

No. 664,698.

Patented Dec. 25, 1900.

E. WENTSCHER.

DISTRIBUTING APPARATUS FOR MATRIX OR DIE SETTING MACHINES.

(Application filed Apr. 18, 1899.)

(No Model.)

2 Sheets—Sheet 1

Fig. 1

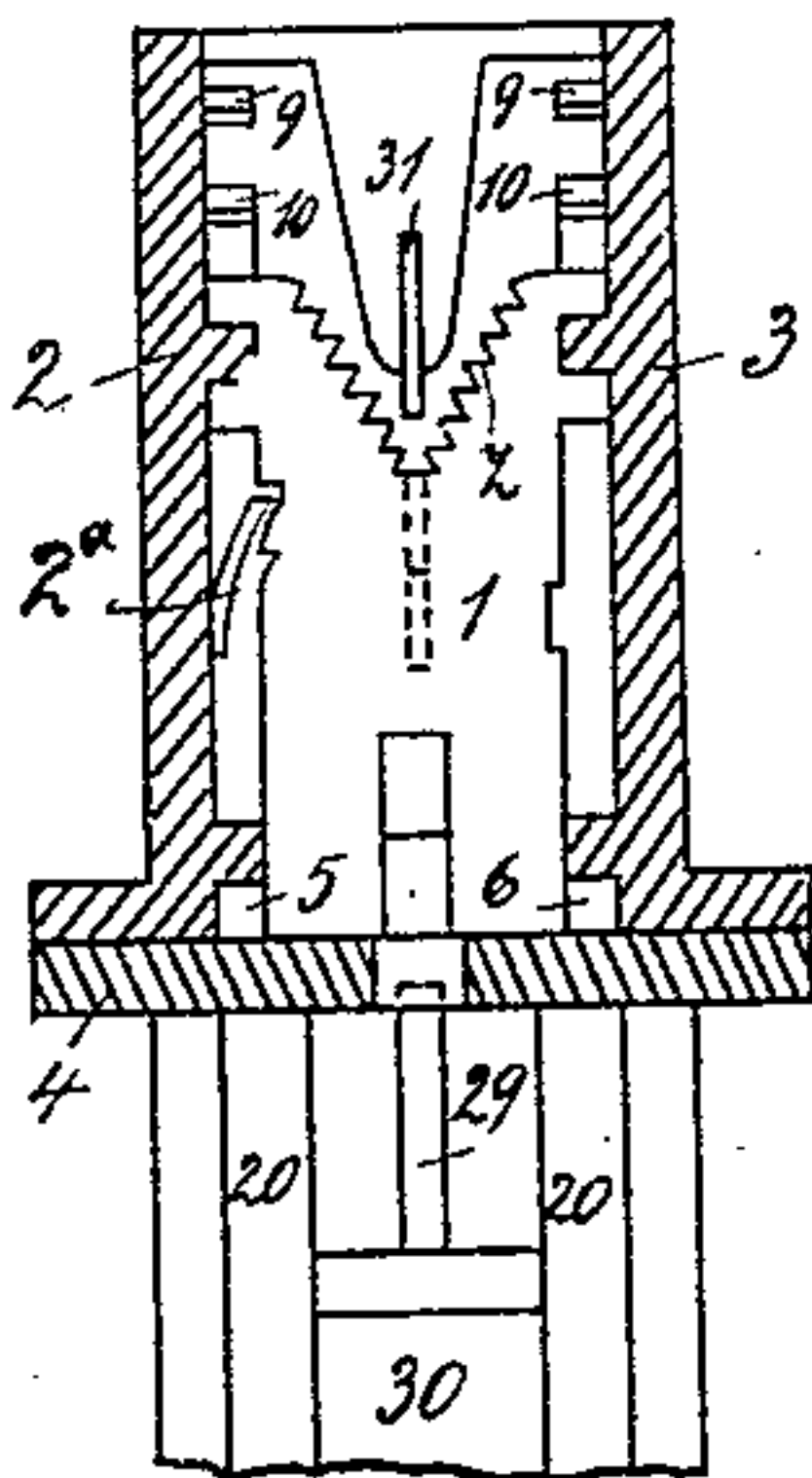


Fig. 2

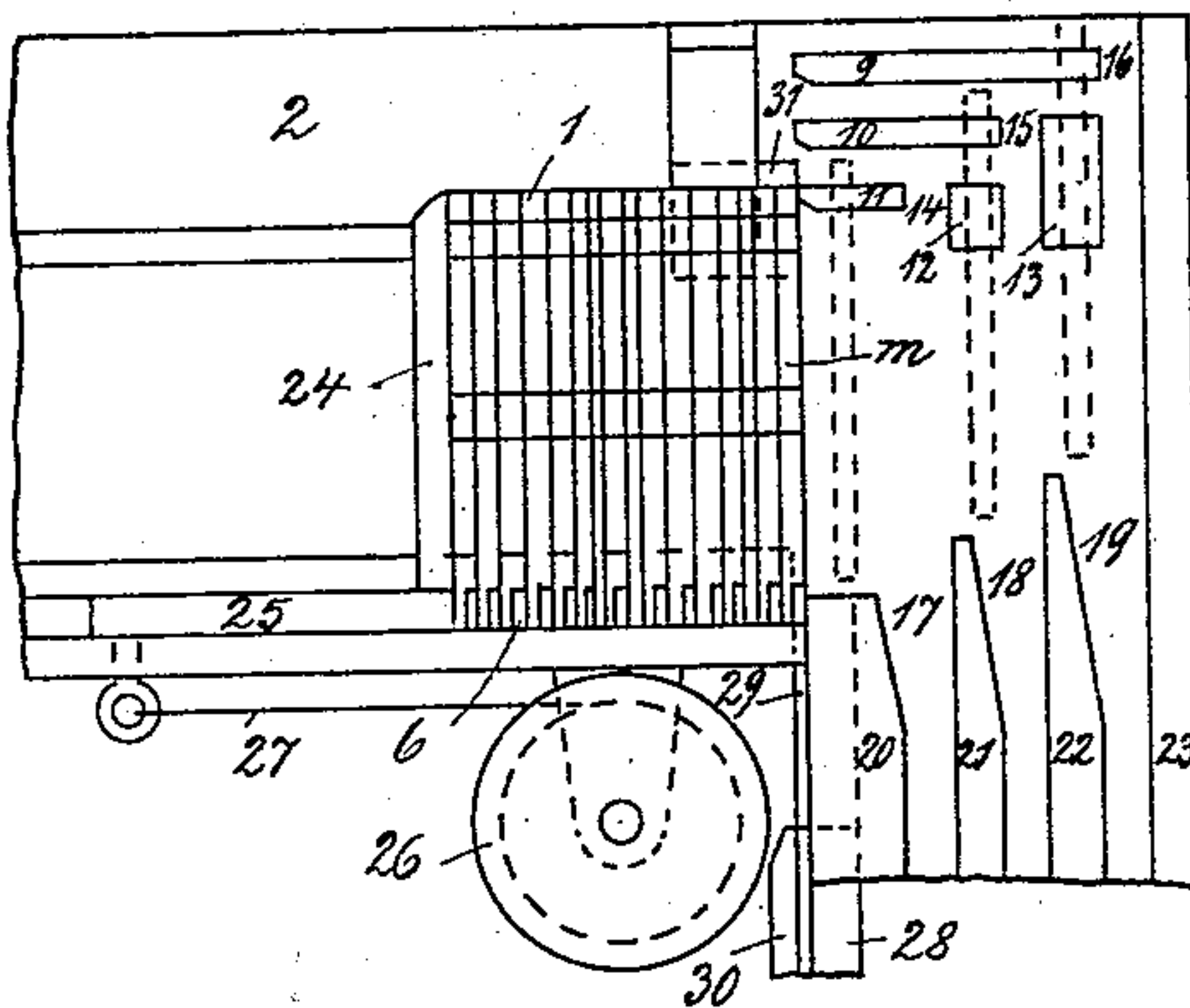


Fig. 3

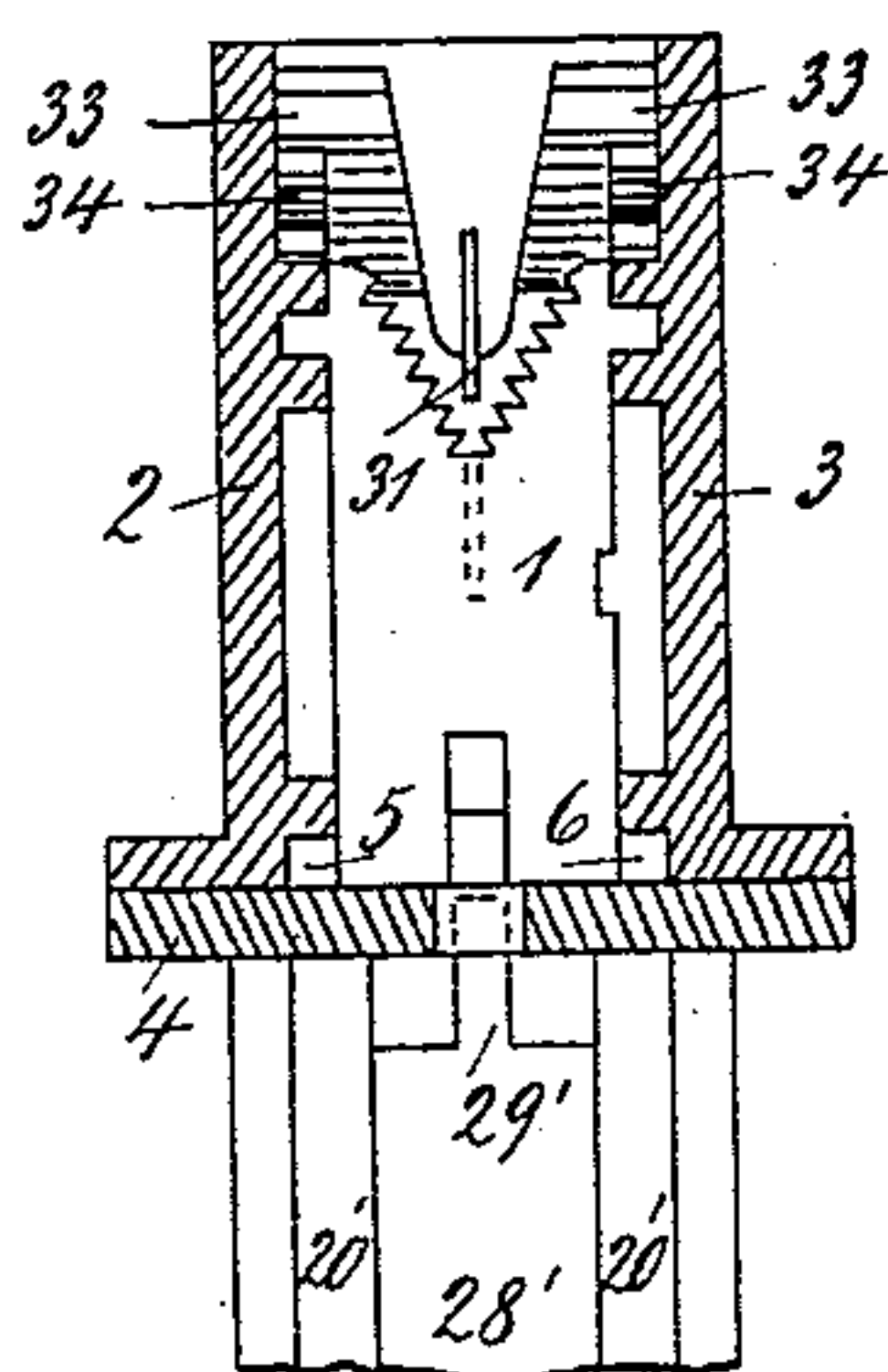


Fig. 4

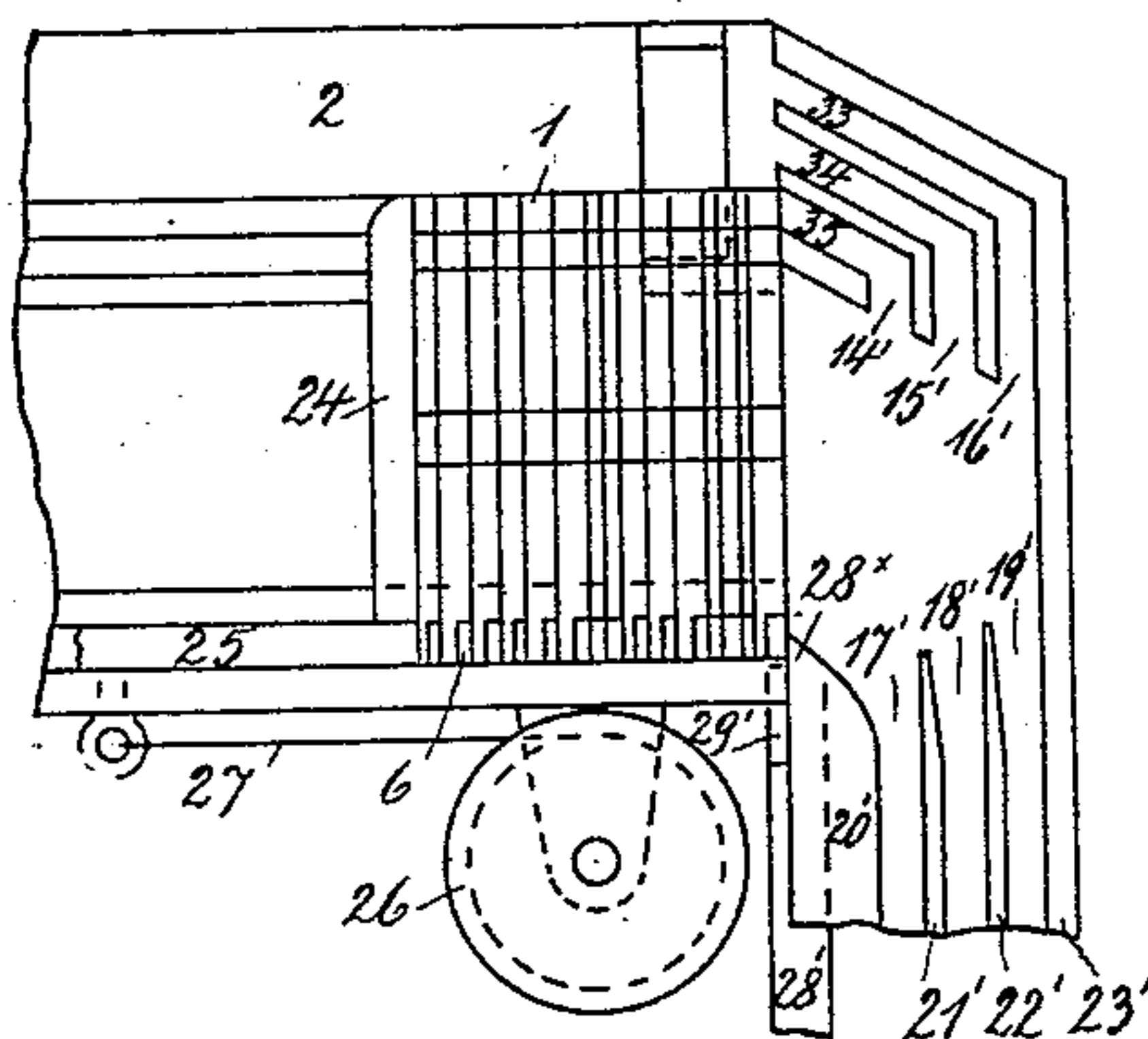


Fig. 11

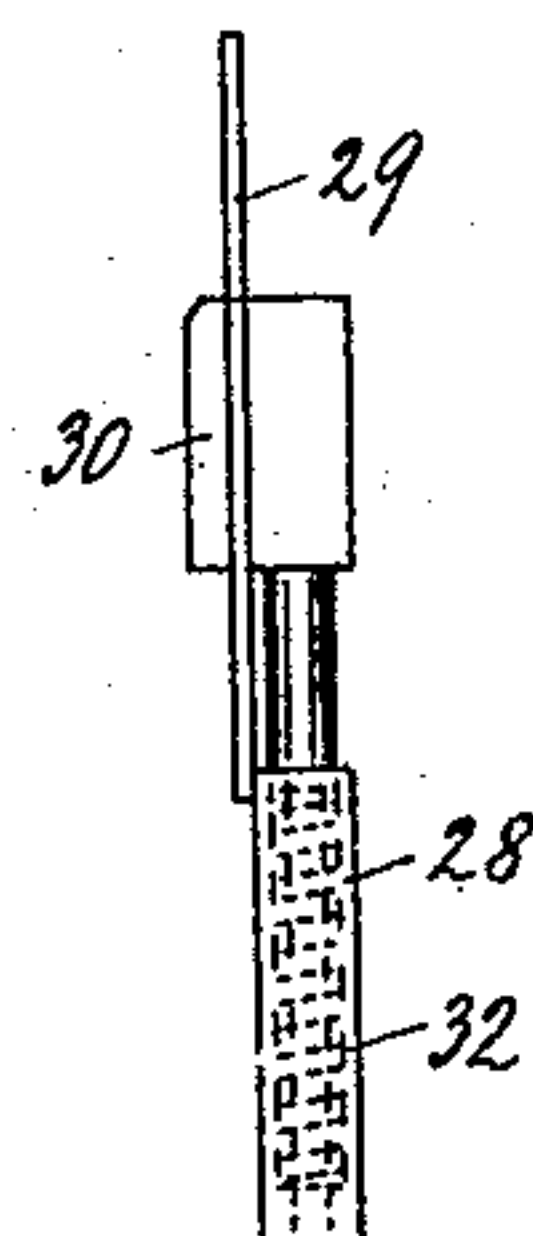


Fig. 5

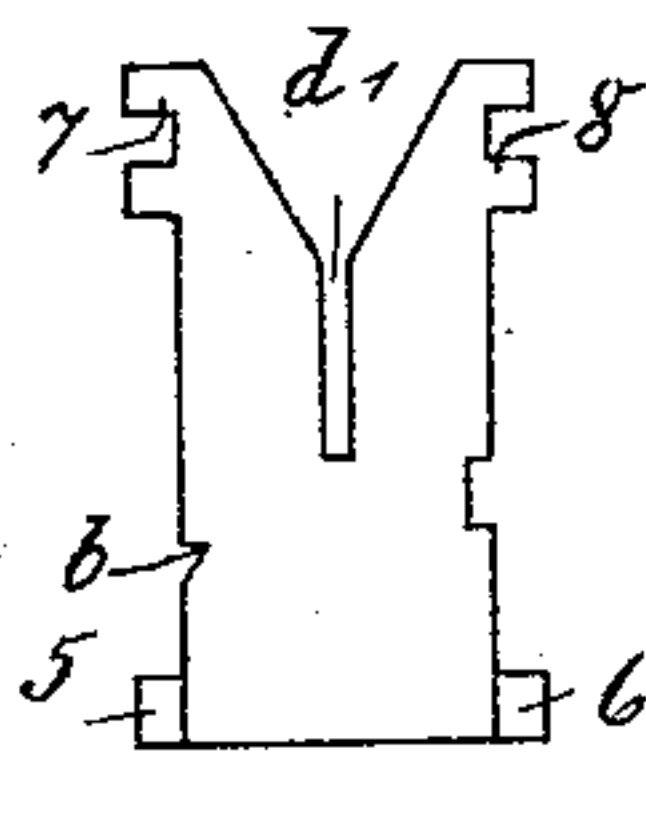


Fig. 6

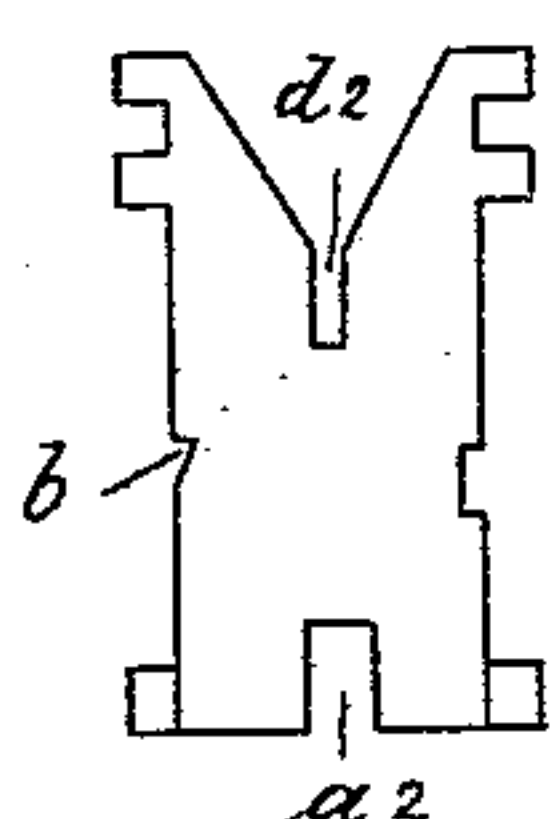


Fig. 7

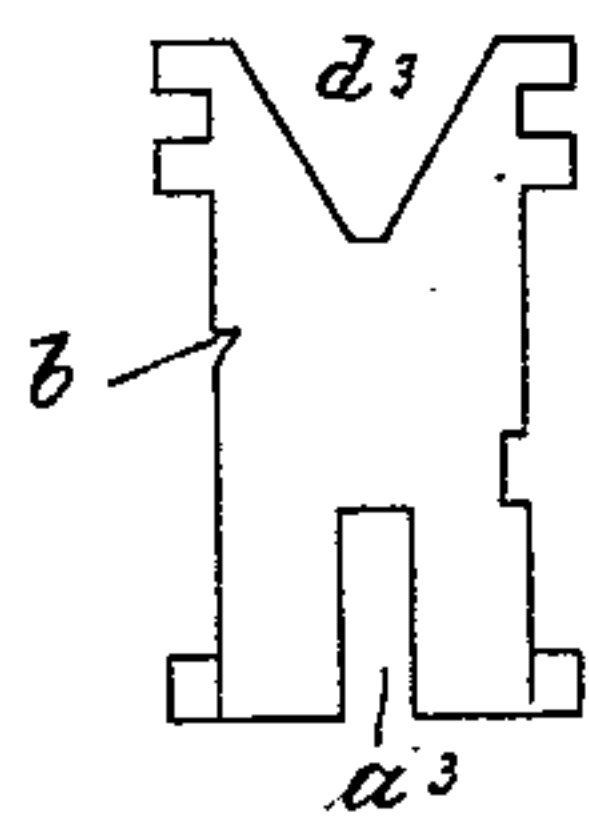


Fig. 8

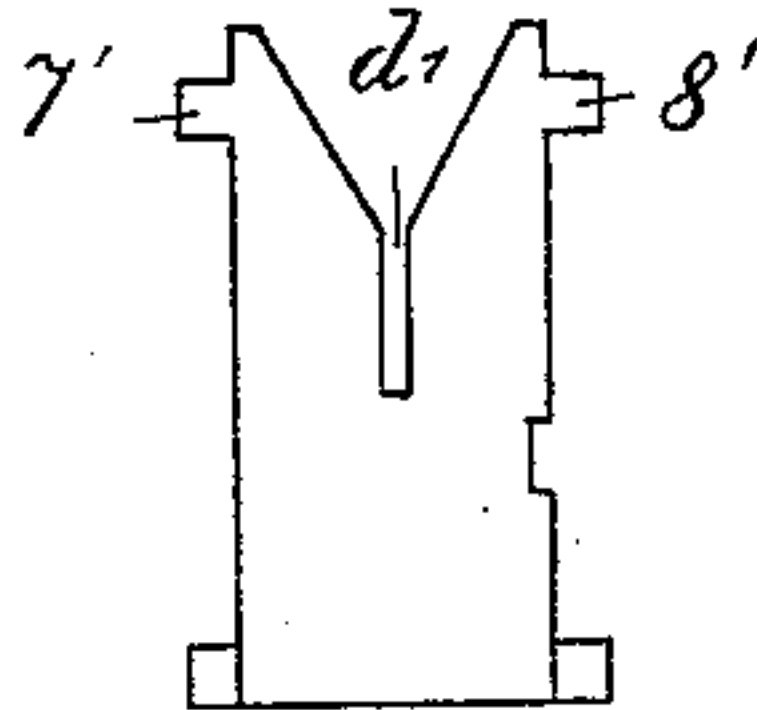


Fig. 9

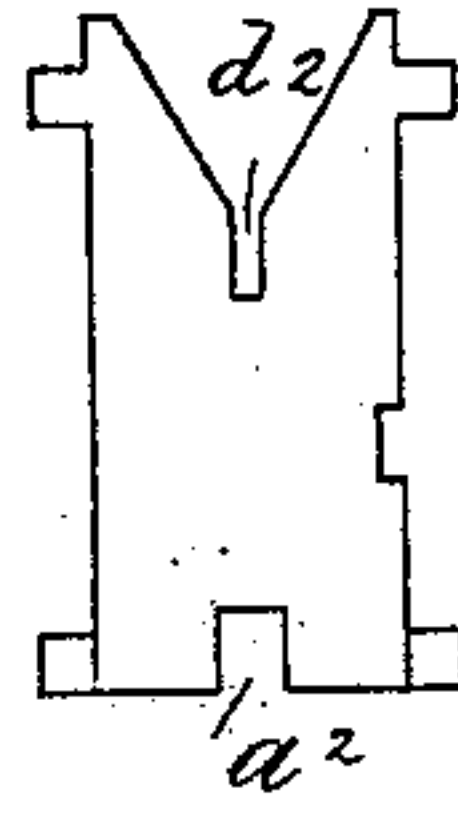
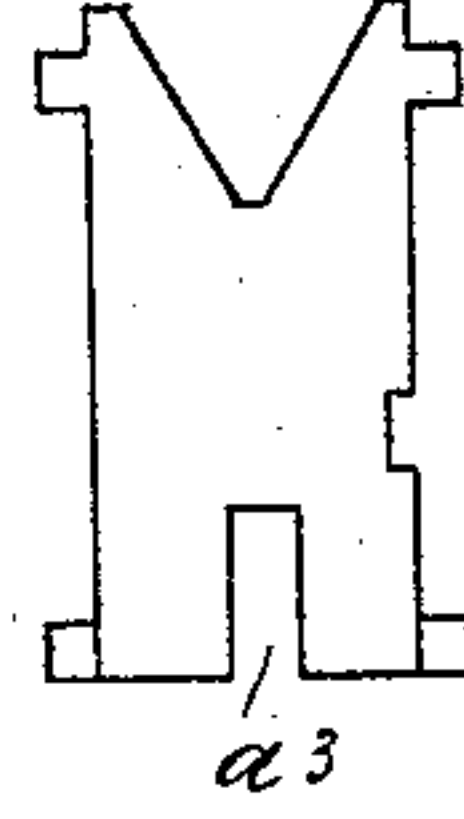


Fig. 10



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Fig. 12.

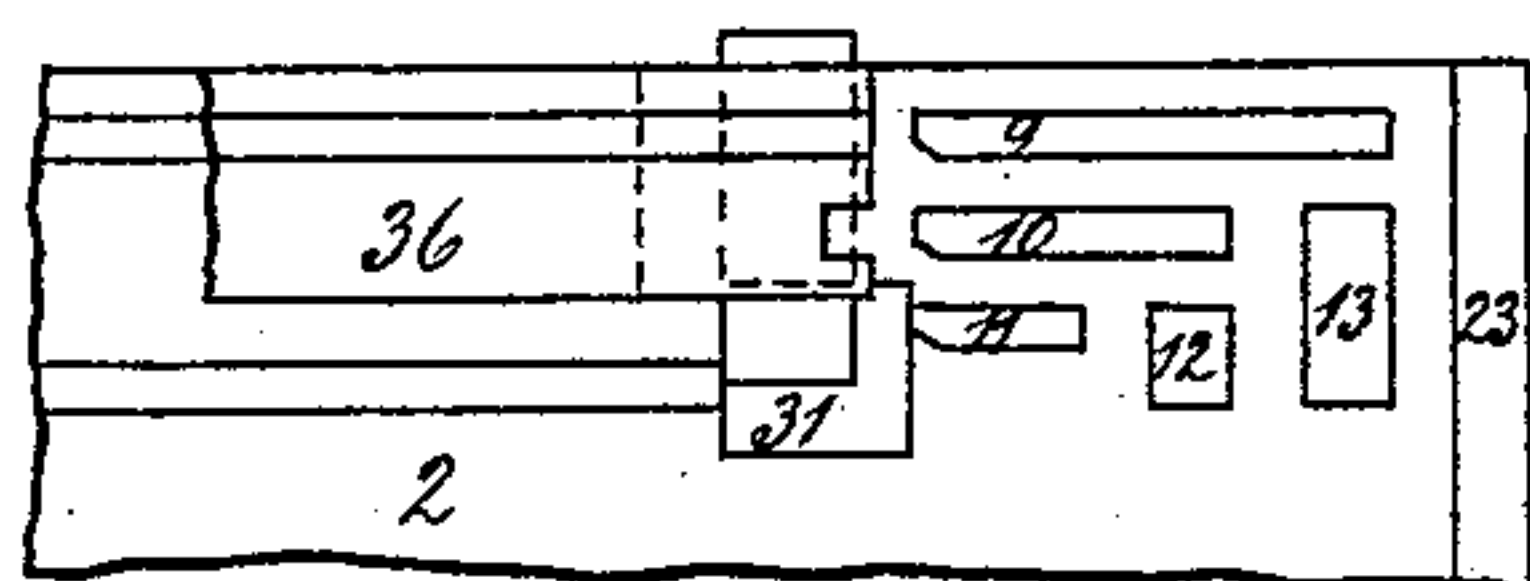


Fig. 14.

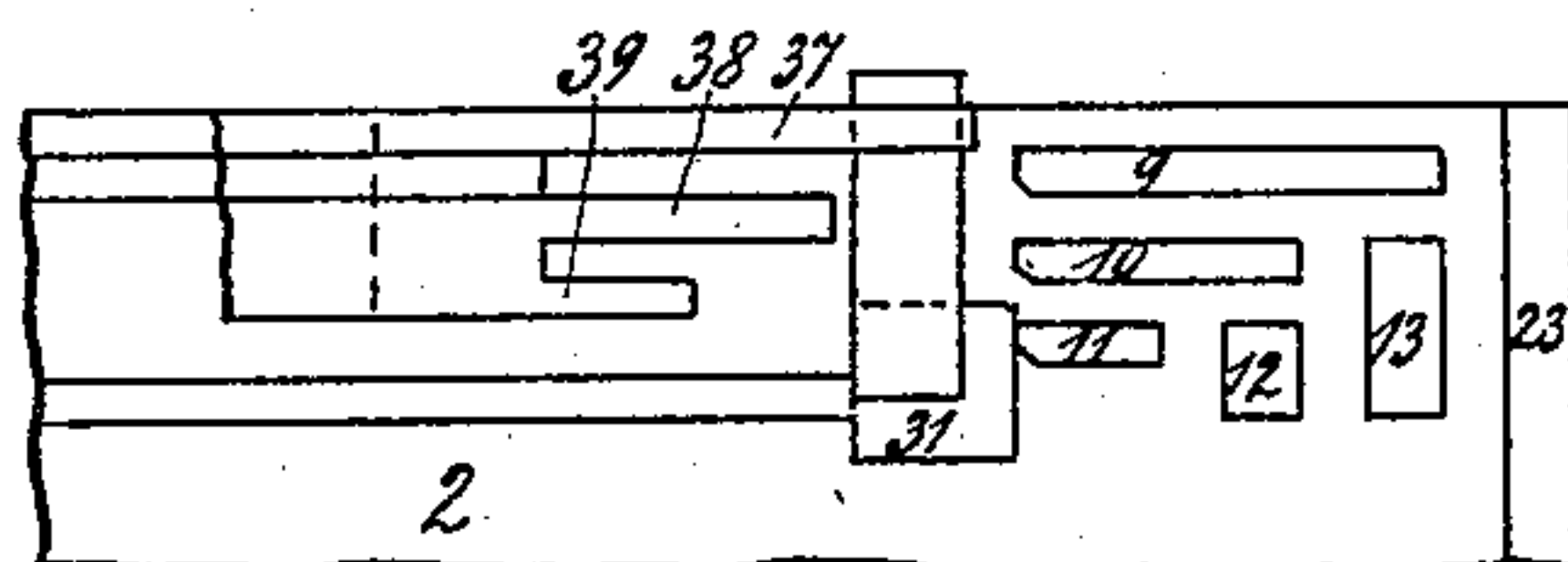


Fig. 13.

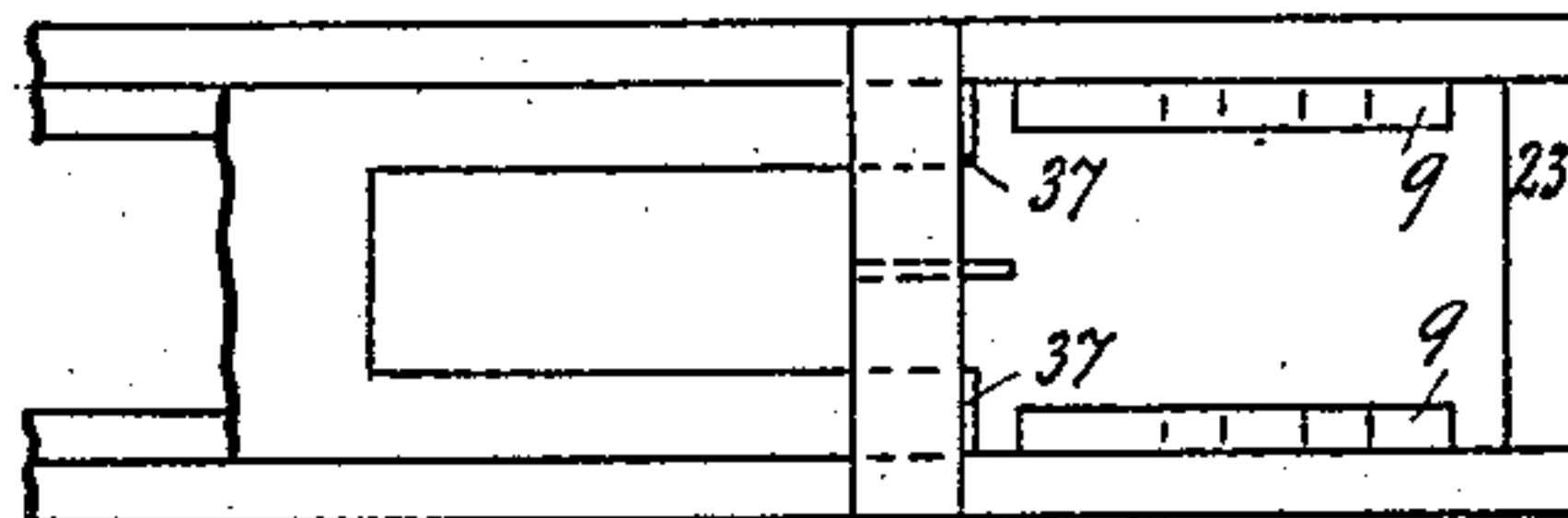
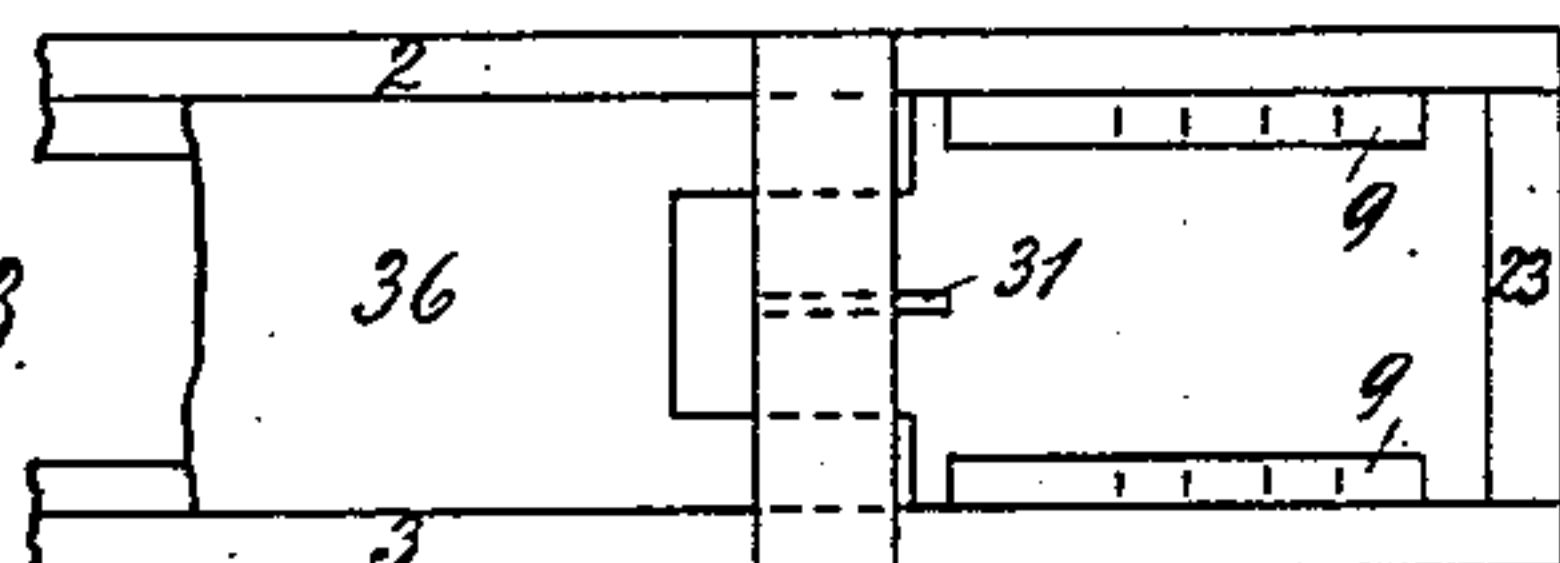


Fig. 15.

Fig. 16.

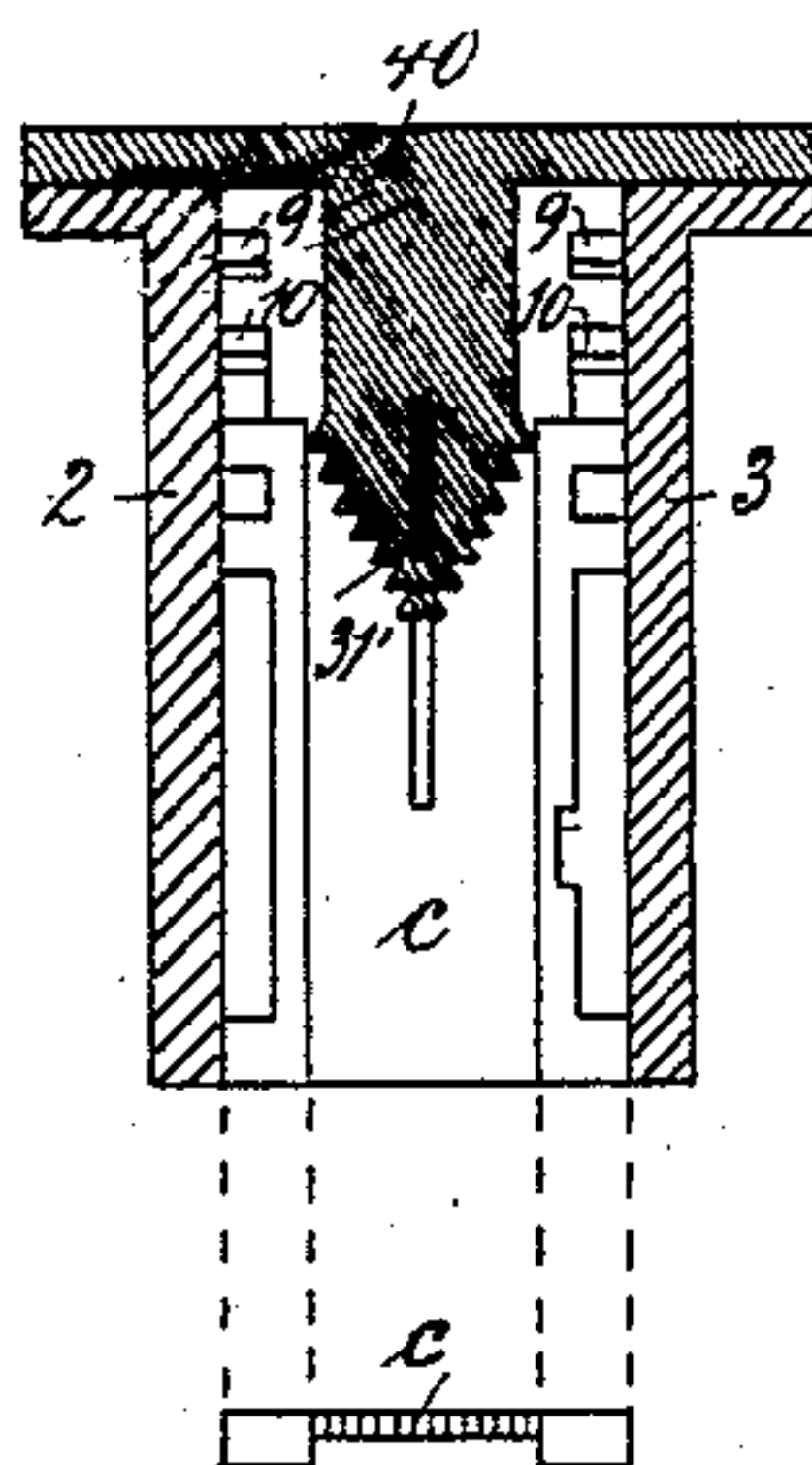


Fig. 17.

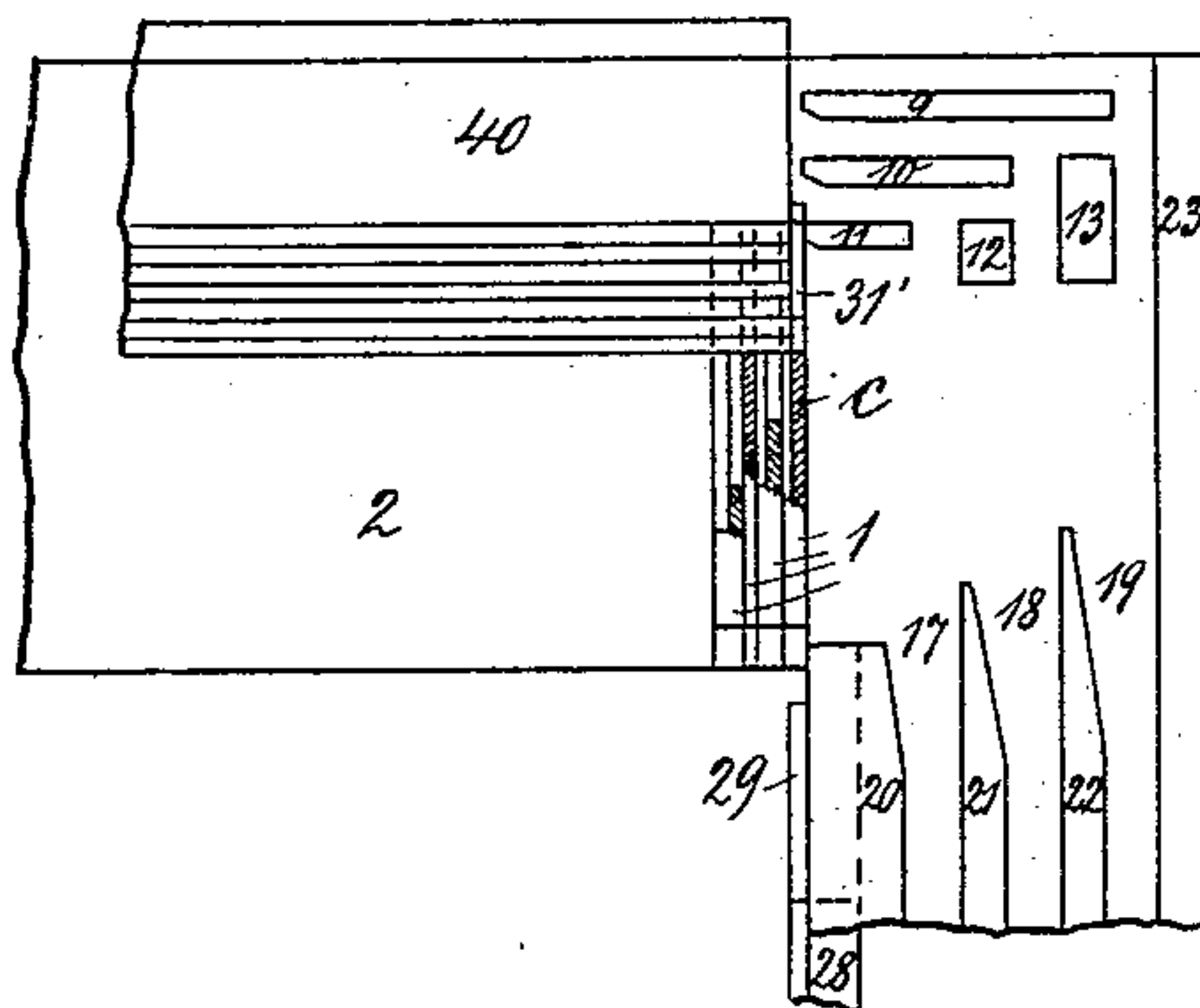
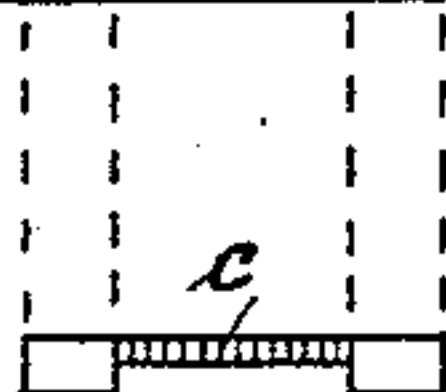


Fig. 18.



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UNITED STATES PATENT OFFICE.

ERNST WENTSCHER, OF BERLIN, GERMANY:

DISTRIBUTING APPARATUS FOR MATRIX OR DIE SETTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 664,698, dated December 25, 1900.

Application filed April 18, 1899. Serial No. 713,505. (No model.)

To all whom it may concern:

Be it known that I, ERNST WENTSCHER, a subject of the German Emperor, residing at Berlin, Germany, have invented new and useful Improvements in the Distributing Apparatus of Matrix or Die Setting Machines, of which the following is a specification.

My invention relates to that class of matrix or die setting machines in which a plurality of sorts or fonts of characters is to be used for producing mixed matter; and the objects of my invention are, first, to provide means for automatically distributing the characters of the several sorts and assembling them in a condition ready to be uniformly composed again by machinery; second, to perform the distribution of the several characters by means of but one set of main-nick combinations, being the same for each sort, the separation of characters of the several sorts being controlled by additional separating-nicks varying from sort to sort. By these means the characters are first separated by sorts, and then the characters of each sort distributed. I attain the said objects by the means illustrated in the accompanying drawings, in which—

Figure 1 is a rear view, and Fig. 2 a side view, of my invention, the front wall 3 of Fig. 1 being removed in Fig. 2. Figs. 3 and 4 are similar views of a modification of my invention. Figs. 5, 6, and 7 show the matrices to be used in the form of my invention represented in Figs. 1 and 2. Figs. 8, 9, and 10 show matrices adapted for use with the mechanism shown in Figs. 3 and 4. Fig. 11 is a view of a peculiar form of pusher to detach the single matrices from the matrix-line. Figs. 12 and 13 are a side view and a top view, respectively, of a detail of my invention, and Figs. 14 and 15 are similar views of a modified form of the said detail; and Figs. 16 and 17 are views of my invention corresponding to Figs. 1 and 2 or to Figs. 3 and 4, respectively, showing the same attached to the Mergenthaler linotype-machine.

In the drawings the matrices have been given the form of the Mergenthaler linotype-matrices, any other system of distributing-nicks, however, being compatible with my invention, as it will be hereinafter seen that the separation by sorts in my invention is

quite independent of the peculiar arrangement of the proper distributing-nicks:

Referring first to Figs. 1 and 2, the line of matrices 1 is contained in a casing which consists of two walls 2 3 and a bottom plate 4. There are assumed to be three sorts of matrices, Figs. 5, 6, and 7, provided with lateral lower projections 5 6 and with similar upper projections 7 8, the said projections serving as guides for the matrices, together with corresponding ribs on the side walls 2 3 of the casing, Fig. 1. Walls 2 3 are continued toward the right, Fig. 2, projecting downward and closed at opposite sides by cross-walls 20 23, so as to form a vertically-descending shaft. Guide-ribs 9 10 11 and stops 12 13 are provided in the upper part of this shaft, leaving notches 14 15 16 for the passage of the upper lateral projections of the matrices, and channels 17 18 19 are formed by partitions 21 22 beneath the notches 14 15 16, respectively. The matrices are guided on ribs 9 10 11 by means of their recessed portions 7 8 and forwarded thereon until they reach the notches 14 15 16 and will then drop into the corresponding channels 17 18 19. Each of the latter is connected to a separate distributing apparatus. By these means the matrices are separated by sorts and then the matrices of each sort separately forwarded to their proper distributing apparatus. As heretofore mentioned, the said separation of the matrices is performed by peculiar nicks. Supposing, for instance, there are three sorts of matrices, the matrices of the second sort are provided with a lower recess a^2 , Fig. 6, and those of the third sort with a lower recess a^3 of greater depth, while no corresponding recess is to be provided to the matrices forming the first sort, Fig. 5. However, a lower recess could be provided to each sort of matrices, provided that such recess be made of different depth for each sort.

Wall 20 and ribs 11, Fig. 2, form an abutment for the line of matrices to be separated, the foremost matrix bearing with its lower end against wall 20 and with its uppermost lateral projections against ribs 11, the line being gently pressed toward the right by means of any angle-shaped slide 24 25 and a cord 27, connected thereto and wound on a spring-operated barrel 26.

A slide 28 is guided in wall 20 and reciprocated by any convenient means, carrying a pusher 29 and provided with a rubbing-surface 30. The pusher fits into the recesses a^2 a^3 and its thickness does not exceed that of the thinnest matrix, so that only the foremost matrix, regardless of its thickness, can be seized by the pusher in its upward movement, while at the same time the rubbing-surface 30 comes into frictional contact with barrel 26, turning the same backward, and thus releasing slide 24 25 and likewise the line from pressure.

The guide-ribs for the matrices terminate at the left of the abutment of the line, leaving clear spaces for the passage of the lateral projections of the matrices, the foremost matrix m thus being permitted to be shifted upward. In order to positively prevent there-by accidental withdrawing of the adjacent matrix or matrices, (this being, however, not absolutely needed, as the line is then not under pressure, as stated before,) the lower projections 5 6 of all matrices may be made of a uniform thickness, as represented in Fig. 2, and the clear space in front of the corresponding guide-rib conforming thereto.

The upward movement of the several matrices is controlled by the depth of recesses a^2 a^3 in such manner that the matrices provided with the deepest recess a^3 , Fig. 7, are raised the least extent to bring their recesses 7 8 to register with the ribs 11, while the matrices provided with the recesses a^2 , Fig. 6, are raised with their recesses 7 8 into the level of ribs 10, and those without a recess on their lower ends, Fig. 5, are raised the greatest extent, so as to bring their recesses 7 8 to the level of ribs 9.

When slide 28 descends, the raised matrix is retained in its elevated position by friction from the adjacent matrix, or, if necessary, by rubbing-surfaces, which may be conveniently provided on the insides of walls 2 3. There could likewise be provided notches b , Figs. 5 to 7, on the edges of the matrices, and a spring-catch 2^a , secured to the inside of wall 2, Fig. 1, opposite to the edge of the foremost matrix, which then would be positively held by the spring-catch in its raised position. The descending slide 28 releases again barrel 26 to actuate slide 24 25 to shift the line a farther step toward the right. Thereby the next following matrix of the line will be brought opposite to and into the path of pusher 29 and the matrix previously lifted at the same time delivered to its corresponding guide-ribs, and so on. Thus the matrices detached from the line are assembled and successively forwarded on the guide-ribs 9 10 11 until they reach the clear spaces 14 15 16 and drop into the respective channels 17 18 19.

In order to prevent the matrices being delivered to a wrong channel, I have provided the stops 12 13 and successively heightened the partitions 21 22. By these means the matrices delivered to guide-rib 11 cannot

travel beyond stop 12 and partition 21, nor those delivered to guide-ribs 10 beyond stop 13 and partition 22, while the matrices advancing on ribs 9 are stopped by cross-wall 23, as will be clear from Fig. 2, in which the several matrices are indicated by dotted lines.

Although I have represented and described above my invention only applied to three different sorts of matrices, it will be clear without further explanation that it can be likewise adapted to a larger number of sorts to be separated and distributed.

As slide 28 is quickly reciprocated, it could possibly occur that a matrix is lifted beyond its proper level by the momentum imparted to the matrix by the slide-stroke. In order to prevent this and to always insure the coincidence of the recesses 7 8 with their corresponding guide-ribs 9 10 11, I have recessed the upper part of the matrices at d' and d^2 , Figs. 5 and 6, the deepest recess d' being provided to the matrices of the first sort, and the recess d^2 of less extent to those of the second sort, while the matrices of the third sort have no corresponding recess. However, likewise the latter could be recessed, provided that the recesses are conveniently stepped for the several sorts. In accordance therewith I have provided a stop-plate 31 in the upper part of the casing to fit into the recesses d' d^2 , when the matrices are lifted by pusher 29 and to positively limit their upward movement.

If desired, by providing the upper recesses d' d^2 the lower ones a^2 a^3 can be dispensed with, provided that the pusher 29 be made yieldingly compressible, as represented in Fig. 11, by loosely connecting parts 28 and 29 and keeping them expanded by a spring 32. Slide 28 in that instance is given a uniform stroke sufficient to lift the matrices, Fig. 5, which are to be lifted the largest distance, while in lifting the matrices of the second and the third sort parts 28 and 29 are accordingly compressed.

In the modification of my invention represented in Figs. 3 and 4 the matrices, Figs. 8, 9, and 10, are provided with lateral projections $7'$ $8'$, the corresponding guideways consisting of grooves 33 34 35. In this modification the matrices are delivered to their respective guideways by a less amount of upward movement, as the partitions between grooves 33 34 35 can be reduced to very thin strips, Fig. 4. By inclining the grooves, as represented, the matrices delivered to the same descend at once by gravity, dropping immediately through the downwardly-discharging ends $14'$ $15'$ $16'$ of the grooves into the corresponding guide-channels 17' 18' 19', no assembling of matrices taking place in the upper part of the casing-shaft. The latter thus being always clear slide 28' can be prolonged beyond the upper end of pusher 29', so as to form a movable abutment 28^x for the foot of the matrix being raised. By these means the necessity of releasing the line from pressure when lifting the foremost matrix is dispensed

with, as the line cannot advance until slide 28' descends, releasing at the same time the line from abutment 28^x; but as then the matrix has been already lifted projections 7' 8' cannot enter a wrong groove. It will be obvious that likewise in the latter modification the matrices can be provided with upper recesses d' d^2 , and the lower ones a^2 a^3 may be dispensed with if providing a compressible slide and pusher, as represented in Fig. 11.

Instead of successively shifting the matrices on their respective guides by means of the line of matrices and the spring-actuated angle-shaped slide 24 25, Fig. 2, a special pusher may be made use of, reciprocated alternately with slide 28. In Figs. 12 and 13 such a pusher is represented and indicated by numeral 36, the said pusher performing a short reciprocating movement, and therefore successively shifting the matrices on their guides 9 10 11. In Figs. 14 and 15 the said pusher is provided with stepped projections 37 38 39 and supposed to perform a large stroke, so as to shift each matrix after having been lifted to the end of its guide and at once cause the same to immediately drop into its guide-channel.

In Figs. 16 and 17 I have shown my invention applied to a matrix-detaching device as at present used in the Mergenthaler linotype-machine. Numeral 40 indicates the ribbed elevator-bar, on which the matrices are suspended and guided by the distributing-teeth. All matrices have a longitudinal section c of one and the same reduced thickness to clear bar 40, Fig. 18, top view, and Fig. 17 showing the matrices partially in section, bar 40 leaving a clear space at its right end, corresponding in size to the thickness of section c . By these means only the one foremost matrix can be detached from the line by the reciprocating pusher 29. Bar 40 is provided with the stop edge 31', as and for the purpose heretofore described, the line of matrices being gently pressed toward the right, and the slide and pusher 28 29 constructed as described with reference to Figs. 1, 2, or 11.

As concerning the channels 17 18 19 and 17' 18' 19', only their admitting ends are subjected to be placed opposite to the discharging-notches 14 15 16 or grooves 14' 15' 16', while these channels can be continued any way and diverge from each other in their further course toward distinct delivery-points placed anywhere in the apparatus. This is of great importance, as with respect to the several distributing devices—*i. e.*, to the distributing-screws in the linotype, for instance—and the assembling-magazines it will be left absolutely free to place and arrange them anywhere and at any point of the machinery, one above the other, one back of the other, or in line with each other, as it may be convenient and preferable by any other reasons or with respect to the general arrangement of the machine.

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

1. In an apparatus for decomposing lines of dies or matrices of several sorts controlled by specific sort-nicks, the combination of a plurality of separate guideways corresponding each to one sort of dies or matrices, means for detaching single dies or matrices from the line and variably shifting and stopping the same in accordance with and by the medium of the sort-nicks, and means for delivering the shifted dies or matrices to their respective guideways and forwarding the same, substantially as and for the purposes described.

2. In an apparatus for decomposing lines of dies or matrices of several sorts controlled by specific sort-nicks, the combination of a common guide for the die or matrix line to be decomposed, a plurality of separate guides for the dies or matrices of the several sorts respectively, a plurality of guide-channels following the said separate guides and corresponding to them respectively, a plurality of distributing devices connected respectively to the delivery ends of the several guide-channels, means for detaching single dies or matrices from the line to be decomposed and delivering them to the several separate guides, and means for forwarding the same toward these several distributing devices, substantially as and for the purposes described.

3. In an apparatus for decomposing lines of dies or matrices of several sorts controlled by specific sort-nicks, the combination of a plurality of separate guideways corresponding each to one sort of dies or matrices, means for detaching single dies or matrices from the line and variably shifting and stopping the same in accordance with and by the medium of the sort-nicks, means for delivering the shifted dies or matrices to their respective guideways and forwarding the same, and a plurality of distributing devices associated each with one of the said guideways to receive the forwarded dies or matrices and to definitely distribute them into assembling-receptacles, substantially as and for the purposes described.

4. In an apparatus for decomposing lines of dies or matrices of several sorts controlled by specific sort-nicks, the combination of a common guide for the die or matrix line to be decomposed, a plurality of separate guides for the dies or matrices of the several sorts respectively following the common guide and provided with outlets at their ends, the said separate guides being arranged above each other to support the dies or matrices suspended thereon, a plurality of guide-channels arranged respectively with their admitting ends beneath the outlets of the said separate guides to receive the dies or matrices from the latter, a plurality of distributing devices connected respectively to the delivery ends of the several guide-channels, means for detaching single dies or matrices from the

line to be decomposed and lifting them to the level of the several separate guides in accordance with and by the medium of the sort-nicks, means for delivering the lifted dies or matrices to the corresponding separate guides, and means for forwarding the same toward the outlets so as to enter the several guide-channels and descend in the same by gravity substantially as and for the purposes described.

5. In an apparatus for decomposing lines of dies or matrices of several sorts controlled by specific sort-nicks, the combination of a common guide for the die or matrix line to be decomposed, a plurality of separate guides for the dies or matrices of the several sorts respectively following the common guide and provided with outlets at their ends, the said separate guides being arranged above each other to support the dies or matrices suspended thereon, a plurality of guide-channels arranged respectively with their admitting ends beneath the outlets of the said separate guides to receive the dies or matrices from the latter, and provided with stops for the lower ends of the dies or matrices, a plurality of distributing devices connected respectively to the delivery ends of the several guide-channels, means for detaching single dies or matrices from the line to be decomposed and lifting them to the level of the several separate guides in accordance with and by the medium of the sort-nicks, means for delivering the lifted dies or matrices to the corresponding separate guides, and means for forwarding the same toward the outlets so as to enter the several guide-channels and descend in the same by gravity, substantially as and for the purposes described.

6. In an apparatus for decomposing lines of dies or matrices of several sorts controlled by specific sort-nicks, the combination of a common guide for the die or matrix line to be decomposed, a plurality of separate guides for the dies or matrices of the several sorts respectively following the common guide and provided with outlets at their ends, the said separate guides being arranged above each other and in an inclined position to support the dies or matrices suspended thereon, a plurality of guide-channels arranged respectively with their admitting ends beneath the outlets of the said separate guides to receive the dies or matrices from the latter and provided with stops for the lower ends of the

dies or matrices, a plurality of distributing devices connected respectively to the delivery ends of the several guide-channels, means for detaching single dies or matrices from the line to be decomposed and lifting them to the level of the several separate guides in accordance with and by the medium of the sort-nicks, means for delivering the lifted dies or matrices to the corresponding separate guides, and means for forwarding the same toward the outlets so as to enter the several guide-channels and descend in the same by gravity, substantially as and for the purposes described.

7. In apparatus for decomposing lines of dies or matrices, the combination of a plurality of sorts of matrices, with a reciprocating pusher adapted to separate individual matrices from a line, the said matrices being so constructed and related to the pusher that they are moved different distances thereby.

8. In apparatus for decomposing lines of dies or matrices, the combination of a plurality of sorts of matrices, with a reciprocating pusher adapted to separate individual matrices from a line, the several sorts of matrices having differently-located portions with which the pusher coöperates whereby the matrices are moved different distances by a uniform movement of the pusher.

9. In apparatus for decomposing lines of dies or matrices, the combination of a plurality of sorts of matrices, with a reciprocating pusher adapted to separate individual matrices from a line, the several sorts of matrices having notches of different depths in which the pusher operates whereby the matrices are moved different distances by a common movement of the pusher.

10. In apparatus for decomposing lines of type or dies, the combination with a pusher and a fixed stop, of a plurality of sorts of matrices, the matrices of each sort having a surface to coöperate with the pusher, and a second surface to coöperate with the stop, the location of said surfaces being different in the different sorts and serving to limit the movement of the matrices.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ERNST WENTSCHER.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.