

Feb. 18, 1969

H. EGGERINGHAUS

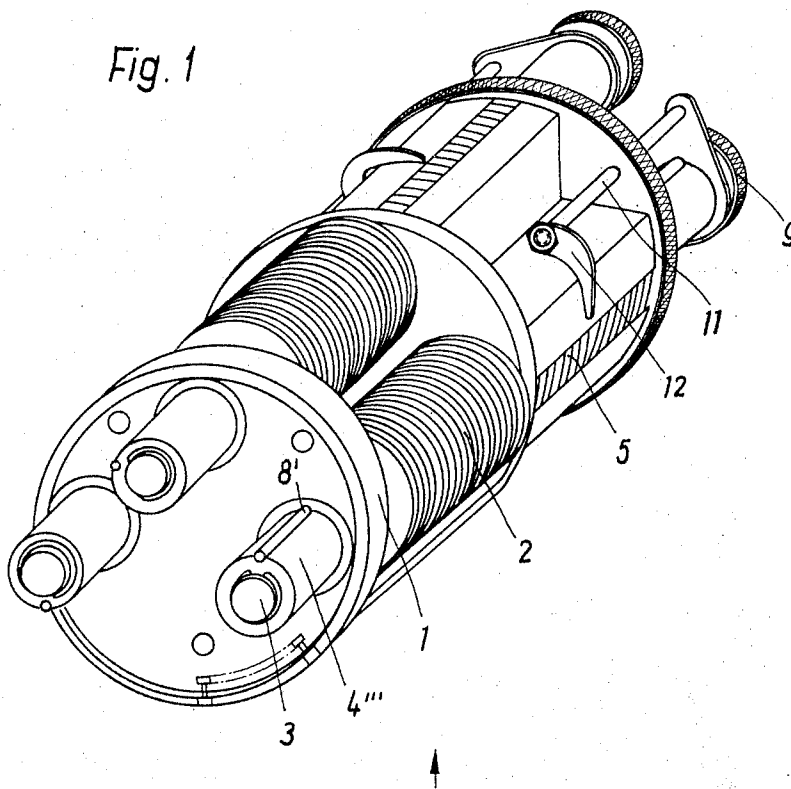
3,427,961

NUMBERING MACHINE ADJUSTER FOR PRINTING PRESSES

Filed April 26, 1967

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Fig. 1



Inventor:

Heinz Eggeringhaus,

By *Reinhold Marmorek*,
His Attorney.

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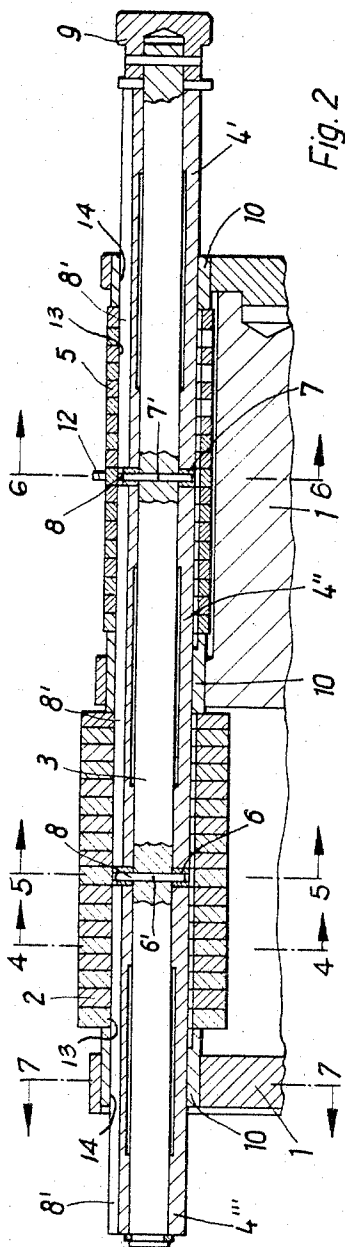


Fig. 2

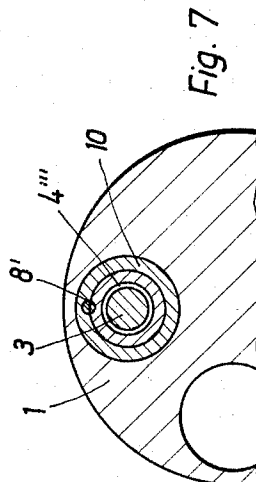


Fig. 7

Inventor:

Heinz Eggeringhaus,

By

Leopold Marmorek,

His Attorney.

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H. EGGERINGHAUS

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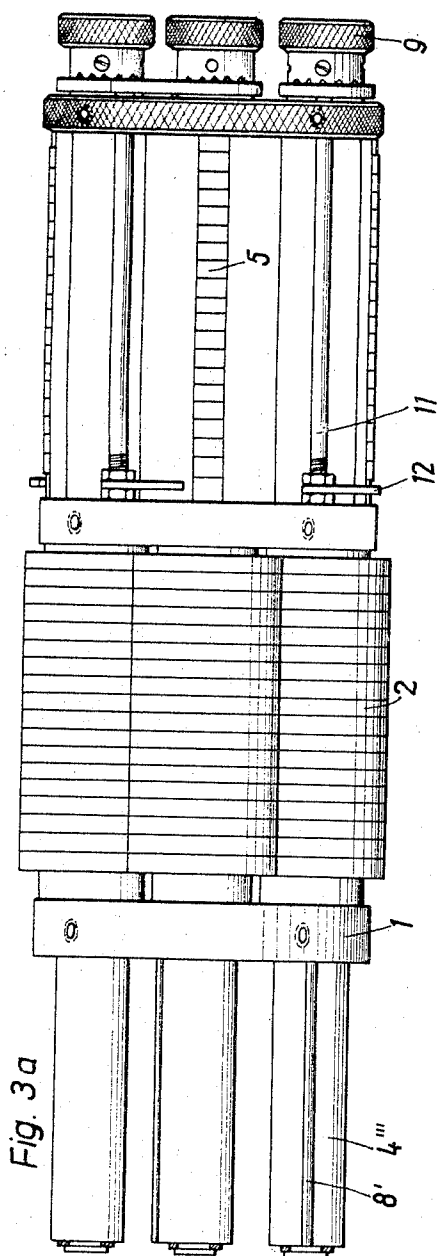


Fig. 3a

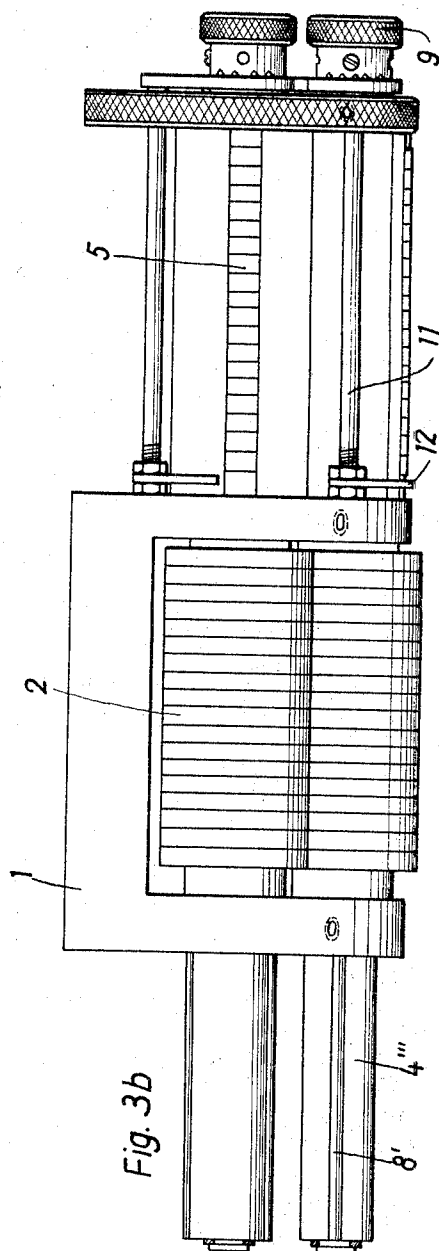


Fig. 3b

Inventor:

Heinz Eggeringhaus,

By *Leopold Marmorek*,
His Attorney.

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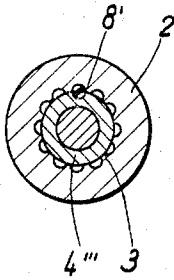


Fig. 4

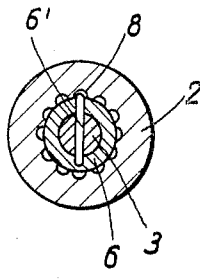


Fig. 5

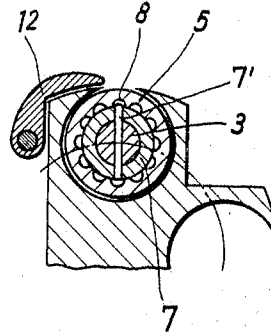


Fig. 6

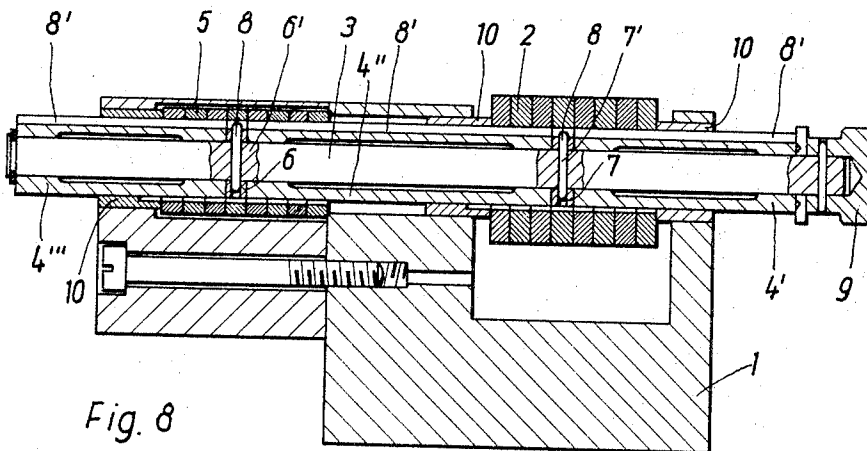


Fig. 8

Inventor:

Heinz Eggeringhaus,

By *Heinz B. Marnerok*,

His Attorney.

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3,427,961

NUMBERING MACHINE ADJUSTER FOR PRINTING PRESSES

Heinz Eggeringhaus, Berlin, Germany, assignor to Maschinenbau "WAM" M. Osterhof, Berlin, Germany, a company of Germany

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U.S. Cl. 101—76
Int. Cl. B41I 45/00

3 Claims

ABSTRACT OF THE DISCLOSURE

A numbering machine adjuster for printing presses that comprises a printing cylinder, a shaft axially displaceable relative to the cylinder for coupling the number printing wheels with a manual operating member and, respectively, with indicating wheels. The coupling is carried out by means of two adjusting rings secured to the shaft. Three sleeves are provided in alignment on the shaft, and the shaft is sufficiently long so that it extends in the farthest working position, in which one end portion is pushed all the way into the cylinder, with its other end portion beyond the confines of the cylinder, and one of the sleeves covers that extending other end portion of the shaft.

The invention relates to a number machine adjuster for printing presses, and relates more particularly to such number machine adjusters for label printing presses.

The invention is based on the known construction of a numbering machine adjuster, for instance of the type shown in German Patent No. 1,121,079 (British Patent No. 893,959/1962), and comprises a shaft that is axially displaceable for coupling on one hand the number printing wheels with a knurled disc by means of an adjusting ring that is firmly connected to the shaft and, on the other hand, for coupling the number printing wheels with indicating wheels by means of a second adjusting ring which is also firmly connected to the shaft. On the shaft, there are mounted, displaceable therewith, two sleeves which are located between the adjusting rings, or between one of the adjusting rings and the knurled disc, and wherein the adjusting rings as well as the sleeves have projections which engage into recesses between the number printing wheels and the indicating wheels.

Known devices provide against accidental rotation by means of a resilient ratchet mechanism, for example in the form of spring ratchets or spiral springs with balls. The assembly of these safety devices, however, is rather complicated and makes the manufacture expensive.

It is, therefore, among the principal objects of the invention to provide an adjuster of the character described that avoids the drawbacks of the prior art referred to.

According to the invention, these drawbacks are avoided in that a third sleeve is arranged on an extension of the shaft, namely on that end of the shaft that is remote from the end that carries the knurled disc, and the shaft extension projects beyond the printing cylinder

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in the farthest working position. The farthest working position is here defined as that position in which the other end of the shaft that carries the knurled disc is fully pushed into the printing cylinder.

The projections of the sleeves which engage into the recesses of the number printing wheels and of the indicating wheels are formed by round bars embedded into recesses of the sleeves with about one-half of their cross section.

It is another object of the invention, to provide an improved number machine adjuster, by positioning the indicating wheels relative to the number printing wheels and the knurled disc in a most advantageous manner. To achieve this object, the position of the indicating wheels relative to the number printing wheels is changed in accordance with the instant invention as compared with the known constructions, so that the indicating wheels are arranged between the number printing wheels and the knurled disc. This re-positioning of the indicating wheels makes possible the elimination of the pointer rod within the zone of the number printing wheels; the pointer rod had been placed in the known constructions in such a position for connecting an indicator arranged above the indicating wheels with the knurled disc and to enable it to be axially displaced.

The invention accordingly comprises the features of construction, combination of elements and arrangements of parts which will be exemplified in the constructions hereinafter set forth, and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description, taken in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view of an embodiment in accordance with the invention;

FIG. 2 is a fragmentary sectional view taken on the line 2—2 of FIG. 1;

FIG. 3a is a plan view of the embodiment illustrated in FIG. 1, as seen in the direction 3a of FIG. 1;

FIG. 3b is an elevational view as seen in the direction 3b of FIG. 1;

FIG. 4 is a sectional view taken along the line 4—4 of FIG. 2;

FIG. 5 is a sectional view taken on the line 5—5 of FIG. 2;

FIG. 6 is a fragmentary sectional view taken on the line 6—6 of FIG. 2;

FIG. 7 is a fragmentary sectional view, taken on the line 7—7 of FIG. 2; and

FIG. 8 is a sectional view, similar to FIG. 2 but embodying a modification.

In carrying the invention into effect in the embodiments which have been selected for illustration in the accompanying drawings and for description in this specification, and referring now particularly to FIGS. 1 and 2, there is provided a printing cylinder 1 that carries number printing wheels 2, preferably several, for instance three, groups thereof as shown; and an inking or color imparting roll (not shown) is mounted near the printing wheels 2. The wheels 2 are mounted on a shaft 3 by means of two sleeves 4" and 4'''. As shown, for each group of printing wheels

2 there is one shaft 3. These sleeves are mounted axially immovably on the shaft 3. The sleeves are furthermore arranged non-rotatably relative to the printing cylinder 1, by means explained below. Each shaft 3 also carries indicating wheels 5, that are positioned thereon by means of two sleeves, namely the aforesaid sleeve 4" and a sleeve 4'.

As may be seen in FIG. 2, the sleeve 4''' projects in the farthest working position of the shaft 3 from the cylinder 1 towards the left in the drawing. The farthest working position, as previously explained, is that in which the other end of the shaft 3, namely that which carries the sleeve 4', is fully pushed into the printing cylinder 1. As in the known construction, two adjusting rings 6 and 7 are secured to the shaft 3. They are secured by means of pins 6' and 7' that extend with their upper ends as projections 8 beyond the sleeves 4', 4" and 4'''. Corresponding projections 8' are formed in the sleeves, such as by half-embedded cylindrical bars, as shown in FIG. 1. The adjusting rings 6 and 7 form with the sleeves 4', 4" and 4''' coupling means that are mounted on the shaft 3. Each shaft 3 has on the left side (FIGS. 1, 2) an extension which in the aforesaid farthest working position projects with the sleeve 4''' at least partially from the printing cylinder 1.

On the right end of the shaft 3 (as viewed in the drawing), there is provided a manual operating member, namely a knurled disc 9. The projections 8 and 8' engage into recesses 13 which, as shown in FIGS. 4 to 6, are provided on the number printing wheels 2 and on the indicating wheels 5. The projections 8 and 8' also engage into recesses 14 of bearing bushings 10 that are arranged in printing cylinder 1. This engagement of the projections 8', as best shown in FIG. 7, secures the sleeves 4', 4" and 4''' to be non-rotatable, as previously pointed out, relative to the cylinder 1.

The indicating wheels 5 are located between the number printing wheels 2 and the knurled disc 9 (see FIGS. 2, 3a and 3b). Owing to the positive blocking of the indicating wheels 5 and of the number printing wheels 2 by the sleeves 4', 4" and 4''', the function of the apparatus is protected against torques acting on the indicating wheels 5 or on the number printing wheels 2 such as may be caused, for example, by excess printing ink.

The printing wheels 2, as usual in label printing presses, are pressed against an inking or color imparting roll. The printing ink or printing color thus imparted to the printing wheels 2 may, under certain conditions, for instance when the color imparting roll is too moist and hence gives off too much color, be squeezed between the adjoining printing wheels 2. This, in turn, might in other machines cause a transmission of torque onto the printing wheels. As previously explained, however, the instant adjuster does not suffer from that disadvantage.

Pointer rods 11 with pointers 12 are provided, as shown in FIGS. 1, 3a and 3b. The pointer rods 11 extend only over the range of the indicating wheels 5 and, in contrast to the prior art, no longer over the range of the number printing wheels 2. Owing to this re-positioning of the indicating wheels 5 (in the drawing, towards the right-hand side), the printing cylinder 1, due to its mounting near one end, can easily be exchanged. This is of great advantage for the practical application of the whole device.

As shown in FIGS. 1 and 3a, it is preferred to operate with a plurality of, for instance three, shafts 3 and a like plurality of groups of printing wheels 2 and of indicating wheels 5, so that the printing is multiple. Thus, during each revolution of the machine three labels will be printed.

The operation of the above described numbering machine adjuster is as follows. A plurality of shafts 3, for instance three shafts 3, are provided. On each shaft 3 there are mounted printing wheels 2 and indicating wheels 5. The adjustment will need to be carried out for each of

the plurality of shafts 3. In the following, therefore, the adjusting of only one of these shafts 3 will be described, it being understood that the same movements will be carried out with each of the shafts 3 separately, in succession. By pulling out to the right (FIG. 2) of the shaft 3 and, respectively, by pushing it to the left (FIG. 2), the pointer 12 of that shaft is positioned, by means of the rod 11 to the desired indicating wheel 5. By this movement of the shaft 3, the adjusting rings 6 and 7 will thereby be moved to the corresponding position. This means that the position of the pointer 12 corresponds to the position of the adjusting ring 7 (as clearly indicated in FIG. 2). Now the knurled disc 9 is turned, the respective indicating wheel 5 and printing wheel 2 will be turned until the desired number of these wheels has been reached. In a similar manner, the remaining printing wheels 2 and indicating wheels 5 are adjusted to the desired number. Thereafter, as previously indicated, the same adjustment will be done on the remaining shafts 3. Thereafter, the shafts 3 will be pushed to the left into the aforesaid farthest working position, and the printing may commence. Due to the fact that there is a multiplicity of shafts 3, there will be printed at each revolution of the machine the same plurality of labels in succession.

In FIG. 8, in which all parts that correspond to the embodiment of FIGS. 1 to 7 are marked with the same reference numerals, there is shown a simplified construction of the numbering device. In this modification, the position of the indicating wheels 5 relative to the number printing wheels 2 and the knurled disc 9 is such that, as in the known constructions, the number printing wheels 2 are arranged between the indicating wheels 5 and the knurled disc 9. The sleeve 4''' that cooperates in the embodiment of FIGS. 1 to 7 with the number printing wheels 2 is, however, in the modification of FIG. 8 provided for the positive locating of the indicating wheels 5.

Also this embodiment has substantial advantages compared with the known art, as may be gleaned from what has been said hereinabove. The preferred embodiment, however, is that represented in FIGS. 1 to 7.

I wish it to be understood that I do not desire to be limited to the exact details of the construction shown and described, for obvious modifications will occur to a person skilled in the art.

Having thus described the invention, what I claim is new and desire to be secured by Letters Patent, is as follows:

1. A numbering machine adjuster for label printing presses, comprising a printing cylinder, at least one shaft, at least one group of number printing wheels and at least one group of indicating wheels surrounding said shaft, said two groups being spaced apart from each other, three sleeves mounted on said shaft, said shaft mounting a manual operating member near one shaft end, coupling means mounted on said shaft, said shaft being axially oppositely displaceable relative to said cylinder whereby said coupling means will couple a number printing wheel with said operating member and, respectively, with an indicating wheel, said coupling means comprising two adjusting rings secured to said shaft and three sleeves aligned on and surrounding said shaft and displaceable therewith, securing means between said sleeves and said cylinder operable for securing said sleeves against rotation relative to said cylinder, each adjusting ring being disposed between two sleeves, each wheel having a recess, said adjusting rings and sleeves including projections engaging into said recesses of the number printing wheels and of the indicating wheels, said shaft comprising at the other end and an extension projecting beyond said printing cylinder when said one end of the shaft is pushed into said cylinder, one of said sleeves being mounted on said extension of said shaft.

2. A numbering machine adjuster, as claimed in claim 1, said securing means comprising a recess defined in each of said sleeves aligned with the recesses of said

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wheels, bushings secured in said printing cylinder guiding said sleeves and each bushing having a recess opposite said aligned sleeve recesses, said recesses of said sleeves and of said bushings completing a passage, and cylindrical bars disposed in said passage and forming said sleeve projections, said bars also engaging the recesses of at least some of said number printing wheels and of at least some of said indicating wheels, each of said cylindrical bars being embedded in a recess of a sleeve to about one-half of its cross section.

3. A numbering machine adjuster, as claimed in claim 1, said indicating wheels being arranged between the said numbering wheels and said manual operating member.

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WILLIAM B. PENN, *Primary Examiner*.

U.S. Cl. X.R.

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