

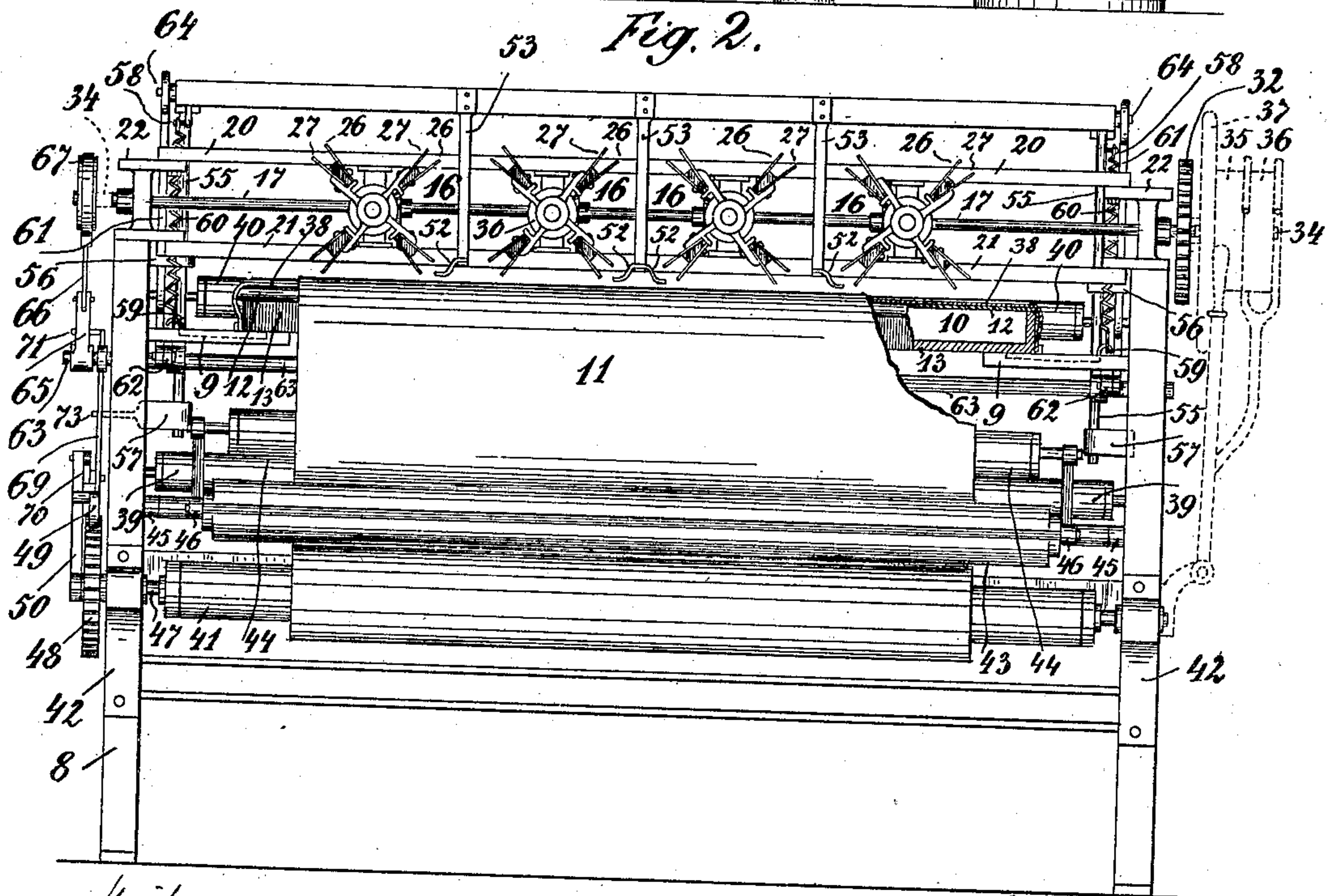
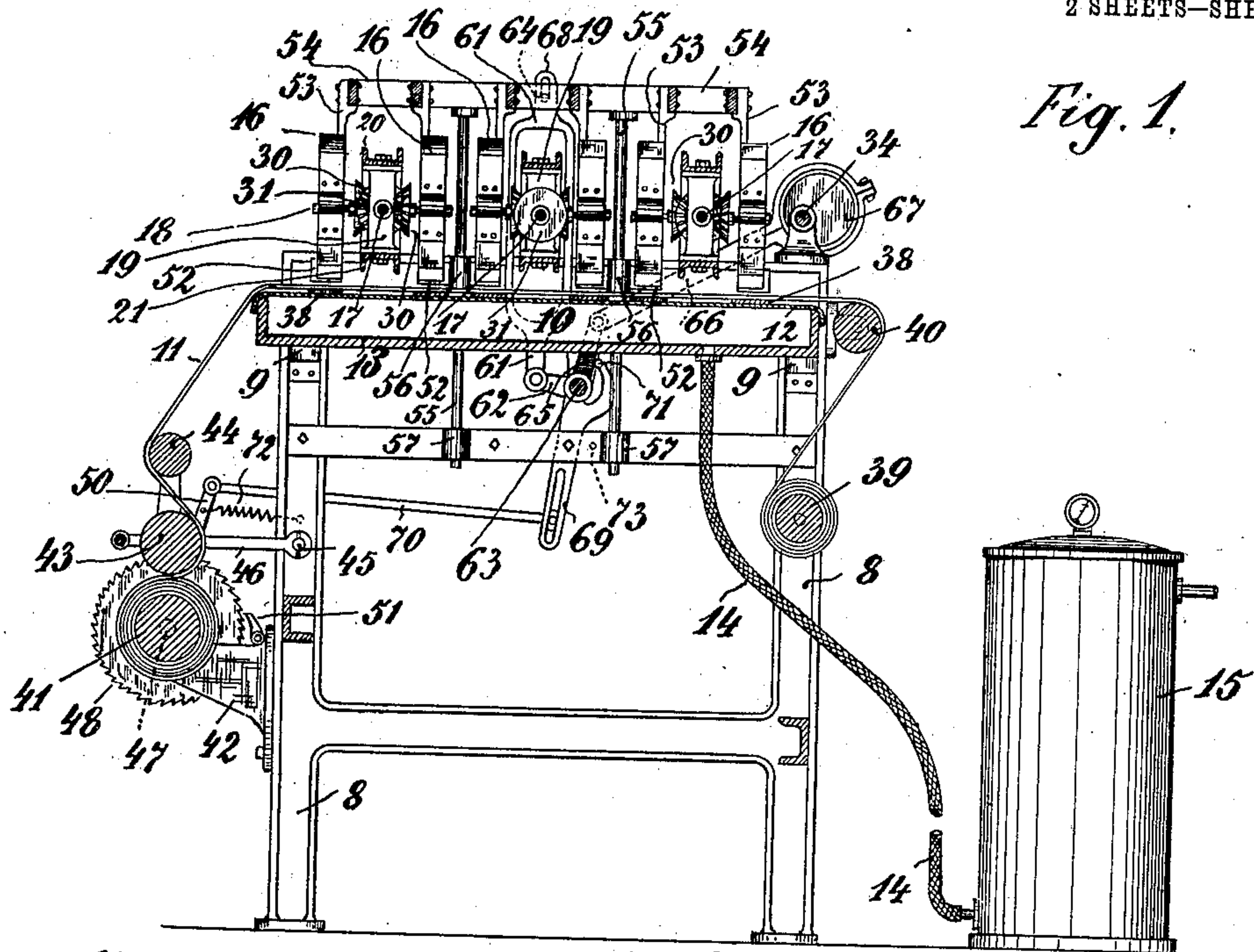
No. 827,594.

PATENTED JULY 31, 1906.

C. WILMSEN.  
SCOURING MACHINE FOR WOVEN FABRICS.

APPLICATION FILED AUG. 15, 1905.

2 SHEETS—SHEET 1.



Witness:  
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George A. Sturbrich

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By Knight Bros  
his Attorneys



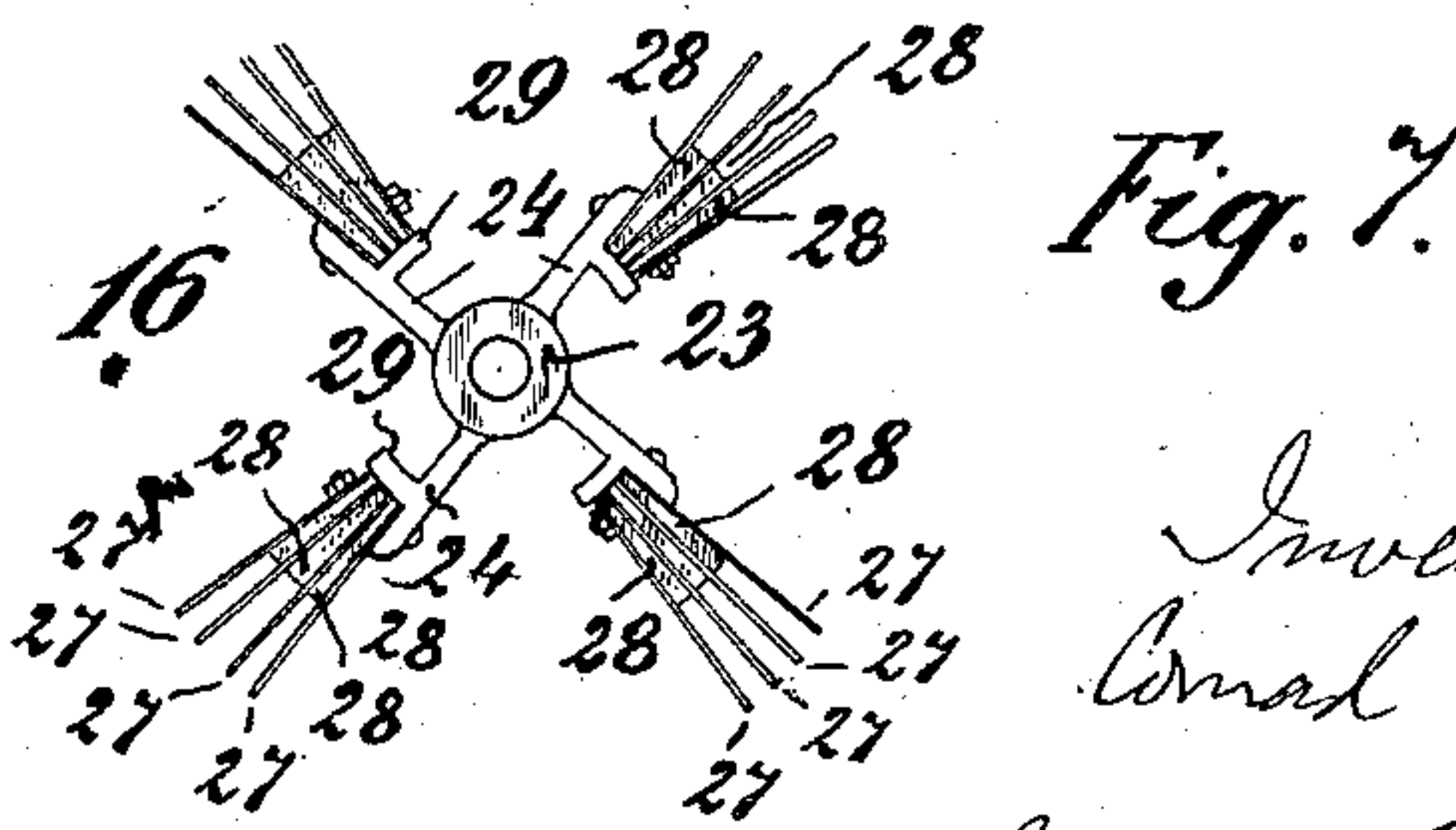
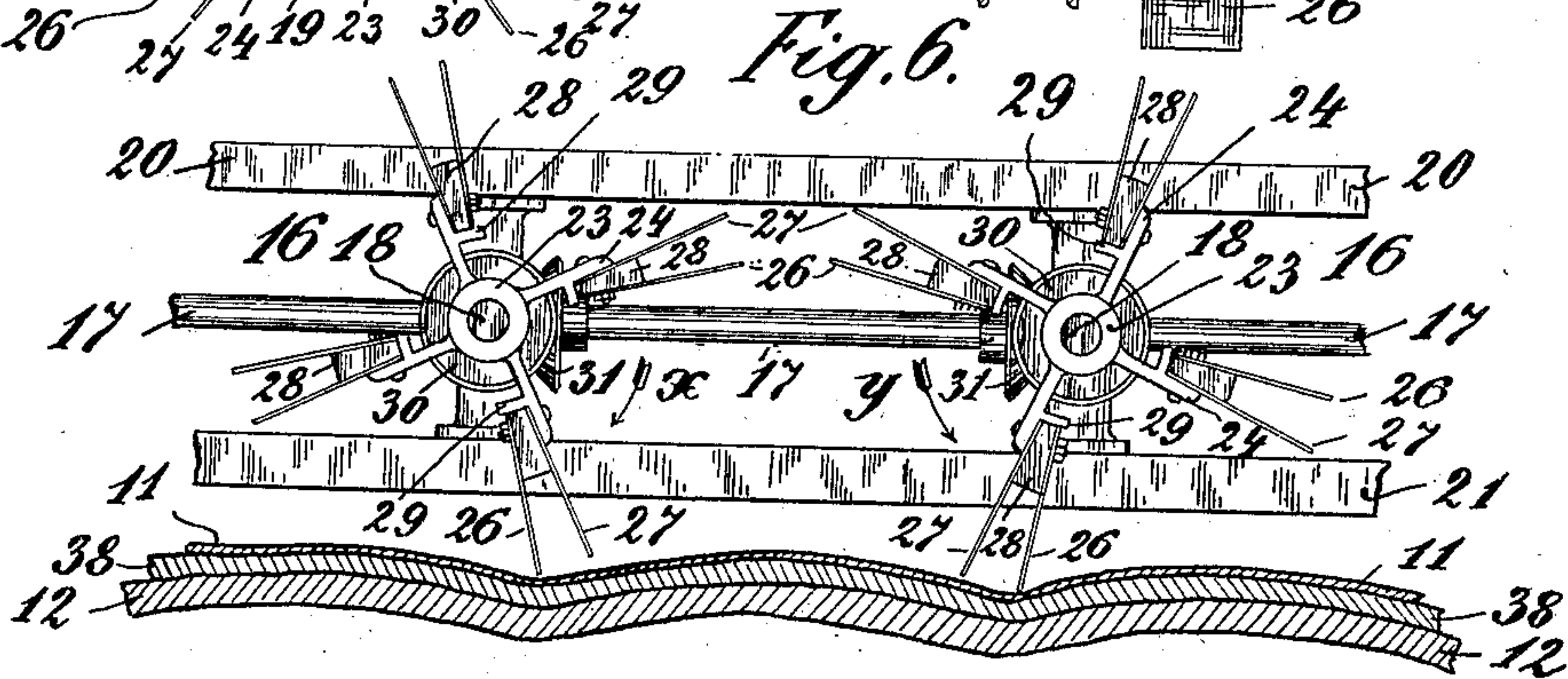
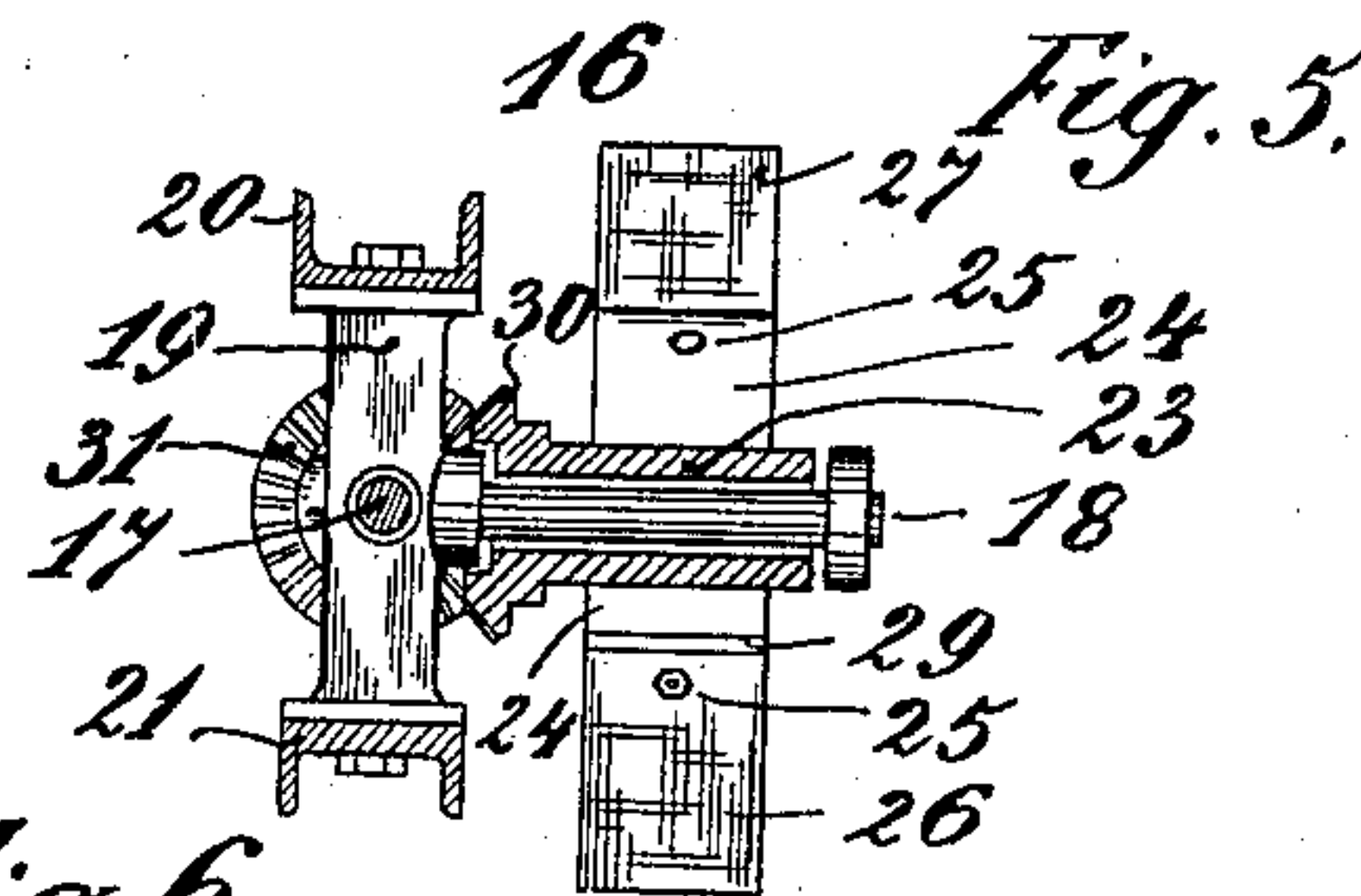
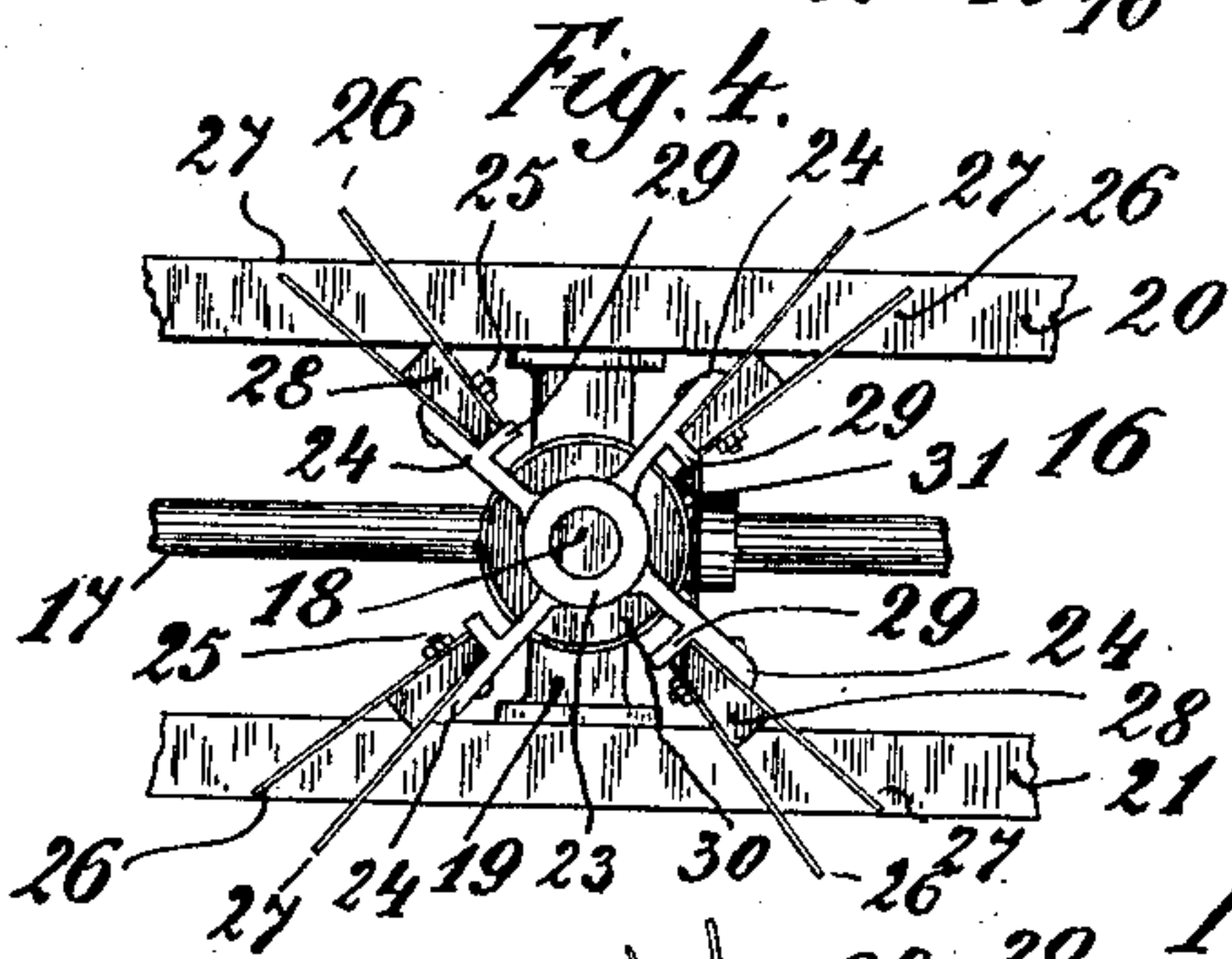
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

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## SCOURING-MACHINE FOR WOVEN FABRICS.

No. 827,594.

Specification of Letters Patent.

Patented July 31, 1906.

Application filed August 15, 1905. Serial No. 274,310.

*To all whom it may concern:*

Be it known that I, CONRAD WILMSEN, a subject of the German Emperor, and a resident of Viersen, Rheinland, Germany, have  
5 invented certain new and useful Improvements in Scouring-Machines for Woven Fabrics, of which the following is a specification.

This invention relates to improvements in  
10 scouring-machines for woven fabrics as used especially in the final treatment of silks and half-silks for umbrellas.

The system of most of the scouring-machines consists therein that the scouring-  
15 knife carriers make a swinging or circular motion and that the fabric to be treated lies on an elastic cushion arranged above or below the scouring-knife carriers, while the scouring-knives, in consequence of their swinging  
20 or circular motion imparted to them by their carriers, release the fabric temporarily, which is thereupon advanced by steps.

The scouring-knives in this invention are so distributed that two or several knives run  
25 close or immediately behind each other, and thus treat the fabric in close succession before it is released for the purpose of being moved on. As in this way the fabric is pressed each time by the foremost knife against the elastic  
30 cushion, and thus stretched, the following knives do their scouring and rubbing far more effectively than the first. The scouring action is thus considerably improved.

The accompanying drawings illustrate a  
35 scouring-machine provided with knife-carriers which turn round in a circle, and below the same an elastic cushion for the fabric.

Figure 1 is a cross-section, and Fig. 2 a front view, of the scouring-machine, showing  
40 only the front row of the knife-carriers. Fig. 3 shows the journals and driving device of the knife-carriers in a top view and partly in a longitudinal section. Fig. 4 gives, on an enlarged scale, a front view of a single knife-  
45 carrier and its connection with the driving-shaft; and Fig. 5 is a corresponding side view with a cross-section through the knife-carrier. Fig. 6 serves to better explain the invention. It shows two knife-carriers turn-  
50 ing in a circle in opposite directions in their working position. Fig. 7 is a front view of a knife-carrier with four scouring-knives fastened to each arm.

Similar numerals refer to similar parts throughout the several views.

In the system of scouring-machines on  
55 which this construction is based an elastic cushion 10 rests on ledges 9, fastened to the frame 8 of the machine, which cushion serves as a support or counter-pressure surface to  
60 the fabric 11 to be scoured. The cushion 10 may be formed by a box 13, covered with india-rubber or any other elastic and airtight material whose hollow interior communicates with a vessel 15 with compressed  
65 air through a flexible tube 14.

Above the cushion 10 are journaled a number of knife-carriers 16 in parts of the frame of the machine. The knife-carriers are distributed uniformly over the working surface.  
70 Fig. 3 shows twenty-four of these knife-carriers arranged in groups of eight around a common driving-shaft 17 in a manner that four knife-carriers 16 are in front of and four knife-carriers 16 behind the driving-shaft 17.  
75 The knife-carriers sit loosely on cross-pins 18 of blocks 19, screwed to U-shaped ledges 20 and 21. The latter may be screwed at their ends to the journal-blocks 22 for the shafts 17 or fixed to them by other means. These  
80 journal-blocks 22 are in their turn fastened to the frame of the machine 8.

The knife-carriers 16 are, as shown in Figs. 4 and 5, composed of the hollow boss 23, the arm-cross or radial wings 24, and the scour-  
85 ing-knives 26 and 27, fastened by means of screws 25 to the wings 24. The scouring-knives 26 and 27 are arranged one close behind the other and are kept at the desired distance from each other by a segmental  
90 spacing block or layer 28, of wood, india-rubber, caoutchouc, vulcanite fiber, or the like. In order to find when fastening the scouring-knife carriers the required height rapidly and accurately, the wings 24 of the knives may  
95 be provided with segmental ledges 29, which serve as supports to the scouring-knife carriers 26 and 27.

In order to give to the knives 16 a circular motion, conical toothed wheels 30 are ar-  
100 ranged on their bosses 23, which gear with conical toothed wheels 31 on the shafts 17. The toothed wheels 31 sit, however, if viewed from in front or from above, Figs. 2, 3, and 6, partly on the left and partly on the right of  
105 the pins 18 for the knife-carriers 16 and so



that all knife-carriers which from the center of the machine lie toward the left turn in the direction of the arrow  $x$  in Fig. 6 no matter whether they are journaled in front of or behind their driving-shaft 17, whereas the knives journaled on the right side of the machine turn in the opposite direction, therefore in the direction of the arrow  $y$ , Fig. 6.

The shafts 17 must turn at a uniform speed. This is attained by toothed wheels 32 of the same number of teeth arranged at one end of the shafts and gearing with each other. Moreover, a smaller toothed wheel 33 on the main shaft 34, journaled in the frame of the machine, gears with the toothed wheel 32 of one of the shafts 17. The ratio of transmission in the construction shown in the drawings is one to four. The reason of this will be stated farther on. The main shaft 34 may be provided with a fast and loose pulley 35 and 36 for the driving-belt and, moreover, with a fly-wheel 37, which serves at the same time as a hand-wheel.

Below each longitudinal row of knife-carriers 16 a broad strap 38 is placed upon the cushion 10, the ends of which strap may be screwed to the side walls of the air-box 13, Fig. 2. Over these straps the fabric 11 to be worked on is fed after being unwound from a beam or roller 39, journaled in the frame of the machine, and after passing over a smoothing-roller 40 before it arrives at the operating-place. In the front part of the machine the fabric is wound upon a roller 41, journaled in the blocks 42. On the roller 41 rests a roller 43, journaled, the same as the guide-roller 44, in the arms 46, which swing on the pin 45 in the frame of the machine.

When the fabric has been released by the scouring-knives, it must be drawn forward a little in order that during the next operation not exactly the same place is rubbed by the scouring-knives. To this end there is arranged on one of the pins 47 of the roller 41 a ratchet-wheel 48, into which snaps the click 49, Fig. 2, of the lever 50, loosely arranged on the pin 47. A turning backward of the roller 41 is prevented by a counter-click 51 on one of the journal-blocks 42, Fig. 1.

During the scouring the fabric must be kept as close as possible to the knife-carriers 16, for which purpose there have been arranged pressers 52, close in front of the knife-carriers in the direction in which they turn, which can be moved up and down. The arms 53, to which the pressers 52 are screwed, may be arranged on a joint-frame 54 above the knife-carriers. The said frame has on both sides of the machine downwardly-directed sliding bars 55, moving in the journals 56 and 57 of the frame of the machine and securing thereby a vertical up-and-down movement of the frame 54. Springs 60, (only shown in Fig. 2,) placed with one end on pins 58 of the frame 54 and hung with their

other end into hooks 59, screwed to the bottom of the air-box 13, constantly endeavor to draw down the frame 54 with the pressers 52 upon the fabric; but the frame is at the same time supported on both sides by levers 61, movably joined to arms 62 of an axle 63, journaled in the frame of the machine and act upon bolts 64 of the frame 54. One arm 65 of the axle 63 is, moreover, actuated by the eccentric-rod 66, which is moved by means of the circular eccentric 67 on the main shaft 34. The axle 63 thus receives an oscillating motion, which is converted into an up-and-down checked motion of the lever 61. In order that the pressers 52 in their lowest position are pressed down upon the fabric only under the action of the spring 60, the levers 61 are provided with a longitudinal slit 68, through which the bolts 64 on the frame 54 pass, Fig. 1. Since, as already said, the main shaft 34 drives the shafts 17 for the knife-carriers with a ratio of transmission of one to four, the eccentric 67 can be so adjusted that the frame 54, with the pressers 52, is raised just then when the wings 24 of the knife-carriers 16 are in the position shown in Figs. 1 and 2, therefore when no scouring-knife touches the fabric. This position returns at each quarter of a revolution of the knife-carriers 16. From the oscillating movement of the axle 63 may at the same time be derived the movement of the lever 50 on the roller 41. For this purpose a lever 69 is loosely arranged on the axle 63 by the side of the lever-arm 65, and this lever 69 is connected by a drawing-rod 70 with the lever 50. A cross-arm 71 of the lever 69 catches behind the arm 65, so that the lever 69 must follow the movement of the arm 65 to the right, as shown in Fig. 1, and turn the lever 50; but if the arm 65 swings back, the lever 69, under the action of, for instance, a spring 72, acting upon the lever 50, only follows so far as a pin 73 on the frame of the machine admits of.

When in this scouring-machine the knife-carriers 16 get into the working position according to Fig. 6 the first scouring-knife 26 of the two scouring-knives 26 and 27, following one close behind the other, is the first in all the knife-carriers 16 to touch the fabric 11, which is smoothly stretched out on the straps 38. The first scouring-knives 26 first carry away with them the fabric, according to the elasticity of the latter and also of the cushion 10. During the first part of their movement the first scouring-knives 26 therefore stretch the fabric. Only after this has been done the scouring action, properly speaking, of the first scouring-knives 26 commences. When the knife-carriers thereupon continue their rotary movement, the second scouring-knives 27 likewise touch the fabric, but not in those places which were the points of contact for the knives 26 on their commencing to work, but more sidewise, as the



5 fabric is still held stretched by the first scouring-knives 26. The second scouring-knives 27 therefore considerably hasten the scouring. They make it possible to distribute the threads of the warp more uniformly than single scouring-knives following each other at greater intervals.

10 If desired, the number of scouring-knives to immediately follow the first may be increased. Thus, for instance, Fig. 7 shows a modification in which three scouring-knives 27 follow the first scouring-knife 26 on each arm or wing 24 of the knife-carriers 16.

15 What I claim as my invention, and desire to secure by United States Letters Patent, is—

20 1. A scouring-machine for woven fabrics comprising a counter-pressure surface, a plurality of knife-carriers arranged in parallel rows, each of the said knife-carriers having groups of two or more scouring-knives, the said groups of scouring-knives being spaced apart a sufficient distance and the corresponding groups of scouring-knives of the said 25 knife-carriers having uniform inclination toward the counter-pressure surface so as to permit the fabric passing over the counter-pressure surface to be periodically fully relieved between the strokes of the correspond-

ing groups of scouring-knives of all the knife-carriers, means for holding the fabric on the counter-pressure surface during the strokes of the groups of scouring-knives, and means for operating the knife-carriers. 30

2. A knife-carrier comprising a boss, having radial wings, and ledges, inner and outer knives seated against the ledges, spacing-blocks located between the knives, and means for securing the knives, blocks and radial wings together. 35

3. A knife-carrier comprising a boss, having radial wings, and segmental ledges, inner and outer knives seated against the ledges, segmental spacing-blocks located between the knives, and means for securing the knives, spacing-blocks and wings together. 40

4. A knife-carrier comprising a boss, having radial wings, and ledges, inner and outer knives and intermediate knives seated against the ledges, spacing-blocks located between the knives, and means for securing the knives, blocks and radial wings together. 50

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

CONRAD WILMSEN.

Witnesses:

W. BRUCE WALLACE,  
Mrs. T. R. WALLACE.