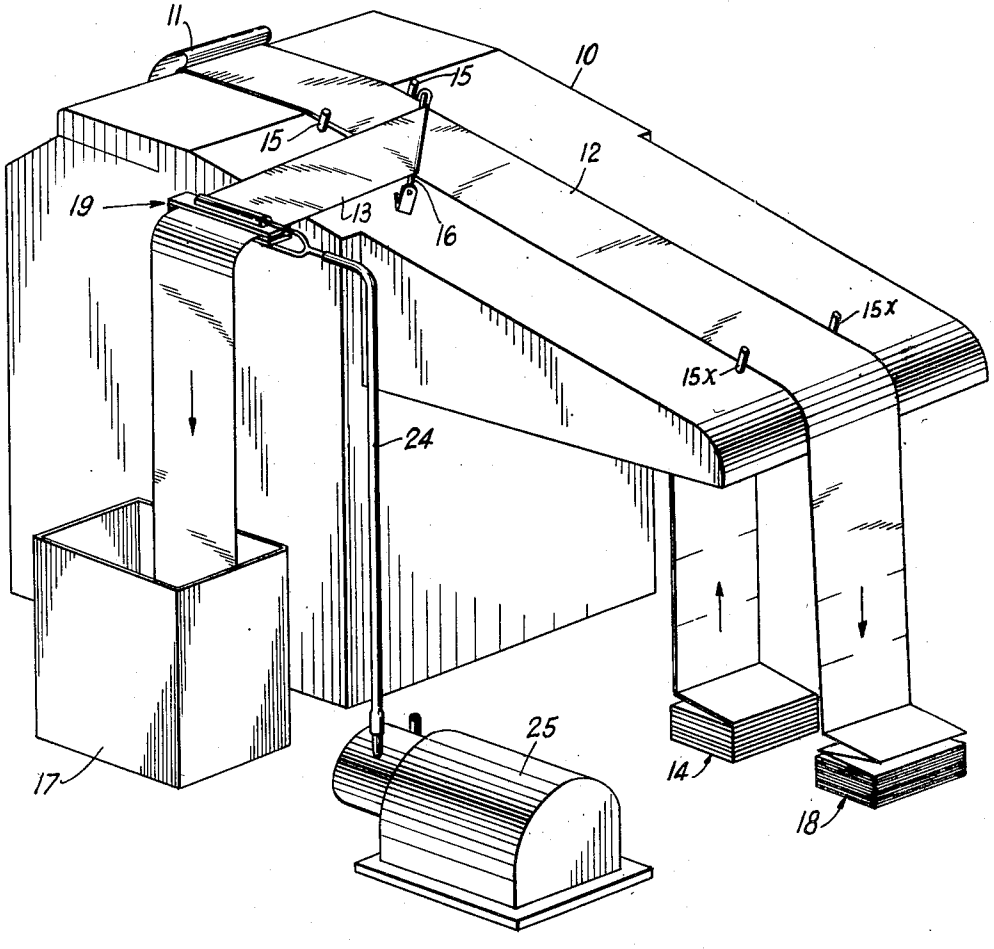
April 30, 1957 W. WOCKENFUSS 2,790,638

AIR BLAST STRIP FEEDING MEANS

Filed May 1, 1952 2 Sheets-Sheet 1

Fig. 1



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Fig. 3

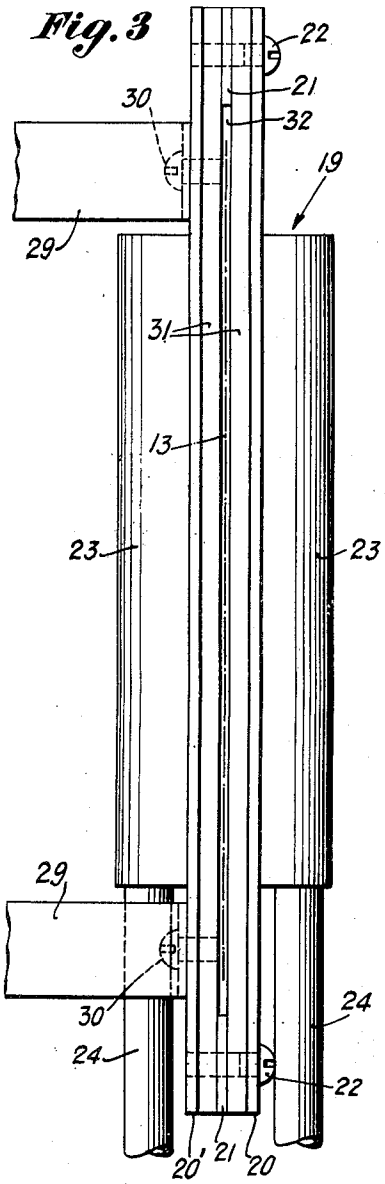


Fig. 2

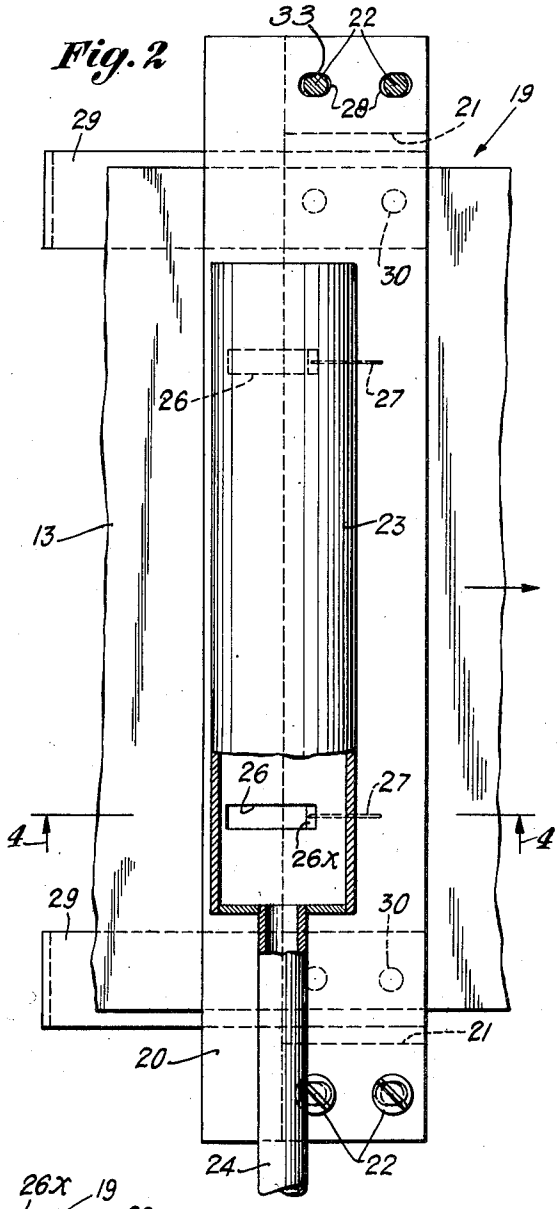
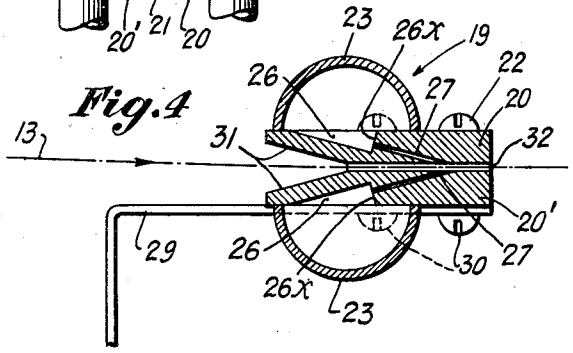


Fig. 4



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2,790,638

AIR BLAST STRIP FEEDING MEANS

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1 Claim. (Cl. 271—2.1)

This invention relates to printing machines, and the like, utilizing in the printing operation a record supply packet of the manifold or fanfold type. It is particularly concerned with a device useful in facilitating the stripping of the carbon paper strip from the packet and in carrying it to its collecting receptacle.

In the use of manifold type record strip packets, after printing has been effected thereon, the packet is fed from the machine as a unitary strip. Upon its issuing from the printing machine it is desirable to remove the carbon paper strip from between the record sheets and to carry it off to a separate receptacle. The purpose of this is to prevent smudging of the record sheets in subsequent handling. Because of the light weight and thinness of the interposed carbon, difficulty is experienced in carrying it off to its receptacle. The carbon strip has been found to sag, collapse and pile up along the route to its collecting station. Mechanical pulling devices do not solve the problem as their use promotes tearing of the carbon and further difficulties. A conveying force is, however, required to tension the carbon strip without tearing the carbon and to facilitate its movement over the printing machine to a point where it can drop into its selected receptacle.

The invention of the present application overcomes these various difficulties and provides a means through air pressure whereby a force of air is caused to impinge against opposite sides of the carbon paper strip and thereby tension the paper forwardly and facilitate its movement to its appointed destination.

The general object of the invention is to facilitate and hasten the carriage to an individual receptacle of a light weight paper strip from a manifold record packet as it issues from a printing machine.

A further object of this invention is means for the carriage of a continuous strip of carbon paper from the record sheets of a manifold packet to a collecting station.

Another object is means for stripping from a manifold packet and carrying away in a practical and efficient manner a continuous strip of light weight paper.

A still further object of this invention is a device serving to facilitate the carriage of a thin strip of paper by air pressure to its appointed destination.

These and other objects and advantages of this invention, as well as the structural details thereof, will become apparent as this specification unfolds in greater detail and when it is read in conjunction with the accompanying drawings.

In the drawings:

Fig. 1 is a perspective view of the invention employed in association with a manifold printing machine;

Fig. 2 is a top plan view of the device with some of the parts cut away;

Fig. 3 is a rear elevational view thereof; and

Fig. 4 is a cross section taken on the lines 4—4 of Fig. 2.

In the drawings there is disclosed a printing machine

or unit 10 adapted to utilize as the recording medium a manifold packet supply designated 14. The packet here shown includes a continuous strip 11 serving as the original record, a strip 12 serving to receive a carbon duplicate record of the original, and a continuous carbon paper strip 13 interposed between the original and the duplicate strips.

In the process of the recording operation the original, carbon and duplicate strips leave the packet 14 and are fed through the printing machine as a unit. As the packet strip is issued out of the machine as in Fig. 1, the original record strip 11 is separated from the carbon strip and by its own weight thereafter separates from the packet and collects in a pile, not shown, at the front of the machine. The duplicate record strip 12 is carried rearwardly across the top of the machine between the upper and lower guide posts 15, 15x and allowed to drop down and collect in a pile 18. Strip 12 is continuously tensioned rearwardly by its own weight as it drops over the machine. The interposed carbon paper strip 13 is first manually lifted from the underlying strip 12 after passing the upper guide posts 15, then passed upwards and over a guide element 16 and inserted through a stripping device, generally designated 19. The device 19 about to be described prevents the carbon paper, as it issues forth, from piling up upon the machine, and aids in its removal from the manifold packet by tensioning and carrying the paper forward and allowing it to drop down into its selected receptacle 17. The guide element 16 bridges the rearward path of movement of the strips 12 and 13. It is affixed to the top of the printing unit 10 and is preferably arranged so as to permit the carbon sheet to lead first upwards and then off sideways at right angles to the device 19 and to the path of movement of the strip 12.

The stripping device 19 includes a pair of elongated plates 20, 20′ superimposed one above the other and separated from one another by spacers 21 at the ends of the plates, whereby an elongated slot 32 is provided between the plates, through which slot the carbon strip 13 may freely pass. Plates 20, 20′ together with the interposed spacers 21 are secured together by suitable fasteners, such as the headed screws 22.

In the use of the stripping device 19, after the carbon strip 13 has been passed over the guide element 16 at the start of the carbon stripping operation it is manually inserted through the slot 32. However, because of the lightness as well as the thinness of the carbon strip, it will not of its own weight thereafter tension itself and will not continue to move through the stripping device as it feeds out of the printing machine, but will sag, collapse and pile up on the machine to slow up the printing operation. To avoid this, air pressure means is provided whereby streams of air converging to a common point within the slot are blown against opposite sides of the carbon strip causing it to be continually tensioned forward and thereby carried through the slot and down to its collecting receptacle. To enable this movement of the carbon paper, there is provided a pair of air compression chambers or reservoirs 23 secured airtight, one to the outer face of the upper plate 20, the other to the lower plate 20′. A supply of air is simultaneously carried to each of the chambers 23 by a common tube 24 from an air pump 25. The air is permitted to escape from the chambers through ports 27 in each plate member to the common slot 32. The escape ports are of a smaller diameter than that of the intake tube 24 so that air pumped into the chambers will accumulate therein under pressure and will escape in a forceful and steady stream from the ports. The pump 25 is adapted to maintain a constant air pressure in the chambers. The ports of each plate lead from shoulders 26x of wells

26 and are disposed in an inclined position from the chambers 23 toward the common slot 32, so that air escaping forcefully from the ports will impinge against both sides of the carbon paper strip within the slot, and will thereby tension it in a forward direction and carry it out of the slot, after which it will drop down to its collecting receptacle.

Each port 27 through the upper plate 20 is complementary to a similar port in the lower plate 20', and each is positioned one directly above the other and so inclined from their respective chambers 23 through their respective plates to the common slot 32 so that the terminal end of the port of the upper plate enters the slot directly above that of the lower plate. The complementary ports converge toward one another in such manner that air forced through the upper plate port will meet air forced from the lower plate port at an angle and at a common point within the slot 32 and upon converging will issue out of the forward side thereof.

Now, where a sheet of thin paper, such as the carbon strip 13, is within the slot, the air forcefully escaping from each of the complementary ports will impinge upon opposite sides of the paper with equal pressure at a common point and with a forward force, whereby the paper will be carried forwardly out of the slot. Due to a constant air pressure created in the chambers 23 the stream of air escaping from the ports will be steady causing a continuous and automatic movement of the paper through the slot. The forward pull or force upon the paper will tension the carbon strip forward. In doing so, it will lift the carbon paper from the underlying strip 12 as it tensions the paper upwards and over the guide bridge 16. In doing so it will further prevent the paper from slackening or collapsing in a pile over the printing machine.

To insure the forward movement of the carbon and to avoid any possible side movement thereof, it is preferred that each plate 20, 20' have more than one port. Here there is provided a pair of parallel aligned ports 27 in the upper plate and a complementary pair in the lower plate, each laterally spaced from one another and so arranged in relation to the carbon paper passing through the slot as to impinge against opposite sides of the paper at points a uniform distance from the marginal sides of the paper.

While it is desirable that the converging ports open into the slot 32 as above, with their terminal ends directly above one another, and in such manner that air escaping from complementary ports will meet within the slot at a common point, fair results may be had by offsetting the upper plate, so that air escaping through the terminals of its ports enters the slot slightly forwardly or rearwardly of that coming from the terminals of the complementary ports of the lower plate. To enable this the upper plate is provided with elongated slots 33, whereby upon loosening the headed screws 22 the upper plate may be adjusted either forwardly or rearwardly as

desired. The set screws 22 may then be tightened to secure the plate in its adjusted position.

A further feature of this invention is the manner in which the rear marginal edges of the plates 20, 20' are formed. Here they are beveled to diverge outwardly to form a guide chute or throat 31 for the slot 32. This not only facilitates insertion of the carbon strip through the slot at the start of the stripping operation, but has the further advantage of preventing jamming of the carbon strip as it enters the slot 32 in the event of slightly torn portions which otherwise might catch at the point of entrance. The chute 31 enables the carbon with any raised torn portions to enter between the plates. As the paper moves through the chute the raised torn portions are pressed down by the converging plates and the paper is enabled to freely pass on through the slot.

The device 19 is secured to the side wall of the printing machine by brackets 29 fixed to the bottom of the lower plate 20' by screws 30.

While I have described what I consider to be a highly desirable embodiment of my invention, it is obvious that changes in form could be made without departing from the spirit of the invention, and I therefore do not limit myself to the exact form herein shown and described, nor to anything less than the whole of my invention as herein set forth and as hereinafter claimed.

I claim:

In a high speed printing apparatus, the combination of means for feeding a web of light and thin paper stock at relatively high speed through the apparatus, said web feeding means comprising adjustably positioned, flat, opposed, smooth plates defining a narrow passage therebetween unobstructed laterally and longitudinally, through which passage the web is adapted to be fed, converging port means formed in the respective plates and communicating with said passage, an air compression chamber formed on each plate and juxtaposed over the converging ports, and air compression means communicating with said chambers, whereby air is directed through said ports to said passage so that air escaping forcefully from the ports will impinge against both sides of the web within the passage and will thereby tension it in the forward direction and carry it out of the passage.

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