

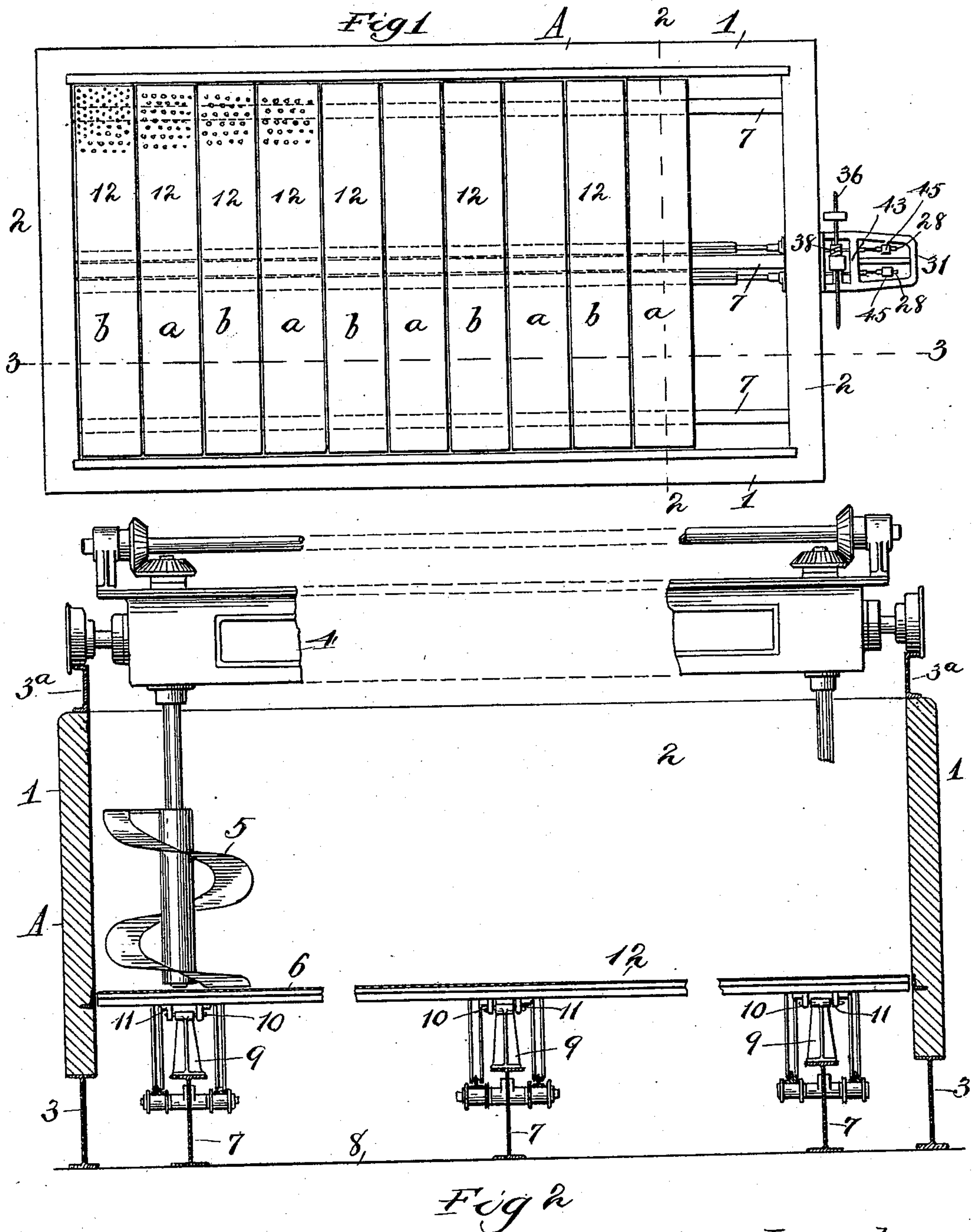
(No Model.)

4 Sheets—Sheet 1.

W. H. PRINZ.
DUMPING KILN FLOOR.

No. 581,137.

Patented Apr. 20, 1897.



Witnesses,
E. J. Boileau
Wm B. Snowhook

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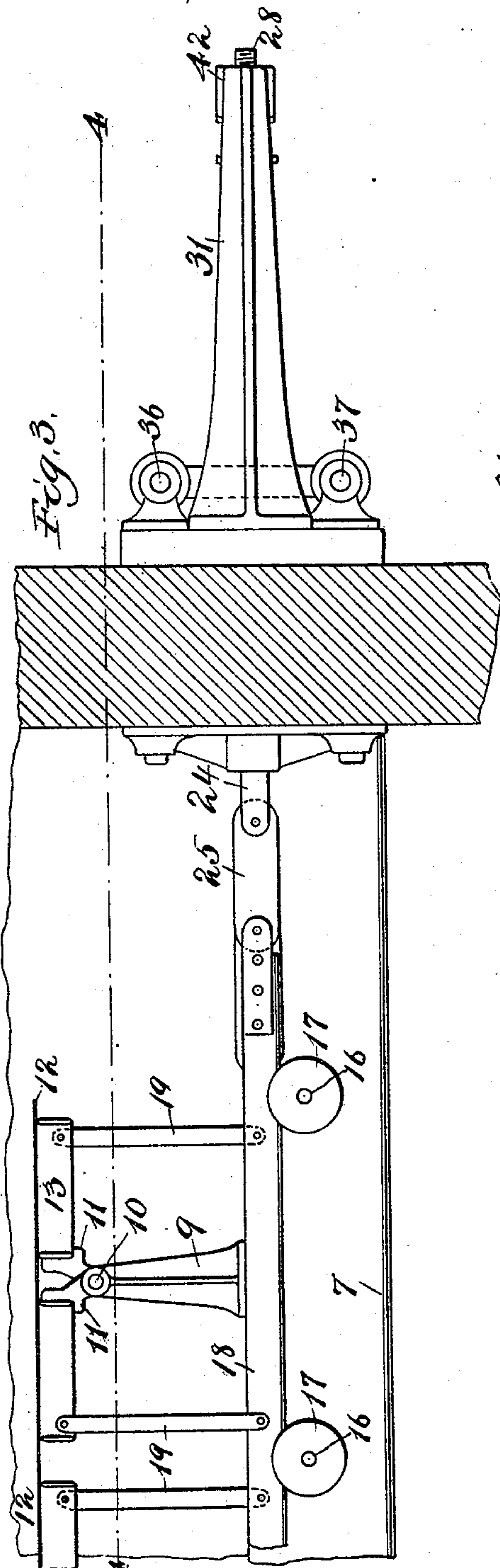
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W. H. PRINZ.
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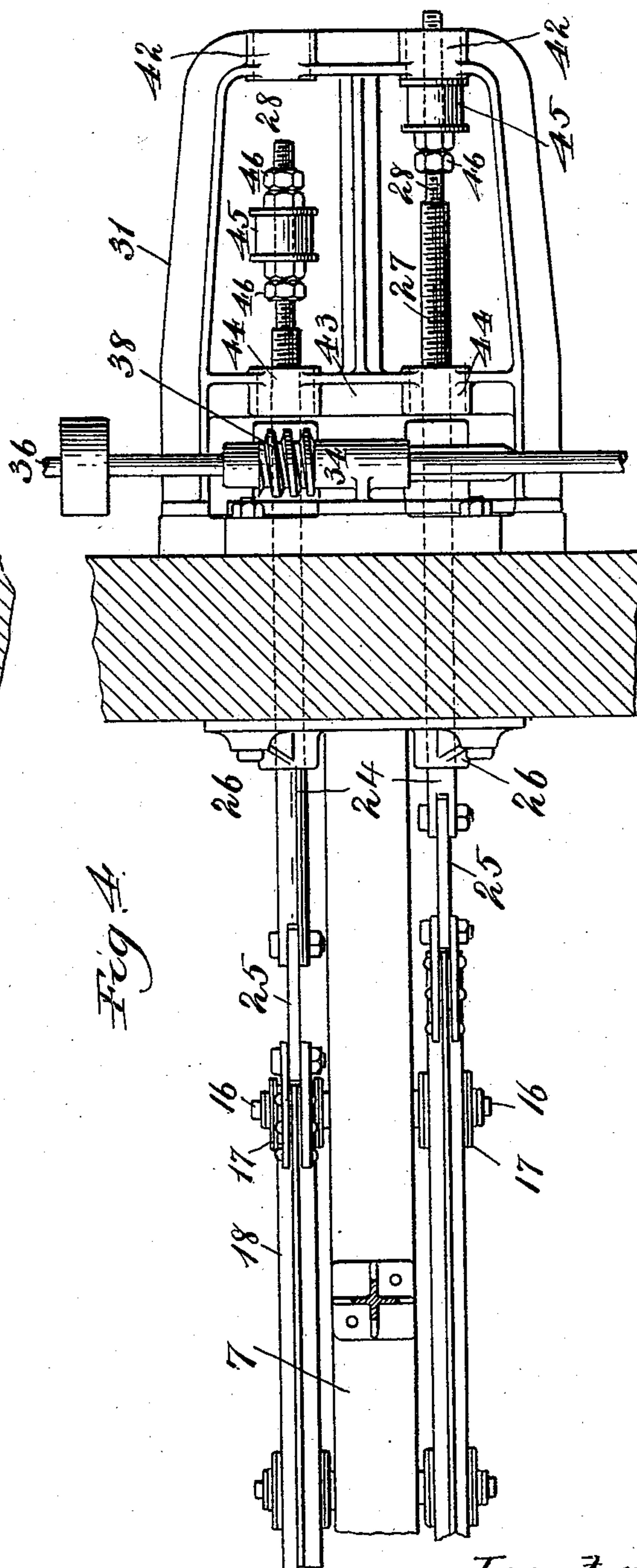


Fig. 4.

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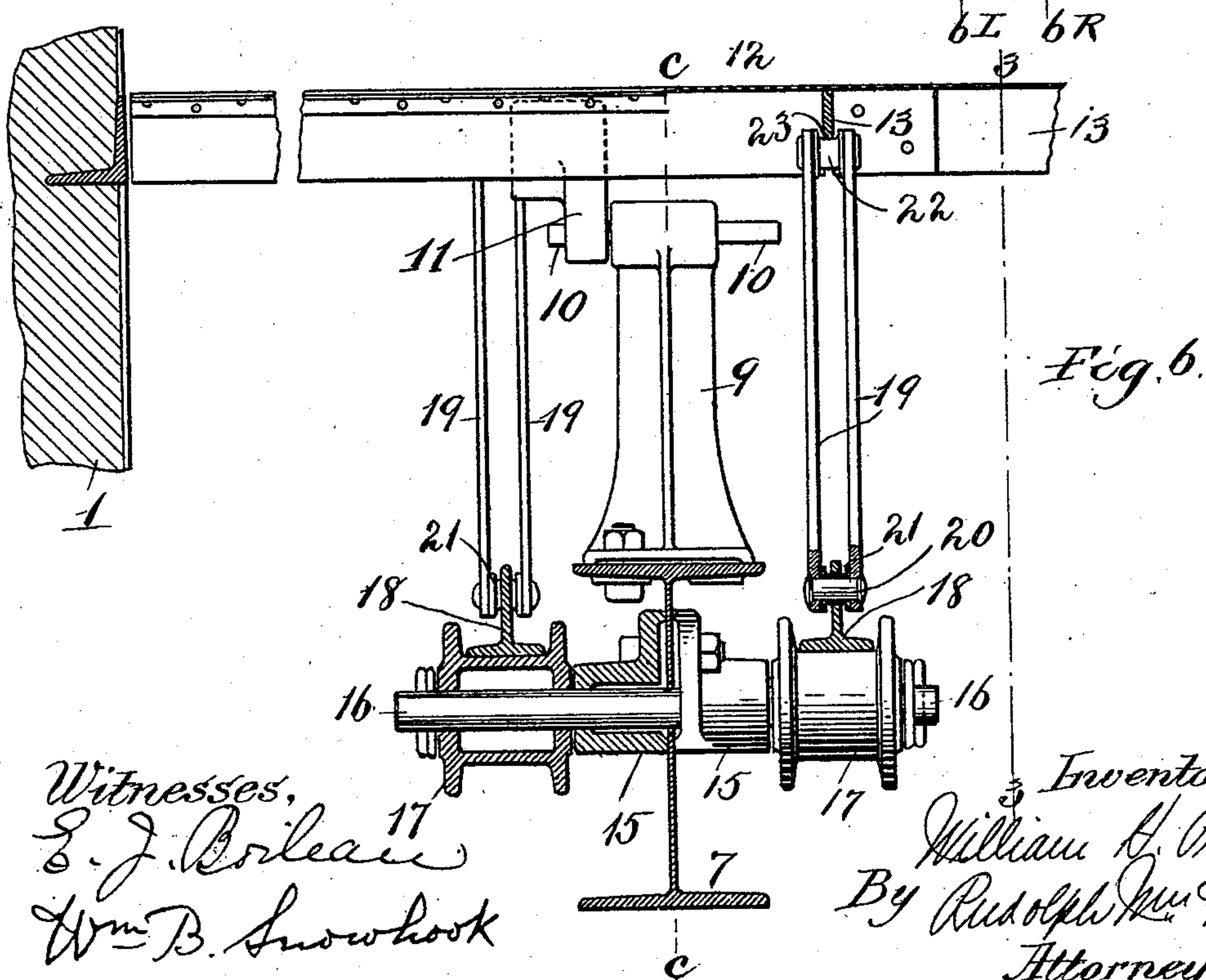
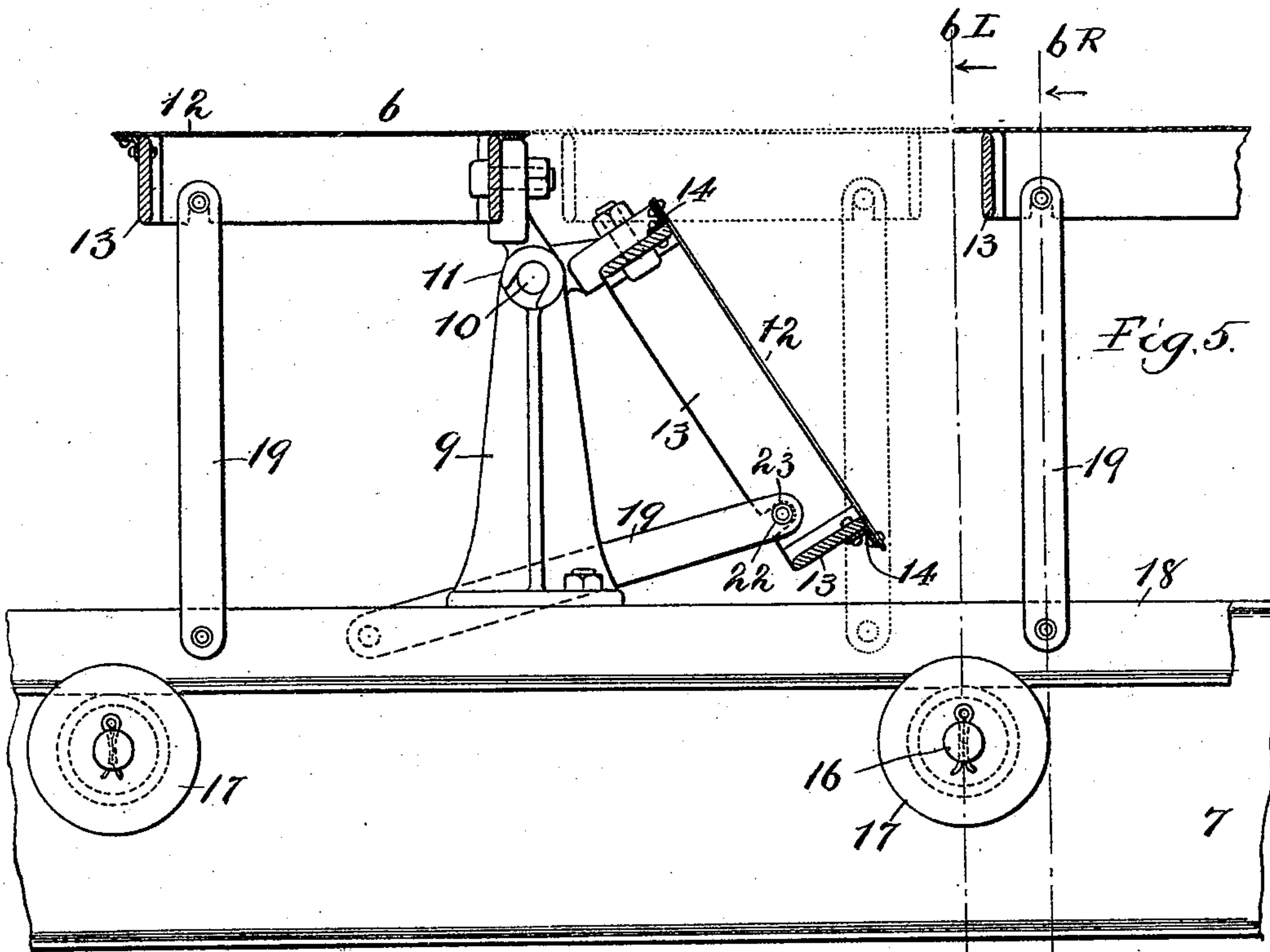
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(No Model.)

4 Sheets—Sheet 4.

W. H. PRINZ.
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Fig. 7.

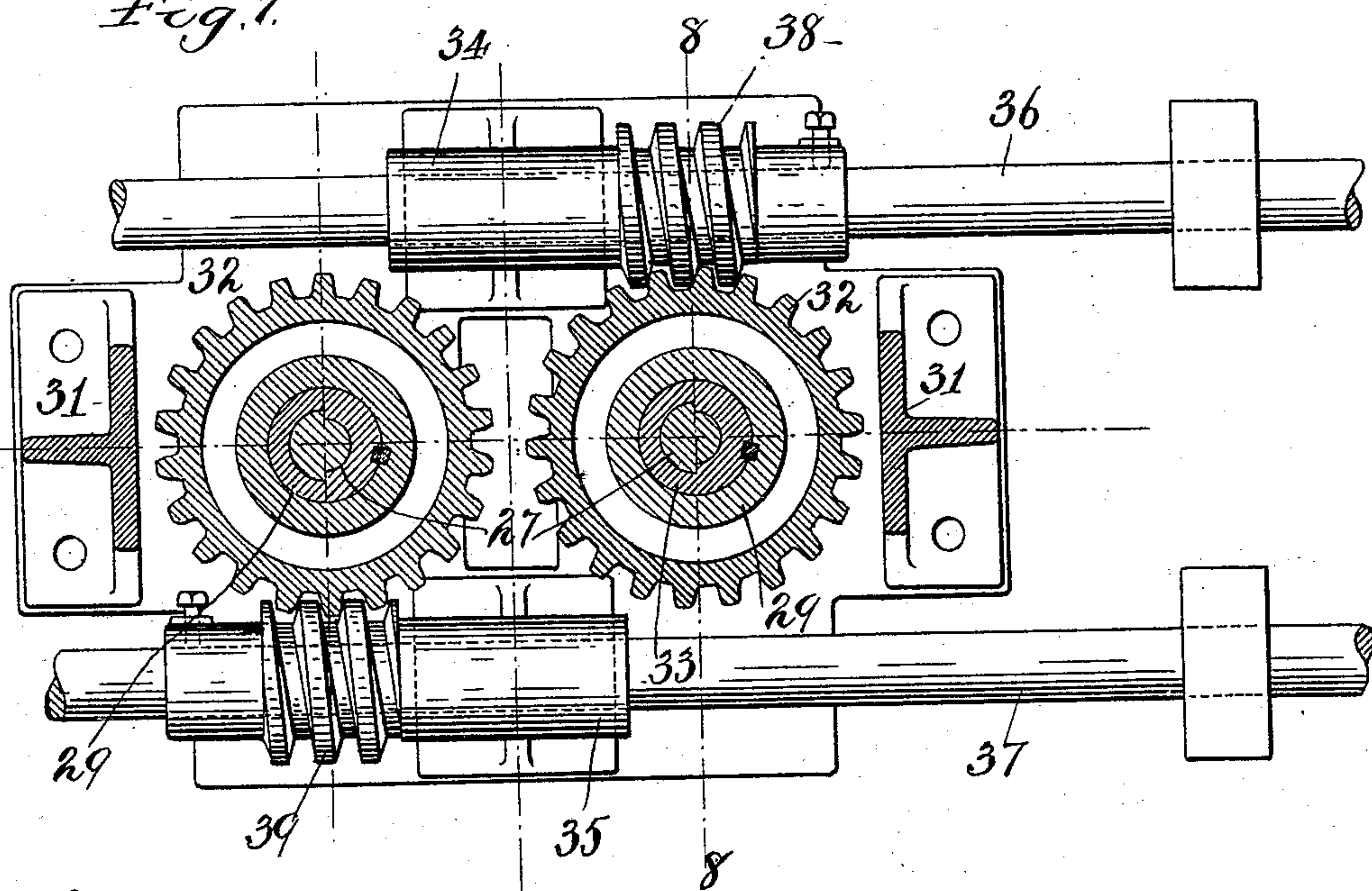


Fig 8

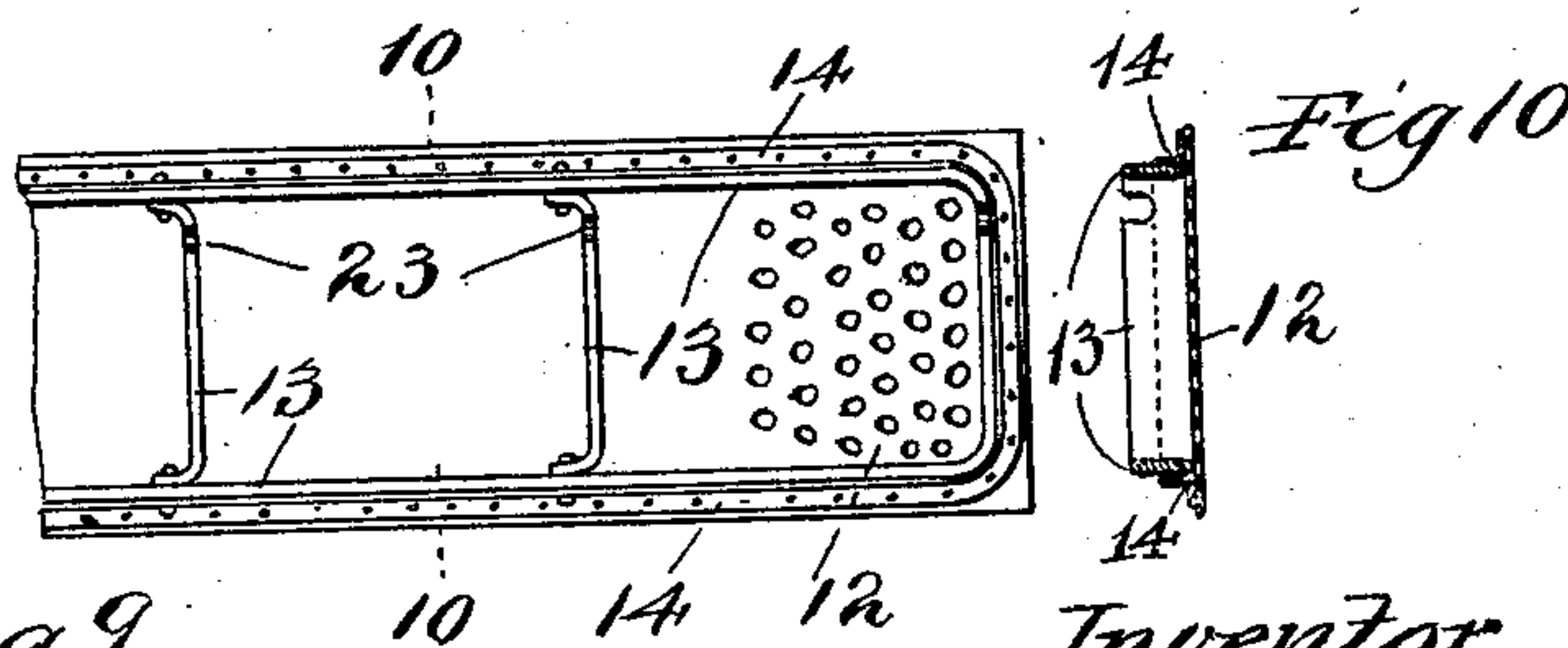
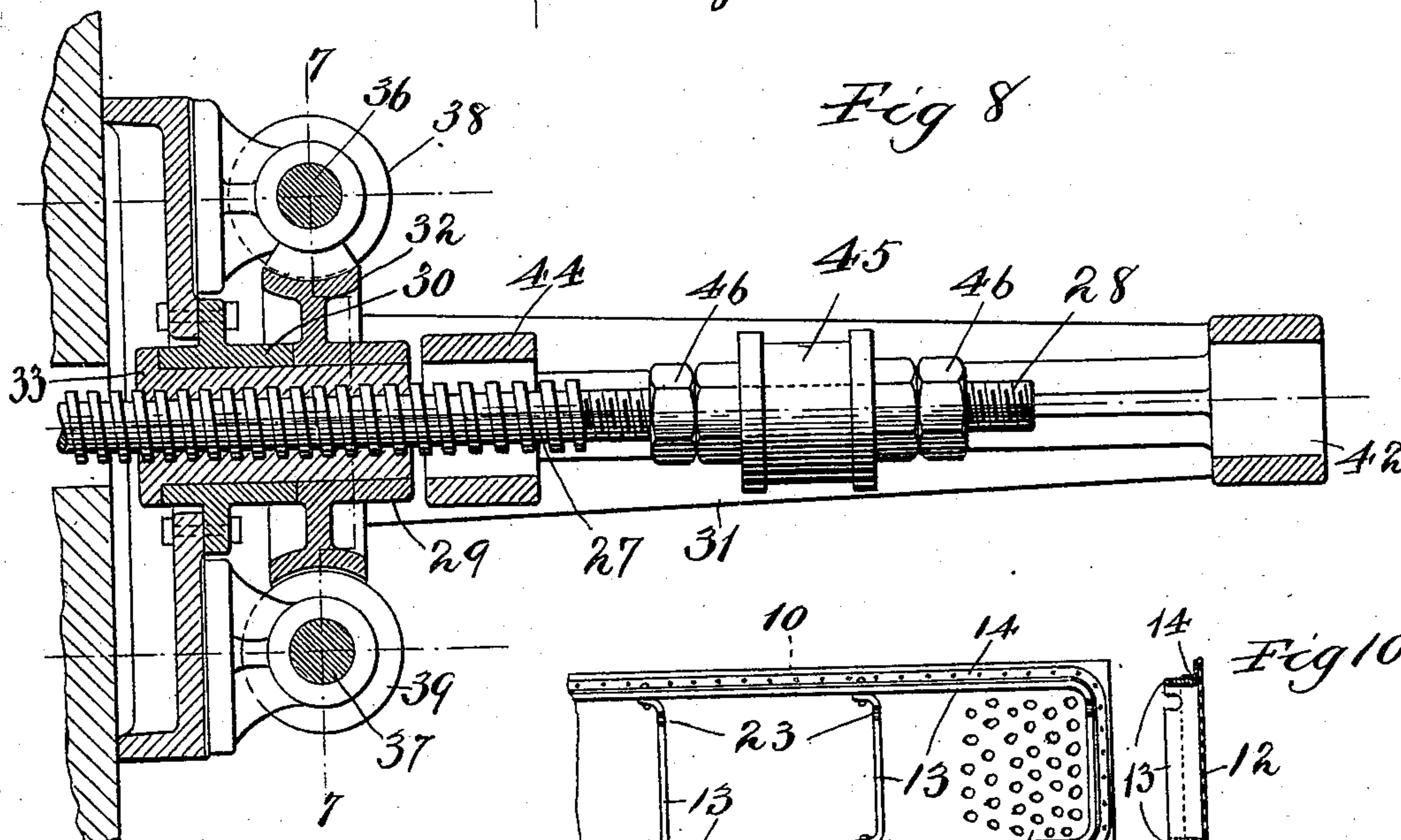


Fig 10

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Fig 9

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UNITED STATES PATENT OFFICE.

WILLIAM H. PRINZ, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE SALADIN PNEUMATIC MALTING CONSTRUCTION COMPANY, OF SAME PLACE.

DUMPING KILN-FLOOR.

SPECIFICATION forming part of Letters Patent No. 581,137, dated April 20, 1897.

Application filed August 8, 1896. Serial No. 602,209. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. PRINZ, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Dumping Kiln-Floors; 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.

This invention relates to a novel construction in a malt-kiln, and is adapted more especially to a novel arrangement and construction in the dumping-floors of a malt-kiln whereby the construction of the same is simplified and the expense of building is reduced to a minimum as far as is consistent with the ready and efficient manipulation of the sections of the dumping-floor, as will be fully pointed out hereinafter.

To these and other useful ends my invention consists in the features of construction and combination of parts hereinafter fully described and specifically claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a top plan view of the dumping-floor of a malt-kiln constructed in accordance with my invention. Fig. 2 is a vertical transverse section taken on the line 2 2 of Fig. 1 and illustrating also a portion of the machine employed for opening up the malt for ventilation. Fig. 3 is a fragmentary detail sectional view taken on the line 3 3 of Figs. 1 and 6. Fig. 4 is a horizontal section taken on the line 4 4 of Fig. 3. Fig. 5 is a fragmentary view taken on the same section as Fig. 3, but on an enlarged scale, and illustrating the parts with greater clearness. Fig. 6 is a vertical transverse section on the same scale as Fig. 5, and in this view the parts to the right of the center line (marked *c c*) are taken on the line 6^R 6^R of Fig. 5, while the parts to the left of the center line (marked *c c*) are taken on the line 6^L 6^L of Fig. 5. Fig. 7 is a fragmentary detail view in vertical transverse section and taken on the line 7 7 of Fig. 8. Fig. 8 is a horizontal section taken on the line 8 8 of Fig. 7. Fig. 9 is a bottom plan of a portion of one of the sections of the dumping-floor. Fig. 10 is a transverse section of the same, taken on the line 10 10 of Fig. 9.

My invention relates particularly to the construction and arrangement of the dumping-floor of the kiln and the means for operating the same, and is particularly adapted for the class of kilns known as the "Saladin-Prinz" system, in which the malt is placed in compartments similar to the compartments of malt-houses of this system and in which the malt is loosened up by means of traveling turning-machines to permit the ready passage of air therethrough. My invention can also be applied to kilns of ordinary construction with equal advantage, though in the drawings I have shown it applied to malt-kilns of the Saladin-Prinz system.

Owing to the fact that the helices or malt-turning screws of the machine extend downwardly very close to the level of the floor of the compartment it is absolutely essential that in turning the sections thereof to dump the malt no corners of said sections should project above the level of the floor to injure said helices. To this and other ends I have constructed my floor in the following manner:

The compartment A is provided with side walls 1 and end walls 2. The side walls 1 are mounted upon I-beams 3, suitably mounted within the kiln, and are provided at their upper ends with channels 3^a, which form tracks upon which the malt-turning machine 4 runs. Said malt-turning machine 4 is provided with a plurality of helices 5, which extend down and close to the perforated section 6 of the floor of said compartment. I have shown only one of said helices in the drawings, as I consider this sufficient for purposes of illustration. Mounted between said I-beams 3, parallel therewith and equidistant from each other, are three I-beams 7, preferably of equal size with said I-beams 3 and having the lower faces of their lower flanges on a level with the lower faces of said lower flanges of said I-beams 3, as indicated by the line 8. Mounted upon each of said beams 7 are standards 9, upon which said sections 6 of said floor are pivotally mounted—that is, said standards 9 are provided with outwardly-extending pivots 10, which are adapted to enter the bearing-brackets 11 on each pair of said sections 6, which are thus pivotally mounted upon said standards. Said bearing-brackets 11 ex-

tend downwardly and outwardly from said sections 6 and are mounted upon said pivots 10 on opposite sides of said standards. Said sections 6 are preferably rectangular in shape and extend between the side walls 1 of the compartment. Each of said sections is made up of a rectangular perforated plate 12, mounted upon a frame 13 and secured thereto by means of angle-irons 14. The upper edges of said frames 13 are rounded off, so as to cover as few of the perforations of said plate as possible. The bearing-brackets 11 are secured to said frames 13 by means of bolts. Each of said sections 6 is provided with three of said bearing-brackets 11, which are adapted to receive the pivots of the standards 9 on each of said beams 7. Each set of three of said standards 9 supports a pair of said sections 6. Mounted upon the webs of said beams 7, adjacent said standards 9, are bearings 15, in which shafts 16, carrying rollers 17 at their outer ends, are mounted, said shafts passing through openings in said webs of said beams. Running upon said rollers 17 are inverted-T irons 18, which are connected at one of their ends with the operating mechanism of the floor. Pivotaly secured to said T-irons 18 are connecting-rods 19, one of which is mounted upon each side of the web of said T-iron and which are connected at their ends by pins or shafts 20, mounted in bearing-sleeves 21 and 22. Said bearing-sleeves 21 are mounted in the webs of said T-irons 18, while said bearing-sleeves 22 are adapted to enter recesses 23 in the cross-pieces 13 of said floor-sections 12. In this manner good bearings are provided at both ends of said connecting-rods 19. Said connecting-rods 19 support said floor-sections 12 at their outer ends, and in order to cause the same to drop to dump the malt therefrom said T-irons 18 are moved so as to cause the lower ends of the connecting-rods 19 to move, respectively, toward the standards 10. In this manner support is withdrawn from said floor-sections, thus causing the same to swing on their pivots to the position shown in Fig. 5. To permit such action, the alternate sections marked *a* are connected with the T-iron on one side of said beam 9 and the sections *b* with the T-iron on the other side thereof. Said T-irons are consecutively moved in opposite directions in order to dump the floor-sections, suitable mechanism being provided for this purpose, which I will now proceed to describe.

Said T-irons are connected at one end to shafts 24 by means of toggle-levers 25. Said shafts 24 are mounted in bearings 26 on the inner side of the end wall of the compartment and pass through said wall and are screw-threaded at their outer ends, as at 27. The outermost ends 28 of said shafts 24 are reduced in diameter and are also screw-threaded. Said portions 27 of said shafts 24 are mounted in sleeve-nuts 29, running in bearings 30, secured to a frame 31, mounted

upon the outer face of the end wall of the compartment. Said sleeve-nuts 29 are rigidly mounted within the hubs of worm-wheels 32 and revolve therewith, the said shafts 24 being secured against rotation and obviously caused to move longitudinally by the rotation of said sleeve-nut 29. Said sleeve-nuts 29 are provided with circumferential flanges 33, which engage the ends of said bearings 30 to prevent the longitudinal movement of said nuts in one direction, while the hubs of said worm-wheels 32 form collars which engage the other ends of said bearings 30 and prevent the movement of said nuts in the opposite direction. Mounted in bearings 34 and 35 on the inner end of said frame 31 are shafts 36 and 37, carrying worms 38 and 39, which are adapted to engage said worm-wheels 32. Said shaft 36 runs above and said shaft 37 below said worm-wheels 32, and said worms 38 and 39 engage said worm-wheels, respectively, above and below their centers. Said shafts 36 and 37 revolve in the same direction, thus causing said worm-wheels and shafts 24 to move in opposite directions, said worms 38 and 39 having threads extending in the same direction. Said frame 31 extends outwardly to form a loop and is provided at its outer end with sleeves 42, through which the end portions 28 of said shafts 24 are adapted to pass. Between its ends said frame 31 is provided with a cross-piece 43, in which similar sleeves 44 are formed, which are in alignment with said sleeves 42 and through which the portions 27 and 28 are adapted to pass. Said sleeves 42 and 44 are of larger diameter than said shaft 24 and are adapted to engage collars 45 on the portions 28 thereof. Said collars 45 are secured upon said portions 28 of said shafts 24 by means of lock-nuts 46 in an obvious manner and are longitudinally adjustable. Said collars 45 form stops to limit the movements of said shafts 24 in either direction and are so arranged that when the sections *a* and *b* are dumped one of said collars will be in engagement with the end of one of the sleeves 42 and the other thereof with one of the sleeves 44, and vice versa, when said sections 12 are at the upper limits of their movement. Each of said shafts is operated independently of the other.

By means of the toggle connection between the shafts 24 and the T-irons 18 I prevent binding of the former through settling of the walls of the compartment or from any other cause, and by means of the adjustable collars 45 I am enabled to so adjust the movement of the floor-sections that they will always assume the same level when raised.

Besides the advantage of my device in so dumping the floor-sections that every portion of the same will drop below the floor-level there is another—namely, that owing to the above the entire weight of the malt tends to cause the floor-sections to drop, so that very little power is required to operate the same, while heretofore the floor-sections have been

turned upon center pivots, so that one-half of the malt rested upon both sides of the pivot and balanced each other.

I claim as my invention—

5 1. In a dumping kiln-floor, a plurality of floor-sections arranged in pairs and pivoted adjacent their meeting ends to standards mounted upon beams in the kiln, movable supports pivotally secured to said sections ad-
10 jacent their outer ends, and devices for moving the lower ends of said supports in opposite directions to trip the same and dump said sections.

2. In a dumping kiln-floor, a floor-section
15 pivotally mounted upon standards and supported at its outer end upon a rod pivotally secured thereto and pivoted at its other end upon a movable beam, and devices for moving said beam to trip said rod to dump said
20 section and to raise said rod to raise said section.

3. In a dumping kiln-floor, a plurality of floor-sections arranged in pairs and pivotally mounted upon standards, movable supports
25 pivotally secured adjacent the outer ends of said section and pivoted at their other ends to movable beams, and devices for moving said beams in opposite directions to operate said movable supports to dump said sections
30 and to raise the same.

4. In a dumping kiln-floor, a plurality of pivoted floor-sections supported at their outer ends upon movable supports pivoted upon
35 movable beams, and devices for moving said beams to operate said supports to dump and raise said floor-sections, consisting of screw-shafts connected with said movable beams and adapted to be engaged by revoluble sleeve-
40 nuts, and devices for operating said sleeve-nuts.

5. In a dumping kiln-floor, a plurality of pivoted floor-sections arranged in pairs supported at their outer ends upon movable supports pivotally secured thereto and pivotally
45 mounted at their other ends upon movable beams, and devices for moving said beams to operate said supports to dump and raise said floor-sections, consisting of screw-shafts connected with said movable beams by means of
50 toggle-levers and adapted to be engaged by sleeve-nuts, and devices for operating said sleeve-nuts.

6. In a dumping kiln-floor, a plurality of pivoted floor-sections supported at their outer
55 ends upon movable supports pivoted upon movable beams, and devices for moving said beams to operate said supports to dump and raise said floor-sections, consisting of screw-shafts connected with said movable beams by
60 means of toggle-levers and adapted to be en-

gaged by sleeve-nuts mounted in bearings in a frame secured to a rigid portion of the kiln, worm-wheels rigidly mounted upon said sleeve-nuts and adapted to be engaged by
65 worms upon shafts running in bearings in said frame and adapted to turn said worm-wheels in opposite directions, and collars upon the ends of said screw-shafts adapted to engage rigid portions of said frame to limit the
70 movements of said screw-shafts.

7. In a dumping kiln-floor, a plurality of pivoted floor-sections supported at their outer ends upon supports pivoted thereto and pivoted at their other ends upon beams movably
75 mounted upon rollers mounted upon beams in said kiln, and devices for moving said movable beams to operate said supports to dump and raise said floor-sections, consisting of screw-shafts mounted in bearings secured to a rigid portion of the kiln and connected with
80 said movable beams by means of toggle-levers interposed between the same, revoluble sleeve-nuts mounted upon said screw-shafts and running in bearings upon a frame secured to a rigid portion of the kiln, worm-wheels rigidly
85 mounted upon said sleeve-nuts, devices for turning said worm-wheels in opposite directions, sleeves on said frame through which said screw-shafts are adapted to pass, and collars upon said screw-shafts adapted to engage
90 said sleeves to limit the movements of said screw-shafts in either direction.

8. In a dumping kiln-floor, a plurality of pivoted floor-sections supported at their outer ends upon supports pivoted thereto and pivoted at their other ends upon beams movably
95 mounted upon rollers mounted upon beams in said kiln, and devices for moving said movable beams to operate said supports to dump and raise said floor-sections, consisting of
100 screw-shafts mounted in bearings secured to a rigid portion of the kiln and connected with said movable beams by means of toggle-levers interposed between the same, revoluble sleeve-nuts mounted upon said screw-shafts and
105 running in bearings upon a frame secured to a rigid portion of the kiln, worm-wheels rigidly mounted upon said sleeve-nuts, devices for turning said worm-wheels in opposite directions, sleeves on said frame through which
110 said screw-shafts are adapted to pass, and devices for limiting the movements of said screw-shafts in either direction.

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

WILLIAM H. PRINZ.

Witnesses:

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E. J. BOILEAU.