

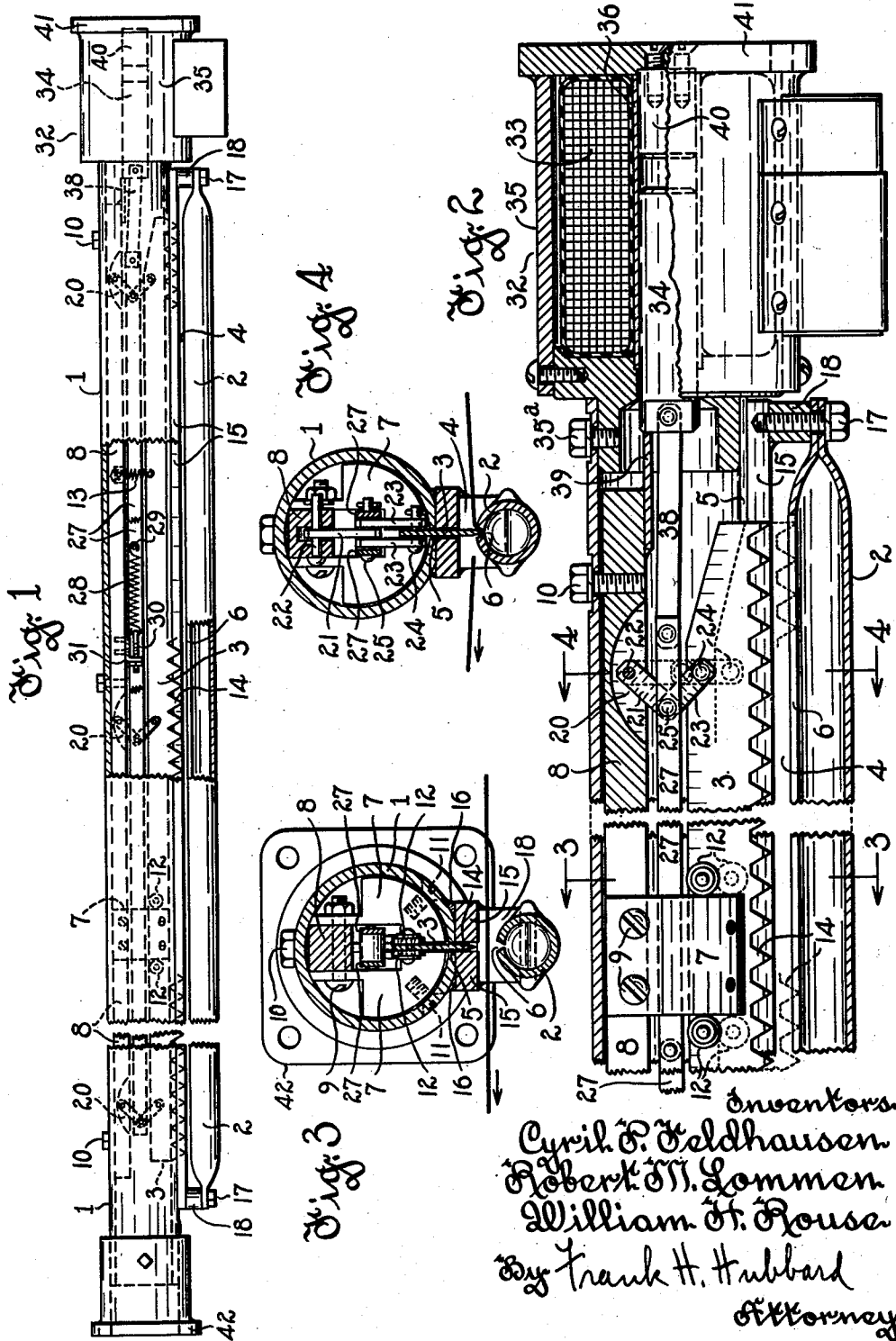
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WEB SEVERING DEVICE

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WEB SEVERING DEVICE

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4 Claims. (Cl. 164—90)

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This invention relates to web severing devices for use in machines such as printing presses.

The invention relates more particularly to web severing devices of the type disclosed in the patent to E. H. Laabs, No. 1,918,407, issued July 18, 1933.

The web severing device disclosed in the aforementioned patent is provided with a plurality of solenoid operated knives which are normally concealed within a tubular supporting member and are movable outwardly through openings therein to puncture or slash the web at a plurality of spaced points so that the same is severed by tearing between such points. In practice it has been found that when a web is severed in this manner the press plates are likely to be marked or damaged due to fold-back or wrinkling of the torn end of the web.

The present invention has among its objects to provide an improved web severing device which overcomes the aforementioned objection.

Another object is to provide a web severing device which operates to effect substantially instantaneous severing of the web entirely across the same.

Another object is to provide an improved web severing device which is exceedingly rugged in construction, positive and reliable in operation and which includes cooperating stationary and movable web severing parts for effecting severing of a web by shearing thereof.

Various other objects and advantages of the invention will hereinafter appear.

The accompanying drawing illustrates an embodiment of the invention which will now be described, it being understood that various modifications may be made in the embodiment illustrated without departing from the spirit and scope of the appended claims.

In the drawing,

Figure 1 is a side view of a web severing device embodying the invention, portions of the device being broken away and portions thereof being shown in section;

Fig. 2 is an enlarged sectional view of portions of the device shown in Fig. 1, and

Figs. 3 and 4 are sectional views on lines 3—3 and 4—4 of Fig. 2 illustrating the web severing blade of the device in retracted and projected positions.

The device illustrated in Fig. 1 includes a tubular bridge member 1 which carries a stationary web guide 2 and a cooperating movable web severing blade 3. Bridge member 1 is designed for mounting between the side frames of a print-

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ing press and web guide 2 extends longitudinally along one side of said bridge member and is spaced with respect thereto to provide a narrow web receiving space 4. Blade 3 is normally concealed within bridge member 1 and is movable outwardly through a longitudinal slot 5 in one side thereof to engage within a longitudinal slot 6 in guide member 2 for severing of the web in space 4.

More specifically, blade 3 is guided and supported within bridge member 1 between a pair of inner guide members 7—7. Guide members 7 are arranged midway between the ends of blade 3 and as shown in Fig. 3 the same are secured to opposite sides of an elongated supporting bar 8 by bolts 9. Bar 8 is secured to the inner side of bridge member 1 by screws 10, and as shown in Fig. 3 guide members 7 are secured within said bridge member by screws 11. Blade 3 has rollers 12 mounted on opposite sides thereof which engage guide members 7 on opposite sides to hold said blade against longitudinal movement. Also said blade is connected to bar 8 by a pair of springs 13 to bias the same inwardly with respect to bridge member 1. One of the springs 13 is shown in Fig. 1, and the other (not shown) is arranged to the left of guide members 7.

Blade 3 is provided with a saw tooth cutting edge 14 which is normally concealed between a pair of rectangular guide members 15—15. As shown in Fig. 3 the guide members 15 are disposed on opposite sides of the slot 5 in bridge member 1 and are secured to said bridge member by welds 16. Also as shown in Fig. 3, the saw teeth of cutting edge 14 are preferably provided with a V-shaped taper and the slot 6 in web guide 2 is also preferably provided with an outward V-shaped taper to receive and permit engagement of said teeth within said guide member. A web guide 2 is secured at opposite ends by screws 17 to lugs 18 which are welded to opposite ends of the guide members 15.

The operating mechanism for blade 3 includes four operating toggles 20, three of which are illustrated in Fig. 1. These operating toggles are arranged at points adjacent opposite ends of blade 3 and at points on opposite sides of guide members 7. As shown in Figs. 2 and 4, each of the operating toggles 20 includes a link 21 which is pivotally connected at one end to bar 8 by a pin 22. Also each of the operating toggles includes a pair of links 23—23 which are arranged on opposite sides of blade 3 and are pivotally connected at one end to said blade by a pin 24, and at their opposite ends to the free end of link

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20 by a pin 25. The several operating toggles are connected for simultaneous movement by a pair of links 27—27 which are arranged on opposite sides of said toggles and are connected thereto by their associated pivot pins 25. The links 27 are biased to move toward the left by a spring 28 having one end attached to said links by a pin 29 and its opposite end adjustably connected by a screw adjusting device 30 to a bracket 31 fixed to bar 8.

Links 27 are connected to an operating solenoid 32 including a winding 33 and a reciprocable plunger 34. As shown in Fig. 2, winding 33 is mounted within a magnetic enclosing casing 35 which is fixed within the right hand end of bridge member 1 by screws 35^a. Plunger 34 is slidable within a non-magnetic sleeve 36 which extends through an opening in winding 33 and is supported at opposite ends by casing 35. Plunger 34 is connected to links 27 by a link 38 and said plunger is normally held by spring 28 (Fig. 1) in engagement with a fixed stop 39 secured to bar 8. Casing 35 carries a pole projection 40 which extends into the right hand end of sleeve 36 and upon energization of winding 32 plunger 34 is attracted toward the right by said pole projection against the action of spring 28.

The several operating toggles 20 are normally maintained in the full line position shown in Fig. 2 under the action of spring 28 and with the toggles in this position blade 3 is held in the retracted position shown in Fig. 1 so that the saw tooth edge 14 thereof is concealed between the guide members 15 associated with bridge member 1. Upon energization of winding 33 plunger 34 is moved toward the right into its attracted position against the action of spring 28 to move the several toggles 20 from the full line position illustrated in Fig. 2 into the dotted line position of toggles 20 into the dotted line position shown in Fig. 2 blade 3 is moved outwardly with respect to bridge member 1 against the action of its associated springs 13 into a projected position wherein the saw tooth edge 14 thereof enters the slot 6 in web guide 2 for severing of the web in space 4. During movement of blade 3 into its projected position the same is held against longitudinal movement with respect to bridge member 1 by the guide members 7, and as is apparent the cutting edge 14 is maintained in parallel relation to the axis of web guide 2. Thus when the saw tooth edge 14 is moved into the slot 6 in web guide 2 the web is severed substantially instantaneously entirely across the same. The severing is accomplished by a combination of shearing by the saw teeth penetrating the web at a multiplicity of closely spaced points in a straight line across the web and by the tension exerted on the web effecting separation of the web material between the sheared points. Upon deenergization of winding 33 blade 3 is restored to the retracted position shown in Fig. 2 by springs 28 and 13, and it should be noted that when the blade is in this position the opposing faces of guide members 15 overlap the saw teeth of cutting edge 14 to prevent entry of paper lint into the interior of bridge member 1.

To facilitate mounting of the device within a press enclosing casing 35 of solenoid 32 is provided with drilled mounting flange 41, and the left hand end of bridge member 1 has a cup-shaped supporting member fixed thereto which is provided with a drilled mounting flange 42.

While use of a transverse V-shaped taper on

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the saw teeth of cutting blade 3, and a corresponding taper for the slot 6 in guide member 2 is not required in practice of the invention in its broadest concept, such formation insures positive pinching or clinching of the web against guide member 2, which facilitates final severance of the web by the tension exerted on the leading portion of the latter. The included angle between the tapered sides of the saw teeth, and between the sides of the slot, can be varied considerably, but should not be too small or binding of the blade in the slot may occur. The width of the bottom of the slot should preferably be less than the maximum width of blade 3 to insure engagement of blade 3 against member 2 within the slot of the latter.

What we claim as new and desire to secure by Letters Patent is:

1. A printing press web severing device comprising a tubular bridge member for mounting between the side frames of a printing press, an elongated web guide member secured to one side of said bridge member in spaced parallel relation with respect thereto to provide a narrow web receiving space between said members, said guide member being of tubular form and being provided with a longitudinal slot in the side opposite said bridge member which is outwardly V-tapered in transverse cross section, and an elongated web severing blade normally concealed within said bridge member, said blade in transverse cross section being of a width greater than the bottom of said slot and having a saw tooth edge which is transversely complementally tapered with respect to said slot, and said blade being movable outwardly through a slot in one side thereof into a projected position wherein the same enters and engages said guide member within said slot of the latter for severing of a web traveling in the space between said bridge and guide members.

2. A printing press web severing device comprising a tubular bridge member for mounting between the side frames of a printing press, an elongated web severing blade normally retracted in said bridge member and movable outwardly through a slot in one side thereof, elongated guides secured to said bridge member and disposed on opposite sides of said slot in such manner that the opposing faces of said guide members abut and overlap said blade in retracted position of the latter to prevent entry of paper lint into the interior of said bridge member, and an elongated web guide member located to one side of said bridge member and disposed in spaced parallel relation with respect thereto to provide a narrow web receiving passage between said members, said guide member having a longitudinal slot in the side opposite said bridge member for entrance by said blade upon outward movement thereof for severing a web in the space between said bridge and web guide members.

3. In a printing press web severing device comprising a tubular bridge member for mounting between the side frames of a printing press, an elongated web guide member of tubular form secured to one side of said bridge member and disposed in spaced parallel relation with respect thereto to provide a narrow web receiving space between said members, said guide member having a longitudinal slot in the side opposite said bridge member which is outwardly V-tapered in transverse cross section, an elongated web severing blade, which is wider in transverse cross section than the bottom of said slot and has a cutting edge that is transversely complementally

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tapered with respect to said slot, mounted and normally concealed within said bridge member, said blade being movable outwardly through a slot formed in said bridge member to enter and engage said guide member within the slot of the latter for severing of a web traveling in the space between said bridge and guide members, and cooperating parts carried by said bridge member and said blade for restricting the latter in its movement to the plane of said slots and against movement longitudinally of said slots.

4. In a printing press web severing device comprising a tubular bridge member for mounting between the side frames of a printing press, an elongated web guide member of tubular form secured to one side of said bridge member and disposed in spaced parallel relation with respect thereto to provide a narrow web receiving space between said members, said guide member having a longitudinal slot in the side opposite said bridge member which is outwardly V-tapered in transverse cross section, an elongated web severing blade, which is wider in transverse cross section than the bottom of said slot and has a saw-tooth cutting edge that is transversely complementally tapered with respect to said slot, mounted and normally concealed within said bridge member, said blade being movable out-

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wardly through a slot formed in said bridge member to enter and engage said guide member within the slot of the latter for severing a web traveling in the space between said bridge and guide members, stationary members mounted within said bridge member on opposite sides of said blade to restrict the latter in its movement to the plane of said slots, and parts carried by said blade cooperating with the last mentioned members to restrain said blade against movement longitudinally of said slots.

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