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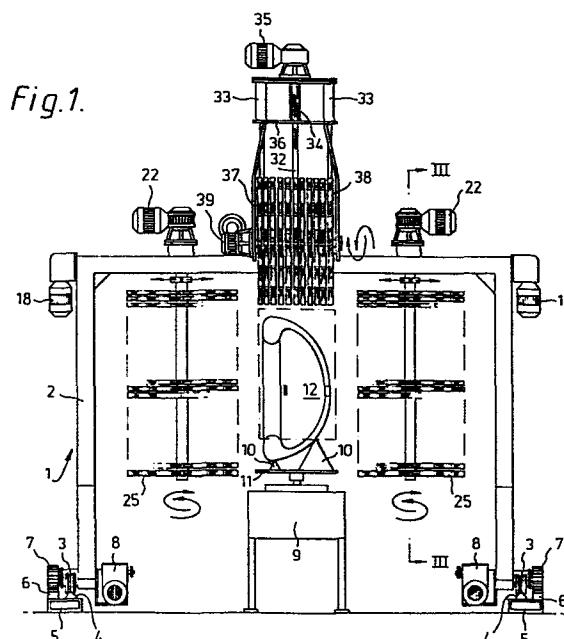
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(54) Automatic machine for the external fettling of ceramic vitreous-china articles.

(57) An automatic machine for the external fettling of ceramic vitreous-china articles, comprising a portal (1, 2) to be disposed straddling a horizontal surface (9) on which the articles (12) are placed, and arranged to run parallel to this surface (9), on its cross-member there being slidably disposed two opposing rotating brushes (25) with their shafts vertical, and a third vertically mobile central rotating overhanging brush (38) with its shaft horizontal.



AUTOMATIC MACHINE FOR THE EXTERNAL FETTLING OF CERAMIC VITREOUS-
CHINA ARTICLES

The present industrial invention patent relates to a machine arranged
5 to automatically accomplish the external fettling operation on
ceramic vitreous china articles such as water closet pans, flushing
tanks, bidets, wash basins and other similar sanitary appliances.

The said fettling operation is known to consist of a sort of surface
10 finishing of the cast articles still in their soft state, before
they are fed to the other operational stages of the production
cycle, such as drying.

Up to the present time the said operation has been effected in a
15 completely manual manner using skeins or pads formed from a weave
of a filiform plastics material commonly known as SCOTCH BRITE.

Because of the high productivity of the associated plants, said
fettling obviously requires a considerable number of personnel, who
20 are compelled to carry out long, complicated, monotonous and/or
repetitive operations.

The present patent provides and protects a machine able to obviate
the aforesaid drawbacks by automatically effecting the fettling of
25 the articles, by means of a simple, rational and extremely reliable
constructional design.

The machine according to the invention comprises a portal carriage
to be disposed transversely to a support bench for the articles to
30 be fettled, and autonomously mobile parallel to said bench, on its
cross-member there being disposed a series of rotating brushes
arranged to make contact with the various zones of the outer surface
extension of the articles.

35 Specifically, on said cross-member there are provided two opposing
rotating brushes with their shafts vertical, and mobile towards

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and away from each other, and a third vertically mobile rotating brush with its shaft horizontal, and disposed overhanging the central zone of said cross-member.

5 these brushes comprise a shaft provided with a plurality of radial clamps which each carry a thin strip of SCOTCH BRITE which extends radially when the brush is in motion, but which falls freely downwards when the brush is stationary.

10 For a better understanding of the characteristics and constructional merits of the invention, reference is made hereinafter to the figures of the accompanying drawings which illustrate a particular preferred embodiment by way of non-limiting example only.

15 Figure 1 is a front view of the machine concerned.

Figure 2 is a side view thereof.

Figure 3 is a section on the line III-III of Figure 1.

20

Figure 4 is a section on the line IV-IV of Figure 3.

Said figures, and in particular Figures 1 and 2, show a portal 1 constituted by two facing flat frames 2 (Figure 3) which are joined
25 together by a convenient set of transverse elements.

Externally to the bases of the uprights of said portal 1, there are rotatably mounted two opposing pairs of grooved wheels 3, disposed on respective running rails 4 supported by metal bases 5.

30

On these latter, and external to the rails 4, there are fixed two racks 6 with which there engage two toothed wheels 7 provided between the two pairs of grooved wheels 3 (Figure 2).

35 Said toothed wheels 7 are rotated in the two opposing directions by respective geared motors with an incorporated speed variator 8,

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which are fixed on the inside of the bases of the uprights of the portal 1.

The rails 4 are disposed straddling a support bench 9 on which
5 the articles to be fettled 12 are placed suitably spaced apart, and
by way of suitable supports and bases, 10 and 11 respectively.

The specific example shows wash basins, but the machine according
to the invention is also able to fettle other sanitary appliances
10 such as water closet pans, flushing tanks, bidets and urinals.

From the accompanying Figure 3, it can be seen that on the facing
walls of the cross-members of the two frames 2, there are fixed
two rolling tracks 13, essentially constituted by two vertically
15 lying horizontal plates.

With the opposing longitudinal edges of each track 13 there engage
two opposing pairs of idle grooved wheels 14 pertaining to a
carriage 15 arranged to move along the cross-member of the portal
20 1 in the two opposing directions.

Said carriage 15 is located on one side of said cross-member, and
a further similar carriage is disposed on the other side of the
same cross-member as can be seen from Figure 1.

25 Each carriage 15 is provided internally with a threaded bush of
horizontal axis 16, with which there engages a threaded shaft 17
driven by a respective geared motor 18 which is fixed to the
corresponding end of the cross-member of the portal 1.

30 Each carriage 15 comprises, fixed to its central portion, a vertical
sleeve 19 in which a drive pin 21 is rotatably mounted by way of
suitable rolling bearings 20.

35 The lower projecting end of this pin comprises a joint 23 for
fixing the vertical shaft 24 of a brush 25.

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As is clearly shown in the accompanying Figures 3 and 4, the vertical shaft 24 comprises a series of equidistant circumferential longitudinal slots 26, with each of which there is associated a plurality of radial clamps.

5

Each clamp comprises a connection plate 27, of which the inner portion, ie that which is intended to be inserted into one of the slots 26, is of T configuration.

10 Between each pair of adjacent circumferential rows of connection plates 27 there is disposed a retention collar 28 arranged to engage the said T-shaped portions, and the entire assembly is clamped into a stack between two suitable end elements, of which one is visible in Figure 3.

15

A thin strip of SCOTCH BRITE 31 is fixed to each connection plate 27 by means of a locking plate 29 and a respective pair of bolts 30.

Said strip 31 extends vertically in a flabby condition when the
20 shaft 24 is stationary, whereas when the shaft rotates, the strip extends horizontally as shown in Figures 1 and 2, to rub the corresponding lateral zone of the articles 12.

As best seen from Figures 1 and 2, from the central zone of the
25 cross-member of the portal 1 there project two vertical cylindrical bars 32, on which a slider 33 is slidably mounted.

This latter is provided centrally with a vertical threaded bush 34, with which a threaded shaft, not shown, driven by an overlying geared
30 motor 35, engages in a similar manner to that described for the carriages 15.

From the slider 33 there branches a front bracket 36, of which the free end is provided lowerly with a fork 37 which supports a fettling
35 brush 38 which has its shaft horizontal, and is disposed transversely to the bench 9.

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The brush 38, which is entirely similar to the brushes 25 heretofore described, is rotated in the two opposing directions by a variable speed motor with an electronic control panel 39.

- 5 The operation of the invention is easily understood from the
aforegoing and from a simple examination of the accompanying figures.

10 It should be noted merely that the brushes 25 and 38 rotate in one
or other direction according to the direction of transfer of the
portal 1 along the rails 4.

Finally, it should be noted that the portal 1 can be fixed or
stationary, while the articles are moved by means of a conveyor or
suitable trollies.

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PATENT CLAIMS

1. An automatic machine for the external fettling of ceramic vitreous-china articles, characterised by comprising a portal (1, 2)
5 to be disposed straddling a horizontal bench (9) on which the articles (12) are arranged, and autonomously mobile parallel to this bench, on its cross-member there being disposed two opposing rotating fettling brushes (25) mobile towards and away from each other and having their shafts vertical, and a third vertically mobile central
10 rotating fettling brush (38) which has its shaft parallel to said cross-member and is disposed overhanging this latter.
2. A machine as claimed in claim 1, characterised in that rack and pinion means (6, 7) are provided at the base of the uprights (2)
15 of said portal (1, 2), for the movement thereof.
3. A machine as claimed in claim 1, characterised in that said vertical (25) and horizontal (38) fettling brushes each comprise a suitably motorised (22, 39) shaft (24) having a plurality of radial
20 clamps (27, 29, 30) each provided with a thin flexible strip (31), such as a strip of scotch brite.
4. A machine as claimed in claim 3, characterised in that each of said vertical (25) and horizontal (38) fettling brushes is
25 driven by a variable speed motor with an electronic panel (22, 39).
5. A machine as claimed in claim 1, characterised in that said vertical (25) and horizontal (38) fettling brushes are rotatably mounted on horizontal (13, 14, 15) and vertical (32, 33) sliders
30 respectively, which are controlled by screw and threaded bush means (17, 16; 34).

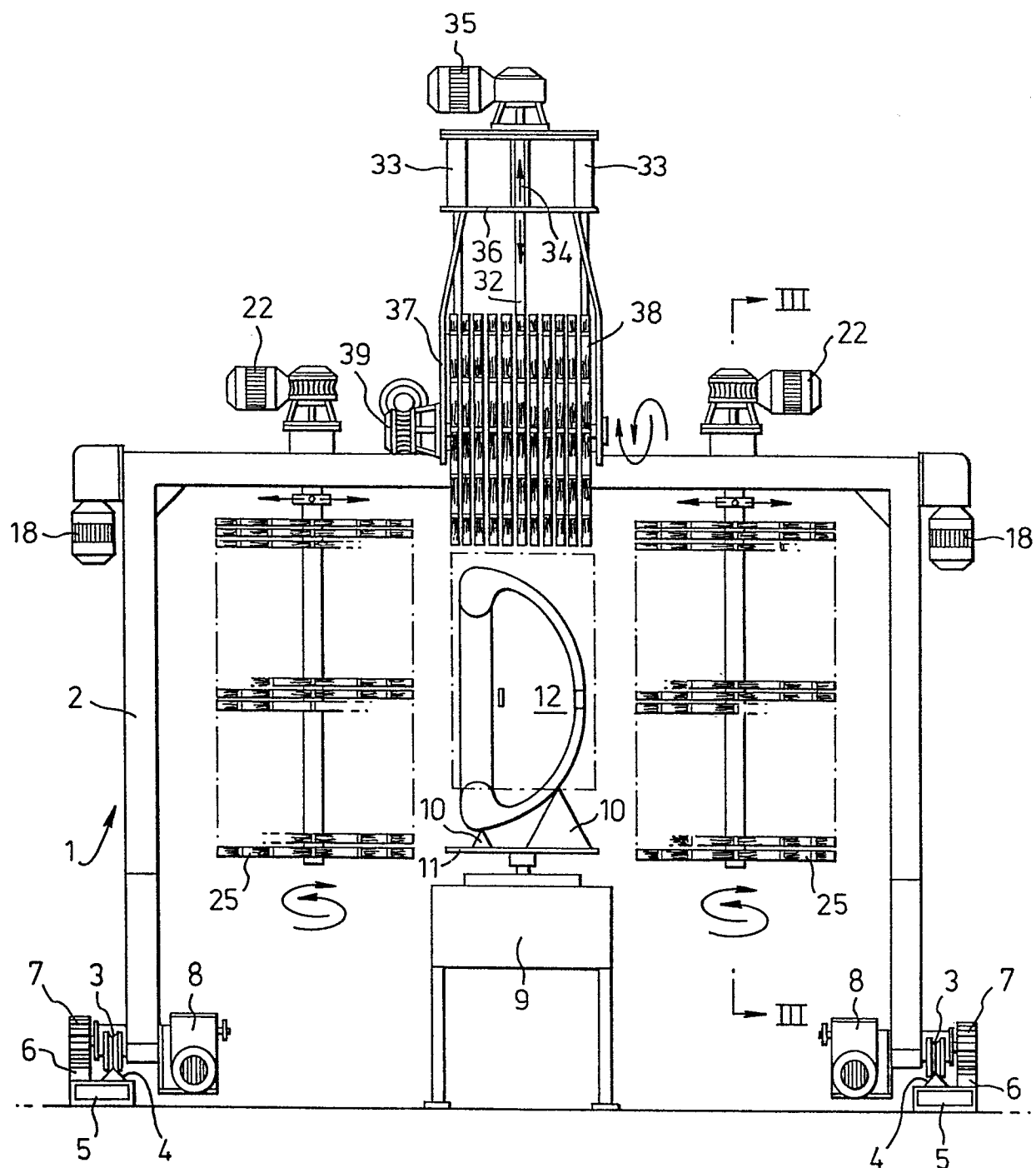
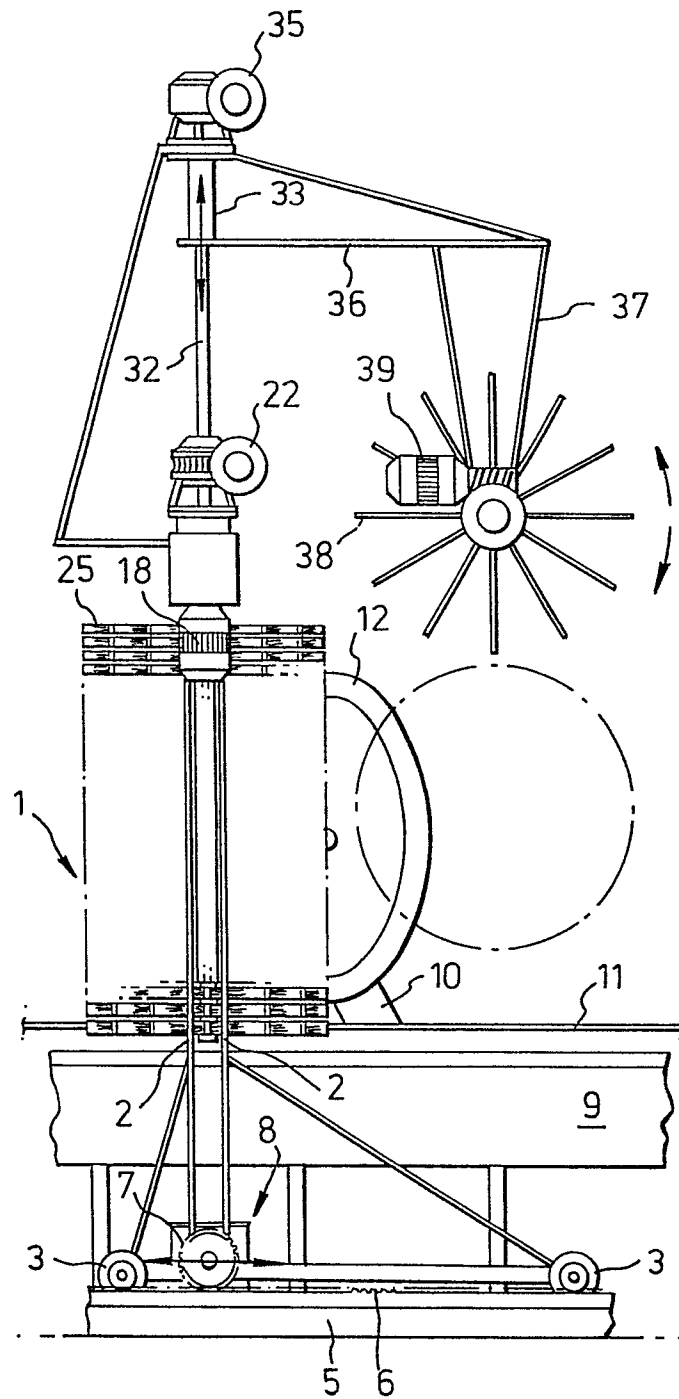


Fig.1.

*Fig. 2.*

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Fig. 3.

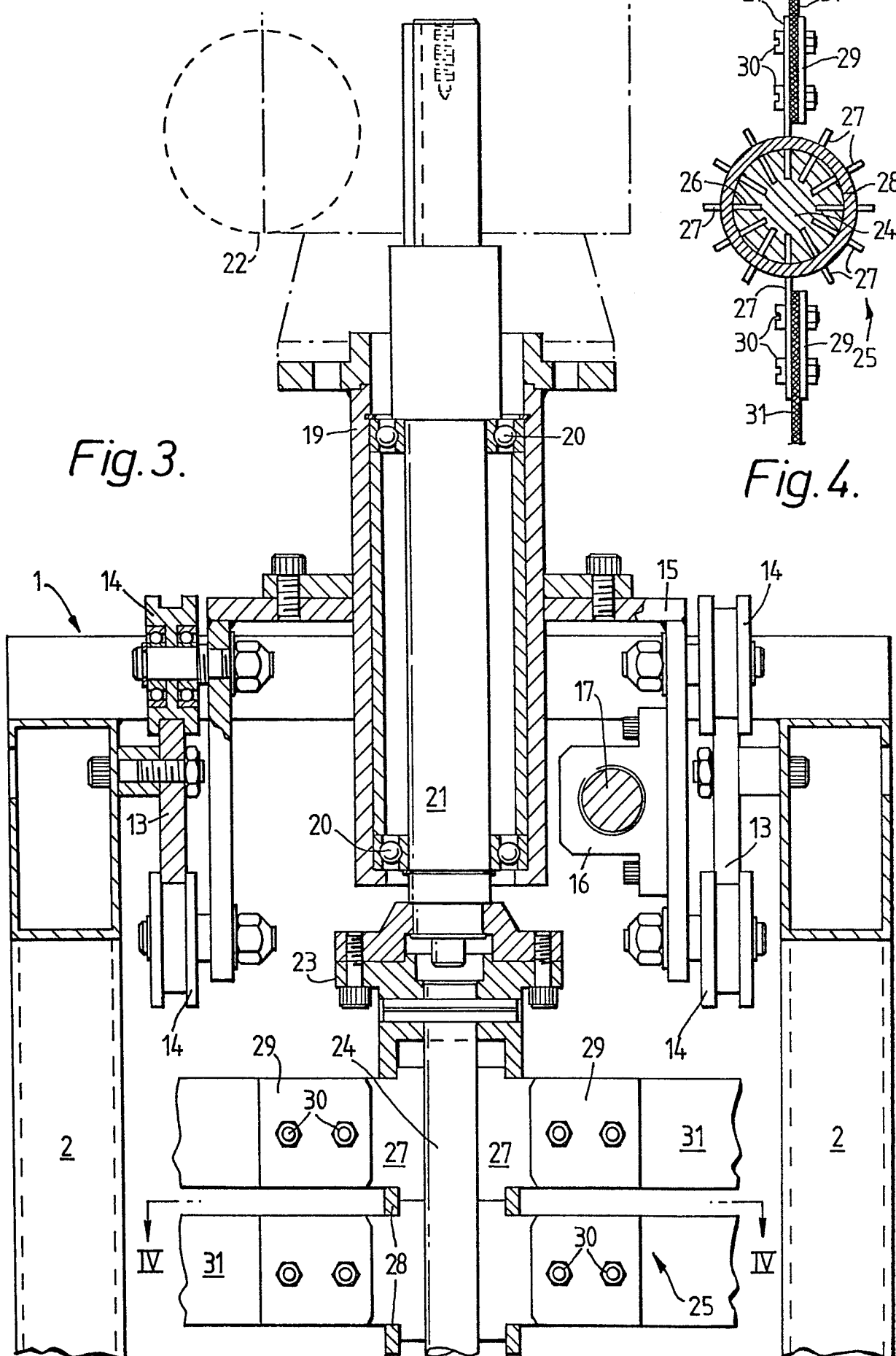


Fig. 4.

