XVI. *Epiſtola* Jo. Henrici Winkleri, *Prof.* Lipſ. *&* *R. S.* Lond. *S. ad* Societatem Regalem Londinenſem *data, quæ continet Deſcriptionem & Figuras* Pyrorgani *ſui* Electrici.

Præſes Illuſtriſſime,
Viri Illuſtriſſimi,

Read May 7. 1747.

FACTA in Societatem veſtram ſplendidiſſimam mei cooptatione adeo præclarum munus mihi impertiviſtis, ut in agendis ejus partibus omnem vim ac operam adhibendam mihi eſſe videam. Cum enim ex veſtra Societate per quamplurimos annos opera et ſcripta prodierint, quibus et propter rerum dignitatem, et propter auctorum celebritatem, et propter doctrinæ excellentiam, memoria perpetua conſtabit; facile intelligo quam arduum opus ſit, quod inter viros, quorum fama univerſum literarum orbem peragravit, mihi ſuſcipiendum eſt. Attamen vires animus colligit. Cum enim duobus abhinc annis ex primo meo de electricitatis natura libello ſcintillularum electricarum, quibus ſpiritus vini incenditur, præcipua phænomena in tranſactiones veſtras deſcripta inferri curaveritis, Viri Illuſtriſſimi; in eam adductus ſum opinionem, fore, ut futura etiam opera mea, in qua continuanda non deſiſtam, aliquid efficiatur, quod non diſpliceat. In præſenti vobis, Illuſtriſſime Præſes, Viri Illuſtriſſimi, pro eximio, quo me ornâſtis, beneficio grates ago immortales, meque, quoad potero, exquirendis naturæ viribus

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viribus ſtudium impenſurum eſſe indefeſſum, et, ſi mihi obvenerit, quod notatu dignum videatur, hoc ad vos perſcripturum eſſe polliceor. In libello *Germanico*, in quo anno ſuperiori experimentum *Muſchenbroekianum* explicaturus virium electricarum augmentum in vaſis vitreis deſcripſi, § 30, organi alicujus, quo plures ſcintillæ ſimul oriundæ crepitant, mentionem injeci.

Hujus *Pyrorgani Electrici*, ut voco, imaginem, in figuris æneis dicti libelli non delineatam, in præſenti exhibeo TAB. IV. *Fig.* 2. Per medium annulum metallicum *ab* (*Fig.* 1.) pice repletum, cylindrulus metallicus *cd* infixus eſt. Annulum diameter unum pollicem *Pariſinum* et quatuor lineas æquat. Cylindrulus utrinque ad diſtantiam unius pollicis prominet. Diameter annuli minor eſſe haud debet, ne cum cylindrulo communicata electricitas, ſi ad annulum metallicum pertingat, imminuatur. Ferrumine adjuncta eſt annulo *ab* furca metallica, cujus ſtylus cochleatus inditus eſt cylindro ligneo *ef*, (*Fig.* 1.) cujus extremitas inferior *f* ita formata eſt, ut per aſſeris alicujus fiſſuram pervadens huc illuc moveri, et ope cochleæ firmari queat. Ejuſmodi cylindrum metallicum pici, qua annulus repletus eſt, infixum cum ſtylo cochleato, compendii cauſa, ſimpliciter *cylindrum electricum* nomino (*Fig.* 1.). Ex quatuor hujuſmodi cylindris electricis pyrorganum electricum, *Fig.* 2. expreſſum, conſtat. Cylindri ita ponuntur, ut inter ſe habeant intervallum ad gignendas ſcintillas electricas ſufficiens. Eas vero excitaturus pyrorganum juxta aliquod metallum *ab* ex filis ſericis ſuſpenſum firmatuuique ita colloco, ut inter metallum et cylindrum *c*, intervallum neceſſarium interſit. Ultimo cylindro *fg* in *g* alligo filum metallicum *h* in vas metallicum aqua plenum *i* pertingens. His ita ordinatis, ſimulac metallum

metallum oblongum *ab* electricitate donatur, in quatuor intervallis scintillæ electricæ emicant tanto clarius splendentes, quanto majorem electricitatem communicant rotati frictique globi vitrei.

Ex quo libellus nominatus in lucem prodiit, duo ejusmodi pyrorgana electrica construxi, quorum alterum formam rotæ alatæ habet, alterum scintillis emicantibus septemtriones repræsentant.

Rotæ alatæ constructio, quam Tab. IV. *Fig.* 4. delineari curavi, est sequens. Orbi ligneo cavato seu annulo ligneo *dddd* sex alæ ligneæ *cd* infixæ sunt. Totius annuli cum foramine diameter 13 digitos, et foraminis rotundi diameter 6 digitos complectitur. Alæ *cd*, quarum longitudo decem digitos comprehendit, fissuras habent, in quibus tres cylindri electrici hinc illinc moveri et firmari possunt. Prope alas infixas in annulo *dddd* foramina angulata formata sunt, in quibus singulis itidem cylindrus electricus statuitur. Itaque in rota alata sex ordines apparent, qui singuli quatuor cylindris electricis constant, observatis inter ipsos intervallis, quæ ad excitandas scintillas electricas prosunt. In cujusvis alæ extremitate *c* firmatur instrumentum metallicum *gf*, constans tribus partibus, quarum extremæ ad angulum rectum mediæ *g* junctæ sunt.

Ut vero instrumenta ista metallica rite applicari queant, in latere ad finem *c* alæ postico (anticum enim nomino, in quo cylindri electrici scintillant) fibula metallica affixa inter se et latus alæ posticum aliquod intervallum relinquit. Media fibula instructa est cochlea versatili *g*. Dicto intervallo pars brevior instrumenti metallici inditur. Pars altera extrema *h* cylindro quarto propinqua est; tantum vero ab eodem

diſtat, quantum debet, ſi inter iſtam inſtrumenti partem et cylindrum ſcintilla electrica excitanda eſt. Hinc pars altera brevior ſub fibula pro lubitu moveri et firmari poteſt. Fibulis applicatum eſt et in partibus poſticis alarum circumductum filum metallicum *ik*, cui, quando ſcintillæ electricæ ſuſcitandæ ſunt, in loco *x* aliud metallum *y* adjungitur in vas metallicum *s* aqua plenum pertingens. Electricitas, ſimulac cum cylindro primo communicatur, ad omnes cylindros tranſit.

Hinc neceſſe eſt, ut, ſi ſcintillæ exoriri debeant, inſtrumenta metallica deſcripta *gf* ſemper libera et vacua maneant electricitate. Quod fit metallo *y*, quod filo metallico *ik* adjunctum eſt, electricitatem in aquam propagante. Inter duo enim corpora æquali prædita electricitate nulla exiſtit ſcintilla. Cum primo autem cylindro electricitas communicatur a malleo metallico *a* affixo axi metallico *bc*, qui in foraminibus rotundis duarum columnarum *de* lignearum verſari poteſt præditus manubrio *f*. Hujus mallei apparatum *Fig.* 5. oſtendit.

Columnæ *de Fig.* 5. ligno *mn* inſiſtunt, quod ſtylum *g* habet infixum operculo, quod vas vitreum *h* pice cum eodem copulatum tegit. Hoc vaſe vitreo ideo opus eſt, ut electricitas axi metallico *bc* ope alicujus fili metallici appenſi data conſervetur.

Vaſis vitrei *h* fundus ope picis junctus eſt cum ligno, cui ſtylus adjunctus eſt, qui foramini longiori columnæ *ik* ita inſeri poteſt, ut cochleæ *l* ope firmari queat, poſtquam vas vitreum debitam altitudinem nactum eſt. Hæc vero debet eſſe altitudo, ut axis *bc* in foramine annuli lignei *dddd* medium teneat. Cylindri autem electrici in annulo et alis *cd*

ita

ita collocandi ſunt, ut malleus a quocunque cylindro electrico primo, ad quem accedit, et cylindri a ſe invicem ſufficientem ſcintillis electricis excitandis diſtantiam habeant.

In baſi quadrata *mnop*, *Fig.* 4. in qua columna *ik* inſiſtit, fiſſura eſt, in qua, quando malleus *a* ſatis per foramen annuli *dddd* prominet, columna *ik* cochlea ſtabilitur. Annulo *dddd* furca metallica applicata eſt infixa columnæ ligneæ *qr*, quæ ſimiliter in fiſſura baſis quadratæ *mnop* firma redditur. Axis metallicus *bc* per medium annuli foramen protenſus a baſi quadrata per altitudinem 21 digitorum abeſt. Quando igitur, axe *bc* electricitatem nacto, malleus alicui cylindro electrico primo appropinquat, quinque ſcintillæ ſecundum ſeriem rectam uno fere tempore exoriuntur.

Verſo itaque ſenſim axe *bc*, ordines iſti ſcintillarum per circulum in conſpectum prodeunt. Scintillæ adeo claræ ſunt, ut in luce diurna ad centum pedes videantur. Homo qui axem manubrio verſat, ne electricitatem diſſipet atque perdat, ſtare debet in materia electricitatem non propagante.

Electricos Septemtriones, Tab. IV. *Fig.* 3. exhibet. In tabula *abcd*, quæ in columnæ *ef* fiſſura elevari et demitti poteſt, novem cylindri electrici ita collocari poſſunt, ut ſeptem ſcintillæ eo ordine ſimul appareant, quo ipſi Septemtriones in cœlo nocte ſerena micant. Cylindro metallico primo eo tempore, quo exiſtere debent ſcintillationes, adjungitur filum metallicum *h*, cui electricitas traditur. In tertii et quarti extremitatibus filum inflexum metallicum *i* annectitur, ut electricitas ad quintum et reliquos cylindros permeare valeat. Cylindro nono filum metallicum *k* applicatur in aquam in vaſe metallico *l* productum, quo

electricitas omnibus cylindris tributa in materiam, quæ eandem haud conservat, quantum opus est, propagetur.

Hæc quanquam nonnisi ad delectandos oculos spectare videantur, attamen vobis, Illustrissime Præses, Viri Illustrissimi, qui in ejusmodi delectamentis electricis vim naturæ mirabilem latere perspicitis, haud ingrata fore confido. Qua spe fretus, vestro omnium favori, quem impense veneror, me submisse commendo.

Scribebam *Lipsiæ*,
die 31 *Martii*,
1747.

XVII. *Some Observations upon* Gems *or* Precious Stones; *more particularly such as the Ancients used to engrave upon, by* Robert Dingley, *Esq*;.

Read May 7. 1747.

GEMS or precious Stones, of all Species, are sometimes found of regular Shapes, and with a natural Polish; and sometimes of irregular Shapes, and with a rough Coat. The first Sort may be consider'd as of the Pebble-Kind; and they are said to be found near the Beds of Rivers, after great Rains: The others are found in Mines, and in the Clefts of Rocks.

The Gems of the first Sort were what the Ancients most usually engraved upon: These are commonly called *Intaglio's*; and they are mostly of a long oval Figure, inclining to a Point at each End, convex as well on the engraved Face, as on the others, with a Ridge

Fig. 4. p. 499.

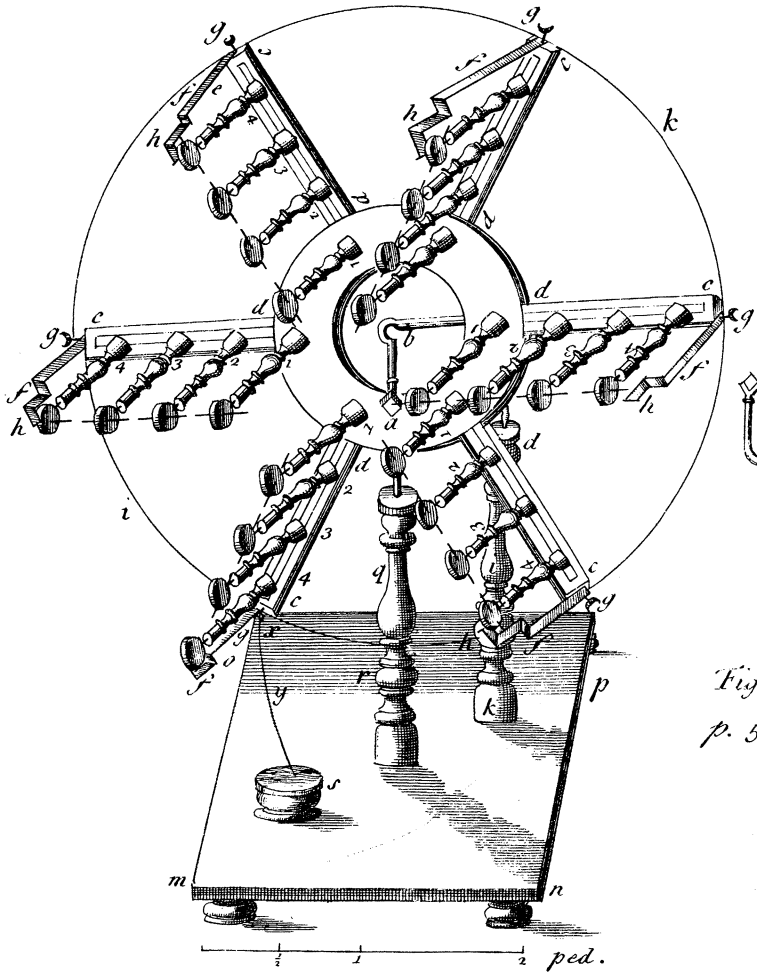
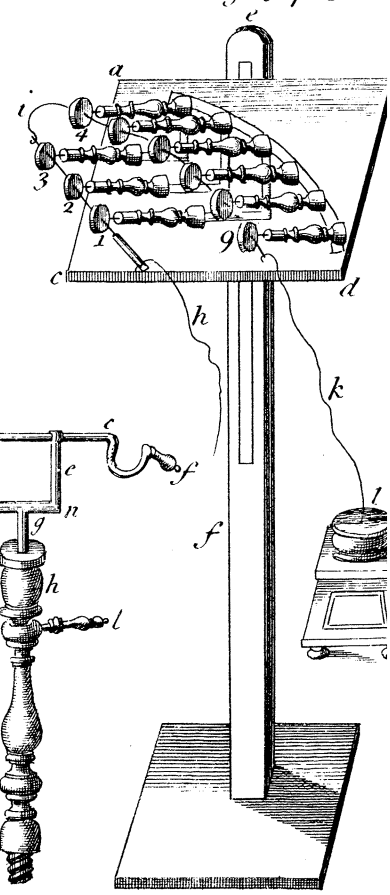


Fig. 3. p. 501.



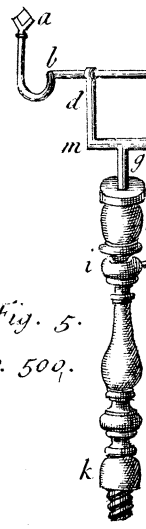
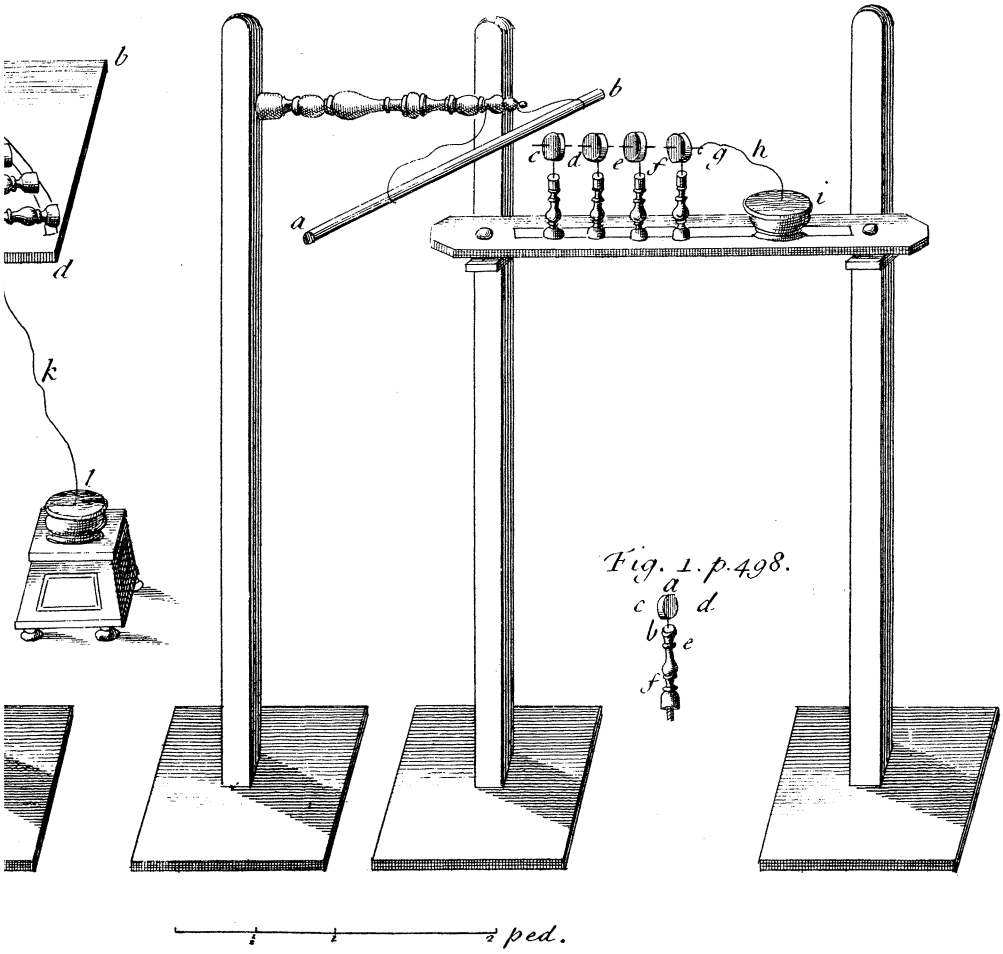


Fig. 5. p. 509.

p. 501.

Fig. 2. p. 498.



T. Mynde sc.

Fig. 4. p. 499.

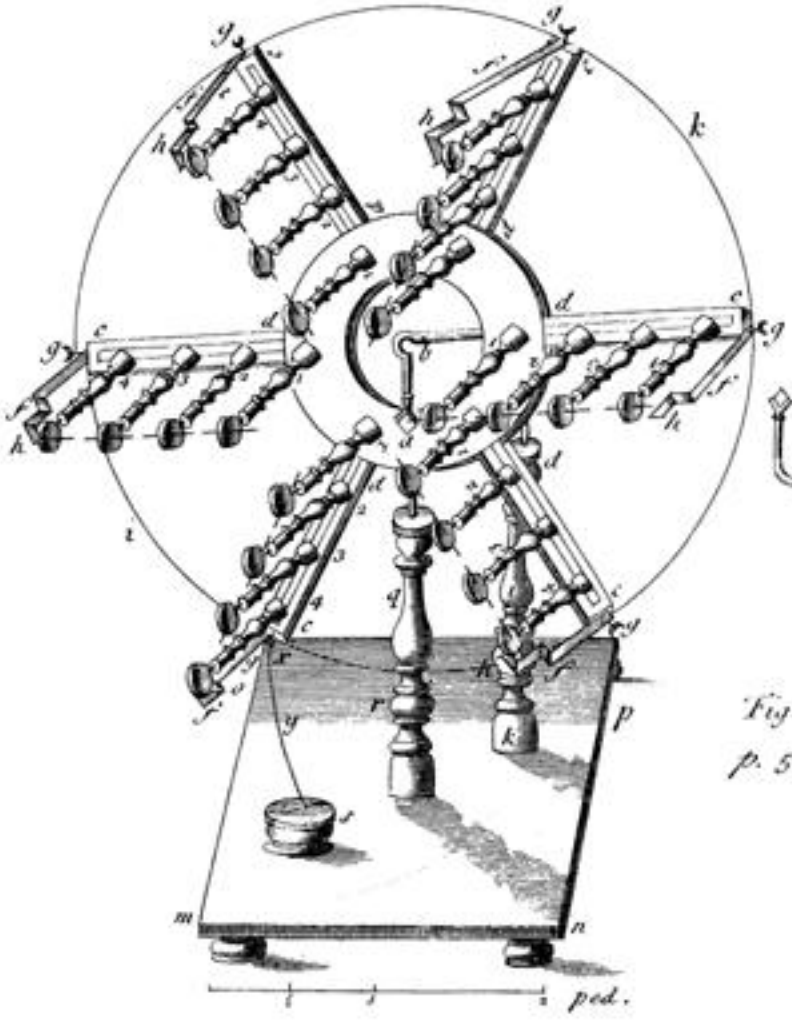


Fig. 3. p. 501.

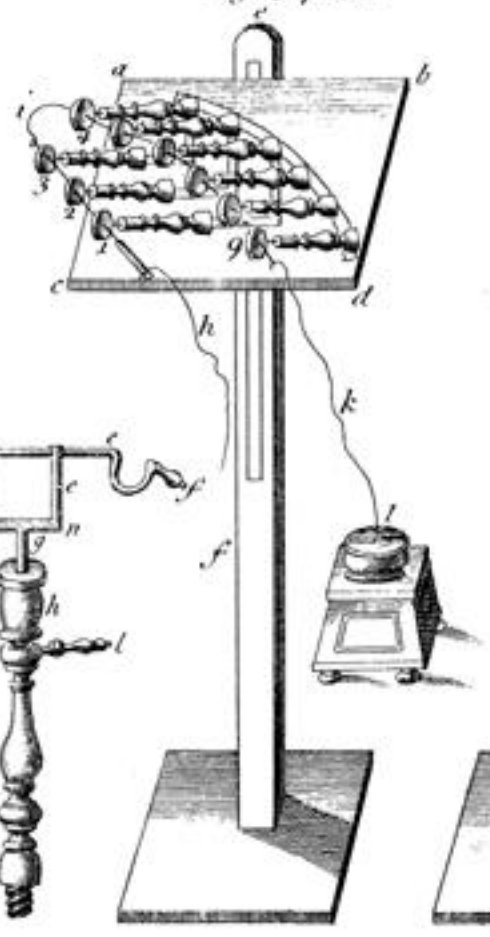


Fig. 5. p. 504.

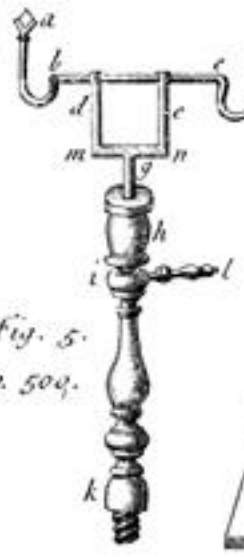


Fig. 2. p. 498.

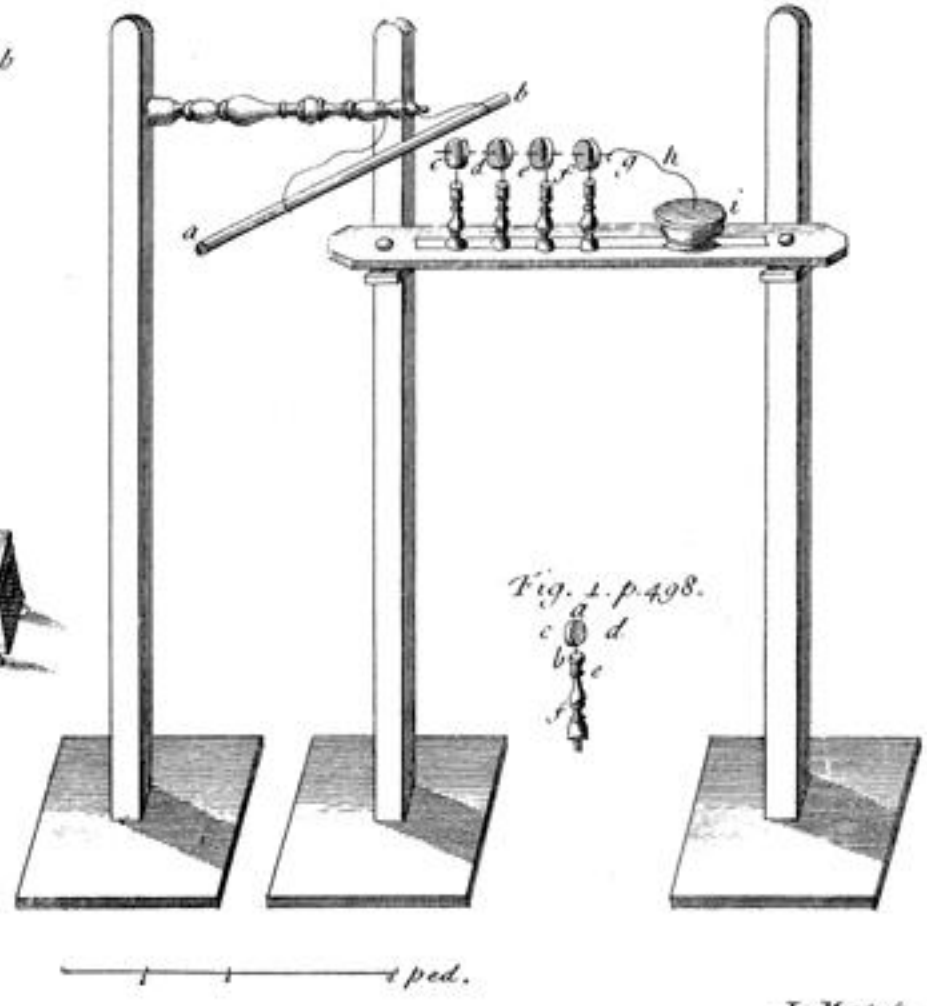


Fig. 1. p. 498.

T. Myatt sc.