

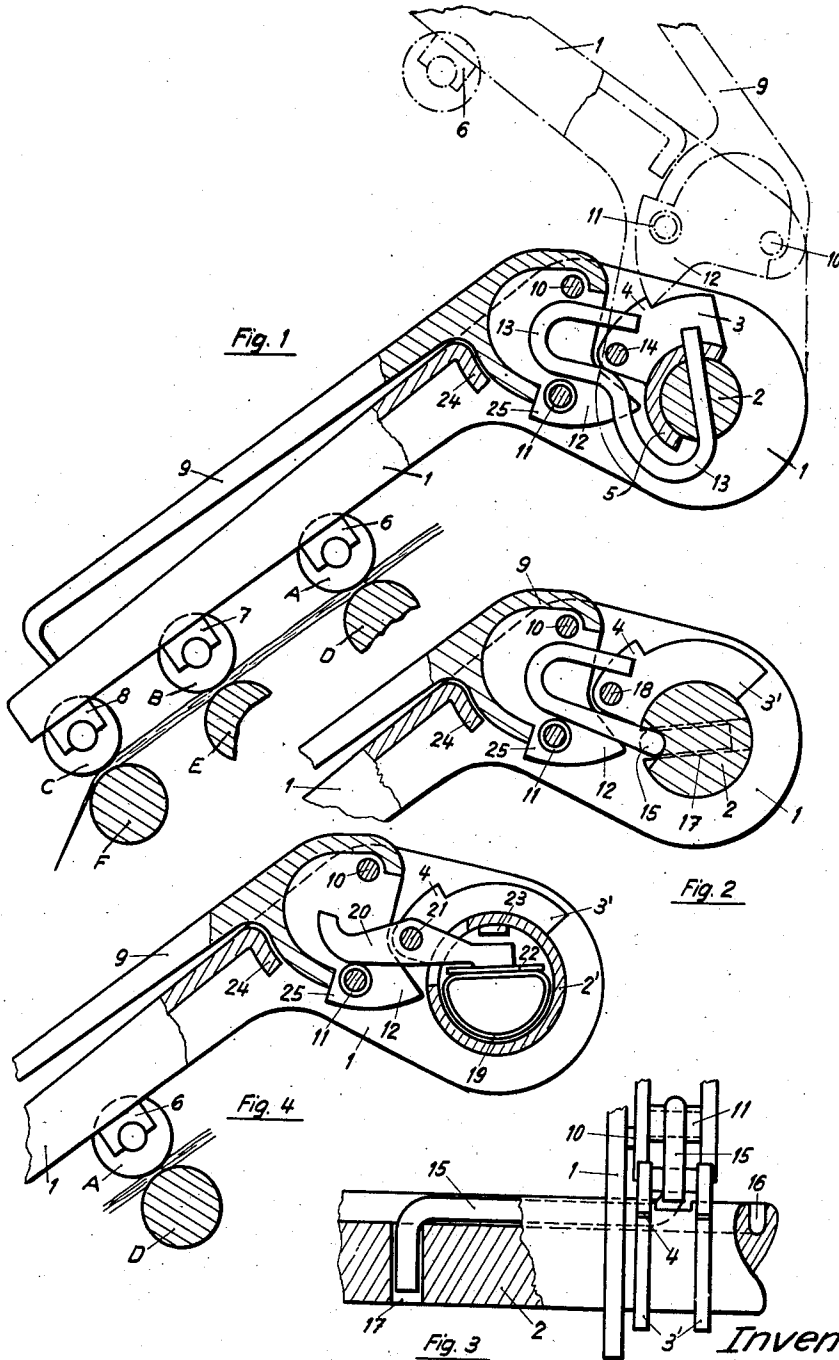
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PRESSURE DEVICE FOR DRAWING FRAMES

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## UNITED STATES PATENT OFFICE

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## PRESSURE DEVICE FOR DRAWING FRAMES

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This invention relates to improvements in pressure devices for the roll heads in drawing frames, comprising a weighting arm pivoted on a pin to the frame and provided with holders which carry the top rolls.

In conventional cotton type drawing frames, the load is transmitted onto the top rolls through a stirrup-and-lever system which, disadvantageously, is arranged in the rear or in front of the roll head. Such known arrangement renders the operation of the frame more difficult, particularly the mounting and removal of the lower rotary roll clearers. Further, the weights or springs and the stirrup-and-lever system of such known pressure devices easily soil through the deposit of dust and fly, which may cause disturbances in the operation of the frame.

In order to avoid such inconveniences and disadvantages of known weighting arrangements, the pressure device according to the present invention is disposed in or on the support pivot pin of the weighting arm and substantially intermediate of the lateral legs of the said arm which has two side walls and connecting means therebetween.

Elastic elements such as springs or a fluid pressure hose supported by said pin and subject to pneumatic or hydraulic pressure, may be provided for producing the weighting load. The latter suitably may act on a bearing pin of a swingable arm pivoted to the weighting arm and, through the said pin, on the weighting arm and its holders and top rolls. Again, the spring means may be supported, when the top rolls are not loaded, under preliminary tension on a stud connected to the said pin.

The present invention is shown in various forms in the accompanying drawing, in which

Fig. 1 shows a first form in side elevation and partly in section,

Fig. 2 a second form in a similar view,

Fig. 3 a top plan view, partly in section, of Fig. 2, and

Fig. 4 represents a third form in a view similar to Fig. 1.

In the first form (Fig. 1), the front portion of the weighting arm 1 is composed of side walls and a connecting wall extending laterally from the upper edges of the side walls and, thus, is U-shaped in cross-section, while its rear portion is formed by two vertical walls only. The latter are bored for reception of a support pin 2 which extends the entire length of the frame. Two holding plates 3, which are disposed intermediate of the said vertical wall and each of which is provided with a nose 4, are fixedly connected to the pin 2 and secure the arm 1 against lateral displacement on pin 2. The said two plates 3 are interconnected by or integral with a saddle 5 which is semi-cylindrical and is lodged on pin 2.

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The said saddle, however, could be a full or closed ring. Besides the plates 3, the holders 6, 7 and 8 of the top rolls A, B and C also are disposed intermediate of the two vertical walls of arm 1. A swingable arm 9 is pivoted on a pin 10 to arm 1, and its rear portion is shaped substantially as a semi-circular hollow body having side walls. A detent roller 11 is rotatably mounted on a pin secured to the two side walls of the said rear portion of swingable arm 9. The said side walls are each provided with a beak-like projection 12.

In Fig. 1, a spring-wire 13, bent off at various points, is provided for producing the weighting load or pressure. One end portion of the spring 13 extends through a transverse bore of pin 2 and, at the same time, an aperture in the saddle 5 of the two discs 3, thus locating the latter on pin 2. The free end of spring wire 13, which permanently is subject to a certain preliminary tension, abuts against a stop stud 14 secured to the holding discs 3 when the swingable arm 9 has been swung upward and when the top rolls A—C of the drawing head thus are not weighted.

In the example shown in Figs. 2 and 3, one leg of a torsion rod 15, which is bent off at various points, is inserted into a longitudinal groove 16 of the pin 2; the one end portion of rod 15 being anchored in a cross bore 17 of pin 2. When the swingable arm 9 has been swung upward, the rod 15 is subject to a preliminary torsion through a stop stud 18 secured to the two holding plates 3'.

In the third form (Fig. 4), the pin 2' is tubular and houses a fluid pressure hose 19 which extends over the entire transverse width of the frame and is subject to pneumatic or hydraulic pressure. One end of a lever 20, fulcrumed on a pin 21 secured to the two holding plates 3', abuts against a protective or bearing plate 22 supported on the pressure hose 19; said lever projecting through a slot provided in the wall of the tubular pin 2'. A stationary stop 23 provided inside the latter limits the rocking movement of lever 20.

In all the forms of invention described and shown, the top rolls A—C rest, in the non-weighted state of arm 1, on the bottom rolls D—F under the dead weight of the pressure device; the swingable arm 9 being slightly raised. In the first two examples (Figs. 1-3), the free ends of the springs 13, 15, which are prestressed, then abut against the stop studs 14 and 18 respectively. In the third example (Fig. 4), the lever 20 then is urged upward against stop 23 through the pressure hose 19. When depressing the swingable arm 9 onto arm 1, which depressing may be easily done by virtue of the relatively long leverage of arm 9, the detent roller 11 is engaged by the adjacent bent free portion of spring 13 or 15, or of lever 20 respectively, where-

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upon the resilience of the said springs or the force engaging the lever 20 through hose 19, is directly transmitted onto the arm 1 through the said roller 11. The top rolls A—C secured to arm 1, thus are pressed down against their appurtenant bottom rolls D—F. When it is desired to relieve or unload the drawing head, swingable arm 9 is simply raised. The springs 13, 15 then are relieved, when the rollers 11 roll on the bent spring portions, until the stop studs 14, 18 prevent a further relief. The lever 20, during such relieving operation, is rocked until it abuts against the stationary stop 23. In such relief position, the swingable arm 9 and weighting arm 1 are disengaged from the pressure-producing means.

It also is possible, by correspondingly swinging the arm 9 upward, to also swing upward the arm 1 together with the holders 6—8, in that the two lateral noses 25 of arm 9 strike against a cross rib 24 provided on arm 1, so that the latter then follows arm 9. In the raised position of the arms 1, 9 shown in Fig. 1 by dash-and-dot lines, the beak-like projections 12 of arm 9 are engaged to the rear of the noses 4 of the holding-discs 3, whereby the arm 9 is held in the respective position, as is also the arm 1 with the aid of pivot pin 10.

The load may be easily and readily applied and removed, by means of the arrangement described, by correspondingly manipulating the arm 9. The weighting-arrangement according to my present invention affords a well set, uniform appearance to the drawing frame, and substantially facilitates its operation, since levers and stirrups are avoided in front, intermediate and in the rear of the drawing rolls. Further advantages of the form of invention shown in Fig. 4 are that the pressure of the top rolls against the bottom rolls may be readily adapted to the nature of the fibrous material to be worked by varying the pressure of the fluid in hose 19, and that all the drawing heads of the frame may be loaded and unloaded from a central point by raising or lowering the pressure of said fluid.

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

1. Weighting apparatus for textile drawing apparatus comprising a weighting arm, a plurality of upper drawing rollers having shafts, said weighting arm carrying a plurality of holders for the shafts of said upper drawing rollers, a support pin, said weighting arm being pivotally mounted on said support pin, elastic pressure producing means carried by said pin, and means contacting the weighting arm for applying the elastic pressure thereto for loading the weighting arm and, thus, the rollers carried thereby.

2. Weighting apparatus according to claim 1, and in which the elastic pressure producing means includes a spring wire, and in which the support pin is provided with a recess accommodating a part of said wire.

3. Weighting apparatus according to claim 1 and in which the elastic pressure producing means includes a spring member having a straight portion lying parallel to the axis of the support pin, said support pin being provided with a longitudinal groove in which said straight portion of the spring member lies, for application of pressure to the spring from the said support pin.

4. Weighting apparatus according to claim 1, and in which the support pin is hollow, and the elastic pressure producing means is a flexible tube located in the hollow of said hollow pin, said hollow pin having an opening in its wall, and the

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means for applying the elastic pressure to the weighting arm comprises pressure transmission linkage extending through the opening in the wall of the pin and contacting the flexible tube.

5. Weighting apparatus for applying elastic pressure to a textile drawing head comprising, a weighting arm having side walls connected by a transversely extending connecting means, a plurality of roller shaft holders on said arm, a plurality of upper rollers having shafts held in the respective holders, a support pin on which said weighting arm is swingably mounted, means for applying elastic pressure to said weighting arm tending to swing it downwardly, said pressure applying means including elastic pressure producing means carried by the support pin, a second arm swingably journaled on the weighting arm between the side walls of the weighting arm, means for transmitting elastic pressure from said pressure producing means to swing said second arm downwardly, said second arm engaging the weighting arm at a location remote from its journal to apply the elastic pressure to the weighting arm.

6. Weighting apparatus for textile drawing heads according to claim 5 and in which there is provided a plurality of retaining plates fixedly mounted on said support pin between the side walls of the weighting arm, said plates each being provided with a nose on its periphery which serve as stops, the said second arm having projections positioned to engage the noses of said plates when swung upwardly so as to retain the weighting arm in a raised position removed from its operating position.

7. Weighting apparatus for textile drawing heads according to claim 5, and in which the means for producing elastic pressure comprises a flexible tube containing pressure fluid, said support pin being hollow and said tube being disposed in said hollow pin, a lever having two arms and having pivot means located between the side walls of the weighting arm, a pair of spaced-apart plates fixedly mounted on the support pin, said pivot means extending between said plates, said lever bearing with one of its lever arms against said tube and with its other lever arm against said second arm journaled on the weighting arm to transmit weighting forces produced by the pressure tube to the weighting arm.

8. Weighting apparatus for textile drawing heads according to claim 5 and in which the weighting arm is provided with a transversely extending rib, between its two side walls, said second arm having an abutment positioned to engage said transversely extending rib of the weighting arm when said second arm is swung upwardly so that the weighting arm by engagement of the abutment of said second arm with the rib of the weighting arm will also be swung upwardly.

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#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

Number	Name	Date
263,365	Furbush	Nov. 28, 1882
1,130,220	Vales	Mar. 2, 1915
1,396,122	Johnson	Nov. 8, 1921
2,353,338	Hess	July 11, 1944
2,384,250	Hafeli	Sept. 4, 1945