

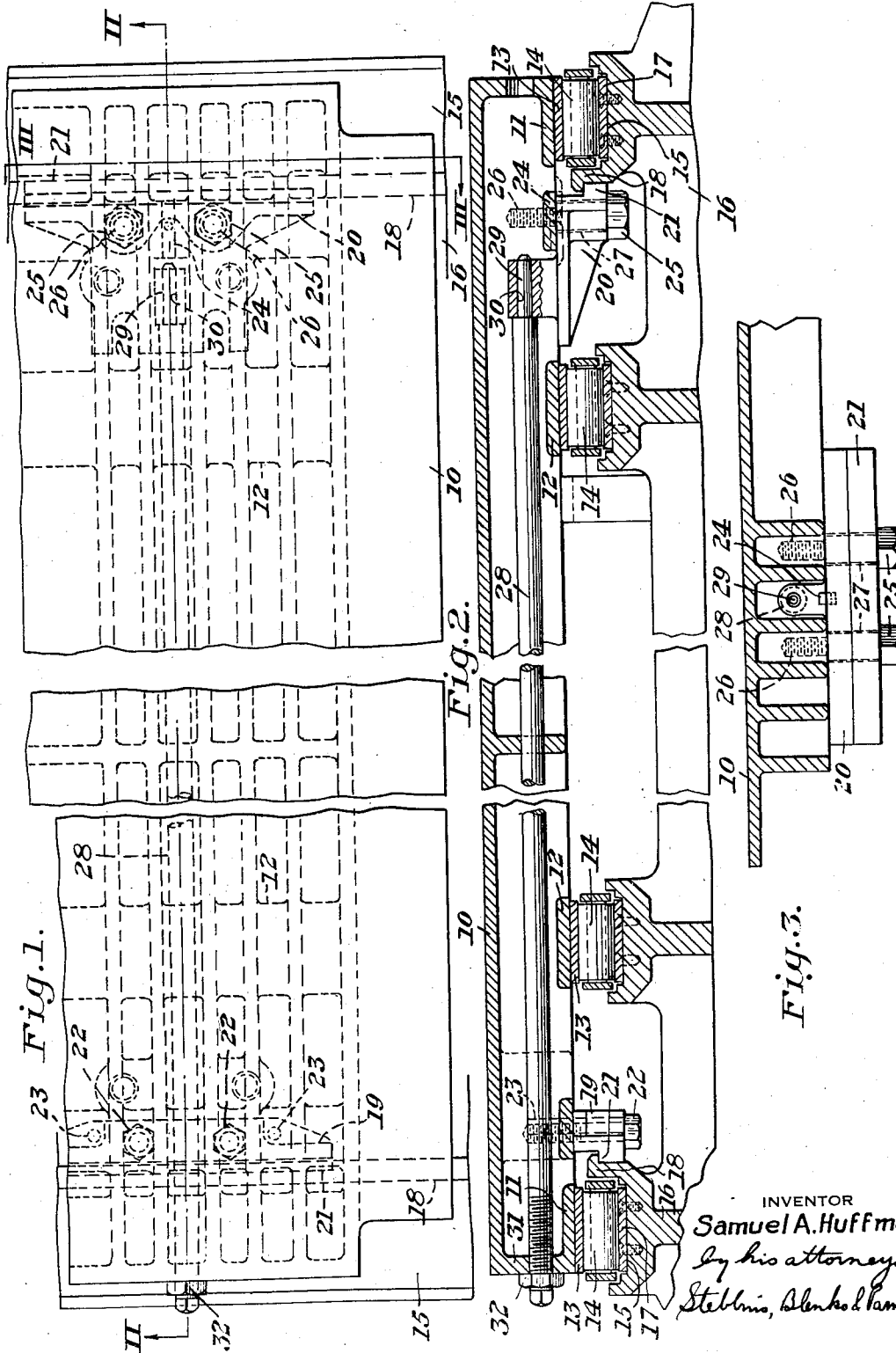
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TYPE BED GIB

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TYPE BED GIB

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This invention relates generally to printing presses, and in particular to an arrangement of gibs for guiding a reciprocating flat bed back and forth along the frame of the press.

When it is attempted to operate reciprocating flat bed presses at high speeds, the mass of the bed imposes rather definite limits on the speeds which it is possible to attain. As a result, the use of beds composed of relatively light non-ferrous metals or alloys is indicated, in contrast to the cast-iron beds previously employed. This expedient, however, introduces further complications. Non-ferrous metals and alloys generally have a higher coefficient of thermal expansion than cast iron. This means that running clearances between an alloy bed and a cast-iron frame, which are satisfactory at one temperature, are either too small or too great at other temperatures. Relatively close clearances are desirable at all times, in order to insure accurate register, and the expansion of an alloy bed between its idle temperature and its operating temperature may exceed this clearance considerably.

I have invented an arrangement of gibs for printing-press beds whereby the proper spacing of the gibs relative to the way-frames of the press is maintained at all times, regardless of changes in the temperature of the various parts. This permits the use of beds of light non-ferrous metals or alloys, and the maintenance of the proper running clearances at all temperatures without the necessity for any adjustment or re-setting. In accordance with my invention, I provide a bed with gibs, at least one of which is movable through a short distance transversely of the bed. I also provide means for spacing the movable gib from the other gib by means, such as a spacer bar or rod, which is composed of material having substantially the same coefficient of thermal expansion as the material of which the press frame is composed. The spacing of the gibs is thus maintained by means independent of the bed so that expansion or contraction of the latter does not change the clearance between the gibs and the way-frames.

For a complete understanding of the invention, the following detailed description may be referred to in connection with the accompanying drawing illustrating a preferred embodiment. In the drawing,

Fig. 1 is a partial plan view of a press bed and the way-frames on which it reciprocates;

Fig. 2 is a transverse sectional view along the line II—II of Fig. 1; and

Fig. 3 is a partial longitudinal sectional view along the line III—III of Fig. 1.

The press bed, indicated at 10, is of ribbed construction and may be composed of any suitable material, such as a relatively light non-ferrous alloy. Side and intermediate races 11 and 12 having hardened wearing surfaces 13 rest on roller bearings 14. These bearings travel along races 15 formed in the way-frame 16 and having hardened wearing surfaces 17. The way-frame 16 is provided with tracks 18. Gibs 19 and 20 cooperate with the tracks 18. It will be understood that the gibs 19 and 20 are duplicated at the opposite end of the bed, which does not appear in the drawing.

The gib 19 is simply a block having a shoulder 21 for engaging under the track 18. The gib is secured to the bed by cap screws 22. Its position on the bed is precisely fixed, furthermore, by dowels 23 extending into holes formed in the gib 20 and the bed.

The gib 20 differs slightly from the gib 19 in that it is keyed to the bed at 24 for sliding movement transversely thereof. The gib 20, of course, has a shoulder 21 cooperating with the track 18 in the same manner as the gib 19.

The gib 20 is movably supported on the bed 10 by cap screws 25 having reduced end portions 26. The gib 20 is bored at 27 to receive the cap screws 25, the diameter of the bores 27 being slightly greater than that of the screws 25 whereby slight movement of the gib 20 transversely of the bed is permitted.

A thrust bar or spacer rod 28 has a reduced end 29 extending into an eye 30 formed integral with the gib 20. The bar 28 extends transversely of the bed 10, and the end thereof remote from the eye 30 is threaded through a tapped hole in a peripheral flange 31 depending from the surface of the bed. A lock nut 32 permits the bar 28 to be held in position when properly adjusted. The bar 28 is preferably of steel or some other material having substantially the same coefficient of thermal expansion as the material of which the way-frame is composed, usually cast iron. The gib 20 will be initially adjusted by turning the bar 28, to provide the proper clearances between the shoulder 21 on the gibs and the tracks 18 on the way-frame. The end of the bar 28 extending through the flange 31 is squared to take a wrench for this purpose. When the proper adjustment of the gib 20 has been made, the lock nut 32 is tightened. The running clearances between the gibs and the tracks initially provided are maintained at all times, regardless

of temperature changes and the difference between the coefficient of thermal expansion of the bed 10 and the frame 16. If the press is started while relatively cold as, for example, after a period of idleness, the temperature of the parts will increase as the operation of the press continues. The bed 10 will expand a greater amount than the frame 16. No difficulty is experienced as a result of this expansion, since the races 11 and 12 are free to shift relative to the roller bearings 14. The bar 28 expands at about the same rate as the way-frame 16, and thus keeps gib 20 up against its track with the initially chosen running clearance, at all times. When operation of the press ceases, contraction of the frame 16 on cooling is substantially equaled by contraction of the bar 28 whereby a free running fit between the gib 20 and its track is maintained. It will be understood that the screws 25 are not tightened sufficiently to prevent lateral adjusting movement of the gib 20 relative to the bed 10.

It will be clear from the foregoing description that the invention obviates an objection to the use of beds of non-ferrous metals or alloys which has existed heretofore, since it provides means for determining the spacing of the bed gibs independently of the bed itself. The spacing of the gibs is determined by means (the spacer bar 28) which changes its length with variations in temperature to about the same extent as the distance between the tracks 18 changes. Proper running clearances are thus preserved regardless of the temperature of the parts.

While I have described the invention as applied to the reciprocating beds of printing presses, it will be understood that it may be otherwise applied and utilized. Changes in the exact construction disclosed, furthermore, may be made without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. Means for maintaining a close running fit between the way-frame of a printing press and a bed reciprocable thereon composed of material having a thermal coefficient of expansion different from that of the material of which the frame is composed, comprising a gib fixedly mounted adjacent one side of said bed, a second gib movably mounted adjacent the other side of said frame, said gibs cooperating with said frame to

guide movement of the bed thereover, and a thrust bar composed of material having a thermal coefficient of expansion substantially the same as that of the material of which the frame is composed and extending across the bed, for holding the movable gib in a predetermined position relative to the side of the frame.

2. Means for maintaining a close running fit between guideways on a frame and a member reciprocable thereon composed of material having a thermal coefficient of expansion different from that of the material of which the frame is composed, comprising a gib fixedly mounted adjacent one side of said member, a second gib movably mounted adjacent the other side of said member, said gibs cooperating with said guideways to guide movement of said member thereover, and a spacer mounted for expansion and contraction independently of said member for maintaining the movable gib in the desired position relative to the fixed gib, said spacer being composed of material having a thermal coefficient of expansion substantially the same as that of the material of which the frame is composed.

3. Means for maintaining a close running fit between a frame having at least a pair of ways thereon and a bed reciprocably supported on said ways, said frame and bed being composed of materials having different coefficients of thermal expansion, said means including a gib fixed relative to said bed and cooperating with one of said ways, a gib movably mounted on said bed cooperating with another of said ways, and means positioning said last-mentioned gib relative to the bed in accordance with the expansion and contraction of said frame, regardless of the expansion and contraction of said bed.

4. Means for maintaining a close running fit between a frame having at least a pair of ways thereon and a bed reciprocably supported on said ways, said frame and bed being composed of materials having different coefficients of thermal expansion, said means including gibs cooperating with the ways and so mounted on the bed as to permit relative movement between said gibs, and means for positioning the gibs with relation to each other in accordance with the expansion and contraction of said frame, regardless of the expansion and contraction of said bed.

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