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J. E. EAKIN ET AL
CONVEYER AND CHUTE, COMBINED WITH SWINGABLY
MOUNTED MEASURING HOPPER

2,523,562

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3 Sheets-Sheet 1

Fig. 1.

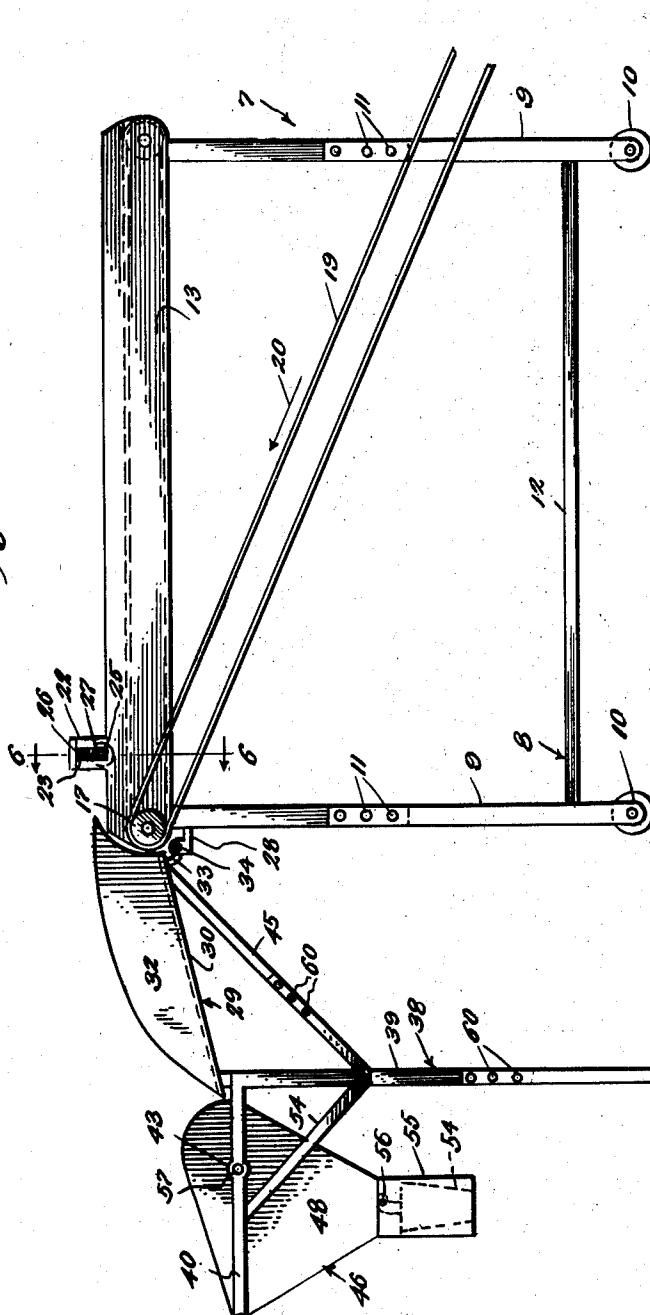
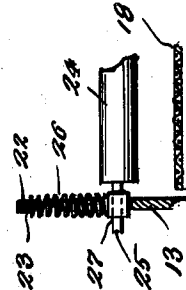


Fig. 6.



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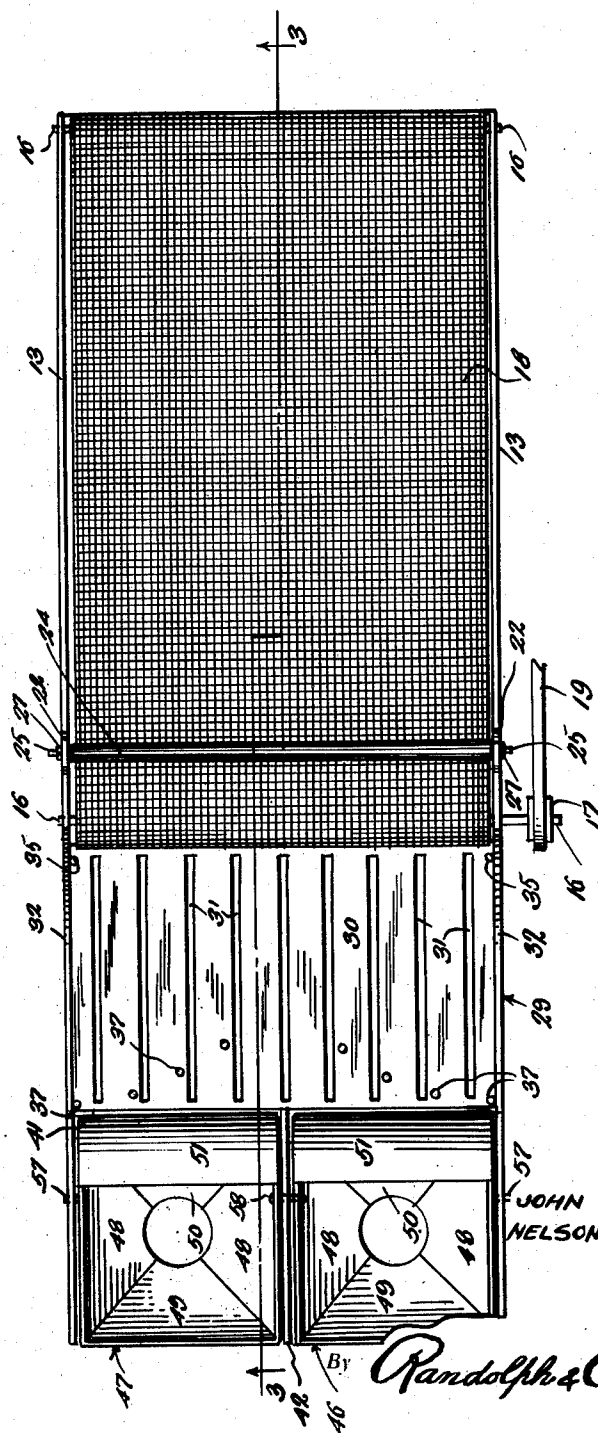
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Fig. 2.



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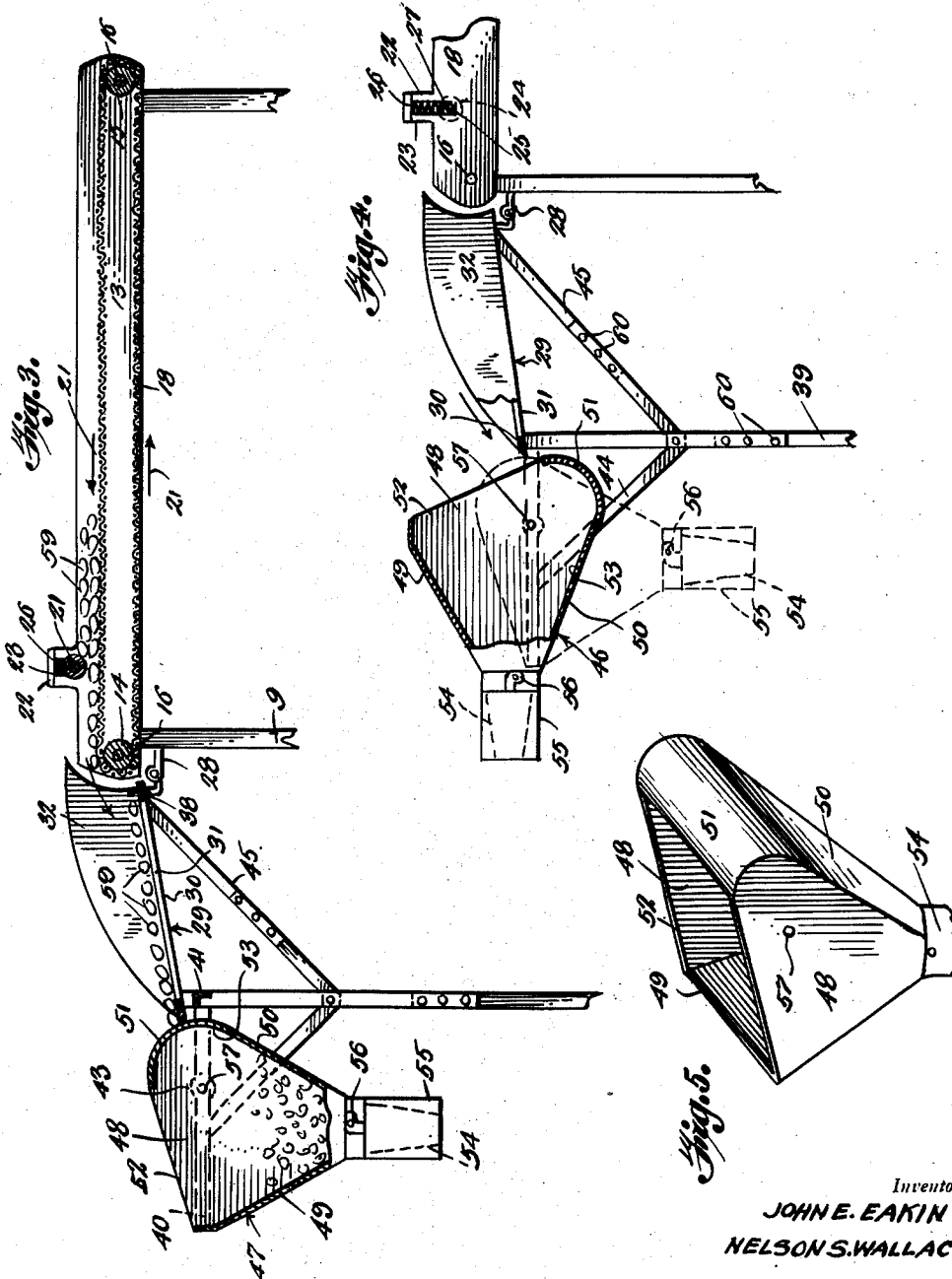
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UNITED STATES PATENT OFFICE

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CONVEYER AND CHUTE COMBINED WITH
SWINGABLY MOUNTED MEASURING
HOPPERJohn E. Eakin and Nelson S. Wallace, Calgary,
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4 Claims. (Cl. 226—61)

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This invention relates to a machine of simple construction and adapted for use especially in connection with consumable food items such as potatoes, apples, onions and similar items normally sold in bags or sacks of predetermined sizes and by the pound, and has for a primary object to provide a means for dispensing a predetermined quantity of the items into a sack or bag and so that the quantity of the contents may be accurately determined before the bag or sack is filled.

Another object of the invention is to provide a machine of the afordescribed character which will greatly simplify and speed up the operation of bagging or sacking consumable items and which is also adapted for use in bagging or sacking such items according to other measurements such as bushels, half-bushels or pecks.

Still a further object of the invention is to provide a machine for the aforementioned purpose, which is partially power-actuated and partially manually controlled and by means of which the items to be sacked or bagged will be conveyed to the discharge point or points of the machine and during their travel, be partially cleaned, so that a minimum of foreign matter will be dispensed with the items into the bags or sacks.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawings, illustrating a preferred embodiment thereof, and wherein:

Figure 1 is a side elevational view of a preferred form of the machine;

Figure 2 is a top plan view thereof;

Figure 3 is a longitudinal sectional view taken substantially along a plane as indicated by the line 3—3 of Figure 2;

Figure 4 is a view partly in side elevation and partly in section of the discharge end of the machine and showing one of the hoppers positioned for receiving an item to be measured;

Figure 5 is a fragmentary perspective view of one of the measuring hoppers, and

Figure 6 is a fragmentary vertical sectional view taken substantially along a plane as indicated by the line 6—6 of Figure 1.

Referring more specifically to the drawings, the dispensing, measuring and bagging machine is designated generally 7 and includes a frame, designated generally 8 composed of upright corner legs 9 which are preferably provided with small wheels or casters 10 at their lower ends to provide a mobile mounting for the frame 8. Each of the legs 9 may be formed of extensible sec-

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tions having overlapping portions connected by fastenings 11 and said legs, adjacent their lower ends, are preferably connected by braces 12. The longitudinally aligned legs 9 are connected at their upper ends by longitudinally disposed upright wall members 13.

Rollers 14 and 15, as seen in Figure 3, are rotatably disposed between the wall members 13 by means of stub shafts 16 which project from the ends thereof and which are journaled in said wall members, adjacent the ends thereof. One of the stub shafts 16 of the forward roller 14 is provided with a belt pulley 17 which is keyed thereto and disposed outwardly of the adjacent side wall 13. An endless conveyer belt 18, preferably formed of mesh wire fabric, is trained over the rollers 14 and 15 and is disposed for movement longitudinally of the frame 8 and between the side walls 13. A belt 19 is trained over the drive pulley 17 and over a suitable driving means, not shown, so that the belt 19 will be driven in a direction as indicated by the arrows 20 in Figure 1 for driving the endless conveyer belt 18 in the direction indicated by the arrows 21 in Figure 3, or so that the upper flight of the conveyer belt 18 is moving toward the roller 14, which is located at the discharge end of the frame 8. As clearly illustrated in Figure 3, the side walls 13 extend substantially above the upper flight of the conveyer belt 18 to form retaining walls which are disposed in sufficiently close proximity to the side edges of the belt 18 to prevent the items being conveyed by the upper flight thereof from falling laterally off of said conveyer belt.

As best seen in Figures 3 and 4, the side walls 13, adjacent the discharge end of the frame 8, are provided with laterally aligned upwardly projecting extensions 22 and with perpendicular slots 23 which extend into said extensions 22. A distributing roller 24 is disposed between the walls 13 and above and transversely of the endless conveyer 18 and has restricted shaft portions extending from the ends thereof and journaled in the slots 23. Said shaft portions 25 are normally retained in the lower ends of slots 23 by expansion springs 26 which are disposed in the slots 23, between the upper ends thereof and the shaft portions 25, or, more specifically, the bearings 27 which are slidably disposed in the slots 23 and in which the shaft portions 25 are journaled. The legs 9 disposed adjacent the discharge end of the frame 8, are provided with brackets 28 which project from adjacent their upper ends in a direction longitudinally and outwardly of the frame 8.

A chute designated generally 29, comprises an

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inclined platform 30 having longitudinal slots 31 therein and upstanding side walls 32 normally disposed along the side edges of the platform 30. The platform 30, adjacent its upper end, is provided with downwardly and outwardly extending supporting arms 33 which are pivotally connected at 34 to the brackets 28 for pivotally mounting the upper, inner end of the chute 29 at the outlet end of the frame 8 and beneath and adjacent the discharge end of the conveyer 18. The side walls 32, adjacent their upper, inner ends, are provided with depending pins 35, as seen in Figure 2, which are journaled in the corners of the platform 30. The walls 32 are also provided adjacent their opposite ends with depending pins 36 for selectively engaging openings 37 in the platform 30 for positioning said side walls either parallel to the side edges of the platform, as illustrated, or at various oblique angles relatively thereto, for a purpose which will hereinafter become apparent.

A supporting frame, designated generally 38, includes a pair of substantially upright supporting legs 39 which are adapted to rest upon the supporting surface of the wheels 10 and the upper ends of which are adapted to support the lower, discharge end of the chute 29. The legs 39 are provided with corresponding outwardly projecting arms 40 and are connected, adjacent their upper ends, by a cross brace 41, as seen in Figures 2 and 3. The cross brace 41 is provided with a supporting arm 42, corresponding to the arms 40, which projects outwardly therefrom and which is disposed substantially parallel to and intermediate of the arms 40. The supporting arms 40 and 42 are provided with aligned bearings 43. The supporting arms 40 are braced relatively to the legs 39 by diagonal braces 44 and said legs 39 are also provided with upwardly and inwardly extending diagonal braces 45 which engage the underside of the chute 29, adjacent its pivoted inner edge and which combine with the upper ends of the legs 39 for supporting the chute at an incline, as illustrated in Figure 1.

A hopper, designated generally 46 is mounted between one of the arms 40 and the intermediate arm 42 and a hopper, designated generally 47 is mounted between the other arm 40 and the intermediate arm 42. The hoppers 46 and 47 are identical in construction and a description of the construction of one will therefore suffice for both. Each of said hoppers includes corresponding side walls 48, an outer or front wall 49 and an inner or rear wall 50; said walls being joined or formed integral at their edges and converging toward their lower ends, as clearly illustrated in Figures 2 and 5. The rear wall 50 of each of the hoppers is provided with an upwardly and inwardly turned upper portion 51 which overlies portions of the upper edges of the side walls 48 and which combines with said upper edges and the upper edge of the front wall 49 to form an open upper top or inlet opening 52 of the hopper. The intumed upper portions of the rear wall 50 of each hopper combines with the converging lower portions thereof to form a receptacle 53 when the hopper is disposed with its longitudinal axis in substantially a horizontal plane, as illustrated in full lines in Figure 4. The converging lower ends of the walls 48, 49 and 50 of each of the hoppers merge with a tapered discharge spout 54, forming the outlet of the hopper and over which a substantially cylindrical sleeve 55 may be detachably mounted by means of a bayonet connection 56. As best seen in Figure 2, a pin 57 projects outwardly from the outer side

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wall of each of the hoppers and said pins are journaled in the bearing portions 43 of the arms 40. A pin 58, as seen in Figure 2, is journaled in the intermediate arm 42 and substantially in alignment with the pin 57 and extends through the adjacent walls 48 and is provided with headed ends disposed on the inner sides thereof, so that said hoppers 46 and 47 are swingably mounted between the arms 40 and 42 and will normally assume a substantially upright position, as illustrated in Figures 1 and 3.

When the hoppers 46 and 47 are disposed as seen in Figures 1 and 3, the wall portions 51 thereof will be disposed across the lower discharge edge of the platform 30 to provide a closure for the discharge end of the chute 29. Assuming that it is desired to bag items such as potatoes, onions or apples, said items 59 are discharged in any suitable manner on to the upper flight of the conveyer 18 which is being driven in the direction indicated by the arrows 21 by the driven belt 19, as previously described. The items 59 will be conveyed by the upper flight of the conveyer 18 and between the side walls 13 of the frame 8 toward the chute 29. It will be readily obvious that loose dirt carried by the items 59 will drop through the open mesh wire conveyer 18 and be thus separated from the articles 59. As said articles 59 approach the discharge end of the belt 18 they will engage and pass under the roller 24 and will be thereby spread out over the upper flight of the conveyer 18 and thus distributed substantially uniformly across said upper flight. The springs 26 permit the roller 18 to yield upwardly to accommodate the passage therebeneath of unusually large items 59. The items or articles 59 are discharged from the upper flight of the belt 18 on to the platform 30 of the chute 29 and between the side walls 32 thereof. The items 59 will be conveyed by gravity down the platform 30 and toward the hoppers 46 and 47 and in passing thereover additional dirt therefrom may be separated from the items by dropping through the slots 31. When the hoppers 46 and 47 are in their normal upright positions of Figures 1, 2 and 3, the items 59 will be prevented from being discharged from the chute 29 by the wall portions 51. However, if the hoppers are raised to horizontal positions, as illustrated in full lines in Figure 4, the items 59 will be discharged from the lower end of the chute 29 into the receptacles 53 of said hoppers. These receptacles 53 are sized to contain a given measurement of the items 59, when filled, so that when the receptacle portions 53 are filled substantially to the level of the top of said portions and assuming that a bag or sack has been positioned over the spout 54 or the sleeve 55 surrounding the spout 54, the hopper can then be swung downwardly to its normal upright position so that the items 59 will be discharged through the spout 54 into the bag or sack, not shown, for filling said container to a particular measurement which may be in bushels or other desired measurements. It will also be readily apparent that during the filling operation the portions 51 will prevent additional items 59 from being discharged from the chute 29.

If it is desired to utilize only one of the hoppers, for example the hopper 46, the side wall 32, remote thereto, is swung inwardly after first raising the pin 36 thereof out of engagement with its outer opening 37. Said wall 32 is swung inwardly on the pin 35 thereof as a pivot, and the pin 36 is thereafter engaged in one of the other openings 37 of the platform 30 and which

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is disposed adjacent to said wall 32. The wall 32 will then be positioned obliquely to the platform or chute for deflecting the items 59 toward the hopper 46 and away from the hopper 47. Obviously, the other wall 32 could be similarly adjusted for deflecting the items 59 away from the hopper 46 and toward the hopper 47.

The legs 39 and braces 45 are each formed of extensible sections connected by fastenings 60 so that said legs and braces may be extended or retracted for raising or lowering the hoppers 46 and 47 and also for raising or lowering the outer, discharge end of the chute 29 to vary the inclinations thereof and accordingly the rapidity with which the items 59 will be conveyed thereover by gravity and toward the hoppers 46 and 47.

Various modifications and changes are contemplated and may obviously be resorted to, without departing from the spirit and scope of the invention as hereinafter defined by the appended claims.

We claim:

1. In a machine for feeding and dispensing articles in predetermined measurements, a driven endless conveyer, a chute disposed beneath and adjacent the discharge end of the conveyer to receive articles to be measured therefrom, said chute being declined in a direction away from the conveyer for conveying the articles therealong by gravity, a hopper mounted at the outlet or discharge end of the chute, and means for swingably supporting said hopper relatively to the chute, said hopper being constructed and arranged to normally assume an upright position and having a wall disposed for closing the discharge end of the chute, said hopper having an outlet, disposed to open downwardly when the hopper is thus disposed, said hopper being swingable to a position substantially at a right angle to its normal position for positioning the outlet thereof in an elevated position and for displacing said wall downwardly for opening the discharge end of the chute to permit the articles contained thereon to be discharged into the hopper, and said hopper having a portion disposed to form a receptacle, when the hopper is in its last mentioned position, to be filled and contain a predetermined quantity of said articles to be thereafter dispensed through said outlet when the hopper is returned to its normal, first mentioned upright position.

2. A machine as in claim 1, a frame for supporting said endless conveyer, said chute being pivotally supported adjacent its inner end on said frame, said supporting means for the hopper including a frame having spaced arms between which the hopper is mounted and on which said

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hopper is swingably disposed, said chute being partially supported at an incline by portions of said last mentioned frame, and said last mentioned frame having extensible portions for varying the elevation of the hopper and the incline of the chute.

3. In a machine of the character described, a frame, a driven endless conveyer disposed for movement longitudinally of said frame, a chute pivotally supported by said frame and having one end thereof disposed beneath and adjacent the discharge end of the endless conveyer, said chute comprising a slotted platform and upstanding side walls, a frame unit having portions for supporting said chute at an incline downwardly and away from its pivoted end, and a pair of hoppers disposed side by side and swingably supported in said frame unit and across the outlet end of the chute, said hoppers being normally disposed in an upright position and having portions for closing the discharge end of the chute, when the hoppers are thus disposed, and having downwardly opening outlets, and said hoppers being swingable to positions substantially at right angles to their normal positions for opening the discharge end of the chute, whereby articles conveyed and discharged from the endless conveyer will be discharged from the chute into said hoppers, and said hoppers having portions forming receptacles, when the hoppers are in said last mentioned position, for containing a predetermined quantity of said articles to be discharged from said outlets when the hoppers are returned to their normal, upright positions.

4. A machine as in claim 3, the side walls of said chute being constructed and arranged for angular adjustment relatively to the platform for deflecting the articles passing over the platform, toward either of said hoppers.

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