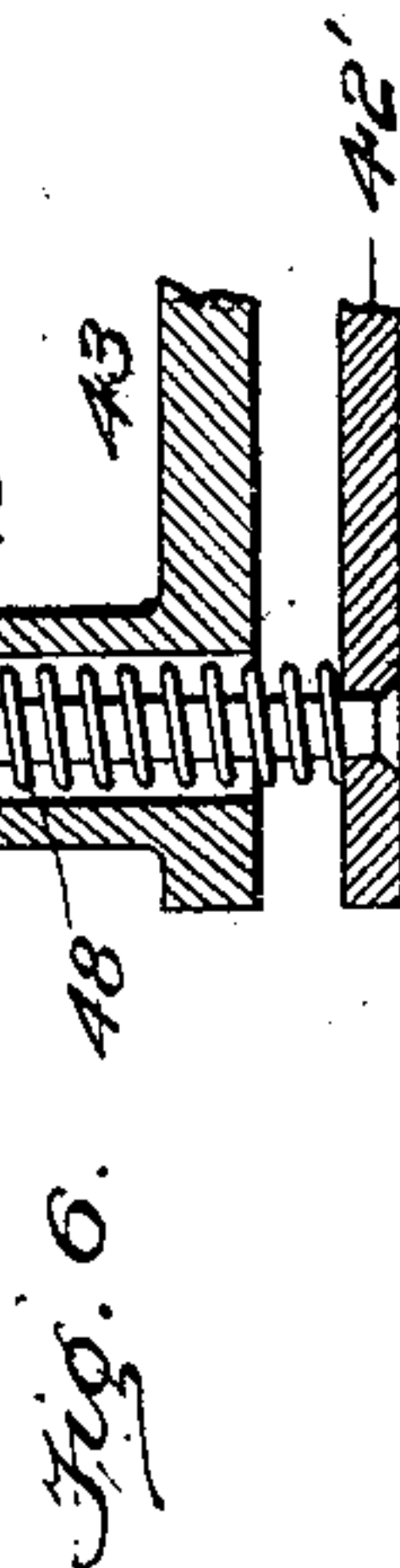
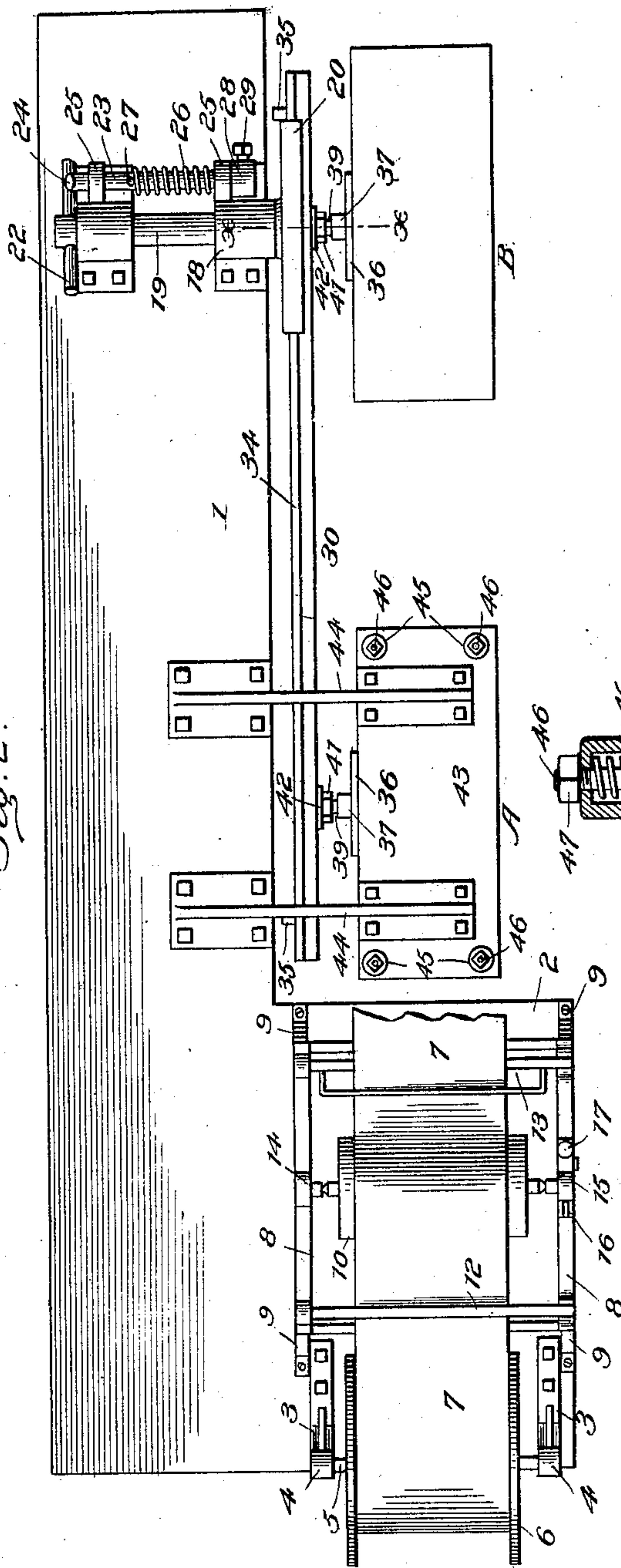
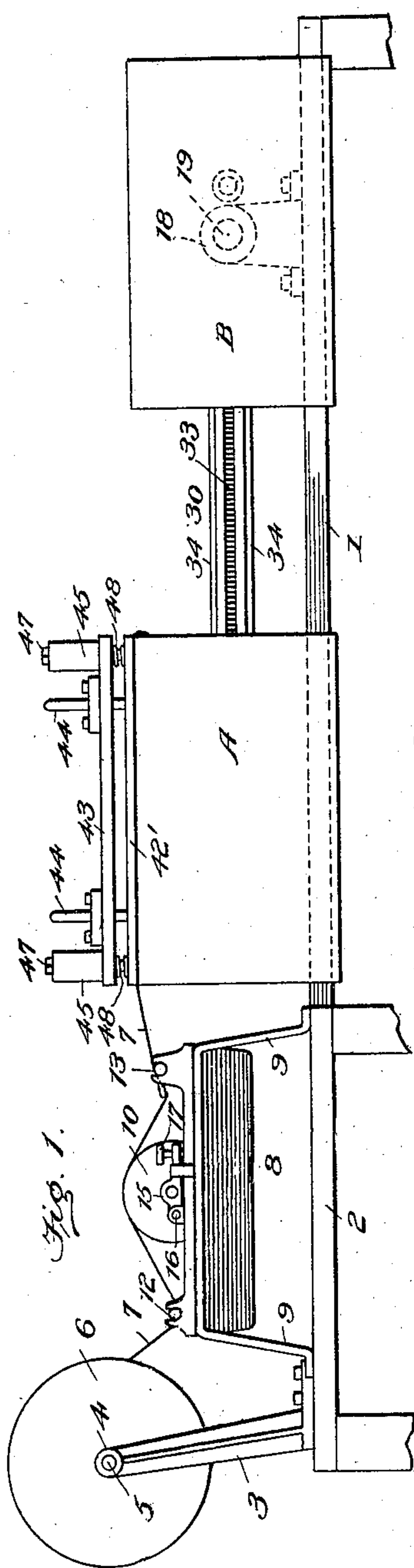


No. 862,290.

PATENTED AUG. 6, 1907.

P. S. SMITH.
BOX COVERING MACHINE.
APPLICATION FILED JAN. 13, 1904.

2 SHEETS—SHEET 1.



Witnesses

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Inventor

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By

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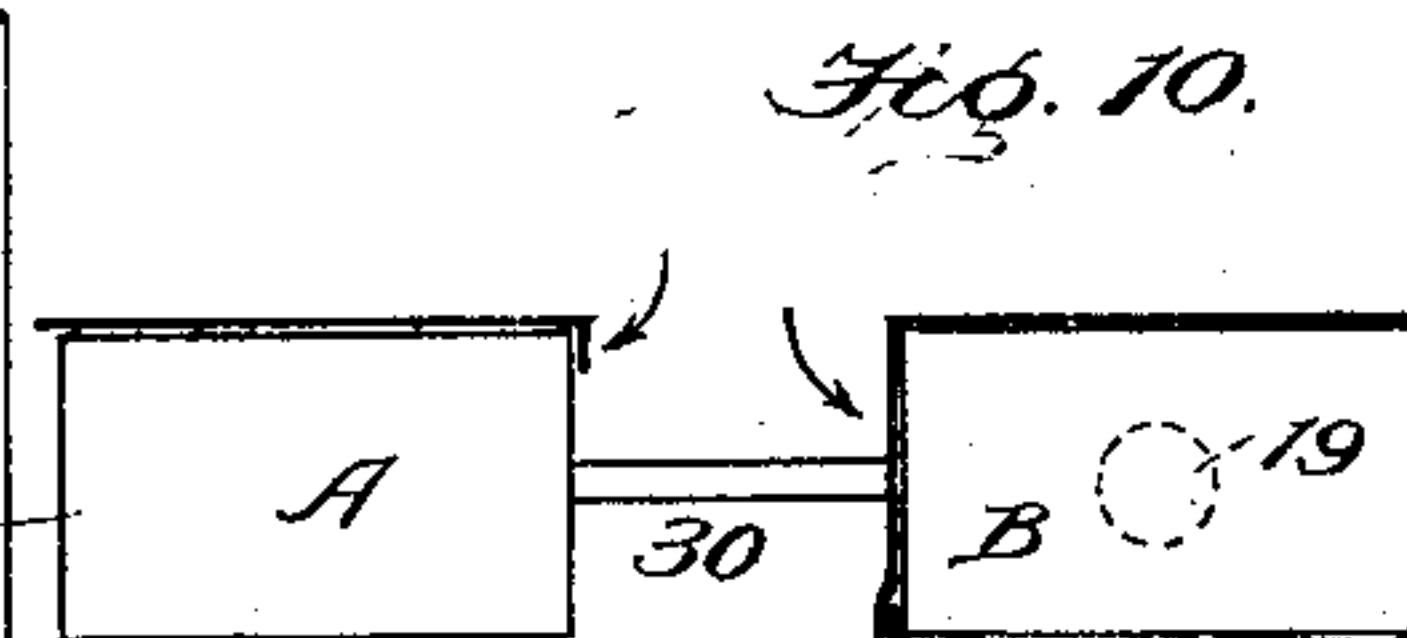
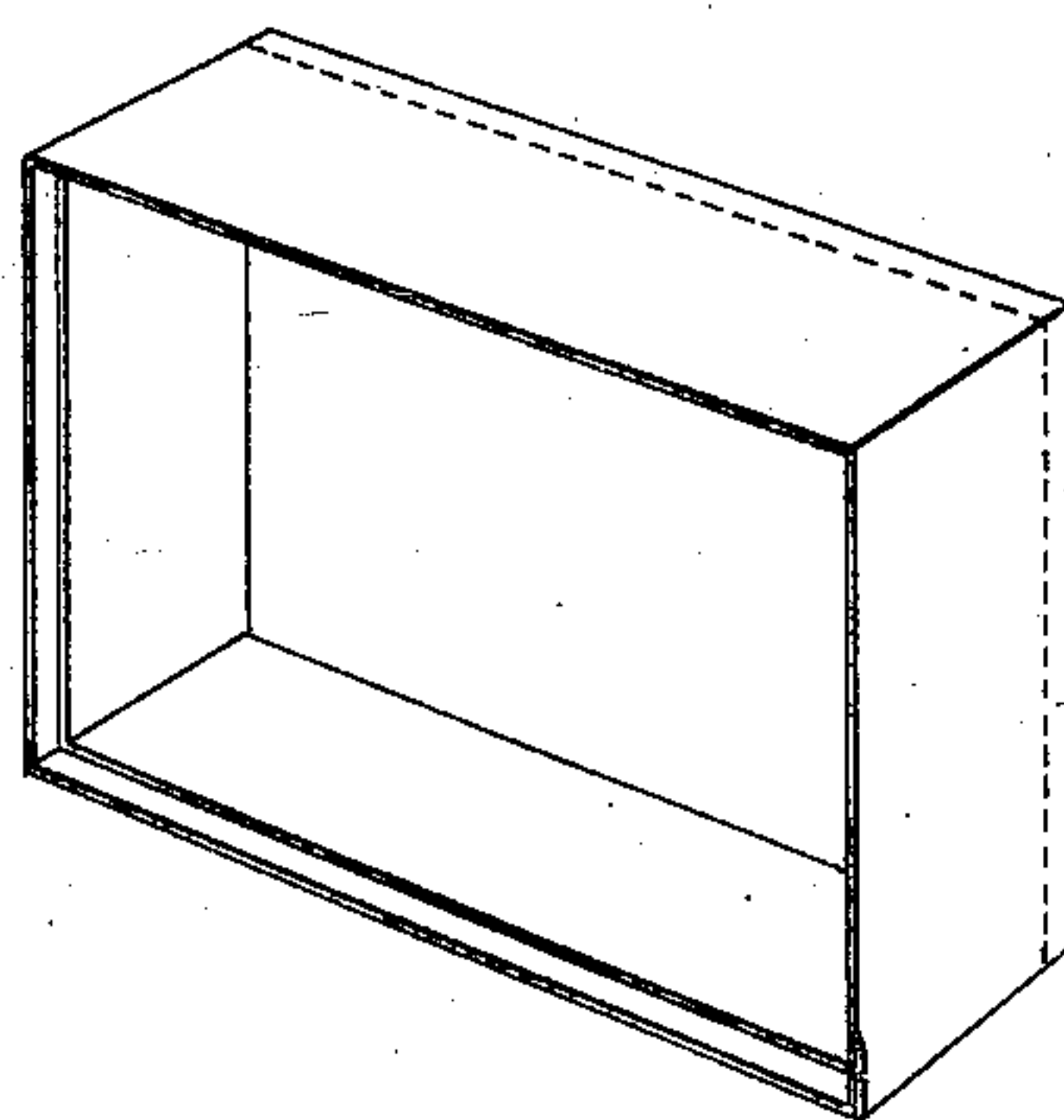
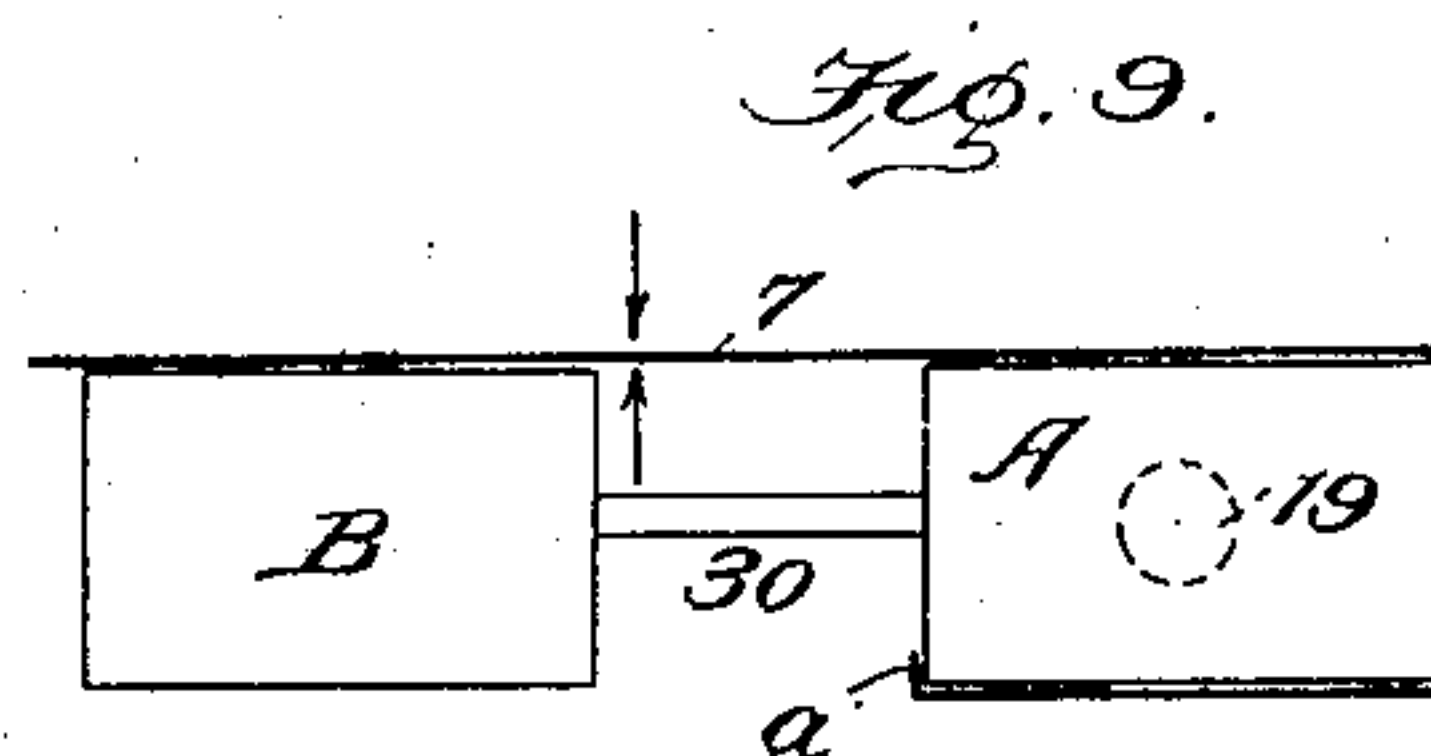
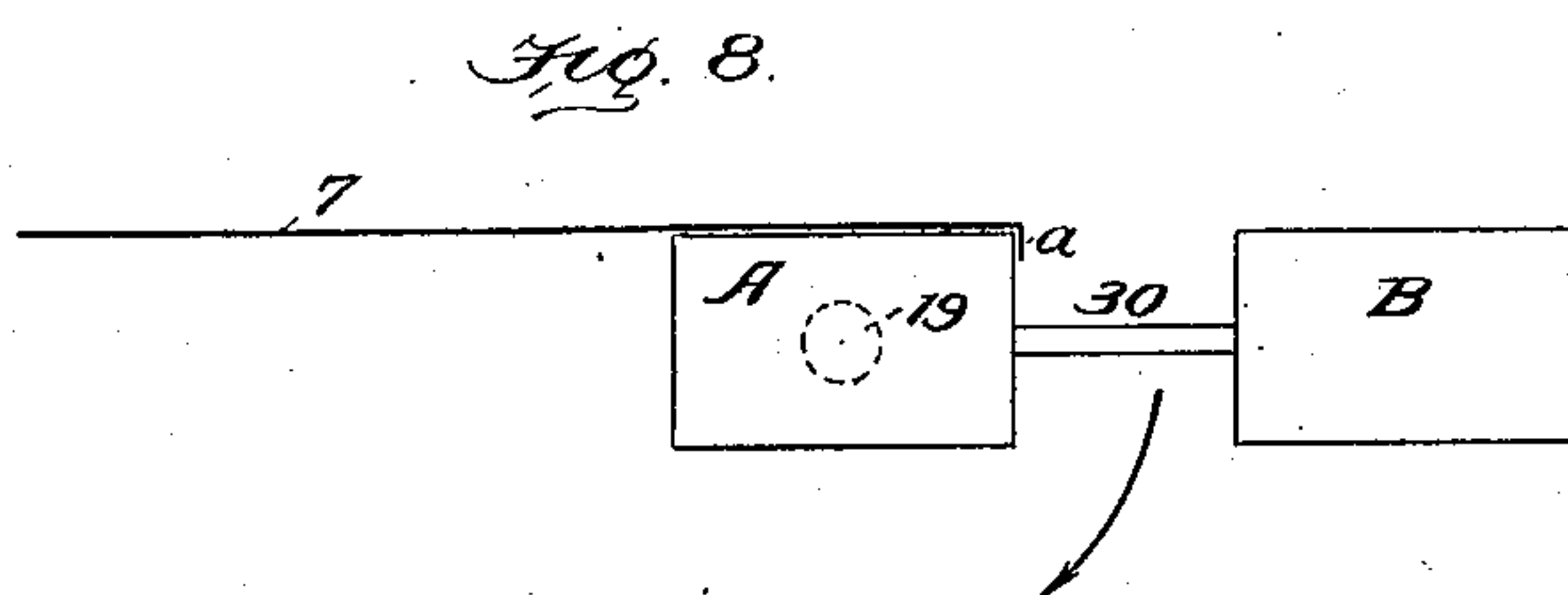
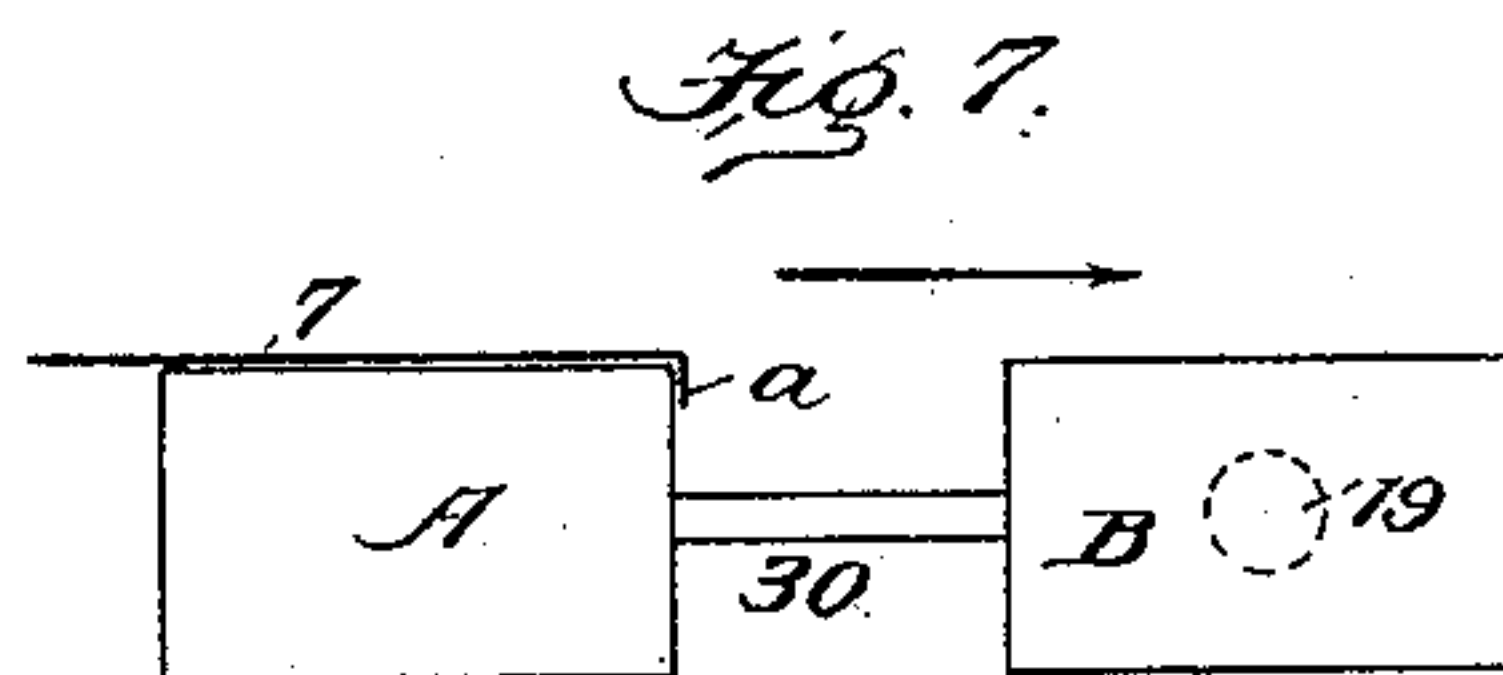
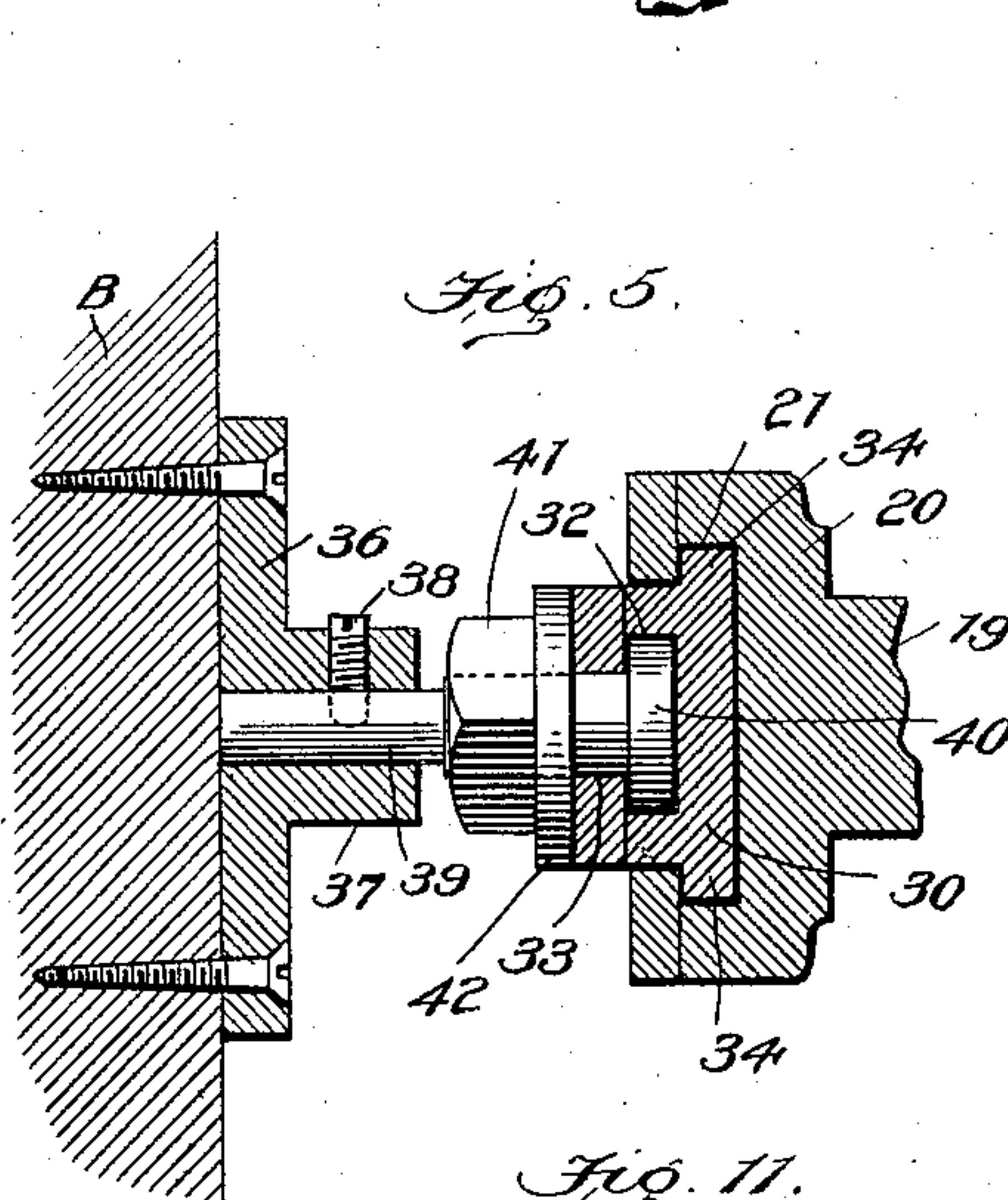
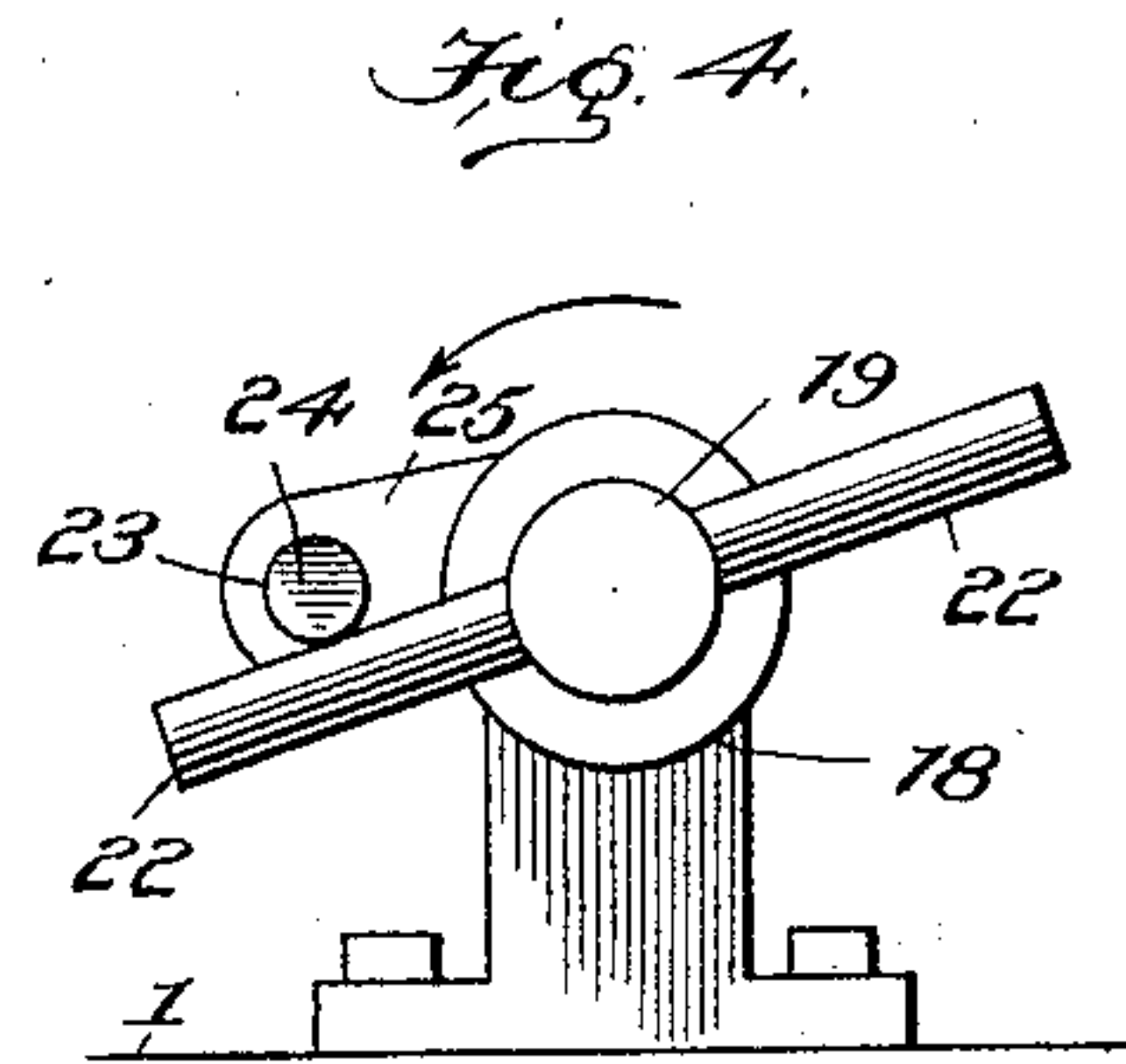
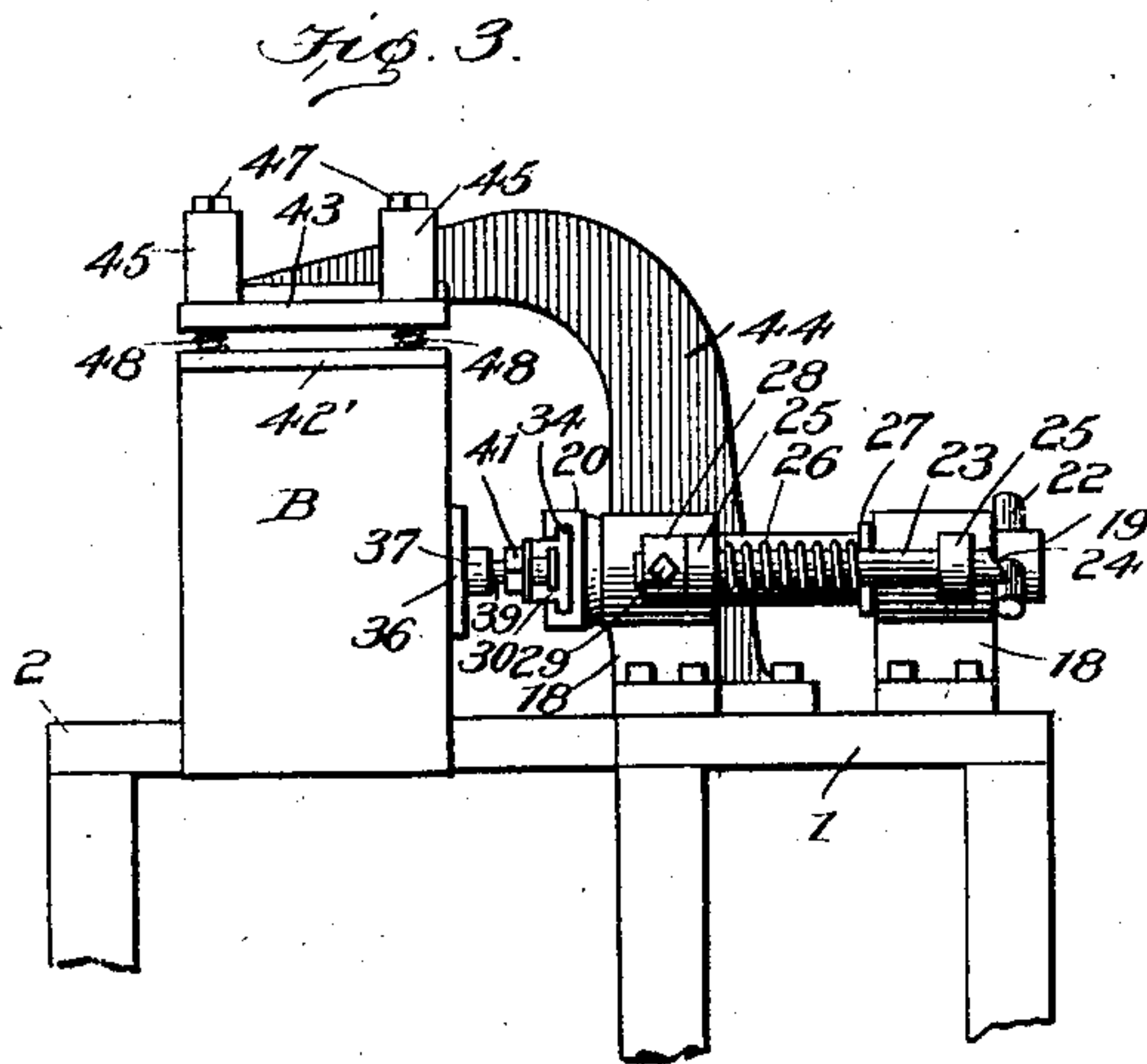
Attorney

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2 SHEETS—SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

PHILIP S. SMITH, OF PHILADELPHIA, PENNSYLVANIA.

BOX-COVERING MACHINE.

No. 862,290.

Specification of Letters Patent.

Patented Aug. 6, 1907.

Application filed January 13, 1904. Serial No. 188,905.

To all whom it may concern:

Be it known that I, PHILIP S. SMITH, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Box-Covering Machines, of which the following is a specification.

This invention relates to box covering machines and more particularly to that type known in the art as stripping or banding machines, in which a gummed covering strip or band is applied to the outer side and end walls of a box in such manner as to entirely cover said walls and give an ornamental or finished appearance to the completed box.

Box stripping or banding machines as now usually constructed, consist of a reel or spool containing the covering strip, a glue tank having a glue applying roller rotatable therein and over which the covering strip is drawn, whereby glue is applied to one face thereof, a rotatable box-form or support upon which the box to be covered is placed and a shear cutter for severing the strip at a point between the box-form and glue applying roller. In using a machine of this construction, a box is first placed upon the form and the gummed strip is then drawn forward and the free end pasted to one side of the box, the form with the box thereon is now rotated and the strip wound around the box, it being understood that the rotation of the form unreels the strip from the reel or spool and carries it over the glue roller. When the strip has been wound entirely around the box so that all sides are covered, said strip is severed and the end pasted to the box wall overlapping or abutting the end first applied and the stripping or banding operation is completed. The box with the strip thus applied to its outer walls is then removed from the form and the opposite projecting edges are turned over by hand and pasted to the bottom and to the inner walls of the box respectively, these steps completing the covering operation. A new box is then placed upon the form and the foregoing operations repeated, it being necessary at the beginning of each operation, for the operator to grasp the free end of the gummed strip by hand, draw it forward, and affix it to the box to be covered. While machines of the above description are, in a sense, fairly satisfactory, yet they are very slow in operation, and the output of each machine is necessarily limited as will be understood when it is stated that a skilled or expert operator can cover only about 2,000 boxes per day; whereas with the machine forming the subject matter of the present application, an unskilled operator can cover at least 4,000 boxes per day, thus effecting a great saving in the cost of the product and enabling the work to be done more expeditiously.

According to the present invention, instead of employing only one box form as heretofore, I employ two forms and I so mount these forms as that one box will

feed the covering strip to the other during the movement of the forms, thus enabling the covering operations to be carried on in a continuous manner and overcoming that objection present in the old method, of picking up the free end of the covering strip after each box has been covered and affixing it to the next box, which step or operation consumes much time and limits the output of the old machines.

Briefly and rather specifically stated, the present invention comprises means, such as a glue roller for applying glue to one side of a covering strip, an element mounted to have a longitudinal and a rotary movement, and two box forms or supports carried by said element, the said forms being located in line with each other but separated one from the other a distance equal, or about equal, to the length of one of the box walls, the arrangement being such that when the said element with its forms and boxes thereon, is moved forward longitudinally during the covering operation, such movement will feed forward a trailing excess or amount of the covering strip in a position behind the rear form to be engaged by the box on the foremost form when said element is rotated to bring the said foremost form in the position previously occupied by the rear form; it being understood that during such rotation of the element the strip will be wound around the box on the originally rear, but now foremost form.

From this general description it will be seen that the machine comprises essentially, two forms or box supports, each acting alternately to feed the covering strip to the other, and this constitutes the broad spirit of the invention.

The invention comprises other more or less important features due to the peculiar construction and arrangement of parts, all as will more clearly hereinafter appear.

In order to enable others to understand, make and use my said invention, I will now proceed to describe the same in detail, reference being had for this purpose to the accompanying drawings, in which—

Figure 1, is a side elevation of a covering machine constructed according to this invention. Fig. 2, is a top plan view thereof. Fig. 3, is an end view of the machine looking to the left of Fig. 1. Fig. 4, is an enlarged detail end view of the shaft on which the rotary element is mounted. Fig. 5, is a sectional view taken on the line $x-x$ of Fig. 2. Fig. 6, is an enlarged detail sectional view of one of the yielding supports for the abutment block or plate. Figs. 7, 8, 9, 10, are diagrammatic views showing the several positions of the forms and boxes with the covering strip applied during the operation of covering boxes, and Fig. 11, is a perspective view of a covered box as it is taken from the machine.

Referring to the drawings, Figs. 1 and 2, the reference numeral 1, designates a table having at one end a forwardly extending offset portion 2, from one end of which rises two brackets 3, having bearings 4, in which

is journaled a shaft 5, carrying a reel or spool 6, upon which is mounted the covering strip or band 7, usually of paper.

Located in front of the reel or spool and also mounted upon the offset portion 2, of the table, is a glue tank 8, supported upon feet 9, and rotating in said tank is a glue applying roller 10, over which the covering strip or band 7, is caused to pass in such manner as to apply glue to the under face thereof. Guides 12 and 13, are placed upon opposite sides respectively of the glue applying roller, so as to cause the covering strip or band to bear upon and make contact with the face of said roller. The glue applying roller 10, is journaled at one end in a fixed bearing 14, and at its opposite end in a pivoted and adjustable bearing plate 15, said bearing plate being pivoted at one end at 16, and made adjustable at the other end by means of a thumb screw 17. By making the glue applying roller adjustable in the manner described, the same may be caused to bear squarely upon the covering strip or band in such manner as to always apply a smooth and uniform coating of glue thereto.

Journaled in bearings 18, located at the opposite end of the table 1, is a rotatable shaft 19, carrying at its front end a head 20, having an undercut or grooved way 21, and at its rear end said shaft is provided with a cross pin 22. This head will be known broadly as the "rotatable element". Arranged alongside the shaft 19, and parallel therewith, is a longitudinally movable latch pin 23, having a beveled end 24, which coöperates with the cross pin 22, to hold the shaft 19 against movement in one direction, but permitting said shaft to rotate in the opposite direction. The latch pin 23, moves longitudinally in apertured ears 25, and is normally held projected toward the cross pin 22, by means of a spring 25, said spring being confined between one of the ears 25, and a pin 27, which latter passes through the shaft 19. A collar 28, is adjustably secured to the latch pin 23, by means of a set screw 29, and serves to limit the movement thereof in a direction toward the cross pin. In operation, when the shaft 19, is rotated in the direction of the arrow (Fig. 4) the cross pin 22 will snap over the beveled end 24, of the latch pin 23, but said shaft will be prevented from rotating in the opposite direction by reason of the spring 25, holding the latch pin projected in the path of movement of the cross-pin. The purpose of this construction and operation of the parts will appear hereinafter.

The reference numeral 30, designates a comparatively long bar, hereafter to be known broadly as the "longitudinally movable element or form carrier", said bar being provided throughout its length, or substantially so, with a T-shaped groove 32, the narrower portion 33, of which is open along the front of the bar, as more clearly shown in Fig. 1. The said bar 30, is also provided along its upper and lower longitudinal edges respectively, with projecting flanges 34, which are arranged to fit and slide freely in the undercut or grooved way 21, in the head 20. By this construction it will be clear that the longitudinally movable element or form carrier, can be moved freely back and forth in the direction of its length in the groove of the head, or rotatable element, and by reason of the fact that the head which supports the bar can be rotated, said bar is also capable of rotary movement in one direction. In other words,

the bar is capable of both longitudinal and rotary movement, the purpose of which will presently appear. The bar 30, is provided on its rear face near each end, with projecting stops 35, Fig. 2, which serve to limit the longitudinal movement thereof, said stops abutting the opposite ends of the head 20.

Adjustably and removably carried by the bar 30, are two box supports for supporting and carrying the boxes to be covered. These supports may be of any desired construction, those shown in the present instance being ordinary solid wooden forms A, and B, although it will be understood that I do not limit myself to the use of any specific form of box support, the present showing being only by way of example. These box supports A, and B, are adjustably mounted upon the bar in the following manner, reference being made more particularly to Fig. 5, of the drawing. If a solid wooden form-block, such as here shown, is employed, I screw to the back of each block, a plate 36, having an integral hollow boss 37, and in this boss I fix, by means of a screw or pin 38, a bolt 39, having a head 40, at its free end, said head being located in the T-groove 32 of the bar 30. The bolt 39, is threaded intermediate its ends and screwed upon this threaded portion is a nut 41, between which and the face of the bar 30, is placed a washer 42. It will be understood that by screwing the nut 41, toward the bar 30, the head 40, of the bolt, may be tightly clamped in the T-groove, thus preventing any movement of the form-block relatively to the bar. It will also be understood that by unscrewing the nut 41, the parts will be released and the forms may then be adjusted toward and from each other along the bar 30, for a purpose presently to appear.

From the foregoing description it will be clear that the machine comprises two box supports, one mounted in advance of the other, said supports being carried by a longitudinally movable element, (the bar 30) and said element being capable of rotary movement by reason of the fact that it is mounted upon a rotary element, (the head 20, carried by the shaft 19). It will be seen therefore, reference being had to Fig. 1, that by moving the bar longitudinally in a direction away from the glue applying device, the forms A and B, will be advanced together, the rear form A, taking up the position of the front form B, and then by partially rotating the bar, the form B, will be brought to the position originally occupied by the form A, thus by giving alternate longitudinal and rotary movements regularly to the bar 30, the forms will be caused to follow each other, the one taking up the position previously occupied by the other. When the parts are in the position shown in Figs. 1 and 2, it will be seen that the latch pin 23, is in engagement with the cross-pin 22, hence the shaft 19, is held against backward rotary movement and the bar 30, supported in a horizontal position, thus holding the upper sides of the forms in substantial alignment with the glue applying device and in position to receive the gummed covering strip 7, all as will more clearly hereinafter appear in the recital of operation of the machine.

In order to aid in applying or affixing the covering strip to the boxes during the movements of the forms, I provide what may be termed an abutment block or plate 42', which latter is located at a point between the shaft 19, and the glue applying device and in such posi-

tion as to be engaged by the form blocks as they are alternately shifted from front to rear during the rotary movements of the bar 30. The said abutment block or plate is preferably, but not necessarily, yieldingly suspended from a support 43, carried by upwardly and forwardly curved brackets 44, which latter are bolted to the table 1. The support 43, has rising therefrom four hollow projections 45, through each of which a bolt 46, passes, said bolts being attached to and supporting at their lower end the abutment block or plate 42', and each bolt having its upper end threaded and carrying a nut 47. A coil spring 48, surrounds each bolt and bears at its upper end against the upper interior wall of the hollow projections 45, and at its lower end against the top or upper face of the abutment block or plate. By adjusting the nuts 47, the tension of the springs may be varied to impart a greater or less yield to said plate or block, as desired.

While I have herein shown and described the machine as provided with the said abutment block or plate, I wish it understood that such element is not a necessary or indispensable part thereof, and that the same may be used or not, as desired.

I will now proceed to describe the general operation of the machine, reference being had for this purpose to Figs. 1, 7, 8, 9 and 10. Let it be assumed that a box to be covered has been placed upon each of the forms, A and B, and that said forms are in the positions shown in Figs. 1 and 7. The free end *a*, of the covering strip 7, is initially drawn forward by hand over the upper wall of the box on form A, and turned down and pasted to the end wall of said box as shown in Fig. 7. The longitudinally movable element or form carrier is now moved forward by hand, to the position indicated in Fig. 8, which brings the form A, in the position formerly occupied by form B, and throws form B, forward. This longitudinal movement of the carrier draws from the reel or spool a length of the covering strip and holds the same in the position shown in Fig. 8. The carrier is now rotated to bring the forms in the position indicated in Fig. 9, which rotary movement causes the covering strip to be wound around two sides of the box on form A, as shown. This rotary movement also brings the form B, in the position initially occupied by form A, and the box thereon in contact with, or directly under, the length of covering strip that was drawn forward by the longitudinal and rotary movements of the carrier, it being understood that the carrier will be held in this position by the latch pin until again moved by hand.

From the foregoing it will be seen that the box on the form A, has now been covered on three sides, one side remaining uncovered, and that the covering strip has been applied, or is held in position for application, to one side and a portion of one end of the box on form B. It only remains now to sever the covering strip between the two boxes at the point indicated by the two arrows in Fig. 9, which severing operation will leave two free ends, one of which is sufficiently long to completely cover the uncovered portion of the box on the form A, and the other end just long enough to bend over the corner of the box on the form B. These two free ends are then applied by hand and the covered box on form A, is removed and a new box placed thereon and the before described operations repeated. It will be seen

from the foregoing description that the covering operations are carried on continuously and that each box acts alternately to feed the covering strip to the other. So far as I am aware, I am the first to conceive this method of operation and accordingly do not wish to be limited to any specific mechanism for carrying the same into effect.

The covering strip 7, is usually wider than the depth of the boxes being covered, so that when applied to the box-walls, said strip will project beyond the top and bottom of the box as shown in Fig. 11. The projecting portions of the covering strip are then turned over and affixed to the interior and to the bottom of the box respectively, either by hand or with a separate machine constructed to accomplish this work.

The machine herein shown and described is what may be termed a "hand machine" since the forms are moved or shifted and the covering strip is applied by hand, although I wish it understood that I contemplate operating the machine by power so that the forms will be progressively moved and the covering strip properly applied to the boxes entirely by mechanism and automatically, in which case the operator has only to feed the boxes to the forms and remove them as they are covered. The mechanism for accomplishing this additional work will form the subject matter of a separate application for patent as will also the method herein disclosed for covering boxes.

What I claim and desire to secure by Letters Patent is—

1. In a box stripping machine, two box supporting members, and means whereby said members may have motions of translation and rotation whereby each will act alternately to feed a covering strip to the other.

2. In a box stripping or banding machine, two box supports located in the same plane and separated from each other a distance slightly in excess of the width of the box being covered, and means whereby each of said supports may act in advance of the other to feed the covering strip alternately to the other.

3. In a box covering machine, a supply roll carrying the covering web, a box form for supporting the box to be covered, and means whereby said form may have alternate movements of translation and rotation to first withdraw an excess quantity of the covering web and then wrap said web about the box on the form.

4. In a box covering machine, two box supports for supporting boxes to be covered, said supports being arranged in the same plane and means whereby said supports may have similar movements, so that during a part of the movement one box will act to feed the covering strip in position to be engaged by the wall of another box.

5. In a box covering machine, two box supports movable together bodily in one direction, and means whereby said supports may be moved reversely one at a time.

6. In a box covering machine, two box supports movable together bodily within fixed limits over one path, and means whereby said supports may be reversely moved over another path one at a time.

7. In a box covering machine, a rigid element, two box supports carried thereby and means whereby said element may be moved in one direction over one path and moved reversely over another path.

8. In a box covering machine, two box supports and means whereby said supports may be moved together over the same path in one direction and moved reversely but singly over another path.

9. In a box covering machine, two box supports one located in advance of the other, and means whereby the positions of said supports may be alternately changed from front to rear.

10. In a box covering machine, two longitudinally movable box supports, means whereby said supports may be

given alternate longitudinal and reversely directed rotary movements.

11. In a box covering machine, two box supports a stationary axis, and means whereby said supports may be alternately rotated about said axis.

12. In a box covering machine, two box supports one located in advance of the other, a stationary axis, and means whereby the positions of said supports may be shifted alternately relatively to said axis.

13. In a box covering machine, a rotatable element, a carrier slidably mounted thereon, and two box supports carried by the carrier.

14. In a box covering machine, a rotary shaft, a head on said shaft, a bar slidably mounted on said head, and two box supports carried by said bar.

15. In a box covering machine, a rotary shaft, a head on said shaft, said head provided with a groove, a bar slidably mounted in the said groove, and two box supports carried by the bar.

16. In a box covering machine, a rotatable shaft, means for preventing rotation of said shaft in one direction, a carrier bodily movable relatively to said shaft, and two box supports carried by the carrier.

17. In a box covering machine, a rotatable shaft, means for preventing rotation of said shaft in one direction, a carrier movable in a right line on said shaft, and two box supports mounted on the carrier.

18. In a box covering machine, a carrier, two box supports adjustably mounted upon said carrier, and means for locking said supports in their adjusted position.

19. In a box covering machine, a carrier comprising a bar having a grooved way, and box supporting means having a part movable in said way.

20. In a box covering machine, a carrier comprising a bar having a grooved way, box supports each having a part movable in said way, and means for clamping said parts against movement.

21. In a box covering machine, a carrier comprising a bar having an undercut way, two box supports each having a part provided with an enlarged portion movable in said way, and means for clamping said parts against movement in the way.

22. In a box covering machine, a carrier comprising a bar having an undercut groove, a bolt having a head movable in said groove, means for clamping the bolt against movement in the groove, and a box support mounted upon the bolt.

23. In a box covering machine, a carrier comprising a bar having an undercut groove extending longitudinally thereof, a bolt having a head movable in said groove, means for clamping the bolt against movement in the groove, and a box support detachably connected to the bolt.

24. In a box covering machine, a carrier comprising a bar having a T-shaped groove extending longitudinally thereof, a bolt having a head movable in said groove, a nut threaded upon the bolt for clamping the latter against movement and a box support carried by the bolt.

25. In a box covering machine, means for applying glue to a covering strip, a rotary element, a movable element carried by said rotary element and movable relatively thereto in a right line, and a plurality of box supports mounted upon said movable element.

26. In a box covering machine, a reel for the covering strip, a glue applying device, a rotary element, a movable element carried by the rotary element and movable thereon in a right line, and two box forms adjustably mounted upon said movable element.

27. In a box covering machine, an abutment, two box supports for supporting boxes to be covered, and means whereby said supports may be moved bodily to feed the covering strip over the face of the abutment and to bring the boxes thereon alternately into contact with the covering strip.

28. In a box covering machine, a yielding abutment, two box supports for supporting boxes to be covered, and means whereby said supports may be moved bodily to feed the covering strip over the face of the abutment and to bring the boxes thereon alternately into contact with the covering strip.

29. In a box covering machine, an abutment, two box supports for supporting boxes to be covered, means whereby said supports may be moved bodily in a straight line to draw the covering strip over the face of the abutment, and means whereby the boxes may be brought alternately into contact with the covering strip.

30. In a box covering machine, an abutment having a flat face, two box supports, means whereby said supports may be moved bodily in a straight line away from said abutment to draw the covering strip over the face thereof, and means whereby said supports may be moved reversely one at a time to bring the boxes thereon alternately into flat contact with the abutment.

31. In a box covering machine, an abutment, two box supports and means whereby the supports may be moved toward and from and alternately into engagement with said abutment.

32. In a box covering machine, an abutment, a rotary element, and two box supports carried by said element, said abutment being located across the path of rotary movement of said element so as to be engaged alternately by the supports.

33. In a box covering machine, an abutment, two box supports, one located in advance of the other, and means whereby said supports may be moved bodily in a straight line to change the positions thereof relatively to said abutment.

34. In a box covering machine, an abutment, two box supports, one located in advance of the other and means whereby said supports may be given alternate right line and rotary movements to cause them to be brought into engagement alternately with the abutment.

35. In a box covering machine, a yielding abutment, two box supports and a mounting therefor capable of having alternate right line and reversely directed rotary movements whereby the supports may be brought into engagement alternately with said abutment.

36. In a box covering machine, an abutment, a rotary element, a carrier movable in the direction of its length on said rotary element, and two box supports mounted on said carrier, the construction and arrangement of parts being such that said supports may be brought alternately into engagement with the abutment.

37. In a box covering machine, an abutment, a rotary head, a bar movable longitudinally on said head, and two box supports carried by said bar, the construction and arrangement of parts being such that said supports may be brought into engagement with the abutment alternately.

38. In a box covering machine, a glue applying device, for applying glue to a covering strip, a rotary element an abutment located at a point intermediate the said glue applying device and rotary element, a carrier movable in a right line on said rotary element, and two box forms carried by the carrier.

39. In a box covering machine, an abutment, and two box supports, and means whereby said supports may be moved bodily in a straight plane away from said abutment and move alternately into engagement with the same.

40. In a box covering machine, an abutment block, and two box supports for supporting boxes to be covered, and means whereby said supports may be moved bodily in a direction away from the abutment and also moved reversely to be brought into engagement alternately with said abutment.

41. In a machine for applying a covering strip, to the outer side and end walls of boxes, means for applying glue to the covering strip, two box supports mounted on a common support movable in a direction away from said glue applying device and operating to draw the covering strip over the glue applying device, an abutment located in front of the glue applying device, and means whereby the box supports may be brought alternately into engagement with the abutment during the covering operation, whereby said operation may be carried on continuously.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

PHILIP S. SMITH.

Witnesses:

J. GRANVILLE MEYERS, Jr.,

J. STODDARD STOKES.