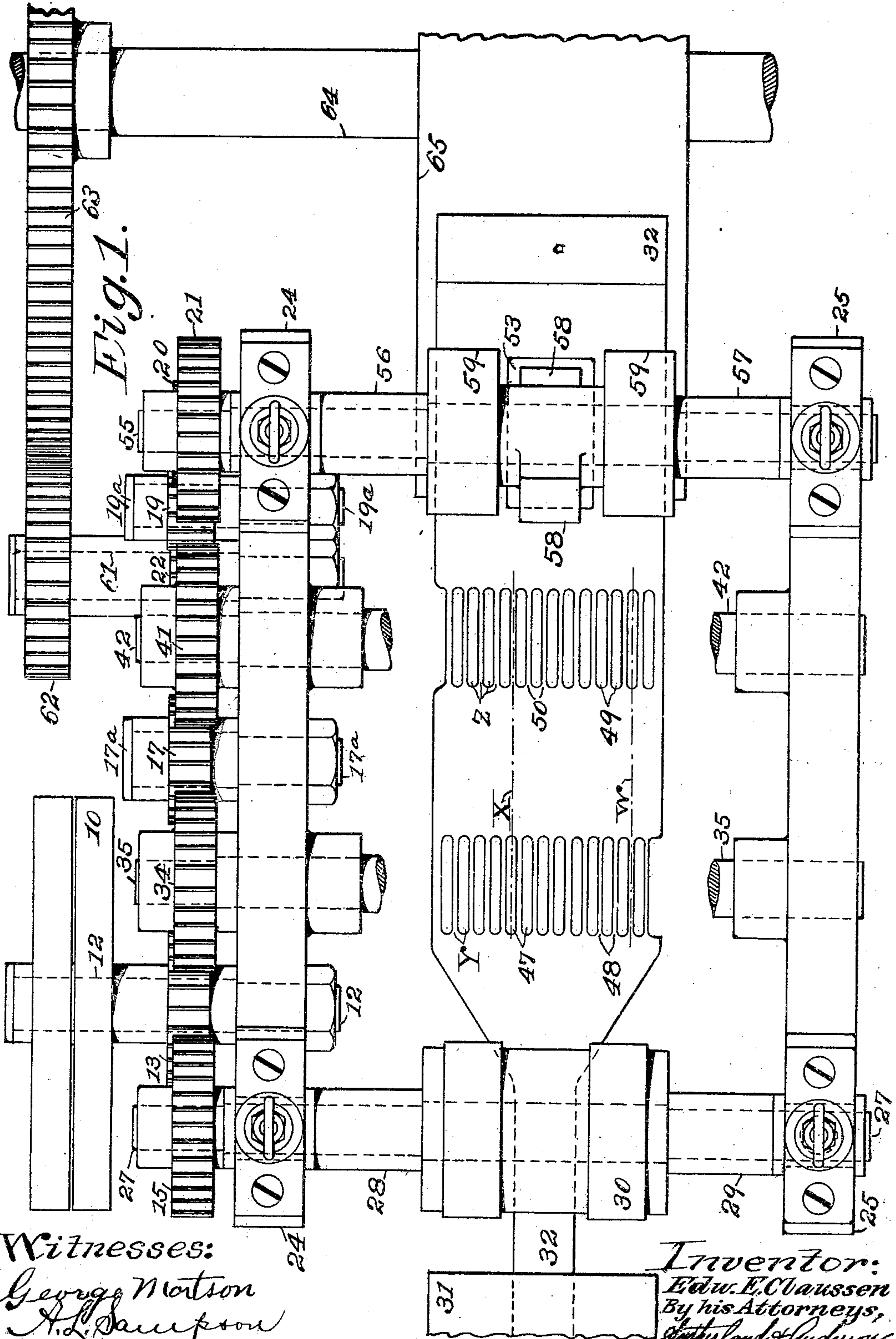


E. E. CLAUSSEN.
PAPER BAG MACHINE.
APPLICATION FILED SEPT. 28, 1908.

940,515.

Patented Nov. 16, 1909.

3 SHEETS—SHEET 1.



Witnesses:
George Norton
A. L. Sampson

Inventor:
E. E. Claussen
By his Attorneys,
Cuthland & Hudson.

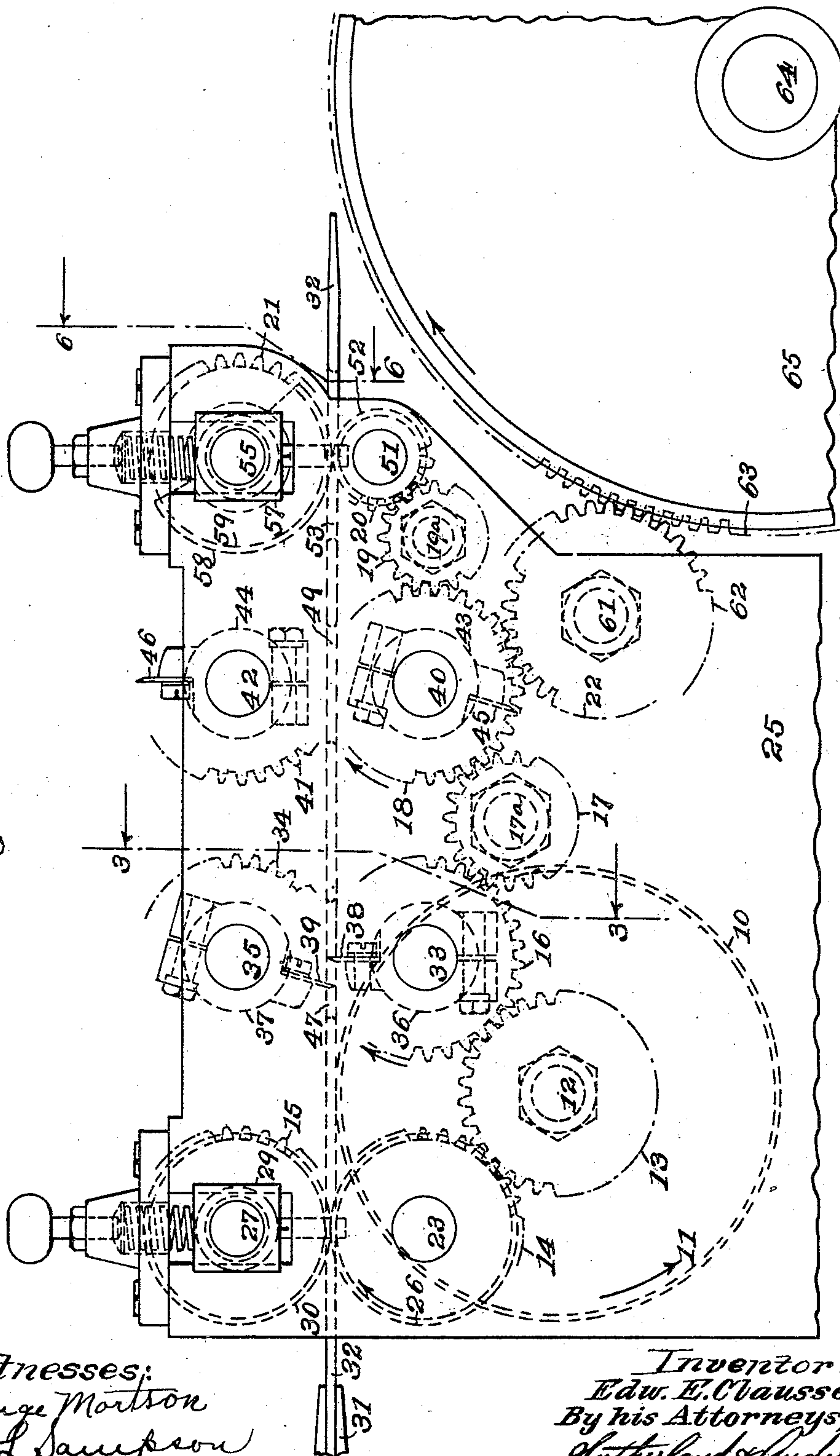
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

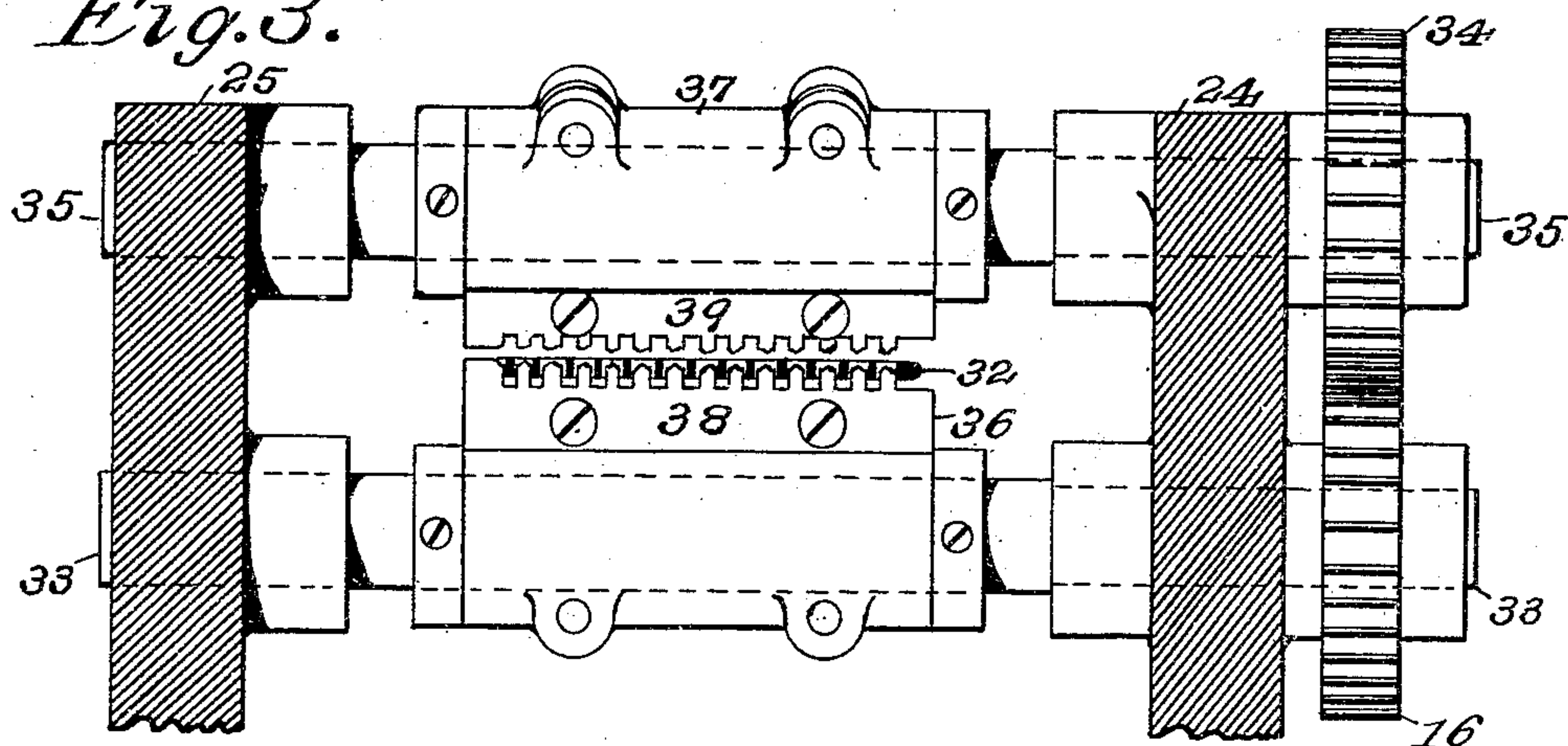


Fig. 4.

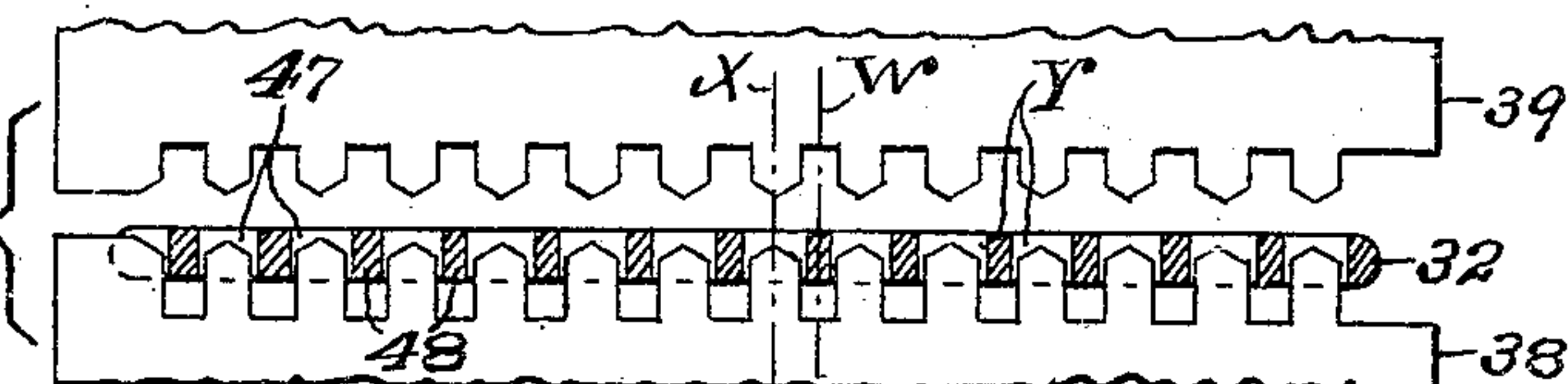


Fig. 5.

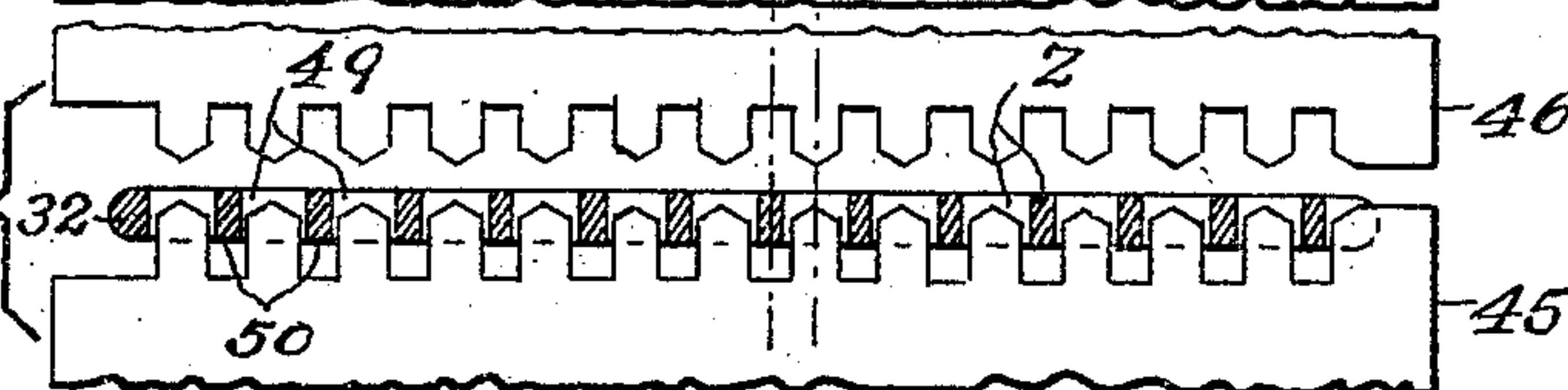
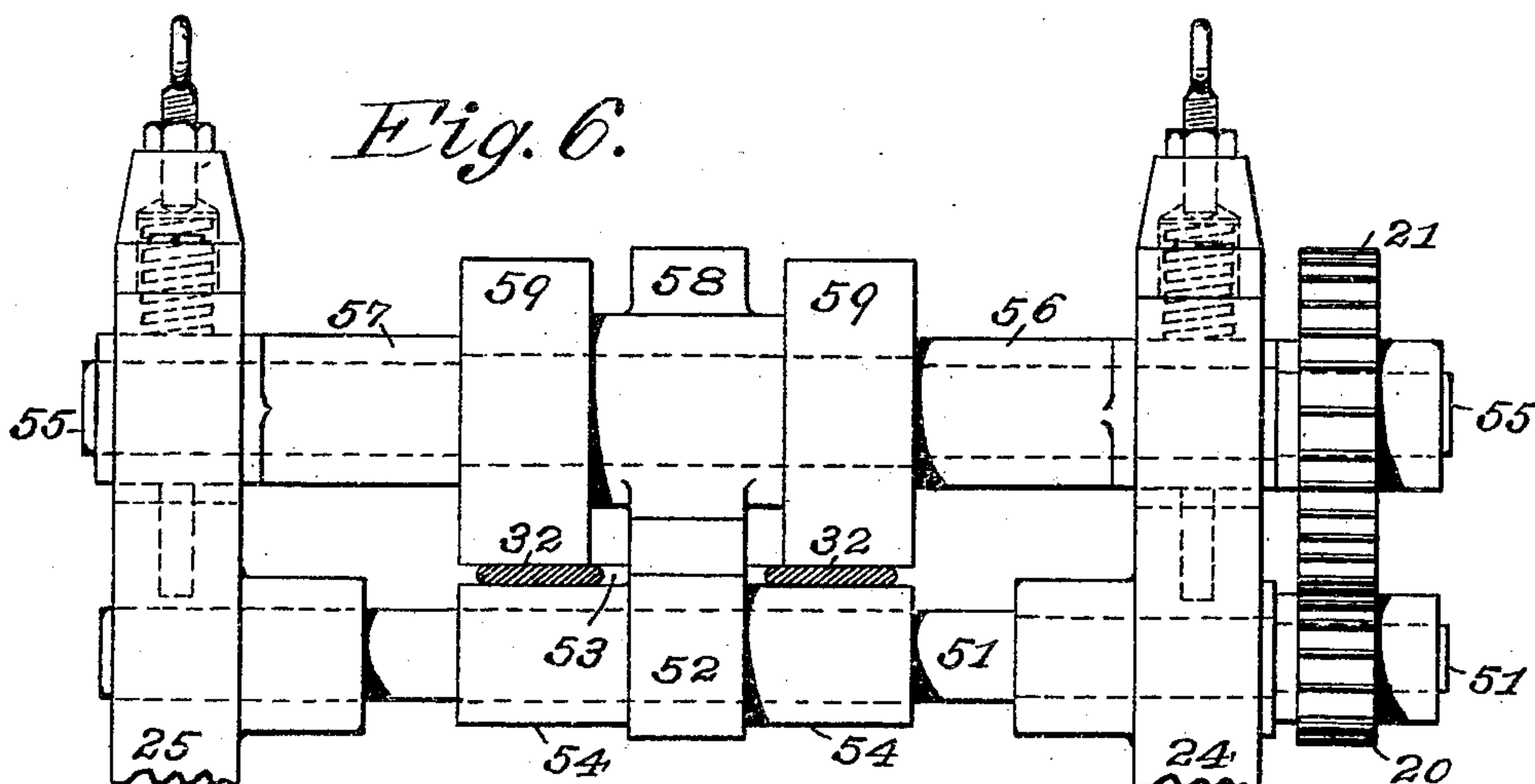


Fig. 6.



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UNITED STATES PATENT OFFICE.

EDWARD E. CLAUSSEN, OF HARTFORD, CONNECTICUT.

PAPER-BAG MACHINE.

940,515.

Specification of Letters Patent.

Patented Nov. 16, 1909.

Application filed September 28, 1908. Serial No. 455,126.

To all whom it may concern:

Be it known that I, EDWARD E. CLAUSSEN, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Paper-Bag Machines, of which the following is a specification.

This invention relates to paper bag machines, the object of the invention being to provide mechanism of this character which is reliable, rapid and noiseless in action.

In the drawings accompanying and forming part of this specification I have illustrated in detail one effective form of embodiment of the invention which to enable those skilled in the art to practice said invention will be set forth in detail in the following description while the novelty of the invention will be included in the claims succeeding said description.

Referring to said drawings, Figure 1 is a plan view of a paper bag machine involving my invention, with certain portions removed. Fig. 2 is a side elevation of the same. Fig. 3 is a cross sectional front elevation, the section being on the line 3—3, Fig. 2, looking in the direction of the arrows. Figs. 4 and 5 are enlarged views of cutting knives and a coöperating device shown in the preceding figures, and Fig. 6 is a sectional front elevation of the machine, the section being on the line 6—6 Fig. 2 and in the direction of the arrows.

Like characters refer to like parts throughout the several figures.

My invention can be embodied in paper bag machines of various types. A machine of this character generally involves what is known as a "float" which constitutes a convenient support and guide for the paper tubing from which the bag is to be formed and I provide novel cutting mechanism which preferably acts in conjunction with such a float. The cutting mechanism is adapted for severing flat, continuous, single, double or multiple ply webs and all the plies may pass above the float or a part above and a part below. In a paper bag machine it is particularly desirable in severing the tucked paper tubing into sections of bag blanks that there be a difference between the upper and lower plies of such a blank. Generally the upper ply at the leading end of the blank is cut back or foreshortened by virtue of which the forward projecting end of the

lower ply can alone be gripped by mechanism well known in the art of bag making; this relation which I can accomplish also provides a lip at the forward end or top of the bag by which the opening of the bag is readily facilitated. In paper bag machines it is a desideratum that the tucked paper tubes or blanks be presented squarely to the traveling folding bed which is ordinarily a cylinder. By reason of my construction I am enabled to bring the discharge end of the float within a short distance of or nearly to said bed the consequence being that the function to which I have just alluded is insured.

In machines which use the now prevalent form of striker arm, there is a terrific noise each time the tube is struck by said striker arm; in a machine embracing my invention this noise is wholly eliminated. I have indicated in a general way some of the advantages accompanying said machine. I will point out at length hereinafter other advantageous points and would state that I do not limit myself to the disclosure made by the present drawings and description as these are simply an exposition of one form of embodiment of the invention. I may make radical changes within the scope of my invention as expressed in the claims thereto.

The different operative parts of the machine may be supported in any desirable manner and framework for this purpose will be hereinafter briefly described. So also any desirable means may be utilized for actuating the different moving devices of said machine, the prime driver being shown as a pulley 10 adapted to be driven by a belt (not shown) in the direction of the arrow in Fig. 2. The pulley 10 is illustrated as rotatively supported by a stud as 12 and fastened thereto is a gear as 13 which meshes with a gear as 14 which in turn meshes with a gear as 15. The gear 13 in the present instance serves as a convenient means for operating a train of gears represented as consisting of seven gears as 16, 17, 18, 19, 20, 21 and 22. The gear 14 is shown as mounted on the shaft 23 rotatively supported by the uprights 24 and 25 and carries the lower drawing roll 26, said uprights constituting suitable framing for sustaining the several parts of the machine. The gears 17 and 19 are rotatively supported by studs as 17^a and 19^a respectively securely held in the upright 24. The gear 15 is mounted on the

shaft 27 rotatively supported by the boxes 28 and 29, and carries the upper drawing roll 30 which coacts with the lower drawing roll 26, said two rolls receiving between them the paper tubing and as they rotate advancing said tubing toward the cutting mechanism which is preferably though not necessarily duplicated.

The former 31 is of any design common in bag machines for forming paper into a tube and it is represented as supporting one end of a float as 32 suitable means being provided to prevent said float from vibrating; I will hereinafter describe one for this purpose. It might be stated that this float extends preferably substantially uninterruptedly from a former, such as that described to a suitable folding device as will hereinafter appear. The gear 16 is fastened to the shaft 33 and meshes with a gear as 34 mounted on and fastened to a shaft as 35 and to said shafts 33 and 35 respectively, are fastened cutter heads as 36 and 37 to which are circumferentially connected cutting blades as 38 and 39. The cutter heads with their blades constitute primary cutters while I provide as will hereinafter appear secondary cutters. I use the terms "primary" and "secondary" only for convenience and not to indicate that one pair is of greater importance than the other. It is conceivable that one pair of such cutters might be omitted, the invention not residing so much in their number as in their construction and relation and the way in which they cooperate with the blank support which in a bag machine would be a float such as that to which brief reference has been made. The blades 38 and 39 are of novel construction, each having indentures or notches which produce cutting teeth or perforating members. The gear 18 is mounted on the shaft 40 and engages the gear 41 fastened to the shaft 42 and said shafts 40 and 42 have fastened thereto the secondary lower and upper cutter heads 43 and 44 upon which are mounted the secondary cutting blades 45 and 46, the cutting edges of which are also indentured or notched to form cutting teeth precisely like those in the primary cutting blades 38 and 39.

With respect to the length of the float 42 or the line of travel of the blank, the teeth of the two series of cutters are staggered or out of line with relation to each other and the purpose of this will be hereinafter made apparent. The float 32 is inclosed by or is surrounded by the paper tube which is to be cut by the said cutters and said tube is preferably of tuck paper fed onto the float in such a way that the upper ply travels along the upper surface of said float while the tucks and the lower ply thereof pass along the lower surface of said float. The float 32 adjacent the former 31 is nar-

row and forward of this narrow part it flares out to the full width of the paper tube, the sides thereof diverging forwardly just beyond the bite of the rolls 26 and 30. Said float in advance of said drawing rolls is shown as having a series of traverse openings as 47. While said openings may be of any desirable character I prefer that they be in the form of parallel slots which are somewhat elongated longitudinally of the former. I prefer said openings made in the form of slots in that they can be made more cheaply, for instance by milling, than if they extend into the float but partially either from the upper or lower surface thereof but as is obvious these openings need not extend entirely through the float. This also provides a means for practically simultaneously cutting both plies of the tube surrounding the former. The parallel rectangular bars between the openings, holes or slots 47 are designated by 48 and such structure forms a grate as Y. A short distance forward of said holes, openings or slots 47 is a similar set of holes as 49, the bars between which are denoted by 50 and which together produce a grate as Z. It will be perceived that the holes 47 are opposite the bars 50 as indicated by the broken line X and that the longitudinal center lines of the holes 49 coincide with the similar lines of the bars 48 as indicated by the broken line W. It will be therefore evident that the two series of holes, openings or slots are staggered or out of line with each other longitudinally of the float 31 or in the direction of movement of the blanks, the amount of stagger of said series corresponding approximately with that of the teeth of the series of cutters. As a tube is fed along the float 31 and as the cutter heads 36 and 37 rotate the teeth of the primary blades 38 and 39 will ride into and then out of the holes 47 and thereby form crosswise of the paper tube a series of perforations. The leading portion of the tube therefore in the present case is not wholly severed by the primary cutters. When however the perforated portion of the tube comes opposite the second series of holes or openings 49 the teeth of the cutting blades 45 and 46 as they enter said second series of holes will cut through the uncut portion of the stock or paper tube and thereby completely sever the leading portion thereof from the remainder to make a perfect blank. The pressure of the paper against the float is very small while the teeth of the several cutters are acting owing to the fact that at no time during the cutting operations do said teeth come in contact with said float as will be clear upon an inspection of Figs. 4 and 5. There is clearance all around the said teeth while they are entering, while they are in and while they are leaving the cooperating openings or slots in

said float. Not only is there clearance between the said teeth and the ends and sides of the slots or openings but there is also clearance and preferably more so between the float and the bottoms of the notches in the cutting blades.

The gear 20 is mounted on the shaft 51 extending transversely of the uprights 24 and 25 and rotatively supported by suitable bearings thereon and to which is fixed the lower delivery roll 52 projecting through a hole 53 in the float 32. Adjacent to and at each side of the delivery roll 52 are the holding rolls which serve as a convenient means for supporting the free end of the float (see Figs. 2 and 6) said rolls 54 being also fastened to said shaft 51, and said free end being in proximity to a forming device as will hereinafter appear.

Above the lower delivery mechanism just described I have shown a shaft as 55 to which is fastened the gear 21 which meshes with the gear 20 said shaft 55 being rotatively supported by boxes as 56 and 57 supported on the framework. To said shaft 55 is shown as fastened a delivery sector as 58 which also projects through said hole 53. At each side of the sector 58 are the upper holding rolls 59 which are shown as being smaller in diameter than said sector and which are fastened to the sector-carrying shaft 55. It will be noticed that the free end of the float is supported by and between the pairs of rolls 54 and 59 which serve as a convenient means for preventing up and down vibration of the float during the action of the cutting mechanism although as will be apparent there is not much tendency to vibrate said float, in view of the fact that the cutting mechanisms do not press against the same at any time. The gear 22 is rotative upon a stud as 61 and to the same is fixed a gear as 62 meshing with a gear as 63 fastened to a shaft as 64 to which is united a cylinder as 65 which represents conventionally or diagrammatically the folding bed of a bag machine and which converts the cut tubular blank into a square bottomed paper bag.

The operation of the machine is as follows: Power having been applied to the pulley 10 to move it in the direction of the arrow thereon in Fig. 2 the other parts which derive their motion from said pulley will be turned as also indicated by arrows in said figure. The paper tube passes from the former 31 after being formed thereon onto the float 32 and is advanced along the latter by the drawing rolls 26 and 30. As the leading portion of the onwardly moving tube comes over the openings, holes or slots 47 the teeth of the blades 38 and 39 perforate the tubing a distance back of the extreme forward end of the same equal substantially to that of the bag blank. As the

tube is advanced farther, its movement being as will be obvious continuous, the perforated portion of the tube will register with the second series of openings or slots 49 and the two second series of teeth will then cut through the uncut portions of the leading portion of the tube; that is to say the second series of teeth cut through the webs or stock between the previously formed perforations and therefore make a blank or definite length of tubing which is severed from the remainder of the tube and from which is to be subsequently made the finished or completed bag. The cutter heads 36 and 37 and 43 and 44 are so timed as to their operations as to cause the toothed blades carried thereby to act upon the stock or tubing at the precise times. After the length of paper which is to form the blank is cut it is fed forward by the sector 58 and the lower delivery roll 52 onto the rotating folding bed or cylinder 65 to be shaped up into a bag.

By the mechanism set forth I am enabled to carry the float practically to the folding device or cylinder and as said float in the present case leads directly from the former there is practically a continuous support for the bag, tubing or blank from the time the same leaves the former until it is received by the folding device and owing to the fact that the tubing and the blank from which the same is cut surrounds the float I insure an absolutely square presentation of the blank when cut to the forming device and naturally secure the best possible results thereby during the folding operation. I have referred hereinbefore to the lack of vibration of the float and also to the fact that there is no pressure of the cutting mechanism against said float so that there is practically no tendency to shift the blank while on the float or to distort the tubing prior to the time the blank is cut therefrom.

The two series of openings or slots in the float are represented as being straight and as parallel with each other but this is not essential this showing having been adopted merely for convenience. Their relative disposition or individual positions will depend upon the form of the bag at the mouth thereof.

In practice the teeth of the lower cutters or knives will be arranged upon an arc or otherwise disposed as well known in this art by reason of which the leading portion of the tube will be wholly severed from the remainder thereof to produce a bag blank.

What I claim is:

1. The combination of a float to receive around it a tube of paper, means for cutting through the paper of the tube between the sides thereof at one place in the length of said float to form a series of transversely-disposed perforations in said tube, and

means for subsequently cutting the stock between the perforations at an advanced place in the length of said float.

2. The combination of a float to receive
5 around it a tube of paper, means for cutting through both plies of the tube between the sides thereof at one stage in the movement of the tube along the float to form a series of transversely-disposed perforations in each
10 of said plies, and means for cutting the stock of said tube at an advanced stage in the movement of the tube and between said perforations in both plies.

3. The combination of a float to receive
15 around it a paper tube, a pair of cutting blades disposed at opposite sides of said float, having teeth said blades being movably mounted and related to cause one series of teeth to cut through one ply of the tube
20 in advance of the other, said two series of teeth perforating the plies of the tube between the side edges thereof, a secondary pair of cutting blades also disposed at opposite sides of the float, having teeth said secondary blades being movably mounted and
25 related to cause one series of teeth to cut through one ply in advance of the other, said two secondary series of teeth being located to cut through the stock between the perforations made by the primary two series of teeth, and the float having openings
30 entirely therethrough to receive the four series of teeth.

4. The combination of a float to receive
35 around it a paper tube and independent cutting mechanisms to act on the tube at different places in the length of said float each cutting mechanism involving a series of teeth extending transversely of the float the
40 teeth of one cutting mechanism being out of line longitudinally of the float with the teeth of the other cutting mechanism.

5. The combination of a float to receive
45 around it a paper tube and primary and secondary cutting mechanisms to act on the tube

at different points in the length of the float and said mechanisms involving blades disposed above and below the float, provided with teeth disposed in series extending transversely of said float the teeth of the
50 blades of the primary cutting mechanism being out of line longitudinally of the float with the teeth of the blades of the secondary cutting mechanism and the float having openings entirely therethrough to receive all
55 four series of teeth.

6. A float for paper bag machines having longitudinally separated series of openings therein the central median lines respectively of the bars between one series of openings
60 coinciding approximately with the central median lines of the other series of openings.

7. The combination of a float having longitudinally separated series of openings therein the central median lines of one series
65 of openings coinciding with the central median lines respectively of the bars between the other series of openings, and correspondingly-disposed cutting teeth to enter the respective openings.
70

8. The combination of a float to receive around it a paper tube and two series of teeth to cut through the tube at places separated longitudinally of said float the teeth of one series being out of line longitudinally
75 of the float with the other series.

9. The combination of a float having longitudinally separated series of openings therein the central median lines of one series of openings coinciding with the central
80 median lines respectively of the bars between the other series of openings, and cutting teeth projectable into the respective openings.

In testimony whereof I affix my signature
85 in presence of two witnesses.

EDWARD E. CLAUSSEN.

Witnesses:

HEATH SUTHERLAND,
J. W. LEVY.