

May 30, 1967

E. E. PROCTER ET AL

3,322,065

ROTARY SPIRIT DUPLICATOR ADDRESSING MACHINE

Filed June 22, 1965

2 Sheets-Sheet 2

Fig. 2

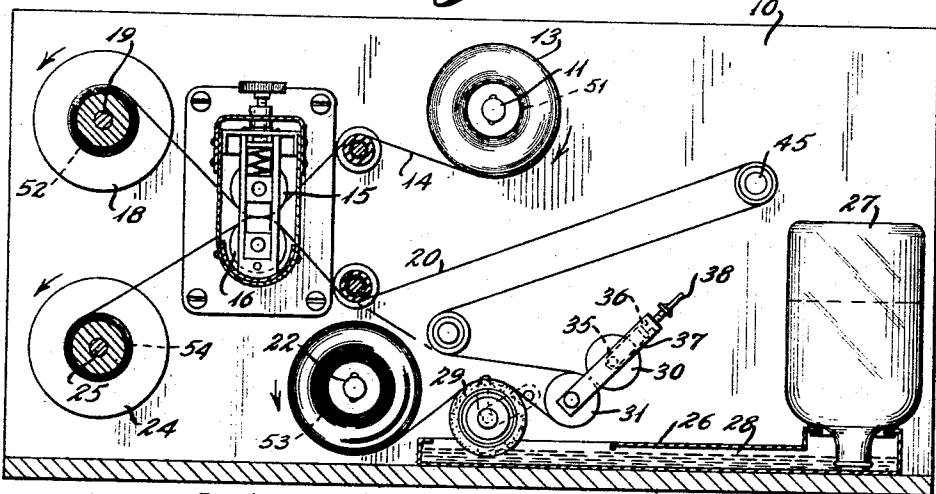


Fig. 3

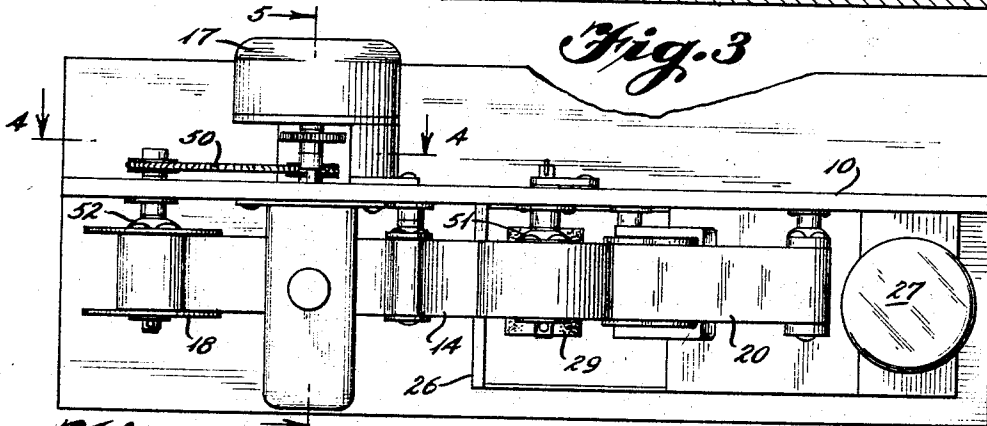


Fig. 4

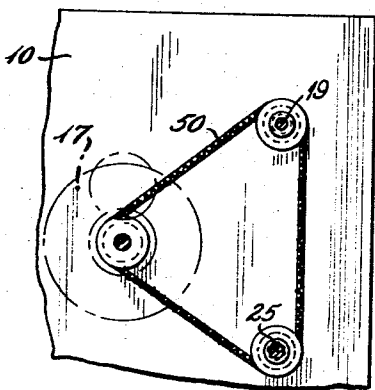
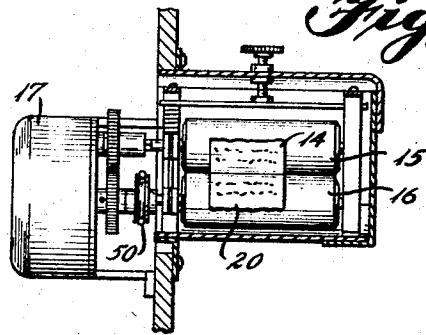


Fig. 5



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ROTARY SPIRIT DUPLICATOR ADDRESSING MACHINE

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Filed June 22, 1965, Ser. No. 465,878
3 Claims. (Cl. 101-132.5)

This invention relates to modern communication including the transmission of matter of various kinds and having utility in the preparation of addresses thereto, as well as to mechanism and equipment by which such addresses are prepared for subsequent application to indicate the destination to which such matter is to be delivered.

The invention relates particularly to the printing of a single copy at the same time of a large variety of different indicia of a similar type, as for example address labels for mailing or the preparations of pages of a report or brief and utilizing spirit duplicator type mechanism and method.

Existing methods for preparing mass mailings generally involve the use of addressing machinery utilizing individual plates carrying separate addresses. The machinery which delivers each plate to the object upon which the name is to be imprinted ordinarily is cumbersome, expensive, and can only be used by large volume users. Relatively small mailings can be addressed by the use of hand-held manually operated machines in which each address is successively delivered to a printing position and the machine is hand placed against the object to be addressed to print the address. Intermediate volume mailers, such as clubs, organizations, publishers of small newspapers and magazines find that their mailing is too small to justify the investment of existing automatic addressing machines and too large to justify either the labor of using hand-held machines or the expense of contracting their mailings to shops having automatic equipment.

Spirit duplicating plate machines have been tried for printing of addresses. These have included some which print addresses from master cards and others that print from master rolls on individual labels, but in either event expensive and complex machinery is needed to bring the master cards or rolls and the paper to be printed into engagement. Other difficulties found with spirit duplicating machines involve the control of the solvent; if too much solvent is used a fuzzy reproduction and too few copies result, and thus the labor of preparing the master roll or card must be repeated too often. If too little solvent is used, or if too much solvent evaporates after application and before printing, the printed image will be too faint.

Existing methods of preparing the printed copies of reports and briefs are tailored to the preparing of a large number of copies at the same time. Generally, a number of copies of each page are printed at the same time, and then one copy of each page is collected to form a set. Elimination of the collection step is obviously desirable. If at some future time one or more copies are desired, it is wasteful of time and labor to make a second printing of all of the pages. There is a clear need for an economical method of printing a single copy at the same time of each of the pages of a report, particularly for publications which will have limited circulation, such as reports and briefs.

One of the objects of the invention is to provide a relatively inexpensive practical device requiring a minimum of labor in its use which prints one copy of each of a large number of items on a continuous sheet.

Another object of the invention is to provide a device of the spirit duplicator-type addressing machine having

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means for controlling the amount of solvent used during the printing process. Another object is to provide a method by which excess names may be readily moved from the spirit duplicator master roll.

Other objects and advantages of the invention will be apparent from the following description taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a perspective view of a machine according to the present invention printing on address list;

FIG. 2, a side elevation of the device in section taken on line 2-2 of FIG. 1;

FIG. 3, a plan view of the device;

FIG. 4, a fragmentary sectional view taken on the line 4-4 of FIG. 3 illustrating the belt drive for the speeds;

FIG. 5, a fragmentary sectional view on the line 5-5 of FIG. 3 illustrating the drive arrangement for the compression rollers;

FIG. 6, a fragmentary perspective illustrating printing according to the present invention; and

FIG. 7 and FIG. 8, fragmentary views illustrating methods of covering addresses to be deleted from the master printing roll.

With further reference to the drawings, in the practice of the invention a mounting member or frame 10 has mounted thereon a shaft 11 with a reel 12 carrying a roll 13 of master tape 14, on which material to be reproduced is typed as a mirror image in a special soluble copying ink. The master tape 14 moves between a pair of motor driven adjustable pressure rollers 15 and 16 driven by an electric motor drive unit 17. The master tape is then received upon a rewind spool 18 mounted on a shaft carried by a mounting member or frame 10.

A feed reel 21 mounted on a shaft 22 carried by member 10 carries a roll of tape 20 upon which the material is to be printed. The tape may be of paper or other material suitable for receiving printing. Ordinary adding machine tape has been found to be quite satisfactory for the printing of addresses. Tape 20 has a solvent for the copying ink carried by the master tape applied thereto by a solvent-applying mechanism 23 described in detail in the next paragraph. Thereafter the tape 20 moves between the pressure rollers 15 and 16 which press the face of the master web carrying the soluble copying ink indicia against the wet blank tape to transfer the image of the indicia to tape 20. Tape 20 is then received upon a rewind spool 24 mounted on a shaft 25.

The solvent applying mechanism 23 includes a solvent reservoir 26 carrying a bottle 27 of solvent 28. A moistening roller 29 has its lower portion immersed within the solvent in the reservoir 26. Tape 20 moves from feed reel 21 over the moistening roller 29 and between a pair of adjustable squeegee rollers 30 and 31 to remove excess solvent. The squeegee rollers are carried by a U-shaped shackle 32 pivotally mounted on the lower squeegee roller shaft 33. An upper shaft 34 for the upper squeegee roller 30 is mounted within a slot 35 in the arms of shackle 32. A U-shaped pressing arm 36 has its legs 37 mounted within the slot 35. An adjustment screw 38 is threaded within the connecting arm 40 of the shackle 32 and engages the connecting portion of the pressing arm 36 to control the biasing force on the squeegee rollers. Free rolling pulleys 43, 44 and 45 are mounted on frame 10. Pulleys 43 and 44 are located slightly below the straight line between the squeegee rollers 30, 31 and the pressure rollers 15, 16, whereas pulley 45 is located at some distance from this line. After passing through the squeegee assembly the paper can either pass over rollers 43 and 44 or can be diverted from roller 44 to roller 45 and then back to roller 43 to provide a longer drying path to permit greater evaporation of solvent on the tape 20.

The takeup shafts 19 and 25 are driven by motor 17 through a slip belt 50. Tension washers 51, 52, 53, and 54 are mounted upon shafts 11, 19, 22 and 25 respectively so that normally the reels mounted thereon will move with the shaft, but allow slippage between the reels and the shaft at times when the tension on either the master tape 14 or blank tape 20 is greater than the frictional forces transmitted by the slip belt and tension washers.

In operation names and addresses are typed on the master tape 14 while a special carbon type paper carrying a coating of soluble copying ink is in contact with the side of the master roll opposite the typewriter keys. The copying ink is thus applied to the reverse side of tape 14 as a mirror image. The blank tape 20 has solvent applied thereto as it passes over moistened roller 29 and then passes through the squeegee rollers 30 and 31 follows the longer drying path over rollers 44 and 45 and 43 respectively as illustrated in FIGS. 1 and 2. On dry days when too much solvent might evaporate from tape 20 during its passage through this longer path, it is run through the shorter path over rollers 43 and 44.

As master tape 14 is pressed into contact with the wet paper tape 20 a small amount of the copying ink on the master tape is deposited on the paper tape to print the desired image. Takeup reels 18 and 24 are driven by slip belt 50 and travel with shafts 19 and 25 at decreasing speeds as increasing amounts of tape are taken up upon the reels. Tension washers 52 and 54 on the takeup reels assist slip belt 50 in permitting slippage between the shafts and the reels. The tension washers 51 and 53 on the feed reels 12 and 21 retard unrolling of the feed reels. Continuous tension is therefore maintained on the tapes 14 and 20, respectively, as they are pulled onto the takeup reels. This prevents overrunning of the feed reels, which might cause snag of the tapes, particularly if the takeup action is suddenly stopped. When the master tape is completely taken up upon the takeup reel, this reel can be used as a feed reel when the next set of addresses is to be printed by running the master in the reverse direction.

When tape 20 is printed completely, the individual addresses or other indicia are cut apart to make separate labels or pages. If desired, a printed copy of a report or brief could be kept and read in roll form, as was done in ancient days, instead of being cut apart and bound in book form.

When it is desired to remove names from the master tape they may simply be covered with any suitable tape carrying adhesive on one surface. In FIG. 7 a piece of paper 60 covers an address 61 and is held in position by cellophane tape 62. In FIG. 8 and address 64 is covered by a paper 65 of the same material as the master tape and a new address has been typed on paper 65.

It will be apparent that a method and machine are provided which will efficiently and conveniently print differing indicia with a minimum of labor, and that furthermore an efficient system has been provided in which unwanted indicia may be removed from a master printing roll.

It will be obvious to those skilled in the art that various changes may be made in the invention without departing from the spirit thereof and therefore the invention is not intended to be limited by that which is illustrated in the drawings and described in the specification, but is intended to be limited by only the legal scope of the following claims including equivalents thereof.

What is claimed is:

1. Apparatus for printing varying indicia comprising a support means on which is mounted each of the following:
 a first feed reel for carrying a master carrier web having indicia thereon in a soluble copying ink,
 a takeup reel for receiving said master web,
 a second feed reel for carrying a roll of blank web,
 a second takeup reel for receiving said blank web,
 each of said reels being rotatably mounted on a shaft

rotatably mounted on the support means, and tension washer means connecting each shaft and each reel for moving the reel with the shaft while providing slippage between the shaft and the feed reel when the torque therebetween exceeds a predetermined value,

a pair of opposed compressor rollers for pressing said master and said blank webs together as they move therebetween,

means for applying a liquid solvent for the copying ink to the blank web at a point between the second feed reel and the opposed compressor rollers,

slip belt means entrained about both takeup reels and one of the compressor rollers for driving said reels and compressor rollers together and providing slippage between the belts, reels, and compressor rollers, and

drive means for driving the takeup reels and the said compressor roller.

2. The structure of claim 1 in which the support means carries roller means located outside of the direct path between the solvent applying means and the opposed compressor rollers for selectively diverting blank web through a longer carrier path at times when greater evaporation of solvent is desired.

3. Apparatus for printing varying indicia comprising a support means on which is mounted each of the following:

a shaft having mounted thereon a first feed reel for carrying a master carrier web having indicia thereon in a soluble copying ink and means mounted between said shaft and said reel to move it with the shaft but permitting slippage therebetween to limit the torque on the reel to a predetermined value,

a shaft carrying a takeup reel for receiving said master carrier web,

a shaft carrying a second feed reel for carrying a roll of blank web and means mounted between the shaft and the second feed reel to move it with the shaft but permitting slippage therebetween to limit the torque on the reel to a predetermined value,

a shaft carrying a second web takeup reel for receiving said blank web and means mounted between said shaft and said second takeup reel to move it with the shaft but permitting slippage therebetween to limit the torque on the takeup reel to a predetermined value,

a pair of opposed compressor rollers engaging opposite sides of the said webs between the feed reels and the takeup reels for pressing the said webs together as they move therebetween,

a drive means for said compressor rollers,

slip belt means connecting said drive means and both of said feed reel shafts for driving said shafts but permitting slippage therebetween to limit the torque on the reels to a predetermined value,

a reservoir solvent for said copying ink,

a solvent transfer wheel having its lower portion within the reservoir and its upper portion positioned for engaging said blank web as it moves between said feed reel and said compressor rollers,

a pair of parallel squeegee rollers engaging opposite sides of the blank web to remove excess solvent before it reaches said compressor rollers, and adjustable means for varying the compressive forces between the said squeegee rollers,

a guide roller for said blank paper mounted outside of the direct path between the squeegee roller and the solvent transfer wheel for receiving and guiding the said blank paper web at all times when greater evaporation is desired,

a second guide roller placed outside of the direct path between said master feed reel and said opposed compressor rollers for guiding said master roll web, and a third guide roller for guiding said blank paper web located outside of both the direct path between the

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squeegee rollers and the opposed compressor rollers and also outside of the direct path between said first guide roller and the opposed compressor rollers whereby said second and third guide rollers will spread said master web and said blank web apart immediately before entering said compressor rollers.

References Cited

UNITED STATES PATENTS

981,132	1/1911	Stableford	-----	101-132.5	10
1,281,782	10/1918	Jean	-----	101-132.5	

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2,215,995	9/1940	Bellack	-----	101-131
2,269,086	1/1942	Morris	-----	101-52
2,303,171	11/1942	Morrison.		
2,340,819	2/1944	Mills	-----	101-132.5
2,503,185	4/1950	Wright.		
2,548,281	4/1951	Bartholomew	-----	101-132.5
2,903,963	9/1959	Harris et al.	-----	101-132.5
3,034,428	5/1962	Ellam	-----	101-149.5
3,216,350	11/1965	Sharkey	-----	101-149.4
3,241,484	3/1966	Crissy	-----	101-132.5

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