

No. 740,818.

PATENTED OCT. 6, 1903.

G. P. DAVIS.
WRAPPING MACHINE.
APPLICATION FILED DEC. 29, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

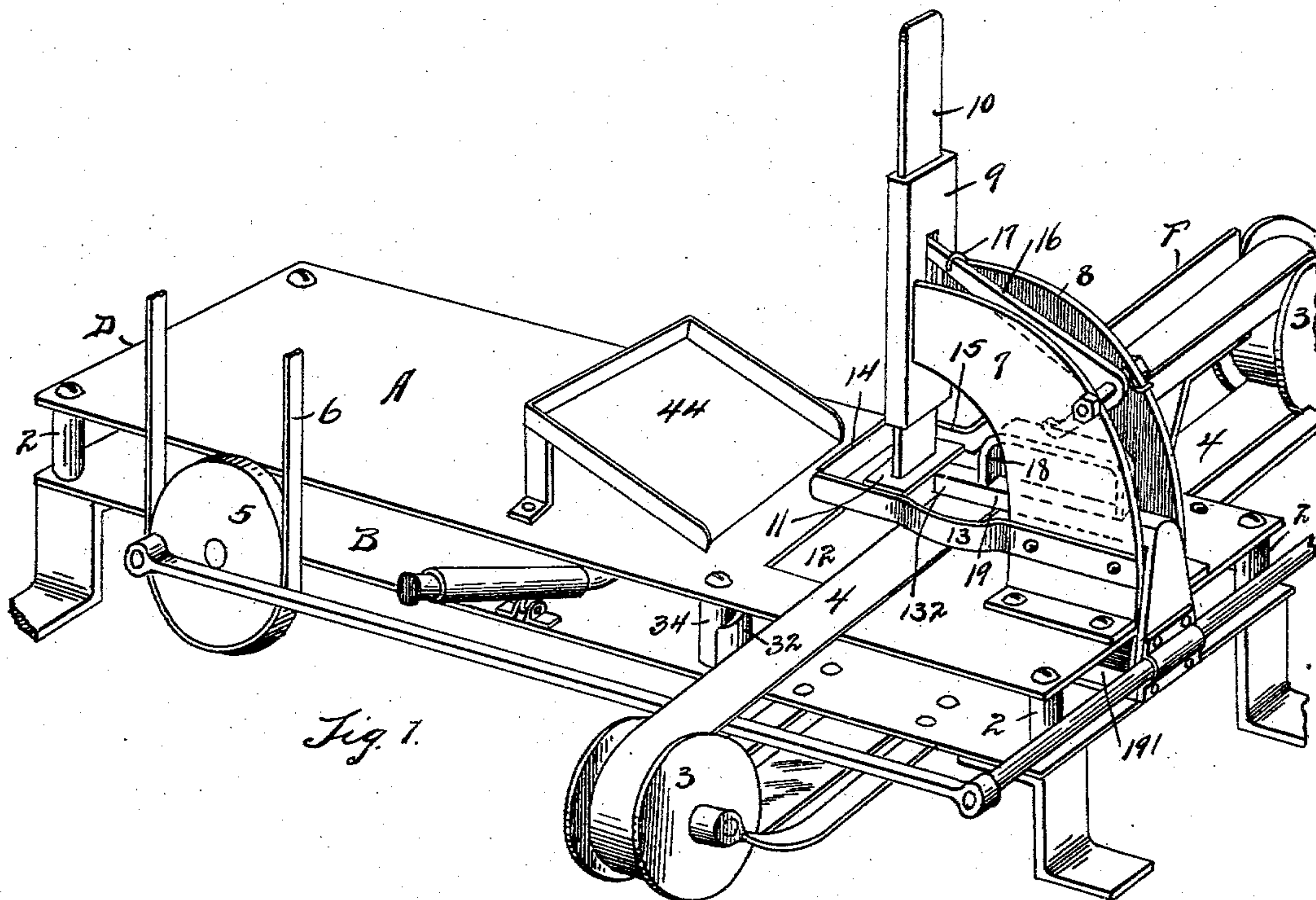


Fig. 1.

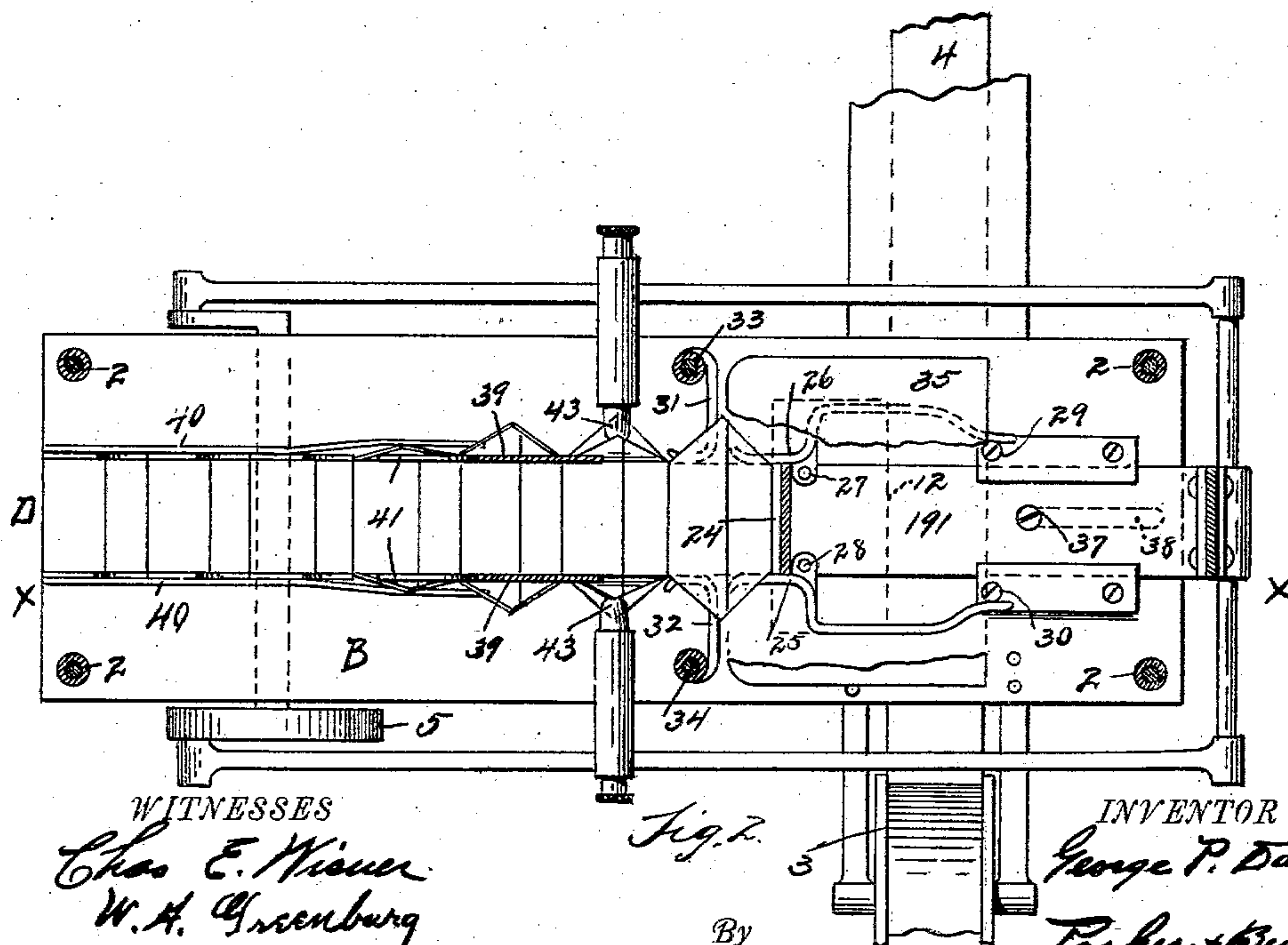


Fig. 2.

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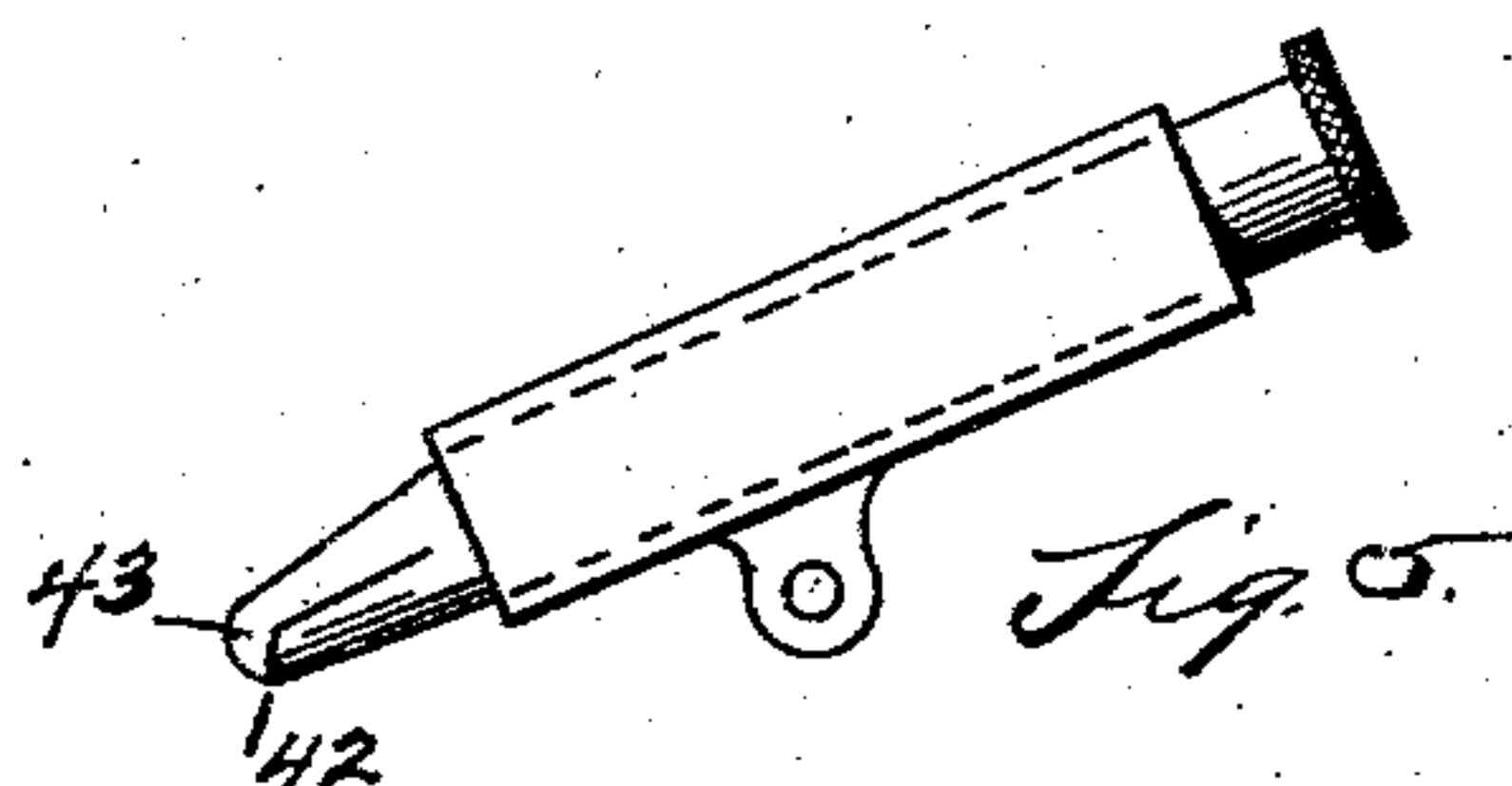
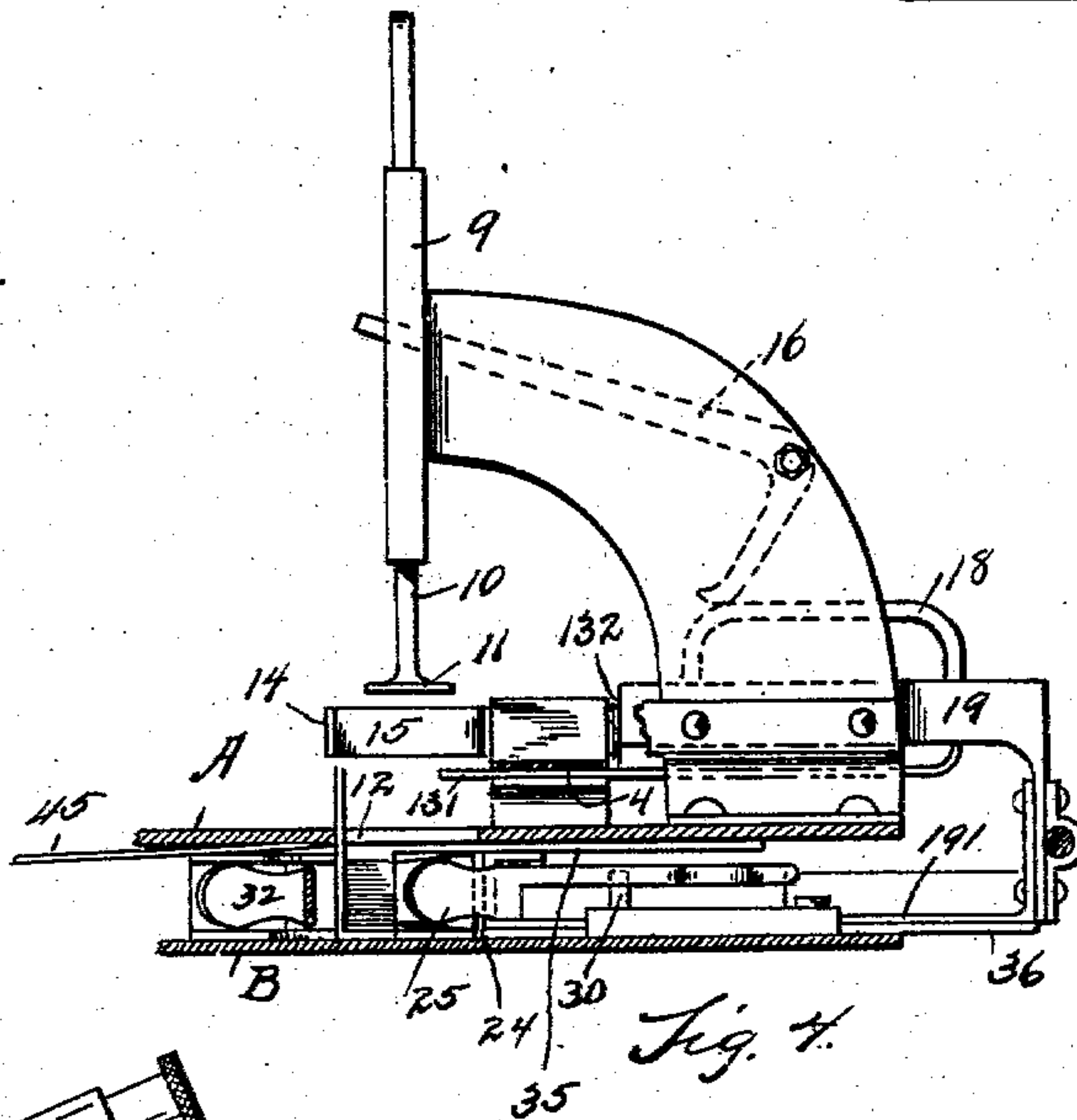
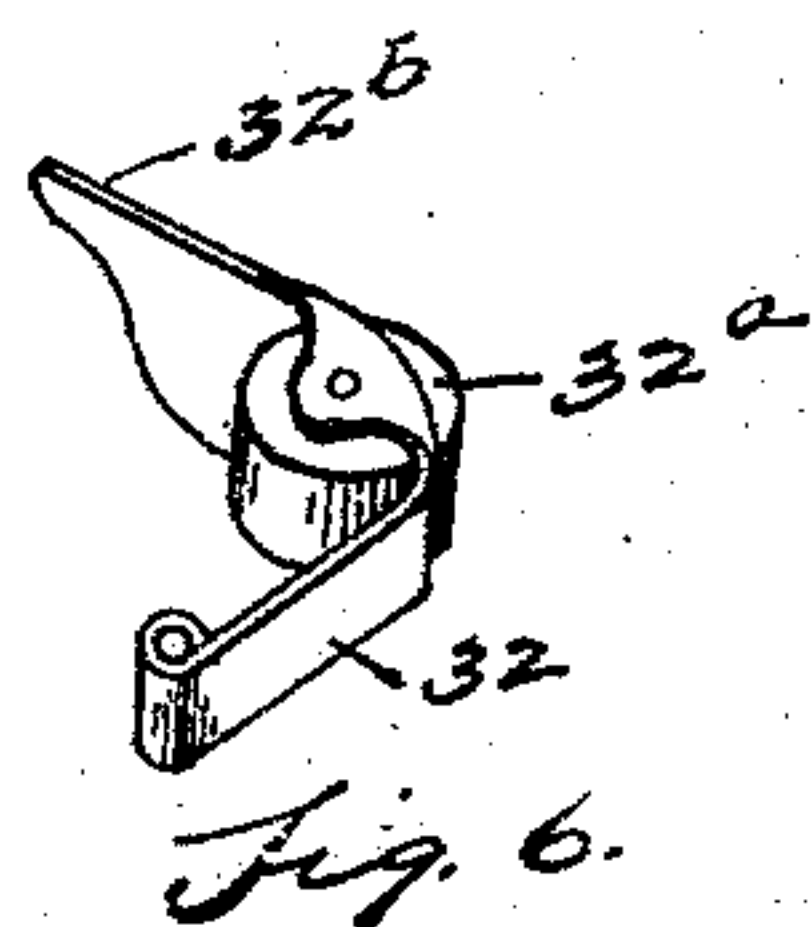
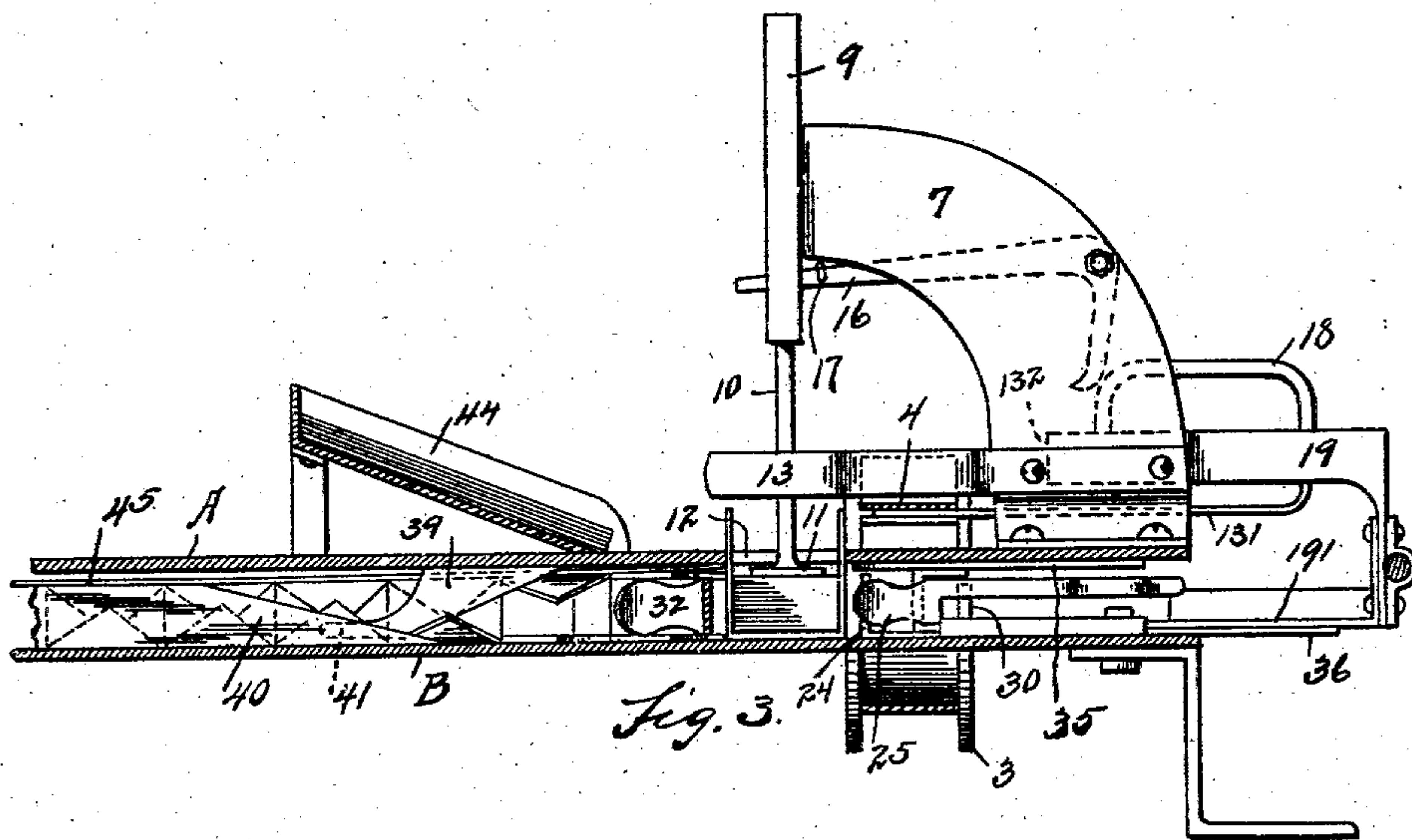
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G. P. DAVIS.
WRAPPING MACHINE.

APPLICATION FILED DEC. 22, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

GEORGE P. DAVIS, OF DETROIT, MICHIGAN.

WRAPPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 740,818, dated October 6, 1903.

Application filed December 29, 1902. Serial No. 136,897. (No model.)

To all whom it may concern:

Be it known that I, GEORGE P. DAVIS, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Wrapping-Machines; and I 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to wrapping-machines, and has for its object an improved machine intended to wrap cakes of material with paper wrappers.

In the drawings, Figure 1 is a perspective view of the machine. Fig. 2 is a plan view of those parts which lie underneath the cap-plate A of Fig. 1. Fig. 3 is a longitudinal section at the line *x x* of Fig. 2. Fig. 4 is a longitudinal section of the right-hand end of the machine with the parts shown in a different position from that which they are shown in Fig. 3. Fig. 5 is a detail elevation of the paster. Fig. 6 is a detail of the folding-finger 32.

The machine consists of a base-plate B on any suitable supports, above which is supported on posts 2 a cap-plate A, with a space between the two plates sufficient to permit the free passage of the cake and its inclosing wrapper.

The base-plate B supports pulley or sheave wheels 3, around which travels an endless feed-belt 4. It also supports a pulley-wheel 5, to which a belt 6 communicates motion from any convenient source of power. Above the cap-plate A and secured thereto are bracket-arms 7 and 8, which support a vertical plunger-guide 9, through which reciprocates the stem 10 of a plunger having a broad flat head 11. The plunger is located above an opening 12 through the cap-plate A. The opening 12 has a length across the cap-plate A and parallel with the course of travel of the belt 4 equal in length or slightly exceeding in length the paper which is to be used for a wrapper, and the opening is equal in width on a line at right angles to the course of the belt 4 to or slightly exceeds the width of the cake to be wrapped. The opening 12 is on

that side of the belt which lies toward the delivery end D of the machine.

At the feed end of the machine and under the belt is a race F, through which the cakes to be wrapped are fed until they are stopped by an arm 13, that reaches across the belt from the bracket 7 and extends beyond the belt over the opening 12 to engage with an arm 14, that forms one side of a box-like structure, into which the cake passes from the belt after it has been brought to a stop by engaging with the arms 13. The cake rests on a reciprocating support 131, which acts as a bottom to the box. The arms 13 and 14 are not joined or secured together, and the arm 13 has a slight ability to yield and is made of resilient material and holds the cake between itself and the side 15 of the receptacle, into which the cake is pushed by the end 132 of a slide 19.

The plunger 10 is actuated by a rock-lever 16, and the rock-lever is actuated by a spring 17 to cause it to travel downward and by a sliding cam 18 to lift it. The sliding cam 18 is connected with the mechanism which pushes the cake forward through the folding appliances and is arranged to allow the spring to act when the push-bar is drawn back.

The pushing apparatus is in two parts—an upper and a lower part—and the upper part has yoked to it a bar, which lies alongside the lower part of the pushing apparatus and is provided with gripping-fingers that reach forward toward the delivery end of the machine beyond the head of the lower part. The upper part consists of the push-bar 19, with the head 132, with the cam 18, and with the sliding box-bottom 131, and yoked to this is a slide 191, which carries the gripping-fingers 25 and 26. Under the slide 191 is a second slide 36, provided with a pin 37, that engages through a long slot 38 in the slide 191.

The lower slide 36 is provided with a head 24, which engages behind the row of cakes, the last one of which has just been dropped or forced down by the plunger 10, and pushes the entire row of cakes toward the delivery end of the machine. Previous to its pushing action, however, the upper part of the pushing device has traveled toward the delivery end of the machine, forcing another cake from the belt 4 into the box under the head 11, push-

ing forward also at the same time the gripping-fingers 25 and 26, which have effected a partial folding of the wrapper and have closed in against the ends of the cake in a way which will be understood more fully from the further explanation.

The two grippers 25 and 26 are pivoted to the push-bar 191 by pivots 27 and 28. These grippers during the back stroke and most of the forward strokes of the push-bar are not in close engagement with the cake or with the wrapper which is around the cake; but during the last part of the stroke toward the delivery end (the forward stroke) the ends of the levers 25 and 26 engage with pins 29 and 30, and the rear ends of the levers are thrown outward, bringing the front ends, which lie at the ends of the cake, forcibly in toward the cake and forcing in a fold of the paper.

Toward the delivery end of the machine and lying closely adjacent to the path of the cake are two spring-fingers 31 and 32, held from posts 33 and 34 and arranged to produce a side fold of the wrapper on that side of the cake which is to the front or delivery end. The push-bar 191 carries a plate 35, which engages over the cake and forces over the paper at the rear of and above the cake and folds down this part of the paper on the top of the cake, and as the cake advances under the cap-plate A that part of the paper which is in front of the cake and extends above it is forced down and overlaps the edge of the paper that was folded down forward from the race. At this part of the folding the cake is in a rectangular tube of paper, with two sides of the tube partially folded in by the fingers 25 and 26.

The base 36 remains stationary for a period after the slide 191 begins its travel in either direction, and on the forward motion the slide 191 is pushed in, carrying the fingers 25 and 26 and carrying the plate 35, both of which perform their work before the lower slide, which carries the head 24, is brought into action to push the package forward. On the return movement the lower slide, with the head 24, remains in engagement with the package until the slide 191 has retreated and the gripping-fingers and plate 35 are no longer in engagement with the package.

The folding of the upper or free edges of the paper over the top of the package is produced in the way described, first, by folding over that side of the paper which is at the rear of the cake by means of the plate 35, next by pushing the cake under the cap-plate A, which folds back the free edge on the forward side of the cake. In folding in the ends of the tube the two sides of the tube which are respectively at the front and the rear are folded in, the one in the rear by the gripping-fingers 25 and 26 and the ones at the front by the spring-fingers 31 and 32, and the partially-completed package is next pushed forward between the appliances which fold up the under flaps and fold down the upper flaps. The upper end flaps are folded down first by guides

39, which hang from the cap-plate A, and the upper end flaps are pressed downward and inward to engage against the end of the cake over the already infolded front and rear side folds. At the next forward step the under flap is treated with an application of paste or cement, is folded upward and inward behind guide 40, which is secured to the plate B, and rises toward the plate A.

A finger 41 projects from the hanging guide 39 forward behind the folder 40 in a position to hold the upper flap firmly against the end of the cake until the lower end flap is nearly ready to engage against it.

Any suitable pasting device may be employed. The one shown in the drawings is a tube of paste (shown in Fig. 5) having a mouth-opening 42, through which paste escapes and which is spread or opened by the upward pressure of the flap which passes under and engages it, lifting the overhanging part 43 and opening the mouth for the escape of the semifluid cement. The appliance is made of some flexible material—as, for example, india-rubber—and closes through the resiliency of the material immediately after the paper passes out of engagement with it.

The paper is fed by hand from a tray 44.

All the parts have an intermittent movement and are properly timed to produce the proper consecutive action of the parts.

Each of the spring-fingers 31 32 may, and preferably should, have bearing-rolls at the angle or turn. Such a form of finger is shown in detail in Fig. 6, in which the finger 32 is provided with a bearing-roll 32^a, that bears against the end of the paper which is folding down on the cake. Beyond the roll and in the line of the paper is a long projection or finger 32^b, which continues to bear against the end of the paper under the down and infolding upper flap until the upper flap is fully folded down.

During the entire forward course of the package it is passing under a resilient or yielding spring 45, which is secured to the top 39 near the edge where the packages enter under the top and bears with slight force on the top of the packages as they progress.

What I claim is—

1. In a wrapping-machine, in combination with a feeder adapted to feed cakes of material into the machine, a pushing-plunger, means connected with the pushing-plunger for folding over the rear edge of the wrapper, arms pivotally connected to the plunger for folding in the first end folds on the rear side of the package, and means for forming the subsequent folds of the package; substantially as described.

2. In a wrapping-machine, in combination with a feeder adapted to feed cakes of material into the machine, a pushing-plunger, means carried by the plunger for folding over the rear edge of the wrapper, arms pivotally connected to the plunger for folding in the end folds on the rear side of the package, re-

5 silient devices arranged to engage and fold in the end folds on the front side of the package and overlapping guides adapted to fold in the end flap of the wrapper, substantially as described.

10 3. In a wrapping-machine, in combination with a feeder adapted to feed cakes of material into the machine, a bed-plate, a cap-plate, a pushing-plunger sliding between the bed and cap plates, means carried by the pushing-plunger for folding over the rear edge of the wrapper, means on the cap-plate for folding over the front edge of the wrapper, fingers pivotally connected to the plunger for folding in the end folds on the rear side of the package, means on the bed-plate arranged to engage and fold in the first end folds on the front side of the package, guides projecting downwardly from the cap-plate and guides projecting upwardly from the bed-plate and overlapping the downwardly-projecting guides, said guides being arranged to fold in the end flaps of the wrapper, substantially as described.

25 4. In a wrapping-machine, in combination with a feeder adapted to feed cakes of material into the machine, means for folding over the rear edge of the wrapper, a pushing-plunger, fingers pivotally connected to the plunger, means whereby when the plunger is advanced the pivoted arms will be caused to bear against the sides of the package and form the end folds on the rear side of the package, and means arranged to form the subsequent folds of the package, substantially as described.

40 5. In a wrapping-machine, in combination with a feeder adapted to feed cakes of material into the machine, means for folding over the rear edge of the wrapper, a pushing-plunger, fingers pivotally connected to the plunger having their rear ends bent inwardly, stops in the path of the bent portions of the fingers, said stops being arranged on the forward movement of the plunger to cause the forward ends of the arms to bear against the sides of the package to form the first end folds on the rear side of the package, and means arranged to form the subsequent folds of the package, substantially as described.

50 6. In a wrapping-machine, devices for folding the wrapper about the article embracing a pusher-plunger carrying a folding edge, side-folding fingers pivoted to said plunger and arranged to fold in the end folds on the rear side of the package, a stationary plate under which the article and its wrap-

per are pushed, stationary folders between which the article and its wrapper are pushed to fold in the end folds on the front side of the package, and overlapping guides between which the article and its wrapper are pushed to fold in the end flaps, substantially as described.

65 7. In a wrapping-machine, devices for folding the wrapper about the article embracing a pushing-plunger carrying a folding edge, folding-fingers pivotally secured to said plunger arranged to fold in the end folds on the rear side of the package, a stationary plate under which the article and its wrapper are pushed, stationary folders provided with friction-rollers between which the article and its wrapper are pushed to fold in the end folds on the front side of the package and stationary guides between which the article and its wrapper are pushed to fold in the end flaps of the wrapper, substantially as described.

80 8. In a wrapping-machine, in combination with a feeder adapted to feed cakes of material into the machine, a plunger provided with a folding edge, folding-fingers pivoted to said plunger, a pusher-head having a slotted connection with said plunger, and means for forming the subsequent folds of the package, substantially as described.

90 9. In a wrapping-machine, in combination with a feeder adapted to feed cakes of material into the machine, a pushing-plunger, means connected with the pushing-plunger for folding over the rear edge of the wrapper, arms movably connected to the plunger for folding in the first end folds on the rear side of the package, and means for forming the subsequent folds of the package; substantially as described.

100 10. In a wrapping-machine, the combination with a feeder adapted to feed cakes of material into the machine, means for folding over the rear edge of the wrapper, a pushing-plunger, fingers movably connected to the plunger, means whereby when the plunger is advanced the movable arms will be caused to bear against the edges of the package and form the end folds on the rear side of the package, and means arranged to form the subsequent folds of the package; substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

GEORGE P. DAVIS.

Witnesses:

CHARLES F. BURTON,
NETTIE V. BELLES.