

No. 659,772.

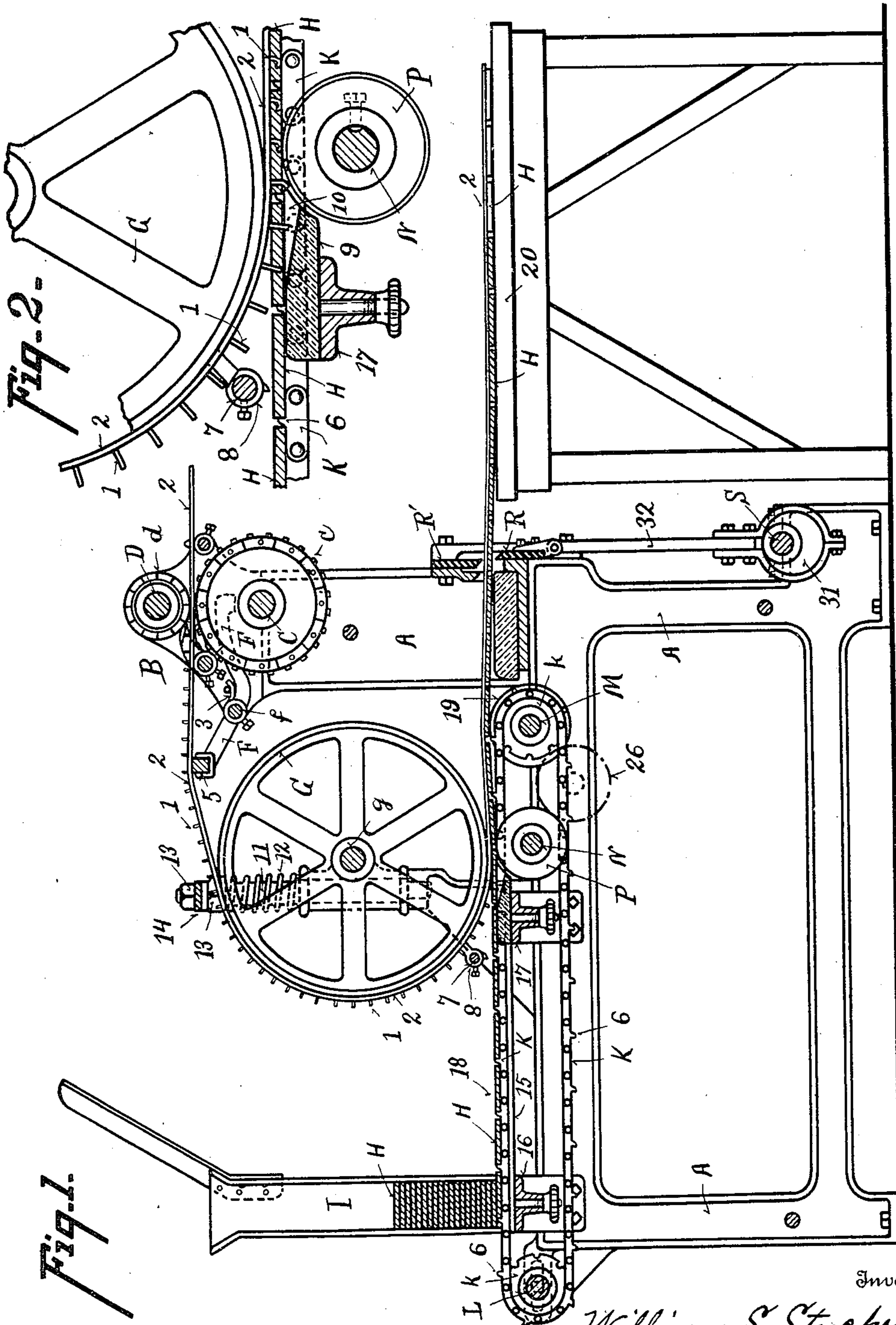
Patented Oct. 16, 1900.

W. S. STUCKENBERG.
BOX FORMING MACHINE.

(Application filed Feb. 19, 1900.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses
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H. R. Wood

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Fig. 3.

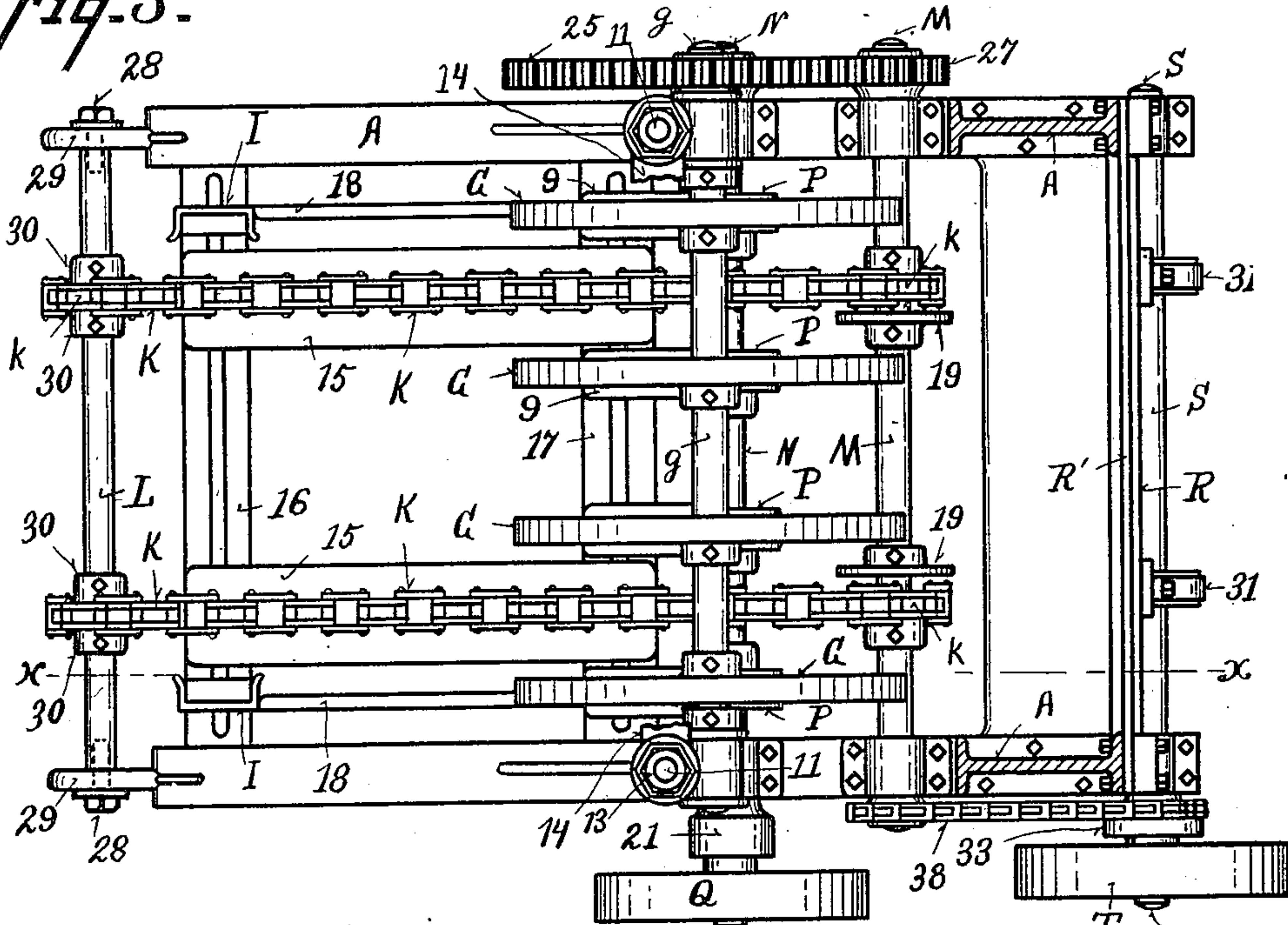
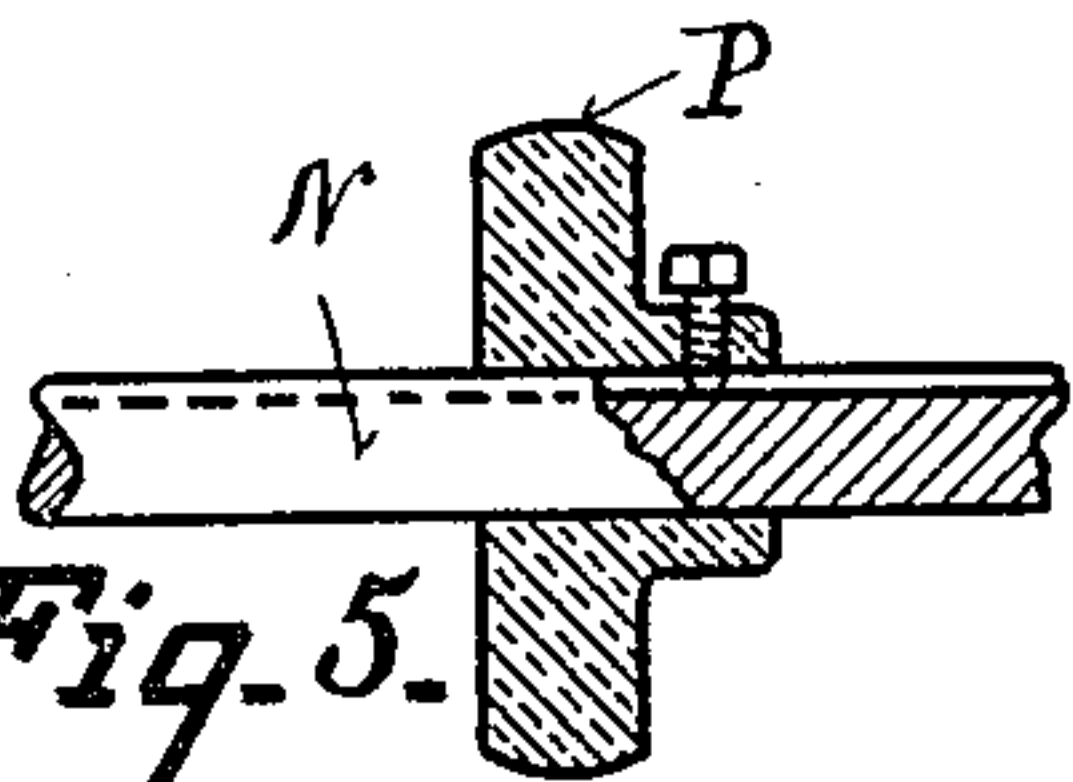
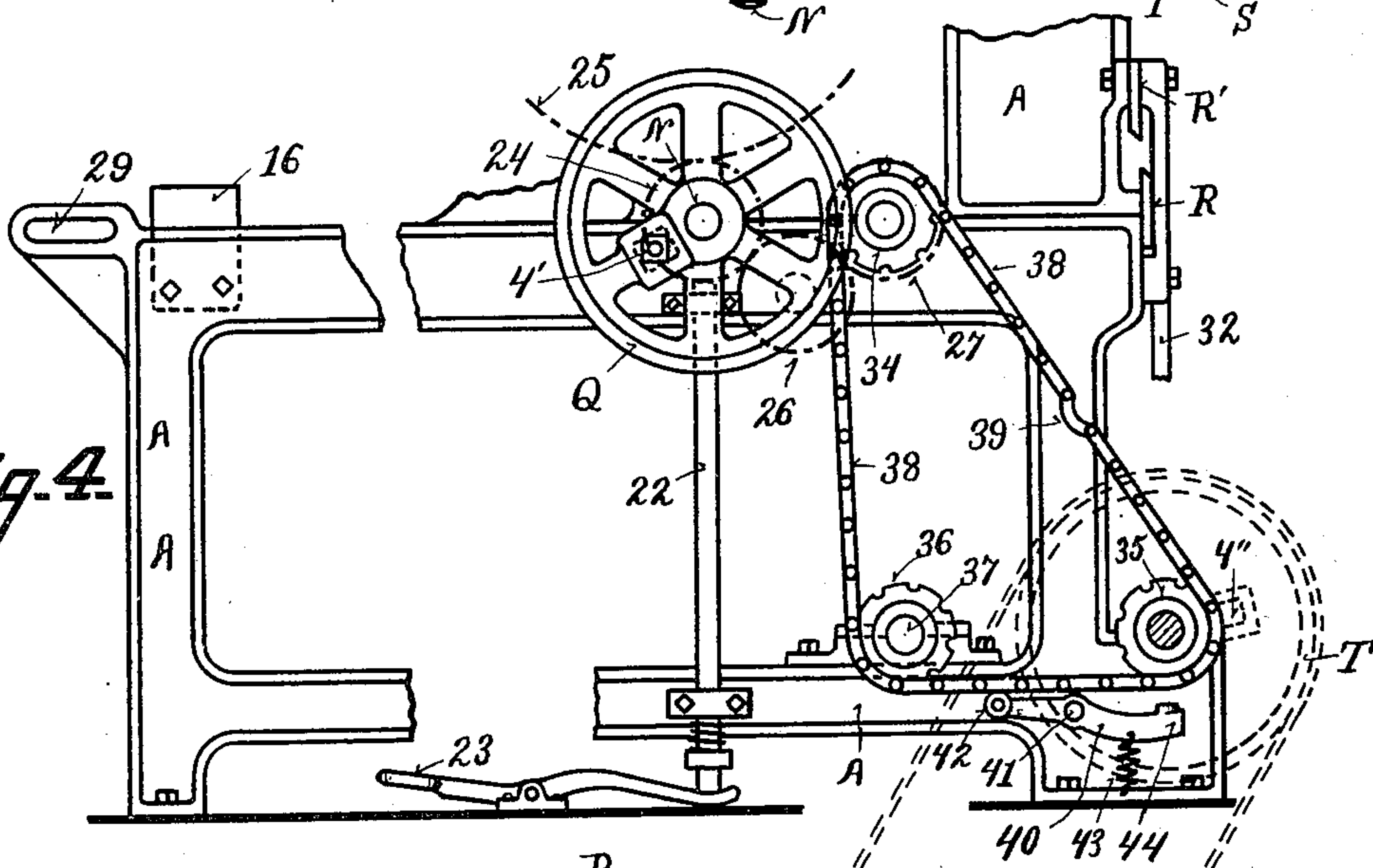


Fig. 4.



Witnesses

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Fig. 5.

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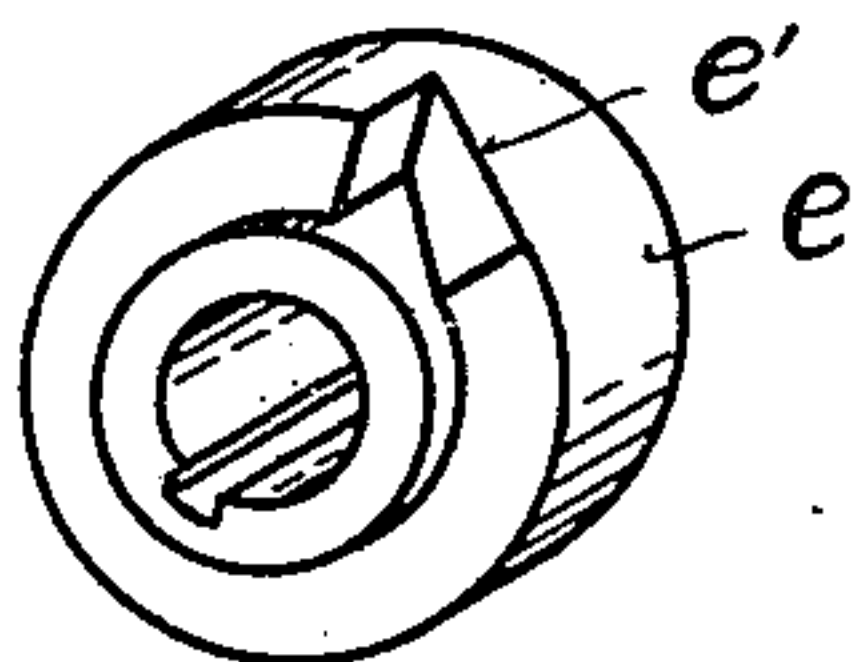
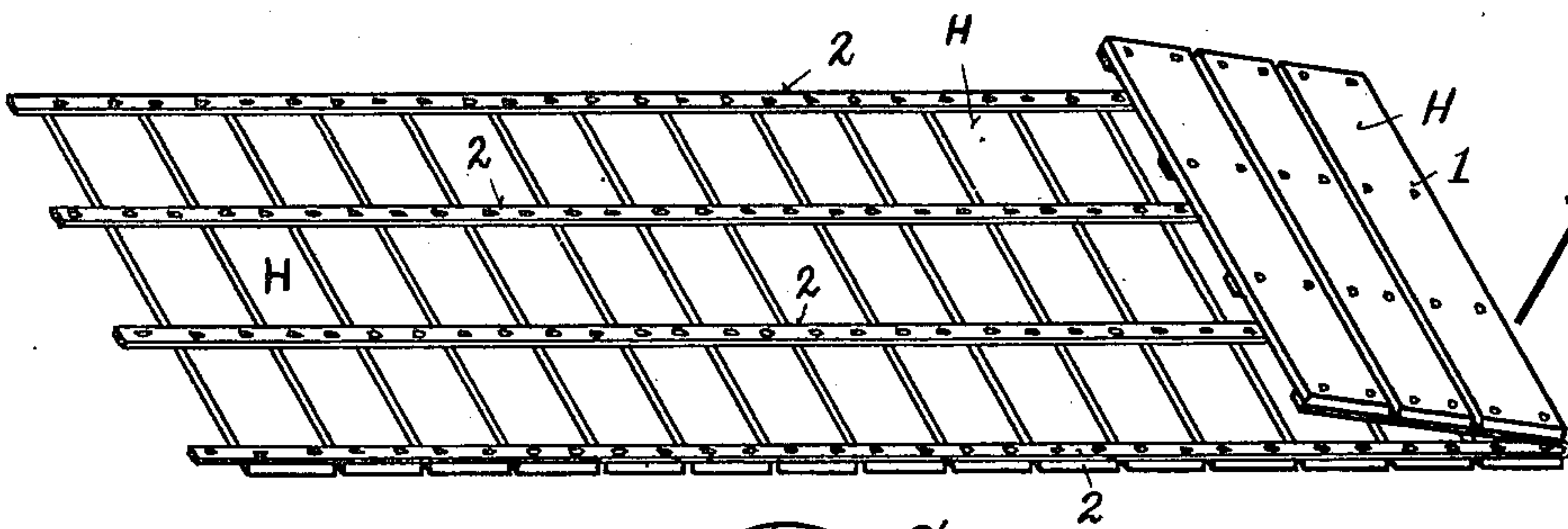
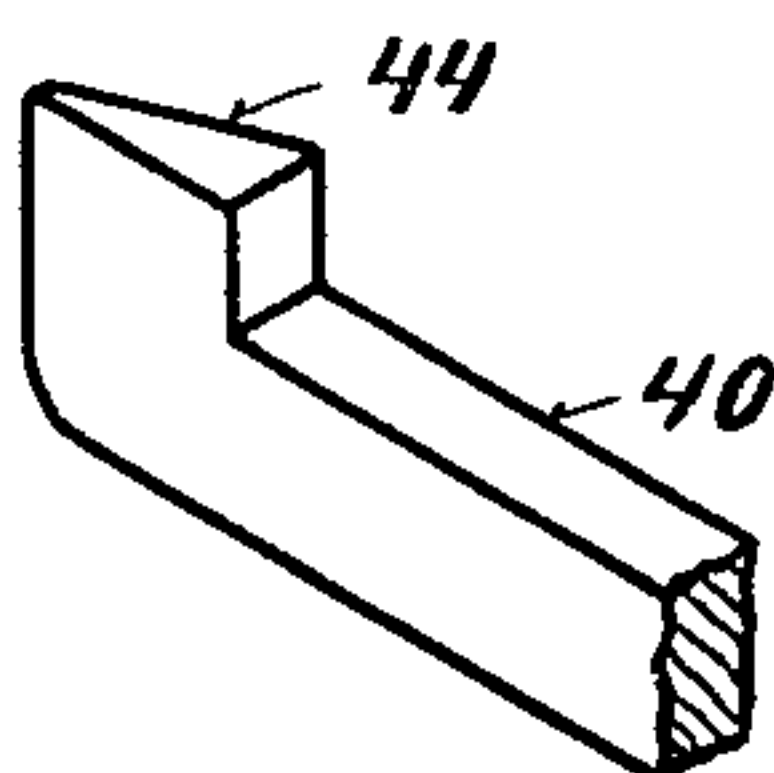
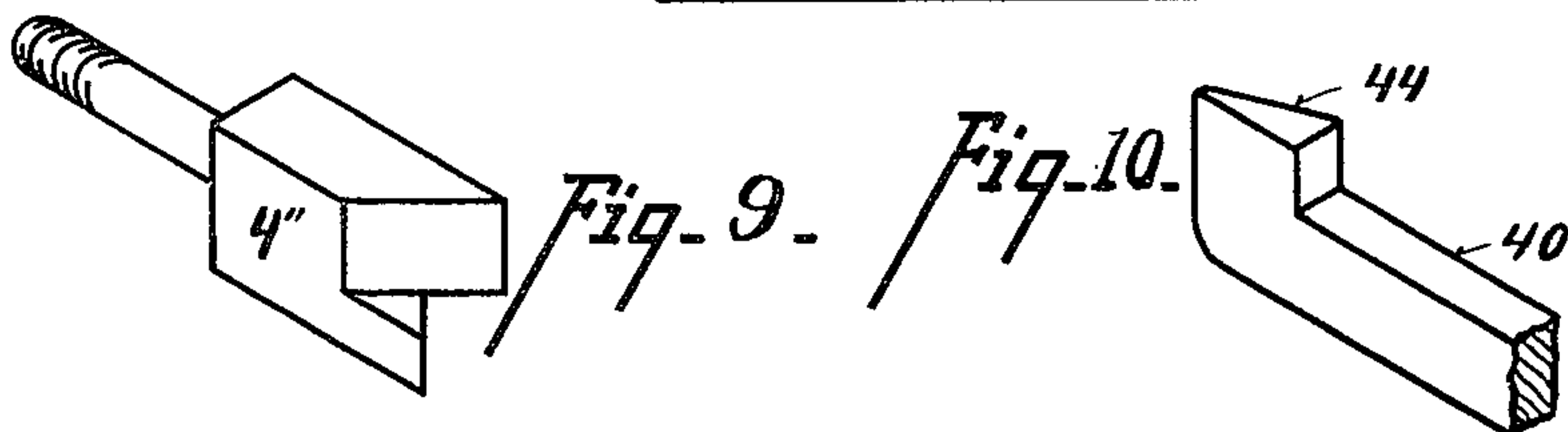
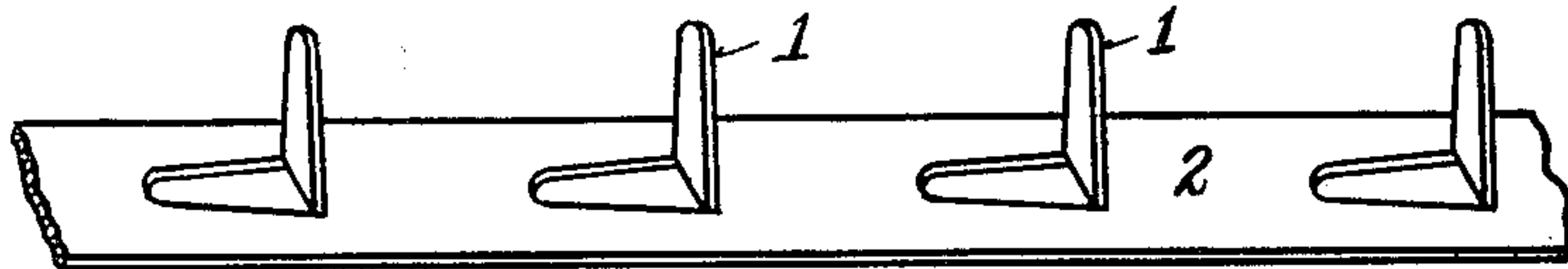
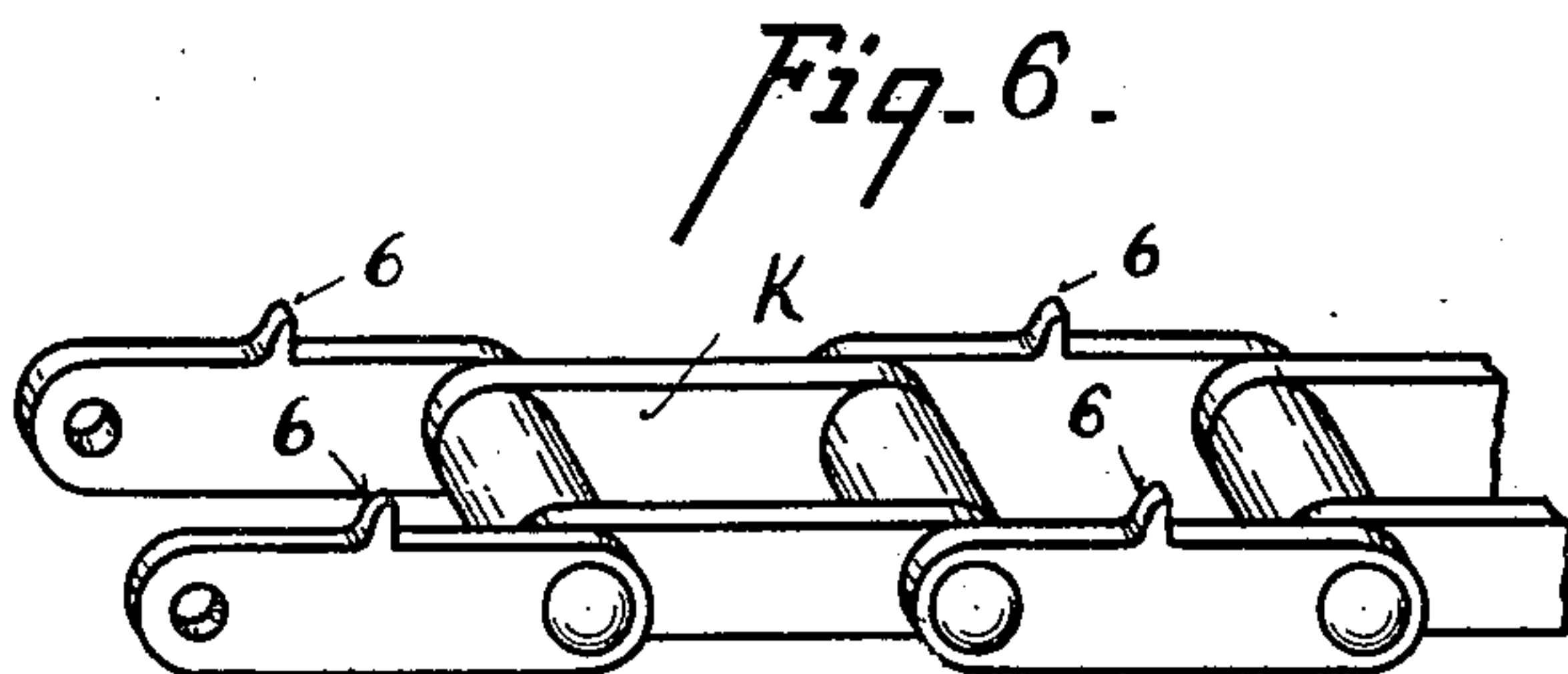
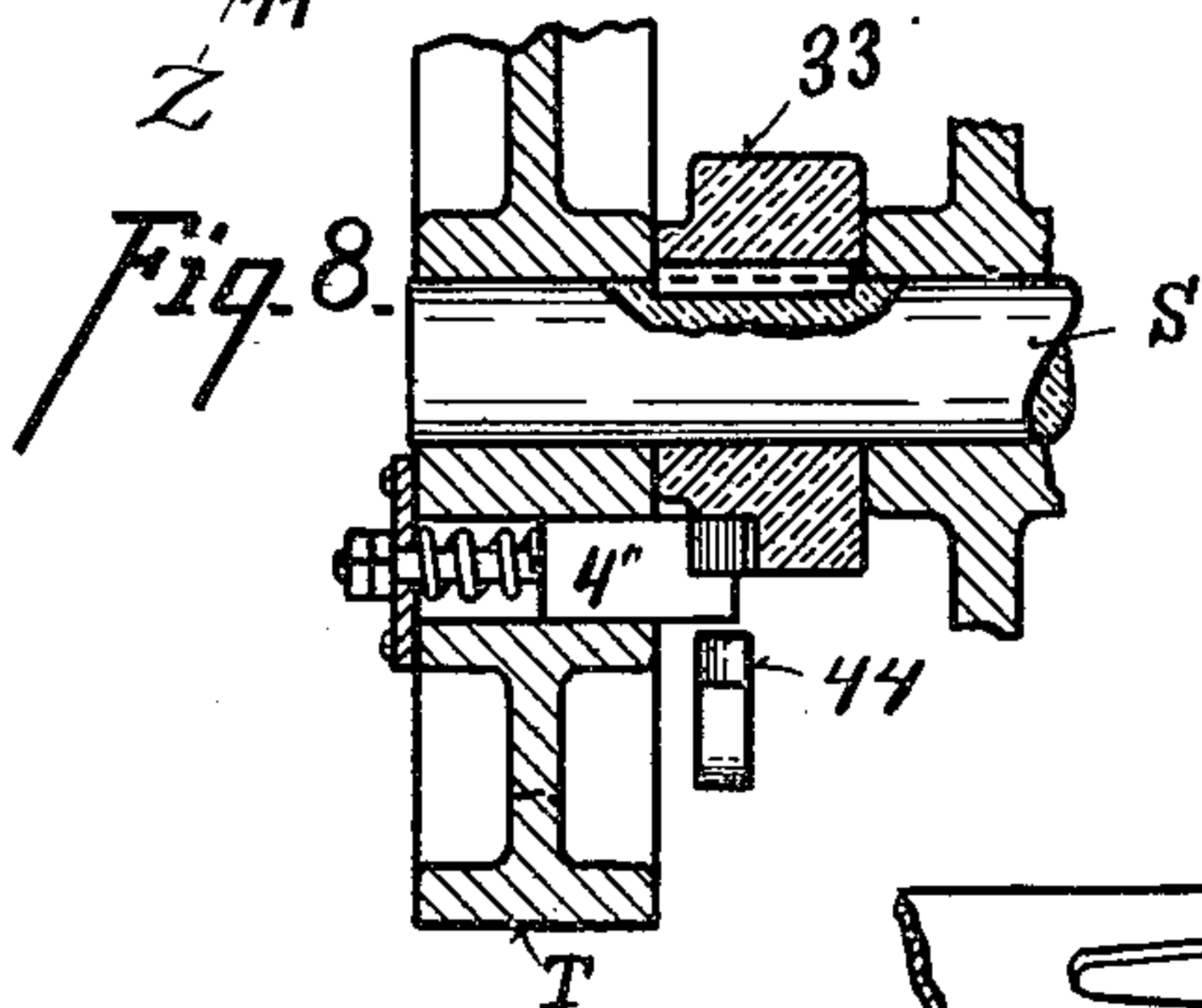
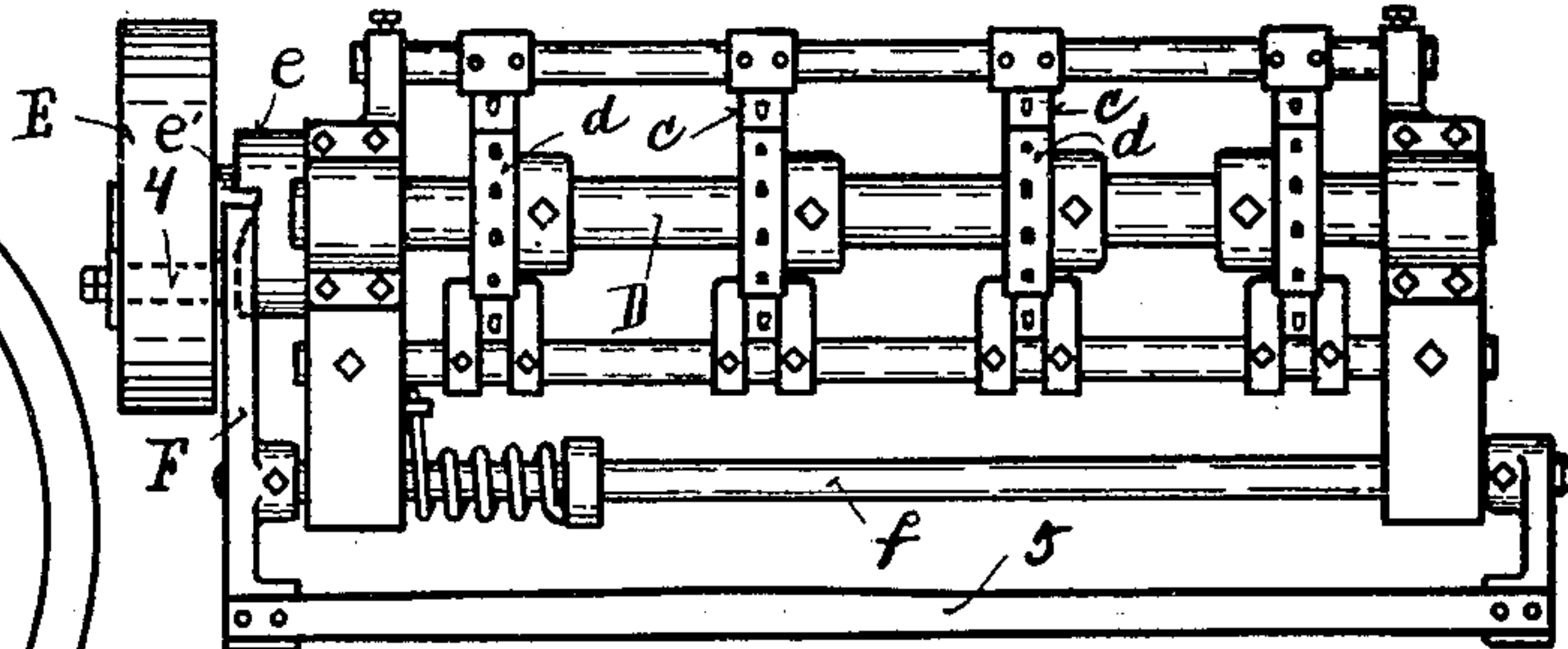
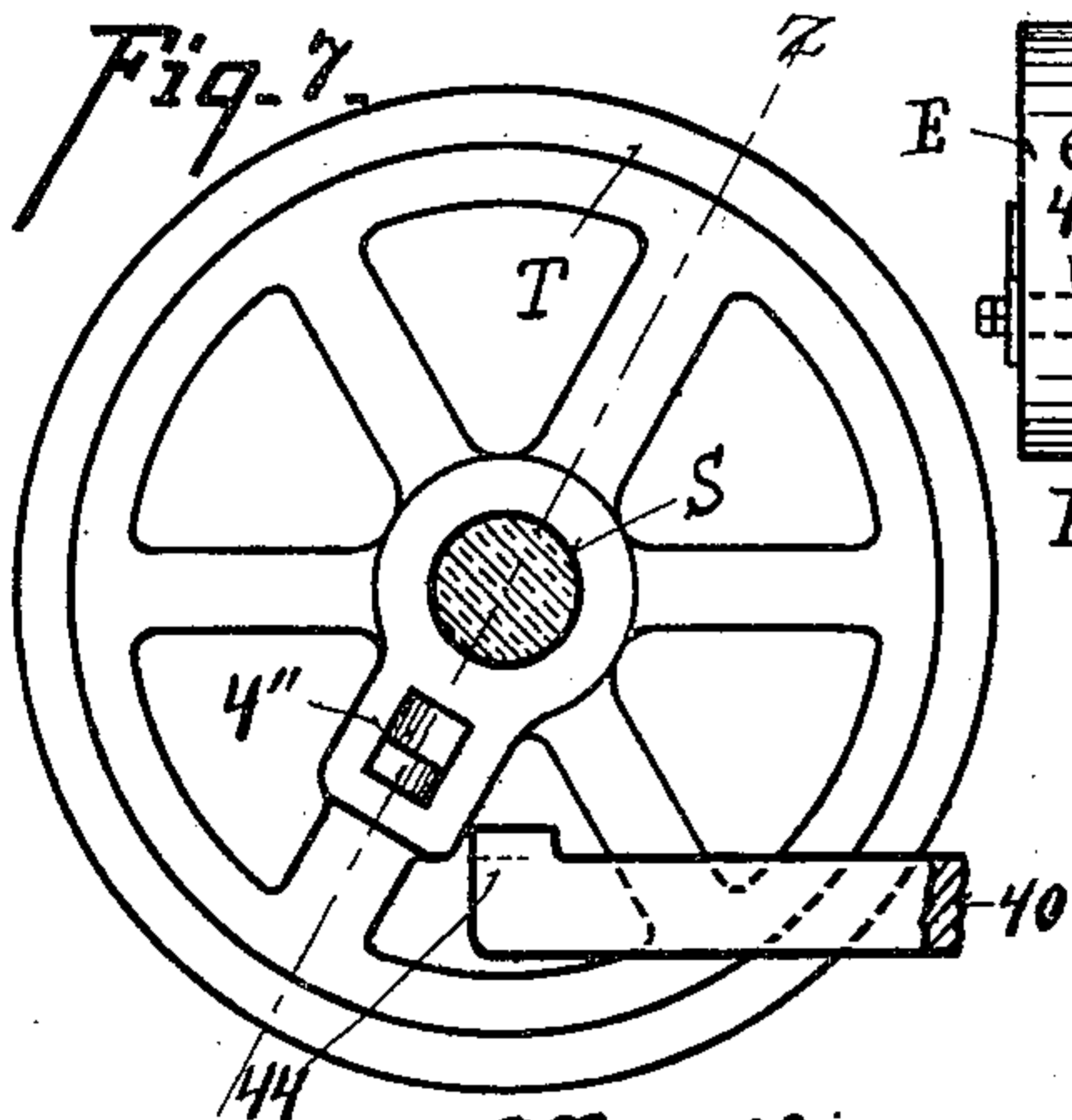
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3 Sheets—Sheet 3.



Witnesses

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Fig. 11.

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UNITED STATES PATENT OFFICE.

WILLIAM S. STUCKENBERG, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO THE
METAL BOUND PACKAGE COMPANY, OF ILLINOIS.

BOX-FORMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 659,772, dated October 16, 1900.

Application filed February 19, 1900. Serial No. 5,731. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. STUCKENBERG, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Box-Forming Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in mechanism for making boxing material. One of its objects is to provide mechanism by means of which slats or continuous sheets of veneer may be bound with metal strips to form the siding for boxes.

Another object is to provide mechanism by means of which engaging lugs are stamped up from the metal strips and strips and slats or sheets immediately fed through the machine, whereby the lugs are automatically driven into the slats and clenched, binding the whole into sections suitable for forming the siding of boxes.

Another object is to provide mechanism for automatically and continuously feeding the material and carrying on the above-named operations.

Another object is to provide mechanism for automatically and independently controlling the feed of the stamping mechanism to deliver the stamped metal as required to the driving and clenching mechanism.

Another object is to provide mechanism automatically controlled to cut the continuous sheet of box siding into sections of the desired length and also means whereby the cut-off mechanism may be set to automatically cut off sections of any desired length.

My invention also further consists in several detail combinations and devices whereby the general result is facilitated, all of which will be more fully set forth in the description of the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section through my improved mechanism on line *xx* of Fig. 3. Fig. 2 is an enlarged sectional detail view of the driving and clenching mechanism. Fig. 3 is a top plan view with the stamping mechanism omitted.

Fig. 4 is a side elevation showing the manner of intermittently driving the cut-off mechanism. Fig. 5 is a central vertical section through one of the clenching-rolls. Fig. 6 is a top plan view of the stamping mechanism, showing the automatic feed-controlling mechanism. Fig. 7 is a side elevation of one of the clutch-wheels. Fig. 8 is a section through the same on line *zz*, Fig. 7. Fig. 9 is a perspective view of the clutch-dog from one of the clutch-wheels. Fig. 10 is a detail perspective view of the end of one of the levers for tripping the clutch-dogs. Fig. 11 is a perspective view of one of the clutches. Fig. 12 is a perspective view of a section of the slat-feeding chain. Fig. 13 is a perspective view of a section of one of the metal binding-strips with the binding-lugs stamped up therefrom. Fig. 14 is a perspective view of one of the finished sections of box siding.

A represents the frame of the machine.

B represents the mechanism for stamping up the lugs 1 from the metal strips 2. As shown, this mechanism consists of shafts C D, carrying, respectively, a series of male and female stamping-rolls *c d*, between which the plain metal strips are fed and the lugs struck up at intervals therefrom.

E represents the driving-pulley, which is loose upon the shaft C and is automatically engaged and released from the clutch member *e* by means of a lever F, which is mounted on shaft *f* and normally held so as to trip the dog 4 and prevent it from entering the notch *e'* in the clutch *e*. When pressure is brought to bear upon the cross-bar 5 through the tightening of the metal strips resting thereon, the lever F is drawn out of the path of the dog 4, allowing the dog to catch the notch in the clutch *e* and drive the rolls to feed in more of the strips. This stamping mechanism is independently driven and is speeded somewhat faster than the remainder of the mechanism; so as to thus automatically supply the stamped strips as fast as and only as required. This stamping mechanism may be of any approved pattern which can be automatically controlled, as described, to supply the stamped strips to the remaining mechanism as required. From the stamping mechanism the

strips 2 are fed over the rolls G and brought in contact with the slats H, which slats are fed consecutively from a hopper I by means of chain belts K, passing over sprocket-wheels k on the respective shafts L M. The alternate links of this belt are provided with spurs 6, which catch the edge of the bottom slat as they pass and feed the slats forward.

7 represents a rod, to which guides 8 are secured to guide the strips 2 centrally beneath the rolls G.

N represents a shaft carrying a series of rolls P, coacting with the rolls G, and between which and the rolls G the slats and binding-strips are fed.

9 represents plates resting beneath the slats in front of the rolls P to support the slats while the lugs 1 are being driven through the slats, slots or grooves 10 being cut in these plates, so that the points of the lugs may project through the slats without being bent. When the projecting points of these lugs come in contact with the faces of the rolls P, they are bent over or clenched, as indicated in Fig. 2. The faces of the rolls P are preferably curved or crowned in order to clench the lugs well into the faces of the slats.

In order that the rolls G may exert a yielding pressure and accommodate any inequality in the thickness of the slats, the shaft g is mounted in boxes, which are supported upon studs 11 and held in place by means of springs 12 and lock-nuts 13. The upper ends of the studs are connected by means of a cross-bar 14. 15 represents plates adjustable upon the cross-bars 16 17 to support the undersides of the chains K in feeding the slats forward from the hopper. The plates 9 are also secured to and adjustable upon the cross-bar 17, and the sprocket-wheels k and rollers G P are all adjustable upon their respective shafts, so as to enable slats of different lengths to be employed.

18 represents guideways for the ends of the slats, also adjustable on the cross-bars 16 17.

After passing the rolls G P the slats are lifted from the chain sufficiently to clear the teeth 6 by means of disks 19 on shaft M, as shown in Fig. 1, and are then fed between the shear-blades R R' and out upon the table 20.

The shafts g N M are driven through the following instrumentalities: Q represents an independently-driven pulley similar to pulley E, provided with a dog 4' and mounted loosely on the shaft N. 21 represents a clutch similar to e , rigid upon shaft N. 22 represents a tripping-rod operated by a treadle 23 to throw the dog 4', and thus stop or start the feed. Upon the opposite end of the shaft N is a gear 24, driving shaft g through gear 25 and also driving an idler-gear 26, which in turn drives gear 27 on shaft M. The rod L does not revolve, but is adjustable to or from the shaft M by means of bolts 28, passing through slots 29 in the frame A. The sprocket-wheels k journal on the rod L and are held to the adjusted position by collars 30.

The lower shear-blade is driven at appropriate intervals to cut the sheet of boxing material into sections of the desired length in the following manner: S represents a shaft carrying eccentrics 31, which reciprocate the shear-blade R through the connecting-rods 32. Upon one end of shaft S is an independently-driven pulley T, similar to pulley E and carrying a dog 4". A clutch 33 similar to clutch e is secured to the shaft S. 34 represents a sprocket-wheel mounted on and driven by shaft M. 35 represents a sprocket-wheel loosely journaled on shaft S. 36 represents an idler sprocket-wheel mounted upon the adjustable stud-shaft 37. 38 represents a chain belt passing over the wheels 34 35 36 and provided with one or more curved links 39. 40 represents a tripping-lever pivoted at 41 to the frame of the machine. One end of this lever is armed with a roller 42, which is pressed upon the chain by means of the spring 43. The opposite end of the lever is provided with a trip 44, normally engaging and holding the dog 4" out of engagement with the clutch 33. When the curved link 39 comes opposite the roller, the lever moves, releasing the dog 4", which causes the shaft S to make one revolution and sever a section of the boxing. By the time the shaft S has completed one revolution the curved link has passed the roller and the trip 44 acts again. In order to cut longer or shorter sections, one or more links are added to or taken from the chain 38 and the stud-shaft adjusted to take up the slack in the chain.

Having described my invention, what I claim is—

1. In a box-forming machine the combination of a series of rolls over which the metal strips are fed; anvil-plates supporting the slats while the lugs of the metal strips are being driven; and a series of clenching-rolls in the rear of said plates for bending the ends of the lugs, substantially as specified.

2. In a box-forming machine the combination of a slat-hopper; chain belts for feeding the slats therefrom; a series of rolls for driving the projecting lugs of the binding-strips through the slats; and a series of clenching-rolls upon the opposite side of the slats for bending over the ends of the lugs, substantially as specified.

3. In a box-forming machine, the combination of a slat-hopper; chain belts for feeding the slats consecutively therefrom; a series of spring-cushioned rolls for driving the lugs of the binding-strips through the slats; and a series of clenching-rolls for bending over the ends of the lugs, substantially as specified.

4. In a box-forming machine the combination of a slat-hopper; chain belts for feeding the slats therefrom; a series of rolls for driving the lugs projecting from the binding-strips through the slats; anvil-plates supporting the slats while the lugs are being driven; and a series of clenching-rolls for bending over the ends of the lugs, substantially as specified.

5. In a box-forming machine the combination of a series of driving-rolls for driving the lugs projecting from the binding-strips through the wood; anvil-plates supporting the wood while the lugs are being driven; a series of clenching-rolls for bending over the ends of the lugs; and intermeshing gears causing the driving and clenching rolls to move in unison with each other, substantially as specified.

6. In a box-forming machine the combination of mechanism for stamping up projecting lugs from a series of metal binding-strips; a series of rolls adapted to force the lugs through slats; and a series of clenching-rolls on the opposite side of the slats for bending over the ends of the lugs, substantially as specified.

7. In combination with a series of rolls adapted to drive the projecting lugs of the binding-strips through the slats; and a series of clenching-rolls for bending over the ends of the lugs; means substantially as shown for stamping the lugs from the binding-strips, and a tripping mechanism actuated by the tension on the binding-strips to automatically stop and start the stamping mechanism, substantially as specified.

8. In combination with a slat-hopper, chain belts for feeding the slats therefrom; a series of driving-rolls for driving the lugs projecting from the binding-strips through the slats; and clenching-rolls for bending over the ends of the lugs; means substantially as described for stamping the lugs from the binding-strips; and a tripping mechanism actuated by the tension on the binding-strips to automatically stop and start the stamping mechanism, substantially as specified.

9. In combination with a slat-hopper; chain belts for feeding the slats therefrom; a series of driving-rolls for driving the lugs projecting from the binding-strips through the slats; and clenching-rolls for bending over the ends of the lugs; an independently-driven stamping mechanism for stamping the lugs from the binding-strips; and a tripping mechanism actuated by the tension of the binding-strips to automatically stop and start the stamping mechanism, substantially as specified.

10. In a box-forming machine the combination of a series of rolls adapted to drive the projections of the binding-strips through the slats; clenching-rolls adapted to bend the ends of the lugs over; and intermittently-operated shears adapted to sever the sheet of boxing material into sections of the required length, substantially as specified.

11. In a box-forming machine the combination of a series of rolls adapted to drive the projections of the binding-strips through

the slats; clenching-rolls adapted to bend the ends of the lugs over; independently-driven, and intermittently-operated shears; and means substantially as described for tripping and operating the shears in unison with the movements of the driving and clenching rolls, substantially as specified.

12. In a box-forming machine the combination of a slat-hopper; chain belts for feeding the slats therefrom; a series of rolls for driving the lugs projecting from the binding-strips through the slats; clenching-rolls for bending over the ends of the lugs; shears adapted to sever the boxing material into sections of predetermined length; and means substantially as shown and described for tripping the shears in unison with the movements of the driving and clenching rolls, substantially as specified.

13. In a box-forming machine the combination of mechanism for stamping up lugs from the binding-strips; a series of rolls adapted to drive the lugs through the wood of the slats or sheets; a series of clenching-rolls adapted to bend over the ends of the lugs; and means substantially as described for severing the sheet of boxing material into sections, substantially as specified.

14. In a box-forming machine the combination of mechanism for stamping up lugs from the binding-strips; a slat-hopper; chain belts for feeding the slats therefrom; a series of rolls for driving the lugs through the slats; a series of clenching-rolls adapted to bend over the ends of the lugs; and means substantially as described for severing the sheet of boxing material into sections, substantially as specified.

15. In a box-forming machine the combination of independently-driven mechanism for stamping up lugs from the binding-strips; tripping mechanism actuated by the tension of the binding-strips to automatically stop and start the stamping mechanism; a slat-hopper; chain belts for feeding the slats therefrom, a series of driving-rolls for driving the lugs through the slats; a series of clenching-rolls for bending over the ends of the lugs; independently-driven shears for severing the sheet of boxing material into sections of predetermined length; and means substantially as specified for automatically tripping the shears in unison with the movement of the driving and clenching rolls, substantially as specified.

In testimony whereof I have affixed my signature in presence of two witnesses.

WILLIAM S. STUCKENBERG.

Witnesses:

F. J. KUNY,

V. C. KELLER.