Dec. 23, 1941. G. H. SARGENT 2,267,046

RIBBON FEEDER

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Fig. 2.

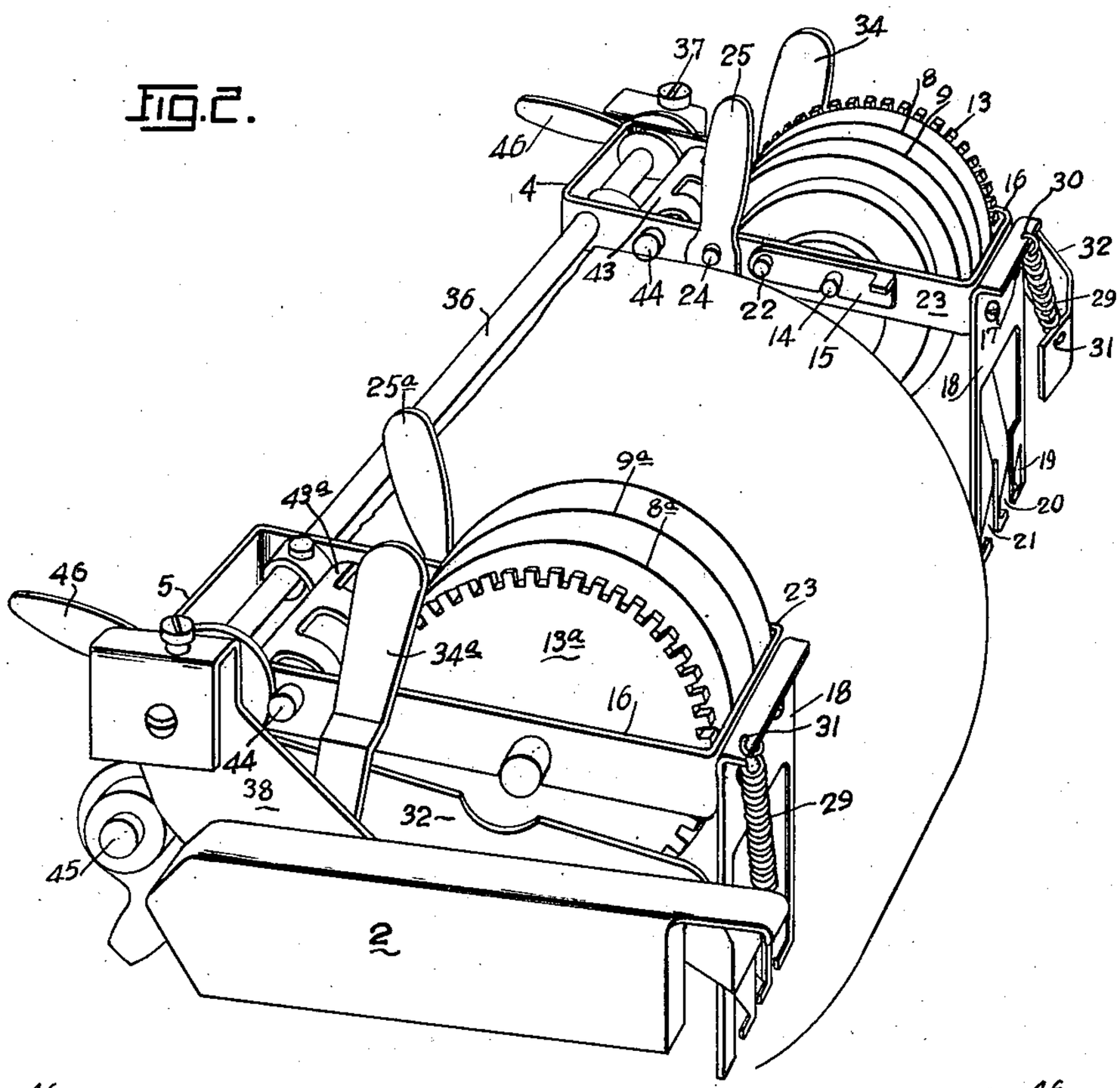


Fig. 1.

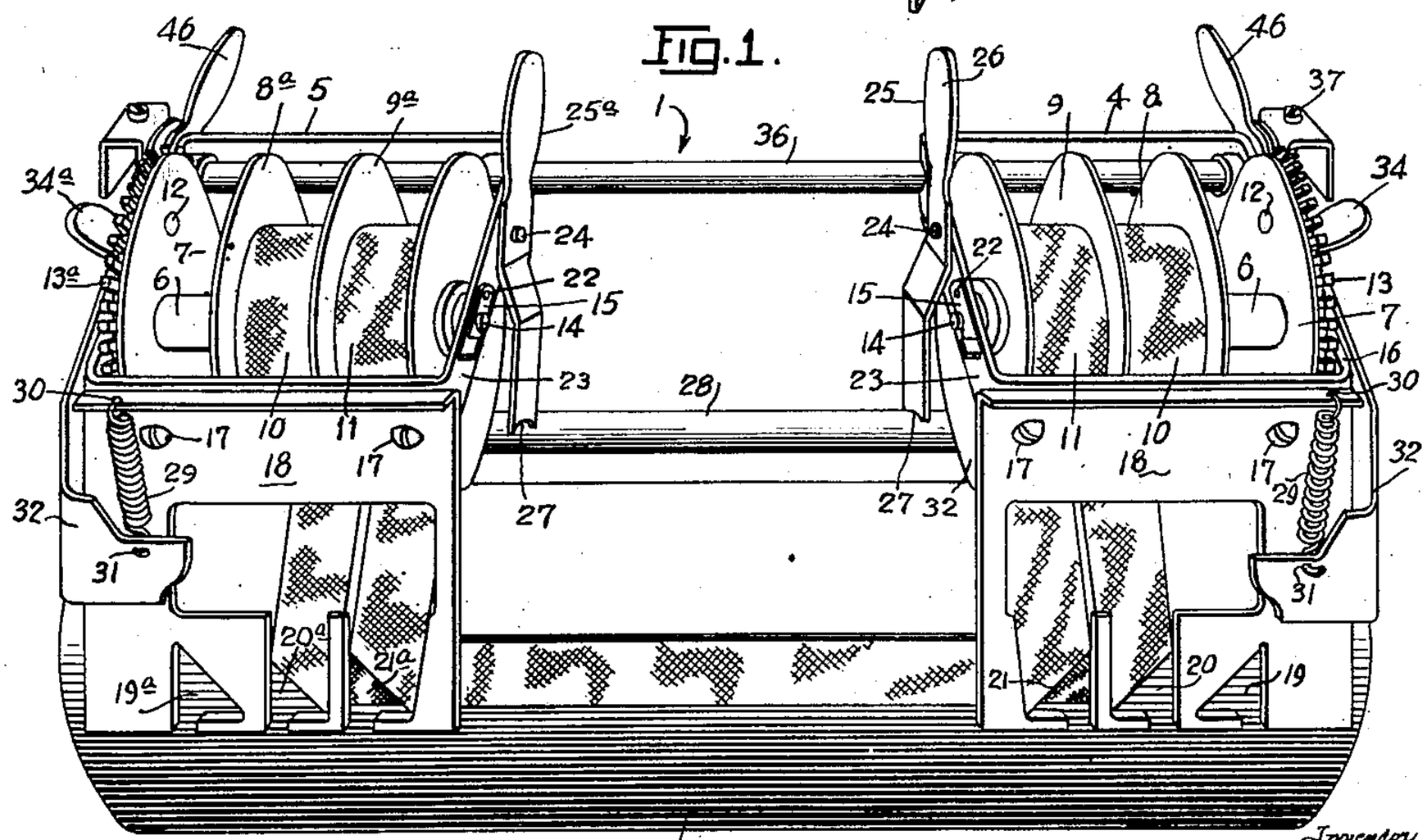


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FIG. 3.

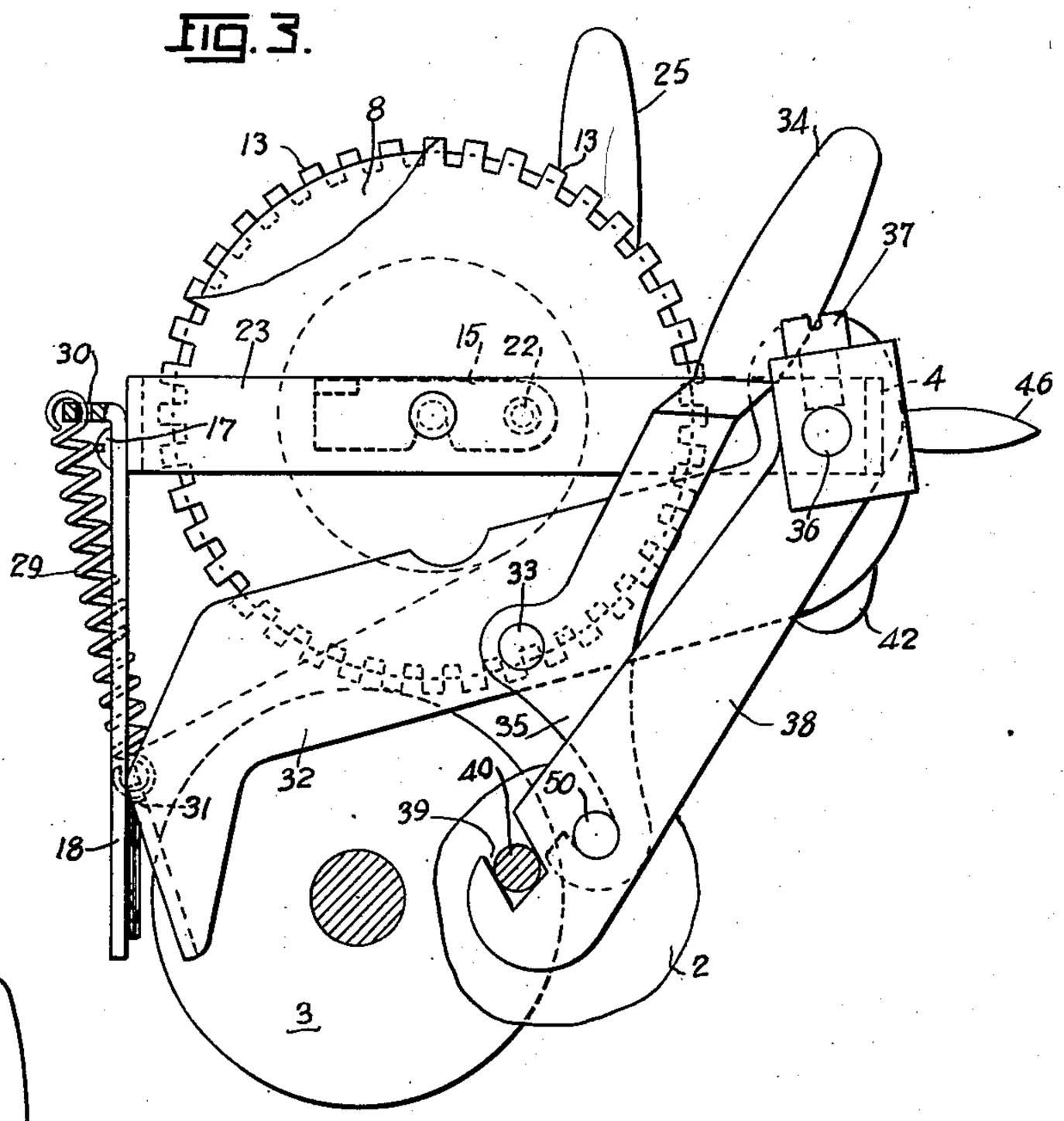
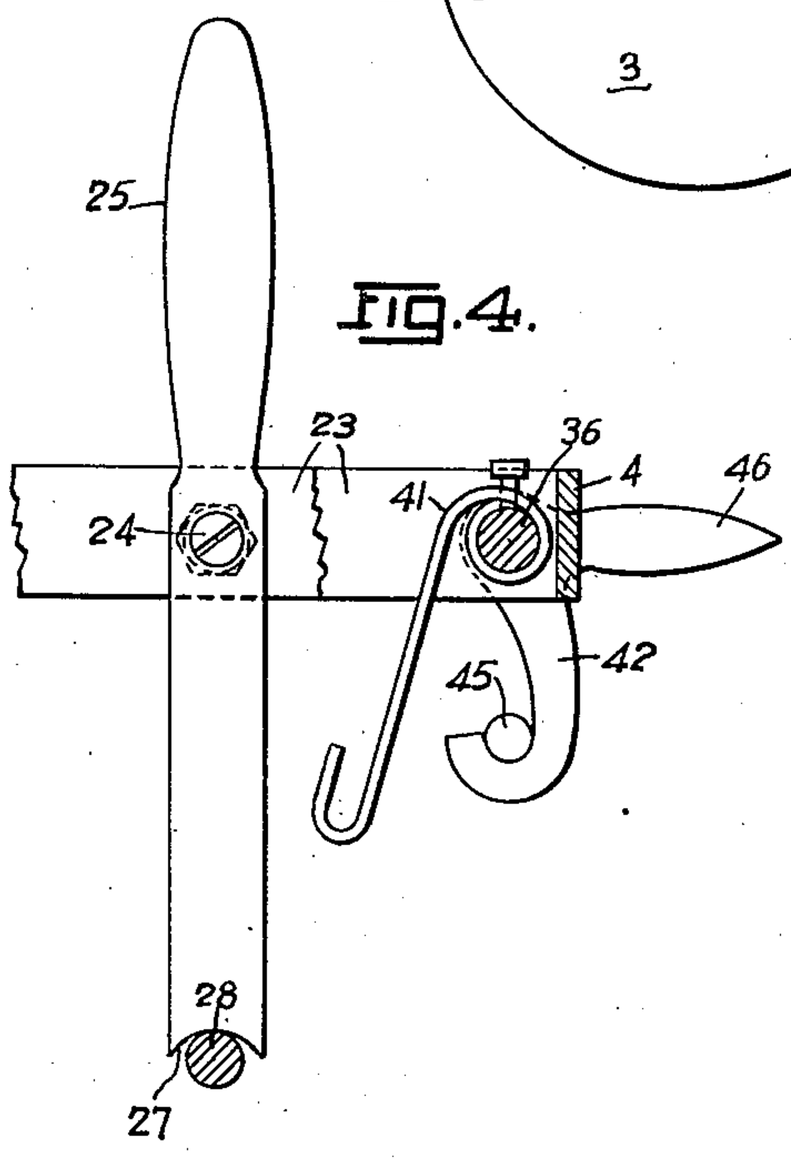



FIG. 4.

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2,267,046

# UNITED STATES PATENT OFFICE

2,267,046

## RIBBON FEEDER

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Application November 6, 1940, Serial No. 364,534

7 Claims. (Cl. 197—153)

This invention relates to ribbon feeders, and in particular to ribbon feeders in connection with typewriters or similar recording devices on which usually one original and simultaneously therewith at least one copy thereof is written.

Heretofore when preparing an original with copies thereof, for instance on a typewriter, it was necessary to provide one carbon paper for each copy to be made and to place it on top of each copy sheet when inserting the sheets in the typewriter.

The employment of carbon papers for copies is particularly cumbersome and disadvantageous when writing a great number of small sized short letters or bills since, in this instance, the inserting of the carbon papers takes almost as much time as the typing of the letters or the bills in view of the fact that the carbons have to be removed from each sheet when they are written and to be inserted between the new sheets. Moreover, the carbons have to be of the size of the letters to be typed. It is also to be mentioned that the carbons wear rapidly and, consequently, have to be replaced frequently.

Accordingly, it is an object of the invention to provide a mechanism which although simple in construction will avoid the drawbacks above referred to.

It is another object of the invention to provide an assembly which is easily attached to a typewriter and which will allow preparing a copy simultaneously with an original being typed without the use of carbon paper.

It is a further object of the invention to provide a ribbon feeder which, in connection with one or more ribbons, will allow the preparation of copies of various sizes without the use of carbon paper.

These and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawings, in which:

Figure 1 shows a front view of an attachment according to the present invention.

Figure 2 is a side view in perspective of the attachment shown in Figure 1.

Figure 3 shows the elements of the attachment for connecting the latter with a typewriter.

Figure 4 shows a detail of the connecting mechanisms illustrated in Figure 3.

*General arrangement*

The ribbon feeder, according to the invention, comprises a plurality of spools adapted to receive a ribbon and to be connected with a driving mechanism so that the ribbon alternately winds from one spool to the other, while the ribbon is passed over the copy to be made. To allow the preparation of a plurality of copies, the number of spool pairs corresponds to the number of copies to be made. According to a more specific embodiment of the invention, an assembly comprising the spools above referred to is selectively attachable to or detachable from a normal typewriter and the feeding mechanism for the copying spools is driven by the typewriter platen.

*Structural arrangement*

Referring now to the drawings in detail, the ribbon feeder according to the present invention comprises a frame, generally designated 1, which is adapted to be connected with the frame 2 of a typewriter having a normal platen 3. The frame 1 comprises rectangularly shaped frame members 4 and 5 at each end of the frame which fully correspond with each other in construction so that the description of one frame member will be sufficient. The corresponding members of the other frame member are, therefore, designated with the same reference numerals, however, with the addition of the letter *a*.

As will be seen from the drawings, the frame member 4 carries a hollow shaft 6 having rigidly connected therewith three spools 7, 8 and 9, two of which are shown as being provided with ribbons 10 and 11, whereas the spool 7 is empty. The spool 7 engages, by means of a pin 12, or similar clutch member, a correspondingly shaped recess in a toothed disc 13, adapted frictionally to engage the typewriter platen 3. The toothed disc 13 is rigidly connected with a shaft 14 passing through the hollow shaft 6 and being provided at its free end with a notch (not shown) adapted to receive a locking member or latch 15 for preventing longitudinal movement of the shaft 14. The latch 15 is pivotally connected by means of a pivot 22 with the inner side member 23 of the frame member 4. The other end of the shaft 14 adjacent the toothed disc 13 is journaled in the side portion 16 of the frame member 4. The front portion of the frame member 4 has connected therewith, for instance by screws 17, a guiding member 18 with triangularly shaped passages 19, 20 and 21 for the copying ribbons. Preferably the passages or guiding slots 19, 20 and 21 are slightly offset with respect to each other so that they are located in different but parallel planes.

As will be seen from Figure 1, the ribbons 10 and 11 pass from the spools 8*a*, 9*a*, through

the passages 20*a*, 21*a* respectively, where they make a sharp turn so as to run parallel to the platen 3 and then to pass through the passages 20, 21, to the spools 8 and 9. Pivotally connected with the inner side member 23, by means of a pivot 24, is a lever 25 provided at one end with a lever arm 26 and on the other end with a curved notch 27 adapted to engage the connecting rod 28 connecting the frame members 4 and 5 with one another. The length of the lever 25 is such that when this lever is shifted into a position in which the notch 27 engages the rod 28, the toothed disc 13 is spaced from the platen 3 so as not to engage the latter. On the other hand, if the lever 25 is disengaged from the rod 28, the spring 29 pulls the frame 4 downwardly so as to cause a frictional engagement of the toothed disc 13 with the platen 3, thereby causing rotation of the disc 13 and, consequently, the spools 7, 8 and 9 when the platen 3 is rotated. The spring 29 has one end thereof threaded through a hole 30 in the upper portion of the guiding member 18 while the other end of the spring 29 is threaded through a hole 31 in the frame arm 32. The frame arm 32 has pivotally connected therewith by means of a pivot 33 a locking lever 34 the lower and of which is provided with a hook shaped portion 35 which, when the frame 1 is locked to the typewriter, engages the stud 50 connected to the locking arm 38. The frame arm 32 is in its turn rotatable about the connecting rod 36 which also connects the frame members 4 and 5 with each other. The locking arm 38 which is keyed to the connecting rod 36, for instance by means of a locking screw 37, is provided at its lower end with a notch 39 for engaging a locking pin 40 rigidly connected with the typewriter frame 2. In other words, the spring 29 continuously urges the arm 32 upwardly and, thereby, also the lever 34 which thus, by means of stud 50, keeps the arm 38 in engagement with the locking pin 40 on the typewriter frame.

As will be seen from the drawings, engagement of the locking arm 38 with the pin 40 and of the hook shaped portion 35 of the lever 34 with the stud 50 firmly locks the frame 1 to the typewriter, due to the action of the spring 29. Keyed to the connecting rod 36 is furthermore a hook shaped stopping member 41 forming a stop for the lever 25. Rotatably mounted on the connecting rod 36 is furthermore a hook 42 adapted to engage a rod 45 provided on the rear side of the typewriter and carrying the usual paper guide (not shown in the drawings) forming a lateral abutment for the paper sheets inserted in the typewriter. To facilitate the engagement of the hook 42 with the rod 45, the hook 42 is provided with a handle 46. The frame members 4 and 5 are provided in the usual manner with tensioning members 43 and 43*a* held in their position by screws 44 and bearing against the ribbons so as to hold the same properly tensioned.

To locate the assembly according to the present invention on the typewriter, the locking levers 34 and 34*a* are shifted in anti-clockwise direction. The assembly is then placed upon the typewriter so that the toothed disc 13 and toothed disc 13*a* engage the typewriter platen 3. The handle 46 is then operated so that the hook 42 engages the rod 45, while the locking arm 38 is shifted so that its notch 39 embraces the locking pin 40. Since the locking arms 38 and 38*a* are rigidly connected with the connecting rod 36, shifting movement of the locking arm 38 also causes a shifting movement of the locking arm 38*a*. Now the locking levers 34 and 34*a* are operated so that the lower hook shaped portion of lever 34 engages the stud 50, while the corresponding portion of lever 34*a* engages a corresponding stud (not shown). The assembly is now firmly locked to the typewriter frame. In order to effect a proper operation of the winding spools, one of the toothed discs, for instance disc 13, is disengaged from the platen 3 by shifting the lever 24 so that its notched portion 27 engages the rod 28 as shown in Figure 1, thereby spacing the disc 13 from the platen 3. The lever 25*a* then occupies a position likewise shown in Figure 1, so that the toothed disc 13*a* frictionally engages the typewriter platen 3. When the typewriter platen 3 is now rotated in the usual manner by moving the carriage from its outermost right-hand position to its outermost left-hand position, it will, by friction with the toothed disc 13, rotate the latter in the direction indicated by the arrow, thereby winding a predetermined portion of the ribbons off the spools 8 and 9 and on the spools 8*a* and 9*a*.

The ribbon feeder, according to the present invention, is of particular advantage when typing relatively short letters or bills of similar character. In this instance the bills may, for example, be connected with each other by a perforation and form a long band wound up on a roll. One roll will then be used as the original while a number of further rolls corresponding to the number of copies to be made will be fed, together with the "original" roll through a typewriter connected with the ribbon feeder, according to the invention. As will be clear from the above description of the invention, all rollers can then continuously be fed through the typewriter and the ribbon feeder without interruption whereupon, after having prepared the bills, the single bills may be torn off along the perforations.

It will be understood that I desire to comprehend within my invention such modifications as come within the scope of the claims and the invention.

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

1. A ribbon feeder comprising in combination a frame, spool receiving means at each end of said frame, driving means operatively connected with said spool receiving means, lever means for selectively connecting or disconnecting said frame and spool receiving means as a unit to or from a typewriter, yielding means associated with said frame for yieldingly maintaining said frame and typewriter interlocked, and means for effecting driving connection between said typewriter and said driving means.

2. A ribbon feeder comprising in combination a frame, spool receiving means at each end of said frame, driving means operatively connected with said spool receiving means, and locking means including a lever mechanism for detachably and yieldingly locking said frame as a unit to the frame of a typewriter and establishing frictional driving connection between said driving means and the platen of said typewriter.

3. A ribbon feeder comprising in combination a frame, spaced spool receiving means supported by said frame and adapted to receive two sets of spools for receiving typewriter ribbons, guiding means for said typewriter ribbons to guide said ribbons from one set of spools to the other set of spools and vice versa, means operable to effect

a yieldable connection between said frame and a typewriter, said means including lever means for selectively connecting or disconnecting said frame and said typewriter, and means for driving said spool receiving means in response to the movement of the platen of said typewriter.

4. A typewriter comprising in combination a typewriter platen, a frame supporting two spaced sets of spools adapted to cooperate with each other so as to pass ribbons from one set of spools to the other set of spools and vice versa, a pair of driving members respectively associated with each set of spools and operatively connected therewith, said driving members being adapted to convey the movement of said typewriter platen to said spools, means associated with each driving member for selectively moving the driving member pertaining thereto into operative or inoperative position, lever means operable selectively for attaching said frame with said spools as a unit to or detaching the same as a unit from said typewriter, and yielding means associated with said frame for maintaining a yielding connection between said frame and said typewriter.

5. A ribbon feeder comprising in combination a frame, means supported by said frame for receiving two spaced sets of spools adapted to pass typewriter ribbons from one set of spools to another set of spools and vice versa, driving members associated with each set of spools, guiding means connected with said frame for guiding said ribbons in different planes, lever means yieldingly connected with said frame and operable selectively for yieldingly and detachably connecting said frame together with said spools as a unit to the frame of a typewriter, and means for effecting driving connection between said driving members and the platen of said typewriter.

6. A ribbon feeder attachment comprising in combination, a frame, two spaced sets of spools supported by said frame, the spools of each set being axially aligned, a first lever having one end pivotally connected to said frame and the other end yieldingly connected to said frame, a second lever shiftably mounted in said frame and provided with means for selective engagement with a typewriter or similar recording device, a third lever pivotally connected with said first lever and operable selectively to engage said second lever for locking said frame to said typewriter or recording device, and means associated with said spools and operable selectively for effecting a driving connection between said spools and a driving member on said typewriter or recording device.

7. A typewriter attachment comprising in combination, two spaced frames, each frame having a set of spools with the spools in axial alignment with each other, spacing means spacing and interconnecting said frames, a lever pivotally connected to one of said frames and operable selectively for engaging a typewriter and connecting said frames thereto, driving means associated with each of said spools and adapted to engage a driving member on said typewriter, means associated with said spools for selectively making said driving means effective or ineffective, and yielding means associated with said frames for holding said lever in yielding connection with said typewriter and continuously urging said driving means into engagement with said driving member on said typewriter.

GEORGE H. SARGENT.