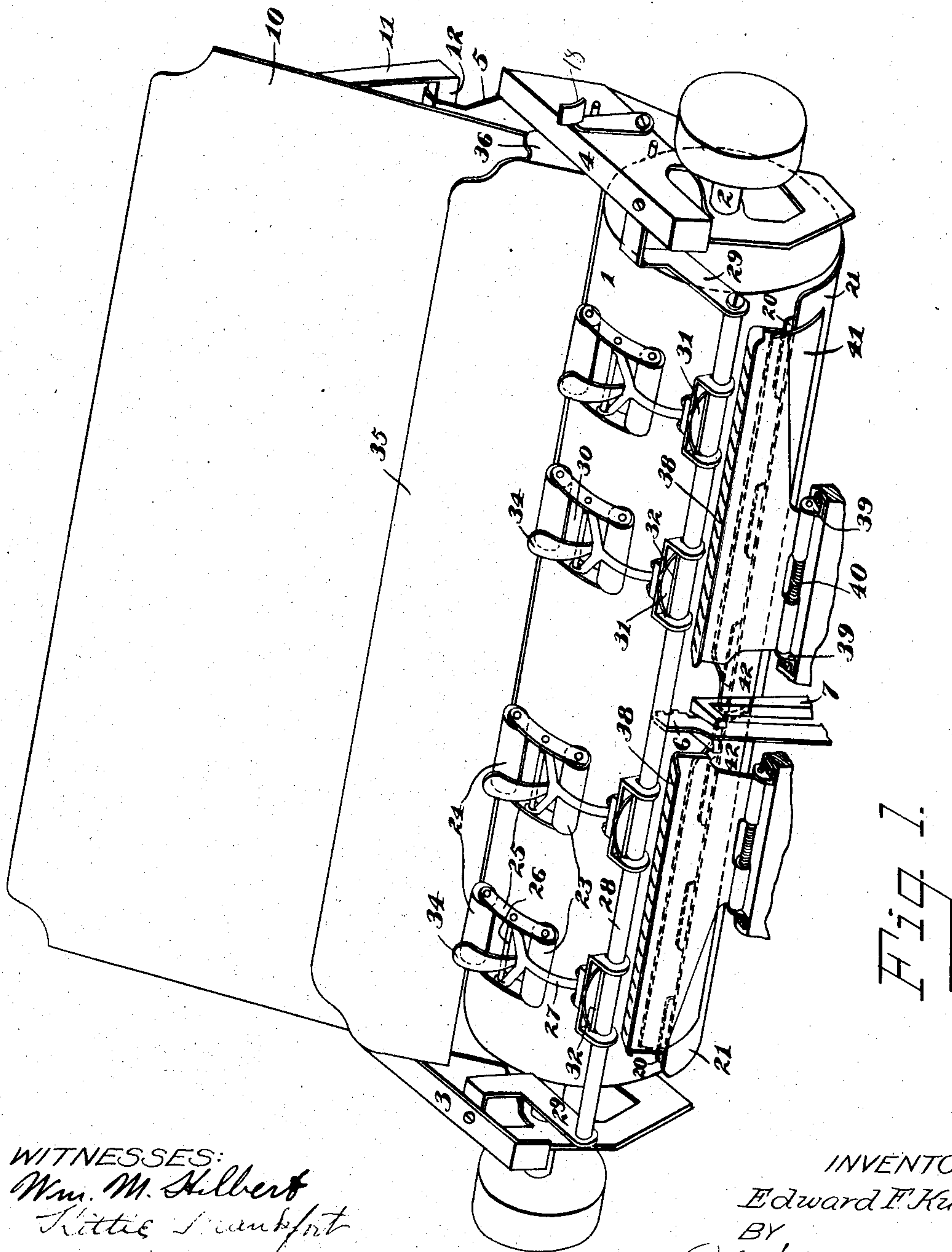


Fig. 1.

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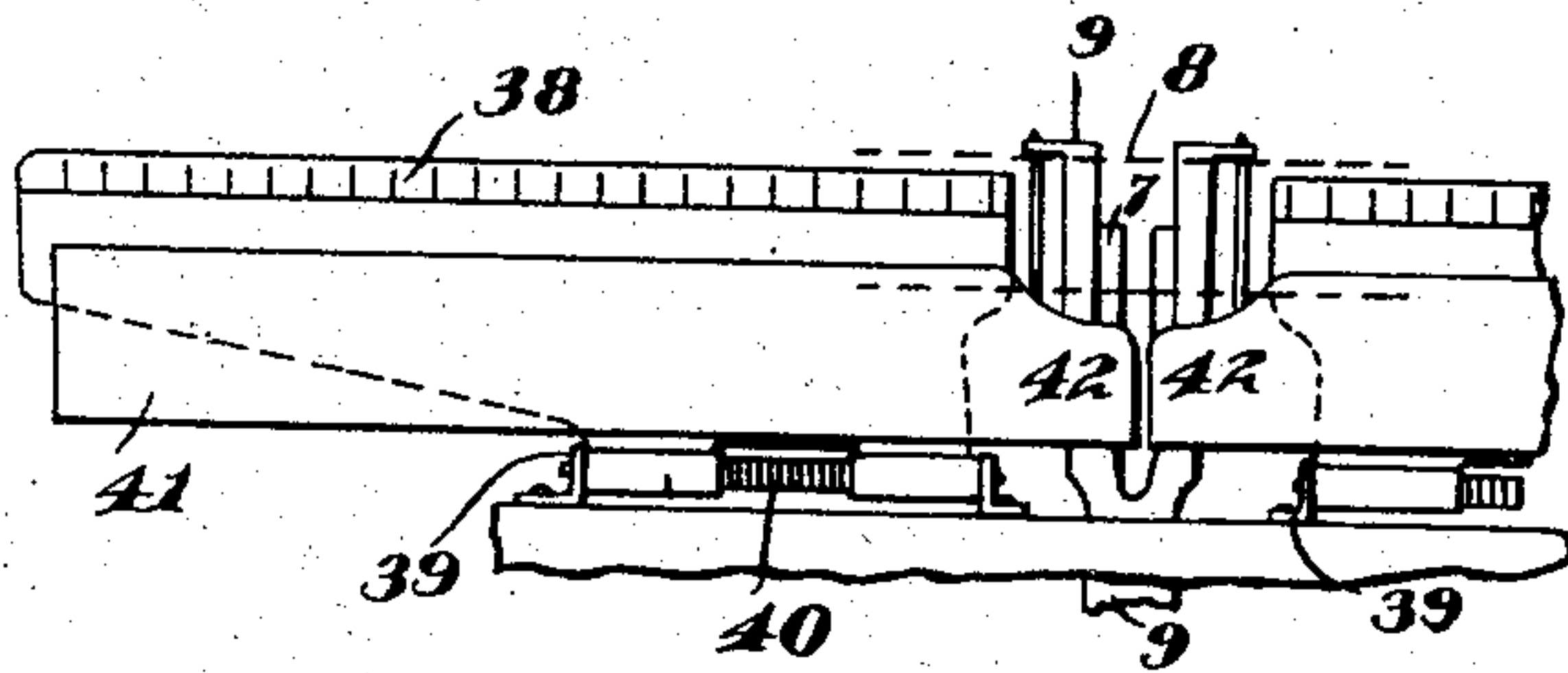
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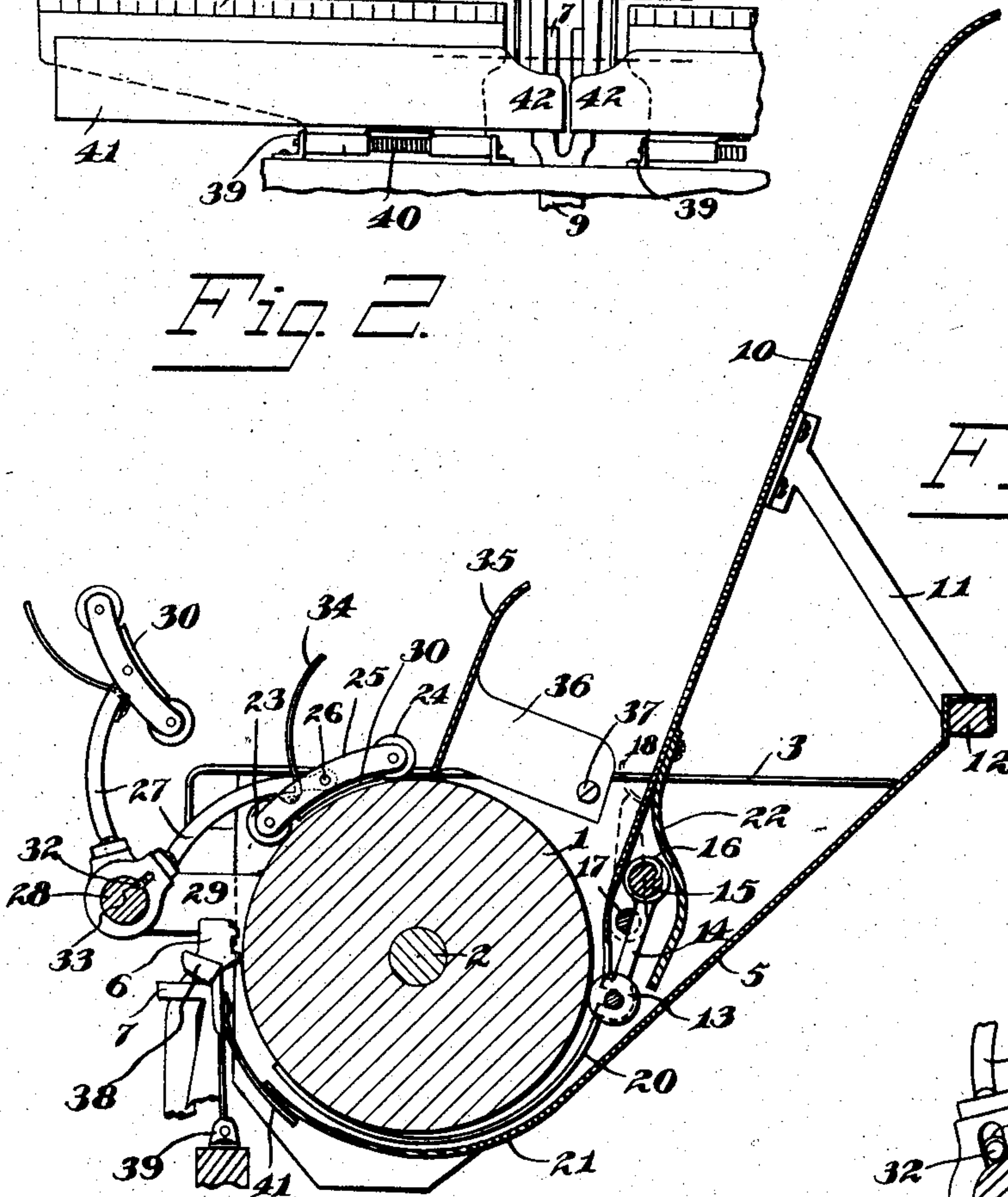
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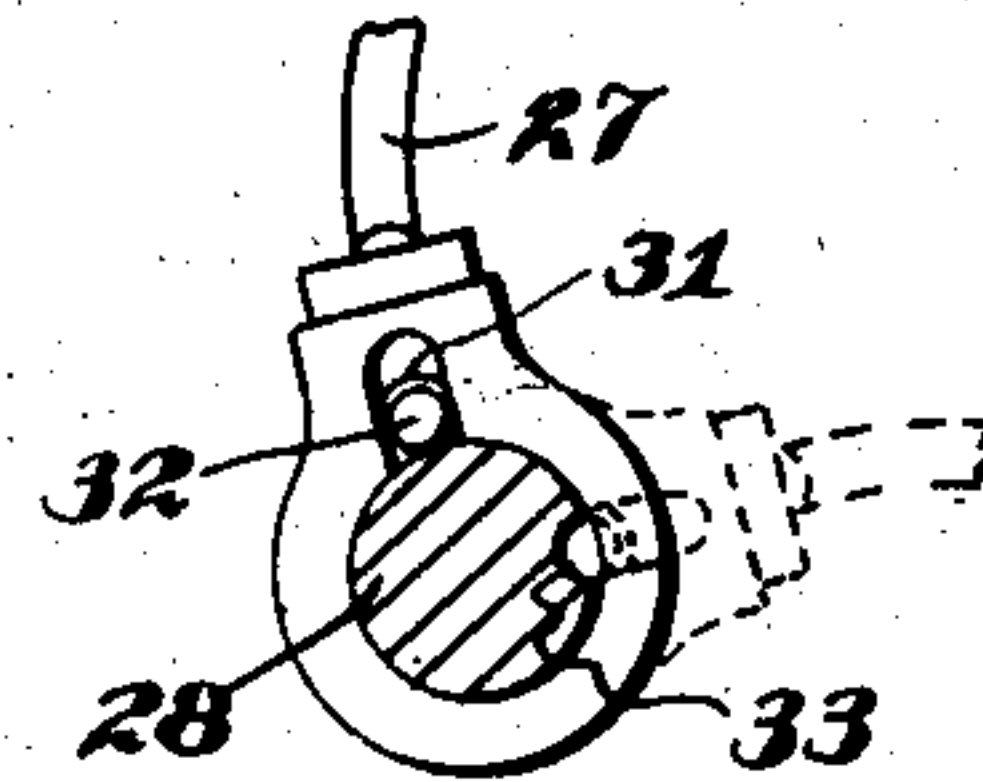
2 SHEETS—SHEET 2.



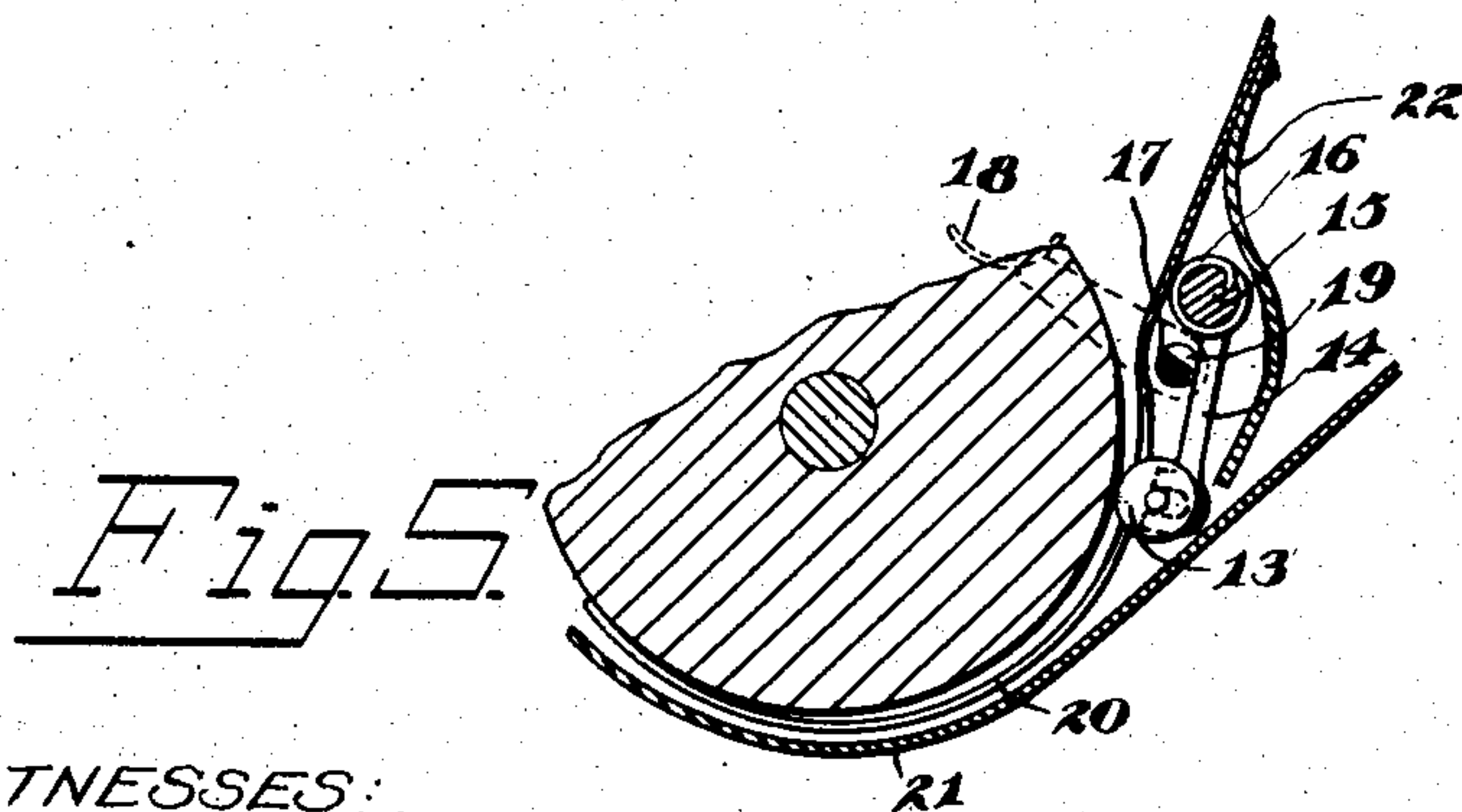
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



*Fig. 5.*

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# UNITED STATES PATENT OFFICE.

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## TYPE-WRITING MACHINE.

No. 833,840.

Specification of Letters Patent.

Patented Oct. 23, 1906.

Application filed August 18, 1905. Serial No. 274,715.

*To all whom it may concern:*

Be it known that I, EDWARD F. KUNATH, a citizen of the United States, residing in Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to means for conducting sheets of paper around the platens of type-writing machines, particularly those of the front-strike variety, and especially where it is desired to insert and remove successive bills or other sheets while a single record-sheet, with its carbon, remains in the machine, so as to receive carbon impressions of all the matter written upon the successive sheets. In this class of paper-feeding mechanism means are provided for holding one sheet or set of sheets against the platen while other sheets are introduced at either the front or rear of the platen and pushed around under the same until in proper position for receiving the first line of writing.

In accordance with my present improvements a high paper shelf or support is inclined upwardly and rearwardly from the rear or receiving side of the revoluble platen of the writing-machine, and associated with said shelf or support are several yielding fingers, which curve forwardly beneath the platen and up partly around the front thereof, whereby sheets may be inserted between said paper-shelf and the platen and carried around between the latter and said fingers, rolls being provided to bear against the rear side of the platen and cooperate in conducting said sheets around the platen. In rear of said paper-shelf I provide a second paper shelf or support also inclined upwardly and rearwardly from the platen and curving forwardly and up partly around the front side thereof, but considerably below said paper-guiding fingers to permit the introduction of sheets at either the front or rear of the platen independently of said fingers or the sheets held thereby and permitting such subsequent introduced sheets to be pushed under the platen and around the same as far as required, said fingers serving to sustain the first-inserted sheets, so that they cannot bulge down into the path of the subsequently inserted sheets. I further provide means

for facilitating the introduction of sheets downwardly at the front of the machine and the movement of such sheets below said paper-fingers, and I make provision also for preventing the leading edges of the sheets from catching the ink-ribbon as they ascend in front of the platen. I also provide means forward of the first-mentioned paper-shelf for deflecting the leading edge of the paper away from the platen, so that it may not pass around the platen a second time. The outside sheets—that is, those which are pushed around the platen outside of or below said paper-fingers—I feed by means of rolls mounted to bear against the front of the platen above the printing-line or against the upper front side of the platen, such rolls also being effective to feed the record-sheets that are passed between the paper-fingers and the platen. These front rolls are preferably mounted tandem in pairs, each tandem pair mounted on a truck, and the latter hinged upon a spring-pressed arm, which is carried by and adjustable along a rod mounted in front of the platen. These rollers not only may bear evenly against the platen at all times, but a sufficient number thereof is also provided to effect true feeding of the paper. These roller-bearing arms are preferably four in number, thus making two sets, one set for the wide record-sheets and the other set for the narrow individual sheets. Each arm may be moved to release its rolls, so that although a large number of rolls is provided still they may be readily lifted from the platen to release the narrow and wide sheets, as desired.

Other features and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 is a perspective view of the well-known front-strike "Underwood" type-writing machine, showing my improvements applied thereto. This view shows the platen and platen-frame with appurtenances, and it will be understood that said platen is shiftable up and down to enable different types to print, the platen-frame being for this purpose suitably mounted upon a paper-carriage. (Not shown.) Fig. 2 is a rear view of a pair of scales hinged in front of the platen and having pendent aprons for guiding the leading edge of the paper and also having shields



for preventing the leading edge of the paper from catching in the ribbon. Fig. 3 is a sectional elevation of the paper-feeding devices. Fig. 4 is a detail of the releasable arms which carry the front paper-rolls, and Fig. 5 is a sectional view showing the rear pressure-rolls released from the platen.

The platen 1 of said machine is revolvably mounted, by means of an axle 2, in a platen-frame comprising ends 3 4 and a rear plate 5. Type-bars 6 enter a guide 7 and strike upon the front side of the platen through the usual inking-ribbon 8, Fig. 2, which is threaded through a carrier 9. One or more record-sheets, with their carbons, are introduced at the rear side of the platen and lie upon a paper shelf or support 10. Said shelf inclines upwardly and rearwardly from the platen, being carried by a pair of arms 11, secured by means of a bar 12 to the upper edge of said plate 5. This shelf 10 is of great height, because the record-sheets for which it is used are usually of very great length, and by providing the high support therefor they are prevented from trailing upon the rear portions of the type-writing machine and are kept away from the rear end of other sheets that are in the machine at the same time. Said record-sheets pass down between the platen and a set of pressure-rolls 13, which are carried by the lower ends of depending arms 14, the latter hinged upon a rod 15. The arms are provided with springs 16 to press the rolls against the platen. The arms 14 are releasable by means of a shaft 17, having a release-key 18. Said shaft has a groove 19 normally occupied by the arms 14, Fig. 3, in which the rolls 13 are shown pressing against the platen. When said release key is depressed, Fig. 5, the recessed portions of said shaft operate to cam the arms away from the platen, thereby leaving the rolls free and permitting the introduction of sheets. The plate of metal of which the shelf 10 is formed is shown as cut away along its lower portion to form paper-guiding fingers 20, which curve past the rollers 13 and down around the platen and up partly in front thereof. Their forward ends may press yieldingly against the platen, Figs. 3 and 5. Paper-guiding fingers may, however, be otherwise associated with the paper-shelf 10 for the record-sheets. Said plate 5, it will be seen, inclines upwardly and rearwardly from the platen and corresponds to the paper-shelf usually provided in said Underwood machine. At its lower portion it is continued to form a deflector or guide 21, which curves forwardly and upwardly around the platen, but is situated a short distance beneath the said guiding-fingers 20, so as to leave a clear space therebelow for the movement of paper, said plate 21 being unbroken or imperforate throughout, so as not to leave any edges or projections on which the paper

might catch. It will thus be seen that after the record-sheets are introduced between the shelf 10 and the platen and passed around the latter it is easy to introduce individuals bills or other blanks by slipping them down between the paper-shelf 5 and the paper-fingers 20 and pushing said bills forwardly and up around the platen to the printing-line. To the rear side of the shelf 10 I secure a sheath 22, which hangs behind the pressure-rolls 13 and prevents the rear sheets when introduced from catching upon said rolls and directs them downwardly along the paper-shelf 5, said sheath 22 extending about the whole length of the platen, as will be understood.

Both the inner and outer sheets ascending in front of the platen are caught between the latter and pressure-rolls 23 24, bearing against the upper front side of the platen. Said rolls are in tandem pairs, each pair carried upon a truck 25, pivoted at 26 on the front end of an arm 27, hung upon a rod 28, the latter fixed at its ends in a pair of arms 29, forming a part of the platen-frame. Each truck is provided with a paper-guide 30, extending from roll to roll, to prevent the leading edge of the paper from catching upon a roll. Said arms are pressed toward the platen by springs 31, bearing upon short rods or keys 32, which fit in a groove 33, formed longitudinally in the bar 28. By grasping a hook or finger-piece 34 provided upon the arm 29 the latter may be swung forwardly, Fig. 3, to release the rolls from the platen to permit the adjustment of paper thereon or the introduction of sheets downwardly in front of the platen, such movement forcing the keys 32 out of the groove 33, as seen at Fig. 4, and carrying the rolls so far forward as to leave a commodious opening for the introduction of sheets. The arms 27 are adjustable along said rod 28 and are preferably four in number, two middle ones to be used for bills or other blanks or sheets and the two outer ones for wider record-sheets, which, it will be understood, may be provided with margins for the purpose of being engaged by said rollers.

Between the rolls 24 and the paper-shelf 10 I provide a plate 35, which extends from the platen upwardly and rearwardly to deflect the leading edge of the paper directly up away from the platen, so that it cannot go around the latter a second time. Said plate 35 may be supported, by means of a pair of ears 36 and screws 37, upon the ends of the platen-frame and is so close to the shelf 10 that the leading edges of limp or thin sheets as they pass upwardly over the plate 35 are caught upon the shelf 10 and do not curl down and reënter the bite of the paper-feeding devices.

Scales 38, one at each side of the type-guide 7, facilitate the adjustment of the



paper to the printing-line. These scales are hinged upon brackets 39, pressed rearwardly by springs 40, and incline upwardly and forwardly from the platen to form a guide where-  
 5 by sheets may be conveniently introduced downwardly in front of the platen and between the fingers 20 and deflector 21. The brackets 39 are fixed upon the framework of the machine so that the scales remain station-  
 10 ary, as usual in the Underwood machine, while the platen travels in letter-space direction. As seen in Figs. 1, 2, and 3, aprons or shields 41, attached to the rear side of said scales, depend in front of the plate 21 and  
 15 slightly overlap its front edge, whereby the leading edges of upwardly-advancing sheets are guided and also whereby the leading edges of sheets introduced downwardly at the front of the platen are prevented from pass-  
 20 ing down in front of said plate 21.

The adjacent ends of shields 41 are provided with guards 42 just in rear of the ribbon-vibrator 9 and serving to fend the leading edge of the paper away from the ribbon 8.

25 Variations may be resorted to within the scope of my invention, and portions of my improvements may be used without others.

Having thus described my invention, I claim—

30 1. In a type-writing machine, the combination with a revoluble platen, of a paper-shelf inclining upwardly and rearwardly from the rear side thereof, paper-guiding fingers extending from said paper-shelf around be-  
 35 neath the platen to the front thereof, a second paper-shelf in rear of the first paper-shelf, and means associated with said second shelf and passing forwardly below and around the platen directly under said guiding-fingers  
 40 and forming therewith a paper-guiding channel around the under side of the platen to the front thereof.

2. In a type-writing machine, the combination with a revoluble platen, of a paper-  
 45 shelf at the rear side thereof, paper-guiding means extending forwardly around beneath the platen to the front thereof, means beneath said guiding means and cooperating therewith to form a channel for independently  
 50 guiding paper around the under side of the platen, and releasable pressure-rolls bearing against the front side of the platen above the impression-point and so mounted that they may be thrown out of the way to permit  
 55 downward introduction of sheets at the front of the platen; the second-mentioned guiding means flaring forwardly from the platen and constructed to receive and guide such sheets rearwardly beneath the platen.

60 3. In a type-writing machine, the combination with a revoluble platen, of a paper-shelf at the rear side thereof, a paper-guide extending from said paper-shelf around be-  
 65 neath the platen to the front thereof, means so placed beneath said guide as to cooperate

therewith to form an open passage for guiding paper rearwardly around the under side of the platen while the latter is stationary, and pressure-rolls mounted to bear against the front of the platen above the impression-point  
 70 but movable forwardly away therefrom to an extent to leave a commodious opening for the downward introduction of sheets.

4. In a type-writing machine, the combination with a revoluble platen, of a paper-  
 75 shelf extending from the delivery side thereof, a paper-guiding device extending from said paper-shelf around beneath the platen to the front thereof, a pressure-roll to cooperate with said guiding device for conducting  
 80 paper around the platen, means for releasing said pressure-roll, and means beneath said guiding device and cooperating therewith to form an open channel for guiding paper around the under side of the platen.  
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5. In a type-writing machine, the combination with a revoluble platen and types mounted to strike upon the front thereof, of a paper shelf or support extending from the rear side of the platen, a paper-guide associ-  
 90 ated with said paper-shelf and extending around beneath the platen to the front thereof, a second paper shelf or support in rear of the first paper-shelf, means associated with said second paper-shelf for guiding paper  
 95 around beneath the platen independently of said paper-guide, and a deflector upstanding over the platen forwardly of the first-mentioned paper-shelf, for deflecting the edge of the paper upwardly from the platen, the de-  
 100 flector having sufficient height and being sufficiently close to the first-mentioned paper-shelf, to prevent the leading edge of limp sheets from curling down around the platen.

6. In a type-writing machine, the combination with a revoluble platen and types  
 105 mounted to strike upon the front side thereof, of a paper-shelf extending upwardly and rearwardly from the rear side thereof, paper-guiding means associated with said paper-  
 110 shelf and extending around the platen to the front thereof, a second paper-shelf in rear of the first paper-shelf, and a paper-guide curving beneath said fingers, for guiding paper introduced between the second paper-shelf and  
 115 the platen; the last-mentioned paper-guide standing well away from the platen so as to leave an open passage for sheets introduced downwardly at the front of the platen, and releasable pressure-rolls being provided  
 120 above the printing-line.

7. In a type-writing machine, the combination with a revoluble platen, of a paper-  
 125 shelf extending from the rear side thereof, paper-guiding fingers extending from said paper-shelf around beneath the platen to the front thereof, a second paper-shelf in rear of the first paper-shelf, and additional means for guiding paper around the under side of the platen beneath said paper-fingers; the  
 130



first paper-shelf extending upwardly and rearwardly from the platen to a far greater height than the second paper-shelf, so as to support relatively extensive recording-sheets while smaller sheets are inserted between said paper-fingers and said additional paper-guiding means or removed therefrom.

8. In a type-writing machine, the combination with a revoluble platen, of a paper-shelf extending from the rear side thereof, paper-guiding fingers extending from said paper-shelf around beneath the platen to the front thereof, a second paper-shelf in rear of the first paper-shelf, and additional means for guiding paper around the under side of the platen beneath said paper-fingers; said additional paper-guiding means being sufficiently below said paper-guiding fingers to leave an open passage of such form as to enable paper to be introduced readily at either the front or back of the platen.

9. In a type-writing machine, the combination with a revoluble platen, of a paper-shelf at the rear side thereof, a paper-guiding device extending from said paper-shelf around beneath the platen to the front thereof, a second paper-shelf in rear of the first paper-shelf, means for guiding paper around the under side of the platen beneath said paper-guiding device; a series of pressure-rolls at the rear side of the platen to cooperate with said fingers in carrying paper around the platen and a shield mounted between the first and second paper-shelves and extending behind said pressure-rolls.

10. In a type-writing machine, the combination with a revoluble platen, of pressure-rolls at the rear side of the platen, means cooperating with said pressure-rolls to feed paper forwardly beneath and around the platen, means beneath said cooperative means and cooperating therewith to form a passage for independently guiding additional sheets of paper beneath and around the platen, and rolls mounted to bear upon the delivery side of the platen.

11. In a type-writing machine, the combination with a revoluble platen, of releasable pressure-rolls at the lower side of the platen, means cooperating with said pressure-rolls to feed paper forwardly beneath and around the platen, means beneath said cooperative means and extending to the front of the platen and forming an open passage for independently guiding additional sheets of paper beneath and around the platen, and pressure-rolls mounted at the delivery side of the platen and supported so that they can be thrown forward well away from the platen, to permit downward introduction of sheets at the front of the platen into said passage.

12. In a type-writing machine, the combination with a revoluble platen and types mounted to strike upon the front side thereof, of a paper-shelf at the rear side of the

platen, a device curving from said shelf beneath and forwardly around the platen for guiding such sheets as are introduced between said paper-shelf and the platen, a second paper-shelf in rear of the first paper-shelf and continuing forwardly to form a curved uninterrupted guiding-plate at a short distance below said guiding device, to form an open passage to guide sheets that are introduced at either the back or front side of the platen, and pressure-rolls bearing against the front side of the platen above the printing-point, and so mounted that they may be moved far away from the platen to leave a commodious opening for the introduction of sheets downwardly at the front of the platen.

13. In a type-writing machine, the combination with a revoluble platen and types mounted to strike upon the front side thereof, of a paper-shelf at the rear side of the platen, means for guiding beneath and forwardly around the platen such sheets as are introduced between said paper-shelf and the platen, a second paper-shelf in rear of said paper-shelf and continuing to form a curved uninterrupted guiding-plate well below said guiding means, and forming an open passage for the introduction of paper at either the back or front side of the platen, releasable pressure-rolls bearing against the front side of the platen above the printing-point; and a deflector upstanding over the platen between the said pressure-rolls and the first-mentioned paper-shelf, to turn the sheets away from the platen and onto said shelf.

14. In a type-writing machine, the combination with a platen and types mounted to strike upon the front side thereof, of a rod extending along the front of the platen, arms hinged upon said rod and extending backwardly therefrom, a pair of tandem pressure-rolls carried by each arm, a truck carried by said arm whereon said rolls are carried, and means for causing the rolls to press against the platen.

15. In a type-writing machine, the combination with a platen and types mounted to strike upon the front side thereof, of a rod extending along the front of the platen, arms hinged upon said rod and extending backwardly therefrom, a pair of tandem pressure-rolls carried by each arm, and means for causing the rolls to press against the platen; each pair of said rolls being releasable independently of the remaining pairs.

16. In a type-writing machine, the combination with a platen and types mounted to strike upon the front side thereof, of a rod extending along the front of the platen, arms hinged upon said rod and extending backwardly therefrom, a pair of tandem pressure-rolls carried by each arm, and means for causing the rolls to press against the platen; each pair of said rolls being releasable inde-



pendently of the remaining pairs and each of said arms having a hook whereby it may be pulled up to release the rolls.

17. In a type-writing machine, the combination with a traveling revoluble platen and types mounted to strike upon the front thereof, of a front scale for the platen, said scale stationary during the travel of the platen and supported upon the framework and slanting upwardly and forwardly from beneath the printing-line on the platen, and having a shield which curves downwardly and rearwardly around the front side of the platen, and a paper-guiding plate curving around the under side of the platen but well separated therefrom so as to form an open passage to permit sheets inserted downwardly at the front of the platen to be guided by said plate rearwardly beneath the platen; the front edge of said plate lying between the lower edge of said shield and the platen.

18. In a type-writing machine, the combination with a traveling revoluble platen and types mounted to strike upon the front thereof, of front scales for the platen, said scales stationary during the travel of the platen and supported upon the framework and slanting upwardly and forwardly from the platen, and having shields which curve downwardly and rearwardly around the front side of the platen, a paper-guiding plate curving around the under side of the platen and forming a passage to guide rearwardly sheets inserted downwardly at the front of the platen, the front edge of said guiding-plate lying between the lower edges of said shields and the platen; said scales mounted end to end one at each side of the printing-point.

19. In a type-writing machine, the combination with a traveling revoluble platen and types mounted to strike upon the front thereof, of front scales for the platen, said scales stationary during the travel of the platen and supported upon the framework and slanting upwardly and forwardly from the platen, and having shields which curve downwardly and rearwardly around the front side of the platen, a paper-guiding plate curving around the under side of the platen and forming an open passage to guide rearwardly sheets inserted downwardly at the front of the platen, the front edge of said guiding-plate lying be-

tween the lower edges of said shields and the platen; said scales mounted end to end one at each side of the printing-point; and having at their adjacent ends shields for fending the paper away from the ribbon.

20. In a type-writing machine, the combination with a revoluble platen and types mounted to strike upon the front side thereof, of a paper-shelf inclining downwardly and forwardly to the rear side of the platen and continuing in a curve around the bottom of the platen and up around the front thereof nearly to the printing-line, and forming a passage whereby paper may be introduced at either the front or back of the platen between the same and said plate and pushed around beneath the platen, and paper-guiding means independent of said plate and curved around beneath the platen from the rear to the front thereof between said plate and the platen, and pressure-rolls mounted at the front side of the platen, so as to be movable well away therefrom to form a commodious opening for the introduction of paper into said passage.

21. In a type-writing machine, the combination with a revoluble platen and types mounted to strike upon the front side thereof, of a paper-shelf inclining downwardly and forwardly to the rear side of the platen and continuing in a curve around the bottom of the platen and up around the front thereof nearly to the printing-line, and forming an open passage around the platen whereby paper may be introduced at either the front or back of the platen between the same and said plate and pushed around beneath the platen, paper-guiding means independent of said plate and curved around beneath the platen from the rear thereof to the front thereof between said plate and the platen, a paper-shelf associated with said independent guiding means, and releasable pressure-rolls at the front and rear sides of the platen.

22. In a type-writing machine, the combination with a revoluble platen, of a yielding arm, a truck hinged thereon, a pair of tandem rolls carried by said truck, and a paper-guiding plate extending between said rolls.

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Witnesses:

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