

Jan. 27, 1953

J. BASUS

2,626,702

DEVICE FOR PACKING FIBROUS MASSES

Filed Jan. 28, 1948

3 Sheets-Sheet 1

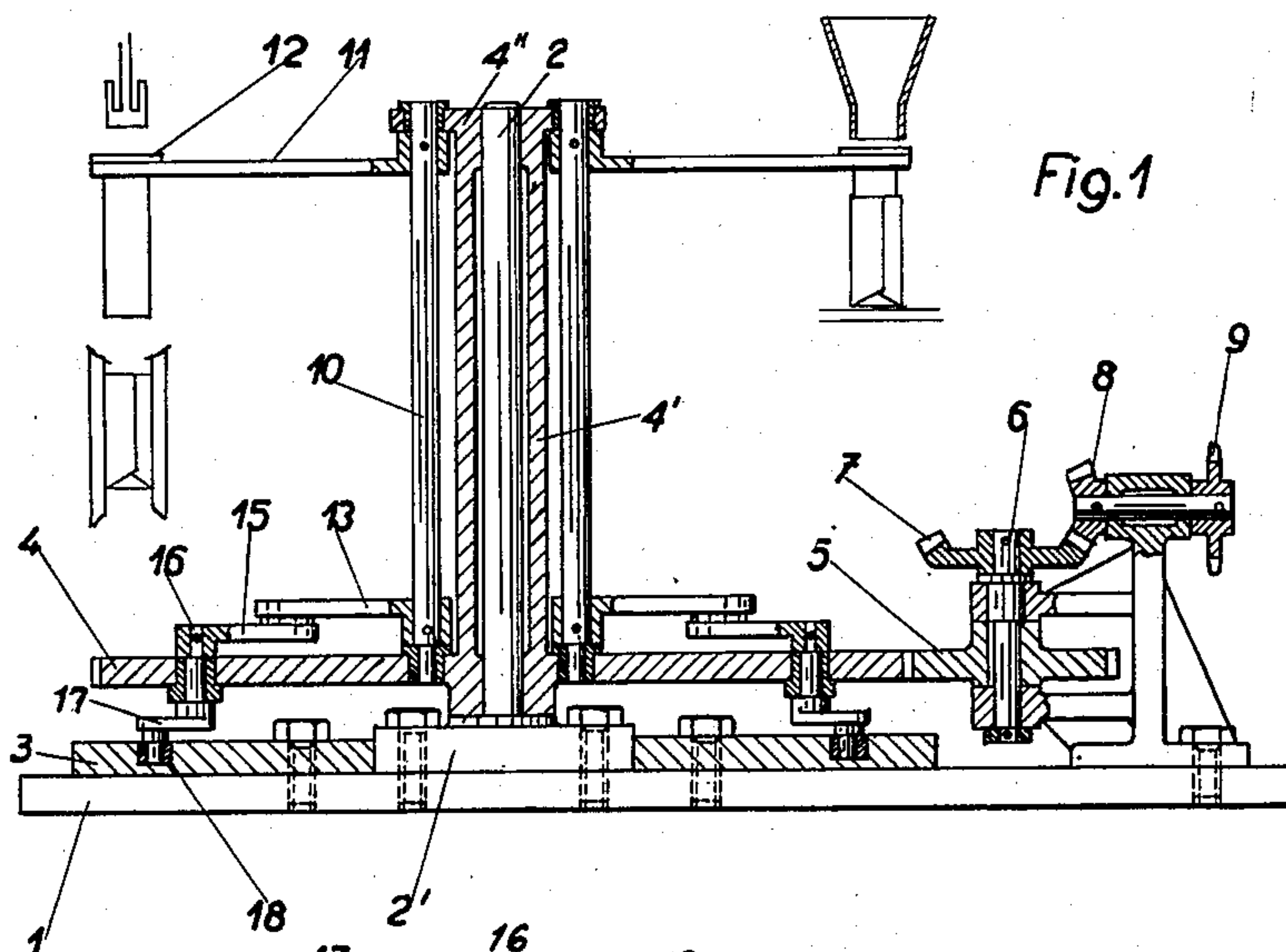


Fig. 1

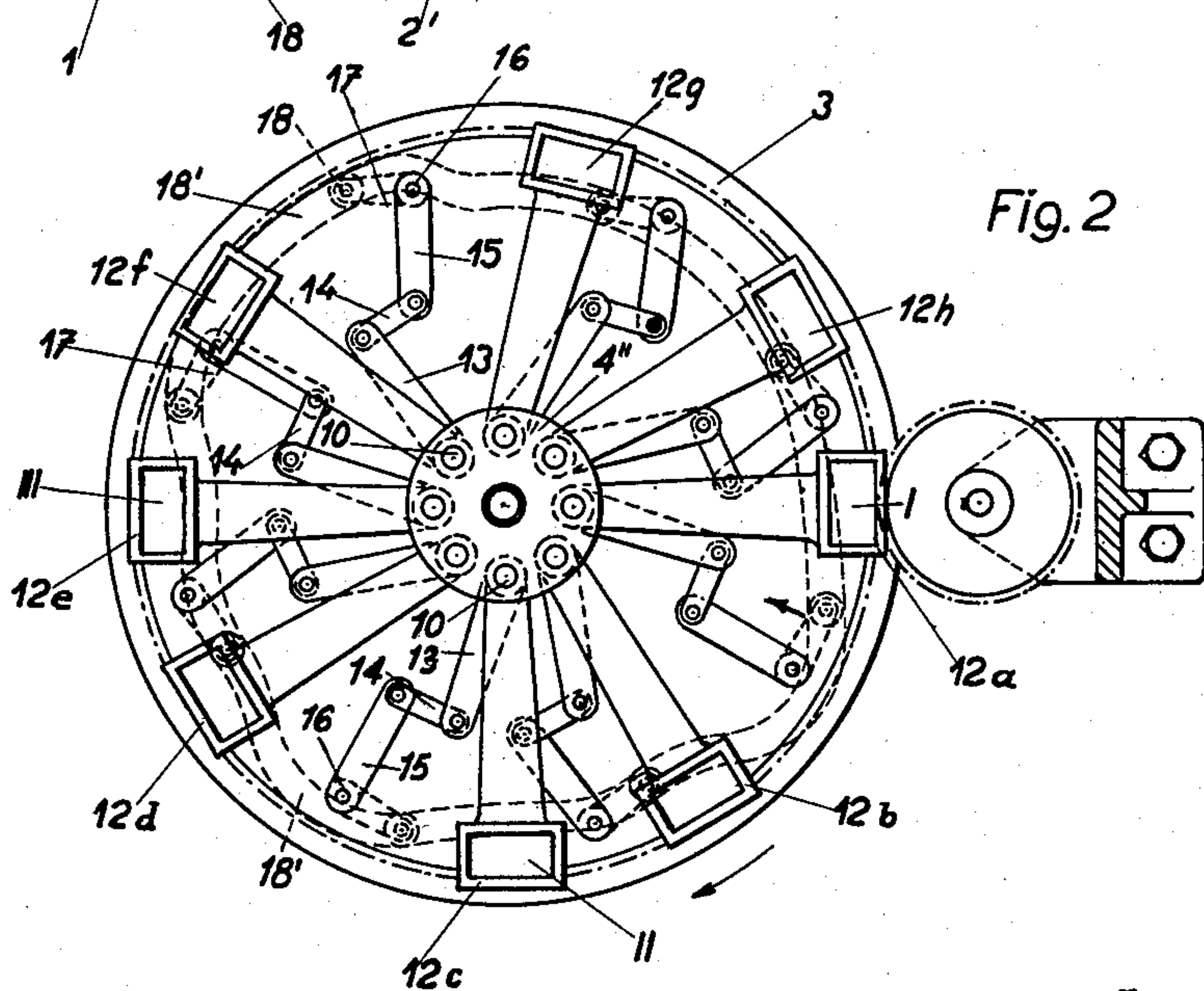


Fig. 2

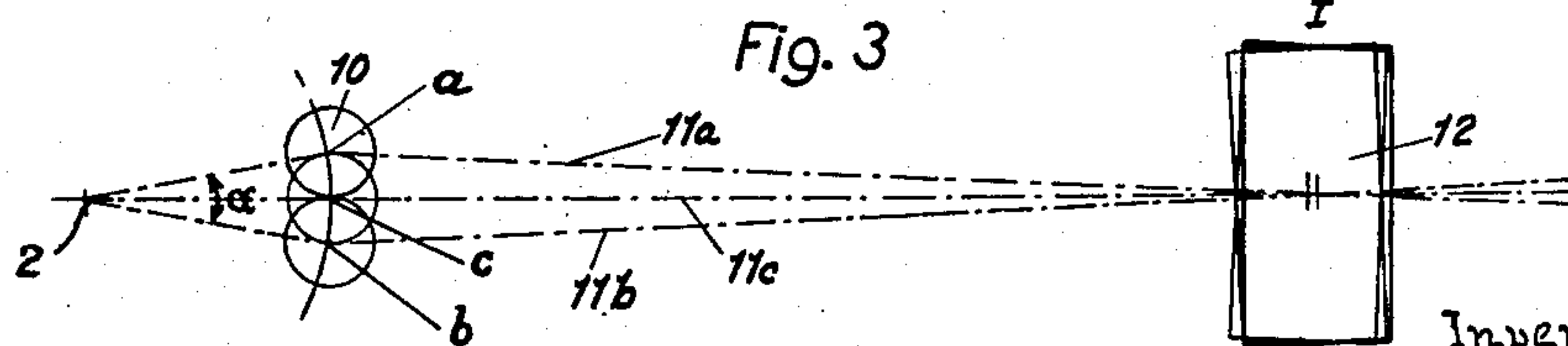


Fig. 3



Inventor:

Jiri Basus

by Paul H. Smoller

Jan. 27, 1953

J. BASUS

2,626,702

DEVICE FOR PACKING FIBROUS MASSES

Filed Jan. 28, 1948

3 Sheets-Sheet 2

Fig. 4

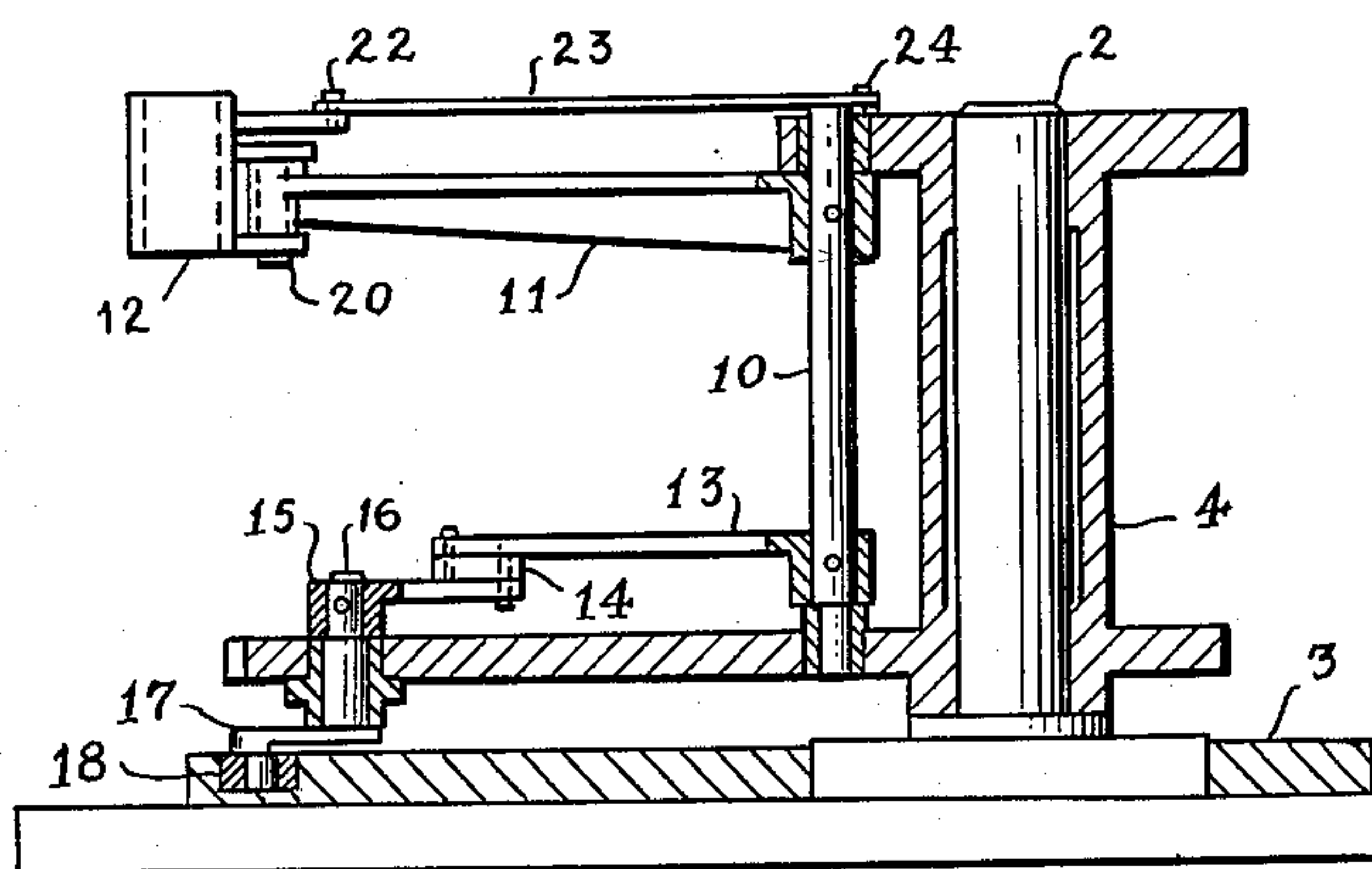


Fig. 5

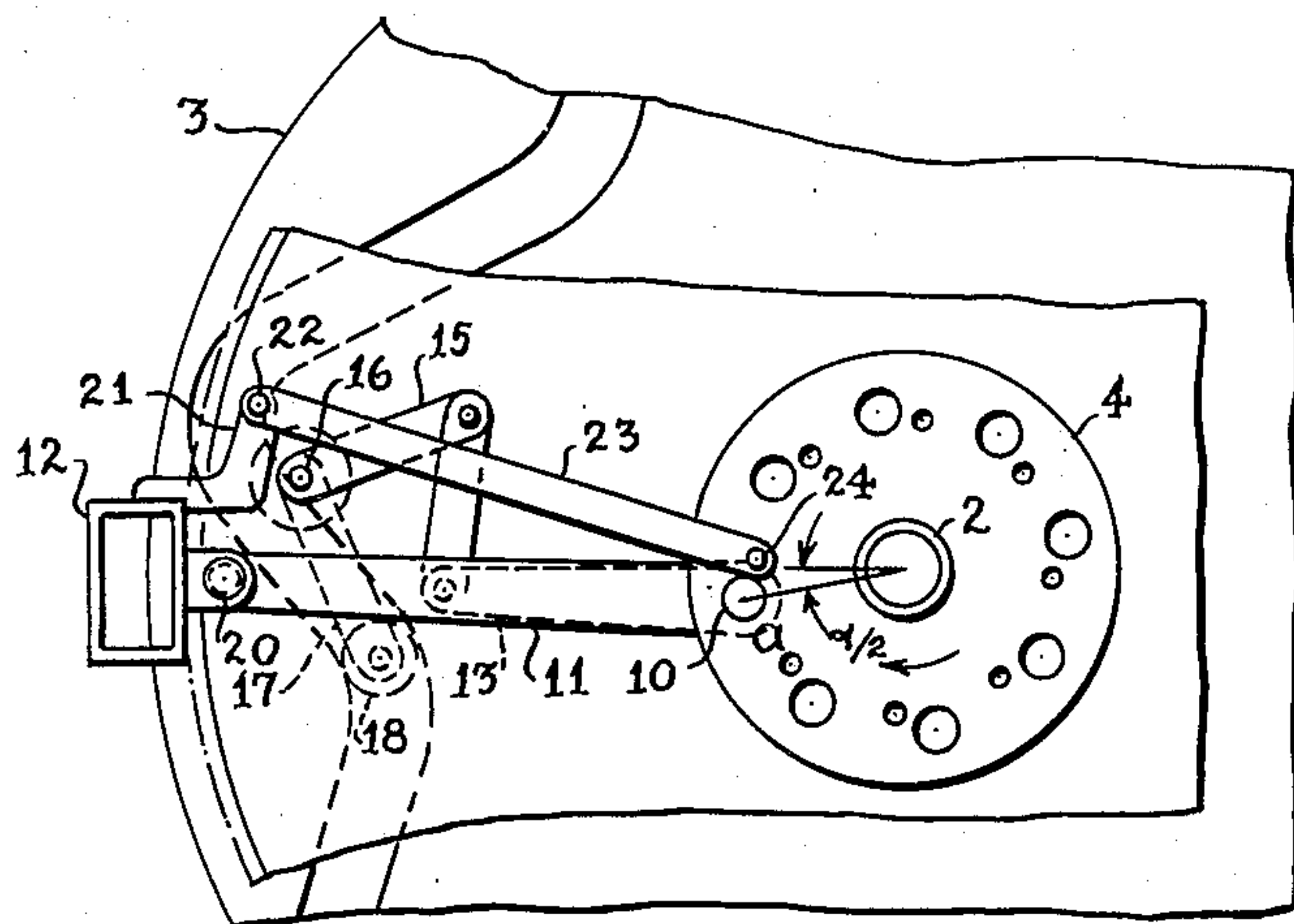
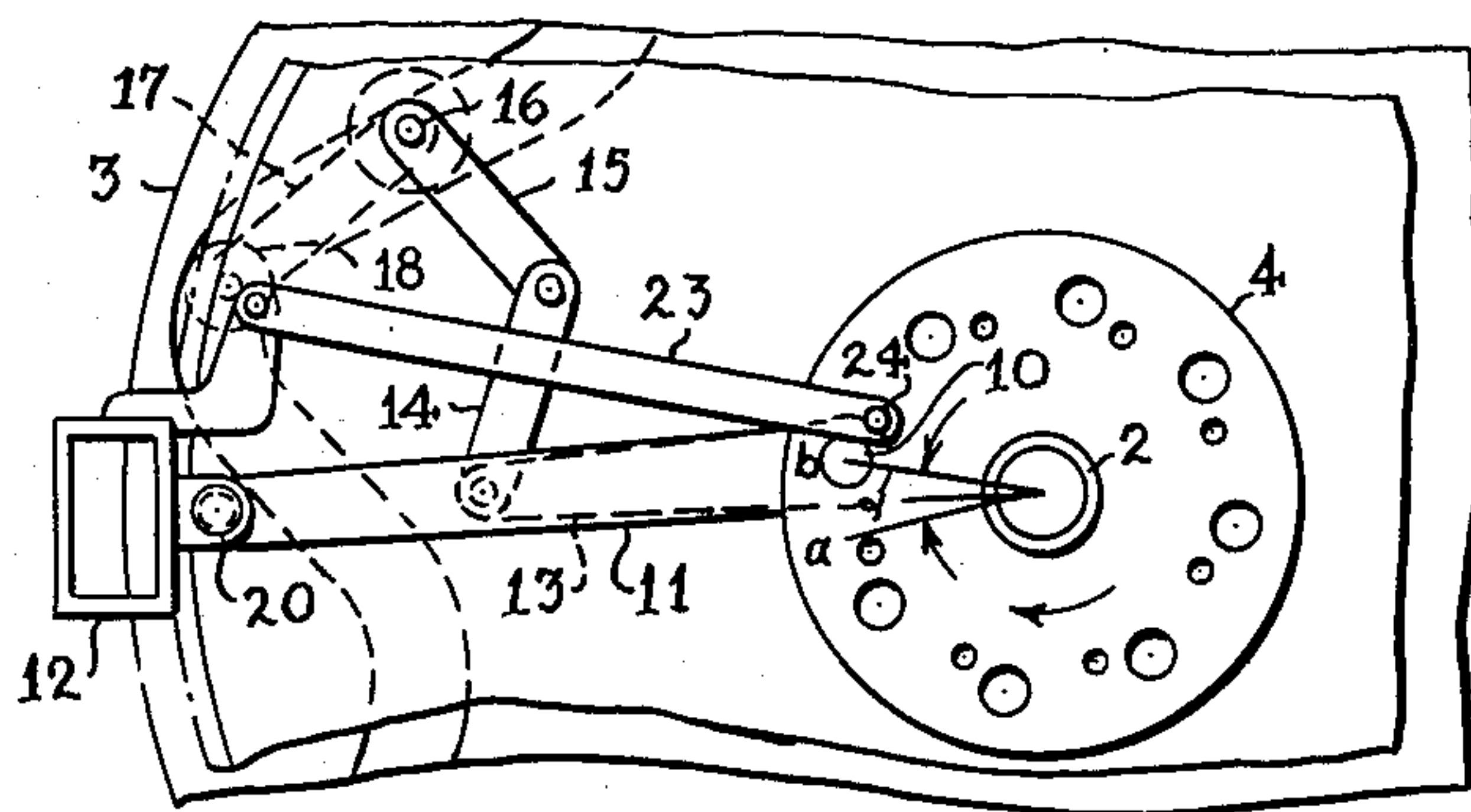


Fig. 6



INVENTOR.

Jiří Basus

BY

*Anthony Lawrence*  
ATTORNEY

Jan. 27, 1953

J. BASUS

2,626,702

DEVICE FOR PACKING FIBROUS MASSES

Filed Jan. 28, 1948

3 Sheets-Sheet 3

Fig. 7.

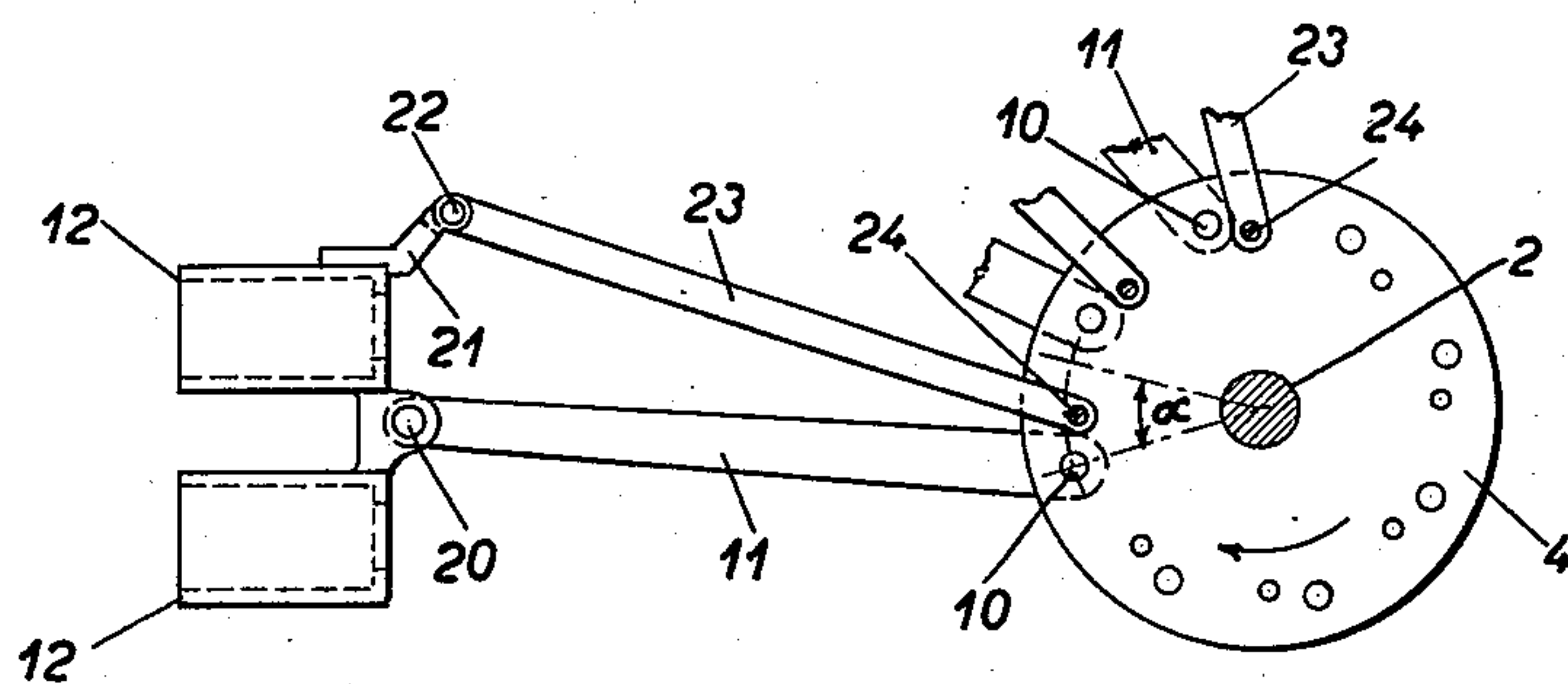


Fig. 8.

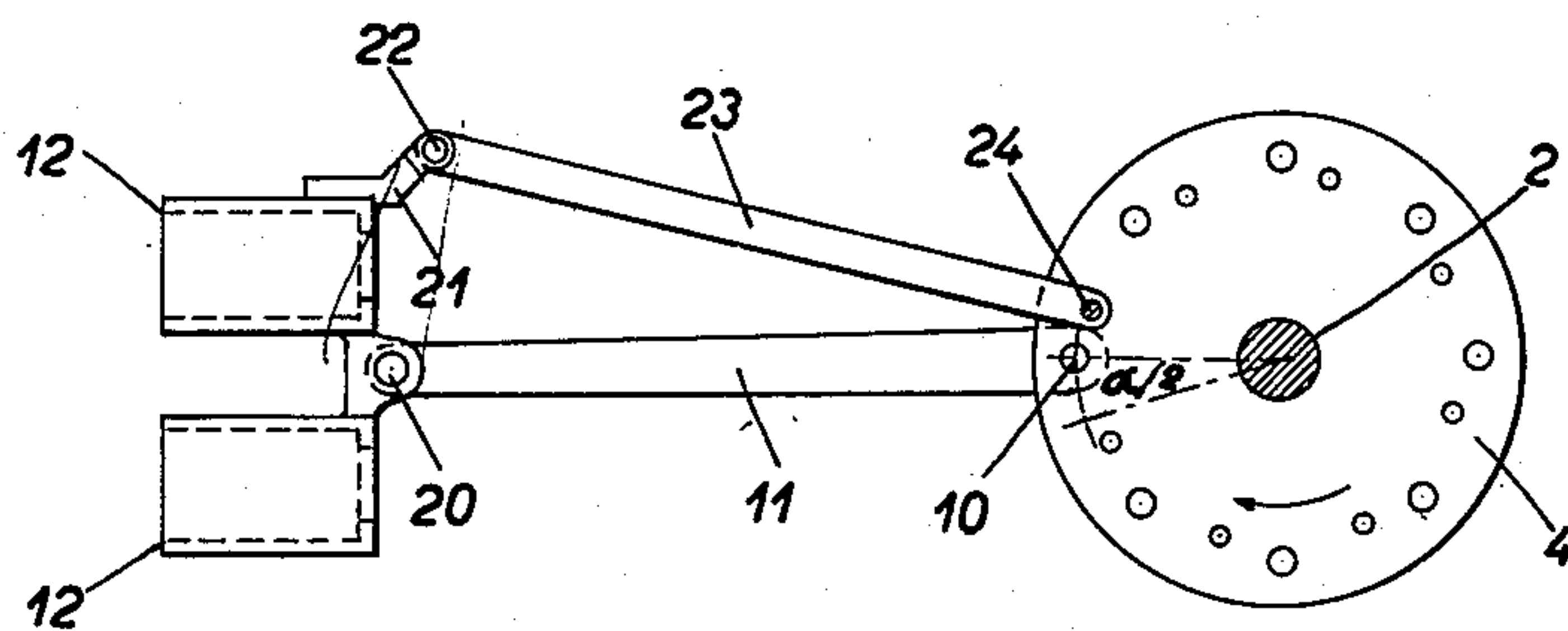
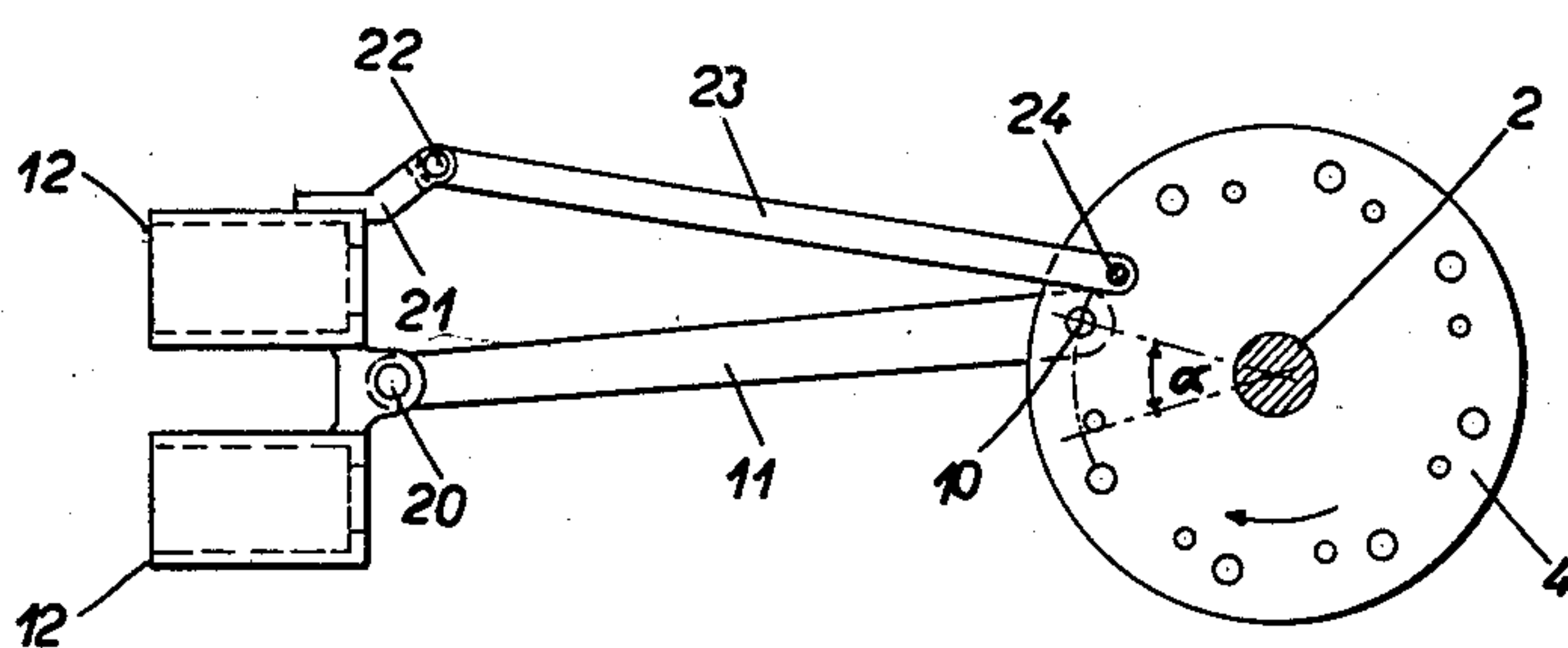


Fig. 9.



Inventor:

Jiří Bašus,

by

Paul H. Summer



## UNITED STATES PATENT OFFICE

2,626,702

## DEVICE FOR PACKING FIBROUS MASSES

Jiří Bašus, Prague, Czechoslovakia, assignor to  
Skoda Works, National Corporation, Plzen,  
Czechoslovakia

Application January 28, 1948, Serial No. 4,893  
In Germany September 17, 1942

Section 1, Public Law 690, August 8, 1946  
Patent expires September 17, 1962

3 Claims. (Cl. 198—209)

1

My invention relates to an apparatus for handling for example packing bulky or fibrous material such as tea, tobacco or the like, or individual articles such as cigarettes.

In hitherto used apparatus of said type a plurality of sleeves adapted to receive the material have been arranged in equal intervals upon a drum or other support which has been discontinuously rotated to bring one sleeve after another into an operative and temporarily stationary position. This known apparatus had many disadvantages. Thus said drums or supports had to be quite heavily built and their considerable mass being repeatedly accelerated and decelerated during the interrupted rotation influenced unfavorably the operation of the apparatus. This made it impossible to increase the rotational speed of said support in order to increase the output of the apparatus.

The main object of my invention is to avoid the said disadvantages and to provide an apparatus of said type which is simple and reliable in construction and efficient in its operation. According to my invention the sleeves or sleeve groups are arranged at the tips of supporting arms which are pivoted upon a uniformly rotating driving member and said sleeves are in intervals temporarily accelerated and decelerated to counteract the effect of the driving member upon said supporting arms and the sleeves connected thereto and thus to temporarily stop the rotational movement of the sleeves or sleeve groups while the material or articles are handled by and in said sleeves.

The said and other objects of my invention will be more fully understood from the following specification when taken with the accompanying drawing in which three embodiments are illustrated. In the drawing:

Fig. 1 is a sectional view of one embodiment of my new apparatus;

Fig. 2 is a top view thereof,

Fig. 3 is a schematical showing later described in detail,

Fig. 4 a partial sectional view of another embodiment of my apparatus,

Figs. 5 and 6 are top views thereof illustrating two different positions, and

Figs. 7, 8 and 9 illustrate in top view a further embodiment in three different positions.

The same reference characters indicate the same or equivalent parts in all figures of the drawing.

Figs. 1 and 2 show a vertical pivot 2 with base plate 2' mounted upon the machine base 1.

2

Concentrically surrounding said pivot 2 is a cam plate 3 also mounted upon the machine base 1 and having upon its top face an endless non circular groove or race 18'. This groove 18' is adapted to guide a series of horizontally turnable rollers 18 to impart to them a predetermined inward and outward movement relative to the pivot 2 for a purpose which will be later described.

Journalled upon said pivot 2 is a driving member comprising a circular disc 4 with a peripheral toothing. Said disc 4 is arranged above the cam plate 3 and is provided with a hub 4' extending along said pivot 2 and terminating in a head plate 4''. Said driving member is continuously and uniformly turned about the pivot 2 in any suitable manner in clockwise direction indicated by the arrow in Fig. 2, for example as shown by the pinion 5 which meshes with the toothing of the disc 4 and is driven by the sprocket wheel 9 and the intermediate bevel gear drive 6, 7, 8.

A series of vertical spindles 10, eight in the shown embodiment, are equidistantly spaced in a circle around the pivot 2 and each spindle is journalled with its ends in the driving disc 4 and the said head plate 4'', respectively. Each of said vertical spindles 10 has attached thereto at its upper end a radially extending arm or carrier 11 supporting on its free end a packaging sleeve 12 or the like and at its lower end an essentially radial lever 13. The free end of each lever 13 is connected by a link 14 with an essential radial lever 15 which together with the trailing lever 17 arranged below the driving disc 4 form a bell crank lever turnable upon the short vertical pin 16 journalled in said disc 4. Each of said lower levers 17 is provided with a horizontally turning roller 18 which travels in the endless cam groove 18' as already mentioned above. The circular portions of this groove 18' are interrupted by non circular portions which effect a rocking movement of the levers 17 about the pin 16. This movement is transmitted by the lever 15, the link 14 and the lever 13 upon the spindle 10 so that the same is angularly displaced relative to the driving member 4 rotating in clockwise direction. It will be easily understood that each of the spindles 10 will be partially turned in anticlockwise direction when the respective roller 18 while traveling in the groove 18' moves away from the rotational axis of the driving member 4, thus retarding the rotational movement of the respective sleeve 12 connected through the arm 11 to the spindle 10, and



3

that each of the spindles will be partially turned in clockwise direction when the respective roller 18 while traveling in the groove 18' moves towards the rotational axis of the driving member, thus advancing the rotational movement of the respective sleeve 12. It will be further understood that each sleeve 12 may be kept transitively at rest in case that the speed of said retardation will equal the circumferential speed imparted by the uniformly rotating driving member 4. Any expert in the art will be in a position to design said non circular groove 18' so that each sleeve 12 will be retarded, advanced or stopped for a certain time interval at any desired place during the rotation of the driving member 4.

Fig. 2 shows each of the eight sleeves 12a, 12b, 12c through 12h in its particular position relatively to the driving member 4 while they rotate with the latter. In the shown embodiment it is assumed that each of the sleeves 12 has to be transitorily stopped when reaching during its rotational movement the positions I (sleeve 12a), II (sleeve 12c) and III (sleeve 12e) to allow the performance of a certain operation for example to receive the wrapper in position I, to fill the wrapper in position II, and to close the wrapper in position III. The sleeves 12a, 12c and 12e are shown during said transitory rest period. This rest period will continue while the respective roller 18 moves in the groove 18' away from axis of rotation of the driving member 4 and effects a compensation of the rotational movement of said sleeve. When said roller 18 reaches the adjoining circular portion of the groove 18' no relative movement between the sleeve 12 and the driving member 4 will occur. When thereafter the roller 12 while traveling in the groove 18' moves towards the said axis of rotation, the bell crank levers 17, 15 will be turned in an anticlockwise direction causing an acceleration in the movement of the respective sleeve 12. When this sleeve reaches an intermediate position such as 12b or 12d the respective roller 18 will start to move away from said axis of rotation and will continue to do so until the respective working or rest position 12a, 12c, 12e, respectively, is reached. During the respective time interval the sleeve remains at rest in position 12c. The relative movements described before are repeated when the sleeve moves from position 12c over the position 12d into the transitory rest position 12b, and again while the sleeve continues to move over the positions 12f, 12g and 12h into the first mentioned position 12a. The cycle described before is repeated as long as required to perform the different operations as related above.

Fig. 3 shows diagrammatically the movement of one supporting arm 11 with sleeve 12 while the spindles 12 are partially turned as described above at first clockwise and then anticlockwise in order to compensate the rotational movement effected by the driving member 4 so that the sleeves are kept temporarily in an at least essentially stationary position while the material is handled by and in said sleeves. In this Fig. 3 three succeeding positions a, c, b, of the spindle 10 are shown while the driving member 4 turns in clockwise direction about an angle  $\alpha$ . As described above the arm 11 supporting the sleeve 12 is turned at first clockwise about the spindle 10 while the same moves from position a to position c and thereafter anticlockwise while the spindle 10 moves from position c into the

4

position b<sub>1</sub> said arm 11 thereby attaining successively the positions indicated by the lines 11a, 11c, 11b, respectively. It will be evident that the sleeve 12 will remain basically stationary during this period although it will only very slightly be moved away from and back to the rotational axis 2 when the supporting arm 11 will turn from the position 11a to the radial position 11c and from the latter into the position 11b, respectively. In addition thereto the sleeve 12 will be slightly angularly displaced. These two secondary movements may be in most cases disregarded as they will not affect the proper operation of the sleeve.

However, in some cases particularly when large sized sleeves or sleeve groups are attached to each supporting arm 11 the said angular displacement of the sleeve or sleeve group may become disturbing. To avoid this disadvantage my apparatus may be constructed as illustrated in Figs. 4, 5 and 6. This embodiment is basically identical with the embodiment shown in Figs. 1 and 2 and described above in detail. However, according to Figs. 4-6 the sleeves 12 are not rigidly mounted upon their respective arm 11 but are journaled thereto by means of a pivot 20. A supplemental connecting bar 23 is journaled with one end at 24 to the driving member 4 and with its other end to said sleeve 12 or to an integral part thereof such as the arm 21. The said bar 23 will practically completely prevent an angular displacement of the sleeve 12 while the same is otherwise in a stationary position during its operation.

The embodiment shown in Figs. 4 through 6 may be modified as illustrated in Figs. 7-8 which show in a top view three succeeding positions of the supporting arm 11 and the driving member 4 while the latter turns about an angle  $\alpha$  during the rest period of the sleeves 12. In this modified embodiment a group of two sleeves 12 is journaled upon each arm 11. It will be well understood that the sleeves 12 may be arranged in other groups than in groups of two and that they may be adapted to receive any kind of material such as cigarettes, tobacco, tea, drugs and other commodities.

While three specific embodiments of my invention have been shown and described in detail to illustrate the application of the principles of my invention, it will be well understood that the same may be otherwise embodied without departing from such principles.

What I claim as my invention is:

1. In a device of the type described for handling bulky or fibrous material such as tea, tobacco or the like, or articles such as cigarettes, the combination comprising a machine base, a vertical journal mounted upon said base, a driving member rotatably mounted upon said vertical journal, driving means to impart a uniform rotation to said driving member; a plurality of vertical spindles equidistantly spaced in a circle around said journal and journaled in the driving member; a plurality of essentially radially extending supporting arms, each arm being connected to the upper part of one of said spindles; a plurality of sleeves to receive the material or articles to be handled, each sleeve being attached to the outer end of one of said supporting arms; and means to partially turn said spindles in intervals contrary to the rotation of said driving member so as to counteract the latter's effect upon said supporting arms and the sleeves connected thereto and thus to



5

stop temporarily the rotating movement of the sleeves around said vertical journal while the material or articles are handled by and in the sleeves.

2. In a device of the type described for handling bulky or fibrous material such as tea, tobacco, or the like, or articles such as cigarettes, the combination comprising a machine base; a vertical journal mounted upon said base; a stationary cam plate surrounding said journal and provided on its top face with an endless non-circular cam groove; a driving member rotatably mounted upon said vertical journal, said driving member embracing a horizontal driving disc and a hub surrounding said journal; driving means to impart a uniform rotation to said driving member; a plurality of vertical spindles equidistantly spaced in a circle around said journal and journaled in the driving member; a plurality of essentially radially extending supporting arms, each arm being rigidly connected to the upper part of one of said spindles; a plurality of sleeves to receive the material or articles to be handled, each sleeve being attached to the outer end of one of said supporting arms; a plurality of essentially radially extending adjusting levers, each one rigidly attached to one of said spindles; a plurality of short vertical shafts journaled in said horizontal driving disc and equidistantly spaced in a circle thereupon; an upper and a lower lever arm projecting from opposite ends of each of said vertical shafts, each pair of said levers forming a bell crank lever; the free end of each upper lever arm being linked to the free end of one of said adjusting levers; a horizontally turnable roller seated upon the free end of each lower lever arm and travelling in said endless cam groove; this groove being formed to partially turn by means of said lever and arm combination each of said spindles in intervals contrary to the rotation of said driving member so as to counteract the latter's effect upon said supporting arms and the sleeves connected thereto and thus to stop temporarily the rotating movement of the sleeves around said vertical journal while the material or articles are handled by and in the sleeves.

6

porarily the rotating movement of the sleeves around said vertical journal while the material is handled by and in the sleeves.

3. In a device of the type described for handling bulky or fibrous materials, such as tea, tobacco or the like, or articles such as cigarettes, the combination comprising a machine base, a vertical journal mounted upon said base, a driving member rotatably mounted upon said vertical journal, driving means to impart a uniform rotation to said driving member, a plurality of vertical spindles equidistantly spaced in a circle around said journal and journaled in the driving member, a plurality of sleeves to receive the material or articles to be handled, a plurality of essentially radially extending arms having said sleeves journaled thereto, each arm being linked with one end to a sleeve and with its other end to the upper part of one of said spindles; supplemental connecting bars cooperating with said supporting arms, each bar being linked with one end to a sleeve and with its other end to the rotating driving member so as to keep the sleeve in its relative position with regard to the driving member; and means to partially turn said spindles in intervals contrary to the rotation of said driving member so as to counteract the latter's effect upon said supporting arms and the sleeves connected thereto and thus to stop temporarily the rotating movement of the sleeves around said vertical journal while the material or articles are handled by and in the sleeves.

JIRÍ BAŠUS.

## REFERENCES CITED

The following references are of record in the file of this patent:

## UNITED STATES PATENTS

Number	Name	Date
1,461,222	Myers -----	July 10, 1923
2,314,154	McCoy -----	Mar. 16, 1943
2,351,200	George -----	June 13, 1944