Portal:MT

From BesslerWiki

Contents

Maschinen Tractate

> **" Further demonstrations regarding the possibility and impossibility of perpetual motion**
>
> NB. May 1, 1733. Due to the arrest, I burned and buried all papers that prove the possibility. However, I have left all demonstrations and experiments, since it would be difficult for anybody to see or learn anything about a perpetual motion from them or to decide whether there was any truth in them because no illustration by itself contains a description of the motion; however, taking various illustrations together and combining them with a discerning mind, it will indeed be possible to look for a movement and, finally to find one in them. "
>
> *- Johann Bessler, cover page of Maschinen Tractate*

Background

Bessler created a book of illustrations that describes his search for perpetual motion. He referred to this work as his "great treatise on mechanics", now known as "Maschinen Tractate", or "MT" for short. The work explores many concepts and it depicts mechanical, thermal, wind, and fluid systems.

After selling his wheel, Bessler intended to either publish his book with the secret mechanism revealed in every detail and/or use it as a teaching device (his hand-written notations read like lessons) in his planned 'Fortress of Wisdom' in which he wished to teach basic skills to apprentices in a strongly religious atmosphere.

Bessler's wheel was obviously never sold and his "great treatise on mechanics" appears tantalizingly incomplete.

...

Bill has graciously allowed me to post MT from orffyre.com here on the wiki. Thanks so much Bill.

Hopefully the wiki will provide a new venue for constructive discussion and collaboration that may one day help finally decipher Bessler's enigmatic treatise.

.....

MT Commentary Text Translation

'The first prints using lampblack'; clear problems in the demonstrations and experiments, what was seen among various friends.

Almost everyone who has sought to invent a perpetual motion machine has considered bringing about motion through spheres and thereby has hit upon the idea that through straight lines nothing would be gained for their purpose. Therefore, departures from the structure are present, as the first figure shows. A beginning student of mechanics can judge that with such things [departures?) assumed nothing at all would be effected.

No. 1 The horizontal line must be rather level or have a slope such that one sphere rolls toward the center from the rim, and the others roll out to the rim from the center.

No. 2 Almost unanimously the mobilists for whom the spheres were the main principle have chosen figure for the most part like this one; such a figure has already been encountered in various books on mathematics and mechanics, and from the figure the mathematicians generally showed the impossibility of perpetual motion, just as though one could not bring forth a better figure as evidence. In particular, Jungnickel, in his almost peculiar book titled Key to Mechanics, pages 243, 246 and 247, has presented three such machines and intended to prove and enforce the impossibility of perpetual motion. Sturm also uses this figure, and even the late Leopold uses it in his Machine Treatise, of which he prepared 8 sections but did not complete because of his death.

No. 3 Several mobilists have supposed that they invented the thing when they chose curves and double curves at that- for the spheres, as the accompanying figure shows. Here is seen not only the outer sphere- compartments but also a separate inner component with long curves. It was thought with utter certainty that one could induce movement by this means. If one only makes completely unbiased calculations, then one finds the opposite to be true. Thus it is not even necessary to build a model.

No. 4 Here the lines curve a great deal and are made up of half circles. It was imagined without doubt that movement could be obtained in this way; but the former invention and the latter are the same thing. Granted! One finds out through calculation and on paper, on one side somewhat more than on the other side, that a superior weight equalizes; observe! Thus there will always be stability and no mobility; why? Answer: because the friction, owing to the machine's own weight and heaviness, eats away all the supposed superior weight; sufficiently understood.

No. 5 Here the thing again has double curves like No. 3 and is only slightly different. This one runs the same way as that one; nevertheless, I have come across this same fantasy in the work credited to people who were of renown and who truly possessed much mathematical knowledge.

No. 6 Some mobilists have done something special by letting the spheres run out of the wheel into a channel at the edge of the wheel. Because they did or knew nothing other than what is merely recorded here, the thing can run no differently from what this figure leaves one to believe and conclude.

No. 7 Here it first appears as though movement should inevitably result, for the curved lines which convey the spheres from the light side outward are attached very close to the axle, and at the edge of the wheel runs the same formation as in the previous illustration. However, if one counts the spheres on the light side and then those on the heavy side and calculates the force accordingly, then the situation is readily shown and proven to be completely different from one's first impression, as it is said: great people err, too: they weigh less, then nothing.

No. 8 Here the spheres fall somewhat higher and sooner onto the thing and then lie more on the heavy side than they did in the previous figure, but one must also note: when as many of the spheres lie at the light side, further out, toward the edge, an equilibrium is caused as in the two previous illustrations..

No. 9 Because one has learned that little is to be accomplished with the sphere-wheels like those just now seen in the figures and diagrams, one speculates on another principle, namely: on weights! In all places where I have found weight-figures, these weights are seen to be simple and nothing is attached to the belts or chains. Such is the case with Leupold, but nothing is to be accomplished with his thing unless one acts out of my connectedness principle; but here I do not yet wish to show or discuss the figure for the time being.

No. 10 This is exactly the previous model, except that the weight-poles are more curved and longer. The principle is good, but the figure is not yet complete until I delineate it much differently at the appropriate place and indicate the correct handle and construction.

No. 11 This figure is doubled, as one can see, and the form does not involve much, but there is more in it than meets the eye, as will be seen when I pull back the curtain and disclose the correct principle at the appropriate place, as mentioned previously.

No. 12 This only shows the present and previous weight-principle in passing: one is able to discern somewhat below here at A and downward that the weights do not hang very far out but lie nearer the center, and, moreover, upon revolution the weights do not fling out very much to the side and cause a great shaking.

No. 13 This is a new weight-invention, with no belts or chains but each weight is separate and free except that each has an interval arm C with which it forms an angle, and on the cylinder hangs a figure which has below a weight in the shape of a half-moon and above a small wheel B over which the arms C sweep and lift themselves up at D. This invention would be very good for running if not so much friction were present or someone was available up by D to always lift up the weight with lightning speed.

No. 14 This invention is somewhat speculative, and the internal cross-tensions with the weights are movable; therefore, when the weights raise up one another, the cross-tensions are pulled up with their weights at the same time. What is objectionable about this model, what to learn from it and how it can and may be used, will all be treated later.

No. 15 This ratchet-wheel derives from the previous model, except that the tensions are somewhat longer and have an additional special weight at the external ends. From this drawing alone, however, nothing of the prime mover's source can be seen or deduced although the figure shows the superior weight.

No. 16 This model shows how the weights are connected and how they raise the internal spheres at A up and around. The accompanying special figure shows how the edge of the wheel appears at the tensions when it is opened.

No. 17 Some speculators have gone further still and have imagined lifting up certain weights and effecting operation through several springs, and in this instance the figure has a good and large appearance. An acute mind will readily see and grasp what to make of this thing.

No. 18 This is the previous spring-model, and it seems to be good, but seeming is different from being. In the meantime, the principle should not be disdained or entirely disregarded, for it says more than it shows. I, however, will show more than speak of it at the appropriate place.

No. 19 This figure may be called a mere demonstration. There are nothing but levers with weights at the front ends of the levers, and if they are not very useful, they are also not harmful most of the time. A good friend, however, was violently injured by them. I cannot discuss it further. He endured more than I can mention here.

No. 20 Here the previous levers work somewhat more peculiarly and raise up special weights and turn outward to the over balance. For this reason side A is always heavier, my friend supposed but I denied. I then reminded him to harness the horse in front.

No. 21 This figure has hanging levers A which are internally applied to the cross-poles at B and thus side C becomes lighter; if, however, the lowermost lever is not periodically raised up out of its position and into C, as has already happened at C in the illustration, it remains in its old position.

No. 22 This lever-thing appears to be good. From A in the center hang the large levers B. Small wheels are fastened at C, over which pass cords to the lever-weights D, which are thereby drawn up and thus the side at E becomes heavier. I have misgivings about many of the scrawls in the figure, and I will not yet make the rest of my thoughts known.

No. 23 This is the principle from 21 and is rightly called improved: A are hanging levers on the ends of which, B, is a small lead or iron wheel instead of the weight. Side C appears to be the heaviest, and the weight-wheels B are supposed to lift themselves around at Din a circular channel, by which means side E becomes lighter periodically. Contemplation and consideration reveal what can happen here.

No. 24 This invention ought not to be scorned. It consists of separate levers with weights. Between the weights are small iron poles with hinges. The poles fall inward when the levers close. There is something one must learn first before one can grasp and correctly understand the good quality of the invention.

No. 25 This is the previous model except for some differences. It is sketched with longer poles. There is something misleading about the diagram, for the poles, when coming out, must not project so far out but must bend somewhat further inwardly. There is more to it than one supposes; one must study the diagram extensively.

No. 26. This is somewhat different from the previous model, but it can be described simply: A are levers which are interrupted at B and equipped with weight-wheels at C. The weight-wheels run in a channel E and are attached to the cords D. As the diagram shows, one side is heavier than the other. Behind this problem one looks for an augmented problem.

No. 27 This is the previous model slightly larger and altered: A are the levers interrupted at B and having a heart-weight at C, and D are the straps, or cords, and chains. It needs no further, lengthier explanation. This view shows what the thing might do if several things of this sort were placed next to one another along an axle-shaft.

No. 28 In this figure, A is a wheel with cogs almost like a balance wheel in a clock. In the center of the axle at B are orderly arms. At C is a side lever which raises the above long weight-pole E by means of D. On this pole is a thrust-lath F which, by the double movement of two wheels G and H, forcefully pushes the cogs of wheels A 4 times with each revolution. Thus the thrust upon the edge of the wheel should be much stronger than the force which the arms on the axle require. The rest is left to speculation.

No. 29 This is the previous principle except for one small change. A is the main wheel. B is the cylinder with 2 arms. C is an arm of a large Winkelhaken [Literally, "angle-hook," this German word was used in the printing trade to mean "justifier" or "composing stick." -Translator's note.] which is movable above at D and at E pulls a cord F. F turns a small wheel G from which a weight hangs below at H. On G is a catch I which thrusts twice into the cogs of the large wheel with each revolution and thus should cause the movement. At this point one should be able judge what to do with this thing or what to make of it.

No. 30 This is another lever invention. A is a figure of a half transverse-wheel. B are the main levers. C are small lifting arms on the axle which are pressed down under a small wheel D. At the center, E, of this small wheel, over a tiny wheel, by means of a cord at F, through a chain G the large arms are raised up, the lowermost up to the axle and the other up to H. In the subordinate figure one sees the levers project onto side 1; thus the side at K is seen to be heavier, and that at L, lighter. The hand at M indicates, for best understanding, the pressing down of the lifting lath, which raises the large lever. Whether this invention is good and whether the lath at E below the small wheel can be forced, pressed and raised up may be judged by those who know about friction.

No. 31 This is a figure with two reversed long levers A at the ends of which are weights. The levers are connected to the center of the axle at B by means of a cord which raises the upper levers C C. By means of the cord D the lower levers E are raised toward the axle. There is more to this invention than the mere drawing, which only presents or indicates the problem. The rest is left to commentators to make of the thing what they will.

No. 32 This is a combination of the two previous figures. What is intended by it is easily understood. A is the wheel's center under which the laths B incline and the lever C is raised by means of a cord D. This invention or figure has a good external appearance, but one must look at the end of description No. 30.

No. 33 This is exactly the previous model, except that instead of the central bevel-wheel it is equipped with doubled long levers by means of which the short levers A are brought up to the superior weight and the center B is brought down. It is not necessary to speculate much on this figure, for the diagram itself says what it will do.

No. 34 This model is easy to understand from the figure. Here A presents the machine in profile. At B are 2 long levers with weights suspended from the ends C. The levers are lifted toward the center by cords at D, which lift the upper weights E over small wheels up and outwards, and by other cords at F which lift the lower weights G up and inwards. At this point the reader is free to speculate as he pleases and to explore his thoughts on the matter.

No. 35 This is precisely the previous model, and only the 2 side-wheels, which lie horizontally, are to be observed, one needs no letters or explanations because the drawing itself clearly shows how the thing is constituted. Deliberation or judgment is left to the mind of each reader.

No. 36 The intent of this figure is clearly expressed. AA shows the 2 connected long levers with weights. At BB the levers swing a weight-lever D from below up to E by means of a chain over 2 wheels. The secondary drawing shows a distant view of the thing. Each reader must infer as much as he can.

No. 37 This invention belongs among Nos. 14,15 and 16. It is inserted here only because it slipped past the beginning. AA are movable levers on a belt, each of which has an oval disk fastened to it on the heavy side where the lever is attached. Other oval disks can be drawn to the first disk or pulled away from it by the known method. These disks should be considered a problem rather than an axiom

No. 38 This is based on the previous principle but instead of oval discs it has stork's bills or student- forceps. At A the stork's bills pull apart from one another, and at B they draw together to C by means of the levers D and E; this side is therefore the heaviest. There is more to this invention than there is to the previous one, but here is not the place to show the correct application of the stork's bills.

No. 39 This is a very special style of the stork's-bill invention. Side A is heavy. At B, over wheels, the following area C is raised up to E. At D the figure is contracted, and the corresponding side is lighter.

No. 40 This is a somewhat different stork' s-bill invention. The weight-levers A pull up figures B –which have the joining point at C- and also pull up the weights D by means of the poles E. The figures correspond in the center at F; thus it becomes light at G and heavy above at the superior weight. Whoever thinks it proper can construct these figures on an axle.

No. 41 This is yet another stork's-bill model. It is not necessary first to explain the letters. There is only this to mention: the present horizontal application of the stork's bills is always better than the machine with the vertical application, which constantly has more friction. I can assure the reader that there is something special behind the stork's bills. Whoever knows how to construct them will note that the figures sketched here are not exactly the correct artistic application.

No. 42 This is another application of the stork's bills. The figure is so clear that I omit explanation of the letters. The side figure F indicates how it would look if one were to multiply the internal structure.

No. 43 This shows the perpetual stability machine of the well-known Professor Mangold at Rintein. He alleged it to be a motion machine, and he sought to hoax your highness, the landgrave of most blessed memory. However, as a wise prince you soon sent him away and knew that my motion machine was the better one. This figure speaks for itself and requires no explanation; it tells us that it would run readily if only it had feet and legs.

No. 44 The sphere-method is reintroduced here. The problem shows 2 wheels: A is the main wheel, the axle of which has a gear at B. B drives the somewhat larger wheel C at point D. At side E are spheres which fall out of side G at point H below and into wheel C at point I and then out of C again into A at point F. This problem looks good, but as sketched it does nothing special as long as no other application is present, for the wheel A must revolve several times before C revolves a single time. Thus not enough spheres move from the former into the latter.

No. 45 This is the previous invention, except that the one wheel C is much smaller than A. The explanation of the remaining letters C [sic], D and E are indicated by the figure itself.

No. 46 This special sphere invention has a vertical screw. A is a wheel with sphere which below at B fall out into a channel C and run into the screw at D. The spheres in the screw climb up to E, then out and into wheel A again at F. At G on wheel A is a gear which drives a pole of 2 wheels, one at H and another at I, and the screw-wheel below. The screw-wheel drives a large crane-wheel at K and should pull up a bucket at L; M shows a large perpendicular. Whoever knows about friction can judge this machine.

No. 47 This is a sphere machine which uses stork's bills. The wheel A carries the spheres. The hook (or curved implement] B reaches down to C and moves the beam of a balance. At D, the two ends of the beam, the stork's bills are pulled so that the spheres are ejected above at E and grasped at F. The two sets of stork's bills are connected to each other over the small wheels at GG. An equilibrium causes the spheres to be ejected at L. At H the spheres fall into the wheel A, and at I they fall out again. Afterwards, at K, the spheres are swallowed and lifted up again. I submit the rest of this machine to the judgment of the wise, who might elucidate the problem.

No. 48 This is a sphere invention having a paternoster with pockets. A is a wheel. As the pocket-patemoster C raises the spheres, it passes over B, the axle of the wheel. At D the spheres are ejected into a channel. At E the spheres fall into the wheel, and at F they are ejected again into the paternoster. Here, an insufficient number of spheres is carried to the wheel A by means of the paternoster. The principle is good, but this figure will bring about no mobility by itself until completely different, additional structures have been provided.

No. 49 This is the previous model except that the pocket-patemoster is taller and larger. A is a large wheel. B, the axle of the wheel, moves by means of a chain which reaches up to the paternoster at C. At C the spheres are ejected into the large wheel. Below, at D, they fall off the wheel and are swallowed into the paternoster. The figure makes the thing utterly intelligible, and an average intelligence can grasp the effect of this machine.

No. 50 This is a special pocket-patemoster. A is the upper axle. BB are the hollows with spheres. C is an internal piece which prevents the paternoster from collapsing on itself. At D above and below this paternoster passes over the axles. On the right side E the spheres run out, and on the other side, they run in. For the mobilists who believe in this model, I note: side E is heavier and one would suppose that it would inevitably cause operation, but the thing remains in status quo.

No. 51 This is a perpendicular invention which is meant to maintain motion by means of oscillation. A is a perpendicular with stoppers, or stop-cones, at the top which catch in a small wheel B. A fastens onto the wheel E. D show the perpendicular per se with stop-cones. H is a horizontal perpendicular, or beam of a balance. H moves by means of the curved implement I on the one side and the perpendicular F at G on the other side. Motion by means of the oscillation of H is expected, but the invention is wisely criticized.

No. 52 The present invention or speculation is to be found at the place of an eminent man. I was not a little surprised at the imagination involved in it. A is a balance wheel, and B is its axle. Clappers, or mallets, on B strike the wheel C, which should thereby move. At D are wheels which, by means of a cord, should move the upper axle B and set a perpendicular going at E. I will only say the following: no wheel is moved through strong blows, for paddles would sooner dash it into 1000 pieces, and it would be utterly destroyed with bullets, as is sufficiently known.

No. 53 This is a perpendicular model. A is a lever with a weight. At B the lever has stop-cones which should move the axle at C by means of a small wheel with 2 arms. The arms should raise the pole D by means of the lath. D should move a Winkelhaken ["angle-hook"] above, and this angle-hook should move another angle-hook by means of pole E. This latter angle-hook should move the pole F which should raise the main lever A. G is a beam of a balance and should accomplish all the raising. I saw this fantasy along with many other such devices recorded in a machine book at the home of a learned friend, but I did not see the effect.

No. 54 This is simply a demonstration of how one might raise the large lever of the previous model by means of stork's bills. The letters are self-explanatory.

No. 55 [sketch only]

No. 56 bellows

Wind Machines

No. 141 5. Children's game in which there is something extraordinary for anyone who knows how to apply the game in a different way.

Drawings

1 - 20

21 - 40

41 - 60

61 - 80

81 - 100

101 - 120

121 - 143

External Links

Bill McMurtry's MT (http://www.orffyre.com/mt.html)

Retrieved from "https://www.besslerwheel.com/wiki/index.php?title=Portal:MT"