

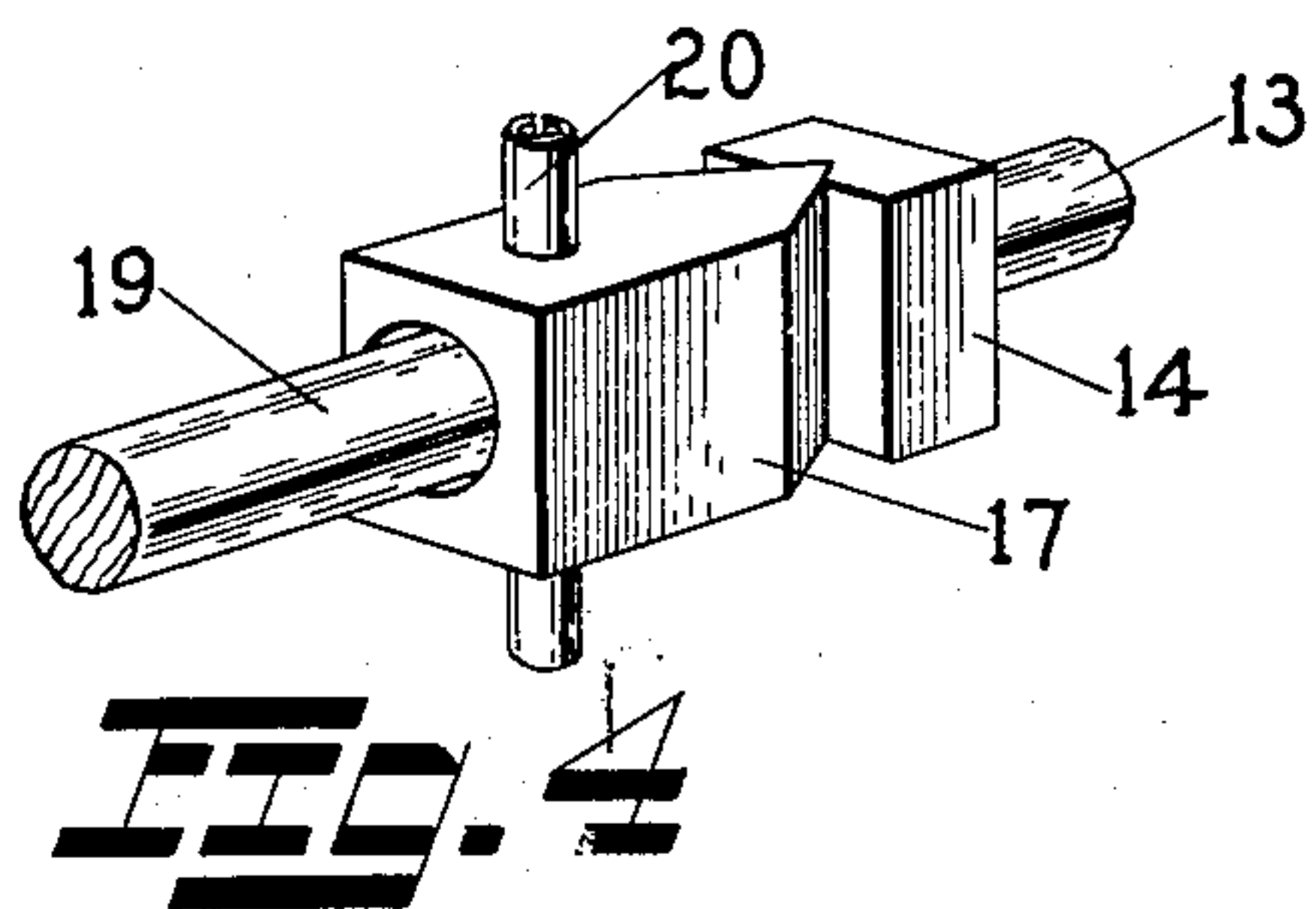
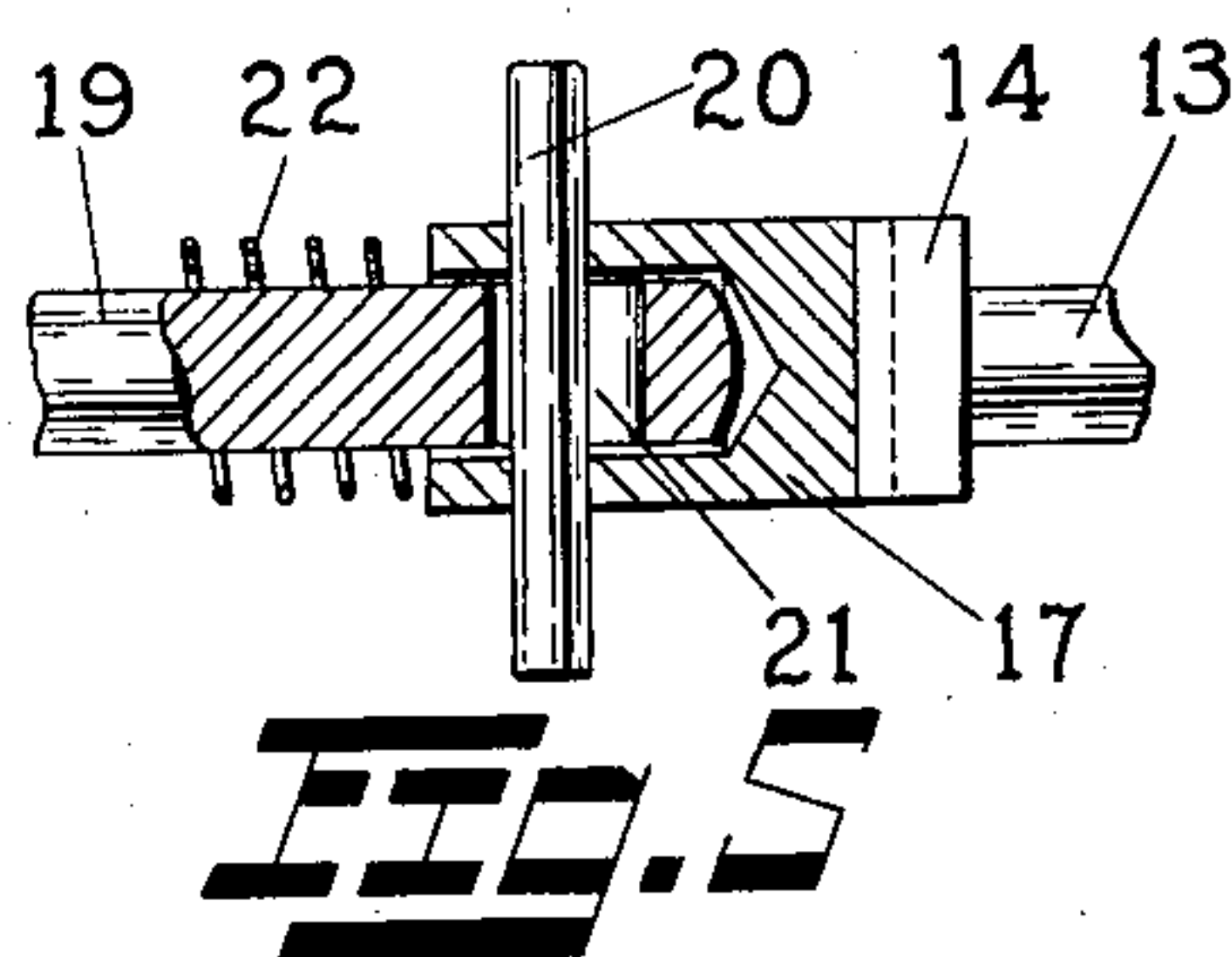
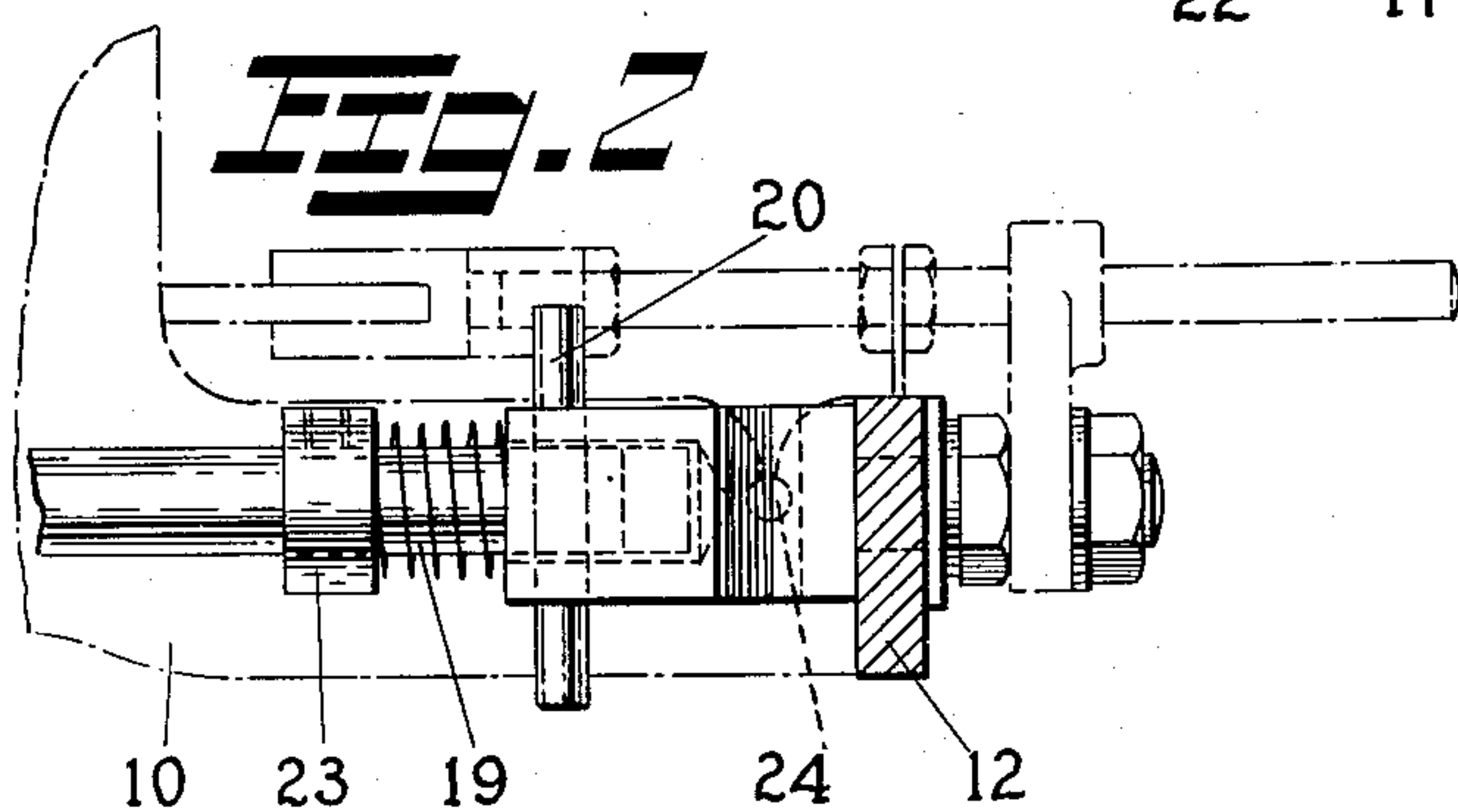
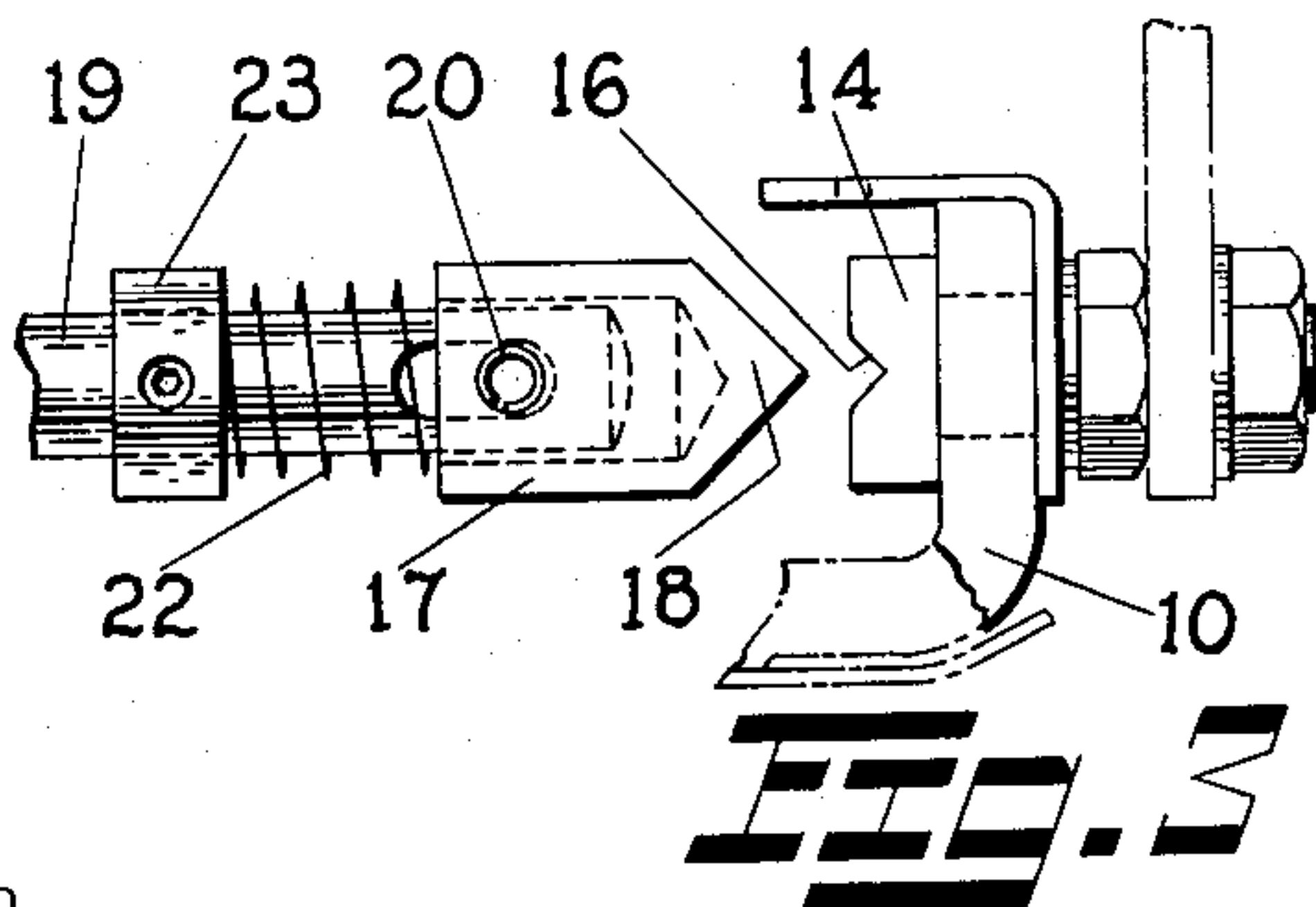
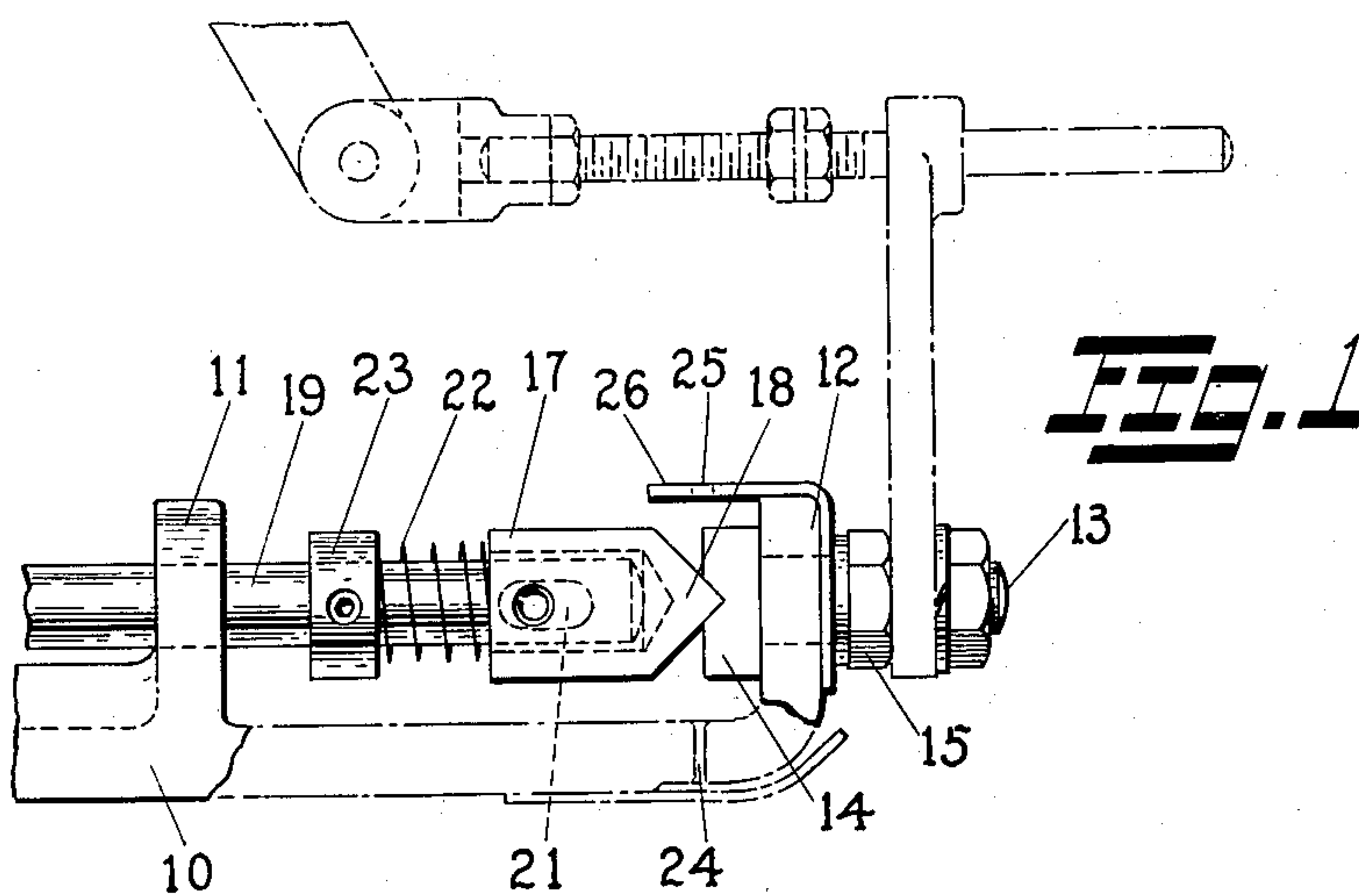
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THREAD CLAMP

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2,624,370

THREAD CLAMP

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6 Claims. (Cl. 139—127)

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This invention pertains to thread clamps for textile machines and the like.

It is a general object of the invention to devise a simple thread clamp which shall effectively perform its intended function of restraining a thread against withdrawal and of releasing that thread as desired, and which shall also be relatively free from the effect of lint or other accumulations of foreign material which sometimes affect the operation of such devices very seriously.

It is a further object of the invention to devise a thread clamp in which the interengaging thread restraining members are so universally mounted as to be self-aligning, thereby to assure uniform functioning of the parts so that precisely the same amount of restraining effect may be imposed upon the running thread at all times.

In various types of textile machinery, for example, in certain looms in which the filling is drawn from a source of supply maintained externally of the shuttle or other filling inserting means, thread clamping members are frequently employed, these being mechanically operated to restrain the filling against withdrawal at certain times during the cycle of pick insertion, and at other times, release that filling so that it may be withdrawn from the source without more than the normal restraint incidental to the passage thereof through various guiding means and the like. These thread clamps have for the most part operated fairly satisfactorily upon certain types of filling, but in cases where the operation of the loom or other textile machine gives rise to the accumulation of lint or other foreign matter on the various parts, these clamps are seriously affected since the lint may tend to prevent the intended operation of the parts and also, may cause the clamping members to remain in a slightly separated condition when it is desired that they be closed so as to restrain the filling. It is further desired that such devices be very simple in construction, that they be easily threaded, and also that there be a certain amount of adjustment possible so that the clamping effect may be proportioned in accordance with the pressure required against the running filling in order to restrain it, but not to damage the same as might result if the pressure were too great, especially when weaving with relatively tender filling materials.

In accordance with the invention a clamp has been devised which obviates to a maximum extent all of the heretofore experienced difficulties

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with such mechanisms, and the gathering or lint on the parts has been reduced to a minimum and even though some accumulation is experienced, the effects thereof are not particularly troublesome as has been the case heretofore. According to a preferred form of the invention herein illustrated, the clamping members comprise one which is fixed and another which is relatively movable and these members preferably have interengaging complementary surfaces which are adapted to exert a relatively great degree of restraint upon the filling if such be required. One of the members is universally mounted so as to provide for a limited degree of movement to provide for alignment and more effective contact between the engaging, filling clamping surfaces, thereby to assure uniformity of action at each individual movement of the parts incidental to their function and also to provide for alignment such as may be required if a small amount of lint happens to fall between the parts just prior to closing them, and which would normally affect the action thereof if the parts were not provided for self-alignment.

The amount of pressure capable of being exerted between the clamping members is capable of adjustment within limits and may be so adjusted to take care of different conditions of weaving, different filling materials, and may provide for such restraint as is adapted to hold the filling against any withdrawal by the inserting instrumentalities or other members functioning upon the filling, or, if desired, may permit slight and intended movement of the filling, e. g., for purposes understood by those conversant with the operation of looms of a type to which this thread clamp may be applied.

The invention will be described hereinafter by references to one embodiment thereof as illustrated in the accompanying figures of drawing, wherein:

Fig. 1 is a plan view of the thread clamp according to the preferred form.

Fig. 2 is an elevation of the mechanism of Fig. 1, a part thereof being broken away so as to show certain elements in full lines whereas they might otherwise have been dotted.

Fig. 3 is a fragmentary view showing the thread clamping parts in separated or non-clamping position.

Fig. 4 is a perspective view showing the clamping members and associated parts.

Fig. 5 is a section showing details of the self-aligning portion of the device.

Now referring to the figures of drawing, enough

of the clamp mechanism has been illustrated to show its function, although the connections therefrom to other parts of the textile machine have not been illustrated. A supporting bracket indicated by numeral 10 may be permanently fixed to some convenient part of the loom or other textile machine and the details of the attachment, the general structure of the part not here illustrated, and other features may well vary with different installations. A similar bracket having a different type of thread clamp associated therewith and applied to a so-called shuttleless loom has been illustrated in co-pending application Serial No. 71,622, filed January 19, 1949, now United States Patent 2,604,123. The present bracket has laterally directed portions 11 and 12 the latter of which is adjacent the end of the bracket and is apertured for the reception of the threaded stem 13 of a relatively fixed thread clamping member 14. This thread clamping member 14 is maintained in position by a nut 15, or by any other suitable means, and in this instance the stem 13 is of additional length mainly for the purpose of supporting other elements not of particular interest here, but which are a part of and perform a particular function in the textile machine to which the clamp is applied.

The relatively fixed clamping member 14 is notched as at 16 for the reception of the cooperating and complementary clamping member 17, hereinafter referred to as the relatively movable clamping member and which has a point 18 for cooperation with the said notch 16. The point 18 and the notch 16 are of V-shape, but it is to be understood that any other suitable interengaging forms may be employed so long as they cooperate to restrain the passage of the filling to a greater extent than would be the case if plain and relatively smooth abutting surfaces only were utilized. The relatively movable member is carried or supported at the end of a rod 19 which serves as an operating means since it reciprocates to and fro in a suitable bearing within the laterally extending portion 11 of the bracket and, of course, at its opposite end (not shown) in other bearings or guiding means appropriate for the purpose. This rod 19 may be reciprocated and thus cause the thread clamp to open and to close at predetermined and appropriate points during the cycle of pick insertion, or at other appropriate times during the operation of any particular textile machine for which the clamp is adapted. Such operating means comprises cams or other suitable devices as illustrated in the patent above indicated.

The member 17 is so attached at the end of the rod 19 that it is universally movable thereon throughout a limited angular extent and thus provides for an aligning movement, or a self-aligning feature may be said to have been built into the clamp so that the complete engagement between the V-shaped point 18 and the notch 16 is automatically assured. This universal movement is provided by forming an aperture or bore in the movable clamp 17 of such size that the end of the rod is a relatively loose fit therein. The parts are maintained against unintended disassembly by a pin 20 which is driven into and through suitable drilled apertures therefor in the clamp 17 and also passes through an elongated opening or slot 21 in the rod end. It is to be understood that the pin is preferably fixed as described in the outer member, that preventing accumulation of lint in the interior portion of the clamp 17, especially within the elongated slot

21. However, it is possible in certain instances to form the slot in the outer member and provide a relatively tight fit for the pin at the rod end.

The extent of movement of the operating rod 19 must be maintained at some predetermined value, and it is not practical to mount the member 17 rigidly thereon and to move it into engagement with the cooperating member 16 and also to attempt to provide for the precise amount of clamping pressure in that manner. To take care of this, the member 17 is continuously urged toward the rod end by a compression spring 22 surrounding the rod and bearing against the flattened end of the member 17 and also against an adjustable collar 23 by means of which more or less pressure may be brought to bear against the member 17. In actual practice the rod is moved toward the end of the bracket and toward the fixed member 14 until the interengaging surfaces have come into contact and have engaged the thread to be clamped and, according to the resistance desired in spring 22, may be moved to an additional extent to compress that spring. At that time, of course, the rod end moves forwardly into the bore of the relatively movable clamping member as is necessary since the movement of the rod 19 is positively controlled while that of the member 17 is spring-pressed, but induced by the forward movement of the rod itself.

The pin 20 is preferably long enough to project beyond the top and bottom surfaces of the member 17 thereby to permit the operator to grip the extending ends whenever he desires to open the clamp manually as when threading filling or other thread through the same.

In practice the rod 19 is periodically reciprocated and the clamping action applied or released as shown. The self-aligning feature of the simple clamp assures that at each portion of the cycle during which the thread is clamped, practically the same effect thereon will be realized. While the clamp is relatively free from the effects of accumulated lint and is also particularly easy to clean, there are certain accumulations of lint of a more or less temporary nature which affect the intended engagement between the clamping surfaces. In that event the self-aligning feature takes care of permitting the parts to come into effective engagement with the thread even though there is a tendency for the lint or other foreign matter to prevent that as it most certainly would if the parts were rigidly mounted so that the clamping action could be one such as intended only if no foreign matter were present. The universal mounting permits ample pivotal movement of the member 17 at the rod end and since pin 20 is a loose fit in the slot, the angular relationship between point 18 and notch 16 is automatically taken care of.

As described, the relatively movable clamping member is that which is attached for limited universal movement and thus is the member through which self-alignment is effected. The reverse may be true in certain instances, although it would not render the mechanism as simple. The member 17 might be permanently fixed to the end of a movable rod or other operating means while the member 14 could, if desired, be resiliently mounted and also supported in such manner as to move for effecting and maintaining alignment between the parts.

While it need not be described in any great detail, the thread passing through the clamp is preferably guided within eyelets or other similar

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means which here takes the form of an eyelet 24 at one side of the bracket, and a second eyelet 25 formed in the attached angular member 26 at the opposite side. These eyelets or guides are aligned with the central portion of the clamping members so that the thread passing therethrough is always in position to be restrained between those parts if they are brought into effective clamping engagement. This guiding means is preferably of a type to be readily threaded, and may take any form several of which are well known to those conversant with these arts and need not be described in this particular application.

While one embodiment of the invention has been disclosed, it is to be understood that the inventive concept may be carried out in a number of ways. The invention is, therefore, not to be limited to the precise details described, but is intended to embrace all variations and modifications thereof falling within the spirit of the invention and the scope of the claims.

I claim:

1. A thread clamp for textile machines having in combination a relatively fixed and a relatively movable clamping member, supporting means for these members, that support for the relatively movable member being movable to and from the said relatively fixed member to effect clamping and releasing of a thread, and the support for at least one of the members being universally attached to its member to provide a limited amount of alignment between the elements thereby to assure more effective clamping engagement.

2. A thread clamp for textile machines having in combination a relatively fixed and a relatively movable clamping member, supporting means for the fixed member and a reciprocable carrier for the relatively movable member by means of which that member is moved to and from the fixed member to clamp and to release a thread, and means by which the movable member is retained by said reciprocable member, said means providing for limited universal movement thereby to assure alignment and more effective engagement between the said clamping members.

3. A thread clamp for textile machines having in combination a relatively fixed and a relatively movable clamping member, a supporting means to which the relatively fixed member is attached and a reciprocable carrier to which the relatively movable member is operatively connected and by which it is moved into and from a position to clamp a thread against the cooperating fixed member, the means for connecting the said member to the reciprocable carrier comprising a loose connection providing a limited amount of pivotal motion universally, whereby the clamping engagement is effected with automatic alignment between the parts.

4. A thread clamp for textile machines having in combination a fixed clamping member, a movable clamping member, said members having their thread clamping surfaces provided with interen-

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gaging formations, a supporting mount to which said first mentioned member is attached and a reciprocable rod movable to and from the fixed member to which the relatively movable clamping member is attached, the means for effecting such attachment comprising a loose connection between the member and rod end, a retaining pin permitting a limited axial movement of the member on the rod and a spring urging the member toward the rod end and in the direction of the cooperating fixed clamping member.

5. A thread clamp for textile machines having in combination a fixed clamping member, a movable clamping member, said members having at their adjacent thread clamping surfaces interengaging, V-shaped projections and indentations, a supporting bracket to which said fixed member is attached, a reciprocable rod guided in said bracket and movable in alignment with and to and from said fixed member, said movable clamping member being attached to said rod, the attaching means between said member and rod comprising an axially engageable joint having lateral clearance to provide a limited angular movement of the member on the rod, a spring for urging the member toward the end of the rod and stop means limiting the movement of the member on the rod.

6. A thread clamp for textile machines having in combination a fixed clamping member, a movable clamping member, a V-shaped notch in the thread engaging surface of the fixed clamping member and a complementary projecting, V-shaped extension on said movable clamping member for engaging within the said notch, a supporting bracket to which said fixed member is attached, a reciprocable rod guided in said bracket and movable in alignment with and to and from said fixed member, said movable clamping member being attached to said rod, the attaching means between said member and rod comprising the end of the rod and a complementary bore in the member into which the rod end extends, said bore being a relatively loose fit over the rod end to provide a limited amount of relative motion between the parts to assure alignment of the interengaging surfaces of the members, a slot in the rod end and a pin fixed in the member adjacent to and passing through said slot to limit axial movement of the member on the rod end, and a spring urging the member toward the rod end, and means for adjusting the spring to vary the force imparted thereby to the movable clamping member.

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REFERENCES CITED

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

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Number	Name	Date
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