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G. L. FULK

2,143,107

MANIFOLDING DEVICE

Original Filed Feb. 10, 1936 2 Sheets-Sheet 1

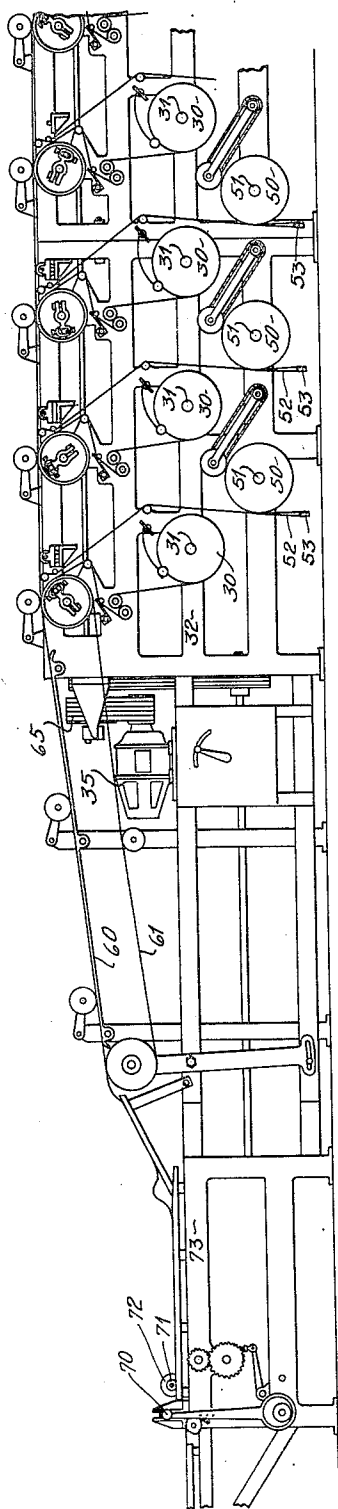


FIG. 1

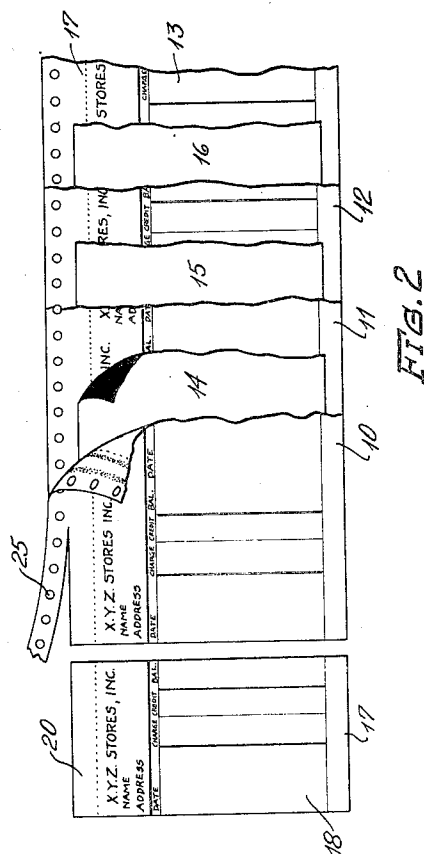


FIG. 2

INVENTOR.

BY *George L. Fulk*
Bates, Gollick & Teare
 ATTORNEYS.

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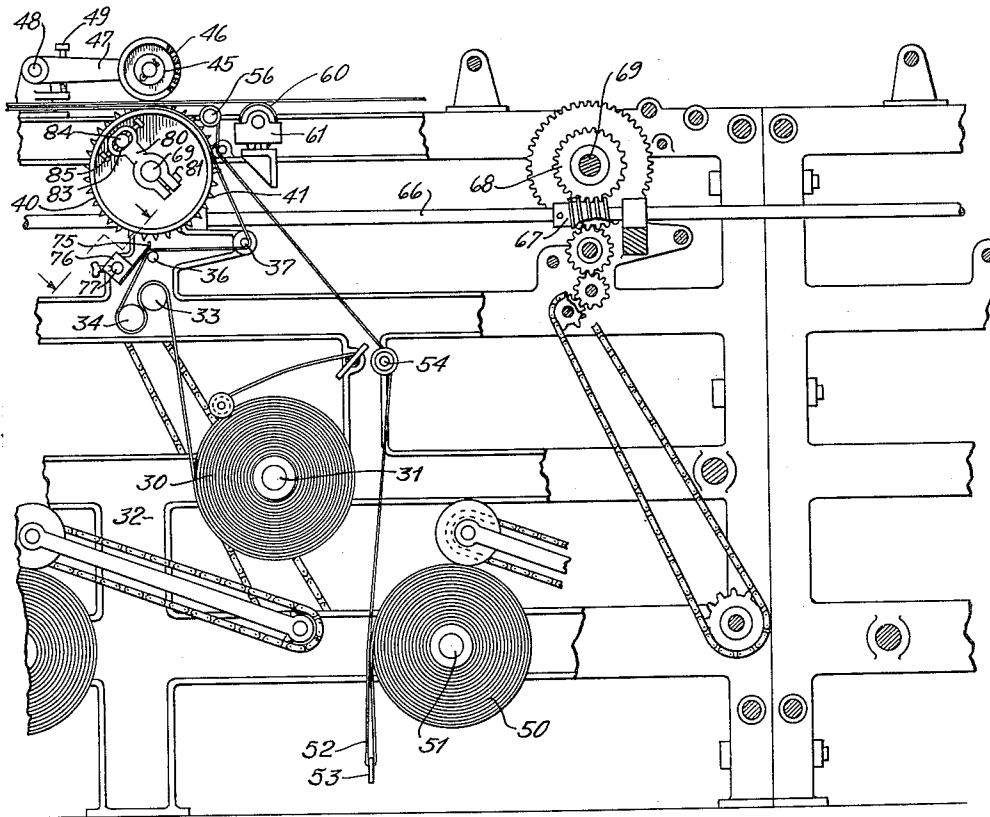


FIG. 3

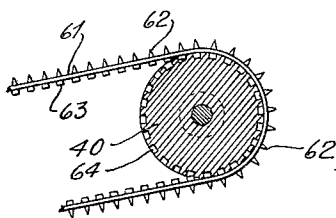


FIG. 4

INVENTOR.
George L. Fulk.
BY
Bates, Golrick & Teare.
ATTORNEYS.

UNITED STATES PATENT OFFICE

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MANIFOLDING DEVICE

George L. Fulk, San Francisco, Calif., assignor to
Carbon Interleaved Forms Corporation, Nor-
walk, Ohio, a corporation of Ohio

Original application February 10, 1936, Serial No.
63,282. Divided and this application April 13,
1937, Serial No. 136,585

6 Claims. (Cl. 270—52)

This invention relates to an apparatus for making manifold records, and especially to a web-feeding apparatus for feeding webs of papers to facilitate the making of manifold record forms in which one time carbons employed for making a record on superimposed forms which are assembled and formed into a composite pack. The present invention is a division of my co-
pending application for Letters Patent, filed February 10, 1936, assigned Serial No. 63,282, and entitled Machine and method for making manifold forms.

An object of the present invention is to provide an apparatus for making a manifold pack, which will enable the interleaved record webs to be accurately positioned relative to superimposed webs, so that the various webs may be secured together and severed into individual packs, in such a manner that accurate registration of previously impressed data on one web, relative to previously impressed data on other webs, may be had in the individual packs.

Another object is to provide an apparatus for feeding webs in such a manner that a plurality of webs may be fed, tensioned and superimposed, one on the other, and maintained in accurate registration with each other.

Other objects of the present invention will become more apparent from the following description, reference being had to the drawings, in which I illustrate a preferred embodiment of my invention. The essential features of the invention will be summarized in the claims.

Referring now to the drawings, Fig. 1 is a side elevation of the machine for making manifold records, embodying my invention; Fig. 2 is a view, illustrating the manner in which the superimposed record and transfer strips are assembled and severed into individual units; Fig. 3 is a side elevation, partially in section of the portion of the machine illustrated in Fig. 1, but shown on a larger scale than that illustrated in that of Fig. 1; and Fig. 4 is a sectional detail taken through one of the web feeding drums.

The manifold pack, with which my invention is especially concerned, includes any number of record strips, such as, for example, those illustrated in Fig. 2, at 10, 11, 12 and 13, with interposed transfer strips 14, 15 and 16. The record and transfer strips are fastened together preferably with an adhesive along one edge and above a perforation line 17, while the lower edges of the transfer strips terminate above the bottom edges of the record strip.

This arrangement enables the operator to grasp

the tab portion 20 above the perforated line 17, with the thumb and forefinger of one hand and grasp the record strip with the overhanging portion beneath the lowermost edges of the transfer sheet, with the thumb and forefinger of the other hand, and then to snap the two portions apart, thus leaving the detached record strips as a unit in one hand, and the detached transfer strips as a unit in the other hand. The transfer strips are then discarded and the record strips are filed for future use.

To make the pack illustrated at 18 in Fig. 2, I take rolls of record strips on which the desired forms have been previously printed, and I provide a series of openings 25 along a longitudinal edge of the strip. I utilize the openings for receiving projections on feeding rolls to hold the strips in registration during the assembling operation. The record strip rolls are indicated in Figs. 1 and 3, at 30, as being freely movable on individual supports, such as bars 31.

The bars 31 are illustrated as extending laterally from a frame 32, and correspond in number to the number of record sheets required to form a designated pack. Fig. 2 shows the arrangement on a somewhat larger scale, in which the record strips from each roll are fed between respective rollers 33 and 34, which are power-driven by an electric motor 35 (Fig. 1). After the strips pass through their feed rollers, they pass upwardly and around respective guide bars 36 and 37, after which they pass over respective drums 40. All of said drums, except that nearest to the motor, carry radially extending pins 41, that project into the openings 25 which are arranged in a line adjacent the longitudinal edge of each strip and which are in registration with the printed matter on the webs.

A roll 45 bears against the upper side of the strip and has suitable recesses 46 for receiving the pins 41 and coating therewith to hold the webs against the drums. In the drawings the thickness of the strips is greatly exaggerated hence while it may appear that the pins 41 do not pass entirely through the perforations in the strips and enter the recesses in the rollers 45, they nevertheless do in actual practice. Each roll 45 is journaled at the free end of an arm 47 which is in turn pivoted at 48 on the frame; and the arm is provided with an adjusting member 49, for adjusting the relative position between the roll and the drum. As the record strip passes over its respective guide bar 36, any wrinkles, which may occur, are smoothed out by a brush 75 which bears against the strip and is ad-

justably carried to vary pressure against the strip. The brush is shown as being carried by a block 76 that is pivotally mounted on a support 77, and this support in turn is carried by the

5 frame 35.

The transfer strips are arranged to be inserted between the record strips, and to this end, I have shown transfer strip rolls 50 which are journaled on bars 51 carried by the frame 32. The

10 web from each transfer roll is extended downwardly in a loop 52 in which a weight 53 is cradled, thence upward around guide bars 54, 55 and 56, from whence it passes between the adjacent record strips and over a drum 40.

15 The transfer strips and record strips are connected together preferably by adhesive during the assembling operation. This adhesive is applied by a roller 60, journaled in a container 61, and positioned to contact the underside of the

20 record strip, which passes thereabove, as shown in Figs. 1 and 2.

As the record strips and interposed transfer strips meet the drum 40 nearest the motor, they pass down an inclined runway 60 along the

25 upper region of which an endless belt 61 is moved. The belt may be provided with pins

62 projecting outwardly therefrom at regular intervals for engagement with the openings 25

of the record sheets, and similarly spaced pins

30 63 on the underside thereof, which engage openings 64 in the drum 40 nearest to the motor.

The projections on the belt are in alignment with those on the drums 40, wherefore the belt

serves to continue the propulsion of the strips

35 and holds them in registration so that they may be sheared into individual uniform packs by a

shear mechanism, such as is indicated, for example, in Fig. 1 at 70.

Before the webs are sheared into individual

40 packs the perforations 25, which are used only to insure proper registration and feeding of the webs, are removed. This may be accomplished as indicated in Fig. 1 by a rotary shear

71, driven by a motor 72 and mounted on the

45 shear table 73 in any well known manner. This shear severs a strip containing the perforations from the webs as indicated in Fig. 2 at 26.

Each drum 40 is driven from the motor 35 and

50 as shown, this motor is connected by a driving belt or chain 65 with a shaft 66 carried by and extending longitudinally of the frame 32. This

shaft is provided, at spaced intervals, with worm

gears 67 which are arranged to engage worm

wheels 68 that are drivingly secured to respec-

55 tive shafts 69 on which the drums 40 are mounted and which are journaled in the frame.

To enable the tension of the upper reach of

the record strips to be adjusted, and to allow

for a slight adjustment to accommodate any

60 inaccuracy in the spacing of the openings 25, I provide an adjustable connection between each

drum 40 and its associated driving shaft 69. This connection comprises an arm 80 which is

rigidly mounted on the shaft, as by a clamping

65 screw 81, and which contains a slot 83 for receiving a pin 84 that is fixed to the end wall of

the drum. The relative position of the pin within

the slot may be varied and locked by adjusting

screws 85.

From the foregoing it will be seen that I have

70 provided a simple and efficient web feeding mechanism for use in the manufacturing of manifold

record packs from elongated strips or webs,

and that the feeding mechanism insures ac-

75 curate registration of previously printed data

on one form with similar or complementary data on another form. Additionally my invention permits the tension of the webs to be adjusted and minor discrepancies in the spacing of gauging perforations in the webs to be compensated 5 for from time to time.

I claim:—

1. In a machine of the character described, the combination of a record web roll, means for withdrawing a web of material therefrom, 10 a drum over which the web is fed, means on said drum adapted to feed the web, a driving member on which the drum is free to move, a second record web roll, means for drawing a web of material therefrom, a second drum over 15 which the second web is fed, a driving member on which the second named drum is free to move, means on said second named drum adapted to feed the second named web, both of said means being substantially the same whereby the second named web will coast with the means on the first named drum, to permit the passing of the second named web from its drum to the first named drum into a superimposed relation relative to the first named web, a common driving mechanism for said web drawing means and said drum driving members, and means connect- 20 ed with said drums for connecting such drums to their respective driving members, one of said last named means being arranged and adapted to adjust the angular relationship between its respective drum and driving member.

2. In a machine for assembling manifold forms, a drum over which the forms are caused to move, a series of equispaced radially extending pins carried by said drum in a single circumferential row and adapted to interengage with a row of similarly spaced perforations in the web, a drive shaft on which said drum is free to rotate, an arm adjustably clamped on said shaft and having an elongated arcuate opening therein, a pin on said drum and extending into the opening in the arm, and means carried by the arm to adjust the position of the pin relative to the arm to drive the drum and to adjust it angularly with reference to the shaft.

3. In a machine for assembling manifold forms, a drum over which the forms are caused to move, means on the drum adapted to feed the forms, a drive shaft on which said drum is free to rotate, an arm adjustably clamped on said shaft and having an elongated arcuate opening therein, a pin on said drum extending into the opening in the arm to drive the drum, and means carried by the arm to adjust the position of the pin relative to the ends of the arm to thereby adjust the drum angularly with reference to the shaft.

4. In a machine for assembling manifold forms, the combination of a drum which is adapted to engage and move a web, means on the drum for maintaining synchronism in surface speed of the drum and web, a driving shaft on which the drum is free to rotate, an arm disposed within the drum and rigidly connected to the shaft, said arm extending radially from the shaft and having means adjacent the end thereof for adjustably connecting it to the drum.

5. In a machine for assembling manifold forms, a drum over which the forms are caused to move, means on the drum adapted to feed the forms, conveying means adapted to receive a plurality of similar forms, a driving member for the drum on which the drum is free to move, 75

means drivingly interconnecting the conveying means and drum driving member, and means for connecting the member to the drum and for adjusting the drum angularly with reference to the member, whereby the forms on the drum are held in registration with the similar forms on the conveying means.

a driving member for each drum and on which the drum is free to rotate, a common driving mechanism adapted and arranged to rotate said members in synchronism and to drive the conveying means, means carried by one of said driving members for connecting such member to its respective drum and for adjusting such drum angularly with respect to its driving member and means for connecting the remaining drums to their respective driving members, whereby the forms from each drum are held in registration with each other on the conveying means.

GEO. L. FULK.

6. In a machine for assembling manifold forms, a plurality of drums spaced apart and over which a substantially continuous web of forms is caused to move, means on each drum adapted to feed the forms, conveying means adapted to receive the forms from each drum,