

**THE MONEY MAKER.**

For months past a familiar sight on Broadway has been the toy vender who sells the little machine called the "Money Maker," the machine consisting of a pair of rollers, in one side of which are inserted plain sheets of paper, of the size of a bank note, and as the rollers revolve, a bright new bill rolls out from the opposite side, then another blank sheet is inserted and another bill rolls out, and so on. To the uninitiated this operation is a mystery, and to the unprincipled it is apparently the device long looked for. This machine is certainly as good as any device calculated to make

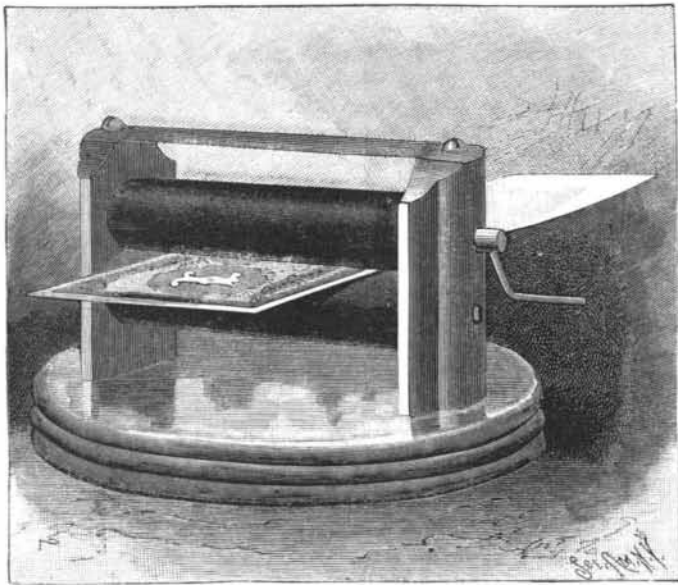


Fig. 1.—THE MONEY MAKER.

something out of nothing, but in this, as in other things, what you get you must pay for.

The explanation of the device is made simple by the enlarged cross section. To the two rollers journaled in the standards are attached the ends of a strip of black cloth, which is wound around both rollers in opposite directions, so as to about evenly divide the cloth between the rollers. The gudgeons of the rollers are squared to receive an ordinary clock key, by means of which either may be turned. To prepare the machine for operation, the cloth is wound upon one of the rollers while it is partly unwound from the other; then the key is transferred to the gudgeon of the partly filled roller, and as it is turned, crisp new bank bills are fed into the machine and are wrapped with the black cloth upon the roller between the convolutions of the cloth; one bill after another is thus inserted until three, four or more bills are hidden in the roll and the rollers present about the same appearance as to size. This preparation, of course, takes place aside, and is not seen by the persons to whom the trick is to be shown. The key is shifted from the roller containing the bills (the upper one in the present case) to the lower one. Now, as the lower roller is turned so as to unwind the cloth from the upper roll, a piece of plain paper of the width and length of a bank note is inserted at the moment the first bill is about to emerge from the layers of cloth on the upper roll. The paper begins to be rolled upon the lower roll under the outer layer of cloth, so that while the paper appears to be simply rolled through between the rollers, coming out upon the opposite side a complete bill, it is in reality only hidden by the cloth on the lower roller. After the first bill is discharged from the rollers another piece of paper must be supplied in such a manner that it will begin to enter the machine as the next bill emerges, and so on.

The molecules of ice are bound together by a very great force. To separate them, that is to melt say one pound of ice at 32° F., requires a power of 109,396 foot pounds, or a power equal to lifting the ice to a height of over twenty miles, or the exertion for one minute of over three horse power.

**Foreign Commerce of the United States.**

According to the report of the Bureau of Statistics, the value of our imports of merchandise for the calendar year 1892 was \$876,198,179, an increase of \$47,877,236 over the value of the imports for the calendar year 1891. The average annual value of our imports for the ten calendar years from 1882 to 1891, inclusive, was \$730,009,046. It will thus be seen that the value of our imports for the calendar year 1892 exceeded the annual average value of imports for the ten preceding calendar years by the sum of \$146,189,133.

The increase in the value of articles and classes of articles of merchandise imported during 1892, stated in the order of magnitude of value, was principally in coffee, caused largely by increase in price, cane sugar, wool and manufactures of, leaf tobacco, and raw silk. There was a decrease in the value of imports of beet sugar, iron and steel and manufactures of, textile grasses and other vegetable substances, and vegetables.

The total value of our exports of merchandise during the calendar year 1892 was \$938,419,893, as against \$970,509,646 in 1891, a decrease of \$32,089,753.

The value of our exports of domestic merchandise was, during the calendar year 1892, \$923,226,312, as against \$957,333,551 in 1891, a decrease of \$34,107,239.

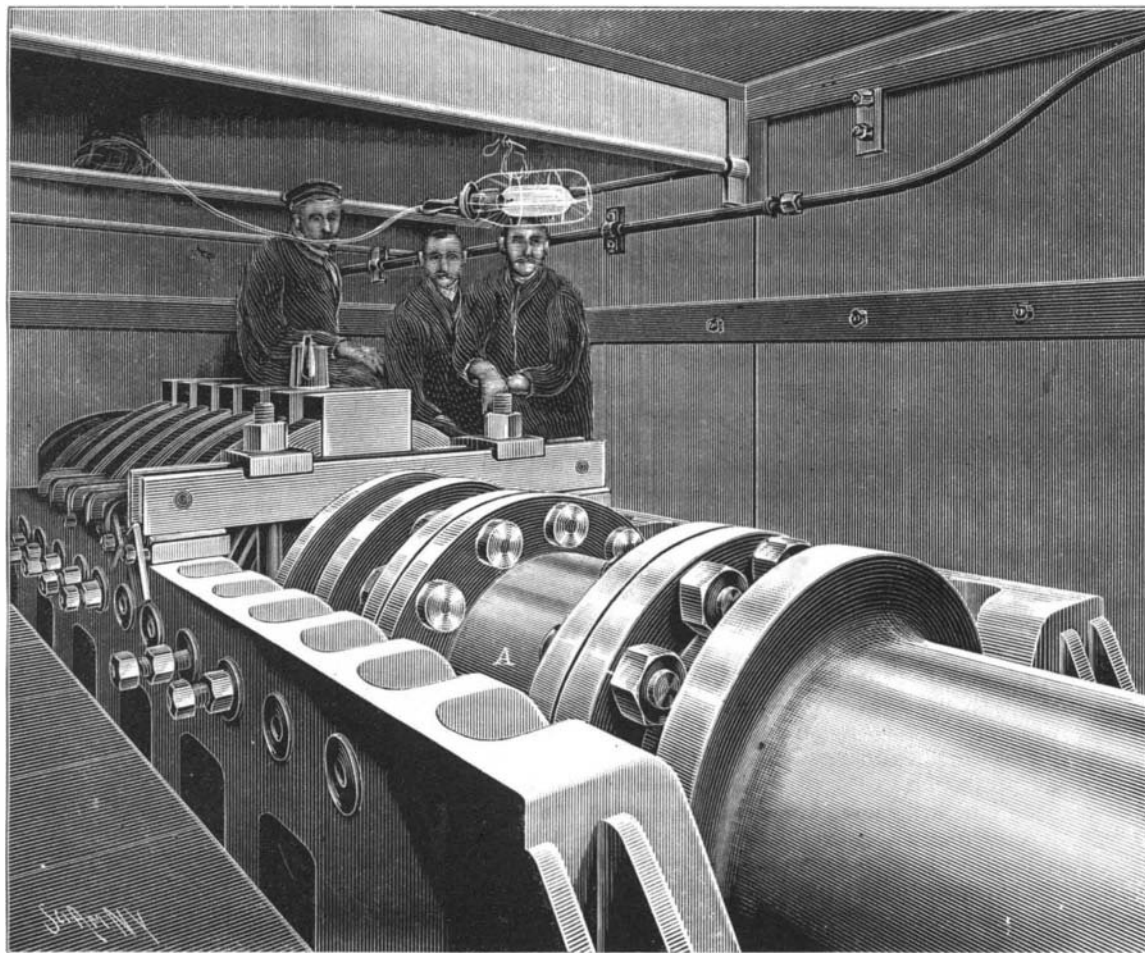
There was a marked decrease in the value of exports of raw cotton, caused largely by the decline in price, and in copper, refined sugar, manufactures of iron and steel, manufactures of leather, and manufactures of wood.

The total value of our imports and exports for the calendar year 1892 was \$1,814,618,072, an increase of \$25,787,483 over the total value of our foreign commerce of 1891, when it amounted to \$1,798,830,589. The average annual value of our foreign commerce for the ten years from 1882 to 1891, inclusive, was \$1,524,692,025.

The value of our foreign commerce for the calendar year 1891 exceeded the annual average value for the ten preceding years by \$289,926,047.

**THE MAIN SHAFT OF THE STEAMER UMBRIA AS REPAIRED.**

In our number for January 28 we gave several illustrations showing the mode of repairing the main shaft of the Cunard steamer Umbria, which, it will be remembered, broke down at sea December 23 last, and was temporarily mended, thus enabling the ship to reach the port of New York. A more permanent repair was here undertaken, which consisted in drilling out the broken section of the shaft, setting in a new section, and securing the same in place by means of nuts



THE MAIN SHAFT OF THE STEAMER UMBRIA AS REPAIRED.

and bolts, which passed through the thrust collars of the shaft and the collars of the new section. These repairs occupied about thirty days' time.

The appearance of the main shaft as thus finally repaired, and of the newly inserted section, are shown in

the accompanying engraving, which is from a photograph taken just before the ship sailed for England. A indicates the newly inserted section of the shaft.

The Umbria left this port on her homeward voyage on the 26th of January, and safely reached the Mersey

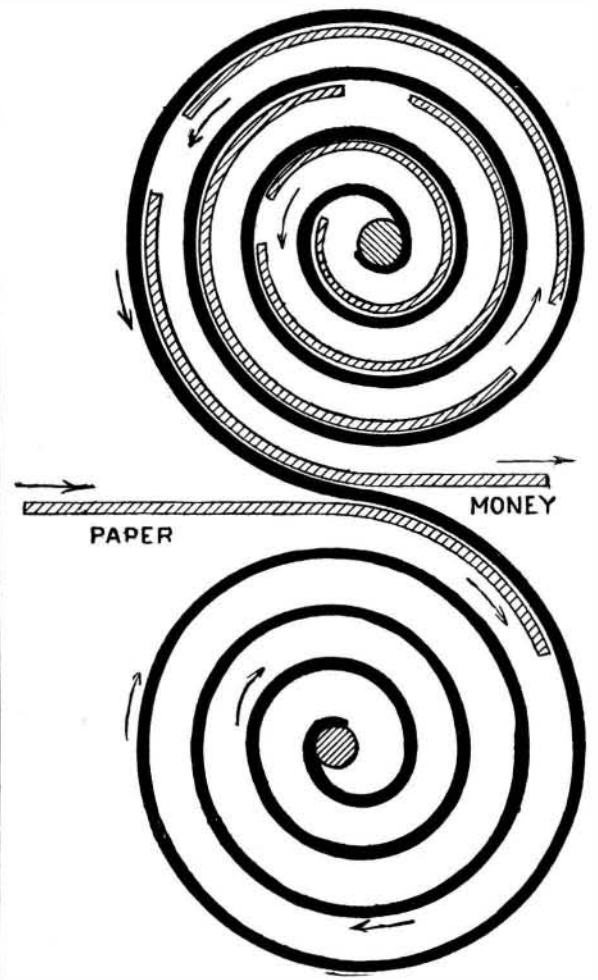


Fig. 2.—CROSS SECTION OF THE MONEY MAKER.

February 4, showing that the job of repairs was a good one. At Liverpool a new main shaft is to be put in and the ship put in order for the coming summer passenger traffic, which it is expected will be very large, in view of the World's Columbian Exposition that opens in May next.

**Metal Sleepers for Railways.**

In a report on steel sleepers contributed to the International Railway Congress at St. Petersburg, M. Kowalski states that about 10.3 per cent of the total railway mileage of the globe is carried on metal sleepers. He finds that on about 4,600 miles of line, of which 180 miles were laid with steel sleepers, the maintenance of way of the latter was 30 per cent less than that of the rest of the line. According to another estimate, with metal sleepers the saving in cost of maintenance is 12 per cent for the first year they were laid, and rises to 40 per cent in the third year. There is also a considerable saving in replacing sleepers, as the life of a wooden sleeper is put down at 15 years, as against 30 for the metal one. Taking first cost only into account, M. Bucha estimates that to pay the metal sleeper ought not to cost more than 1.63 times the wooden one; and this estimate is confirmed by M. Asser, engineer-in-chief of the Dutch railways. If, however, the reduction in cost of maintenance and renewals is also considered, M. Kowalski concludes that a metal sleeper may have a first cost twice that of the wooden, and still show a large saving.

COMMODORE FOLGER, Chief of the United States

Naval Ordnance Bureau, is reported to favor the construction of a 16 inch gun, 511½ inches in length, weighing 246,800 pounds, and capable of throwing a missile weighing a ton 16 miles. The cost would be about \$120,500.