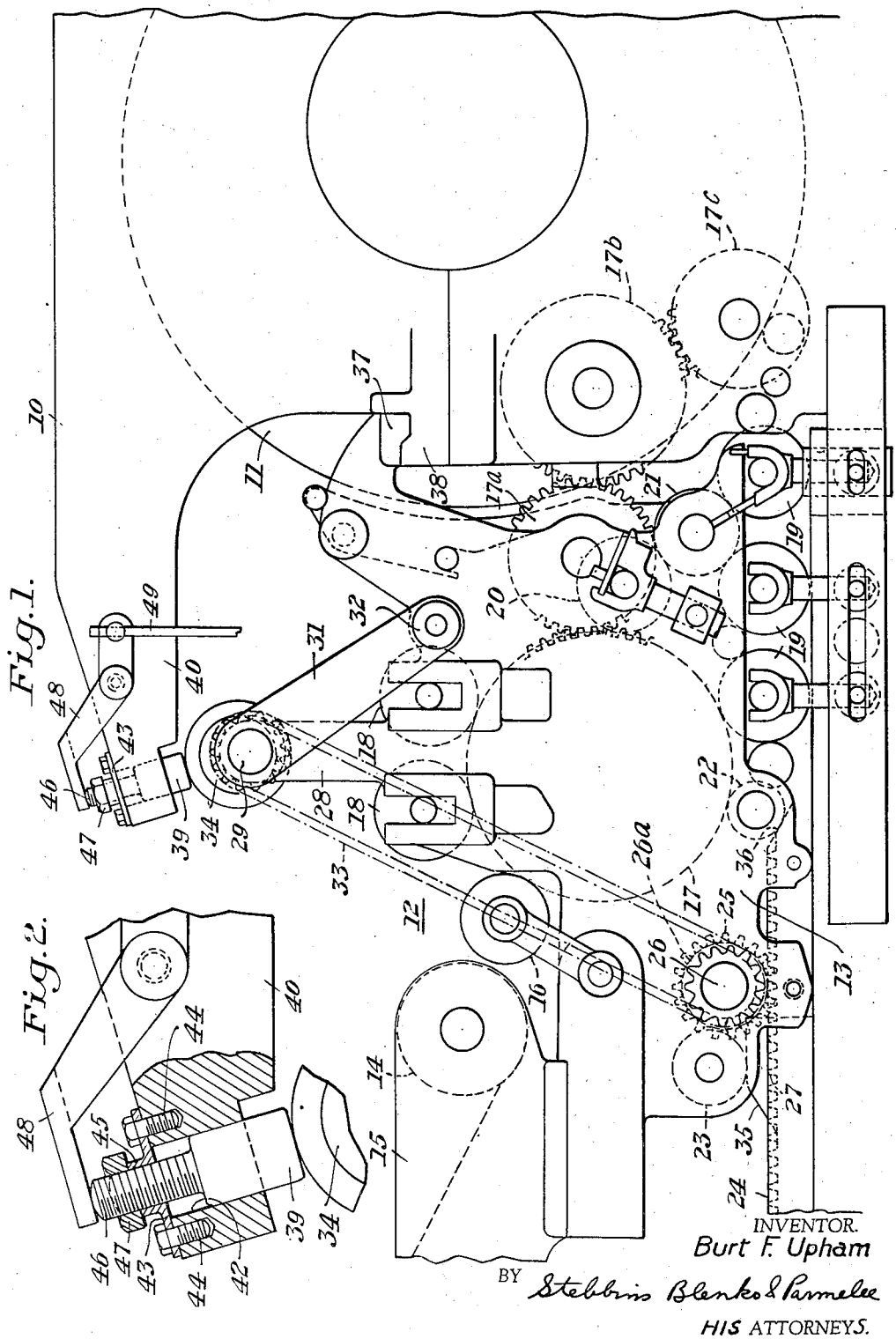
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SAFETY PLATE SHEARING DEVICE FOR INK ROLLERS

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SAFETY PLATE-SHEARING DEVICE FOR INK ROLLERS

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This invention relates in general to printing presses and, in particular, to an improvement in the inking mechanisms usually employed therewith. These include a number of composition rollers which are subject to failure by melting if their temperature exceeds a certain value. Failure of such roller is apt to cause serious injury to the inking mechanism as a whole, and it is an object of this invention to prevent such injury.

In accordance with the invention, I employ a "three-point" mounting of the inking mechanism on the press frame. In other words, the inking mechanism is held in place by engagement with three pairs of fixed abutments on the press frame. In one of these abutments, I incorporate a frangible member whereby, on failure of one of the composition rollers of the inking mechanism, the latter is released from the press frame and the press itself stopped immediately. The movement permitted by failure of the frangible member is utilized to operate a stop mechanism for the press, of any suitable type.

The invention may be more fully comprehended from a consideration of the following detailed description thereof which is to be read in connection with the accompanying drawing illustrating a preferred embodiment. In the drawing—

Fig. 1 is a partial side elevation showing a portion of the press frame with the inking mechanism (shown largely diagrammatically) in operative relation thereto; and

Fig. 2 is a sectional view of the frangible member taken through the abutment on the press frame associated therewith, in a plane parallel to that of Fig. 1.

Referring in detail to the drawing, a portion of the frame of a reciprocating bed press is illustrated at 10, and the cylinder thereof at 11. An inking mechanism, indicated generally by the numeral 12, is mounted on the press frame and comprises spaced side frames 13 providing bearings for the several rolls and rollers usually employed. These include a fountain roll 14 disposed in an ink fountain 15, a composition ductor roller 16, a steel distributing drum 17, composition rollers 18, composition form rollers 19 and an intermediate roller 20 and roll 21, the former of composition and the latter of steel. Meshing gears 17a, 17b and 17c on the inking mechanism and frame drive the drum 17 in the usual manner from a rack on the bed (not shown).

The inking mechanism 12 is movable toward and away from the cylinder 11 on rollers traveling on tracks 24 carried by the press frame. It includes pinions 25 keyed to a shaft 26 journaled in the side plates 13. The pinions 25 mesh with racks 27 fixed to the press frame. Rollers 26a on the shaft 26 travel on the tracks 24 and support the inking mechanism.

Posts 28 upstanding from the frames 13 provide bearings for a shaft 29. The shaft 29 has a crank 31 thereon to permit manual rotation thereof. The crank has a handle 32 mounted for axial movement, and a pin thereon is adapted to enter a hole in the adjacent side frame 13 to secure the crank in the illustrated position. A chain and sprocket drive 33 connects the shafts 29 and 26. Eccentric discs 34 are keyed to the shaft 29 for a purpose which will appear later.

When the inking mechanism is retracted from the cylinder 11, it is tilted counterclockwise about the shaft 26. As it is advanced toward the illustrated position, rollers 23 ride upon inclined portions 35 of the tracks 24, while the rollers 22 ride down inclined portions 36. These rollers and inclined portions are offset laterally of the rollers 26a. The resulting clockwise tilting of the inking mechanism causes the drum 17 and the intermediate roll 21 to engage the form rollers 19 firmly. Such movement also causes hook ends 37 on the side plates 13 to engage behind fixed abutments 38 on the press frame. At the same time, the eccentric discs 34 are rotated into a position such that they firmly engage abutments in the form of studs 39 extending downwardly and toward the cylinder from rearwardly extending portions 40 of the frame. The inking mechanism is thus positioned properly with respect to the press frame by the rollers 26a resting on the tracks 24, the engagement of the hook ends 37 with the abutments 38 and the engagement of the eccentric discs 34 with the studs 39. This provides the previously mentioned "three-point" mounting.

As best shown in Fig. 2, the studs 39 are mounted in bores 42 extending through the portions 40 of the press frame. Discs 43 are secured over the outer ends of the bores 42 by screws 44 and have integral sleeves 45. The discs 43 are bored concentrically with the sleeves 45 and tapped to receive the reduced threaded ends 46 of the studs 39. Lock nuts 47 hold the studs in adjusted position in the sleeves 45.

The discs 43 are so dimensioned that they will fail by shearing, under a predetermined upward stress applied to the studs 39, such as might result from overheating and melting of one of the form rollers 19, for example. Since the studs 39 are the sole means for holding the inking mechanism in proper position by causing engagement

of the hook ends 37 with the abutments 38, failure of the discs 43 permits upward movement of the inking mechanism as a whole to relieve excessive stress which might otherwise be applied to the parts thereof by the defective inking roller. The gear 17a also breaks engagement with the gear 17b.

A bell crank 48 is pivotally mounted on one of the frame portions 40, and has one arm in engagement with the upper end of the adjacent stud 39. The other end of the crank is secured to a link 49, which extends to a suitable stop motion for disconnecting the press motor from its power source and applying a brake to bring the press to an immediate stop. The details of such mechanism are known and need not be illustrated or described here. Shearing of the disc 43 obviously permits movement of the stud 39 to operate the bell crank 48.

It will be apparent from the foregoing description that the invention provides means for holding the inking mechanism rigidly in operative position on the press under all normal conditions of operation. At the same time, the mounting of the inking mechanism is such that upon failure and distortion of one of the composition rollers thereof resulting from excessive temperature, the breakage of the discs 43 will release the inking mechanism from its normal position and permit slight movement thereof, preventing excessive stresses from being applied thereto which might seriously injure the mechanism. The device is effective immediately to stop the press. The invention is simple, and the parts necessary for the application thereof to presses of the usual construction are relatively inexpensive. The frangible discs can, therefore, be replaced at little cost, and serve effectively to protect the entire inking mechanism from serious injury, which might otherwise result from failure and distortion of one of the composition rollers thereof.

Although I have illustrated and described herein but one preferred form of the invention, it will be recognized that changes in the construction illustrated may be made without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. The combination with a printing press having a frame, of an assembly of inking rolls mounted thereon, means on said assembly engageable with an abutment on said frame to lock the assembly relative thereto, said abutment including frangible means adapted to yield on application of an up-thrust to said assembly, and means operated on breakage of said frangible means for stopping the press.

2. The combination with a printing press having a frame, of an assembly of inking rolls mounted thereon, and means for holding said assembly in fixed position on said frame, said means including a frangible member adapted to yield in response to a predetermined force tending to move the assembly with respect to the frame.

3. In a printing press, a frame, an inker movable thereon from operative to inoperative position, and vice versa, means for tilting the inker into engagement with an abutment on the frame when moved to operative position, means for holding the inker in engagement with said abutment, said means including a frangible element capable of yielding upon the occurrence of unusual stress tending to separate the inker from said abutment, and means actuated by said abutment on breakage of said element for stopping the press.

4. The combination with a printing press having a frame, of an inker movable thereon and having means effective on tilting thereof to engage the frame and hold the inker in position thereon, and means for holding said inker against reverse tilting, said means including a frangible member adapted to fail under abnormal stress tending to tilt the inker reversely.

5. The combination with a printing press having a frame, of an inker mounted thereon, an abutment engageable with said inker for holding the inker in position, and frangible means supporting said abutment whereby to release the inker on the application of abnormal force thereto.

6. The combination defined by claim 5 characterized by said abutment comprising a stud carried on a portion of said frame.

7. The combination defined by claim 5 characterized by said abutment comprising a stud, and said means comprising a disc secured to the frame, the stud being so disposed as to transmit to the disc the thrust exerted on the stud.

8. The combination defined by claim 5 characterized by said abutment comprising a stud, and said means comprising a disc secured to the frame, the stud being threaded through said disc.

9. The combination defined by claim 5 characterized by means whereby the abutment may be adjusted relative to said frangible means.

10. The combination with a printing press having a frame and an inking mechanism associated therewith comprising a plurality of rollers and gears for driving them, of means for holding the mechanism in position on the frame including a frangible member adapted to yield on failure of one of said rollers and separation of the driving gears, and means actuated on breakage of said member for stopping the press.

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