

No. 661,016.

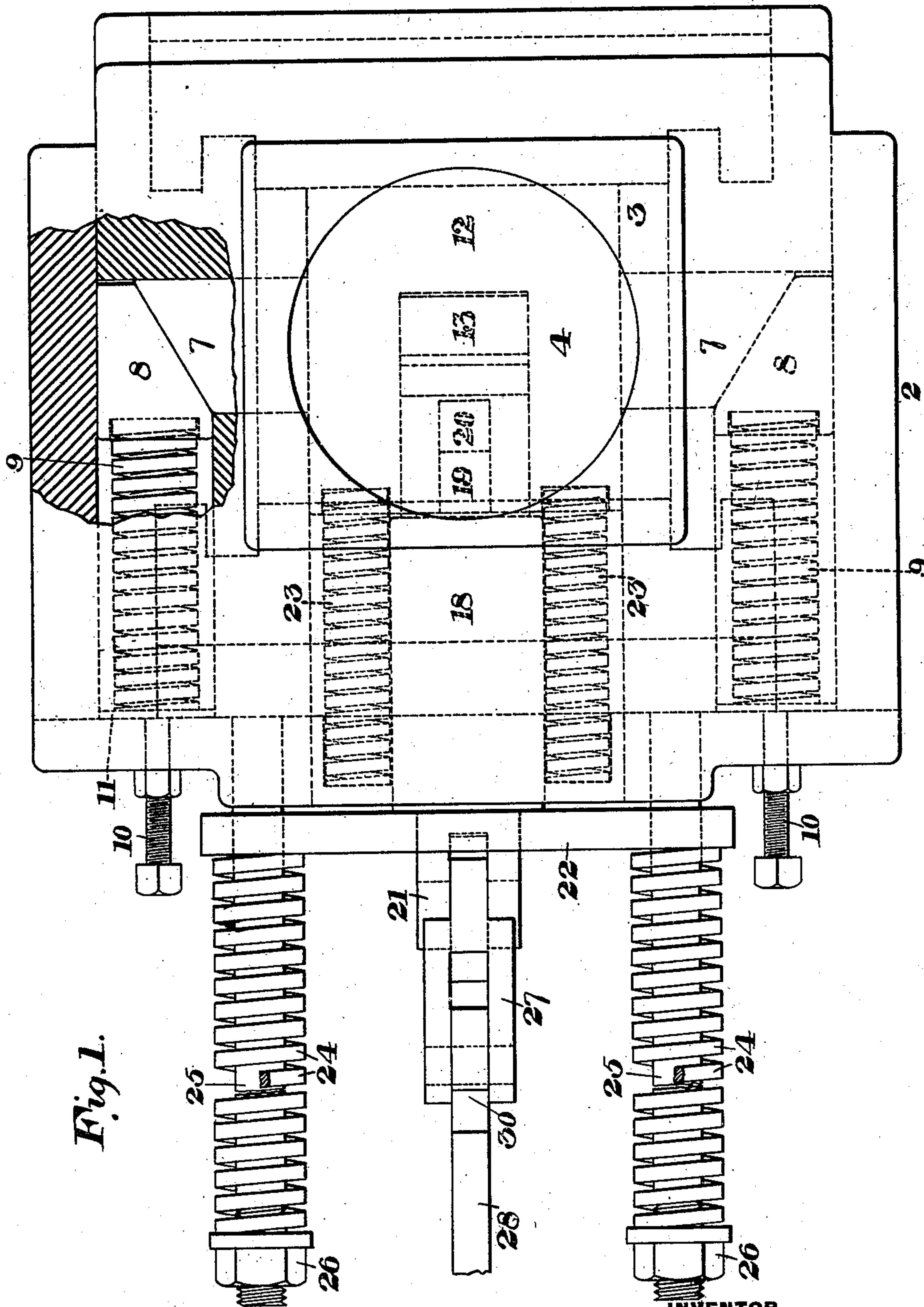
Patented Oct. 30, 1900.

C. KUHLEWIND.
RELIEF DEVICE FOR ROLLS.

(Application filed Dec. 22, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES

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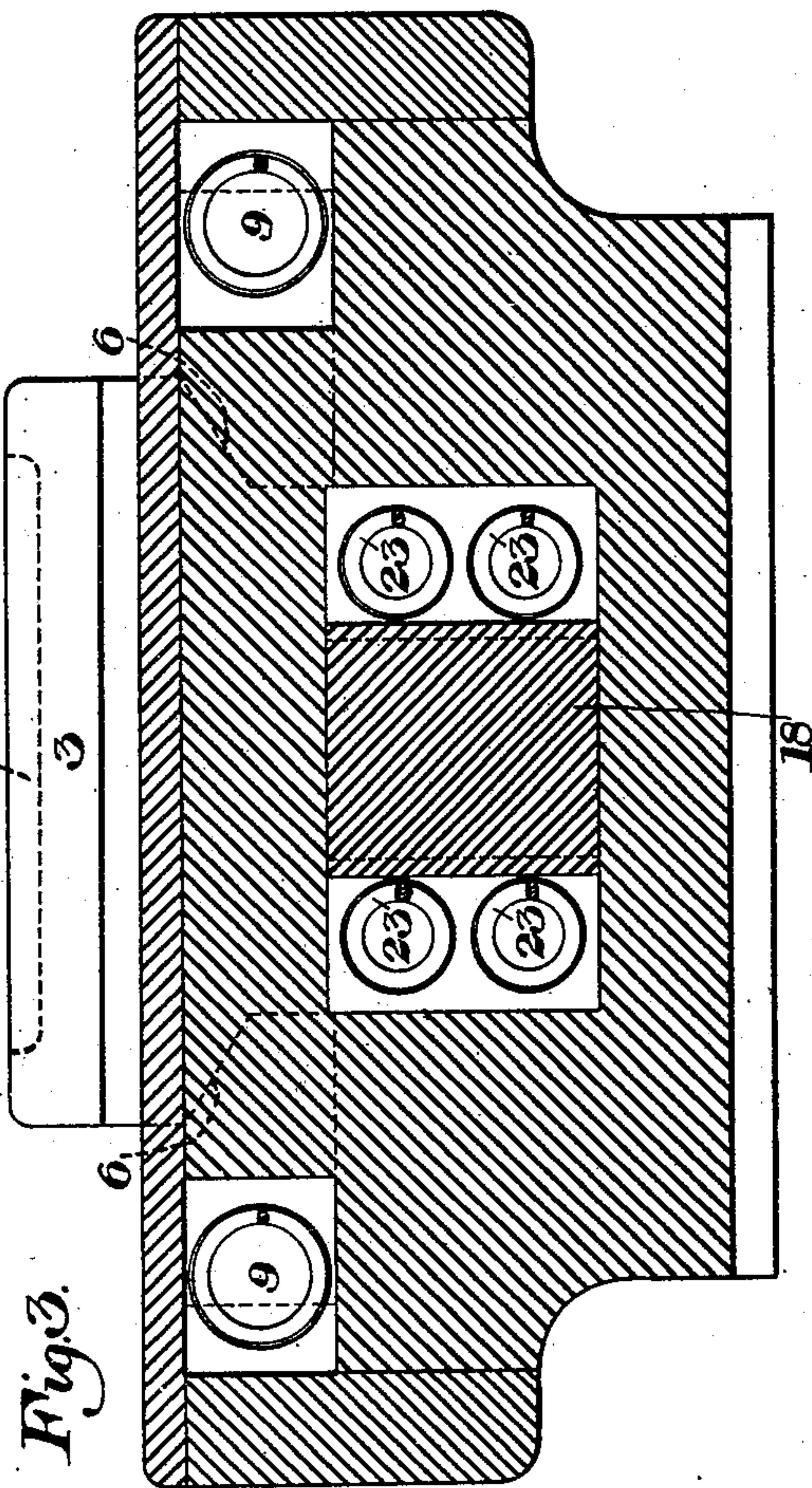
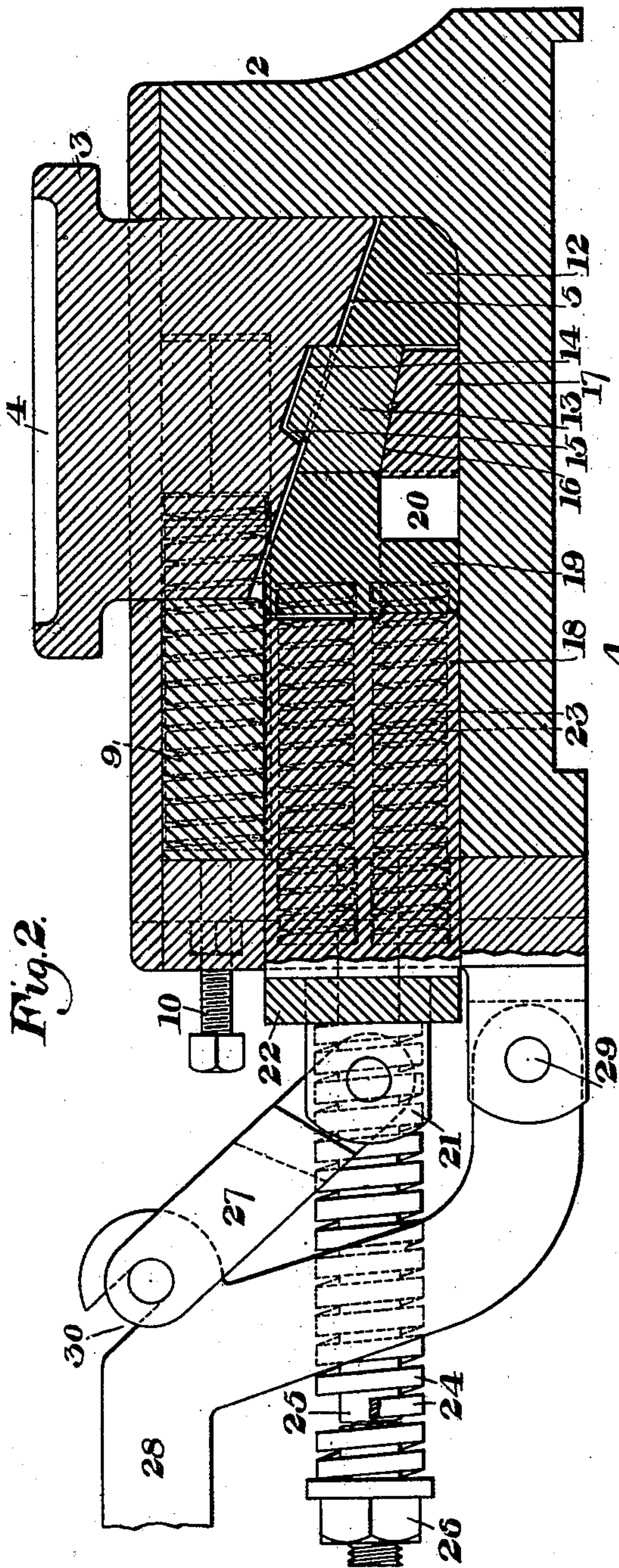


Fig. 4.

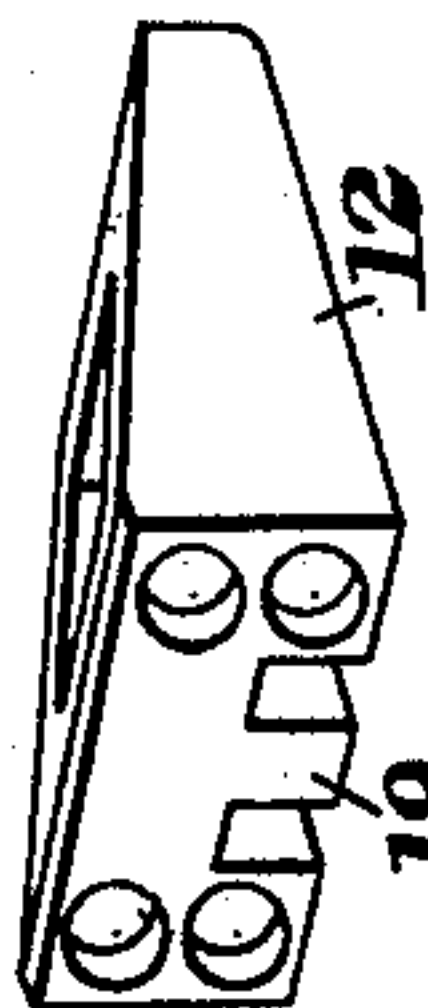


Fig. 5.



WITNESSES

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RELIEF DEVICE FOR ROLLS.

SPECIFICATION forming part of Letters Patent No. 661,016, dated October 30, 1900.

Application filed December 22, 1899. Serial No. 741,207. (No model.)

To all whom it may concern.

Be it known that I, CORNELIUS KUHLEWIND, of Knoxville borough, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Relief Devices for Rolls, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view, partly broken away, of my improved device. Fig. 2 is a longitudinal section of the same. Fig. 3 is a vertical cross-section, and Figs. 4 and 5 are detail perspective views hereinafter referred to.

My invention relates to devices for automatically relieving the pressure upon rolls when such pressure reaches a certain limit; and its object is to provide an improved device for this purpose which is of comparatively few parts and may be easily and cheaply made and applied, and, further, to provide mechanism for preventing vibration and jar when the metal enters the rolls and for relieving the excess pressure by hand when desired.

In the drawings, 2 represents a breaker for the roll-bearings, which is of general box form and contains the coacting wedge and spring elements of the relief device. The upper vertically-movable wedge-block 3, which is preferably square, fits within a square hole in the breaker and has an upper circular recess 4, arranged to receive the end of the ordinary adjusting-screw and an inclined or wedge face 5 at its lower end. The side portions of this block 3 are cut or beveled inwardly to form opposite wedge-faces 6 6, which rest upon corresponding wedge-faces of short blocks 7, the outer ends of which are provided with inclined faces coacting with similar faces upon longitudinally-movable blocks 8, which are normally forced inwardly by springs 9. The blocks 7 and 8 slide in suitable sockets or recesses in the breaker, and the pressure of the springs 9 may be adjusted by screws 10, which bear against washers 11 at their outer ends.

The lower face 5 of the block 3 coacts with a similar upper-inclined face on a lower hori-

zontally-movable block 12, a small detail view of which is shown in Fig. 4. This block 12 rests upon the floor of the cavity in the breaker and is provided with a square central hole which contains a locking-block 13. This block 13 is provided with an upper extension having an inclined face 14, coacting with a similar face in the recess of the block 3, within which the projection fits, and the projection is provided upon one side with a sharply-inclined face 15, which fits a corresponding face of the recess. The locking-block 13 is provided on its lower side with an inclined face 16, which engages the correspondingly-inclined upper face upon the head 17 of a horizontal slide 18, which is slotted as shown in Fig. 5, to permit lug 19 of the wedge-block 12 to extend through a slot 20 in the head 17. The slot in the slide extends back to the enlarged portion 18, which portion fits a suitable socket in the breaker in the rear of the lower wedge-block 12, this enlarged portion having at its outer protruding end ears 21, which project through a cross-head 22, the cross-head bearing against the outer end of the slide body 18.

The lower wedge-block 12 is normally forced forward by four coiled springs 23, which fit in rear recesses therein and extend on each side of the body of the slide 18, their other ends fitting in recesses in the rear side of the breaker. The cross-head 22 is forced forward by spiral springs 24, surrounding stems 25, which are screwed into the breaker. The tension of the springs is adjusted by nuts 26. The ears 21 are pivotally connected by a link 27 to a bent lever 28, pivoted to the breaker at 29, the upper pivot or pin of link 27 fitting in a slot 30 in the lever.

The tension of the springs 9 is so regulated that the wedges 7 and 8 will receive their movements under the ordinary working pressure of the rolls, these blocks being so arranged that before the piece is rolled the upper wedge-block 3 will be slightly lifted from the lower wedge-block 12. The purpose of this portion of the apparatus is to prevent the vibration which occurs when the piece enters the pass of the rolls and the consequent pressure is brought upon them, such

wedge system cushioning the jar and allowing the upper and lower wedge-blocks to come in contact and press upon each other while the piece is passing through. Another advantage of this feature is that thin sheets or plates may be rolled down to a fine gage by regulating the tension of springs 9. The main wedge-blocks thus being in contact during the normal operation of the mill if an excessive pressure is exerted upon the rolls—as, for example, by a piece sticking in them—when this pressure reaches the determined limit the locking-block will be forced down, leaving the recess in the upper wedge-block, thus forcing out the slide 12 and cross-head 22 against the action of the springs 24, the lower wedge-block moving out against the pressure of springs 23. The pressure upon the rolls is thus relieved, and when the excess pressure is removed the springs will restore the parts to their normal positions, as shown in the drawings. During this automatic movement the hand-lever is not acted upon, the pin of link 27 moving up in the slot of this lever.

When it is desired to relieve the rolls by hand, the hand-lever is forced down and acts to first lower the locking-block and then to draw out this block and the lower wedge-block.

The advantages of my invention result from the use of the supplemental wedge system, which acts to reduce the jar incident to the normal rolling operation, and from the simplicity and compactness of the main relief system; also, from the hand-lever connection by which the rolls can be relieved whenever desired, aside from their automatic action.

Many changes may be made in the form and arrangement of the parts without departing from my invention.

I claim—

1. A relief device for rolls, having movable parts with coacting inclined faces, and springs arranged to normally hold them in place, said parts being arranged to move under excessive pressure, and a cushioning device arranged

to give a slight yield to the roll during the ordinary rolling operation; substantially as described.

2. A relief device for rolls, having coacting parts with inclined faces, and springs arranged to hold them in place, said parts being arranged to yield slightly under the ordinary working pressure of the rolls; substantially as described.

3. A roll-breaker having coacting main wedge-blocks, and a supplemental relief device connected to one of said blocks and arranged to hold them slightly apart until the working pressure is applied; substantially as described.

4. An automatic relief device for rolls, arranged to operate under excessive pressure and containing a wedge and spring system, and a hand device arranged to move out a part of the wedge system against the action of the springs to relieve the roll when desired; substantially as described.

5. A relief device for rolls, having coacting parts with inclined faces, springs arranged to hold them in normal position until excessive pressure is applied, and a hand-lever arranged to move one of said wedges to relieve the pressure; substantially as described.

6. A relief device for rolls having coacting main wedge-blocks, a locking-block between them, and a hand-lever arranged to operate the locking-block at will; substantially as described.

7. A relief device for rolls, having a vertically-movable wedge-block, a horizontally-movable wedge-block coacting therewith, a locking-block arranged to hold them in normal position, springs bearing upon the horizontally-movable block, and a movable slide arranged to hold the locking-block in place; substantially as described.

In testimony whereof I have hereunto set my hand.

CORNELIUS KUHLEWIND.

Witnesses:

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