

Sept. 3, 1957

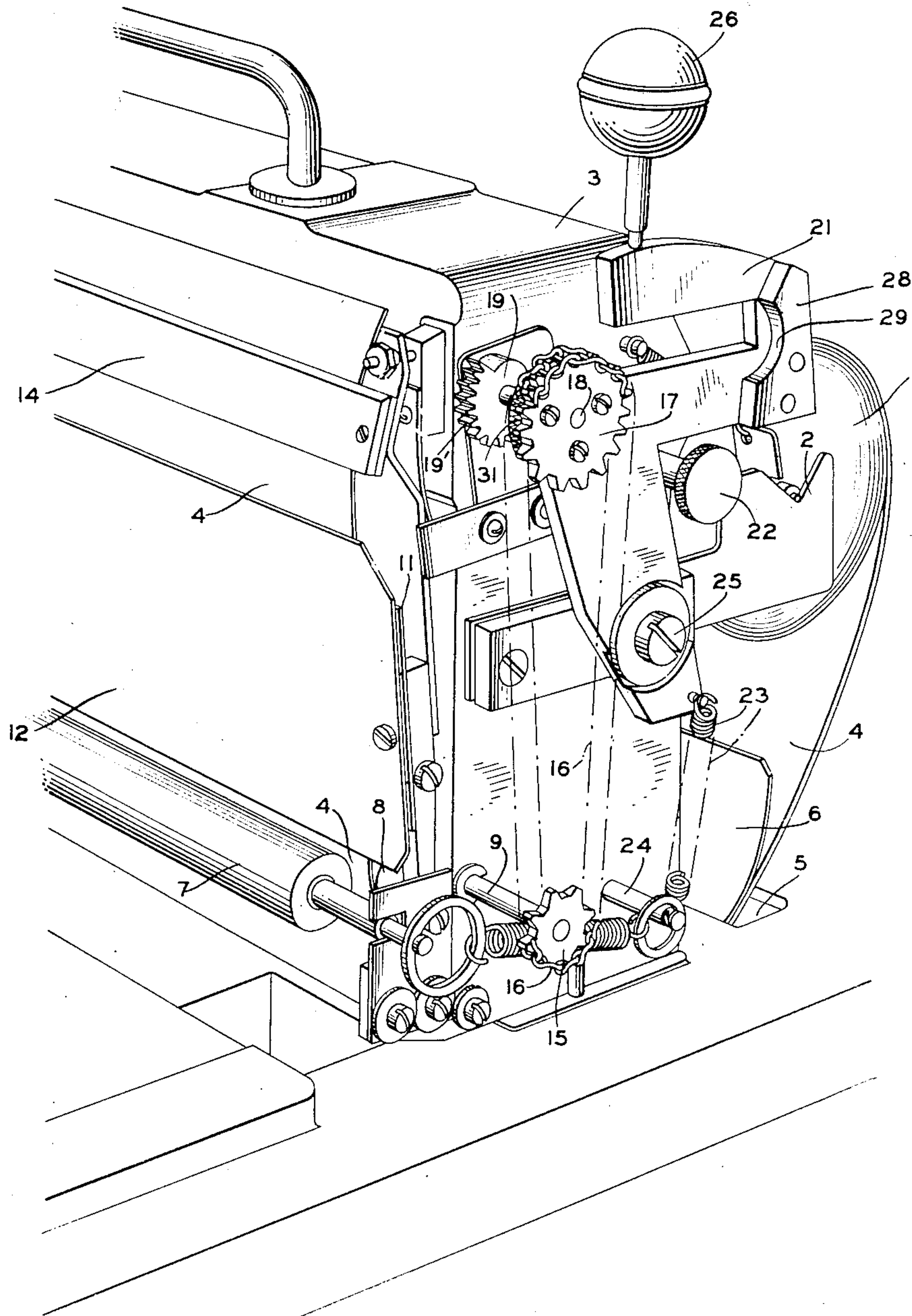
A. S. HILL ET AL
PAPER FEED MECHANISM

2,805,115

Filed April 1, 1954

2 Sheets-Sheet 1

FIG. 1



INVENTORS
A. S. HILL
BY D. S. ZABRISKIE

M. Reynolds
ATTORNEY

Sept. 3, 1957

A. S. HILL ET AL

2,805,115

PAPER FEED MECHANISM

Filed April 1, 1954

2 Sheets-Sheet 2

FIG. 2

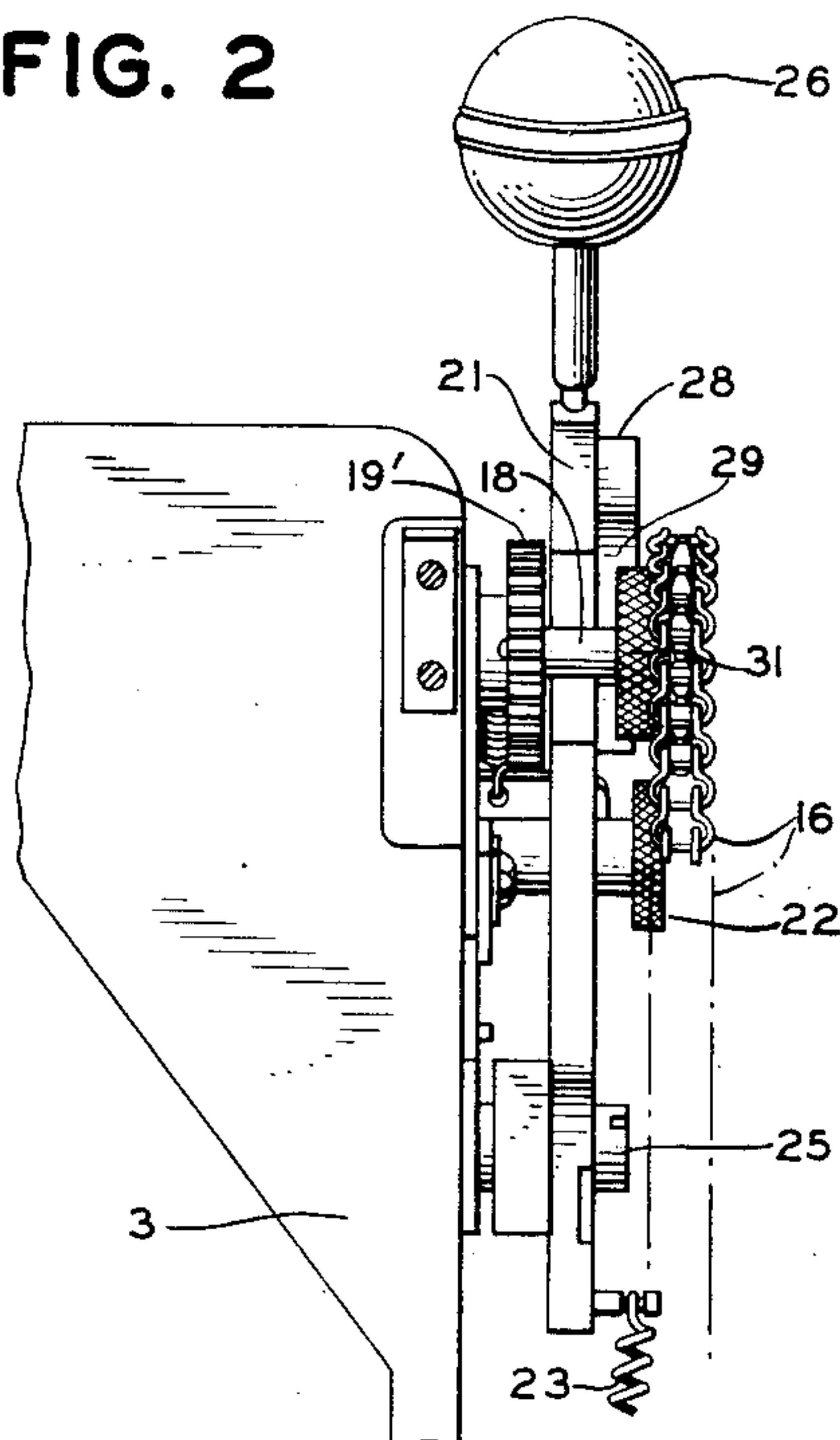


FIG. 3

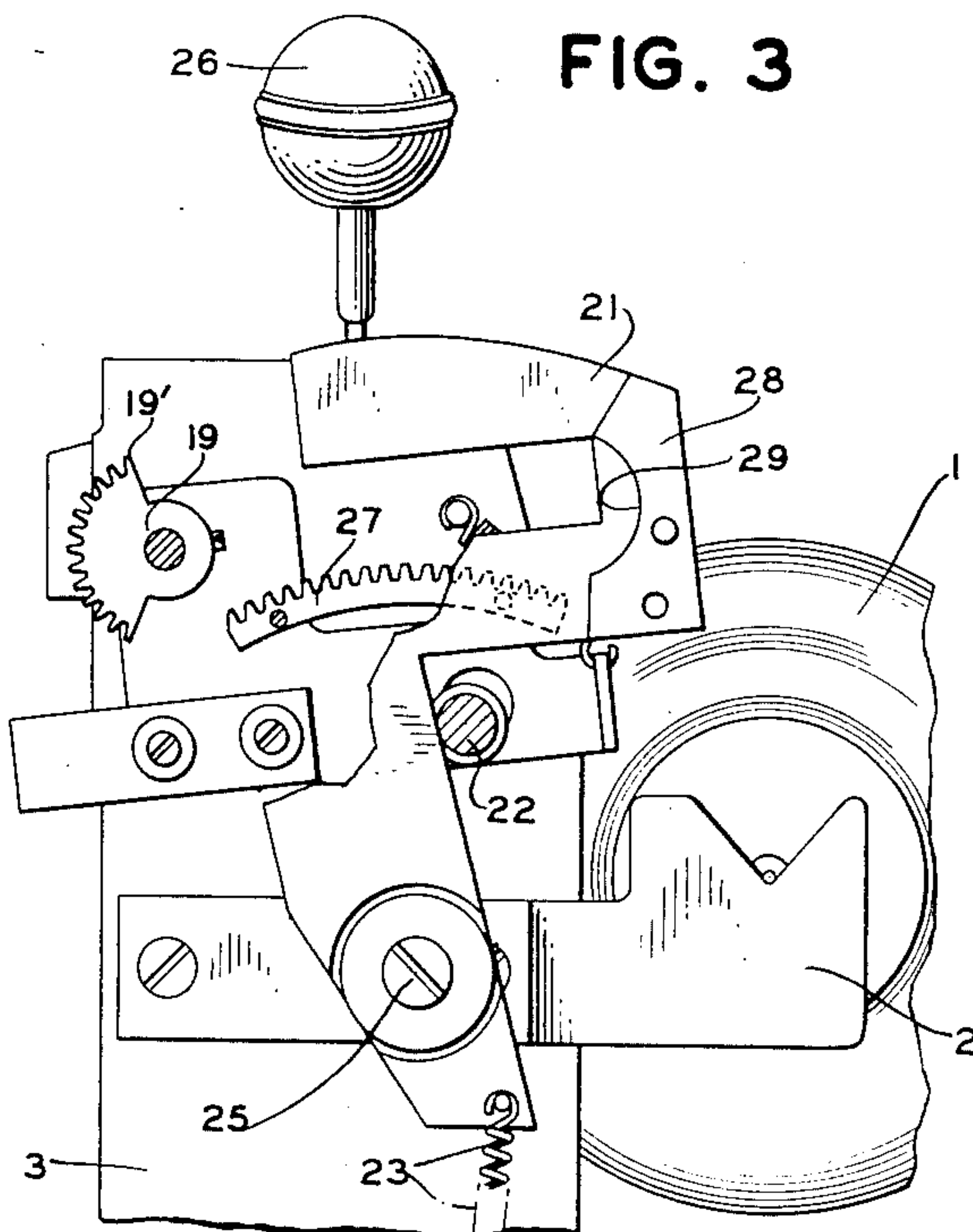
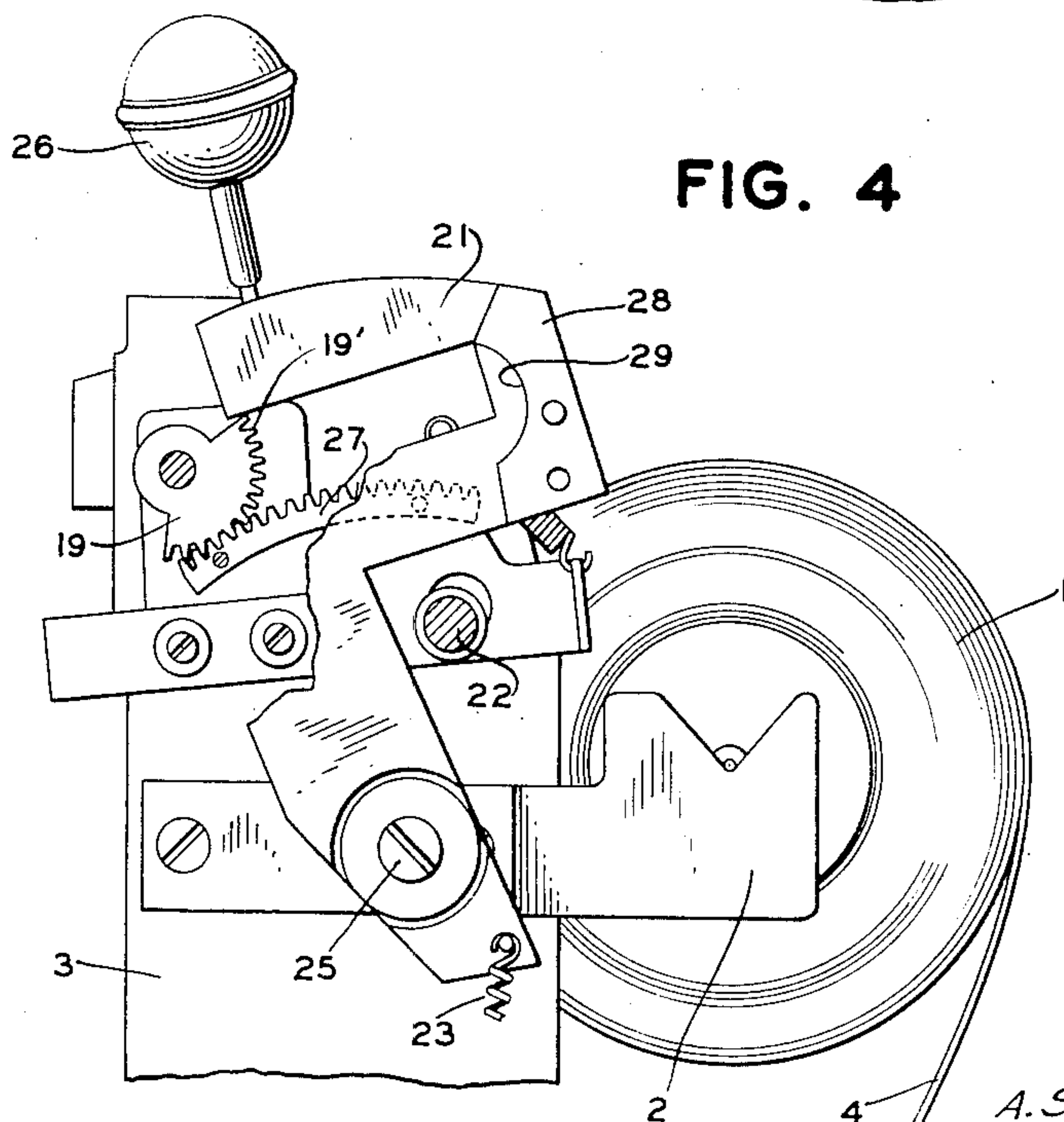


FIG. 4



INVENTORS
A. S. HILL
D. S. ZABRISKIE
BY *M. J. Ray*
ATTORNEY

1

2,805,115

PAPER FEED MECHANISM

Archie S. Hill, Metuchen, and Douglas M. Zabriskie, Northvale, N. J., assignors to The Western Union Telegraph Company, New York, N. Y., a corporation of New York

Application April 1, 1954, Serial No. 420,367

5 Claims. (Cl. 346—136)

This invention relates to the art of recording facsimile transmissions by means of equipment for marking on a paper sheet, and more particularly to equipment of the kind in which such paper sheet is adapted for full width message recording.

Page recorders employing a rapidly moving stylus which scans across the page repetitively while the paper is slowly advanced beneath the stylus have been described in Patent No. 2,639,211, issued May 19, 1953, to F. G. Hallden et al., and are widely used in the communications art.

When such recorders are used in conjunction with transmitters of the rotating drum type, a message paper of constant height is transmitted and recorded because the fixed dimensions of the transmitter drum determine the size of the message blanks used upon it. It therefore results that regardless of the length or brevity of the actual content of the particular message being transmitted, the equipment must be arranged to transmit the full height of a standard message blank, even in the case of short messages, unless the recorder is carefully attended, and its operation terminated manually as soon as the text of the message has been received. Since one such recorder is customarily used in connection with several transmitters, the loss of time incurred in waiting for the blank portion of the message to be received is undesirable because it decreases the availability of the recorder for use on other incoming lines, and thus requires that a greater number of recorders be employed in order to maintain an acceptable standard of availability.

It is the practice to closely watch each of several such simultaneous recordings, and at the end of the recorded intelligence on each, to terminate the reception on that machine by rotating the paper feed handwheels of the recorder until a predetermined length of paper has been fed out in order to produce a message sheet of standard size.

It is an object of the present invention to provide a method of feeding out paper from a facsimile recording machine, which requires no skill or care on the part of the operator to determine the proper amount of additional paper feed to provide uniform message height.

It is another object of this invention to provide a more rapid and precise means of securing received facsimile record sheets of uniform height.

Still another object of the present invention is to enable a smaller number of central office recording machines to accommodate a given number of patrons' lines by increasing the proportion of machine operating time during which recording is accomplished.

Further objects and advantages of the instant invention will become apparent from a consideration of the description thereof, taken together with the accompanying drawings, wherein:

Fig. 1 is a perspective view of a portion of a facsimile recorder, equipped with the apparatus of the instant invention;

2

Fig. 2 is a front elevation of the instant invention in place on a recorder;

Fig. 3 is a side view of Fig. 2 having a portion broken away; and

Fig. 4 is a view of Fig. 3 shown in a different phase of its cycle of operation.

Referring now to the drawings, it is seen that Fig. 1 depicts the paper feed mechanism of a facsimile page recorder of a type in common use, equipped with the mechanism of the present invention. A roll 1 of electrographic paper is mounted on brackets such as 2, which are fastened to the frame 3, in such a manner as to permit free rotation thereof, and the ready replacement of a depleted roll. Paper 4 passes downward through opening 5 in the base of the machine, guided by the curved chute 6, and emerges upwardly over the roll 8 to pass between the back plate 11 and the front platen plate 12 and thence behind the beveled straight edge 14, between which latter it is subjected to the writing action of a set of horizontally moving styluses as shown in the aforesaid patent. During operation of the receiver, the paper is thus fed upward past the writing zone by the slow rotation of roll 8 caused by a motor and one-way clutch (not shown) against which roll the idler roll 7 is spring-pressed to provide traction. The shaft 9 of roll 8 is journaled in the frame casing 3 and is provided with a sprocket 15 affixed thereto and connected by means of a ladder chain 16 to a sprocket 17 on a shaft 18 which is similarly mounted. The shaft 18 also has affixed to it a gear sector 19, as may be seen more clearly in Fig. 3.

A yoke 21 having an operating handle 26 is pivotally mounted on a shoulder screw 25 secured in the frame casting 3. It is normally retained in a rearward position by the tension of a coil spring 23 connected to it and operating against a stud 24 in the frame casting 3.

In Fig. 3 is seen a gear or rack segment 27 secured to the reverse side of yoke 21, for engagement with the sector gear 19, the said yoke being shown partly broken away to display the segment more clearly. A block 28 of relatively soft material having a high coefficient of friction, such as linen-filled Bakelite, is affixed to the said yoke in such position as to engage the knurled cylinder 31, seen in Fig. 2, with its friction surface 29 when the handle 26 is pulled forward, and thereby to act as a stop to the forward motion of yoke 21, and simultaneously as a brake to prevent further rotation of the cylinder 31, and consequently of the roll 8. This is desirable in order to prevent spinning of the roll 8, which would otherwise occur if the handle 26 were pulled violently, and which would thus cause the feeding out of an extra and undesired length of paper unless so checked.

In Fig. 4 is shown the mechanism of Fig. 3 in the position assumed after the recording of part of a facsimile message. At the start of recording, the yoke 21 rests against knurled screw 22 and sector gear 19 assumes the position shown in Fig. 3. As recording progresses, sector gear 19 rotates until its first tooth 19' engages segment 27, at which time yoke 21 begins to advance against the tension of spring 23. The initial portion of the facsimile record comprises margin, heading and message identification data, all of which are present in every transmission and which are received during the interval before tooth 19' engages segment 27. Upon such engagement, the reception of further message signals is concurrent with the further rotation of sector 19 and consequent advancement of yoke 21. At such time as visual inspection indicates that reception is completed, the handle 26 is pulled forward until block 28 engages knurled cylinder 31, and the message is torn off against straight edge 14. Pulling handle 26 causes the immediate rotation of sector 19 to a position where the last gear tooth thereof becomes disen-

3

gaged from segment 27, thus freeing the yoke for return to the rearward position by spring 23 when pressure is removed from the handle 26.

It is to be noted that in pulling the handle 26 forward in the manner described, the roll 8 is caused to rotate to a fixed final position, thus feeding paper 4 upward beneath the straight edge 14 to a definite height of protrusion therefrom as measured to the previously torn edge produced by the similar cycle of operation, next preceding. At this final position of the roll 8 a cam operated switch associated therewith which is not shown on the drawings but is disclosed in the aforesaid Hallden et al. patent, is effective to open the circuit to the paper feed motor, thus placing the recorder in a standby condition until the arrival of another facsimile transmission.

Since it is apparent from the foregoing that the operation of the present invention in the manner described results in the production of successive message sheets of identical shape and size, it is evident that an increased convenience in handling and filing of the messages results from its use.

A further advantage arises from the fact that the handle 26 is advanced from its rearward position only after the body of an incoming facsimile transmission has started to record on the moving paper. The handle therefore indicates by its position whether or not the recorder is in a portion of its cycle where complementary feedout of paper is possible, and if not, it requires no closer inspection at that time, but may be ignored until a different indication is obtained. It is thus unnecessary to make a close inspection of the machine to determine whether any attention is required, as this can be seen from a considerable distance by observing the position of handle 26.

Various modifications of the structural embodiment disclosed herein can be made without departing from the essential inventive concept, and it is therefore intended that only such limitations be placed thereon as are specifically set forth in the appended claims.

What is claimed is:

1. In a continuous facsimile recorder, means for supporting a roll of recording paper, a forwardly free-wheeling paper feed roll for advancing said recording paper through a recording zone for a predetermined distance, drive means for said feed roll to advance said paper through a fixed initial portion of said predetermined distance, and through a further portion of said predetermined distance, gear sector means always connected with said feed roll for rotation by said drive means during said initial portion of said predetermined distance and during said further portion thereof, rack means engageable by said sector means only during said further portion and advanceable thereby toward a fixed forward position thereof, manual means for advancing said rack in a fixed path of travel adjacent to said sector into said forward position for the overriding advancement of said feed roll to a predetermined final position, whereby said recording paper is successively advanced in part by said drive means and in complementary part by said manual means, and means to return said rack means to a rearward position.

2. In a facsimile recorder having a feed roller actuated by a motor for the advancement of recording paper, the combination comprising a sector member concentrically

4

mounted and connected to the said feed roller for rotation therewith, a manually operable resiliently repositionable rack member mounted adjacent to the said sector member, means for moving said rack in a fixed path for engagement with said sector member during only a portion of the rotation thereof, whereby normal rotation of the roller by a predetermined amount from a starting position causes engagement of said sector with the said rack, and manual advancement thereafter of the said rack to the end of its path causes further rotation of the said sector to rotate the roller for feeding recording paper to a predetermined distance beyond the roller, and causes said sector to rotate out of engagement with said rack for resilient rack repositioning, and resilient means to reposition the said rack.

3. In a facsimile recorder having a rotatable feed roller for the advancement of recording paper and an overriding clutch associated therewith to enable the roll to be further advanced manually without impediment from driving machinery associated with the feed roller, gear sector means mounted for rotation in step with the said feed roller at all times, means to connect the said gear sector means to the feed roller for rotation in step therewith, a manually swingable lever pivotally affixed adjacent the said gear sector means and having a retracted position and an advanced position, a gear segment affixed to the said lever for engagement in the retracted position by the said gear sector means only after a predetermined portion of a revolution thereof, and means for repositioning said lever to the retracted position.

4. In a facsimile recorder having a rotatable feed roller for the advancement of recording paper and an overriding clutch associated therewith to enable the roll to be further advanced manually without impediment from driving machinery associated with the feed roller, gear sector means mounted for rotation in step with the said feed roller, means to connect the said gear sector means to the feed roller for rotation in step therewith at all times, a manually swingable lever pivotally affixed adjacent the said gear sector means and having a retracted position and an advanced position, a gear segment affixed to the said lever for engagement in the retracted position by the said gear sector means only after a predetermined portion of a revolution thereof, means comprising a block of friction material secured to the said lever for braking engagement with said driving machinery in the advanced position, only after disengagement of the said gear sector means from the said gear segment, and means for repositioning said lever to the retracted position.

5. The invention of claim 4, wherein the said means to connect the said gear sector means to the said feed roller comprises a sprocket on the feed roller, a sprocket on the said gear sector means, and a ladder chain in engagement therebetween.

References Cited in the file of this patent

UNITED STATES PATENTS

1,113,103	Cooper	Oct. 6, 1914
1,220,148	Wernery	Mar. 20, 1917
2,391,765	Artzt	Dec. 25, 1945
2,639,211	Hallden	May 19, 1953