Oct. 25, 1955 S. L. MILLER 2,721,662

TRUCK FOR TRANSPORTING BUSINESS MACHINE PUNCHED CARDS

Filed Nov. 15, 1952

Fig. 1

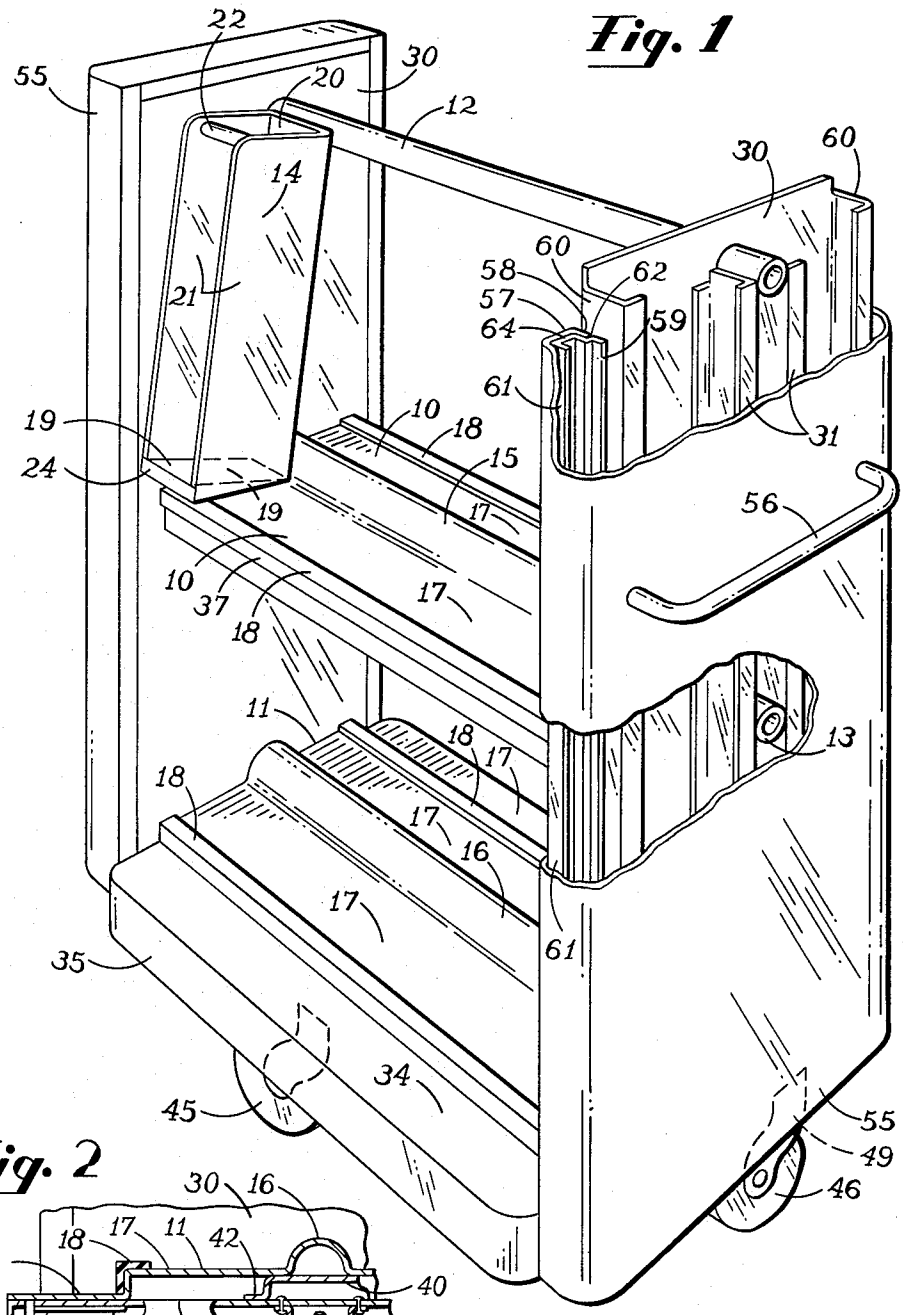
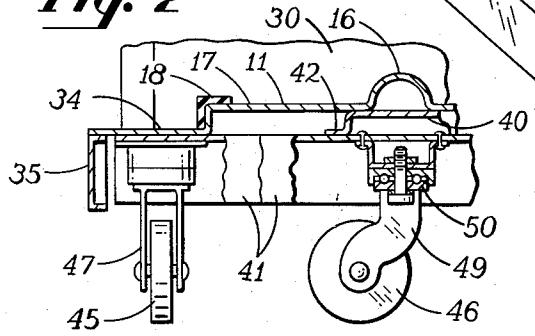


Fig. 2



INVENTOR.
STANLEY L. MILLER
BY
Clayton L. Jenkes
ATTORNEY.

United States Patent Office

2,721,662

Patented Oct. 25, 1955

2,721,662

TRUCK FOR TRANSPORTING BUSINESS MACHINE PUNCHED CARDS

Stanley L. Miller, Worcester, Mass., assignor to The Wright Line, Inc., a corporation of Massachusetts

Application November 15, 1952, Serial No. 320,658

3 Claims. (Cl. 211—71)

This invention relates to a truck for transporting business machine punched cards, and more particularly to a truck of this type in which the cards are supported substantially horizontally in elongated vertically positioned trays.

Various types of business machines are employed for punching cards in accordance with tabulated data and for sorting the cards thereafter in accordance with the punched openings. The sorting machine, for example, is so made and operated that it is desirable to have the cards supported in substantially horizontal positions. Trays have been accordingly provided for the cards, which have elongated side and back walls and an open front arranged to support the cards horizontally and permit their removal through the open front. These trays may be mounted on the top of the business machine, and the cards are thus readily available for removal from the front of the tray for the required machine operation. The trays are also so constructed that they may be stored or used in a horizontal position or with the cards held vertically and available for inspection and removal in a normal manner. It has been found that for the machine operator to carry the trays of cards from storage to the business machine involves considerable labor and a waste of time, and it is therefore desirable that a truck be employed for this transportation.

It is accordingly the primary object of this invention to provide a truck construction which will serve for transporting a large number of the vertically arranged card filled trays with the cards held in a substantially horizontal position ready for use at the business machine, and wherein the truck is so constructed that the trays are not liable to fall from their vertical positions but will be safely carried and the cards held securely in position.

A further object of the invention is to provide an apparatus of this general type having a comparatively inexpensive and simple construction and which not only serves the intended purposes but is also pleasing in appearance and may be made to harmonize with the business machines and other office furniture, and wherein its construction is such that the trays are held vertically tilted toward the back and in such positions that they may be individually removed readily without interference with one another. Further objects will be apparent in the following disclosure.

Referring to the drawings:

Fig. 1 is a perspective view of the truck, which is partly broken away to show details of construction and on which one of the file trays is supported; and

Fig. 2 is a sectional detail of a portion of the bottom and inner frame construction.

In accordance with this invention, I have provided two tray supporting platforms **10** and **11** which cooperate with two rods **12** and **13** to hold trays **14** of elongated substantially parallelepipedon shapes rearwardly tilted but in substantially vertical positions. The platforms **10** and **11** comprise centrally positioned ribs or tray positioning members, such as the half cylindrical or channel shaped ribs **15** and **16**, which project upwardly and have materially greater widths than have the rods **12** and **13** arranged vertically thereover. The flat portions **17** of the platforms **10** and **11** which form shelves at each side of the projecting ribs **15** and **16** may be rearwardly tilted so as to support the trays **14** in tilted positions. These flat shelves **17** are preferably horizontal, and the tray tilting is caused by the raised rubber strips **18** located at and parallel to the front edge of each of the shelves **10** or **11**.

Each tray has a bottom wall **19**, the rear edge of which rests on the platform shelf **17** and is tilted by the rubber strip **18** in a direction which urges the cards toward the rear wall **20** of the tray. The tray has two side walls **21** and a handle **22** near the top for carrying the tray. The bottom wall **19** may also comprise an outwardly turned front flange **24** which serves as a secondary handle, whereby the tray may be carried horizontally or even bottom-side up if a compressor is used therein to support the cards at the opposite end of the pile. That bottom **19** is preferably tilted slightly rearwardly so as to make less than a right angle with the rear wall **20**, as indicated in Fig. 1, and thus aid further in urging the cards towards the wall **20** and making it difficult for them to slide forward outwardly through the front opening between the vertical walls **21**.

The truck construction comprises two side plates or inner end walls **30**, each having two parallel spaced channel irons **31** welded on their outer sides and serving for strengthening purposes. These channel irons are so spaced that the tubes or rods **12** and **13** may pass through an opening in each side plate **30** and be welded to the opposite faces of the channel irons, thus holding the tubes solidly in place. The bottom platform **11** may be a single plate of sheet metal shaped as shown in the drawings to provide not only the hemi-cylindrical part **16** but also the horizontal tray supporting shelf **17** and a lower horizontal level portion **34**. A peripheral flange **35** is welded to and depends from that bottom plate **11**. Each inner end wall **30** is welded at its lower end to that flange **35**. Likewise, the upper tray supporting platform **10** is a plate having a peripheral downwardly depending flange **37** which is welded to the side plate **30** and thus makes an integral structure. Plates **10** and **11** are similarly shaped.

The truck carriage may be variously constructed. As shown particularly in Fig. 2, it comprises a channeled ember **40** welded to the under side of the bottom plate or platform **11** and projecting across the under open side of the half cylindrical rib **16**. A plurality of downwardly opening channel members **41** extend across and are welded to the horizontal flanged portion **42** of the channel iron **40** and they are also welded to the under side of the lower level portion **34** of the plate **11**. Four wheels **45** and **46** are suitably mounted in the channel irons **41**. These may comprise two U-shaped channel members **47** welded inside a central channel **41** and within which the two side rollers **45** are rotatably mounted. The side wheels **45** may be mounted on ball bearing casings, but their supports are preferably rigidly fastened so that the rollers will roll only in one direction. For convenience in turning the truck, a pair of end rollers **46** are mounted to turn in a required direction. The end rollers **46** are each preferably carried between the arms of an S-shaped bifurcated carrier **59** supported through a ball bearing raceway **50** on the plate welded to the inside of each end channel. Thus, by means of these two turnable end rollers **46**, the truck may be wheeled around as needed, or rolled straight ahead in a lengthwise direction.

Two outside reinforcing end walls **55** are removably mounted on the inner end walls **30**, and these carry han-

dles **56** which are preferably U-shaped rods suitably welded thereto and by which the truck may be drawn in either direction. Each end wall **55** is shaped to provide two inwardly curved vertical channels at its vertical edge portions, which have rear flanges **57** parallel to the front face of the end cover **55** and inwardly turned flanges **58**. Welded at **59** to the outwardly turned flanged portion **60** of each end wall **30** is a channel member **61** which is S-shaped at its inner portion to provide a recess at **62** into which the inwardly turned flange **58** of the outer cover may slidably fit. The part **57** of the outer cover slidably rests against the parallel portion **64** of the interlocking channel member **61** and thus aids in positioning the outer cover **55**. Also, the U-shaped channel irons **31** which are welded to the inner end plate **30** and the flanges **60** of the plate **30** have their outer faces substantially in contact with the inner parallel face of the end cover **55**, so as to aid in supporting the latter vertically and centrally thereof. It will thus be seen that the cover plate **55** may be assembled by a vertical sliding movement at the top relative to the two outwardly projecting interlocking channel members **61** and that they will be prevented from escape either laterally or lengthwise of the truck by means of the peculiar support providing the recess **62**. This end member **55** thus provides a pleasing appearance as well as serves the useful purpose of carrying the handle **56** for movement of the truck.

In its operation and use, the truck is suitably located and a set of trays **14** are mounted vertically in contiguous relation on the shelves **17** of the two platforms **10** and **11**. Since the ribs or locating spacers **15** and **16**, which are either integral with the tray supporting platforms **10** and **11** or are separate members, are wider than the rods **12** and **13** thereabove, and since the rubber strip **18** in the construction illustrated is made adequately thick, the back walls **20** of the trays are necessarily tipped rearwardly at an angle determined by the difference in widths of the rib and the rod thereabove as well as the height of the strip **18** or the front portion of the shelf. Hence, the stack of cards piled on the bottom walls **19** of the card trays tilt rearwardly and cannot escape even if the tray wall **19** is at right angles to the back wall **20**. However, for various purposes, compressors may be added to the trays and thus aid in holding the cards in place whether the trays are held bottom side up or horizontally. The cross rods **12** and **13** are of course of such heights above the supporting platforms **10** and **11** that the upper portions of the trays may lean thereagainst while their lower rear corners lie in the angle between the rounded ribs **15** and **16** and the flat shelves **17**. This truck construction is open at the sides so that the trays may be assembled on their supports or any one may be separately removed without interference with the others. There is but a single row of trays on each side of the rods **12** and **13**, so that there are four rows of the vertically positioned trays, which are thus held in a compact and space-saving arrangement.

The ribs or cross members **15** and **16** constitute spacers which separate the opposite banks of trays, and even if the front of the shelf were not raised, the width of the spacer would determine the angle of tilt of the trays. However, the height of the rubber strip **18** is preferably coordinated with the width of the spacer and the thickness of the rod above, so that the tray has a three point support formed by the strip **18**, the corner

angle between the spacer and the shelf bottom, and the rod above. Various other constructions may be provided for this three point support, such as other shapes which serve as a top support like the rod **12** or **13**. Also, the interlocking connection between the outer wall or cover plate **55** and the inner end wall may be variously constructed to provide for ready assembly of the parts. The vertical slideway **62** formed between the flange **60** and the channel member or rib **61** cooperates with the inturned flange **58** of the outer vertical cover plate **55** to slidably interlock the parts together. This provides extra strength for the end walls, as well as giving a finished appearance to the truck. Also, the bottom comprising the channel members **40** and **41** is secured only to the inner end walls so that the outer cover plates **55** may be freely removed. Other advantages in the construction will be apparent.

It will be appreciated that many modifications may be made in the construction within the scope of the invention; hence the above disclosure is to be interpreted as defining a preferred construction and not as imposing limitations on the appended claims.

What is claimed is:

1. A card tray transporting truck comprising spaced vertical end walls, a bottom forming a platform which is secured rigidly to the end walls, said walls and bottom providing a U-shaped space opening laterally and upwardly, a second platform rigidly secured centrally between the end walls, each of said platforms having a raised edge portion and a centrally located spacer extending between the end walls, the platforms forming oppositely accessible shelves on the opposite sides of and separated by the spacer, a horizontal rod vertically above and parallel to each spacer which is carried by the end walls, said rod being materially narrower than the spacer therebeneath, the front and rear portions of each shelf and the rod above the spacer providing a support for sets of vertically elongated card trays and the central spacer limiting the innermost positions of the opposite sets of trays so that they incline rearwardly at an angle defined by the difference in widths of the spacer and the rod thereabove and the height of the raised shelf front.

2. A truck according to claim 1, in which each platform is a unitary shaped metal plate having horizontal shelves connected by a channel shaped central rib forming said spacer and a depending flange rigidly secured to the end walls, and in which each raised edge portion is a strip of material secured on and near the front of the horizontal shelf.

3. A truck according to claim 1 in which each end wall has strengthening flanges providing vertical slide ways, and comprising outer wall plates provided with inturned slide members slidably interlocked with the slide ways and covering the end wall structure.

References Cited in the file of this patent

UNITED STATES PATENTS

334,313	Walker et al.	Jan. 12, 1886
1,171,343	Klok	Feb. 8, 1916
1,276,723	Collis	Aug. 27, 1918
1,562,089	Holley	Nov. 17, 1925
1,675,269	Hine	June 26, 1928

FOREIGN PATENTS

208,667	Switzerland	Feb. 15, 1940