June 24, 1930. A. W. METZNER 1,767,689

MANIFOLDING MACHINE

Filed July 22, 1929 2 Sheets-Sheet 1

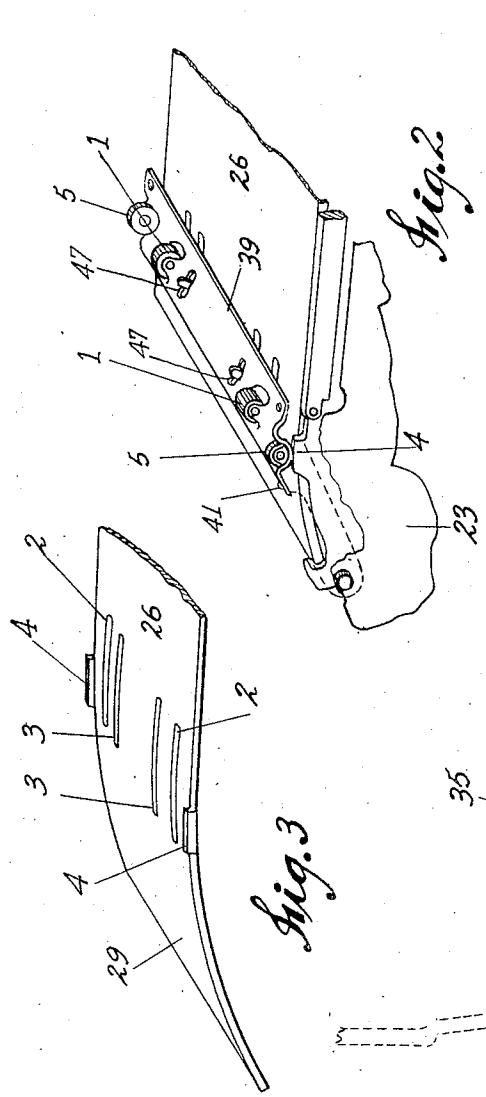


Fig. 2

Fig. 3

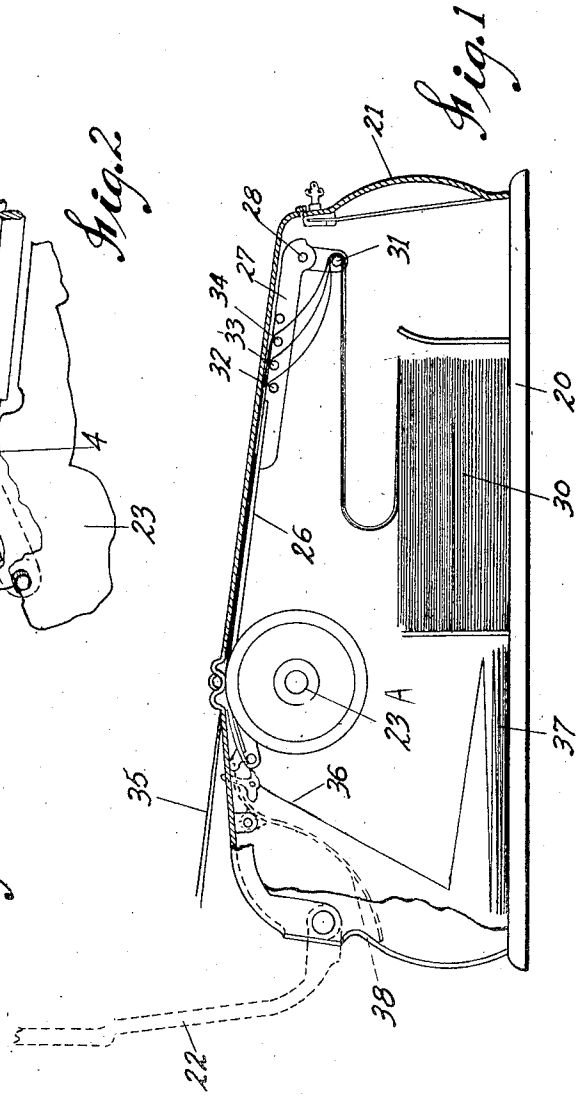


Fig. 1

Albert W. Metzner INVENTOR

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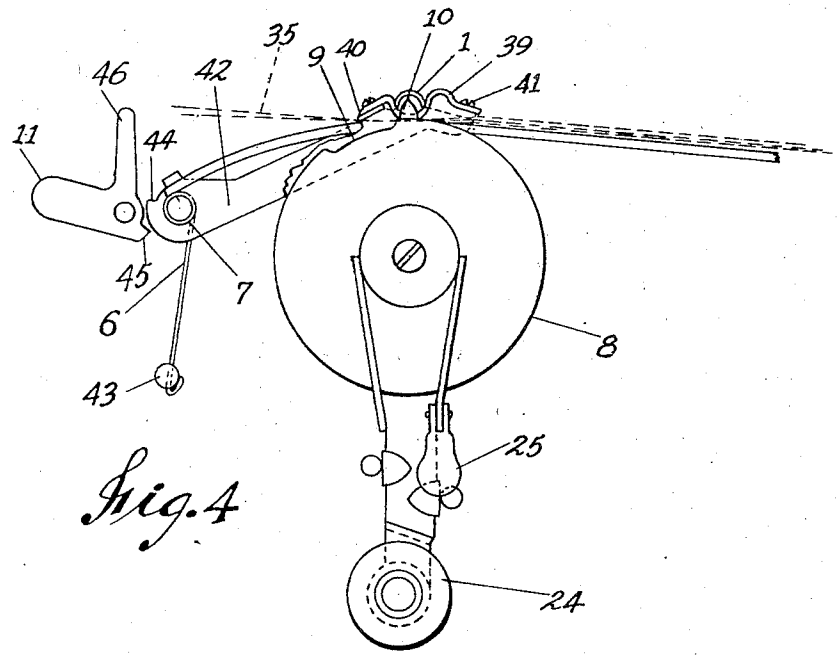


Fig. 4

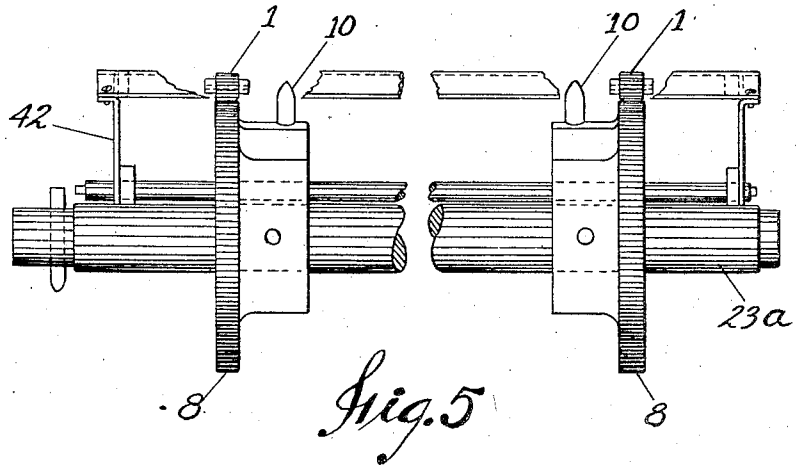


Fig. 5

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Patented June 24, 1930 1,767,689

UNITED STATES PATENT OFFICE

ALBERT W. METZNER, OF DAYTON, OHIO, ASSIGNOR TO JOHN Q. SHERMAN, OF DAYTON, OHIO

MANIFOLDING MACHINE

Application filed July 22, 1929. Serial No. 380,170.

My invention has to do with providing an improvement in that type of manifolding register in which the manifolding forms are fed by a rotating disk in connection with a pressure member, and in which the alignment and registry of the forms is corrected at each revolution of the machine by a pin device. This type of register is to be distinguished from that in which the paper is fed by the continuous action of pin wheels.

The method of feeding paper by the expedient of clamping it between the periphery of a disk, and a pressure member is not new. One form of such a register is shown and described in the Patent #1,445,108 to John Q. Sherman. This patent also sets forth a pin aligning device. In registers of this type, in order that the pin aligning and registry mechanism may become effective it is necessary that the clamping of the paper between the disk and the pressure member be released during the active operation of the pin device. This was accomplished in the patent referred to by providing the disk with a cam which would raise the pressure member from the periphery of the disk at a certain desired point in its travel.

It is an object of my invention to provide an improved mechanism not only for feeding and aligning the paper but for releasing it at the time when the aligning means is to become operative.

It is a further object of my invention to provide a mechanism which will be smoother and more accurate in operation.

It is still another object of my invention to provide a construction which will be cheaper to manufacture and less liable to get out of adjustment.

These and other objects of my invention which I shall point out hereinafter or which will be apparent to one skilled in the art upon reading these specifications, I accomplish by that certain construction and arrangement of parts of which I shall now describe a preferred embodiment, reference being made to the drawings which accompany this specification.

In these drawings:

Figure 1 is a side elevation, largely sectional, of a manifolding register showing my construction.

Figure 2 shows the top of the writing table, the paper clamp and the tear-off knife, and illustrates the cooperation between the two.

Figure 3 is a view of a portion of the writing table showing the slots therein for the clearance of the rotary elements, and the abutments which cooperate with the pressure member or paper clamp.

Figure 4 is a side elevation of the feed mechanism illustrating its operation.

Figure 5 is a front elevation of the pin aligning and disk feeding mechanism, together with the paper clamp and a portion of the mounting therefor.

It has been usual in manifolding registers employing the paper feeding and aligning principle outlined above, to provide a cam mechanism for elevating the pressure member or clamp when desired. Such a structure involves a lack of smoothness in operation and a tendency to irregularity particularly because at the point where the cam becomes operative, the resistance to the operation of the feeding handle is suddenly and considerably increased. In my invention, I provide for smoothness and ease of operation by cutting away the feeding disks over an area representing the place in the movement of the feeding mechanism at which it is desired to release the paper, and I provide stops or abutments upon the writing table to hold the pressure member or clamp away from it during the paper release, so as to insure a proper clearance.

I have shown a manifolding register having a base 20, an enclosing cabinet 21 with a lid 22 and side frames 23 in which the sev-

eral shafts and the like may be mounted. A feed shaft 23ª extends transversely of the frame and is equipped with a handle 24 by which it may be rotated. A suitable stop mechanism indicated generally at 25 is designed to limit the movement of this handle to one complete operation for one release thereof. This device may be of any suitable character and does not form a part of my invention. Upon the shaft I rigidly mount disks 8 which are intended to clamp and feed the paper against a pressure member presently to be described. The disks carry pins 10 which are adapted to engage the paper for alignment and registry when released by the cam cut 9, as will hereinafter be explained. The machine will be understood as equipped with a writing table 26 which is a metallic plate mounted upon bars 27 which are hinged to a shaft 28 lying transversely of the frame. The writing table is curved in its rear portion to form an apron 29 which apron is adapted to rest upon a shaft 7.

Thus the writing table is supported within the cabinet upon the shafts 7 and 28, so that it lies above the feeding rolls 8. The writing table has two pairs of slots, 2 and 3, the first pair being for the clearance of the paper feeding disks 8 and the second pair for the clearance of the aligning pins 10. Abutments 4 are formed on the table preferably by upsetting ears as shown, and these abutments are adapted to lie beneath the clamping element when it is in position, and to prevent the descent of it into clamping relationship with the central portion of the table. My machine is adapted for use either with rolls or flat packs. In the embodiment shown I have illustrated a flat pack 30 consisting of three forms which pass together around idler 31 and severally around idlers 32, 33 and 34, thence passing over the writing table 26, over the feeding disks 8 and beneath the pressure member. Two of the forms are shown issuing from the machine at 35; the third form is shown being fed down into the machine again at 36 and being collected into a record pack 37 in a separate compartment. To assist in the feeding of the paper into the record cabinet, a hinged deflector plate 38 is shown in Figure 1.

It will now be clear that the feeding disks 8 extending through the slots 2 will make contact with the paper and that if the paper be held into contact with the disk peripheries by a rotative pressure element, an operation of the handle 24 in a counter clockwise direction (Figure 4) will effect a feeding of the paper. It will be understood that suitable carbon sheets are placed between the several forms of paper upon the writing table 26 in the well known manner.

My pressure element comprises a metallic plate indicated in the several figures at 39 which is bent preferably so as to present a central depression, and lengthwise ribs. This bending is useful in stiffening the plate. The rear edge 40 of the plate is sharpened so as to form a tear-off knife and the plate itself is mounted by screws 41 upon arms 42 which are hingedly mounted upon a shaft 7, so that the entire clamping assembly may be raised and lowered upon this shaft. A spring 6 operating against an abutment 43 tends to keep the pressure element against the disks. On the rear end of the arms 42 there is formed a shoulder 44 which is adapted, when the pressure member is raised, to contact a shoulder 45 on a cam member 11 so that the pressure member may be held thereby in up-raised position. This is convenient when it is desired to place new forms in the machine. The pressure element may be released again by rocking the lever 46 of the cam 11 forwardly.

Slots 47 are made in the plate 39 for the clearance of the pins 10, and the plate is further provided with ears in which small rollers 1 and 5 are revolvably mounted upon small shafts. This construction will be readily understood from an examination of the several figures. The rollers 1, when the pressure element is depressed are adapted to contact the peripheries of the disks 8 as shown in Figure 5, and when paper is being fed through the machine, to clamp this paper tightly against the disks. The surfaces of the disks 8 and the rollers 1 may both be roughened, scored or knurled to increase the grip upon the paper, and the manner of feeding the paper by the rotation of the disks will now be quite clear.

The pins 10 are mounted upon the hubs of the disks 8 so as to be in positive position with relation thereto, and the peripheries of the disks 8 are cut away for a short distance as shown at 9 in Figure 4. The purpose of this cut away portion is to release the paper so that the pins 10 may pull or jog it into alignment and registry; and the circumference of the disks 8, less the length of the depressed portions 9, are made of sufficient length to feed the paper practically the one form length. The pins 10 are adapted to engage the paper when or shortly after it is released and to feed it a slight distance during the alignment, thereby completing the feed. The paper will of course, have holes made in it in proper registry with the printed forms thereon, and at the head of each, for the engagement of the pins 10; and this type of register is advantageous both in that it does not require paper with continuous marginal perforations and also in that the forms, each with two perforations corresponding to the pins 10, are ready for binding in a two post binder or other binding or filing device, without any further treatment.

In order that the pressure rollers 1 will

not follow down into the depression 9 in the disks, but will properly release the paper over these depressions, means must be taken to limit the descent of the plate 39. These means comprise the ears 4 upon the writing table and the small rolls 5 upon the pressure element which are adapted to come into contact with each other when the pressure element is released. The abutments 4 and the rolls 5 are adjusted so as to maintain a fixed and safe clearance between the pressure element and the table top. Figure 4 shows the position of the feeding devices at the beginning or end of a feeding revolution. It will be observed that the depression 9 has passed by the rollers 1 and that these rollers are now in contact with the periphery of the disk 8. It will also be observed that the pins 10 are in substantial alignment with the pressure element and that they, of course, extend through the holes in the paper. At this point, the paper is tightly clamped between the disks and the rollers and, if it is the end of a stroke, the issued paper webs 35 will be firmly held and may be torn off against the knife 40. After the entry of another transaction upon the next form, the device 25 will be released and the handle rotated one full turn in a counter clockwise direction. The paper tightly engaged between the rollers 1 and the peripheries of the disks 8 will be fed through almost one form length, until the depressions 9 arrive beneath the rollers 1. At this point the paper will be released, the pressure element, no longer held up by the action of the disks upon the rollers 1, will descend until the rollers 5 contact the abutments 4. There will be sufficient clearness so that the paper is not clamped between the table and the pressure element. With the further revolution of the handle, the pins 10 enter the holes in the next succeeding form, and during a slight movement of the handle, will not only jog or pull the paper into alignment and registry, but will feed it forward, to some extent, completing the feed. When the handle has returned to the starting position illustrated in Figure 4, the depressions 9 will have passed completely under the pressure rollers 1, and these rollers will again be clamping the paper against the peripheries of the disks 8. The paper will be clamped both for tearing off against the knife 40 and for the entry of new data upon the next form.

Various modifications of my invention may be made without departing from the spirit thereof.

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

1. In a manifolding register, the combination of a disk for feeding paper, a writing table over which paper to be fed may pass, a pressure element to coact with said disk in feeding the paper, an aligning pin moving with said disk, said disk being cut away to release the paper during the period of action of said aligning pin, and means on said pressure element and said table to hold said pressure element out of contact therewith during the operation of said aligning pin.

2. In a manifolding register, a disk for feeding paper forms, a writing table over which said forms may pass and a pressure element comprising a hinged plate, means on said plate to cooperate with said disk in feeding said paper, said disk cut away in a portion of its periphery and means on said pressure element and said table to hold said pressure element out of contact with said paper.

3. In a manifolding register, a disk for feeding paper forms, a table over which said paper forms may pass, a pressure element comprising a hinged, spring pressed plate, a roller on said plate to cooperate with said disk in feeding said paper, said disk cut away in a portion of its periphery, an abutment on said writing table and a cooperating member on said pressure element for maintaining said pressure element out of contact with said table when said roller is not in contact with said disk.

4. In a manifolding register, feed disks, a writing table and a hinged pressure element, said pressure element having rollers to cooperate with said disks, aligning pins moving with said disks, said disks cut away in a portion of their periphery to permit the action of said aligning pins, and means on said table to hold said pressure element out of contact with said table.

5. In a manifolding register, feed disks, a writing table and a hinged pressure element, said pressure element having rollers to cooperate with said disks, aligning pins moving with said disks, said disks cut away in a portion of their periphery to permit the action of said aligning pins, and means on said table to hold said pressure element out of contact with said table, and means for holding said pressure element up and out of contact with said disks or said table.

6. In a manifolding register, a pair of feed disks bearing aligning pins on their hubs, a writing table, a pressure element comprising a plate lying above said disks and mounted on spring pressed arms, rollers mounted on said plate to cooperate with said disks in feeding the paper, said disks cut away in a portion of their peripheries to permit the action of said aligning pins, and abutments on said table to hold said pressure element out of contact therewith when said rollers do not contact said disks.

7. In a manifolding register, paper feeding disks each having an aligning pin, the peripheries of said disks cut away in part to

permit the action of said aligning pins, a pressure element comprising a plate normally lying above said disks and actuated by spring pressed arms, rollers mounted in said plate to contact the peripheries of said disks in feeding said paper, a writing table, said writing table slotted to permit the passage of the peripheries of said disks and said aligning pins, abutments on said table, and means on said pressure element to contact said abutments, whereby said pressure element will be held from clamping relationship with said paper when said rollers do not contact said disks.

ALBERT W. METZNER.