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E. W. HEWITT ET AL
MESSAGE ACCUMULATOR AND STACKER

2,868,874

Filed May 24, 1955

2 Sheets-Sheet 1

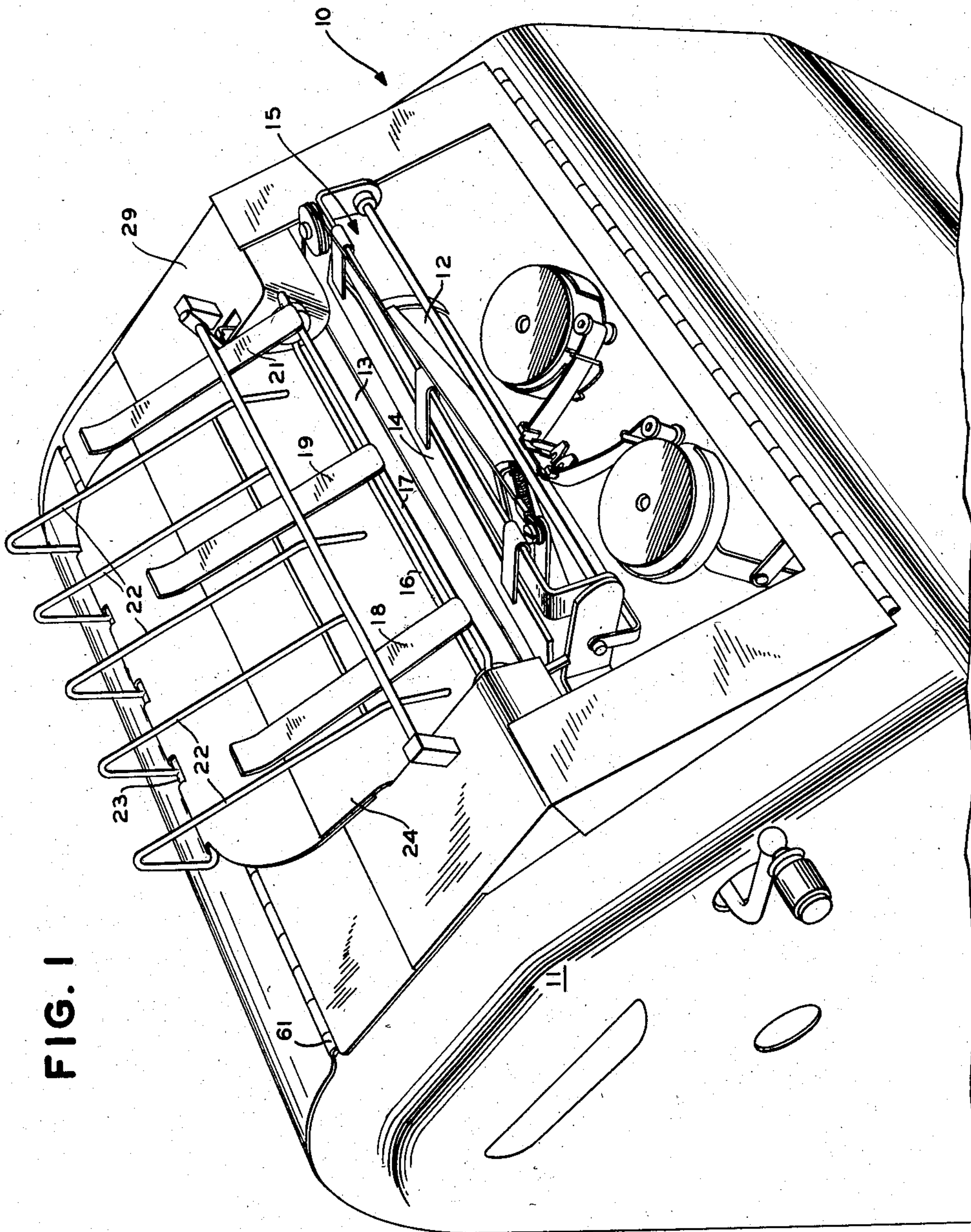


FIG. 1

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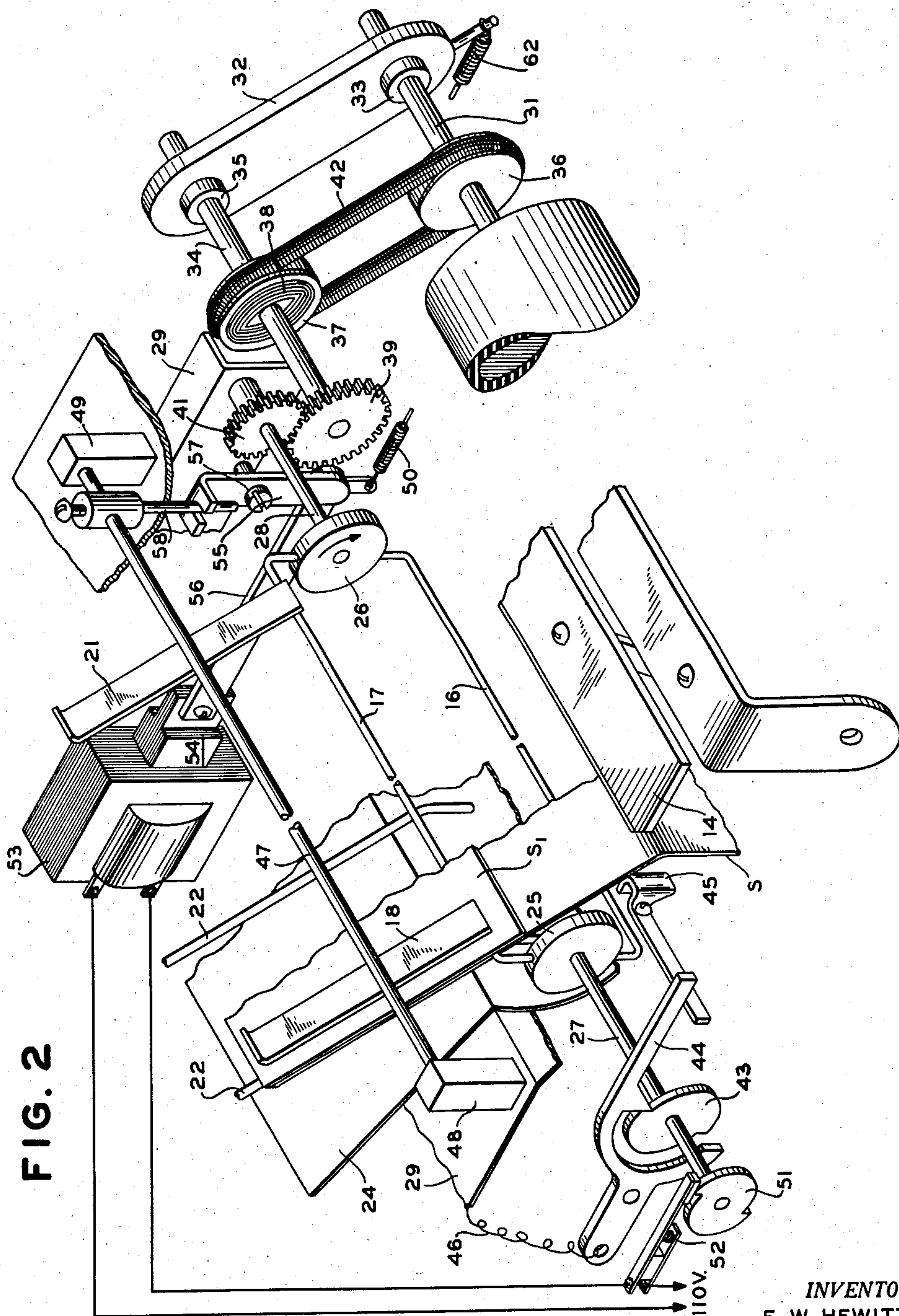


FIG. 2

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MESSAGE ACCUMULATOR AND STACKER

Ernest W. Hewitt, Stamford, Conn., and James J. Krakusky, Ridgewood, N. Y., assignors to The Western Union Telegraph Company, New York, N. Y., a corporation of New York

Application May 24, 1955, Serial No. 510,808

18 Claims. (Cl. 178—42)

The present invention relates to printing telegraph apparatus and more particularly this invention is concerned with means for receiving telegraph messages cut from a continuous strip for the purpose of stacking the messages in numerical order.

The standard teleprinter feeds a continuous strip of message paper from a supply roll past a printing point where received message characters are selectively imprinted on the strip line by line. The message strip is then passed through an opening in the top of the teleprinter where it accumulates as each message is received and printed on the strip. An operator or attendant will periodically inspect the teleprinter machine and manually cut the individual message sheets from the length of paper as it accumulates. This manual operation by the attendant gave rise to the development of an automatic message cutter which was designed to conveniently fit within a standard teleprinter. As a message is received and printed on the paper strip, it is fed past the automatic cutter which is under the control of the transmitting machine at a distant point. After a message is received a special character will be transmitted to operate the cutter and sever the end of the message strip. The severed message sheet is thereupon conveyed to a container or conveyor belt to be transferred to a distant point in the office in which the machine is located. In certain systems it was found desirable to have the cut telegraph message sheets stacked in the order in which they are received with subsequent sheets on the bottom of the stack. The problem of devising means of accomplishing this function was further complicated by the fact that individual message sheets are of random lengths. A short message requiring a few number of lines would appear on a sheet of short length while a longer message would require a much longer sheet. Since the message cutter would generally operate to sever the continuous strip of message paper at the end of each message, the severed sheet would vary in accordance with the length of the message. It is to this problem of stacking messages of random lengths in numerical order that the present invention is directed.

Accordingly, the primary object of the invention is to provide means for stacking message sheets in numerical order.

A further object of the present invention is to provide means for stacking message sheets in numerical order in which each subsequent sheet is placed on the bottom of the stack.

A further object of this invention is to provide means for stacking message sheets of random lengths in numerical order.

These and other objects of the present invention will become apparent from the following description taken with the drawings, in which:

Fig. 1 is a perspective view of the upper part of a standard teleprinter modified with a message paper cutter and a message stacker or accumulator; and

Fig. 2 is a perspective view showing the details of the message stacker or accumulator of the present invention.

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Referring now to Fig. 1, numeral 10 indicates generally a standard teleprinter enclosed in a casing 11. This teleprinter is of well known construction and only such parts as are necessary for an understanding of the present invention are shown. For the structural details of the teleprinter reference may be had to U. S. Patent No. 1,904,164 of Morton et al. It need only be mentioned here that a continuous roll of message paper is fed through the teleprinter over a platen 12 past a printing mechanism (not shown). Received impulses from the distant transmitter selectively actuate type bars which imprint a line of characters from left to right across the width of the paper. The paper is held stationary during each line of printing and at the end of the line the feeding mechanism is operated to advance the strip a distance of one line. At this point the printing mechanism reverts back to the left side of the machine and starts printing the next subsequent line.

From platen 12, the message strip S (Fig. 2) is fed between a fixed knife blade 13 and a movable blade 14 of a message cutter generally indicated by numeral 15. For the details of construction of this message cutter, reference may be had to the U. S. application of E. W. Hewitt, Serial No. 411,516, filed February 19, 1954. The message paper is advanced past the cutting blades and between rods 16 and 17, the function of which will be described hereinafter. As the incoming message is printed line by line, the paper will advance under flat springs 18, 19, 21 and over guide wires 22. The guide wires may take the form of five parallel arranged wires bent at the outer ends and secured to a common wire 23 which in turn is held in place by the bent over edge of plate assembly 24. The opposite ends of the wires 22 are bent downward to engage the bottom of plate assembly 24 so that the message paper is guided over the wires. The purpose of the guide wires is to avoid the electrostatic effects that occur if the message paper is permitted to advance directly in contact with plate assembly 24.

It is seen from the description so far that as the message is received the strip S is advanced to a point where it is resting on guide wires 22 and extending between the knife blades 13, 14 and between rods 16 and 17, as shown in Fig. 2. At the completion of the message, a special character will be transmitted which serves to operate the movable knife blade 14 to cut off the received message. The cutting mechanism and control means therefor are fully disclosed in the above-mentioned Hewitt application.

Referring now to Fig. 2, rods 16 and 17 are bent at their outer extremities and secured to end disks 25 and 26 which in turn are secured to shafts 27 and 28 respectively. For convenience of description rods 16, 17, disks 25, 26, and shafts 27, 28 will be referred to as the paper raising assembly. Shafts 27 and 28 are rotatably mounted on the teleprinter cover 29. Shaft 28 is shown mounted in a bent down portion on the right hand side of the cover, and shaft 27 is similarly rotatably mounted on the left hand side. Platen 12 has a platen shaft 31 with a bracket 32 loosely mounted thereon. This bracket is maintained in position by means of collars 33 secured to the platen shaft. An intermediate shaft 34 is loosely received in the other end of bracket 32 and also maintained in position by collars 35. A pulley 36 is securely mounted on the platen shaft opposite a pulley 37 secured to intermediate shaft 34. Located within pulley 37 is a flat spiral spring 38 one end of which is secured to the intermediate shaft 34 and the other end of which is secured to pulley 37. Gear 39 fastened to the intermediate shaft meshes with a pinion 41 secured to shaft 28 of the paper raising assembly. As is well understood to those familiar with the telegraph art, platen 12 is rotated intermittently by the line feed mechanism of the teleprinter. This rotation of the platen and platen shaft 31 is imparted to

intermediate shaft 34 by means of a spiral spring belt 42 encircling pulleys 36 and 37. In this manner motive power is supplied to the paper raising assembly. In the normal condition the paper raising assembly is prevented from rotating by an escapement cam 43 fixed to shaft 27 and engaged by an escapement lever 44. With shaft 27 thus prevented from rotating, rotation of platen shaft 31 will result in energy being stored in spiral spring 38. As soon as enough energy is stored in the spiral spring it will act as a friction clutch permitting spring 42 to slip on the pulleys. It will be seen then that the release of cam 43 will result in the paper raising assembly rotating in a clockwise direction through an angle of 180° at which point the escapement lever will reengage the cam 43.

It is recalled that as the message is received, the strip of message paper passes upwardly between rods 16 and 17 and that at the end of a message movable knife blade 14 is actuated to sever the message paper. As the movable knife blade advances to cut the message paper, it will engage an intermediate lever 45 which rotates in a clockwise direction to raise escapement lever 44. At this point of the operation, flat spiral spring 38 will have stored sufficient energy due to the rotation of the platen to cause the paper lifting assembly to quickly rotate. As described in the above cited Hewitt application, the knife blade moves forwardly to sever the paper and immediately retracts. The intermediate lever is thereby permitted to move to its normal position to allow escapement lever 44 to reengage cam 43 under the action of spring 46 which is fastened to one end of lever 44 and anchored to the cover assembly 29. Thus the paper raising assembly is permitted to rotate through an angle of 180°.

Flat springs 18, 19 and 21 are suitably secured to a rod 47 as by spot welding or soldering. A pair of brackets 48, 49 are fastened to the top of cover assembly 29 and loosely receive shaft 47. As the paper raising assembly started to rotate upon the release of escapement cam 43, cam 51 closed a pair of contacts 52 to energize solenoid 53. Solenoid armature 54 retracts to pivot link 55 in a clockwise direction by means of link 56 which connects the solenoid armature with the lower end of link 55. The latter is pivotally mounted at 57 to the bent down portion of cover assembly 29. Rotation of link 55 causes pin 58 which is secured to shaft 47 to rotate in a counterclockwise direction to lower the rear ends of flat springs 18, 19 and 21. As the flat springs are thus lowered, their rear ends are urged toward their respective guide wires 22 to hold in position the prior cut messages which are resting on the guide wires. At the termination of the rapid half turn of the paper raising assembly contacts 52 are again opened to deenergize solenoid 53 and permit repositioning of the flat springs by the action of spring 50.

As the paper raising assembly rotates, rod 17 passes over the trailing edge of the cut message and thereafter rod 16 lifts the trailing edge of the cut message sheet S1 to a position where said edge is located above rod 16 now located against the forward ends of the flat springs. At this point in the operation, rod 17 has been rotated through one half turn and is located in the bottom position. The assembly is then prepared to receive the message strip S as it is fed while receiving the next subsequent message. Since the trailing edge of the prior cut message sheet S1 is held in a raised position, the paper strip S, as it feeds through the machine, will be guided below the prior cut sheet and inbetween the rods 16 and 17. The next time the knife blade actuates, the above cycle will reoccur and the message paper that is cut thereby will take its place below the previous cut message. It is seen that the message sheets will accumulate in a stack which will rest upon the guide wires 22. The trailing edges will be aligned and gripped between the forward ends of the flat springs and the upper rod of the paper lifting assembly. It is also understood that the purpose of pivoting the flat

springs during each cycle is to have them engage the stack of cut messages to hold them in place as their trailing edges are released by the turning of the paper raising rods.

Another feature of the present invention is that all of the elements of the accumulator mechanism are mounted to the cover assembly 29 which in turn is hinged as at 61 (Fig. 1) to the teleprinter casing. In this manner the cover assembly may be pivoted upwardly to give access to the interior of the teleprinter without interfering with the mounting of the accumulator. When the cover 29 is pivoted upward, gears 39 and 41 disengage. As the cover is replaced, these gears will reengage and a spring 62 will keep tension on gear 39 against gear 41. This spring is secured to a pin extending from one end of pivoted mounting bracket 32 and anchored to any convenient part of the teleprinter framework.

While the present invention has been described with reference to a specific embodiment thereof, it should be understood that this is to be considered as limiting the appended claims.

What is claimed is:

1. In a device of the character described wherein sheets are fed to a rotatably mounted sheet stacking means, sheet raising means to which successive sheets are fed, means to receive said sheets as they pass to said raising means, means to rotate the raising means as the trailing edge of a sheet reaches said raising means to raise said trailing edge whereby a following sheet fed to said raising means is received between said receiving means and the preceding sheet.

2. In a device of the character described wherein sheets are fed to a sheet stacking means, sheet raising means including a pair of spaced members defining an opening between which successive sheets are fed, means to receive said sheets as they pass between said raising means, means to operate the raising means to raise the trailing edge of a sheet whereby a following sheet fed between said members is received between said receiving means and the preceding sheet and means to hold the trailing edges of raised sheets in a raised position.

3. In a device of the character described wherein sheets are fed to a sheet stacking means, sheet raising means including a pair of spaced members defining an opening between which successive sheets are fed, guide means located to receive said sheets as they pass between said members, means to rotate said raising means as the trailing edge of a sheet reaches said members to raise said trailing edge whereby a following sheet fed between said members is received between said guide means and the preceding sheet.

4. In a device of the character described wherein sheets are fed to a sheet stacking means, sheet raising means including a pair of spaced parallel rods defining an opening between which successive sheets are fed, guide means located to receive said sheets as they pass between said parallel rods, means to rotate said raising means as the trailing edge of a sheet reaches said parallel rods to raise said trailing edge whereby a following sheet fed between said parallel rods is received between said guide means and the preceding sheet.

5. In a device of the character described wherein sheets are fed to a sheet stacking means, sheet raising means including a pair of spaced parallel rods disposed one above the other between which successive sheets are fed, guide means located to receive said sheets as they pass between said parallel rods, means to rotate said raising means through an angle of substantially 180 degrees as the trailing edge of a sheet reaches said parallel rods to raise said trailing edge whereby a following sheet fed between said parallel rods is received between said guide means and the preceding sheet.

6. In a device of the character described wherein sheets are fed to a sheet stacking means, means including a pair of vertically spaced members between which successive

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sheets are fed, guide means located to receive sheets as they pass between said members, sheet holding means located above said guide means and said raising means, means to normally urge said holding means toward the upper one of said vertically spaced members, means to rotate said raising means as the trailing edge of a sheet reaches said members to raise said trailing edge to a position between the upper one of said members and said holding means whereby a following sheet fed between said members is received between said guide means and the preceding sheet, means to rock said holding means at the start of rotation of said raising means whereby said holding means is urged toward the guide means to maintain stacked sheets in position during operation of the raising means.

7. In a device of the character described wherein sheets are fed to a sheet stacking means, sheet raising means including a pair of spaced parallel rods disposed one above the other between which successive sheets are fed, guide means located to receive said sheets as they pass between said parallel rods, sheet holding means located above said raising means, means to urge said holding means toward the upper one of said parallel rods, means to rotate said raising means as the trailing edge of a sheet reaches said parallel rods to raise said trailing edge to a position between the upper rod and said holding means whereby a following sheet fed between said parallel rods is received between said guide means and the preceding sheet.

8. In a device of the character described wherein sheets are fed to a sheet stacking means, sheet raising means including a pair of spaced parallel rods disposed one above the other between which successive sheets are fed, guide means located to receive said sheets as they pass through said parallel rods, sheet holding means located above said guide means and said raising means, means to normally urge said holding means toward the upper one of said parallel rods, means to rotate said raising means through an angle of 180 degrees as the trailing edge of a sheet reaches said parallel rods to raise said trailing edge to a position between the upper rod and said holding means whereby a following sheet fed between said parallel rods is received between said guide means and the preceding sheet, means to rock said holding means at the start of rotation of said raising means whereby said holding means is urged toward the guide means to maintain stacked sheets in position during operation of the raising means.

9. In a device of the character described wherein a continuous strip is fed to a sheet stacking means, strip cutting means located in the path of travel of said strip, said cutting means being selectively operated to sever the strip into individual sheets of random lengths, sheet stacking means located adjacent said cutting means, said sheet stacking means comprising rotatably mounted sheet raising means to which successive sheets are fed, means to receive said sheets as they pass to said raising means, means responsive to operation of said cutting means to rotate said raising means as the trailing edge of a sheet reaches said raising means to raise said trailing edge whereby a following sheet fed to said raising means is received between said receiving means and the preceding sheet.

10. In a device of the character described wherein a continuous strip is fed to a sheet stacking means, strip cutting means located in the path of travel of said strip, said cutting means being selectively operated to sever the strip into individual sheets of random lengths, sheet stacking means located adjacent said cutting means, said sheet stacking means comprising sheet raising means including a pair of spaced members defining an opening between which successive sheets are fed, means to receive said sheets as they pass between said raising means, means responsive to operation of said cutting means to operate said raising means to raise the trailing

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ing edge of a sheet whereby a following sheet fed between said members is received between said receiving means and the preceding sheet and means to hold the trailing edges of raised sheets in a raised position.

11. In a device of the character described wherein a continuous strip is fed to a sheet stacking means, strip cutting means located in the path of travel of said strip, said cutting means being selectively operated to sever the strip into individual sheets of random lengths, sheet stacking means located adjacent said cutting means, said sheet stacking means comprising sheet raising means including a pair of members between which successive sheets are passed as the strip is cut by the cutting means, guide means located to receive said sheets as they pass through said members, means responsive to operation of said cutting means to rotate said raising means as the trailing edge of a sheet reaches said members to raise said trailing edge whereby a following sheet fed between said members is received between said guide means and the preceding sheet.

12. In a device of the character described wherein a continuous strip is fed to a sheet stacking means, strip cutting means located in the path of travel of said strip, said cutting means being selectively operated to sever the strip into individual sheets of random lengths, sheet stacking means located adjacent said cutting means, said sheet stacking means comprising sheet raising means including a pair of spaced parallel rods disposed one above the other between which successive sheets are passed as the strip is cut by the cutting means, guide means located to receive said sheets as they pass through said parallel rods, means responsive to operation of said cutting means to rotate said raising means through an angle of substantially 180 degrees as the trailing edge of a sheet reaches said parallel rods to raise said trailing edge whereby a following sheet fed between said parallel rods is received between said guide means and the preceding sheet.

13. In a device of the character described wherein a continuous strip is fed to a sheet stacking means, strip cutting means located in the path of travel of said strip, said cutting means being selectively operated to sever the strip into individual sheets of random lengths, sheet stacking means located adjacent said cutting means, said sheet stacking means comprising sheet raising means including a pair of vertically spaced members between which successive sheets are passed as the strip is cut by the cutting means, guide means located to receive said sheets as they pass through said members, sheet holding means located above said guide means and said raising means, means to normally urge said holding means toward the upper one of said parallel rods, means responsive to operation of said cutting means to rotate said raising means as the trailing edge of a sheet reaches said members to raise said trailing edge to a position between the upper one of said members and said holding means whereby a following sheet fed between said members is received between said guide means and the preceding sheet, means to rock said holding means at the start of rotation of said raising means whereby said holding means is urged toward the guide means to maintain stacked sheets in position during operation of the raising means.

14. In a device of the character described wherein a continuous strip is fed to a sheet stacking means, strip cutting means located in the path of travel of said strip, said cutting means being selectively operated to sever the strip into individual sheets of random lengths, sheet stacking means located adjacent said cutting means, said sheet stacking means comprising sheet raising means including a pair of spaced parallel rods disposed one above the other between which successive sheets are passed as the strip is cut by the cutting means, guide means located to receive said sheets as they pass through said parallel rods, sheet holding

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means located above said guide means and said raising means, means to normally urge said holding means toward the upper one of said parallel rods, means responsive to operation of said cutting means to rotate said raising means through an angle of 180 degrees as the trailing edge of a sheet reaches said parallel rods to raise said trailing edge to a position between the upper rod and said holding means whereby a following sheet fed between said parallel rods is received between said guide means and the preceding sheet, means to rock said holding means at the start of rotation of said raising means whereby said holding means is urged toward the guide means to maintain stacked sheets in position during operation of the raising means.

15. In a telegraph recorder wherein a continuous strip of message paper is fed past a recording point where intelligence characters are printed thereon in response to combinations of received impulses and wherein a selectively operated cutting means is located in the path of strip feed past the recording point to cut the strip into individual message sheets of random lengths, sheet stacking means located adjacent said cutting means, said sheet stacking means comprising sheet raising means including a pair of members between which successive sheets are passed as the strip is cut by the cutting means, guide means located to receive said sheets as they pass through said members, means responsive to operation of said cutting means to rotate said raising means as the trailing edge of a sheet reaches said members to raise said trailing edge whereby a following sheet fed between said members is received between said guide means and the preceding sheet.

16. In a telegraph recorder wherein a continuous strip of message paper is fed past a recording point where intelligence characters are printed thereon in response to combinations of received impulses and wherein a selectively operated cutting means is located in the path of strip feed past the recording point to cut the strip into individual message sheets of random lengths, sheet stacking means located adjacent said cutting means, said sheet stacking means comprising sheet raising means including a pair of spaced parallel rods disposed one above the other between which successive sheets are passed as the strip is cut by the cutting means, guide means located to receive said sheets as they pass through said parallel rods, means responsive to operation of said cutting means to rotate said raising means through an angle of substantially 180 degrees as the trailing edge of a sheet reaches said parallel rods to raise said trailing edge whereby a following sheet fed between said parallel rods is received between said guide means and the preceding sheet.

17. In a telegraph recorder wherein a continuous strip of message paper is fed past a recording point where intelligence characters are printed thereon in response

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to combinations of received impulses and wherein a selectively operated cutting means is located in the path of strip feed past the recording point to cut the strip into individual message sheets of random lengths, sheet stacking means located adjacent said cutting means, said sheet stacking means comprising sheet raising means including a pair of vertically spaced members between which successive sheets are passed as the strip is cut by the cutting means, guide means located to receive said sheets as they pass through said members, sheet holding means located above said raising means, means to urge said holding means toward the upper one of said members, means responsive to operation of said cutting means to rotate said raising means as the trailing edge of a sheet reaches said members to raise said trailing edge to a position between the upper one of said members and said holding means whereby a following sheet fed between said parallel rods is received between said guide means and the preceding sheet.

18. In a telegraph recorder wherein a continuous strip of message paper is fed past a recording point where intelligence characters are printed thereon in response to combinations of received impulses and wherein a selectively operated cutting means is located in the path of strip feed past the recording point to cut the strip into individual message sheets of random lengths, sheet stacking means located adjacent said cutting means, said sheet stacking means comprising sheet raising means including a pair of spaced parallel rods disposed one above the other between which successive sheets are passed as the strip is cut by the cutting means, guide means located to receive said sheets as they pass through said parallel rods, sheet holding means located above said guide means and said raising means, means to normally urge said holding means toward the upper one of said parallel rods, means responsive to operation of said cutting means to rotate said raising means through an angle of 180 degrees as the trailing edge of a sheet reaches said parallel rods to raise said trailing edge to a position between the upper rod and said holding means whereby a following sheet fed between said parallel rods is received between said guide means and the preceding sheet, means to rock said holding means at the start of rotation of said raising means whereby said holding means is urged toward the guide means to maintain stacked sheets in position during operation of the raising means.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 2,868,874

January 13, 1959

Ernest W. Hewitt et al.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 4, line 20, after "is" insert -- not --.

Signed and sealed this 2nd day of June 1959.

(SEAL)

Attest:

KARL H. AXLINE

Attesting Officer

ROBERT C. WATSON
Commissioner of Patents